Capital Markets, Fair Value Accounting and Regulatory Capital: Evidence from the U.S. and the European Banking Industry during the Financial Crisis of 2007-2009

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All remaining errors are my own.

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List of Abbreviations

AB	American Banker, daily newspaper covering the U.S. financial industry
ABA	American Bankers Association
ABCP	Asset-Backed Commercial Paper
ACLI	American Council of Life Insurers
AfS	Available for Sale
AICPA	American Institute of Certified Public Accountants
AMEX	American Stock Exchange
ARC	Accounting Regulatory Committee
ARM	Ajustable Rate Mortgage
ASF	American Securitization Forum
BCBS	Basel Committee on Banking Supervision
BHC	Bank Holding Company
CAPM	Capital Asset Pricing Model
CAQ	Center for Audit Quality (of the AICPA)
CDO	Collateralized Debt Obligation
CDS	Credit Default Swap
CEBS	Committee of European Banking Supervisors
CEO	Chief Executive Officer
CESR	Committee of European Securities Regulators
CFO	Chief Financial Officer
CFTC	Commodity Futures Trading Commission
CIO	Chief Investment Officer
CMO	Collateralized Mortgage Obligation
CMSA	Commercial Mortgage Securities Association
CP	Commercial Paper
CPP	Capital Purchase Program
CRSP	Center for Research in Security Prices at the University of Chicago
DJN	Dow Jones Newswires
DP	Discussion Paper
EC	European Commission
ECB	European Central Bank
ECOFIN Council	Economic and Financial Affairs Council of the European Union
ED	Exposure Draft
EEA	European Economic Area
EESA	Emergency Economic Stabilization Act of 2008
EFRAG	European Financial Reporting Advisory Group
EITF	Emerging Issues Task Force
EMH	Efficient Market Hypothesis
EPS	Earnings per share
FAF	Financial Accounting Foundation
FAS	FASB Statements

FASB	Financial Accounting Standards Board
FDIC	U.S. Federal Deposit Insurance Corporation
Fed	U.S. Federal Reserve
FEI	Financial Executives International
FGLS	Feasible Generalized Least Squares
FHLB	Federal Home Loan Banks
FHLMC	Freddie Mac, i.e., the Federal Home Loan Mortgage Corporation
FIN	FASB Interpretation Number
FNMA	Fannie Mae, i.e., the Federal National Mortgage Association
FSC	House of Representatives Financial Services Committee
FSF	Financial Service Firm or Financial Stability Forum or Financial Services Forum
FSP	FASB Staff Position
FSR	Financial Services Roundtable
FT	Financial Times
FVA	Fair Value Accounting
G20	Group of Twenty
GAAP	Generally Accepted Accounting Principles
GLS	Generalized Least Squares
GNMA	Ginnie Mae, i.e., the Government National Mortgage Association
IASB	International Accounting Standards Board
IASCF	International Accounting Standards Committee Foundation
IBES	Institutional Brokers' Estimate System
iid	Independent and identically distributed
IIF	Institute of International Finance, Inc.
IOS	Interest-only Stip
MBA	Mortgage Bankers Association
MBS	Mortgage-backed Security
MtM	Mark-to-Market
MVRM	Multivariate Regression Model
NAHB	National Association of Home Builders
NAR	National Association of Realtors
NASDAQ	National Association of Securities and Dealers Automated Quotation
NYSE	New York Stock Exchange
NYT	New York Times
OCA	Office of the Chief Accountant (of the SEC)
OCI	Other Comprehensive Income
OLS	Ordinary Least Squares
OTTI	Other-than-temporary impairments
PCAOB	Public Company Accounting Oversight Board
PCIAA	Property Casualty Insurers Association of America
PPS	Perpetual Preferred Securities
QSPE	Qualifying Special-Purpose Entity
REMIC	Real Estate Mortgage Investment Conduit
Repo	Repurchase Agreement
RER	Real Estate Roundtable
RMBS	Residential Mortgage-Backed Security
RN	Reuters News

SEC	U.S. Securities and Exchange Commission
SFAS	Statement of Financial Accounting Standards
SIC	Standard Industrial Classification or Standing Interpretations Committee of the IASB
SIFMA	Securities Industry and Financial Markets Association
SIV	Structured Investment Vehicle
SML	Security market line
SOX	Sarbanes-Oxley Act
SUR	Zellner's (1962) Seemingly Unrelated Regressions
TAF	Term Auction Facility
TARP	Troubled Asset Relief Program
TEG	Technical Expert Group of the European Financial Reporting Advisory Group
VIE	Variable Interest Entity
WRDS	Wharton Research Data Services
WSJ	Wall Street Journal

List of Symbols and Variables

α	Intercept coefficient
β	Slope coefficient
ϵ	Error term
γ_k	Coefficient of the event-specific indicator variable D_{kt} as a measure of abnormal performance at the time during which D_{kt} is set to one
τ	Event time parameter
$\mathbf{AR}(x)$	Autoregressive process of order x
AR_{it}	Abnormal return of security i at time t
$\overline{CAR}\_K$	Average cumulative abnormal return for all events k, $k = 1, \ldots, K$
$\overline{CAR}_k(\tau_1,\tau_2)$	Average cumulative abnormal return during event window k, which spans from event day τ_1 to event day τ_2
CAR_i	Cumulative abnormal return of security i
D_{kt}	Event-specific indicator variable for event k at time t
$E(\cdot)$	Expectation operator
$R_t^{ABX.HE.X}$	Return of the first ABX.HE vintage 2006 with credit quality X at time t; X wildcards credit qualities of AAA, AA, A, BBB, BBB- or Penultimate AAA (PENAAA)
R_{ft}	Risk-free rate at time t at time t
$R_t^{INTEREST}$	Relative change of an interest rate index at time t
R_{it}	Return of security i at time t
R_t^{MKT}	Return on the market index at time t
$R^{p.a.}$	Annualized return
R_t^{VPORT}	Return at time t of a value-weighted portfolio of 275 U.S. bank holding companies
X_t	Conditioning information for the normal return-generating process
AFS	Relative size of a firm's available-for-sale portfolio
$AFS2$	Alternative measure of AFS for financial service firms
$AFS3$	Alternative measure of AFS for financial service firms
$AFS\Delta FV$	Difference between the fair value and the historical cost of a firm's available-for-sale security portfolio
AFS_MBS	Total fair value of mortgage-backed securities classified as available-for-sale
AFS_OCI	Relative size of the revaluation reserve from available-for-sale securities accumulated in other-comprehensive-income

ALL	Cumulative stock market reaction to all events defined in table 4.1 on page 99
ANALYSTS	Mean number of earnings per share estimates
ANALYSTS_MEDIAN	Median number of earnings per share estimates
COMPLEXITY	Categorial effect of structural complexity
CRISIS_LOSS	Proxy for aggregate maximum loss in market capitalization during the financial crisis
FV2	Alternative measure of *FV*
FV	Fair value assets to total assets
HTM_ABS	Total fair value of held-to-maturity asset-backed securities, scaled by total assets
HTM_MBS	Total fair value of held-to-maturity mortgage-backed securities, scaled by total assets
IOS	Total amount of interest-only strips (IOS) that BHCs retain as credit enhancements related to securitization structures
LESS_FV	Cumulative stock market reaction to all fair value events
LESS_IMP	Cumulative stock market reaction to all impairment events
LESS_OFFB	Cumulative stock market reaction to all off-balance sheet events
LEVEL1	Relative size of level 1 fair value asset holdings
LEVEL2	Relative size of level 2 fair value asset holdings
LEVEL3	Relative size of level 3 fair value asset holdings
LEVERAGE	Leverage ratio, i.e., (1−core equity capital) scaled by total assets
LIQUIDITY	Liquidity ratio, i.e., liquid assets scaled by total assets
LOAN_SECUR[...]	Loan securitization exposure
MKT_CAP_{it}	Market capitalization of firm i at time t
MORE_DISCL	Cumulative stock market reaction to all disclosure events
RISKY_ASSETS	Proxy for balance sheet risk
SECURITIZATION	Total securitization exposure
SIGNED_MEAN	Set of indicator variables to capture abnormal stock return performance for cumulative groups of events, which are set to +1 for events with a positive predicted sign and to −1 for events with a negative predicted sign
SIZE	Natural logarithm of total assets
T1_RATIO	Tier 1 regulatory capital ratio
T2_RATIO	Tier 2 regulatory capital ratio
TOTAL_RATIO	Total regulatory capital ratio
TRADER	Categorical effect of firms that engage in trading activities
TRADING	Relative size of the trading book
TRADING_MBS	Total value of all mortgage-backed securities held for trading

FCPM2	Commercial Paper - Financials 2-months
SWAPSY2	Interest Rate Swaps 2-year
TBM3	Treasury Bills Secondary Market 3-months
TBM6	Treasury Bills Secondary Market 6-months
TCMIIY5	Treasury Constant Maturity, Inflation-indexed 5-years

Abstract

The financial crisis of 2007-2009 triggered an intense debate about the economic consequences of fair value accounting. Opponents argue that fair value accounting is destructive to bank capital and causes adverse second order effects. Proponents claim that fair values contain valuable information for investors not otherwise included in balance sheet values. This dissertation investigates stock market reactions for 275 (146) U.S. (European) banks and 146 (140) U.S. (European) financial service firms during 61 (37) U.S. (European) key events surrounding changes to accounting standards for financial instruments from 2007 to 2010. I find evidence that events surrounding relaxations of fair value accounting and impairment rules provoke positive stock market reactions, which are statistically and economically significant. I also find that events surrounding stricter off-balance sheet rules provoke statistically significant negative stock market reactions. Cross-sectionally, banks' stock market reactions to changes to fair value accounting standards are negatively associated with tier 1 regulatory capital, financial crisis exposure and positively associated with leverage. I find no significant association of stock market reactions with banks' balance sheet composition (i.e., asset mix). However, I find significant stock market reaction to events disseminating information to the market about increased disclosure requirements for financial instruments.

I interpret this evidence as suggesting that fair value recognition on the balance sheet is associated with adverse second order effects, which outweigh economic information benefits during financial crises. Adverse second order effects, however, are not triggered by fair value accounting *per se* but originate from the conjunction of the accounting regime with prudential regulation, resilience-depleting firm characteristics and financial crisis exposure.

Zusammenfassung

Die Finanzkrise von 2007-2009 hat eine intensive Debatte über die ökonomischen Konsequenzen des fair value accounting ausgelöst. Gegner argumentieren, dass fair value accounting zerstörerisch auf die Eigenmittelausstattung von Banken wirkt und zu adversen Effekten führt. Befürworter halten dagegen, dass fair values wertvolle Informationen für Investoren beinhalten, welche sonst bilanziell nicht erfasst werden. Diese Dissertation untersucht Aktienmarktreaktionen für 275 (146) U.S.-amerikanische (europäische) Banken und 146 (140) U.S.-amerikanische (europäische) Finanzdienstleistungsunternehmen während 61 (37) U.S.-amerikanischen (europä-ischen) Schlüsselereignissen im Zusammenhang mit Änderungen von Rechnungslegungsstandards für Finanzinstrumente von 2007 bis 2010. Die empirischen Ergebnisse legen nahe, dass Ereignisse, die zu Erleichterungen bei fair value accounting und Wertminderungsregeln führen, eine positive Aktienmarktreaktion hervorrufen. Diese Marktreaktionen sind statistisch und ökonomisch signifikant. Ereignisse im Zusammenhang mit strengeren Regeln für außerbilanzielle Transaktionen führen zu statistisch signifikanten negativen Aktienkursreaktionen. Querschnittsanalysen zeigen, dass Aktienmarktreaktionen auf Änderungen von fair value accounting-Standards negativ mit regulatorischem Tier 1 Kapital und Finanzkrisenexposure sowie positiv mit dem Verschuldungsgrad in Zusammenhang stehen. Ein signifikanter Zusammenhang zwischen Aktienmarktreaktion und der Zusammensetzung der Aktivseite kann nicht nachgewiesen werden. Allerdings sind signifikante positive Aktienmarktreaktionen auf erhöhte Offenlegungspflichten für Finanzinstrumente nachweisbar.

Diese empirischen Belege deuten darauf hin, dass die Aktivierung von fair values in der Bilanz zu negativen, adversen Effekten führt. Diese Effekte überwiegen in Finanzkrisen die ökonomischen Vorteile wertrelevanter Informationen aus fair values. Adverse Effekte werden jedoch nicht durch fair value accounting an sich ausgelöst, sondern sind eine Folge aus der Verknüpfung der Marktwertbilanzierung mit regulatorischem Eigenkapital, geringer Widerstandsfähigkeit von Finanzinstitutionen während der Finanzkrise und einem hohen Exposure gegenüber den Marktverwerfungen.

1 Introduction

1.1 Motivation, Research Questions and Main Results

What began in early summer of 2007 as a credit crisis in the U.S. subprime mortgage market set the stage for the most severe world-wide financial crisis since the great depression. Rising default and foreclosure rates in the U.S. subprime mortgage sector quickly triggered a banking crisis - not only in the U.S. but globally. Dried-up interbank markets lead the U.S. Federal Reserve Board in December 2007 to announce its first of several Term Auction Facilities (TAF) to re-establish liquidity in the U.S. banking system.[1] The wide distribution of securitized subprime risks and a dense inter-linkage of global financial institutions made the crisis spread rapidly international. In February 2008, Northern Rock received bail out funding from the U.K. Treasury department. In September 2008, Lehman Brothers Holdings Inc. filed for Chapter 11 bankruptcy protection and the banking crisis turned into a global financial crisis. Stock markets plummeted and the U.S. Securities and Exchange Commission (SEC) banned short selling of financial stocks. Economies around the globe fell into economic recession and international governments initiated bailout-programs on a large scale. The bailout debt incurred by international governments during the financial crisis gave rise to the subsequent international sovereign debt crisis.

In the course of the crisis, a vigorous debate evolved around the causes of the financial meltdown. Among the accused culprits is fair value accounting and the role it played during the crisis.[2] This debate is surprising to some extent because of both its stakeholders and its intensity. Traditional constituents, such as academics, accounting professionals, financial institutions and their lobbying groups as well as accounting standard setters have debated the issue for years. During the financial crisis, however, fair value accounting also moved to the top of the political agenda. Among others, U.S. Congress, the European Commission (EC), the Group of Twenty (G20), and the Financial Stability Forum (FSF) debated the case. Financial press coverage reveals an intense public debate on accounting policies for financial institutions that sparked off during the financial crisis.[3]

Although the various perspectives in this debate differ in detail, two main positions can be identified. Opponents, primarily from the banking industry, argue that fair value accounting

[1] Chronological information in this chapter is obtained from the financial crisis chronology established by the Federal Reserve Bank of St. Louis, available at http://timeline.stlouisfed.org.

[2] See Laux and Leuz (2009) for a discussion of this debate.

[3] A keyword search of Dow Jones FACTIVA yields 923 results in the Wall Street Journal (WSJ) and the Financial Times (FT) during the 24-months period from August 1, 2007 to July 31, 2009. Search query: fair value accounting OR mark-to-market OR marking-to-market. The same query for the 24-month period from August 1, 2005 to July 31, 2007 yields only 215 results.

leads to pro–cyclical amplifications of market trends and has exacerbated the financial turmoil of 2008 (e.g., Anderson and Reilly, WSJ, 2008; Sorkin, NYT, 2008; Sutton, AB, 2009).[4] The exacerbation argument rests on the conjunction of accounting standards and regulatory capital requirements. Critics claim that declining security prices under fair value accounting reduce net income and bank equity, which in turn stresses regulatory capital requirements and forces banks to liquidate assets spontaneously in order to avoid further losses (fire sales). Since market turmoil most likely affects the entire banking industry at the same time, fire sales generate aggregate supply pressure and a further deterioration of security prices (e.g., American Bankers Association, 2008b). For instance, William M. Isaac[5] claims at a round table on mark-to-market accounting and its impact on financial institutions held by the SEC on October 29, 2008 that "[...] it's beyond dispute that mark to market accounting has been senselessly destructive of bank capital and is a major cause of the current crisis we have in the financial markets and the economic decline we're facing now" (SEC, 2008c, p. 25). In addition, opponents argue that illiquidity in oversold markets causes security prices to deviate from their fundamentals during times of turmoil (e.g., Dizard, FT, 2008; Brereton and Hannon, WSJ, 2008). As a presumed consequence, banks took significant write-downs and coped with stressed capital requirements because of assets, which were only temporarily impaired.

In contrast, proponents claim that fair value accounting provides relevant information to investors and comprises the best available measure of "true" economic reality. Compared to alternative accounting treatments, it exposes problems instead of causing them (e.g., CFA Institute, 2008; Ryan, 2009; Mott and Deans, 2008; Deans and Mott, 2008). For instance, Scott Evans[6] argues at the same SEC round table that fair value accounting "[...] is a fundamental mechanism to provide investors with important transparency and to the underlying risks in economic value of assets held by public entities. The roots of today's crisis have many causes, but fair value accounting is not one of them" (SEC, 2008c, p. 18).

The academic literature reflects the contradictory predictions about the economic implications of fair value accounting that are inherent in the public debate during the financial crisis. The literature on the information role of fair values suggests that information contained in fair values is beneficial to investors and analysts because it increases transparency in financial markets. For instance, Bleck and Liu (2007) show that fair value accounting enables investors to exercise market discipline as it allows them to detect fundamental asset performance while a historical cost regime hides the "true" performance of the firm. In contrast, the academic

[4] There are some notable exceptions. For instance, J.P. Morgan publicly argued in defense of fair value accounting. "Blaming fair value accounting for the credit crisis is a lot like going to a doctor for a diagnosis and then blaming him for telling you that you are sick" (Deans and Mott, 2008, p. 29). Goldman Sachs Group Inc. resigned from the Institute of International Finance, Inc. (IIF) in protest to the IIF's attempts to suspend Fair Value Accounting (FVA) (Dmitracova, RN, 2008; The Economist, 2008).

[5] William M. Isaac is Chairman at Secura Group of LECG, a financial service consultancy, and former chairman of the U.S. Federal Deposit Insurance Corporation (FDIC).

[6] Scott Evans is Executive Vice President, Asset Management and Chief Executive Officer of TIAA-CREF's investment advisory subsidiaries Teachers Advisors, Inc. and TIAA-CREF Investment Management LLC.

literature on adverse second order effects suggests that fair values, which are recognized on the balance sheet and, thus, directly linked to equity and regulatory capital, lead to inefficient economic outcomes. For instance, Allen and Carletti (2008) and Cifuentes et al. (2004, 2005) show that fair value accounting causes contagion given that certain market friction exists. In Plantin et al. (2008), fair value accounting induces artificial risks in illiquid secondary markets.

The intense debate during the financial crisis and the contradictory predictions in the academic literature motivate this dissertation. Particularly, this dissertation aims to contribute to a number of questions that evolve from the financial crisis and from the ongoing debate on fair value accounting. I focus on the following main research questions:

1. Does fair value accounting matter to investors?
2. Do investors behave as if fair value accounting is associated with adverse second order effects?
3. Do investors behave as if fair values contain valuable incremental information?
4. Do investors behave as if adverse second order effects, if any, are triggered by fair value accounting *per se*?
5. Are second order effects, if any, associated cross-sectionally with certain firm characteristics?

I investigate these five questions empirically by studying stock market reactions to events surrounding changes to accounting standards for financial instruments. Particularly, I study stock market reactions to 61 key events related to changes to U.S. accounting standards for financial instruments for 275 U.S. bank holding companies (BHC) and 146 U.S. financial service firms (FSF). The 61 U.S. key events occur from May 2007 to May 2010 at the heart of the financial crisis. I also study stock market reactions to 37 key events related to changes to international accounting standards for financial instruments for 190 European banks and 140 European financial service firms. The 37 European key events occur from January 2008 to November 2009. By studying stock market reactions to events, which disseminate information about changes to accounting standards in place at the time of the event, I provide indirect evidence on the economic implications of the accounting regime that is subject to change. The virtually complete overhaul of accounting standards for financial instruments during the financial crisis provides rich grounds for this research design.

The first research question relates to net costs and benefits of the accounting regime. If fair value accounting matters to investors economically, it should be associated with net costs or benefits. I use the stock market reaction to changes to fair value accounting standards to draw statistical inference on the costs and benefits associated with this accounting regime. The empirical results suggest that fair value accounting is indeed associated with net economic effects. I find substantial statistically significant abnormal stock returns surrounding changes to fair value accounting standards of 5.39% and 3.95% on an annualized basis for U.S. and European banks, respectively. I interpret this evidence as suggesting that fair value accounting not only matters to investors but is economically very relevant during the financial crisis.

The second research question is closely related to the first. If investors associate fair

value accounting with adverse second order effects, changes to accounting standards, which require "less" fair value accounting should be associated with positive stock market reactions and vice versa. The empirical evidence in this dissertation suggests that this is indeed the case. Particularly, I find positive stock market reactions to events that relax current fair value accounting rules for both U.S. and European banks. I also find negative stock market reactions to events that disseminate information about strengthened fair value accounting rules, i.e., "more" fair value accounting.

The third research questions relates to the information role argument about fair values. If fair values contain incremental information that is beneficial to investors, changes to accounting standards that require less fair value accounting should be associated with "real" costs. However, if fair values are recognized on the balance sheet and therefore tied to equity and capital, the real costs of decreased information content are possibly outweighed by real benefits resulting from relief from adverse second order effects of fair value accounting. Since stock returns measure the net results of possibly antagonistic individual effects and because such individual effects can hardly be disentangled, I pursue a different strategy to investigate the information role of fair values during the financial crisis. Particularly, I investigate stock market reactions to events surrounding changes to disclosure requirements for financial instruments during the financial crisis. Since disclosure rules affect neither the balance sheet nor equity and capital, market reactions to changes to disclosure requirements reveal if information inherent in such disclosures is beneficial to investors. I find strong evidence that disclosures for financial instruments are beneficial to investors. Events surrounding changes to disclosures requirements, which require additional, i.e., "more" disclosure on financial instruments, are associated with statistically significant abnormal returns adding up to 10.66% and 17.78% on an annualized basis for U.S. and European banks, respectively. I interpret this evidence as suggesting that disclosures for financial instruments, including fair values, contain information incremental to historical costs that is beneficial to investors.

The fourth research question responds to what is really at heart of the public debate on fair value accounting. Up to question 3, the evidence in this dissertation supports the conjecture that recognized fair values cause adverse second order effects during financial crises by depleting equity and capital. Is this, however, a phenomenon solely attributable to fair value accounting? In other words, are second order effects resulting from the conjunction of balance sheet values with regulatory capital requirements triggered by fair value accounting *per se* or are they merely a result of write-downs dwindling income in bear markets? I pursue two different strategies to investigate the fourth research question.

First, I study a variety of changes to accounting standards that are not directly related to fair value accounting but have similar implications for bank equity and capital. If such changes provoke similar stock market reactions like changes to fair value accounting rules, this gives reason to believe that adverse second order effects attributed to fair value accounting in the course of the public debate are in fact not triggered by fair value accounting *per se*. Rather, such economic effects likely evolve from the technical link between asset values, equity and

capital. Since this link is inbuilt in accrual accounting and common to virtually any accounting regime governing the valuation of assets, economic net benefits of changes to accounting standards during financial crises evolve not from diminishing fair value accounting but rather from a technical release of pressure on capital requirements under stress. Particularly, I investigate market reactions to events surrounding changes to both off-balance sheet and impairment rules in the U.S. I also study stock market reactions to events that disseminate information about changes to off-balance sheet rules for European banks, about the ability to reclassify financial instruments between classification categories of IAS 39 and IFRS 7, as well as about the replacement and complete overhaul of IAS 39. For U.S. bank holding companies, I find strong evidence that changes to both off-balance sheet and impairment rules exhibit economic characteristics similar to changes to fair value accounting rules. For U.S. banks, I find statistically significant negative stock market reactions to events that are associated with stricter off-balance sheet rules, i.e., changes that would require banks to account for more assets on-balance rather than off-balance. Negative abnormal returns to these events add up to -3.34% on an annualized basis. I interpret this evidence as suggesting that bringing assets back on the books triggers similar adverse second order effects like fair value accounting. Similarly, I find statistically significant positive stock market reactions to events surrounding changes to impairment rules, which relax impairment requirement and ultimately lead to fewer write-downs recorded in income. Positive abnormal returns in response to these events amount to a vast number of 35.83% on an annualized basis. I interpret this evidence as suggesting that the very income effect is the predominant driver of net costs and benefits associated with changes to accounting standards for financial instruments, rather than abandoning fair value accounting. The reason is that postponed write-downs, independent of whether they arise from fewer assets accounted for at fair *market* value or from relaxed impairment rules, safeguard equity temporarily and therefore release pressure from capital rations under stress. The equivalence of the implications for equity and capital of both relaxed fair value accounting and impairment rules becomes even more evident considering that impairment rules relate primarily to assets accounted for on the balance sheet at historical costs.[7]

For European banks, I find negative stock market reactions to changes to off-balance sheet rules. This market reaction, however, is not statistically significant. A possible explanation is that the events, which I investigate, disseminate information to the market about changes to accounting rules, which are not rigorous enough to provoke statistically traceable abnormal stock returns. However, I find strong evidence for European banks that the ability to reclassify financial assets between categories of IAS 39 and IFRS 9 is associated with substantial economic benefits. Statistically significant positive abnormal returns to events disseminating information about possible reclassifications amount to 15.15% on an annualized basis. Reclas-

[7] An exception from this general rules is the accounting treatment of unrealized losses from available-for-sale securities accumulated in other comprehensive income. These unrealized losses are reconciled into income as soon as certain impairment triggers are hit.

sifications within IAS 39 and IFRS 9 essentially allow banks to transfer financial assets from fair value accounting into an amortized cost treatment under certain conditions. It seems highly likely that reclassifications after initial recognition are triggered on average by changes in expectations about the income effects of marking these assets to market. Accordingly, the mere short-term effect on income seems to prompt adverse second order effects of fair value accounting. I also find strong evidence that investors consider the replacement of IAS 39 economically beneficial. Particularly, I find statistically significant positive abnormal returns amounting to 6.09% on an annualized basis in response to events disseminating information about the replacement of IAS 39.

The second strategy that I pursue to investigate the fourth research question is to compare the economic implications associated with changes to accounting standards for banks with a second sample, which consists of financial service firms. Financial service firms compare fairly well against banks in a number of aspects (e.g., balance sheet composition). They, however, differ regarding certain key firm characteristics (e.g., prudential regulation). I use these similarities and differences to draw statistical inference on what drives the economic consequences of fair value accounting.

A main similarity between banks and financial service firms is the composition of their balance sheet. Both banks and financial service firms allocate the majority of their assets to financial instruments. Regarding fair value assets, financial service firms even extend their exposure substantially beyond what banks keep on their books. While U.S. (European) banks hold on average only around 15% (19%) of total assets at fair value, U.S. (European) financial service firms devote around 45% (33%) of their balance sheet to assets accounted for at fair value.[8] Based on this difference in fair value asset holdings, one would expect financial service firms to face substantially more severe adverse second order effects of fair value accounting. However, I find evidence of the opposite. The stock market reaction to changes to fair value accounting standards of U.S. financial service firms is around 3%-pts. lower compared to the market reaction of U.S. banks (on an annualized basis). This difference is statistically significant. I find similar evidence for events surrounding changes to both off-balance sheet and impairment rules (around 1.8%-pts. for off-balance sheet events and vast 40%-pts. for impairment events; both on an annualized basis and statistically significant). I find similar evidence for European financial service firms. The market reaction to fair value events is about 1.4%-pts. higher for European banks compared to European financial service firms (on an annualized basis). Similarly, the difference in market reactions between banks and financial service firms to events surrounding the reclassification of financial assets and the replacement of IAS 39 is about 6.5% and 2.4%-pts., respectively (on annualized basis).[9] Both the U.S. and

[8] The difference in means of fair value asset holdings between banks and financial service firms is statistically significant at the 1% level for both U.S. and European firms.

[9] The difference in estimated coefficients is statistically significant in the European sample only for reclassification events.

the European evidence suggest that banks face more severe adverse second order effects of fair value accounting, off-balance sheet rules and impairment requirements than financial service firms. But what is the missing link causing this difference between banks and financial service firms?

The fifth research question responds to this issue. Since financial service firms do not face the same regulatory capital requirements for prudential regulation as banks do, I hypothesize that the conjunction of balance sheet values, equity and capital drives the magnitude of adverse second order effects for banks. I find strong evidence that regulatory capital and leverage, particularly tier 1 capital, are negatively associated with stock market reactions to changes to accounting standards for financial instruments for both U.S. and European banks. Particularly, I find a statistically significant negative association between the magnitude of U.S. stock market reactions to both fair value and impairment events suggesting that banks with lower regulatory capital ratios benefit more on average from relaxations of both fair value accounting and impairment rules. For European banks, I find statistically significant negative associations between tier 1 capital and the magnitude of stock market reactions to both fair value and reclassification events suggesting that banks with lower tier 1 capital benefit more on average from both relaxed fair value accounting rules and possible reclassifications of financial assets. This evidence suggests that not fair value accounting *per se* causes adverse second order effects but the conjunction of balance sheet values with prudential regulation. If capital and leverage are important determinants of adverse second order effects, it seems likely that other factors determining the resilience of financial institutions toward shocks in the financial system are also associated with market reactions to changes to accounting standards for financial instruments. Accordingly, I hypothesize that market reactions to changes to accounting standards for financial instruments are cross-sectionally related to liquidity, size and complexity, asset risk, financial crisis exposure, and a firm's asset mix. For U.S. banks, I find some evidence that liquidity and complexity are negatively related to the magnitude of stock market reactions to impairment events. I interpret this evidence as suggesting that less liquid and more complex banks benefit relatively more on average from changes to impairment rules because lower liquidity and higher complexity seem to induce more severe adverse second order effects. I also find some evidence suggesting that size is positively related to the magnitude of market reactions to fair value events. This indicates that larger banks benefit more on average from relaxed fair value accounting rules. I also find evidence that stock market reactions to both fair value and off-balance sheet events are associated with financial crisis exposure. This evidence suggest that banks with a higher exposure to the financial crisis benefit more on average from relaxed fair value accounting standards and also suffer more from stricter off-balance sheet rules.

Overall, the evidence in this dissertation suggests that fair value accounting causes adverse second order effects if combined with regulatory capital requirements during financial crises. Adverse effects are on average more severe for banks, which are less resilient toward shocks in the financial system. In this sense, changes to accounting standards, which ease the necessity

of financial institutions to record losses in income during financial crises safeguard equity and capital and are therefore associated with positive economic effects on average. This, however, does not imply that fair value accounting *per se* induces adverse second order effects and is thus deemed harmful to the financial system. Particularly, since market reactions to increased disclosure requirements suggests that fair values contain information incremental to historical costs that is beneficial to investors and analysts. This evidence is of interest for academics, regulators, accounting standards setters and financial industry professionals alike.

1.2 Structure of the Dissertation

The remainder of this dissertation is structured as follows. I begin with hypotheses development in chapter 2 on the next page. Chapter 3 on page 31 outlines the research design that I use to investigate the economic implications of changes to accounting standards for financial instruments. Chapters 4 to 6 are devoted to U.S. changes to accounting standards for financial instruments. Chapter 4 on page 50 provides comprehensive background information and establishes the U.S. event history. U.S. sample selection and variable measurement along with descriptive statistics are provided in chapter 5 on page 112. Chapter 6 on page 149 reports U.S. empirical results and concludes on the U.S. evidence.

Chapters 7 to 9 are concerned with the economic implications of changes to accounting standards for European banks and financial service firms. Chapter 7 on page 185 provides detailed background information on the European history of events. Chapter 8 on page 218 contains information on the selection of the European sample and on variable measurement. It also reports descriptive statistics. The European empirical results are reported in chapter 9 on page 232. Finally, chapter 10 on page 254 concludes.

2 Hypotheses Development

This chapter develops the hypotheses that I examine empirically in the course of this dissertation. I begin in section 2.1 with hypotheses related to stock market reactions to events surrounding changes of accounting standards for financial instruments. Sections 2.1.1 and 2.1.2 highlight propositions from prior research regarding why fair value accounting matters economically. Section 2.1.3 synthesizes these arguments and specifies the main hypotheses regarding the direction (i.e., the predicted sign) of the stock market reaction.

Section 2.2 develops cross-sectional hypotheses. These cross-sectional hypotheses predict that the magnitude of stock market reactions to changes of accounting standards for financial instruments is associated with certain firm characteristics. Tests of these hypotheses are intended to provide empirical evidence on the determinants of adverse second order effects of fair value accounting.

2.1 Predicted Sign of the Stock Market Reaction

Changes to accounting standards are not per se associated with changes of shareholder wealth and movements in stock prices. Investors only revise their expectations about the relative risk-return profiles of firms affected by a rule change, if the change is not purely cosmetic and ultimately affects cash flows and firm value (e.g., Gonedes and Dopuch, 1974; Leftwich, 1981). Prior research emphasizes two different types of "real" implications of fair value accounting: (1) the information role of fair values, and (2) adverse second order effects evolving from the conjunction of fair value accounting with prudential regulation or contractual arrangements given certain market frictions exist. I discuss each in turn.

2.1.1 Information Role of Fair Values

The information role argument relies on the premise that fair values contain information incremental to historical costs. The incremental information presumably adds to the information set of investors and analysts and facilitates their investment and information-production decisions. Bleck and Liu (2007) show that fair value accounting can provide investors with an early warning mechanism and allows them to exercise market discipline, while a historical cost regime enables managers to hide the true performance of the firm. In their model, the relative benefit of fair value information is an increasing function of market opaqueness, i.e., the marginal information benefit is relatively higher in less transparent markets because alternative channels of information are less developed (or even unavailable). As a consequence, investors have to rely more heavily on accounting information. Bleck and Liu also find that the historical cost regime makes financial markets more volatile and leads to more frequent and more severe asset price crashes in more opaque markets. I interpret the findings of Bleck and Liu (2007) as suggesting that changes to accounting standards, which require more financial

instruments to be accounted for at fair value, increase transparency and investors' ability to exercise market discipline. Solely based on this logic, such changes to accounting standards should provoke a positive stock market reaction.

Transparency also plays a role during the market turmoil of 2007-2008. It has been widely acknowledge that a lack of transparency about the structure and composition of securitized debt instruments is one of the causes of the financial crisis. Securitized subprime financial instruments were considered largely opaque by investors. In the logic of Bleck and Liu (2007), fair value information would be particularly beneficial under these circumstances compared to "normal" market conditions. The evidence presented by Lev and Zhou (2009) also relates to the information content of fair value measures during times of crises. They find that the three levels of the fair value hierarchy, as stipulated by SFAS 157, inform about liquidity risk during key events of the 2008 market turmoil.

The value-relevance of fair value measures has also received considerable attention (e.g., Barth, 1994; Seow and Tam, 2002; Beaver and Venkatachalam, 2003; Ahmed et al., 2006). This literature is based on the premise that the association of accounting numbers with stock prices is a desirable property. Similar to the findings of Bleck and Liu (2007), the value-relevance literature suggests that fair values contain information that is relevant to the investment and information production decisions of investors and analysts. Based on this literature, changes to accounting standards, which require more financial instruments to be accounted for at fair value, should provoke a positive stock market reaction.

2.1.2 Adverse Second Order Effects

Prior research also emphasizes potential second order effects that evolve from the recognition of fair values on the balance sheet in the presence of certain market frictions. I refer to these adverse economic effects as second order effects because they do not evolve from the existence of fair value accounting alone. Rather, they result from the interaction of a variety of factors and fair value accounting is only one necessary condition for them to occur. The rationale behind second order effects is that recognized fair values do not only serve as an information device but also affect the structure and the distribution of the balance sheet as a whole.[10] This can lead to adverse effects if contractual agreements (e.g., covenants) or prudential regulation (e.g., regulatory capital requirements) are tied to balance sheet values.[11] Adverse second order effects of fair value accounting include contagion (e.g., Allen and Carletti, 2008; Cifuentes et al., 2004, 2005), the injection of excessive risk (e.g., Plantin et al., 2008) and increased default probabilities of banks (e.g., Burkhardt and Strausz, 2006; Freixas and Tsomocos, 2004). I

[10] Consider the book value of the balance sheet a random variable. The statistical properties of this random variable depend on the accounting regime because in a world of floating prices for financial instruments both mean and variance of the book value differ under fair value accounting compared to historical cost accounting.

[11] Note that adverse second order effects evolving from fair value accounting, prudential regulation and market frictions are likely to be particularly severe if the regulatory regime was originally designed based upon a historical cost accounting regime.

discuss each in turn.

Allen and Carletti (2008) study fair value accounting in the context of liquidity pricing during financial crises. Their findings suggest that fair value accounting can induce contagion from one industry to another unrelated (i.e., non-overlapping) industry. In their model, risk-sharing between banking and insurance sectors causes banks and insurance companies to hold one common asset, although the two sectors are otherwise unrelated. While credit risk transfer allows for more efficient risk sharing, Allen and Carletti (2008) also find that systematic risk in the insurance sector combined with both fair value accounting and liquidity pricing induces contagion from the insurance to the banking sector. Particularly, a shock in the insurance sector causes insolvency in the banking sector. Insolvency of banks, however, is inefficient because banks would be able to meet all their liabilities in subsequent periods if they were not previously closed by the regulator. In contrast, under the historical cost regime, book values of banks' assets are unaffected by the shock in the insurance industry and banks remain solvent.

In a related paper, Cifuentes et al. (2004, 2005) investigate contagion within the banking industry from a system perspective. Their model relies on a fire sale argument. An initial shock forces one bank in the system to divest assets in order to maintain regulatory capital requirements. Since the market demand for illiquid assets is less than perfectly elastic (i.e., liquidity pricing), market prices decrease in response to the sale. The price decrease is contagious and feeds back into the system because all other banks also mark their assets to market and thus incorporate the decreased market price into both their balance sheet and regulatory capital requirements. In order to maintain capital requirements, more and more banks are forced to divest assets, which starts a vicious write down spiral that eventually can cause failure of the entire system.

Overall, the findings of Allen and Carletti (2008) and Cifuentes et al. (2004, 2005) suggest that fair value accounting adversely affects banks' exposure to unrelated shocks and increases expected costs of regulation given certain market frictions (e.g., liquidity pricing, systemic risk) exist. This in turn suggests that changes to accounting standards, which ultimately require more financial instruments to be accounted for at fair value, should provoke a negative stock market reaction and vice versa.

Plantin et al. (2008) investigate fair value accounting in the presence of illiquid secondary markets. Their model assumes firms, which are short-sighted relative to the time to maturity of their assets. They also assume that true asset values are unobservable and thus cannot be contracted upon. True asset values can only be determined based on accounting values, which are contingent on the measurement regime (i.e., fair value or historical cost). In this setting, fair value accounting can introduce artificial risk into transaction prices, which distorts price information and causes inefficient real decisions. Selling of assets into the illiquid market by some firms causes negative externalities for other firms by depressing prices below their fundamental value. In anticipation of a price decrease, firms that are marked to market and would otherwise hold the assets are more likely to also divest their holdings. This causes prices to deviate from their fundamentals even further and generates endogenous volatility. Since

the price amplification mechanism caused by fair value accounting is most severe in bad states of the world (e.g., during market turmoil), changes to accounting standards during financial crises, which ultimately require more financial instruments to be accounted for at fair value, are expected to provoke a negative stock market reaction based on the rationale in Plantin et al. (2008).

Burkhardt and Strausz (2006) study risk shifting and the default probabilities of banks under different accounting regimes. They argue that improved transparency under fair value accounting increases the liquidity of banks' assets and enriches their investment opportunity set, which supposedly leads to riskier investments. As a consequence, fair value accounting in their model increases the probability of default for leveraged banks and reduces overall firm value compared to historical cost accounting. Provided the increased probability of default in Burkhardt and Strausz (2006), changes to accounting standards during financial crises, which ultimately require more financial instruments accounted for at fair value, would be expected to provoke a negative stock market reaction.

2.1.3 Predictions About the Aggregate Market Reaction

The information role argument and the potentially adverse second order effects of fair value accounting apparently lead to contradictory predictions about the economic effects of fair value accounting. Although the information role argument suggests that fair value accounting increases transparency and adds to the information set of investors, the prevalent theoretical literature on second order effects points to adverse real consequences that are likely to deteriorate the incremental information benefit in the presence of certain market frictions. Particularly, liquidity pricing, substantial leverage, banking systems that are interlinked through credit risk transfer or interbank deposits combined with fair value accounting and regulatory capital constraints seem to facilitate contagion as well as distortions and deviations of market prices from their fundamentals during times of market distress. Given both the financial market conditions and the institutional settings during the financial crisis, it seems likely that adverse second order effects of fair value accounting outweigh potential information benefits. That is, I presume that fair values contain incremental information which is beneficial to investors and analysts beyond the information contained in historical costs. However, I also assume that adverse second order effects overshadow the information benefits during financial crises if fair values are not solely disclosed but recognized on the balance sheet with prudential regulation tied to balance sheet values. I adopt this as the first maintained assumption in terms of hypotheses development.

Assumption 1 *Adverse second order effects from the conjunction of fair value accounting with regulatory capital requirements outweigh potential information benefits of fair values during financial crises (**Adverse Effect-Assumption**).*

Assumption 1 on the preceding page relies on the theoretical models discussed above, which derive their propositions by comparison of two extreme corner-scenarios: full fair value versus full historical cost.[12] In addition, the authors treat the accounting regime as externally imposed and static. In the current "real" world environment, however, financial assets are not accounted for under a full fair value model but according to a mixed-model approach. Under the mixed-model, some assets are recognized at fair value and others at cost. Also, the actual portion of assets accounted for at fair value is not exogenously determined altogether but depends somewhat on factors that lie beyond rules and principles stipulated in accounting standards. Such factors include management's intent and the business model of a firm (e.g., investment banks compared to loan and savings institutions). In addition, accounting standards are not static but rather are subject to change. Predicting economic effects of changes to accounting standards in the "real" world regime based on economic effects obtained under the static full fair value regime requires additional assumptions about the relationship between the two worlds.

To develop these assumptions, I consider the full fair value model an upper bound on the scope of fair value accounting since all assets are recognized on the balance sheet at fair value. The full fair value model also specifies an upper bound on the impact of fair value accounting on profit or loss, equity and capital since all changes in fair value are recorded in income. As a result, the full fair value model can be thought of as an upper bound on second order effects of fair value accounting. That is, adverse effects are ceteris paribus most likely and most severe when the entire balance sheet is accounted for at fair value with fair value changes recorded in income. This raises the question of how the occurrence of adverse second order effects relates to "real" world situations where only portions of the balance sheet are accounted for at fair value. Do adverse second order effects only materialize under the full fair value regime and is full fair value accounting thus a necessary condition for adverse effects to occur? Or is the portion of assets accounted for at fair value simply an amplifier for the occurrence of adverse second order effects on an individual firm level?

To address these questions, I define the actual impact of fair value accounting on an individual firm's balance sheet as a firm's fair value exposure. Fair value exposure comprises the implications of recognized fair values for the book value of assets and liabilities, income, equity and capital.

Definition 1 *Fair value exposure measures the impact of fair value accounting on the book value of assets and liabilities, on income, equity and capital (**Fair Value Exposure-Definition**).*

With respect to the full fair value model assumed in most of the theoretical literature, I conjecture that second order effects of fair value accounting occur even if the balance sheet

[12] With the exception of Burkhardt and Strausz (2006).

is not accounted for entirely at fair value. Rather, a firm's fair value exposure magnifies second order effects. This leads to the second maintained assumption in terms of hypotheses development.

Assumption 2 *The occurrence and severity of adverse second order effects is some positive function of a firm's fair value exposure (**Adverse Effects and Fair Value Exposure-Assumption**).*[13]

Given this assumption, changes to accounting standards for financial instruments modify the proximity of the current regime to the upper bound of full fair value accounting. That is, changes to accounting standards alter firms' fair value exposure without modifying the structure and composition of the underlying financial instruments. An increase (decrease) in fair value exposure in turn increases (decreases) the vulnerability to and the risk of adverse second order effects. Accordingly, changes to accounting standards that reduce fair value exposure are expected to provoke a positive market reaction and vice versa. This leads to the first hypothesis, which I refer to as the "less fair value-hypothesis".

Hypothesis 1 *Changes to accounting standards and their surrounding events are associated with a positive (negative) stock market reaction if the change ultimately decreases (increases) firms' fair value exposure (**Less Fair Value-Hypothesis**).*

Recall that the market reaction predicted by hypothesis 1 originates to a substantial extent from assumption 1 on page 12. This assumption states that during financial crises adverse second order effects overshadow the information benefits contained in fair values. The assumption is expected to hold if fair values are recognized on the balance sheet and prudential regulation is tied to balance sheet values in an environment where certain market frictions exist. However, if fair values are solely disclosed to the market and are not recognized on the balance sheet, there are no obvious reasons based on the theoretical literature discussed above why second order effects could occur or even outweigh the positive information effects of fair values. Accordingly, changes to accounting standards that increase (decrease) the extent of fair value disclosures are expected to increase (decrease) the information benefits of fair values. This leads to the second hypothesis, which I refer to as the "more disclosure-hypothesis".

[13] Note that this assumption requires the additional qualification that fair value accounting is also the prevailing accounting regime in the industry even though fair value exposures differ among firms. This qualification is required because most models assume that the adverse effect on a single firm feeds-back into the market and thus causes the overall adverse economic impact. If only a single firm accounted for their assets at fair value, the overall adverse second order effects are unlikely to occur.

Hypothesis 2 *Changes to accounting standards and their surrounding events are associated with a positive (negative) stock market reaction if the change ultimately increases (decreases) the extent of fair value disclosures (**More Disclosure-Hypothesis**).*

Research in this dissertation examines changes to accounting standards for financial instruments with an emphasis on fair value accounting. In addition to fair value accounting, I also cover two closely related areas: (1) off-balance sheet items and (2) impairment rules. As it turns out, economic implications in these closely related fields evolve from a similar, if not the same rationale as for adverse second order effects of fair value accounting. I discuss each area in turn.

Accounting standards for off-balance sheet items are concerned with whether or not certain financial constructs should be accounted for on or off the balance sheet. Therefore, changes to these standards bring either more or less assets and liabilities back on the books. The economic implications of such changes to accounting standards focus on the ultimate consequences of balance sheet expansions through assets and liabilities, which were previously held off-balance. There is at least one obvious direct implication: assets brought back on the books are accounted for according to the same set of rules as other assets on the balance sheet. This implication establishes a direct link to hypothesis 1: changes to accounting standards that bring more assets back on the books likely increase a firm's fair value exposure since at least some of these assets likely are in the scope of fair value accounting standards. This holds under the mixed-model but is perfectly obvious under full fair value accounting. As a consequence, additional assets on the balance sheet are likely to exhibit the same adverse second order effects, including their impact on income, equity and capital, as assets initially accounted for at fair value. In addition, there are a number of indirect effects resulting from stricter off-balance sheet rules. These effects include, among others: additional risks to be assumed by the financial institution along with inefficient risk-sharing, direct implications for tier 1 capital, and implications for the loan origination model (i.e., capacity) along with profitability implications for the bank. Also, in times of financial crises, "involuntary" balance sheet expansion through stricter off-balance sheet rules thwarts efforts to reduce leverage through balance sheet contractions and thus likely triggers additional asset sales perhaps at fire sale price (e.g., Adrian and Shin, 2008, 2010). This leads to the third hypothesis, which I refer to as the "less off-balance sheet-hypothesis".

Hypothesis 3 *Changes to accounting standards and their surrounding events are associated with a negative (positive) stock market reaction if the change ultimately leads to less (more) financial assets accounted for off-balance (**Less Off-Balance Sheet-Hypothesis**).*

Impairment rules stipulate how downside returns on financial instruments are to be reconciled into income. Particularly, impairment rules define the timing and the amount of income-

decreasing write-downs. Both timing and amount of write-downs affect the likelihood of unfavorable effects on income and ultimately equity as well as regulatory capital. Therefore, impairment rules can have implications during financial crises similar to fair value accounting.[14] The reason is, that historical costs accounting with perfectly strict impairment rules is comparable to fair value accounting in the sense that it fully reconciles downside returns of financial instruments into income. Adverse second order effects of fair value accounting emerge to a considerable extent from its rigorous recognition of downside returns into income, equity and capital. Needless to say that impairment rules in the "real world" are far from being perfectly rigorous. Nevertheless, change to impairment rules ultimately either increase or decrease their rigidity. That is, more (less) rigorous impairment rules cause timelier (less timelier) and more (less) comprehensive write-downs. Accordingly, changes to impairment rules affect the proximity of the regime in-effect to the upper bound of perfectly rigorous write-downs. Since the upper bound is expected to be associated with adverse effects during financial crises similar to fair value accounting, I predict a negative (positive) market reaction to changes which ultimately lead to more (less) rigorous impairment rules. This leads to hypothesis 4, which I refer to as the "less impairments-hypothesis".

Hypothesis 4 *Changes to accounting standards and their surrounding events are associated with a positive (negative) stock market reaction if the change ultimately leads to less (more) rigorous impairment rules (**Less Impairments-Hypothesis**).*

2.2 Cross-sectional Predictions

The root cause of second order effects of fair value accounting is that fluctuating market prices are incorporated directly into the balance sheet. Market volatility therefore affects book values, income and equity and hence the metrics that compose regulatory capital. In times of financial crises when market prices decline sharply, financial institutions face pressure to reduce leverage in order to maintain capital ratios. The reduction of leverage is often achieved through balance sheet contractions. If caused by a shock in the financial system, balance sheet contractions can trigger synchronized asset sales and induce contagion via changes in asset prices if markets are not sufficiently liquid to absorb the sales (e.g., Cifuentes et al., 2005, p. 557).

The previous section hypothesizes that changes to accounting standards, which reduce fair value exposure and thus the impact of market distortions on book values, income, equity and capital, provide relief from pressure toward balance sheet contractions. The rationale is that changes to accounting standards can provide additional flexibility on how to account for distortions in capital markets. Hence, the migration of market distortions and price declines into

[14] Technically, impairment rules are part of or at least closely tied to fair value accounting rules. Impairment rules, for instance, stipulate if and when unrealized fair value gains and losses from available-for-sale securities previously accumulated in other comprehensive income are to be reconciled into income.

the balance sheet becomes more discretionary. The impact on shareholder wealth and the corresponding stock market reaction, however, likely differ among financial institutions conditional on their sensitivity to distortions in market prices during financial crises. A financial institution's sensitivity to fluctuating market prices, however, is likely a function of a variety of factors.

This section develops hypotheses regarding the sensitivity of financial institutions to market price distortions during financial crises. These hypotheses are used to investigate the cross-sectional variation of stock market reactions to events surrounding changes to accounting standards for financial instruments during the financial crisis. Cross-sectional tests of these hypotheses provide empirical evidence on the determinants of stock market reactions and thus shed light on the causes of second order effects of fair value accounting. The underlying and subsequently maintained assumption is that the reduction of fair value exposures through changes to accounting standards is relatively more valuable to financial institutions, which are more sensitive toward distortions in market prices.

Assumption 3 *Changes to accounting standards, which reduce fair value exposure, are relatively more valuable to financial institutions with a higher sensitivity to distortions in market prices (**Sensitivity-Assumption**).*

The rationale behind assumption 3 is similar to decreasing marginal utility theory from microeconomics. The additional benefit of a marginal reduction in fair value exposure is lower, if the financial institution is already more immunized against adverse second order effects of fair value accounting. Practically speaking, sharply decreasing market prices during financial crises cause financial institutions to incur losses that diminish equity and capital. As a consequence, financial institutions face pressure to reduce leverage in order to maintain capital ratios. This pressure triggers "real" actions such as balance sheet contractions, possibly through systematic asset divestment, which in turn are associated with "real" costs perhaps due to fire sale prices. Institutions, which are less sensitive to an initial price shock, e.g., due to higher capital ratios, face lower expected "real" costs as they possess more flexibility to time the market. In contrast, for institutions which are more sensitive, maybe due to lower capital ratios, "real" actions such as resizing the balance sheet become imperative immediately as soon as regulatory capital requirements start to bind.

Hypotheses in this section are organized around the concept of sensitivity to price distortions as follows. Section 2.2.2 is concerned with resilience characteristics of financial institutions. The hypotheses in this subsection predict that firms, which are less resilient to shocks based on general firm characteristics (e.g., leverage and regulatory capital, among others) benefit relatively more from changes to accounting standards for financial instruments. Section 2.2.3 hypothesizes that firm-specific financial crisis exposure is associated with stock market reactions to changes to accounting standards. Section 2.2.4 hypothesizes that the asset mix of financial institutions is related to the relative magnitude of stock market reactions. Fi-

nally, section 2.2.5 is concerned with the information role of fair values. It hypothesizes that a firm's information environment determines the relative magnitude of market reactions to events surrounding increased disclosure requirements.

Before turning to sections 2.2.2 to 2.2.5, however, section 2.2.1 presents a stylized example of the balance sheet mechanics, which result possibly from the conjunction of fair value accounting with regulatory capital requirements, to set the stage for the hypotheses development in subsequent sections.

2.2.1 The Balance Sheet Mechanics of Capital Ratios and Fair Value Accounting

The stylized example in this section aims to provide the grounds for intuitively comprehending the balance sheet mechanics that can result from the conjunction of regulatory capital requirements, target leverage and fair value accounting. This example is inspired by and adapted from Adrian and Shin (2008, 2010). I extend the example of Adrian and Shin in two ways. First, I include a liquidity spread, which appears and then vanishes at a later point in time. This is to highlight the "real" costs of fair value accounting when markets are temporarily not perfectly liquid. This modification is similar in spirit to Plantin et al. (2008). Second, I assume security returns to behave such that market prices recover back to original levels after a transitional period of price decline. This is partly in the spirit of Allen and Carletti (2008) and supports the idea that fair value accounting combined with regulatory capital requirements can induce inefficient results if asset prices return to a path of price recovery after initial decline.

Consider a bank with a stylized balance sheet as depicted in figure 2.1. In the initial balance sheet line-up at time $t = 0$, the bank holds securities worth USD 1,000 that are entirely marked-to-market. It has outstanding debt of USD 900 and shareholders' equity of USD 100.[15] Assume for simplicity

- that the required minimum regulatory capital ratio is 5% and
- that the bank has set a target capital ratio for risk management purposes of 10%.

Figure 2.1
Initial Stylized Balance Sheet at $t = 0$

Assets		Liabilities	
Securities	1,000	Equity	100
		Debt	900
	1,000		1,000
Capital Ratio	10%	Profit/Loss	0

Note: initial stylized balance sheet at $t = 0$.

[15] This stylized line-up is typical for bank holding companies. Table 5.12 on page 135 reports summary statistics for 275 U.S. bank holding companies. The mean leverage ratio (computed as debt over total assets) is 0.9093, which adds up to a equity ratio of around 10% on average.

The securities' price process is depicted in figure 2.2. The price is scaled to unity at time $t = 0$. Note that price changes only occur every second period. The period in between is designed as an adjustment period for the bank. This makes it easier to delineate balance sheet adjustments. The event timeline in figure 2.3 illustrates the alternating process of price- and balance sheet-adjustments.

Figure 2.2
Development of Security Price per Unit over Time

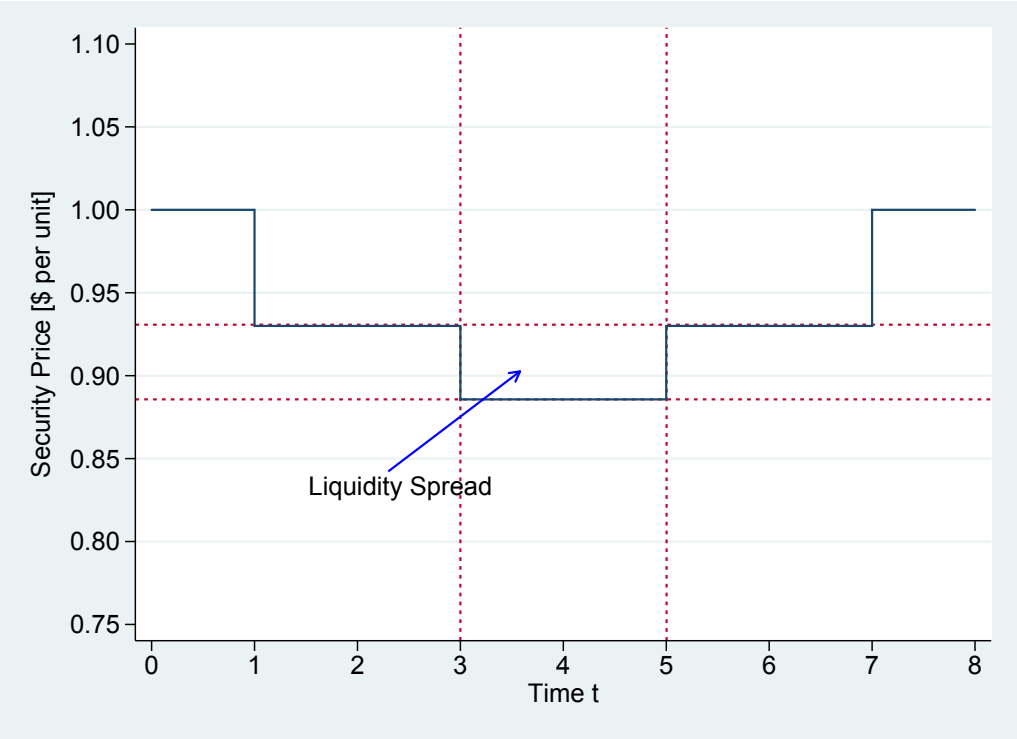
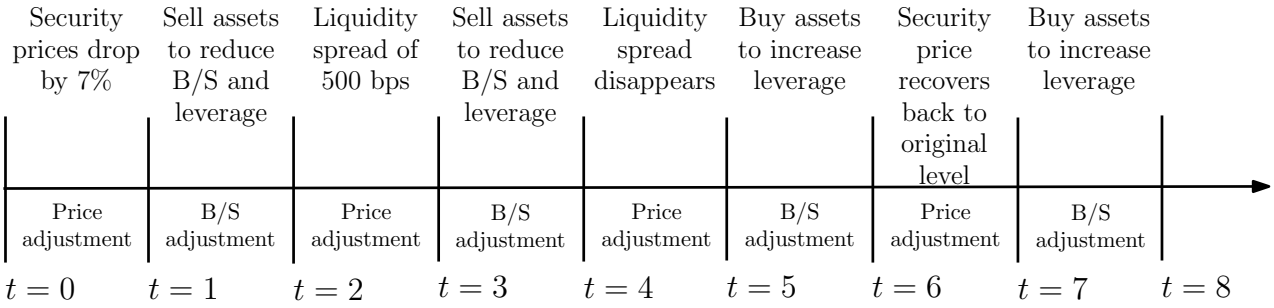


Figure 2.3
Stylized Example on Balance Sheet Mechanics - Timeline of Events



$t = 1$ Security prices drop by 7%

At time $t = 1$, the security price drops by 7% and securities trade at USD 0.93 a unit. The balance sheet is marked-to-market to the new value of USD 930. The bank suffers a loss USD -70, which reduces equity from USD 100 to USD 30. Figure 2.4a on page 21 illustrates

the new stylized balance sheet at time $t = 1$. Note that the price decrease of 7% amplified by the bank's leverage causes the capital ratio to drop from 10% to 3.23%. The new capital ratio violates both the minimum regulatory ratio of 5% and the target capital ratio of 10%.

$t = 2$ Sell assets to reduce B/S and leverage

During period $t = 2$ the bank adjusts its balance sheet to become compliant with regulatory and internal capital requirements. The target capital ratio is 10%. In terms of balance sheet mechanics, the bank has two options at hand: issue fresh capital to strengthen the equity base or reduce leverage by redeeming debt. Assume for the moment that equity transactions are no viable option. To repay part of its debt, the bank has to sell assets into the bear market to acquire the necessary cash. That is, the bank sells 677.42 units of its securities portfolio at USD 0.93 each. The proceeds of USD 630 are used entirely to redeem debt. The new book value of debt is USD 270, which increases the capital ratio back to the target level of 10%. Figure 2.4b on the following page lays out the balance sheet at the end of period $t = 2$. Note that the initial decrease of security prices by 7%, amplified by leverage, causes the bank to lose 70% of its equity base and makes it shrink its balance sheet by more than two-thirds.

Needless to say that banks under real world conditions hold liquidity cushions to buffer against such circumstances. But what if security prices decrease not by 7% but plummet by more than 70% as some ABX.HE indices did during 2007 (e.g., Gorton, 2009a,b)? Also consider the possible implications for security prices if multiple banks behave in the way described above and divest synchronously more than two-thirds of their asset base.

$t = 3$ Liquidity spread of 500 bps

At time $t = 3$, a liquidity premium of 500 basis points hits and the security price drops to USD 0.89. Figure 2.2 on the previous page depicts the liquidity spread as a rectangle spanned between the short-dashed reference lines. The book value of the securities is marked down to USD 285. The resulting loss of USD -15 reduces equity from USD 30 to USD 15 (see figure 2.4c on the following page). The new capital ratio is slightly above 5% and thus not yet in breach of the regulatory minimum requirement, but 5%-pts. below the target capital ratio.

$t = 4$ Sell assets to reduce B/S and leverage

Even though the liquidity spread is likely temporary, the bank needs to sell assets at the liquidity discount to re-reach its target capital ratio. It sells 156 units at USD 0.8857 each. The proceeds of USD 138 are used to retire debt. The new book value of debt is USD 132, which adds up to a capital ratio of 10.27% (see figure 2.4d on the next page). Re-reaching its target capital ratio made the bank contract its balance sheet by more than one-half.

As pointed out by Adrian and Shin (2008, p. 6 f.) at least one additional factor made it painful for banks to achieve the necessary balance sheet contractions resulting from declining

Figure 2.4
Stylized Bank Balance Sheets from Time $t = 1$ to $t = 8$

(a) Balance Sheet at $t = 1$

Assets		Liabilities	
Securities	930	Equity	30
		Debt	900
	930		930
Capital Ratio	3%	Profit/Loss	-70

Note: security prices drop by 7%.

(b) Balance Sheet at $t = 2$

Assets		Liabilities	
Securities	300	Equity	30
		Debt	270
	300		300
Capital Ratio	10%	Profit/Loss	0

Note: sell assets to reduce B/S and leverage.

(c) Balance Sheet at $t = 3$

Assets		Liabilities	
Securities	285	Equity	15
		Debt	270
	285		285
Capital Ratio	5%	Profit/Loss	-15

Note: liquity spread of 500 bps hits.

(d) Balance Sheet at $t = 4$

Assets		Liabilities	
Securities	146	Equity	15
		Debt	132
	146		146
Capital Ratio	10%	Profit/Loss	0

Note: sell assets to reduce B/S and leverage.

(e) Balance Sheet at $t = 5$

Assets		Liabilities	
Securities	155	Equity	23
		Debt	132
	155		155
Capital Ratio	15%	Profit/Loss	8

Note: liquidity spread disappears.

(f) Balance Sheet at $t = 6$

Assets		Liabilities	
Securities	230	Equity	23
		Debt	207
	230		230
Capital Ratio	10%	Profit/Loss	0

Note: buy assets to increase leverage.

(g) Balance Sheet at $t = 7$

Assets		Liabilities	
Securities	248	Equity	41
		Debt	207
	248		248
Capital Ratio	17%	Profit/Loss	18

Note: asset prices recover to original level.

(h) Balance Sheet at $t = 8$

Assets		Liabilities	
Securities	416	Equity	42
		Debt	374
	416		416
Capital Ratio	10%	Profit/Loss	0

Note: buy assets to increase leverage.

asset prices during the financial crisis. Adrian and Shin (2008, p. 7) coin this factor "involuntary" lending. "Involuntary" lending arises from conduits and structured investment vehicles (SIVs), which banks hold off-balance but usually reinforce with lines of credit for credit rating purposes. In late 2007, subprime mortgage-related security prices declined rapidly, liquidity

became scarce and capital requirements of banks began to bind. If banks behave as described above, this triggers almost naturally a balance sheet contraction. At the same time, however, conduits and SIVs became unable to roll over fully their asset-back commercial paper (ABCP) liabilities and thus tapped the sponsors' lines of credit. As a result, banks experienced difficulties in down-sizing their balance sheets at multiple fronts: illiquid secondary markets for hard-to-sell subprime securities in decline made asset divestment tough; "lending against their will" (Adrian and Shin, 2008, p. 6 f.) to conduits and SIVs through tapped credit lines grew banks' balance sheets involuntarily even further.

$t = 5$ The liquidity spread disappers

At time $t = 5$, the liquidity discount disappears and the securities trade at USD 0.93 per unit. The book value of the securities is marked up to USD 155. The corresponding gain of USD 8 increases equity from USD 15 to USD 23. The capital ratio rises to 14.84% (see figure 2.4e on the preceding page).

$t = 6$ Buy assets to increase leverage

Since the bank contracted its balance sheet in response to the liquidity spread, the disappearance of the spread leaves the bank "over-capitalized" with a capital ratio of 14.84%. To reduce its capital ratio to the target level of 10%, the bank expands its balance sheet by increasing leverage. It issues additional debt worth USD 75 and uses the proceeds to buy securities at USD 0.93 each. The new book value of the security portfolio is USD 230 (see figure 2.4f on the previous page).

$t = 7$ Security prices recover to the original level

At time $t = 7$, security prices recover back to the original level of unity. The book value is marked up to USD 248 with a gain of USD 18 recorded in equity (see figure 2.4g on the preceding page). The capital ratio increases to 16.53%.

$t = 8$ Buy assets to increase leverage

As a result of the price recovery, the bank is again "over-capitalized". It issues additional debt of USD 167 to increase leverage and invests the proceeds into securities at USD 1 a unit. The corresponding book value of the portfolio is USD 416 and the capital ratio is back at its target level of 10% (see figure 2.4h on the previous page).

This stylized example is indeed over-simplified and has numerous limitations. Nevertheless,

it contributes to the understanding of at least three important issues. First, if banks behave as presumed above, the conjunction of accounting standards with regulatory capital requirements can have "real" economic implications and cause adverse second order effects in the sense that investment, divestment and financing decisions are induced (partly) by the accounting regime. Marking assets down to declined market prices triggers additional asset sales and the retirement of debt in order to reduce leverage and meet minimum or target capital ratios. Rising security prices trigger asset investment, debt issuance and increased leverage in an attempt to reconcile over-capitalization resulting from fair value gains. The magnitude of these balance sheet contractions and expansions is not trivial. In the stylized example above, the bank reduces its balance sheet to 42% of the original size and absorbs a cumulative net loss of 58% of initial equity even though market prices decline only temporarily (by less than 12% at most) and recover to the original level over time.

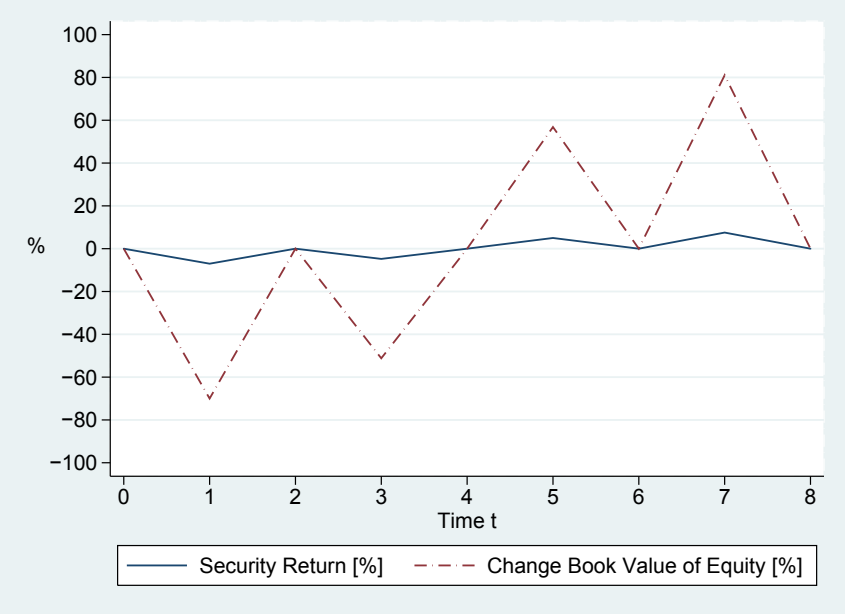
Second, the stylized example also sheds light on plausible implications of changes to accounting standards during financial crises. Balance sheet resizing is costly for banks and it is the result of the conjunction of two sets of rules. Namely, fair value accounting and prudential regulation. As a consequence, changes to these rules likely ease the expected cost burden imposed on banks by market distortions. In theory, this holds for both set of rules: fair value accounting and prudential regulation. If changes to accounting standards are valuable, what exactly is the value of such a rule change? Consider the stylized example and assume that a change to accounting standards allows the bank not to incorporate the liquidity spread into the valuation of its security portfolio. This rule change decreases fair value exposure since it limits the impact of fair value accounting on book values, income, equity and capital. The value of the change is determined by the opportunity cost that the bank had to incur without the change. The opportunity costs, in turn, can be derived from future profits that the bank surrenders by implying the liquidity spread into portfolio valuations. The calculation is straight forward. Before the liquidity spread appears at time $t = 3$, the bank holds 323 units of the security at USD 0.93 each. In response to the liquidity spread, the bank contracts its balance sheet and divests 156 units at USD 0.8857. With the remaining 167 units, the bank participates in both the disappearing liquidity spread at time $t = 5$ and the price recovery at time $t = 7$. The increase in the security price on these units equates to $1 - 0.8857 = 0.1143$. This adds up to a gain of USD 19.09. In addition, the bank buys assets to expand its balance sheet in period $t = 6$ after the liquidity spread vanished. The number of units bought equals 80.57 at USD 0.93 each. These units also participate in the price recovery of USD 0.07 per unit. This adds up to a gain of USD 5.64. Accordingly, the banks generates total gains of USD 24.73 since period $t = 3$, i.e., before contracting the balance sheet in response to the spread.

Next consider the case if the bank had not to include the liquidity spread into portfolio valuations. The bank in this case had not contracted the balance sheet in response to the spread. Thus, it participates in the price discovery of USD 0.1143 with all 323 units. This adds up to a total gain of USD 36.92. The incremental gain of USD $36.92 - 24.73 = 12.19$ defines

the value of the accounting rule change to the bank. Note that USD 12.19 is roughly 40% of the bank's total equity of USD 30 at time $t = 2$ before the liquidity spread hits. In addition, the bank had protected 50% of its equity at time $t = 3$ by omitting the liquidity spread from its valuations and also not sold assets at liquidity-discounted prices. Note, however, that the value of a similar regulatory rule change, which allows the bank not to count the liquidity spread against its capital ratio, would be of the same magnitude.

Third, the example indicates that changes to accounting standards during financial crises can affect differently firms with different balance sheet characteristics. For instance, leverage amplifies the impact of market price changes on equity and capital. Figure 2.5 plots the security return (the solid line) and the %-change of the book value of equity (the dash-dotted line) from the above example on the same y-scale. The graph illustrates how leverage amplifies price changes and causes equity to be volatile under fair value accounting. While the security return plots around the x-axis with returns $\pm 10\%$, changes in equity plot far in excess of 40%. The implication is that the severity of adverse second order effects is a function of amplifying factors such as leverage. Accordingly, banks with higher leverage likely benefit relatively more from changes to accounting standards compared to less-leveraged banks. The reason is that banks with higher leverage face more intense pressure from distortions in financial markets and, hence, the relief from more leeway in accounting standards is relatively more valuable.

Figure 2.5
Security Return vs. %-Change in Book Value of Equity



2.2.2 Resilience Characteristics

Resilience can be loosely defined as the ability of a financial institutions to absorb shocks in the financial system (e.g., Cifuentes et al., 2005, pp. 556 f.).

Definition 2 *Resilience refers to the ability of financial institutions to absorb shocks in the financial system (**Resilience-Definition**).*

The less resilient a financial institution is toward shocks in the financial system, the more sensitive is the firm toward price distortions and the more costly is presumably the adjustment to distorted market conditions. Accordingly, changes to accounting standards are likely more valuable to relatively less resilient institutions. I use a set of firm characteristics to proxy for firm-specific resilience. These characteristics are either resilience-advancing (e.g., high capital ratios) or resilience-depleting (e.g., high leverage). This leads to hypothesis 5, which I refer to as the "resilience-hypothesis".

Hypothesis 5 *The magnitude of the stock market reaction to changes to accounting standards for financial instruments is positively (negatively) related to resilience-advancing (resilience-depleting) firm characteristics (**Resilience-Hypothesis**).*

The following subsections specify resilience hypotheses regarding explicit firm characteristics, including leverage and capital (section 2.2.2.1), liquidity (section 2.2.2.2), size and complexity (section 2.2.2.3), and asset risk (section 2.2.2.4).

2.2.2.1 Leverage and Capital

Leverage and capital are two sides of the same coin. High leverage implies low capital and vice versa. Therefore, I focus the subsequent discussion on capital in terms of terminology bearing in mind, however, that the inverse holds for leverage. Regulatory capital is a resilience-advancing firm characteristic. This is evident in most theoretical models, in which the interaction of regulatory capital requirements with fair value accounting triggers adverse second order effects. In Allen and Carletti (2008), the violation of banks' capital requirements prompts regulatory intervention. This leads to inefficient outcomes if solvency requirements are calculated under marking-to-market and prices are distorted due to liquidity pricing. The outcome is inefficient because banks would be fully operational and able to repay their commitments at the time of maturity of their assets if no regulatory intervention had previously occurred. Also, contagion-based inefficiencies in Allen and Carletti (2008) migrate from the insurance industry into the banking industry. Besides regulatory capital constraints, this effect is also conditional on the presence of credit risk transfer between insurance and banking as well as systematic risk in the insurance industry. Nevertheless, in this logic, institutions with capital ratios close to the threshold triggering regulatory intervention are likely to benefit relatively more from changes to accounting standards for financial instruments.

In Cifuentes et al. (2004, 2005), the initial failure of one financial institution causes a sale of assets into a market with a less than perfectly elastic residual demand curve (i.e., an illiquid market). Given the price decrease resulting from the initial shock is sufficiently severe, other banks in the system are forced to resize their balance sheets by selling assets

into the illiquid market to maintain capital ratios. This starts a step-wise price adjustment process, which depresses prices further during each step and, thus, causes contagion via price changes in the banking system. In Cifuentes et al. (2004, 2005), the resulting overall loss of bank equity, including bankruptcy, can substantially outweigh the initial shock. Banks with relatively low capital ratios are less resilient to shocks of a given size and, thus, face a higher expected costs resulting from a shock. Similarly, in the stylized example in section 2.2.1 on page 18, the requirement to maintain minimum or target capital requirements triggers balance sheet contractions and expansion and, thus, induces the bank to incur the opportunity costs resulting from the balance sheet adjustment to price changes. This leads to hypothesis 5a, which I refer to as the "regulatory capital-hypothesis".

Hypthesis 5a *The magnitude of the stock market reaction to changes to accounting standards for financial instruments is positively related to firms' regulatory capital ratio (**Regulatory Capital-Hypothesis**).*

As indicated above, the inverse holds true for leverage. Leverage is a resilience-depleting firm characteristic. Firms operating on high leverage are likely less resilient and therefore face higher adjustment pressure in times of financial crises. The stylized example in section 2.2.1 on page 18 illustrates extensively this rationale. High adjustment pressure renders more valuable changes to accounting standards that provide relief from the cost burden associated with "involuntary" balance sheet contractions. This leads to hypothesis 5b, which I refer to as the "leverage-hypothesis".

Hypthesis 5b *The magnitude of the stock market reaction to changes to accounting standards for financial instruments is negatively related to firms' leverage (**Leverage-Hypothesis**).*

2.2.2.2 Liquidity

I use the term liquidity in the sense of market liquidity, particularly, with respect to liquidity in secondary asset markets.[16] The liquidity of the secondary markets that a bank's assets trade in is an important determinant of its ability to contract or expand its balance sheet in response to changing market prices. Consider again the stylized example in 2.2.1. The existing liquidity of the security market allowed the bank to resize its balance sheet at will and thus was a requirement for the bank's ability to adjust leverage.[17] If the bank held primarily illiquid assets, resizing the balance sheet would be an entirely different exercise. Therefore, liquidity is a resilience-advancing firm characteristic. It grants firms the opportunity to adjust

[16] See Nikolaou (2009) for a recent summary of the different concepts and definitions of liquidity, particularly, central bank liquidity, funding liquidity and market liquidity.

[17] Note that the liquidity spread in the stylized example was designed as a price discount, not as an inability to trade.

to changing market conditions at lower costs. For firms with rather illiquid balance sheets, balance sheet resizing during times of declining prices is likely more costly. This implies that financial institutions with more illiquid asset holdings benefit relatively more from changes to accounting standards for financial instruments. This leads to hypothesis 5c, which I refer to as the "liquidity-hypothesis".

Hypthesis 5c *The magnitude of the stock market reaction to changes to accounting standards for financial instruments is negatively related to firms' asset liquidity (**Liquidity-Hypothesis**).*

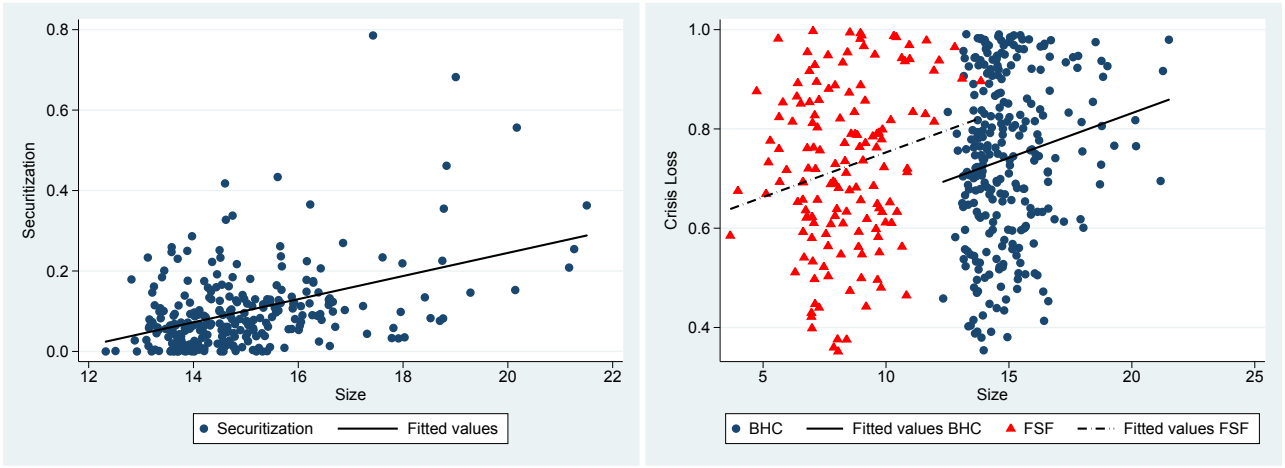
2.2.2.3 Size and Complexity

The sheer size of banks' balance sheets became a widely discussed subject during the financial crisis. Particularly, the debate centered around the issue of being "too big too fail".[18] The resilience implications of size, however, are not immediately obvious. It can reasonably be argued that size is resilience-advancing possibly due to diversification. Large, international bank holding companies are more likely to hold diversified portfolios (asset class-wise and geography-wise) originating from more diversified banking operations. Under this presumption, large banks in theory should be more resilient toward shocks in the financial system. During the recent financial crisis, however, large banks were the prime culprits for large subprime-related mortgage-backed security holdings, which suffered most from sharp price declines. This seems to suggest that (excessive) risk-taking behavior concentrated in large financial institutions renders size a resilience-depleting characteristic. Some of the evidence in Beltratti and Stulz (2012) seems to supports this conjecture in terms of stock price performance. Their evidence suggests a negative relation between size (measured as of December, 2006) and buy-and-hold stock returns over the period from July, 2007 to December, 2008 (Beltratti and Stulz, 2012, table 4, pp. 11 f.). The evidence from the sample used in this dissertation is similar. Figure 2.6a on the next page suggest that securitization increases with size. This in turn leads to the prediction that large banks suffer more from the financial crisis due to higher securitization exposure. Figure 2.6a supports this prediction. The maximum loss in market capitalization during the financial crisis (crisis loss) is positively related to size. Similar to Beltratti and Stulz (2012), this evidences that larger financial institutions are hit harder by the crisis in terms of stock market performance. Overall, this leads me to believe that size turned out as a resilience-depleting firm characteristic during the financial crisis of 2007-2009. Closely linked to size is complexity. I predict that more complex financial institutions face more difficulties when adjusting their balance sheet to market distortions and declining prices. This leads to hypothesis 5d, which I refer to as the "size and complexity-hypothesis".

[18] Robert L. Hetzel's 1991 paper is an interesting historical record on the origins of the "too big too fail" paradigm (Hetzel, 1991). Also see Volz and Wedow (2011), who study market discipline in the CDS market and find that CDS prices are distorted by size effects when banks are considered "too big too fail".

Figure 2.6
Size, Securitization and Crisis Loss

(a) Size and Securitization **(b) Size and Crisis Loss**



Securitization (graph 2.6a) is the sum of interest-only strips, trading mortgage-backed securities, available-for-sale mortgage-backed securities, the fair value of held-to-maturity asset-backed securities and securitized loans relative to total assets as of the fourth quarter of 2007 for 275 U.S. Bank Holding Companies (BHC). Crisis Loss (graph 2.6b) is the relative aggregate maximum loss in market capitalization during the three-year period from January 2007 to December 2009 of 275 U.S. Bank Holding Companies (BHC; scattered as points) and 146 U.S. financial service firms (FSF; scattered as triangles). Size (graphs 2.6a and 2.6b) is the natural logarithm of total assets as of the fourth quarter of 2007.

Hypthesis 5d *The magnitude of the stock market reaction to changes to accounting standards for financial instruments is positively related to firms' size and complexity (**Size and Complexity-Hypothesis**).*

2.2.2.4 Asset Risk

The risk associated with assets on the bank balance sheet determines the necessity, the speed and the frequency of balance sheet adjustments in response to market price changes. Therefore, asset risk is a resilience-depleting firm characteristic. Particularly, during times of market turmoil, it is likely that banks with more risky asset structures face higher pressure toward balance sheet adjustments and thus benefit more from changes to accounting standards providing relief from adjustment pressure. This leads to hypothesis 5e, which I refer to as the "asset risk-hypothesis".

Hypthesis 5e *The magnitude of the stock market reaction to changes to accounting standards for financial instruments is positively related to firms' asset risk. (**Asset Risk-Hypothesis**).*

2.2.3 Financial Crisis Exposure

Resilience characteristics link the sensitivity to market price distortions to general firm characteristics. General firm characteristics, however, are possibly too aggregate to capture empirically firms' sensitivity to market price distortions during the recent financial crisis. Therefore,

I define financial crisis exposure as the degree to which firms are adversely affected by capital market conditions during the financial crisis of 2007-2009.

Definition 3 *Financial crisis exposure measures the extent to which firms are affected by capital market conditions during the financial crisis of 2007-2009 (**Financial Crisis Exposure-Definition**).*

Financial crisis exposure is a resilience-depleting firm characteristic. Hence, I hypothesize a positive relation between relative benefits from changes to accounting standards during the financial crisis and financial crisis exposure. In other words, firms that suffer most from the financial crisis are likely the prime beneficiaries of relaxations to accounting standards for financial instruments.

Hypothesis 6 *The magnitude of the stock market reaction to changes to accounting standards for financial instruments is positively related to firms' financial crisis exposure (**Financial Crisis Exposure-Hypothesis**).*

2.2.4 Asset Mix

A financial institution's actual asset mix depends on the business model of the firm. For instance, investment banks are *ex ante* expected to hold more assets on the balance sheet at fair value, including both trading and available-for-sale securities, compared to loan and savings institutions. Even though higher fair value holdings do not coincide necessarily with higher fair value exposure[19], it seems likely that certain security holdings as well as accounting categories (e.g., trading) induce higher sensitivity to price distortions. For instance, it is likely that high holdings of fair-value-through-profit-and-loss securities are related to the sensitivity to price distortions since price changes of these securities are recorded in income and thus directly affect equity and capital (tier 1). Besides the direct link to equity, valuation effects potentially play a role. For assets, which are marked-to-market, there is little additional discretion to be gained by changes to accounting standards. The lever is likely higher regarding changes to fair value measurement standards that affect assets, which are marked-to-model. Overall, I hypothesize that the asset mix is not trivial and thus associated with market reactions to changes to accounting standards for financial instruments, but I do not specify this hypothesis any further. I refer to this hypothesis as the "asset mix-hypothesis".

[19] Recall definition 1 on page 13: fair value exposure measures the impact of fair value accounting on the book value of assets and liabilities, on income, equity and capital. Consider for instance a firm with only one derivative on the balance sheet. Assume the derivative is a written option. The book value at inception, i.e., the option premium, is likely small compared to the theoretically unlimited loss potential of the option. However, the unlimited loss potential (and not the book value) defines the impact of the fair value on income, equity and capital and, thus, the fair value exposure. Vice versa, consider a firm with substantial holdings of treasury bonds accounted for as available-for-sale securities. The book value is likely high. The fair value exposure, however, is limited since the impact on income, equity and capital is equally limited due to modest default probabilities (interest risk only).

Hypothesis 7 *The magnitude of the stock market reaction to changes to accounting standards for financial instruments is related to firms' asset mix (**Asset Mix-Hypothesis**).*

2.2.5 Information Environment

Changes to accounting standards that require increased levels of fair value disclosures do not affect fair value exposure as outlined in definition 1 on page 13 because disclosures neither affect income nor equity or capital. Accordingly, adverse second order effects of fair value accounting are unlikely to interact with market frictions as predicted above. Rather, the information benefits of fair values are hypothesized to provoke the stock market reaction. Bleck and Liu (2007) show that the information benefits of fair values in their model are most significant in opaque markets, where alternative sources of information are hardly attainable or even unavailable. I curtail this idea to the firm specific information environment and predict that information benefits from increased disclosure are more valuable to firms with less sophisticated information environments. This leads to hypothesis 8, which I refer to as the "information environment-hypothesis".

Hypothesis 8 *The magnitude of the stock market reaction to changes to disclosure standards for financial instruments is negatively related to firms' information environment (**Information Environment-Hypothesis**).*

3 Research Design

The research design in this dissertation consists of two parts: (1) event study tests, which I use to investigate stock market reactions to events surrounding changes to accounting standards for financial instruments; (2) cross-sectional tests, which I employ to investigate the cross-sectional association of stock market reactions with firm characteristics. Therefore, this chapter proceeds as follows. First, section 3.1 outlines briefly the "standard" event study methodology to provide context and to facilitate the transition to the event study research design in this dissertation. Second, section 3.2 on page 41 defines the pooled cross-sectional time-series ordinary least squares (OLS) augmented two-factor market model regression design with cluster-robust standard errors, which I use to draw statistical inference on abnormal stock return performance. Third, section 3.3 on page 47 defines the Sefcik and Thompson (1986) portfolio time-series regression design that I use to investigate the cross-sectional association of abnormal returns with firm characteristics.

3.1 The Event Study Methodology

The event study methodology is among the widely used research designs in accounting and finance.[20] The basic idea evolves from the Efficient Market Hypothesis (EMH).[21] Informationally efficient markets imply that stock prices react quickly to new information, which investors have not previously incorporated into their expectations about the relative risk-return profile of firms (Fama, 1970, 1991). Event studies make informational efficiency a maintained hypothesis and investigate the stock return behavior during times of new information arrival. The statistical properties of stock return behavior during periods of information arrival make it possible to draw inference about investors' assessment of the economic consequences entailed by the new information.

Event study methods differ widely depending on their research context.[22] For the purpose of this dissertation, I distinguish two types of event study methods: "standard" event studies and studies with both event time and industry clustering. The standard approach refers to methods in the spirit of the seminal work by Fama et al. (1969). These studies are characterized by events, which are dispersed in calendar time and by samples, which are not merely

[20] Kothari and Warner (2007, p. 6) count 575 papers employing an event study methodology in the Journal of Business, Journal of Finance, Journal of Financial Economics, Journal of Financial and Quantitative Analysis, and the Review of Financial Studies during the period from 1974 to 2000.

[21] See Ball (2009) for an interesting essay on the implications of the financial crisis for the EMH, and, particularly, his discussion of the critique that the EMH currently faces.

[22] Papers that summarize and review event study methods include, among others, Bowman (1983); Peterson (1989); Salinger (1992); Armitage (1995); MacKinlay (1997); McWilliams and Siegel (1997); Binder (1998); Corrado (2011). A non-parametric approach to event studies is proposed by Dombrow et al. (2000).

selected from specific industries. Specifically, these studies are not affected by either event time or industry clustering and, thus, can rely on the assumption of indepently and identically distributed (iid) returns and, therefore, on general ordinary least squares (OLS) methods to produce unbiased statistical inference.[23]

In contrast, changes to accounting standards, like regulatory events, affect multiple firms on the same calendar day and, thus, are not dispersed but clustered in calendar time. Event time clustering likely induces contemporaneous cross-correlation and heteroscedasticity in the return-generating process (Collins and Dent, 1984; Bernard, 1987). While estimated ordinary least squares (OLS) coefficients are unbiased, standard errors are biased downward causing overstated significance statistics. The presence of industry clustering likely increases the severity of this statistical bias. Therefore, event studies of changes to accounting standards require research designs regarding both measurement of abnormal performance and cross-sectional inference, which account for contemporaneous cross-correlation and heteroscedasticity in the return-generating process (Collins and Dent, 1984; Bernard, 1987). I discuss these research desings in section 3.2 on page 41.

Before turning to section 3.2, this section briefly outlines the standard event study procedure. This prodecure consists of three steps: (1) selection of events, which is covered in section 3.1.1. This step is crucial because ultimately valid statistical inference in any event study boils down to how investigated events are selected. Also, this step applies fully to event studies of changes to accounting standards. (2) Measurement of abnormal performance, which is covered briefly in section 3.1.2. (3) The accumulation of abnormal returns in both time-series and cross-section is covered in section 3.1.3.

3.1.1 Selection of Events

The structure of this section follows numerous summary and review papers and characterizes the event selection procedure as a sequence of the following consecutive steps:[24]

1. Identify relevant events of interest (section 3.1.1.1).
2. Establish the event history (section 3.1.1.2).
3. Define event windows (section 3.1.1.3).

3.1.1.1 Events of Interest

Not surprisingly, the first step in an event study consists of the identification of the events of interest. The event study literature analyzes a broad range of different events such as firm-specific, industry-specific and economy-wide events. Typical examples of firm-specific events include stock splits (e.g., Fama et al., 1969), earnings announcements (e.g., Ball and Brown,

[23] Sample selection procedures, other than those based on specific industries, can introduce similar biases. Ahern (2009) studies the validity of statistical inference of short-window event study methods when samples are selected based on market value of equity, prior returns, book-to-market and earnings-to-price ratios. His simulation results suggest that sample selection based on security characteristics leads to significantly biased statistical inference.

[24] Similar in, e.g., Bowman (1983, p. 563), Strong (1992, p. 534) or MacKinlay (1997, pp. 14 f.).

1968) and corporate mergers (e.g., Asquith, 1983). Both industry-specific and economy-wide events stem mostly from the regulatory change literature. For instance, Beneish (1991) investigates the economic consequences in the airline industry of deliberation events that eventually lead to the Airline Deregulation Act. Zhang (2007) studies the economic consequences of the Sarbanes-Oxley Act (SOX) using a sample of publicly traded U.S. firms.

3.1.1.2 Event History

After having defined the events of interest, the next step establishes the event history. The event history comprises all individual events of interest accompanied by the calendar dates on which they occur.[25] It is important to determine precisely the time periods at which information about the event reaches the market. The reason is that the power of event study tests depends critically on the precision with which the time period of information dissemination is determined (e.g., Brown and Warner, 1980, pp. 224-232). To illustrate some of the related challenges, it is useful to differentiate between a genuine economic event and events for event study purposes. While a genuine economic event can be thought of as the outcome of an economic process, events for event study purposes comprise all incidents, which convey information to the market about the genuine economic event. Consider for instance a corporate acquisition.[26] The genuine economic event comprises the takeover of one firm by another. Assume that this genuine economic event occurs eventually when contractual agreements are negotiated and signed. For event study purposes, however, not the contractual closing of the takeover but the time period when related information is first conveyed to the market commences the history of events. All other periods of relevant information arrival, which occur subsequent to the first information dissemination and prior to the occurrence of the genuine economic event, are usually part of the event history. As a consequence, event histories are usually not limited to time periods during which the genuine economic event ultimately occurs, but also comprise partitioned periods from the first information dissemination about the forthcoming economic event to its eventual occurrence. As a rule of thumb, event histories should comprise those events that likely alter previous expectations either about the probability of the genuine economic event to occur or about the magnitude of its economic impact.

3.1.1.3 Event Windows

The determination of event dates leads to the widespread distinction between event time and calendar time. The latter is simply the calendar date at which new information reaches the market. The former, however, organizes multiple events into one systematic timeframe common to all events. This common timeframe makes it possible to compare the temporal position of multiple events irrespective of their occurrence in calendar time. Adopting the

[25] The following discussion has in mind event studies using daily data. That is, an event date refers to a calendar day. The general principle applies similarly to event studies that rely on other time intervals such as intra-day, weekly or monthly data.

[26] See Bowman (1983, p. 564) for a related example of announcements of dividend changes.

notation in MacKinlay (1997), the calendar day on which a given event occurs is denoted in event time as day $\tau = 0$. The day prior and after the event are denoted as day $\tau = -1$ and day $\tau = +1$, respectively, and so on.

Event time parameters τ are used to define event windows. An event window is the time period over which researchers estimate the market reaction to a given event. Under ideal conditions, i.e., during the instantaneous price adjustment to new information and perfect knowledge about the time of information dissemination, abnormal performance would be measured at a single point in time; that is, the infinitesimally small time window during which the information is conveyed to the market and instantaneously incorporated into prices. In practice, however, neither instantaneous price adjustment nor perfect knowledge about the time of information dissemination is a reasonable assumption. The former seems less a challenge. Extant evidence suggests that price adjustments to new information evolve relatively rapid. Patell and Wolfson (1984) investigate the intra-day price adjustment process after announcements of earnings and dividends. They find that the initial price adjustment occurs within a few minutes and that the bulk of the price adjustment materializes within five to fifteen minutes after the information is conveyed to the market. They conclude that their "empirical results are consistent with the notion that the stock market impounds publicly available information very quickly" (Patell and Wolfson, 1984, p. 250). In a more recent study, Busse and Green (2002) investigate the price response to Morning Call and Midday Call segments on CNBC TV. They find that the market begins incorporating new information disseminated through the segment reports within seconds and that positive news are entirely incorporated into prices in a period as short as one minute. They interpret their evidence as suggesting that "although security prices do not fully reflect all available information instantaneously, the market is efficient enough that a trader cannot generate profits based on widely disseminated news unless he acts almost immediately" (Busse and Green, 2002, p. 435). Overall, the evidence suggests that new information, which becomes publicly available during trading hours, is fully incorporated into prices in a timely fashion.

For most event study purposes, however, determining with precision the time at which new information reaches the market can be challenging. The approach of Busse and Green (2002), who videotape the CNBC TV broadcasts and concurrently record the time with seconds precision at which new information airs (Busse and Green, 2002, p. 418), is infeasible for many event study applications. Rather, researchers rely on formal announcements, press releases or reports in the financial press. Determining the exact timing even of electronic press releases can be difficult and likely is less accurate. This led researchers to be more generous regarding the time horizon over which they aim to document abnormal performance. This time horizon is known as the event window. The length of the event window is the distinct characteristic of short-horizon versus long-horizon event studies. Kothari and Warner (2007) consider studies with event window lengths of less (more) than twelve month short-horizon

(long-horizon) studies.[27] Most short horizon applications, however, apply event windows that span a significantly shorter period of time around the event. For daily data, two-day and three-day event windows are common choices.

The length of the event window, however, is a trade-off between capturing fully abnormal performance by providing for anticipation effects, information processing time and measurement error, and exposing abnormal performance estimates to unrelated factors like confounding events. In other words, even though longer event windows cover anticipation effects, information processing time and measurement error, their lengths also increases the likelihood of contaminating the measurement period with confounding events (see, e.g., Bowman (1983, p. 564), McWilliams and Siegel (1997, p. 634)). Confounding events occur contemporaneously with the events of interest and thus contaminate the estimated market reaction. The effect of confounding events on the power of the event study method depends on their nature. If confounding events occur randomly over time and are not systematically linked to the events of interest, the reliability of event study tests is an increasing function of the sample size of events under standard distributional assumptions. That is, if the confounding event is a random variable itself, its influence on the overall event study results "averages out" if there is a sufficiently large number of non-confounded events of interest. But confounding events can severely affect the reliability of event study results if they are non-random but rather occur systematically with the event of interest. The presence of systematic confounding events, however, does not necessarily restrain the event study methodology from producing meaningful results. Rather, it requires the use of effective identification and control strategies that account for the impact of confounding events on the overall market reaction to the events of interest.

3.1.2 Measurement of Abnormal Performance

After establishing the event history, event studies investigate the market reaction to new information frequently by measuring abnormal stock return performance during predefined event windows.[28] The null hypothesis usually predicts that the event does not affect the behavior of stock returns during the event window (e.g., MacKinlay, 1997, sec. 4, 5; Strong, 1992, p. 533). Drawing statistical inference on the overall impact of multiple events on stock return performance requires (1) a definition of abnormal performance, (2) a model of normal performance and (3) the aggregation of abnormal returns in both time-series and cross-section. This section briefly outlines the three steps.[29]

[27] Kothari and Warner (2007, p. 14) also tabulate the general characteristics of short versus long-horizon studies related to specification, power and the sensitivity of test statistics.

[28] Yadav (1992) reviews event studies, which are based on abnormal volatility of returns and abnormal trading volume rather than abnormal stock returns.

[29] This section is based on MacKinlay (1997) if not otherwise indicated.

3.1.2.1 Abnormal Performance

Abnormal returns are computed as the difference between the stock's actual *ex post* return during the predefined event window and its normal return.[30] Equation (3.1) displays this relationship. Normal returns are expected *ex ante* returns from a return-generating process unconditional on the occurrence of the event of interest and are discussed in the next section.

$$AR_{it} = R_{it} - E\left(R_{it} \mid X_t\right) \tag{3.1}$$

where AR_{it} is the abnormal return of firm i at time t; R_{it} is the actual *ex post* return of firm i at time t; $E\left(\cdot \mid \cdot\right)$ is the conditional expectation operator; X_t is the conditioning information for the normal return-generating process (MacKinlay, 1997, p. 15).[31]

3.1.2.2 Normal Performance

The computation of abnormal returns requires a benchmark model for normal returns. The event study literature uses a number of different specifications. Common choices include mean-adjusted returns, market-adjusted returns, the Capital Asset Pricing Model (CAPM), matched/control portfolio returns, and the market model.[32]

Mean-adjusted and market-adjusted return specifications compute abnormal returns by subtracting a constant (i.e., the mean return over a pre-specicifed period or the contemporaneous market return) from *ex post* returns. The CAPM, the matched/control portfolio, and the market model specification put the computation of abnormal returns into a more sophisticated regression framework.

The CAPM's (Sharpe, 1964; Lintner, 1965; Mossin, 1966) security market line (SML) predicts the following well-known relation between expected security returns, expected market returns and the risk-free rate: $E\left(R_{it}\right) = R_{ft} + \beta_i \left[E\left(R_t^{MKT}\right) - R_{ft}\right]$, where $E\left(R_{it}\right)$ is the expected return of security i at time t, R_{ft} is the risk-free rate at time t, β_i is the risk of security i relative to the market, $E\left(R_t^{MKT}\right)$ is the expected return on the market portfolio at time t. The abnormal return of security i at time t is the difference between the CAPM-expected return $E\left(R_{it}\right)$ and the actual *ex post* return of security i on day t (Armitage, 1995, p. 28).[33]

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[30] This section as well as section 3.1.2.2 and the general definition of abnormal performance therein is entirely based on MacKinlay (1997, p. 15).

[31] Some papers refer to abnormal returns as excess returns or use both terms interchangeably (e.g., Bowman, 1983; Peterson, 1989). The majority of the literature, however, refers to the difference between actual returns and normal, predicted returns as abnormal returns. In contrast, excess returns are defined as the difference between the actual stock return and the risk-free rate, i.e., $R_{it} - R_{ft}$, where R_{ft} is the risk-free rate at time t.

[32] See Strong (1992, pp. 536-538) for more details on these different specifications.

[33] For empirical purposes, the CAPM is often expressed in risk-premium form, i.e., $R_{it} - R_{ft} = \alpha + \beta\left(R_t^{MKT} - R_{ft}\right) + \varepsilon_{it}$ (e.g., Ball and Kothari, 1991, p. 722). See Kothari and Warner (2007, pp. 24-26) for the related discussion of the Jensen-alpha approach in long horizon event studies.

The matched/control portfolio return benchmark, also known as the difference-in-return method, relies on the general idea of the CAPM, but computes abnormal returns as the difference between the returns of two portfolios p and q (Strong, 1992, p. 537). The approach works as follows: The first portfolio p consists of sample firms that are exposed to the event of interest. A sample of firms, which are not affected by the event of interest, forms the second portfolio q. The securities in the two portfolios are weighted according to a weighting scheme which ensures that both portfolios have the same estimated β and, thus, face the same systematic risk. Frequently, the weighting scheme constrains to unity the value of the estimated β (Strong, 1992, p. 537).

The market model puts the general notion of the market-adjusted return benchmark into a regression framework.[34] It proposes the following empirical relation between stock returns of sample firm i and the return on the market (MacKinlay, 1997, p. 18):

$$R_{it} = \alpha_i + \beta_i R_t^{MKT} + \epsilon_{it} \tag{3.2}$$
$$E(\epsilon_{it}) = 0 \qquad var(\epsilon_{it}) = \sigma_{\epsilon_i}^2$$

To compute abnormal returns, the market model is fitted for each sample firm i over a specified period prior to the event of interest (i.e., the estimation window). Firm i's estimated coefficients $\hat{\alpha}_i$ and $\hat{\beta}_i$ from the time-series regression of equation (3.2) are used to compute estimated abnormal returns during the event window as follows (MacKinlay, 1997, p. 20):

$$\widehat{AR}_{i\tau} = R_{i\tau} - \hat{\alpha}_i - \hat{\beta}_i R_\tau^{MKT} \tag{3.3}$$

where $\widehat{AR}_{i\tau}$ is the estimated abnormal return of sample firm i at event time τ; $R_{i\tau}$ is the actual *ex post* return of firm i at event time τ; $\hat{\alpha}_i$ and $\hat{\beta}_i$ are firm i's estimated coefficients from equation (3.2) fitted over the estimation period; R_τ^{MKT} is the actual *ex post* market return at event time τ. The estimated abnormal return $\widehat{AR}_{i\tau}$ can thus be thought of as an out-of-sample computation of the residuals of equation (3.2) (MacKinlay, 1997, p. 20). Under the null hypothesis of no abnormal performance during the event window, the distribution of the estimated abnormal return of security i during event time τ is jointly normal with zero mean and variance $\sigma^2\left(\widehat{AR}_{i\tau}\right)$ conditional on the returns on the market during the event window (MacKinlay, 1997, pp. 20 f.). Formally, that is

$$\widehat{AR}_{i\tau} \sim N\left[0, \sigma^2\left(\widehat{AR}_{i\tau}\right)\right] \tag{3.4}$$

where

$$\sigma^2\left(\widehat{AR}_{i\tau}\right) = \sigma_{\varepsilon_i}^2 + \frac{1}{L_1}\left[1 + \frac{\left(R_\tau^{MKT} - \hat{\mu}^{MKT}\right)^2}{\sigma_{MKT}^2}\right]. \tag{3.5}$$

[34] See Fama (1976) for a comprehensive treatment of the market model.

Note that the variance term $\sigma^2\left(\widehat{AR}_{i\tau}\right)$ consists of two parts. The first part, $\sigma^2_{\varepsilon_i}$, is the disturbance term from equation (3.2) on the previous page. The second term introduces additional variance, which results from the sampling error in α_i and β_i (MacKinlay, 1997, p. 21). The magnitude of the additional variance depends on L_1, which is the length of the estimation window. As L_1 increases, the additional variance term becomes very small and $\sigma^2\left(\widehat{AR}_{i\tau}\right)$ reduces to $\sigma^2_{\varepsilon_i}$. It is thus important to set the lengths of the estimation window long enough, so that one can reasonably assume that the sampling error approaches zero (MacKinlay, 1997, p. 21).

Figure 3.1 depicts the different time periods that are required to estimate the market model. The time periods t denote days in calendar time. The time periods τ denote event time. The market model in equation (3.3) is fitted over the estimation period of 120 trading days. There is no mutual agreement on the required lengths of the estimation window. While longer estimation windows benefit from an improved prediction model due to more observations in the firm-specific time-series regression of (3.3), shorter estimation windows place more weight on the current relation between security and market returns and are thus less likely affected by parameter instability as a result of structural shifts (Peterson, 1989, p. 38). The event window in figure 3.1 spans three-trading days.

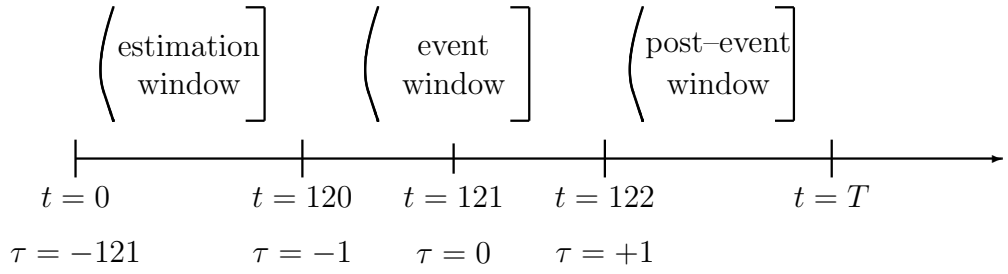

Figure 3.1
Estimation of the Market Model - Timeline
Source: MacKinlay (1997, p. 20)

This figure depicts the different time periods that are required to estimate the market model. t denotes calendar time, τ event time. The estimation window spans the 120 trading days from $t = 0$ to $t = 119$ in calendar time and from $\tau = -121$ to $\tau = -2$. The event window spans the three trading days from $t = 120$ to $t = 122$ in calendat time and from $\tau = -1$ to $\tau = +1$ in event time.

The market model is one of the most popular choices among competing return-generating processes (e.g., Strong, 1992, p. 537). This popularity is due to a number of reasons, but

particularly the power of the market model to detect abnormal performance.[35] There is a considerable literature on the ability (i.e., power) of the OLS market model to detect correctly abnormal performance. Overall the evidence, often based on simulation studies, suggests that OLS market model tests have additional power compared to mean-adjusted or market-adjusted benchmarks.[36] Due to its regression framework, the market captures the variation in security returns explained by the variation in market returns, which results in variance reduction in abnormal returns (MacKinlay, 1997, p. 18). In their simulation study using daily data, Brown and Warner conclude that "methodologies based on the OLS market model and using standard parametric tests are well-specified under a variety of conditions" (Brown and Warner, 1985, p. 25).

3.1.3 Accumulation of Abnormal Performance

The procedure described above yields an estimate of abnormal performance of a single security at a single point in time. That is, $\widehat{AR}_{i\tau} = R_{i\tau} - \hat{\alpha}_i - \hat{\beta}_i R_\tau^{MKT}$, as depicted in equation (3.3) on page 37, is the estimated abnormal return of security i at event time τ. Therefore, the single-factor market model in equation (3.2) is fitted separately on the time-series of stock returns of each sample firm. When using daily data, $\widehat{AR}_{i\tau}$ is the abnormal return during a single day. To draw inference about the overall effect of several events of interest with multi-day event windows on a sample of multiple firms, aggregation of $\widehat{AR}_{i\tau}$ is necessary in both cross-section and time-series.[37]

3.1.3.1 Time-series Aggregation

Time-series aggregation is required to measure abnormal performance during a multi-period event window.[38] Assuming an event window that spans from τ_1 to τ_2, the cumulative abnormal return (CAR_i) of security i during the event window can be computed by aggregating estimated abnormal returns as follows:

$$\widehat{CAR}_i(\tau_1, \tau_2) = \sum_{\tau=\tau_1}^{\tau_2} \widehat{AR}_{i\tau} \tag{3.6}$$

[35] The power of a test is the probability of correctly rejecting a false null hypothesis, i.e., one minus the probability of a type II error (e.g., Greene, 2008, p. 585).

[36] See the Brown-Warner simulations (Brown and Warner, 1980, 1985). Similar studies include the simulations by Thompson (1989) and Chandra et al. (1990).

[37] As above already, I adapt the notation in MacKinlay (1997) for the following discussion of both cross-sectional and time-series aggregation of estimated abnormal returns. However, virtually every review and summary paper on the event study methodology outlines the aggregation of abnormal returns. Similar sources include Bowman (1983, pp. 569 f.), Peterson (1989, pp. 43-49), Salinger (1992, sec. II), Armitage (1995, sec. 5) and Binder (1998, sec. 2). Also see Kothari and Warner (2007, pp. 9 f.).

[38] See MacKinlay (1997, pp. 21-24) on what follows.

Given a sufficiently long estimation period (i.e., a large enough L_1), the variance of $\widehat{CAR}_i$ is asymptotically

$$\sigma_i^2(\tau_1, \tau_2) = (\tau_2 - \tau_1 + 1)\,\sigma_{\varepsilon_i}^2, \tag{3.7}$$

and the distribution of the cumulative abnormal return under the null hypothesis of no abnormal performance is[39]

$$\widehat{CAR}_i(\tau_1, \tau_2) \sim N\left[0, \sigma_i^2(\tau_1, \tau_2)\right]. \tag{3.8}$$

3.1.3.2 Cross-sectional Aggregation

CAR_i measures the impact of a multi-period event window on the security return behavior of a single security i. To test the overall impact of several events on a sample of multiple securities, the CAR_is of the sample firms must be aggregated cross-sectionally into a single measure. Define $\overline{CAR}(\tau_1, \tau_2)$ as the average cumulative abnormal return of all sample firms during the event windows of interest. $\overline{CAR}(\tau_1, \tau_2)$ is computed as displayed in equation (3.9), where N is the number of sample firms (MacKinlay, 1997, p. 24).

$$\overline{CAR}(\tau_1, \tau_2) = \frac{1}{N}\sum_{i=1}^{N} \widehat{CAR}_i(\tau_1, \tau_2) \tag{3.9}$$

The variance of the average cumulative abnormal return is (MacKinlay, 1997, p. 24)

$$var\left(\overline{CAR}(\tau_1, \tau_2)\right) = \frac{1}{N^2}\sum_{i=1}^{N} \sigma_i^2(\tau_1, \tau_2), \tag{3.10}$$

The distribution of the average cumulative abnormal return $\overline{CAR}(\tau_1, \tau_2)$, which is asymptotical in the lengths of the event window L_1 and the number of sample firms N, is depicted in equation (3.11) (MacKinlay, 1997, p. 24).

$$\overline{CAR}(\tau_1, \tau_2) \sim N\left[0, var\left(\overline{CAR}(\tau_1, \tau_2)\right)\right] \tag{3.11}$$

The distributional results can be used to calculate the test statistic θ, which draws statistical inference about the overall effect of several events of interest with multi-period event windows for a sample of multiple securities (MacKinlay, 1997, p. 24).

$$\theta = \frac{\overline{CAR}(\tau_1, \tau_2)}{var\left(\overline{CAR}(\tau_1, \tau_2)\right)^{1/2}} \tag{3.12}$$

[39] See MacKinlay (1997, p. 21).

3.2 Event Study Tests

This section describes the event study research design. Section 3.2.1 outlines briefly the statistical problems that result in the presence of both event time and industry clustering. Section 3.2.2 on the following page introduces the augmented two-factor market model, which I use to estimate abnormal stock return performance. Section 3.2.3 on page 45 covers the estimation technique that I employ to deal with cross-sectional dependence.

3.2.1 Event Time and Industry Clustering

As outlined in section 3.1, standard event studies investigate the stock market reaction to firm-specific events, such as stock splits (e.g., Fama et al., 1969). From a statistical point of view, one advantage of firm-specific events is the dispersion of events in calendar time. That is, events occur not on the same calendar day, but rather are distributed about multiple calendar days and do not overlap. This makes it reasonable to assume that abnormal returns are independent identically-distributed (iid) as in Fama et al. (1969).

In contrast to firm-specific events, changes to accounting standards – like regulatory events – are not dispersed in calendar time but rather affect multiple firms on the same calendar day. This setting is referred to as event time clustering. Event time clustering renders ineffective the usual differentiation between event time and calendar time. In addition, regulatory events often influence significantly a particular industry, which is referred to as industry clustering. Industry clustering is a common phenomenon in event studies of regulatory change.[40] Similarly, changes to accounting standards for financial instruments likely exhibit industry clustering. Although these changes affect possibly a variety of firms in many industries to some extent, a material and systematic impact on the balance sheet as a whole is likely only for firms that recognize substantial portfolios of financial instruments in their financial statements. This is usually the case in the financial services industry, including banks, insurance companies and other financial service providers such as brokerage firms and possibly investment advisors.

The combination of both event time and industry clustering makes it highly likely that the standard event study assumptions of iid abnormal returns are violated because stock returns are cross-sectionally dependent (e.g., King, 1966). Cross-sectional dependence of stock returns causes abnormal returns to be contemporaneously cross-correlated and heteroscedastic (e.g., Bernard, 1987; Collins and Dent, 1984; Karafiath, 1994, 2009). This requires event study techniques, which deviate considerably from the standard approach towards estimating and assessing the statistical significance of abnormal performance during times of information dissemination. Since the combination of both event time and industry clustering is widespread in event studies of regulatory change, this literature has developed approaches that deal with the

[40] Examples of event studies of regulatory change include Binder (1985a), Rose (1985), Beneish (1991), and Zhang (2007). Schwert (1981) and Lamdin (2001) review methodological issues and testing procedures. Cichello and Lamdin (2006) review event studies related to the analysis of antitrust. Bhagat and Romano (2002a,b) review the literature on event studies in the legal domain.

issue of cross-sectional dependence.[41] These approaches modify both parameter estimation of abnormal returns and significance testing. Cross-sectional dependence also requires modifications to tests using cross-sectional regressions with abnormal returns as the dependent variable.[42]

An important lesson from the literature on cross-sectional dependence is that OLS standard errors of estimated abnormal returns are biased downward when using the standard residual method. Hence, tests based on OLS standard errors overstate the statistical significance of the stock market reaction because test statistics derived under general OLS assumptions do not properly account for the correlation among stock returns, which is particularly severe in industry-clustered samples (Collins and Dent, 1984, p. 53). Estimated OLS coefficients, however, are generally unbiased (e.g., Bernard, 1987, p. 4).

Since the statistical problems associated with event time and industry clustering are tied at least partly to the residual characteristics of abnormal returns, one solution proposed in the literature aims to relax this problem by using a different measure of abnormal performance rather than the residuals. The resulting regression model is covered in the next section.

3.2.2 The Augmented Two-Factor Market Model

This section introduces the augmented two-factor market model for individual and cumulative groups of events in subsections 3.2.2.1 and 3.2.2.2, respectively.

3.2.2.1 Individual Events

Instead of using the residuals of a market model regression, the literature on event studies of regulatory change proposes an augmentated single-factor market (e.g., Binder, 1985b). I adopt this model for the research design in this dissertation. To illustrate the model, recall the single-factor market model from equation (3.2) on page 37:

$$R_{it} = \alpha_i + \beta_i R_t^{MKT} + \epsilon_{it} \tag{3.2}$$

The augmented market model adds event-specific indicator variables to equation (3.2), which parameterize the return-generating process. Equation (3.13) displays the augmented regression model (e.g., Binder, 1985b, pp. 371 f.).

$$R_{it} = \alpha_i + \beta_i R_t^{MKT} + \sum_{k=1}^{K} \gamma_{ik} D_{k\tau} + \varepsilon_{it} \tag{3.13}$$

[41] Examples include Schipper and Thompson (1983, 1985), Hughes and Ricks (1984, 1986) and the corresponding discussion of Hughes and Ricks (1986) by Brown (1986), Wallace (1984), Wasley and Linsmeier (1992), Horton and Macve (1998), Fernandez and Baixauli (2003), Armstrong et al. (2010), Ramanna (2008) and the discussion by Skinner (2008).

[42] See section 3.3 on page 47 on Sefcik and Thompson (1986) portfolio time-series regression as employed in this dissertation.

where

R_{it}	is the daily stock return of sample firm i on day t.
α_i	is the intercept.
β_i	is a slope coefficient.
R_t^{MKT}	is the daily return on the market on day t.
$D_{k\tau}$	is an event-specific indicator variable, which is set to one for event days τ during the event window k.
γ_{ik}	is the estimated coefficient of the event-specific indicator variable D_{kt}. γ_{ik} is a measure of abnormal performance of firm i during event window k.
ε_{it}	is an error term.

Equation (3.13) augments equation (3.2) with a set of K indicator variables D_{kt} and their corresponding estimated slope coefficients γ_{ik}. K is the number of events of interest. Each indicator variable is set to one during each day of event window k and to zero otherwise. The idea is that the stock return behavior during the event window "dummies out" and, therefore, measures against the normal performance of the market model. The augmented market model is asymptotically equivalent under mild regularity conditions to the standard event study approach described in section 3.1 on page 31 (Thompson, 1985, pp. 157 f.).

Generally, the interpretation of the estimated coefficient $\hat{\gamma}$ from equation (3.13) depends on the specification of the indicator variable D_τ. If D_τ is specified as D_t, it represents a single day during a given event window and, thus, is set to one during this single day only rather than during the entire event window k. In this case, the estimated coefficient $\hat{\gamma}_{it}$ measures the abnormal performance of security i on day t and, thus, has the same interpreation as $\widehat{AR}_{i\tau}$ in equation (3.4) on page 37. The estimated coefficient $\hat{\gamma}$, however, can also accumulate conviniently abnormal returns in both time-series and cross-section.

Time-series aggreagtion as described in section 3.1.3.1 on page 39 is achieved by specifiying D_τ as D_{kt}, that is, D is set to one during each day t of event window k. The interpretation of the estimated coefficient $\hat{\gamma}_{ik}$ is equivalent to the cumulative abnormal return $\widehat{CAR}\,(\tau_1, \tau_2)$ in equation (3.6) on page 39. Alternatively, D can be set to one not only during a single event window but during all event windows of interest. The estimated coefficient γ_i is in this case interpreted as the market reaction of security i to the regulatory change of interest.

Cross-sectional agregation as described in section 3.1.3.2 on page 40 is achieved, for instance, by specifying the indicator variable D_τ as D_k and γ simply as γ_k, that is, equation (3.13) is not run equation by equation or as a system of equations but as a pooled cross-sectional time-series regression. In this case, $\hat{\gamma}_k$ is the average cumulative abnormal return of the sample securities during event window k and has the same interpretation as $\overline{CAR}\,(\tau_1, \tau_2)$ with $k = [\tau_1, \tau_2]$ in section 3.1.3.2 on page 40. I pursue this approach to estimate stock market reactions to individual events.

Following Beatty et al. (1996), I add an interest rate factor to the single-factor model

because the evidence in Flannery and James (1984) suggests that banks' stock returns are sensitive to unexpected changes in interest rates. The evidence in section 5.2.1.1 on page 115 of this dissertation supports this conjecture. Equation (3.14) summarizes the augmented two-factor market model with which I investigate abnormal stock returns performance for individual events.

$$R_{it} = \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \sum_{k=1}^{K} \gamma_k D_k + \varepsilon_{it}, \tag{3.14}$$

where

α	is the intercept.
β_1 and β_2	are slope coefficient.
R_t^{MKT}	is the daily return on the market on day t.
$R_t^{INTEREST}$	is the daily relative change of an interest rate index.
D_k	is an event-specific indicator variable, which is set to one during all event days τ of event window k.
γ_k	is the estimated coefficient of the event-specific indicator variable D_k. γ_k is a measure of abnormal performance of all sample firms during event window k.
ε_{it}	is an error term.

3.2.2.2 Cumulative Groups of Events

Investigating cumulative groups of events, e.g., all fair value events, requires full cross-sectional and time-series aggregation. This can be achieved by setting D to one during all event days τ of all event windows of interest and by running equation 3.14 as a pooled cross-sectional time-series regression. The estimated coefficient $\hat{\gamma}$ can be interpreted as the average abnormal market reaction, e.g., to changes to fair value accounting standards of all securities in the sample. This procedure allows proper hypotheses testing if the predicted signs of market reactions to all events of interest are homogenous, i.e., consistently positive or negative. This is unlikely the case, however. For instance, consider two related events. The first event increases the likelihood of relaxed fair value accounting standards, and, thus, the predicted sign is positive in line with hypothesis 1 on page 14 (Less Fair Value-Hypothesis). The second subsequent event disseminates information to the market that the relaxations of fair value accounting standards are likely less comprehensive than previously expected. Accordingly, the predicted sign is negative. If multiple events within a cumulative group of events have opposite predicted signs, setting D to one during all event days τ of the event windows of interest as proposed above, causes the market reaction to individual events within the cumulative group to average out. That is, the positive stock market reaction to the first event compensates the

negative stock market reaction to the second event. The corresponding estimated coefficient approaches zero and no abnormal performance is detected even though both events provoke individually the expected stock market reaction. Following Beatty et al. (1996), I account for this problem by testing the market reaction to cumulative groups of events with a set of indicator variables, which I set to one for all events within the group that have a positive predicted sign and to minus one for all events with a negative predicted sign. Also following Beatty et al. (1996), I refer to this variable as *SIGNED_MEAN*. The augmented two-factor market model for cumulative groups of events reads as follows:

$$R_{it} = \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \gamma SIGNED\_MEAN_K + \varepsilon_{it}, \tag{3.15}$$

where

γ	is the estimated coefficient of the set of *SIGNED_MEAN* indicator variables. γ measures the average abnormal performance of all sample firms during the cumulative group of events K.
SIGNED_MEAN	A set of indicator variables, which is set to one for all events with a positive predicted sign and to minus one for all events with a negative predicted sign.

all other variables are defined as in equation (3.14) on the preceding page.

3.2.3 Estimation of the Augmented Two-Factor Market Model

The estimation of the augmented two-factor market model in equation (3.15) yields unbiased coefficients. Test statistics, however, are still biased as a result of cross-sectional dependence. To remedy this bias, prior research proposes the estimation of the model as a system of equations using Zellner's (1962) seemingly unrelated regressions (SUR) to account for cross-sectional dependence.[43] Considering individual events for N sample securities, this implies estimating the following system with one equation for each sample firm (see e.g., Binder,

[43] Zellner's (1962) seemingly unrelated regressions (SUR) are "seemingly unrelated" because each equation of the system can be estimated separately under valid OLS assumption. Thus, the regressions appear independent. Only seemingly though, since the separate regressions are connected through the covariance of their disturbances (Greene, 2008, p. 256).

1985b, pp. 371 f.):

$$
\begin{aligned}
R_{1t} &= \alpha_1 + \beta_1 R_t^{MKT} + \sum_{k=1}^{K} \gamma_{1a} D_{at} + \epsilon_{1t} \\
R_{2t} &= \alpha_2 + \beta_2 R_t^{MKT} + \sum_{k=1}^{K} \gamma_{2a} D_{at} + \epsilon_{2t} \\
&\vdots \\
R_{Nt} &= \alpha_N + \beta_N R_t^{MKT} + \sum_{k=1}^{K} \gamma_{Na} D_{at} + \epsilon_{Nt},
\end{aligned}
\tag{3.16}
$$

where all variable are defined as above and $R^{INTEREST}$ is excluded.

This system of equations is a special case of Zellner's (1962) seemingly unrelated regressions (SUR) with identical regressors in each equation of the system. This special case is often called the multivariate regression model (MVRM).[44] Equation (3.16) can be estimated consistently using OLS separately for each equation, but generalized least squares (GLS) is the efficient estimator for the stacked system.[45] However, since the seemingly unrelated regression equations in (3.16) are connected only through the covariance of their disturbances, the efficiency gain of the GLS estimator compared to the OLS estimator warrants consideration.[46] If the regressors of each equation are the same as in (3.16), the GLS and the OLS estimator are identical and there is no efficiency gain using GLS.[47] This, however, assumes that the covariance matrix of the disturbances $\mathbf{\Sigma}$ is known.[48] If $\mathbf{\Sigma}$ is unknown as in most applications, the GLS estimator is infeasible and the feasible GLS (FGLS) estimator is used instead. FGLS relies on an estimate of the covariance matrix of the disturbances.[49] Generally, the improvement of FGLS over OLS is sample-specific and conditional on the trade-off between the severety of the violations of OLS assumptions and the estimation error in $\mathbf{\Sigma}$ (Thompson, 1985, p. 161). For systems of equations with identical regressors as in (3.16), however, the result holds that the FGSL estimator is identical to equation-by-equation OLS and there is no efficiency gain using the FGSL estimator.[50] Accordingly, running equation (3.16) using seemingly unrelated regressions requires adjustments to test statistics to account for cross-sectional dependence as under general OLS assumptions.[51]

Since the SUR model with identical regressors does not remedy the downward-biased stan-

[44] E.g., Binder (1985b, pp. 370 f.), Binder (1998, p. 124), Greene (2008, p. 255).
[45] See Greene (2008, p. 256).
[46] See Greene (2008, p. 256).
[47] See Greene (2008, p. 257).
[48] See Greene (2008, p. 258).
[49] See Greene (2008, p. 258).
[50] See Thompson (1985, p. 161) and Cameron and Trivedi (2009, p. 157).
[51] Some papers aim to remedy this bias by presenting non-parametric test statistics along side with biased test statistics, e.g, Fernandez and Baixauli (2003).

dard errors, I rely on a different technique to account for cross-sectional dependence. In a recent paper, Petersen (2009) studies the performance of different procedures to compute standard errors, including Fama-MacBeth, Newey-West and clustered standard errors, in panel data sets where the residuals are correlated and OLS standard errors are biased. His simulation results suggest that clustered standards errors are unbiased in panel data sets with cross-sectional dependence given the number of clusters is sufficiently large. In a similar paper, Gow et al. (2010) study the procedures used in the accounting literature to account for time-series and cross-sectional dependence. Their findings suggest that significance statistics are overstated in a variety of settings due to misspecified standard errors employed in parts of the accounting literature. However, they also find that cluster-robust standard errors, clustered by time, are unbiased when panel data sets are cross-sectionally dependent.[52] Based on the simulation evidence in Petersen (2009) and Gow et al. (2010), I run pooled cross-sectional time-series regressions with cluster-robust standard errors, clustered by time, on equations (3.14) and equation (3.15) on page 45 for individual and cumulative groups of events, respectively.

For the European sample, I also include country fixed-effects to account for unobservable country differences. Note that it might be tempting to use two-way clustered standard errors, clustered by both time and country, to safe degrees of freedom when accounting for within-country correlation. This approach would, however, introduce an additional bias rather than remedying one because clustered standard errors produce unbiased results only if the number of clusters is sufficiently large (depending on the research setting, probably at least above 50). The number of European countries in this dissertation's sample, however, is limited to 18.

3.3 Cross-Sectional Tests

The cross-sectional tests in this dissertation rely on Sefcik and Thompson (1986) portfolio time-series regressions to account for cross-sectional heteroscedasticity and contemporaneous cross-correlation. The general idea of this procedure is to convert a cross-sectional regression of abnormal returns regressed on N firm characteristics into N portfolios weighted by the firm characteristics. Running the augmented market model regression from equation (3.14) on page 44 on the time series of portfolio returns yields an estimated coefficient $\hat{\gamma}_k$ on the event-specific indicator variable D_k. The estimated coefficient $\hat{\gamma}_k$ is interpreted as the effect of firm characteristic n on abnormal returns of event k.

To illustrate this technique in more detail, consider for simplicity the cross-sectional regression in equation (3.17), which regresses the abnormal return γ_k to event k on α and the three firm characteristics a, b and c, i.e., $N = 3$.

$$\gamma_k = \alpha + \beta_1 a + \beta_2 b + \beta_3 c + \varepsilon \tag{3.17}$$

[52] Also see Cameron et al. (2006) on two-way clustered standard errors.

Estimation of regression (3.17) as Sefcik and Thompson (1986) portfolio time-series regressions first requires the T by I matrix of stock prices, denoted $\mathbf{R}$, where p_{it} is the stock price of firm i at time t with $i = 1, ..., I$ and $t = 1, ..., T$, and a I by 1 column vector of ones, denoted $\mathbf{1}$.

$$\mathbf{R}_{T\times I} = \begin{bmatrix} p_{12} & \cdots & p_{1I} \\ \vdots & \ddots & \vdots \\ p_{1T} & \cdots & p_{IT} \end{bmatrix} \tag{3.18}$$

$$\mathbf{1}_{I\times 1} = \begin{bmatrix} 1 \\ 1 \\ \vdots \\ 1 \end{bmatrix} \tag{3.19}$$

To construct the portfolios, the vector $\mathbf{1}$, representing the intercept in equation (3.17), is combined with the levels of firm characteristics a_i, b_i, c_i with $i = 1, ..., I$, respectively, to the I by 4 (N plus the intercept) matrix $\mathbf{F}$.

$$\mathbf{F}_{I\times 4} = \begin{bmatrix} 1 & a_1 & b_1 & c_1 \\ \vdots & \vdots & \vdots & \vdots \\ 1 & a_I & b_I & c_I \end{bmatrix} \tag{3.20}$$

The 4 by T portfolio matrix $\mathbf{P}$ is constructed by the following manipulation scheme:

$$\mathbf{P}_{4\times T} = (\mathbf{F}'\mathbf{F})^{-1}\,\mathbf{F}'\mathbf{R} \tag{3.21}$$

Each of the four rows of matrix $\mathbf{P}$, denoted as $j = 1, 2, 3, 4$ represents one of four factors in the cross-sectional regression in equation (3.22) as a time-series of stock prices, i.e., the first row represents the intercept from regression (3.17), rows two to four represent the firm characteristics a, b and c. I extract the four rows from matrix $\mathbf{P}$, compute the returns, and then run regression (3.22) separately on each return time-series.

$$R_t^j = \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \beta_3 D_k + \varepsilon_t \tag{3.22}$$

where

R_t^j	is the return on day t of the daily stock price time series extracted as a row from matrix $\mathbf{P}$.
α	is the intercept.
β_1, β_2, β_3	are slope coefficients.

R_t^{MKT}	is the daily market return.
$R_t^{INTEREST}$	is the daily relative interest rate change.
D_k	is an indicator variable set to 1 during events k with a positive predicted sign, to -1 during events k with a negative predicted sign, and to zero otherwise.
ε	is an error term.

The estimated coefficient $\hat{\beta}_3$ from regression (3.22) with R^1 as the dependent variable, i.e., the return on the stock price time series extracted as row one from matrix $\mathbf{P}$, represents the effect of the intercept from equation (3.17) on abnormal returns to event k. Similarly, the estimated coefficients $\hat{\beta}_3$ from regressions (3.22) with R^2, R^3, R^4 as the dependent variables represent the effect of firm characteristics a, b and c on the abnormal return to event k, respectively, and, thus, are interpreted equivalently to the estimated coefficients $\hat{\beta}_1$, $\hat{\beta}_2$, $\hat{\beta}_3$ from equation (3.17), respectively.

To test the difference of the estimated coefficients of the *SIGNED_MEAN* variables between the bank holding company (BHC) and the financial service firm (FSF) sample, I nest the FSF sample in the BHC sample and create the following three interaction variables, one for each exogenous variable in equation (3.23):

1. $D^{BHC\times MKT}$ interacts the firm type indicator D^{BHC} with the daily returns of the CRSP equally-weighted index.
2. $\mathrm{D}^{\mathrm{BHC\times INTEREST}}$ interacts the firm type indicator D^{BHC} with the daily relative changes of the 6-months U.S. Treasury bill rate.
3. $\mathrm{D}^{\mathrm{BHC\times SIGNED\_MEAN}}$ interacts the firm type indicator D^{BHC} with *SIGNED_MEAN*.

$$R_{it} = \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \beta_3 SIGNED\_MEAN + \varepsilon_{it} \tag{3.23}$$

The firm type indicator D^{BHC} is set to one for BHCs and to zero for FSFs. Pooled daily return observations of both BHCs and FSFs are regressed on the daily returns of the CRSP equally-weighted index, the daily relative changes of the 6-months U.S. Treasury bill rate, the *SIGNED_MEAN* variable, the firm type indicator D^{BHC} and the three interaction variables $D^{BHC\times MKT}$, $\mathrm{D}^{\mathrm{BHC\times INTEREST}}$ and $\mathrm{D}^{\mathrm{BHC\times SIGNED\_MEAN}}$. Equation (3.24) displays the regression model. The t-statistic of the estimated coefficient of $\mathrm{D}^{\mathrm{BHC\times SIGNED\_MEAN}}$ is used to evaluate the significance of the difference between the estimated coefficients of the *SIGNED_MEAN* variables between the BHC and the FSF sample.

$$\begin{aligned} R_{it} =& \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \beta_3 SIGNED\_MEAN + \beta_4 D^{BHC} + \beta_5 D^{BHC\times MKT} \\ &+ \beta_6 D^{BHC\times INTEREST} + \beta_7 D^{BHC\times SIGNED\_MEAN} + \varepsilon_{it} \end{aligned} \tag{3.24}$$

4 U.S. Background and History of Events

This chapter establishes the event history, provides detailed background information about each event and determines the predicted sign of the stock market reaction based on hypotheses 1 - 4. Section 4.1 describes the event identification and selection process. Section 4.2 on the next page provides detailed background information about each event and sets the predicted sign of the stock market reaction. Since the validity of statistical inference in any event study ultimately boils down to how researchers select events and set their predicted signs, I devote considerable attention to illustrating this process. Particularly, I provide detailed historical context for each event. Table 4.1 on page 99 summarizes all events with their predicted signs.

4.1 Identification of Events

I conduct a Dow Jones FACTIVA keyword search to identify events that disseminate information to the market about changes to accounting standards for financial instruments. The search period lasts from January 1, 2007 to June 30, 2010 and includes the following sources: Dow Jones Business News, Dow Jones Capital Markets Report, Dow Jones News Service, Financial Times - Print and Online, Reuters News, The Wall Street Journal - Print and Online, and Wall Street Network News. The keyword query reads as follows (query connectors capitalized): Financial Accounting Standards Board OR FASB OR (SEC AND accounting) OR (Securities and Exchange Commission AND accounting) OR fair value accounting OR mark to market OR marking to market OR off-balance sheet rules OR (off-balance sheet AND accounting) OR impairment rules OR (impairment AND accounting). The search yields a total of 14,871 publication results.[53]

Out of the 14,871 publication results, I identify all references that either (1) disseminate new information to the market about changes to accounting standards for financial instruments or (2) change the probability that these changes ultimately occur. In addition to FACTIVA, I search websites and news releases of standard setters and regulators, such as the Financial Accounting Standards Board (FASB) and the SEC and combine the results with the financial press references. This process leads to 61 key events surrounding changes to U.S. accounting standards for financial instruments. Event windows generally span two trading days (i.e., $[0, +1]$). For some events (e.g., event no. 4), I restrict the event window to one trading day to avoid contamination of the event window with confounding information.

[53] All 14,871 publication results can be obtained from me on request.

4.2 History of Events

This section provides a detailed record of events surrounding changes to U.S. accounting standards for financial instruments.

Event No. 1: FASB likely to review hedge accounting	**Pred. Sign: +**

On May 10, 2007, the Wall Street Journal (WSJ) reports about current plans of the Financial Accounting Standards Board (FASB) to modify and possibly replace hedge accounting rules as stipulated by SFAS 133 (Reilly, WSJ, 2007). According to the WSJ, Robert Herz, Chairman of the FASB, states that the FASB initiates the review of FAS 133 as a result of "numerous complaints about the rule and uncertainty among companies over how to apply it complaints" (Reilly, WSJ, 2007). The WSJ also cites a recent research report by Glass, Lewis & Co., LLC, which suggests that the hedge accounting rules of SFAS 133 lead to over 150 restatements in the period from 2003 to 2006.[54] In addition, Alex Pollock, fellow at the American Enterprise Institute and former chief executive of the Federal Home Loan Bank of Chicago, argues that the current hedge accounting standard is "more than complicated, it is convoluted. It confuses documentation with accounting and the expense associated with it is an enormous deadweight for companies" (Reilly, WSJ, 2007).

Predicted Sign: This event increases the probability of a review or complete overhaul of SFAS 133. It is thus likely that future accounting rules grant management more discretion with respect to hedge accounting. This event also decreases expected future costs associated with both maintaining and documenting effective hedging relationships. Accordingly, I predict a positive stock market reaction in line with hypothesis 1.

Event No. 2: Congress inquires about SFAS 140	**Pred. Sign: +**

On June 19, 2007, Reuters reports about a letter from Barney Frank, Chairman of the House of Representatives Financial Services Committee (FSC), and ten other Democratic House lawmakers sent to SEC Chairman Christopher Cox (Poirier, RN, 2007). The letter expresses concerns about the implications of SFAS 140 with respect to loan modifications of

[54] Glass, Lewis & Co., LLC is a governance analysis and proxy voting firm, headquartered in San Francisco, CA. The report is available for subscribers only. See http://www.glasslewis.com for additional details.

subprime-related mortgage-backed securities (MBS) (Frank, 2007).[55] The letter states that "the lack of clarity [of SFAS 140] may be leading some institutions to withhold making some loan modifications that may benefit borrowers - and bondholders - for fear of being found in violation of FAS 140" (Frank, 2007, p. 1). The letter asks the SEC to address the following question: "Does FAS 140 clearly address whether a loan held in a trust can be modified when default is reasonably foreseeable or only once a delinquency or default has already occurred? If not, can it be clarified in a way that will benefit both borrowers and investors?" (Frank, 2007, p. 1). Essentially, the debate addressed in Barney Frank's letter centers around whether or not loan modifications of off-balance MBSs, for which default has not yet occurred but is only "reasonably foreseeable", trigger on-balance sheet accounting requirements for the mortgage lender.[56]

Predicted Sign: This event is among the first political efforts to gain influence on accounting rules for financial instruments during the financial crisis. Such political effort has a general underlying notion and two primary implications. The general underlying notion of political efforts is a result of the political process and thus presumably driven by lobbying to a certain extent. The prevalence of successful lobbying attempts supposes that political efforts are likely directed toward relaxing accounting rules in favor of (temporarily) higher bank equity instead of toward strengthening them causing timely write-downs and (temporarily) lower bank equity.[57] The first primary implication of such political effort is an increase in the likelihood of additional future political interference, possibly through political pressure or immediate intervention in both private standard setting and enforcement. That is, I presume increasing serial correlation of political interference into private standard setting after a certain threshold. The second primary implication is an increase in the likelihood of more timely standard and rule setting proceedings. Since standard and rule setting by private accounting standard setters and enforcement agencies is a political process itself, additional pressure

[55] Loan modifications involve a restructuring of the terms of the loan, which aims at allowing the borrower to avoid default on the loan. Typical loan modifications include reducing interest rate or principal payments, delaying payment of principal or interest or altering the seniority level of the debt (e.g., Fabozzi et al., 2006, pp. 46-47)
Note that the letter is dated and, thus, possibly sent on June 15, 2007. However, the corresponding press release along with the PDF-version of the letter are marked "for immediate release" on June 19, 2007 on the Democrats Financial Services Committee website, see http://democrats.financialservices.house.gov/press110/press061907.shtml. In addition, information about the letter seems not to appear in the financial press before June 19, 2007. Accordingly, I presume public disclosure on June 19, 2007. However, setting the event window to $[-1, 0]$, instead of $[0, +1]$ does not affect the statistical properties of the abnormal stock return associated with event No. 2.

[56] See Cox (SEC, 2007) and the record of event no. 3.

[57] Deniz Igan and Tressel (2009) investigate the relation between lobbying attempts and mortgage lending in the pre-financial crisis period from 2000 to 2007. Their findings suggest that the amount of lobbying expenses by mortgage lenders is, among other factors, cross-sectionally related to more intense securitization, higher ex-post delinquency rates and higher negative abnormal stock returns during key events of the financial crisis. Their appendix contains a comprehensive list of bills that either relax or tighten lending restrictions, which can be interpreted as anecdotal evidence on the relative success of lobbying efforts by mortgage lenders (Deniz Igan and Tressel, 2009, pp. 54-62).
See Stigler (1971) regarding the political process and the demand for regulation.

drawn from political initiatives increases the resources that standard setters devote to rule setting processes. This in turn possibly increases the pace of standard and rule adjustments.[58]

This event increases the probability that the SEC will clarify SFAS 140 in a way that allows mortgage lenders to make loan modifications to MBSs without bringing them back on the balance sheet even if the default event has not yet occurred. Such a clarification would allow mortgage lending banks to make loan modifications already in anticipation of a default event, without recognizing the related off-balance sheet structures on-balance. It seems likely that such a clarification causes timelier loan modifications and hence decreases on average the probability of default. In addition, such a clarification avoids additional balance sheet recognition and thus circumvents additional fair value exposure. Consequently, I predict a positive stock market reaction in line with hypotheses 1 and 3.

Event No. 3: SEC clarifies SFAS 140 regarding loan modifications **Pred. Sign: +**

On July 25, 2007, Reuters reports about a letter sent by SEC Chairman Christopher Cox to House of Representatives Financial Services Committee (FSC) Chairman Barney Frank (Chasan, RN, 2007d). The letter is a reply to Mr. Frank's letter from June 19, 2011.[59] It addresses and resolves the clarification issues raised by Barney Frank regarding loan modifications of subprime-related mortgage-backed securities (MBS). The letter states "the Commission's professional staff believes that [...] such loan modifications [i.e., modifications made if default has not yet occurred but is "reasonably foreseeable"] would not result in a requirement for entities to account for those securitized assets on their balance sheets" (Cox, SEC, 2007, p. 1).

Predicted Sign: This event resolves uncertainty surrounding loan modifications made prior to an actual default event and effectively allows mortgage lenders to continue the off-balance sheet treatment of mortgage-backed securities in such cases. I predict a positive stock market reaction in line with hypotheses 1 and 3 because this event rules out the probability of additional subprime-related exposures accounted for on-balance as a result of anticipative loan modifications and correspondingly reduces the probability of additional fair value exposure.

Event No. 4: FASB examines improvements of SFAS 140 **Pred. Sign: +**

[58] There is a substantial body of literature that analyzes accounting standard setting from an institutional perspective and as a political process. See e.g., Sutton (1984) regarding lobbying by individuals and organizations; see Kothari et al. (2009), who contrast existing GAAP with GAAP endogenously evolving from market forces; also see Watts and Zimmerman (1978, 1990).

[59] Similar to the preceding letter from Barney Frank to Christopher Cox (event No. 2), the reply from Mr. Cox is dated July 24, 2007, but the corresponding press release is marked "for immediate release" on July 25, 2007 on the Democrats Financial Services Committee website, see http://democrats.financialservices.house.gov/press110/sec_response072507.pdf. Information about the letter seems not to appear in the financial press before July 25, 2007. Accordingly, I presume public disclosure on July 25, 2007. As for event No. 2, the statistical properties of the event-specific abnormal stock return of event No. 3 are robust to a modification of the event window from $[0, +1]$ to $[-1, 0]$.

On August 21, 2007, FASB Chairman Robert Herz tells Reuters in an interview that FASB staff members are currently examining SFAS 140 with regard to possible improvements of the standard, particularly with respect to subprime lending and related securitization (Chasan, RN, 2007b). Reuters cites Mr. Herz as saying that "It [SFAS 140] doesn't work, it's broken. It's not a matter of tweaking, it's a matter of creating a simpler, more transparent way of portraying what's going on" (Chasan, RN, 2007b).

Predicted Sign: This event increases the probability of a replacement or substantial amendment of SFAS 140. At the time, however, it is mostly unclear which direction the FASB is planning to take when replacing or modifying securitization rules. But Herz's statement seems to indicate a considerable focus on enhanced transparency (i.e., disclosure) regarding securitized off-balance sheet vehicles. Accordingly, I predict a positive stock market reaction in line with hypothesis 2. In addition, Herz also considers a simpler standard desirable. Since simplifying the current securitization standard is likely to reduce costs among preparers, this point is also in favor of a positive market reaction.

Event No. 5: No delay of SFAS 157 **Pred. Sign: –**

On October 17, 2007, the FASB decided in a 4-3 vote not to delay the application of SFAS 157 (Chasan, RN, 2007a; Reilly, DJN, 2007). Previously, trade groups, such as Financial Executives International (FEI), had lobbied for a delayed application of SFAS 157 arguing that smaller companies were not yet ready to fully apply SFAS 157 given substantial technical difficulties regarding marking-to-model requirements (Chasan, RN, 2007a). FASB Chairman Robert Herz, who voted against the delay, is cited by Reuters a saying that "I believe as far as financial instruments go, the implementation and application of FAS 157 is a vast improvement" (Chasan, RN, 2007a).

Predicted Sign: This event confirms the previously deliberated application of SFAS 157 for fiscal years beginning after November 15, 2007. The demonstrated commitment of the FASB also reduces the probability that other organizations, such as the SEC, still intend to move towards a delayed application roadmap. Accordingly, this event makes it highly likely that SFAS 157 will be applicable as planned.

The market reaction to this event is conditional on the overall economic impact of SFAS 157 and, thus, difficult to predict for a number of reasons. First, the potential delay in the application of the standard is a "non-event" for a number of large financial institutions, which voluntarily adopted the rule early (Reilly, WSJ.com, 2007). Early-adopters are unlikely to change their initial adoption decision based upon a move by the FASB towards a delay of the mandatory application, particularly since the lobbied-for delay only comprises one year.

Accordingly, the event seems not directly relevant for the group of early-adopters.[60] The predicted market reaction thus depends on the relative importance of early-adopters compared to all sample firms. Chang Joon et al. (2008) study the value-relevance of SFAS 157 disclosures using a sample of early SFAS 157 adopters. To identify early-adopters, they rely on the bank regulatory holding company database, a keyword search of SEC filings and "The Analysts' Accounting Observer".[61] They identify 59 early-adopters, including 34 depositary institutions, 3 non-depositary credit institutions, 6 security, commodity brokers, and services, 5 insurance carriers. The remaining 11 sample firms stem from non-financial industries (see Chang Joon et al., 2008, Table 1, p. 36). Chang Joon et al. (2008) do not disclose a list of early-adopters. Therefore, I assume conservatively that my sample of bank holding companies also contains all 34 depositary institutions and that my sample of financial service firms also contains all 14 non-depository financial services firms. The hypothetical ratio of early-adopters to all sample firms would be about 12% in my bank holding company sample and about 9% in my financial service firms sample. Hence, it is unlikely that the no-delay vote is predominantly a non-event given that only a fairly small number of firms is among the early-adopters.

Second, SFAS 157 is both a measurement and disclosure standard. This leads to potentially contradicting predictions about the sign of the stock market reaction. While hypothesis 1 suggests that a stricter measurement regime provokes a negative market reaction due to implications for values recognized on the balance sheet, hypothesis 2 is directed towards a positive market reaction resulting from enhanced fair value disclosure. Even though I generally presume that given the market conditions during the crisis, adverse second order effects of fair value balance sheet recognition outweigh positive information role effects, the relative prominence of measurement versus disclosure in SFAS 157 deserves further consideration. Anecdotal evidence suggests that SFAS 157 expands the significance of exit values for valuation purposes and also increases the timeliness and quantity of write-downs in anticipation of future events. For instance, Reilly (WSJ.com, 2007) claims that "[...] FAS 157 makes it clearer that companies, if they have to value something using a model, have to think in terms of the value that would result if they were selling, or exiting, the position. In other words, they have to take current market pricing and conditions into account. In some cases, that's a switch. In the past, companies would often argue that an asset's value was holding up in the face of a market downturn because there was no erosion in the item's long-term, "intrinsic" value. [...] Now companies have to take into account what an item would fetch if they sold it today. That's forcing some companies to take big write-downs even though the assets haven't yet started to

[60] Note that even for voluntary adopters, the no-delay decision can be relevant indirectly because it extends the time frame during which voluntary adoption is visible to investors and analysts. Early adoption can be thought of as similar to voluntary disclosure and accordingly, a delay of mandatory adoption extends the period during which signaling can occur because of self-selection into "reputational" groups. See Verrecchia (2001) for a review of the theoretical disclosure literature and, particularly, Dye and Sridhar (1995) on industry-wide disclosure dynamics.

[61] Information about the "The Analysts' Accounting Observer" is available at http://www.accountingobserver.com/.

incur "losses" in terms of the cash flows resulting from an investment."

There is also a substantial empirical literature on SFAS 157 (e.g., Kolev, 2008; Goh et al., 2009; Chang Joon et al., 2008, 2010). This literature, however, is concerned mainly with SFAS 157 disclosures and investigates the value-relevance of the fair-value hierarchy. I am currently unaware of any empirical study investigating the timing and magnitude of write-downs under SFAS 157 relative to the statistical properties of write-downs under the preceding piece meal-approach. Some research benchmarks the timeliness of write-downs under SFAS 157 relative to contemporaneous market conditions. For instance, Vyas (2011) studies the timeliness of quarterly accounting write-downs relative to devaluation schedules implied by credit indices such as the ABX indices. He finds that accounting write-downs are less timely than index-implied devaluations and that more timely write-downs are cross-sectionally related to higher governance quality, pre-quarter regulatory investigations, and higher litigation pressure. Lower timeliness is cross-sectionally related to higher financial leverage, stronger regulatory constraints, and higher complexity of exposures. Vyas (2011), however, does not address the question of how timeliness of write-downs would have changed under the fair value measurement regime preceding SFAS 157.[62]

Nevertheless, much of the debate surrounding fair value accounting during the financial crisis has focused on the measurement implications of SFAS 157. The standard has been criticized continuously for requiring the use of observable market inputs over firm-specific estimates even when markets are illiquid.[63] As described by Ryan (2008, particularly, pp. 1623-1629), most subprime-related mortgage instruments are valued using level 2 inputs under normal market conditions.[64] During the financial crisis, however, sources of observable inputs, such as the Markit ABX indices, became fundamentally illiquid.[65] Since these illiquid price signals were still observable at the respective measurement date, SFAS 157 generally required determining fair values based on those signals (inclusive of price effects due to illiquidity). This technicality can lead to fair values substantially below what had been the result of model-

[62] Beltratti et al. (2010) study the value-relevance of write-downs during the financial crisis using a sample of North American and European banks. They find that write-downs are value-relevant dollar-for-dollar.

[63] Ryan (2008) overviews many different aspects of accounting for subprime-related instruments.

[64] Level 2 inputs comprise "inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly [, such as ...] quoted prices for similar assets or liabilities in active markets, [...] quoted prices for identical or similar assets or liabilities in markets that are not active [...], inputs other than quoted prices that are observable for the asset or liability (for example, interest rates and yield curves observable at commonly quoted intervals, volatilities, prepayment speeds, loss severities, credit risks, and default rates), [... or] inputs that are derived principally from or corroborated by observable market data by correlation or other means (market-corroborated inputs)" (SFAS 157.28).
Level 3 inputs comprise "unobservable inputs for the asset or liability. [...] unobservable inputs shall reflect the reporting entity's own assumptions about the assumptions that market participants would use in pricing the asset or liability (including assumptions about risk)" (SFAS 157.30).

[65] Illiquidity is apparent considering that Markit announced not to publish index figures for the first half of 2008 vintage since there was only a deficient number of securitizations Ryan (2008, p. 1627).

based valuations only considering credit risk for most ABX tranches.[66] The Bank of England examines the bearing of illiquidity on the ABX indices by benchmarking actual index pricing with a Collateralized Debt Obligation (CDO) valuation model (see Bank of England, 2008, p. 19). Since the valuation model uses credit risk as the only price-determining factor, the difference between model-implied prices and actual ABX prices provides an estimate of the magnitude of non-credit factors (e.g., liquidity). These calculations suggest that the decline in market value of subprime-related securities is driven to a substantial extent by non-credit factors, presumably liquidity. That is, the loss of market value for subprime mortgage-backed securities based on vintages from 2006 (including some pre-2006 vintages) to the second half of 2007 is by USD 64 billion higher using the actual ABX pricing rather than model-implied prices, which are affected by credit risk only (Bank of England, 2008, p. 19). In other words, about 17% of estimated losses in subprime mortgage-backed securities are attributable to illiquidity during the period from 2006 to 2007 alone.[67]

Needless to say, that a market price is a market price, illiquidity or not. Equally needless to say, that those market prices, including the impact of illiquidity, might be of interest to investors. The issue, however, appears to be that the measurement regime of SFAS 157, particularly its stickiness to level 2 inputs, incorporates information into balance sheet values that is unrelated to the fundamentals of the fair valued security but rather results from overall market sentiment and, therefore, is more likely to reverse in the future. If losses originating from illiquidity are more likely to reverse in the future, the "approach [of SFAS 157] to value illiquid securities could significantly exaggerate the scale of losses that financial institutions might ultimately incur" (Bank of England, 2008, p. 20). This potentially leads to an undesirable outcome given that temporary losses (temporary because they are likely to reverse in the future) hit equity and regulatory capital during times when it is needed most. This point is consistent with Allen and Carletti (2008), who show that a temporary shock combined with illiquid markets can lead to an inefficient outcome under fair value accounting because banks go bankrupt as they are unable to maintain "marked-to-market regulatory capital" even though they would otherwise be able to meet their future obligations in full. Overall, I assume that the measurement effects of SFAS 157 outweigh the information role effects of additional disclosure and, thus, predict a negative market reaction in line with hypothesis 1.

Event No. 6: SEC revises loan commitments	**Pred. Sign: +**

On November 5, 2007, the SEC issues a revised staff accounting bulletin regarding the accounting for servicing fees related to loan commitments (Burns, DJN, 2007; Wutkowski, RN, 2007). The revision allows banks to include the expected net future cash benefit of servicing

[66] To mitigate this problem, Ryan (2008, p. 1627) suggests that the FASB should provide additional guidance regarding when prepares can deviate from "poor quality" level 2 inputs in favor of unobservable level 3 inputs.

[67] See Bank of England (2008, p. 19 f.).

fees in the fair value measurement of a written commitment already at the time they enter into the commitment rather than at the time the commitment is sold. Reuters cites Alison Utermohlen, a senior director of government affairs for the Mortgage Bankers Association, as saying that "this change will have the effect of causing mortgage lenders to recognize more income at the time they enter into commitments and less income when they sell the loans into the market" (Wutkowski, RN, 2007).

Predicted Sign: This event allows banks to increase current fair value measurements and recognize income sooner rather than later. Accordingly, I predict a positive market reaction in line with hypothesis 1. However, anecdotal evidence suggest that the magnitude of the market reaction surrounding this event is comparatively small because "the change will be relatively minimal because there is generally a short period of time between when a bank enters into a loan commitment and when it sells the loan" according to Alison Utermohlen as reported by Wutkowski (RN, 2007).

Event No. 7: FASB likely to terminate QSPEs	**Pred. Sign: −**

On November 12, 2007, Reuters reports that the FASB plans to eliminate the concept of Qualifying Special-Purpose Entities (QSPE) when revising SFAS 140 (Chasan, RN, 2007c). Reuters cites Russell Golden, Chairman of the FASB's emerging issues task force, as saying that "QSPEs would no longer exist. If you sold the financial asset [...] you would put both the asset and liability on your books" (Chasan, RN, 2007c).

Predicted Sign: This event reveals partly the direction the FASB plans to take when revising SFAS 140. It seems likely that market participants interpret this information as suggesting that a revised version of SFAS 140 intends to limit rather than extend the use of off-balance sheet vehicles. Also, this rather selective piece of information is likely associated with substantial uncertainty on the future revision of SFAS 140. Overall, I predict a negative market reaction in line with hypothesis 3.

Event No. 8: SEC approves loan modifications of ARM loans	**Pred. Sign: +**

On January 9, 2008, Reuters reports about a letter from the SEC's Chief Accountant Conrad Hewitt sent to Arnold Hanish, Chairman of the Committee on Corporate Reporting, Financial Executives International (FEI) and Sam Ranzilla, Chairman of the Professional Practice Executive Committee of the Center for Audit Quality (CAQ) of the American Institute of Certified Public Accountants (AICPA) (Poirier, RN, 2008). The no-action letter confirms that the Office of the Chief Accountant (OCA) will not object plans lead by the American Securitization Forum (ASF) and supported by the U.S. Department of Treasury to make loan modifications in anticipation of future defaults (i.e., "default is reasonable foreseeable") to securitized pools of subprime adjustable rate mortgage (ARM) loans while keeping the status of a Qualifying Special-Purpose Entity (QSPE) and, thus, retaining off-balance

sheet treatment (Hewitt, SEC, 2008). Nonetheless, the letter also requires firms to provide additional disclosures when filing with the SEC. The letter states: "OCA expects registrants to provide sufficient disclosures in filings with the Commission regarding the impact that the ASF Framework has had on QSPEs that hold subprime ARM loans" (Hewitt, SEC, 2008, p. 3).

Predicted Sign: This event supports efforts by the ASF towards "loss prevention activities" regarding securitized subprime loans. It has two effects. First, despite loan modifications without an actual loss event, securitized subprime loans remain off-balance and keep their status as a QSPE. Second, the Chief Accountant requires additional disclosures in SEC filings about the effects of "loss prevention activities" (see Hewitt, SEC, 2008, particularly, Appendix A, pp. 5f.). Accordingly, I predict a positive market reaction in line with both hypotheses 2 and 3.

Event No. 9: SEC plans to improve disclosures	**Pred. Sign: +**

On Feruary 2, 2008, SEC Chairman Christopher Cox indicates at a Senate Banking Committee hearing that the SEC aims to improve the disclosures of Wall Street firms (Younglai, RN, 2008r).[68] He also states that the SEC begins to probe "more than 3 dozen" financial firms with respect to different crisis-related issues such as "the accounting treatment of securitized subprime loans, [the] capital adequacy at big investment banks, the "quality of issuer disclosure" by companies involved in structured finance and the role of credit rating companies in subprime valuations" (Younglai, RN, 2008r).

Predicted Sign: This event expresses the SEC's commitment towards more clarity of disclosures by financial firms. Accordingly, I predict a positive market reaction based upon hypothesis 2. The plan of the SEC to probe Wall Street firms regarding possible breaches of securities laws also increases litigation risk, and, thus likely is associated with substantial expected future costs. For instance, Goldman Sachs & Co. in 2010 paid USD 550 million, a record-high penalty among Wall Street firms, to settle charges with the SEC after being alleged of misleading investors related to its synthetic subprime residential mortgage CDO ABACUS 2007-AC1 (SEC, 2010). It is possible that the expected future litigation costs neutralize or even outweigh the positive effect of disclosure enforcements.

Event No. 10: FASB terminates QSPEs	**Pred. Sign: –**

On February 29, 2008, the Wall Street Journal (WSJ) reports about the FASB's plans to review and amend accounting rules for off-balance sheet vehicles (Reilly, WSJ, 2008d; Berkrot, RN, 2008). According to the WSJ, the FASB examines mostly the accounting treatment and consolidation rules for conduits, structured investment vehicles (SIV) and collateralized debt

[68] See also Younglai (RN, 2008s).

obligations (CDO). The WSJ cites Robert Herz, Chairman of the FASB, stating that "[...] it seems some banks may have been bearing more risk than the accounting was picking up. [...] What isn't clear [...] is whether to change the rules, increase disclosure or force banks to better comply with existing rules" (Reilly, WSJ, 2008d). Also according to the WSJ, the FASB decided to eliminate the SFAS 140-concept of qualifying special-purpose entities (QSPE).

The FASB, however, has not yet decided on how assets currently accounted for off-balance as qualifying special-purpose entities (QSPE) will have to be treated in the future, or if those assets have to be recorded on-balance at all (Reilly, WSJ, 2008d). The WSJ also reports about an interview with Senator Jack Reed, who is a member of the Senate Banking Committee. Senator Reed is cited by the WSJ as saying that "It is vitally important that shortcomings in financial reporting for off-balance sheet transactions as well as timely disclosure of information about subprime and related investments be addressed in an expeditious fashion. The risks hidden by off-balance sheet vehicles raise serious questions about the quality of information investors receive and what bank books really show. Is it the items listed or items that are hidden away and could pop up at any moment? When the question of whether assets should be on banks' books is a close call, the experience of the last few months suggests they should be on the balance sheet" (Reilly, WSJ, 2008d).

Predicted Sign: This event conveys information about the FASB's plans to amend SFAS 140. For a number of reasons, this event increases the probability of additional requirements to account on-balance for certain financial structures currently kept off-balance. First, it seems that the FASB aims to follow a more comprehensive approach when revising off-balance sheet rules because the scope of the review goes beyond the SFAS 140-concept of qualifiying special-purpose entities (QSPE) and comprises different general kinds of structures, such as conduits, SIVs and CDOs. This makes it more likely that the FASB ends up with a solution eventually requiring more rather than less on-balance sheet accounting for securitized assets. Second, the FASB already decided to terminate the SFAS 140-concept of QSPE. It is unclear, however, how this concept is going to be replaced. This creates uncertainty about the future accounting treatment of affected structures and increases the probability of more rather than less on-balance sheet accounting for securitized assets. Third, the comments made by Senator Reed increase the probability of political weight on the standard setting process. The comments are directed towards more prompt amendments of current standards and also favor more rather than less on-balance sheet accounting.

Overall, this event increases the probability of stricter off-balance sheet rules in the near future. Accordingly, I predict a negative market reaction in line with hypothesis 3. This is consistent with David Reilly's comments, who states that "for investors, consolidation of more assets on banks' books could be a mixed blessing. In the short term, it would place additional strain on banks at a time when they can least afford it. Longer term, investors would be less likely to get sandbagged by losses, while bank executives likely will have a better handle on risks that are on their books" (Reilly, WSJ, 2008d).

Event No. 11: PCAOB against modifying fair value	**Pred. Sign: –**

On March 3, 2008, Reuters reports that Mark Olson, Chairman of the Public Company Accounting Oversight Board (PCAOB), expresses concerns about attempts to modify fair value accounting rules in response to the crisis (Younglai, RN, 2008m). Olson is cited by Reuters as saying that "The bigger problem is that I think that people didn't like the answer. And so they would like to have seen a change in the rules or a change in the formula" (Younglai, RN, 2008m).

Predicted Sign: This event demonstrates the PCAOB's opposition to hasty modifications of fair value accounting rules. Since the PCAOB is a major representative of the U.S. public accounting profession, this event reduces the probability of prompt modifications to fair value accounting rules. Accordingly, I predict a negative market reaction in line with hypothesis 1.

Event No. 12: Regulators and SEC push for more disclosure	**Pred. Sign: +**

On March 13, 2008, the President's Working Group on Financial Markets, which is chaired by the U.S. Department of the Treasury and also comprises representatives of the Federal Reserve, the Securities and Exchange Commission (SEC) and the Commodity Futures Trading Commission (CFTC), publishes a number of recommendations in response to the credit crunch (Lawder and Rucker, RN, 2008). These recommendations propose that regulators require "financial institutions to make more detailed disclosures of off-balance sheet commitments, such as asset-backed commercial paper conduits and structured investment vehicles" and that regulators "work closely with the Financial Accounting Standards Board to review accounting issues and make sure that exposure at financial firms is measured across business lines" (Lawder and Rucker, RN, 2008). On March 14, 2011, the Wall Street Journal (WSJ) reports that the SEC plans to issue guidance soon regarding fair value disclosures (Reilly and Scannell, WSJ, 2008; Younglai, RN, 2008t; Adegoke, RN, 2008). According to the financial press, this guidance aims to encourage preparers to disclose a range of possible values around actual level 2- or level 3-fair value measurements (Reilly and Scannell, WSJ, 2008). The SEC also plans to remind preparers to provide detailed descriptions of the models used for pricing securities in illiquid markets (Reilly and Scannell, WSJ, 2008). The WSJ cites Michael Young, who is a partner with Willkie Farr & Gallagher LLP[69], as stating that "if management has a heartfelt judgment as to a range of values, investors might like to hear that." Regarding concerns about manipulative behavior by management, Michael Young adds the following: "Can a range be manipulated? Sure. But a range communicates the imprecision of these numbers, and it's useful for investors to see the highly judgmental nature of the process" (Reilly and Scannell,

[69] Willkie Farr & Gallagher LLP is a New York-based international law firm. For details, see http://www.willkie.com.

WSJ, 2008).

Predicted Sign: This event increases the probability of more detailed disclosures for the first quarter of 2008 financial reports. Accordingly, I predict a positive market reaction in line with hypothesis 2. However, since the SEC deliberately decided to push for "better" disclosures instead of suggesting changes to fair value accounting rules, this event to a certain extent also decreases the probability of material amendments to either fair value recognition or measurement rules in the near future. Such a probability decrease is consistent with a negative stock market reaction in line with hypothesis 1, which could possibly offset the effect predicted above.

Event No. 13: FASB issues SFAS 161	**Pred. Sign: +**

On March 19, 2008, the FASB issues SFAS 161 "Disclosures about Derivative Instruments and Hedging Activities" (Chasan, RN, 2008b; Korn, DJN, 2008; FASB, 2008c). The standard stipulates additional disclosure requirements for derivative financial instruments and hedging activities. These requirements include disclosures in a tabular format of fair values and gains and losses of derivatives and disclosures about credit-risk related features to convey information about the liquidity implications of derivative holdings. The standard also requires mandatory cross-referencing between financial statements and footnotes related to derivatives (FASB, 2008c). The FASB demands mandatory adoption for fiscal years beginning after November 15, 2008, but early adoption is encouraged (Chasan, RN, 2008b; Korn, DJN, 2008).

Predicted Sign: This event is a "pure" disclosure event. The new standard provides additional disclosure requirements related to fair values of financial derivatives. Hence, I predict a positive market reaction in line with hypothesis 2.

Event No. 14: SEC focuses on more disclosure, not less fair value	**Pred. Sign: −**

On March 28, 2011, Reuters reports that the SEC issued guidance on fair value disclosures in form of a letter sent to 30 Wall Street firms (Younglai, RN, 2008n).[70] According to Reuters, the letter particularly addresses level 3-fair value measurements. It encourages preparers to disclose both their view and basis of conclusion on why some fair values declined substantially and, if so, how much current losses are likely to reverse until settlement of the financial instruments (Younglai, RN, 2008h). The Financial Times (FT) interprets this letter as a sign for the SEC's reluctance to modify or suspend fair value accounting rules in response to the crisis (Chung and Guerrera, FT, 2008).

Predicted Sign: This event confirms previous expectations about guidance by the SEC in form of a letter sent to Wall Street firms regarding enhanced disclosures for financial instruments. It is likely that these expectations are already incorporated into security prices as a

[70] See also Younglai (RN, 2008h).

result of event no. 12. This event, however, also reveals that the SEC is currently unwilling to intervene with the FASB standards on fair value accounting. The Commission neither seems to plan a suspension of fair value accounting nor a material modification. Accordingly, this event makes it less likely that relaxed fair value accounting rules come into play in the near future. Accordingly, I predict a negative market reaction in line with hypothesis 1.

Event No. 15: FASB reluctant to modify fair value accounting	**Pred. Sign: –**

On April 11, 2008, Reuters reports in an article that U.S. regulators are reluctant to modify or suspend fair value accounting rules (Chasan, RN, 2008l). The article argues that the FASB is unwilling to make changes to current fair value accounting rules despite growing requests from preparers. Reuters cites FASB Chairman, Robert Herz, as saying that "most investors have clearly told us that [fair value] is the information they want" (Chasan, RN, 2008l). Also according to Reuters, both the SEC and the CFA Institute back the FASB's position. Jeffrey Diermeier, president and CEO of the CFA institute tells Reuters that "there are some that would like to step back, but at this point in time that would only be viewed as some type of a quirky bailout and not something that would be in any way useful" (Chasan, RN, 2008l).

Predicted Sign: This event conveys information about the FASB's position towards a suspension or modification of fair value accounting rules. The event decreases the probability of amendments to fair value accounting standards. Hence, I predict a negative market reaction in line with hypothesis 1.[71]

Event No. 16: SEC favors fair value guidance	**Pred. Sign: +**

On April 24, 2008, Reuter reports about an interview with SEC Commissioner Paul Atkins, who advocates additional guidance by the SEC regarding fair value measurements (Younglai, RN, 2008b). Mr. Atkins tells Reuters that "if you have no value for something because there are no market values to be reflected, then you have to ask whether or not that is truly

[71] The FACTIVA time stamp of the article indicates that it was published at 7:21 p.m. Eastern Time (ET). Similarly, the time stamp of virtually the same article on www.reuters.com indicates publication at 7:31 ET. Both publication times suggest that the article was distributed after market close. Sample banks are distributed among different stock markets as follows: 40 banks (14.55%) trade on the New York Stock Exchange (NYSE), 10 banks (3.64%) trade on the NYSE American Stock Exchange (AMEX) and 225 (81.82%) trade on the National Association of Securities and Dealers Automated Quotation (NASDAQ). Trading hours at both the NYSE and the NYSE AMEX are Monday through Friday 9:30 a.m. to 4:00 p.m. ET (see http://www.nyse.com/equities/nyseequities/1167176215597.html and http://www.nyse.com/equities/nysealternextus/1230594149432.html, respectively). NASDAQ market hours are generally 9:30 a.m. to 4:00 p.m. ET as well. But NASDAQ also offers pre-market trading from 7:00 a.m. to 9:30 a.m. ET, and after-market hours from 4:00 p.m. to 8:00 p.m. ET. However, closing prices that NASDAQ reports to external parties such as data vendors and the financial press solely depend on the price at 4:01 p.m. ET and are not influenced by after-hours trading (see http://www.nasdaq.com/about/schedule.stm). Any market reaction directly related to the publication of this article would be incorporated into the returns of the following trading day. Hence, I set a one-day event window to the following trading day, i.e., Monday, April 14, 2008.

reflective of what the asset is worth" (Younglai, RN, 2008b). Mr. Atkins adds regarding the possible outcome of value measurements based upon observable inputs derived from illiquid markets that "something is clearly not worth zero. It's worth something, so what do you benchmark it to? Between us and the accounting firms and the investment banks [...] we need to come up with some good guidance for people" (Younglai, RN, 2008b). Mr. Atkins, however, does not indicate when such guidance could reasonably be expected by preparers and market participants. Rather, he states that "we have to keep our ears open to the market place. If we need to formulate more guidance sooner than later, [... then] we have to be ready to do that" (Younglai, RN, 2008b).

Predicted Sign: This event suggests that the SEC is willing to facilitate fair value measurements by issuing related guidance. This is partly in contrast to information previously conveyed to the market (e.g., event no. 15) and, thus, likely to cause belief revisions about the likelihood of any relaxations of fair value accounting rules in the near future. Hence, I predict a positive market reaction in line with hypothesis 1.

Event No. 17: FASB plans stricter off-balance sheet rules **Pred. Sign: –**

On May 2, 2008, the Wall Street Journal (WSJ) reports about the FASB's ongoing plans to amend off-balance sheet rules, particularly with respect to securitization structures (Reilly, WSJ, 2008c). According to the WSJ, FASB Chairman Robert Herz announced that under the planned proposals banks would likely have to record securitization structures on-balance that previously qualified as sales under SFAS 140 and thus were kept off-balance. He also indicated that the FASB is likely to provide stricter rules for other off-balance sheet structures as well (Reilly, WSJ, 2008c).

Predicted Sign: This event provides additional details on the FASB's plans to tighten off-balance sheet rules. It increases the probability that banks have to bring back on their books assets currently kept off-balance. Also, it decreases the likelihood that off-balance sheet structuring will be as accessible as under the current regime. Hence, I predict a negative market reaction in line with hypothesis 3.

Event No. 18: Up to USD 5,000 billion could come back onto the books **Pred. Sign: –**

On June 4, 2008, the Financial Times (FT) reports about research by Citigroup analysts on the consequences of the planned tightening of off-balance sheet rules (Davies et al., FT, 2008). According to the Citigroup analysts, the FASB is likely to require banks to bring a number of off-balance sheet instruments, including structures, which currently are qualifying special purpose entities (QSPE), back on their books. The FT cites Birgit Specht, head of securitisation analysis at Citigroup, as saying that "We think it is very likely that these vehicles will come back on balance sheet. This will not affect liquidity because [the off-balance sheet structures] are funded, but it will affect debt-to-equity ratios and so significantly impact banks'

ability to lend" (Davies et al., FT, 2008). According to the Citigroup analysts, the planned rule change by the FASB could require US banks to recognize assets on their balance sheets, which are currently kept off-balance, of up to USD 5,000 billion (Davies et al., FT, 2008). Also on June 4, 2008, the FASB during one of its meetings discusses amendments to off-balance sheet accounting rules, which could become applicable already to 2008 financial statements (Chasan, RN, 2008d). Particularly, the FASB debates how to replace the SFAS 140-concept of qualifying special purpose entities (QSPE). The FASB also discusses additional disclosures related to off-balance sheet structures. This concerns sponsoring banks that only receive fixed fees from the structured entity but are exposed to additional risk such as reputational risk (Chasan, RN, 2008d). FASB Chairman Robert Herz is cited by Reuters as stating that he favors the upcoming proposals to have a "much stronger point about reputational risk" (Chasan, RN, 2008d).[72]

Predicted Sign: This event conveys information about both the likelihood and potential impact of tightened off-balance sheet rules on banks' balance sheets as well as about additional disclosure requirements regarding reputational risk. I presume that the positive effects of additional disclosures are offset by information about the scale of additional on-balance sheet recognition and, hence, predict a negative market reaction in line with hypothesis 3.

Event No. 19:	**FASB revision of off-balance sheet rules likely to offset recent balance sheet reductions**	**Pred. Sign: −**

On June 17, 2008, the Wall Street Journal (WSJ) reports that the upcoming FASB off-balance sheet proposals are likely to add substantially to financial firms' balance sheets (Reilly, WSJ, 2008a). According to the WSJ, recent efforts by Wall Street firms to reduce their balance sheet could be counterbalanced by the new rules in 2010 at the latest. The WSJ uses Lehman Brothers Holding Inc. as an example. If Lehman had to bring back 20% of his currently outstanding off-balance sheet structures onto its balance sheet, its recent balance sheet reduction would already be offset (Reilly, WSJ, 2008a).

Predicted Sign: This event confirms expectations about the material impact that changes to off-balance sheet rules might have on financial institutions' balance sheet. Hence, I predict a negative market reaction in line with hypothesis 3.

Event No. 20:	**SEC studies improvements to disclosures**	**Pred. Sign: +**

On June 26, 2008, Reuters reports about plans of the SEC to improve disclosure requirements for public companies (Wutkowski, RN, 2008b). The SEC initiates a study, named the

[72] Reputational risk became an issue when Citigroup decided in December 2007 to consolidate USD 49 billion of structured investment vehicles (SIV) to "to support the current ratings of the SIVs' senior debt and to allow the SIVs to continue to pursue their current orderly asset reduction plan" (Citi Group, 2007). Citigroup consolidated these "Citi-advised" structures in order to avoid reputational damages among institutional clients, even though it had no legal obligation to do so.

"21st Century Disclosure Initiative", which will look at and try to improve all existing SEC forms and disclosure requirements. Reuters cites SEC Chairman Christopher Cox as commenting that "sunlight remains the best disinfectant for problems in our capital markets. We'll be examining how to improve the way disclosure works, including tapping the full potential of today's technology and integrating it seamlessly into our regulatory approach" (Wutkowski, RN, 2008b).

Predicted Sign: This event increases the probability of both additional and more timely disclosures at lower cost. Hence, I predict a positive market reaction in line with hypothesis 2.

Event No. 21: Wall Street lobbies against new off-balance sheet rules **Pred. Sign: +**

On July 2, 2008, Reuters reports about substantial efforts of the financial industry to lobby against the planned FASB revision of off-balance sheet rules (Chasan and Younglai, RN, 2008a). According to Reuters, Wall Street lobbyists get in touch with the Federal Reserve, the Treasury Department and the SEC to persuade policy makers to postpone the FASB's revision. Also, special interest groups, including the Commercial Mortgage Securities Association (CMSA), the American Securitization Forum (ASF), the Securities Industry and Financial Markets Association (SIFMA), the National Association of Realtors (NAR), the Real Estate Roundtable (RER) and the Mortgage Bankers Association (MBA), started to discuss publicly their concerns. Reuters cites Brendan Reilly, senior vice president with the CMSA, as saying that "These drastic measures [the planned FASB revisions of SFAS 140] are being rushed and could single-handedly erase the efforts of policymakers to provide stability and restore liquidity to our markets. Any changes must be delayed until all options and consequences are carefully examined" (Chasan and Younglai, RN, 2008a). Samuel Golden, a member of the financial industry advisory group of Alvarez & Marsal and previous ombudsman of the Office of the Comptroller of the Currency states that "the capital implications associated with putting them [the off-balance sheet structures] back on their books are traumatic. You're dealing with an industry that, from a capital sufficiency perspective, is already under pressure" (Chasan and Younglai, RN, 2008a). Carol Stacey, vice president of the SEC Institute, comments on the issue by saying that "this will cause their [the banks'] assets, liabilities to go way back up" (Chasan and Younglai, RN, 2008a). The FASB, however, seems dispassionate about the ongoing lobbying efforts. FASB Chairman Robert Herz is cited by Reuters as stating "that [off the balance sheet] concept [i.e., the QSPE] has outlived its usefulness" (Chasan and Younglai, RN, 2008a).

Predicted Sign: Since the substantial lobbying efforts are likely to be associated with a non-zero probability of success, this event decreases the likelihood that the FASB's planned tightening of off-balance sheet rules arises as strict and as prompt as originally intended. Hence, I predict a positive market reaction in line with hypothesis 3.

Event No. 22: FASB's stricter off-balance sheet proposals already in August **Pred. Sign: –**

On July 22, 2008, Reuters reports that the FASB plans to issue possibly already in August its new proposals on off-balance sheet items (Younglai, RN, 2008c; Younglai, RN, 2008g). Reuters cites FASB Chairman Robert Herz as saying that "My own view is that the current accounting [for off-balance sheet items] has been stretched and abused. It has been treated as a punch bowl and we have got to take away that punch bowl" (Younglai, RN, 2008g). According to Reuters, Robert Herz also emphasizes that the FASB will propose the rules for public comment regardless of the anxiety in the financial industry about the possible implications for financial institutions (Younglai, RN, 2008g).

Predicted Sign: The event confirms the FASB's commitment to tighten off-balance sheet rules. It also suggests that recent lobbying efforts have not been fruitful so far. Overall the event increases the likelihood of tightened off-balance sheet rules. It might also cause a revision of expectations regarding the effectiveness of related lobbying efforts. Hence, I predict a negative market reaction in line with hypothesis 3.

Event No. 23: Lawmakers ask SEC and FASB to delay off-balance sheet rule **Pred. Sign: +**

On July 25, 2008, the financial press reports about a letter from Spencer Bachus, Committee on Financial Services member, sent to SEC Chairman Christopher Cox and FASB Chairman Robert Herz. The letter requests the SEC and the FASB to postpone their planned revision of off-balance sheet rules (Burns, DJN, 2008a; Younglai, RN, 2008p).[73] According to Dow Jones Newswires (DJN), the letter states that "changes to securitization accounting could have a dramatic impact on the economy, the capital markets and consumers seeking credit" and asks accounting standard setters to postpone the planed revision "until January 2010 to avoid serious unintended consequences" (Burns, DJN, 2008c; Burns, DJN, 2008a). According to Reuters, the letter also proposes that "significant changes to the accounting rules should be made with careful consideration and preferably when markets are functioning with minimal stress and volatility" (Younglai, RN, 2008l). According to estimates by Spencer Bachus "based on Dec. 31 [2007] figures, approximately $7.2 trillion in mortgage-backed securities, $2.47 trillion in other asset-backed securities and $816.3 billion in asset-backed commercial

[73] Also see Burns (DJN, 2008c); Younglai (RN, 2008j); Burns (WSJ, 2008); Younglai (RN, 2008l).
I am unable to attain a copy of the original letter since the link on the web site of the Committee on Financial Services is non-functional (see http://financialservices.house.gov/News/DocumentSingle.aspx?DocumentID=227957, last checked: July 17, 2011). My request to the office of Committee Chairman Bachus to address the non-functionality of the link remains unanswered as of July 17, 2011.

papers could be affected [by the rule change]" (Younglai, RN, 2008l).[74]

Predicted Sign: This event conveys information about the political pressure put on both the SEC and the FASB by lawmakers to postpone the planned revision of off-balance sheet rules. It also conveys information about the fruitfulness of Wall Street's lobbying efforts against the new rules. Overall, this event reduces the probability that stricter off-balance sheet rules will be put into place as early as intended by the FASB. Hence, I predict a positive market reaction in line with hypothesis 3.

Event No. 24: FASB delays off-balance sheet rules **Pred. Sign: +**

On July 29, 2008, Reuters reports that the FASB at its meeting on Wednesday, July 30, 2008, will evaluate a possible change to the adoption timeline of its planned revision of off-balance sheet items (Chasan, RN, 2008c; Chasan, RN, 2008m). A related FASB staff handout recommends either a delayed adoption with an effective date after November 2009 or an implementation of the planned rules in different successive phases (Chasan, RN, 2008m). On July 30, 2008, the FASB decides to postpone the effective date of the planned revision of off-balance sheet rules (Chasan, RN, 2008n).[75] While the FASB had previously planned to require mandatory adoption of the new standard by the end of 2008, the new rules will now be applicable for fiscal years beginning after November 15, 2009 (Chasan, RN, 2008k; Chasan, RN, 2008n). The Financial Times (FT) reports that the FASB "reluctantly" changed its previously proposed timeline based upon comments and feedback the board received (Davies and Chung, FT, 2008). The FT cites FASB Chairman Robert Herz as saying that "it does pain me to allow something that has been abused by certain folks, to let that go on for another year. [...] the kind of reporting that was made by a number of preparers - particularly certain large financial institutions - did not live up to the needs or desires of the investment community or the public in general" (Davies and Chung, FT, 2008). According to the Wall Street Journal (WSJ), Robert Herz also commented on the decision by stating that "he was reluctant to delay the changes because many companies had abused existing standards to improperly keep vehicles off their books" (Cowley and Reilly, WSJ, 2008). The WSJ also argues that the delay will provide additional time for the financial industry to lobby against the stricter rules that the FASB is likely to propose (Cowley and Reilly, WSJ, 2008).

Predicted Sign: This event delays the upcoming adoption of stricter off-balance sheet rules for another year. Accordingly, I predict a positive market reaction in line with hypothesis 3.

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[74] According to DJN, the letter is dated July 22, 2008 (Burns, DJN, 2008a). It was released on July 25, 2008 (Younglai, RN, 2008l; Burns, WSJ, 2008). The related news release on the website of the Committee on Financial Services is marked for immediate release as of July 25, 2008 (see http://financialservices.house.gov/News/DocumentSingle.aspx?DocumentID=227957). Hence, I identify July 25, 2008 as the event date.

[75] Also see Davies and Chung (FT.com, 2008); Chasan (RN, 2008k); Davies and Chung (FT, 2008); Cowley and Reilly (WSJ, 2008).

Event No. 25: FASB requires more disclosure on credit derivatives **Pred. Sign: +**

On September 12, 2008, the FASB issues FSP No. 133-1 and FIN 45-4, "Disclosures about Credit Derivatives and Certain Guarantees: An Amendment of FASB Statement No. 133 and FASB Interpretation No. 45; and Clarification of the Effective Date of FASB Statement No. 161" (Anonymous, DJN, 2008d; Chasan, RN, 2008i; FASB, 2008d). Primarily, the FASB Staff Position (FSP) amends the disclosure requirements contained in SFAS 133 "Accounting for Derivative Instruments and Hedging Activities". Particularly, the FASB Staff Position (FSP) requires additional disclosures on written credit derivatives, such as credit default swaps (CDS) (FASB, 2008d). The FASB states that "the FSP is intended to improve disclosures about credit derivatives by requiring more information about the potential adverse effects of changes in credit risk [...]" and elaborates that "[...] credit default swaps have become the most dominant product of the credit derivatives market. They also have become the focus of attention [...] because of the turmoil in credit markets during 2007 and 2008. During this period, some sellers of credit derivatives have seen a large number of obligations that are referenced in credit default swaps facing actual or potential defaults, resulting in large liabilities and/or potential credit downgrades. The FSP addresses concerns of financial statement users that the disclosure requirements in Statement 133 do not adequately address the potential adverse effects of changes in credit risk on the financial statements of the sellers of credit derivatives" (FASB, 2008d).

Predicted Sign: This event requires additional disclosures for financial instruments. Hence, I predict a positive market reaction in line with hypothesis 2.

Event No. 25a: Bankruptcy of Lehman Brothers Inc.

On September 15, 2008, the FASB issues three exposure drafts (EDs) as part of its review of off-balance sheet rules (FASB, 2008e). The first two EDs, "Proposed Statement (Revised), Accounting for Transfers of Financial Assets: an amendment of FASB Statement No. 140 (Revision of 8/11/05 ED)" (FASB, 2008k) and " Proposed Statement (Revised), Amendments to FASB Interpretation No. 46(R) (Revision of 8/11/05 ED)" (FASB, 2008l), propose amendments to SFAS 140 and FIN 46(R), respectively. The third exposure draft, Proposed FSP FAS 140-e and FIN 46(R)-e, "Disclosures about Transfers of Financial Assets and Interests in Variable Interest Entities" (FASB, 2008j), proposes disclosures related to off-balance sheet items. The three EDs propose the following main amendments.

1. SFAS 140 - QSPEs: the SFAS 140-concept of qualifying special purpose entities (QSPEs) along with the scope exception in FIN 46(R) would be eliminated (FASB, 2008k, p. V).
2. SFAS 140 - clarification regarding surrender of control: the proposals would provide clarification and guidance to whether or not a transferor has surrendered control over transferred financial assets (FASB, 2008k, p. V).

3. SFAS 140 - participating interest: the proposal would define "participating interest", which allows a transferor to account for the transfer of part of a financial asset as a sale given specific conditions are met (FASB, 2008k, p. V-VI).
4. SFAS 140 - guaranteed mortgage securitizations: the special provisions for guaranteed mortgage securitizations would be removed and securitized mortgages could only be accounted for a sale based upon the general conditions of the standard. If the general conditions are not met, securitized mortgages would be accounted for as loans (FASB, 2008k, p. VI).
5. SFAS 140 - fair value measurement: the proposal would widen the use of fair value measurements since the beneficial interest of the transferor would be measured at fair value when the transfer is recorded as a sale. Also, the SFAS 140-practicability exemption regarding fair value measurements would be eliminated (FASB, 2008k, p. VI).
6. FIN 46(R) - variable interest entities (VIEs) and primary beneficiary: while FIN 46(R) triggers a re-evaluation of whether an entity is a VIE and an enterprise is the primary beneficiary only if certain events occur, the amendments propose such evaluation on an ongoing basis (FASB, 2008l, p. V)
7. FIN 46(R) - troubled debt restructuring: while FIN 46(R) exempted troubled debt restructuring from automatically triggering a re-evaluation of whether an entity is a VIE and an enterprise is the primary beneficiary, this exemption would be eliminated under the proposal (FASB, 2008l, p. V).
8. FIN 46(R) - controlling interest: the proposals would require a qualitative assessment of whether an enterprise has a controlling financial interest in a VIE, particularly regarding any implicit financial responsibility that might arise if the VIE operates not as previously intended. Only if an enterprise is unable to assess qualitatively the controlling interest, a quantitative assessment is sufficient. Under FIN 46(R) a quantitative assessment is generally sufficient (FASB, 2008l, p. V-VI).
9. The proposed FSP FAS 140-e and FIN 46(R)-e requires numerous additional disclosures related to off-balance sheet structures by amending to SFAS 140 and FIN 40(R).

Predicted Sign: Even though this event was "hotly anticipated on Wall Street" (Chasan, RN, 2008p), I do not further investigate the stock market reaction since any event window surrounding September 15, 2008 coincides with Lehman Brothers Holding Inc.'s announcement to file for Chapter 11 bankruptcy protection. It can be argued, rather persuasively, that the capital market implications of this confounding event contaminate substantially the stock market reaction to the FASB proposals.

Event No. 26: SEC/FASB issue guidance on fair value measurement **Pred. Sign: +**

On September 30, 2008, information is conveyed to the market about the following three events: (1) FASB and SEC issue a letter with guidance related to fair value measurement; (2) the FASB announces that more guidance will follow soon; (3) a bipartisan group of lawmakers request the SEC in a letter to immediately suspend fair value accounting and, instead,

introduce a "mark-to-value mechanism". I describe each event in more detail below.

1. The SEC, on September 30, 2008, released a letter titled "SEC Office of the Chief Accountant and FASB Staff Clarifications on Fair Value Accounting", which intends to provide both guidance and clarity regarding fair value measurement. In particular, the letter addresses the use of unobservable level 3 inputs and the conditions under which other-than-temporary impairments become necessary (Younglai, RN, 2008i; Poirier and Chasan, RN, 2008; Younglai, RN, 2008q; Poirier et al., RN, 2008; Burns, DJN, 2008c; Younglai, RN, 2008o; Burns, DJN, 2008a). The letter, for instance, clarifies that "distressed or forced liquidation sales are not orderly transactions, and thus the fact that a transaction is distressed or forced should be considered when weighing the available evidence. Determining whether a particular transaction is forced or disorderly requires judgment" (SEC, 2008d). The letter also states that " When an active market for a security does not exist, the use of management estimates that incorporate current market participant expectations of future cash flows, and include appropriate risk premiums, is acceptable" (SEC, 2008d). Reuters cites Steve Bartlett, president of the Financial Services Roundtable (FSR) as commenting on the release that "this [guidance] is a significant first step and adds stability, confidence, and liquidity within the capital markets" (Poirier and Chasan, RN, 2008). Tom Sowanick, at Clearbrook Financial, is cited as stating that "in essence, the SEC wants to stop the avalanche of declining prices" (Poirier and Chasan, RN, 2008). Dow Jones Newswires (DJN) cites Thomas Quaadman, executive director for financial reporting policy at the U.S. Chamber of Commerce Center for Capital Markets Competitiveness, as saying: "We're happy to see the SEC and FASB are moving on this and are doing so with some speed. As we see it, accountants didn't cause this crisis but there may be accounting rules that are exacerbating it" (Burns, DJN, 2008a). However, Reuters also cites Lynn Turner, former Chief Accountant of the SEC, as saying that "this letter could be titled, pick a number, any number, as it gives bankers great leeway in choosing what numbers they will give to investors" (Poirier and Chasan, RN, 2008).
2. The FASB, also on September 30, 2008, announces that additional guidance beyond the scope of the letter on fair value accounting will follow soon. To debate the guidance, the FASB changed the agenda of its October 1, 2008 meeting, which will be dedicated entirely to valuing financial instruments in illiquid markets (Chasan, RN, 2008g).
3. The financial press, on September 30, 2008, reports about a letter sent by a bipartisan group of 65 lawmakers to SEC Chairman Christopher Cox. The letter requests that the SEC immediately suspends fair value accounting in favor of "a mark-to-value mechanism" (Burns, DJN, 2008; Younglai, RN, 2008k; Chasan, RN, 2008g). According to Reuters, the letter states that "the mark-to-market rule, while well intended, has the unintended consequence of exacerbating economic downturns by hamstringing the ability of banks to make loans to consumers and businesses. Until such guidance [i.e., "mark-to-value" guidance] is issued, the fair value of these assets should be estimated using the best available information of the instrument's value, including the entity's intended use of that asset from the point of view of

the holder of that instrument" (Younglai, RN, 2008k). According to Dow Jones Newswires (DJN), the letter also states that "while the mark to market accounting method can raise important red flags, in an illiquid market it has become counterproductive and is simply making the situation worse" (Burns, DJN, 2008e). DJN also reports about reactions of both investors and accounting firms to the lawmakers' letter. For instance, Beth Brooke, global vice chair at Ernst & Young LLP, is cited as saying that "it [suspending fair value] is just bad for investors. Suspending mark-to-market accounting, in essence, suspends reality" (Burns, DJN, 2008). Barbara Roper, director of investor protection at the Consumer Federation of America, comments on the letter by stating that "it [suspending fair value] is absolute idiocy. Lawmakers need to understand that the alternative to mark-to-market accounting is mark-to-myth. Allowing companies to lie to investors and lie to themselves is not the solution to the problem, it is the problem" (Burns, DJN, 2008). The Wall Street Journal (WSJ) reports that Ben Bernanke, Chairman of the Federal Reserve, and Henry Paulson, Secretary of the Treasury, dissented from the lawmakers' proposal to suspend fair value accounting immediately (Scannell, WSJ.com, 2008; Scannell, WSJ, 2008b).

On October 1, 2008, the FASB debates possible additional guidance during its meeting and decides to issue a staff position (FSP) for public comment, which addresses the valuation of financial assets in inactive markets (Burns, DJN, 2008b; Chasan, RN, 2008j). According to DJN, the FASB provided a three page long handout delineating the FSP on its website (Burns, DJN, 2008b). The board also decides to shorten the comment period to seven days only and to proceed to a final deliberation of the proposal on its October 10, 2008 meeting (Burns, DJN, 2008b; Chasan, RN, 2008j).

On October 2, 2008, the battle over fair value accounting continues. The Wall Street Journal (WSJ) reports that "Momentum Gathers to Ease Mark-to-Market Accounting Rule" (Williamson and Scannell, WSJ, 2008).[76] Particularly, the WSJ claims that "that pressure [on the SEC and the FASB] could intensify when the [financial] rescue bill reaches a House vote. Financial-industry lobbyists' work on the financial-markets bill has given them another opportunity to press their case through allies in Congress, many of whom are big recipients of campaign money from the industry" (Williamson and Scannell, WSJ, 2008). In addition, several Republican lawmakers seem to intensify their efforts to change or suspend fair value accounting rules. For instance, the WSJ cites a statement by House Republican leader John Boehner that reads: "Onerous mark-to-market rules for certain financial assets that have no market value have worsened the credit crisis, and changing them has been a priority for House Republicans" (Williamson and Scannell, WSJ, 2008). Similarly, Representative Darrell Issa, according to the WSJ told MSNBC that "one of the best reasons to fire [SEC Chairman] Chris[topher] Cox is the refusal to deal with the problem of mark to market. You do that, and you put trillions of dollars back into the lending pool. [...] It's a tool that's available [to] the

[76] Also see Williamson and Scannell (WSJ.com, 2008).

SEC, the Fed, the FDIC and the Treasury Secretary, and they're not using it" (Williamson and Scannell, WSJ, 2008). In addition, Spencer Bachus, member of the Committee on Financial Services, sent a letter to Committee Chairman Barney Frank requesting a Committee hearing on fair value accounting including testimonies by the SEC, the FASB, the IASB, the PCAOB, as well as auditors, investors and representatives of public companies (Burns, DJN, 2008d).[77] DJN cites the letter as stating that the hearing should be held to "thoroughly review fair value accounting standards, including the extent to which those standards may have contributed to the current economic downturn and exacerbated the credit crunch" (Burns, DJN, 2008d).

On October 3, 2008, the FASB issues "FSP FAS 157-d, Determining the Fair Value of a Financial Asset in a Market That Is Not Active" in its entirety via the board's website. Essentially, the FSP adds an example to SFAS 157 that is tailored to the valuation of CDOs in an inactive market. This example stipulates a deviation from level 1 or level 2 inputs to unobservable level 3 inputs under conditions, which seem fairly representative of the CDO market at the time. These conditions include, but are not limited to, "a significant widening of the bid-ask spread", "a significant decrease in the volume of trades relative to historical levels", "few observable transactions", "the prices for transactions that have occurred are not current", and "observable prices for those transactions - to the extent they exist - vary substantially either over time or among market makers" (FASB, 2008i, p. 4).

Predicted Sign: The events during this event window have several implications. First, the guidance issued by both the FASB and the SEC clearly allows banks to deviate from fire sale prices. Since previously held views preferred more strictly market prices over unobservable inputs, this guidance actually relaxes fair value measurement rules. Second, the proposed FSP is tailored particularly to CDOs and allows explicitly the deviation from market prices under conditions that are fairly representative of the market conditions at the time. Accordingly, the FSP, if approved, would grant financial institutions additional leeway to avoid timely loss recognition. Third, the substantial political pressure and the until then unpreceded tendency by some to interfere with the private standard setting process increases considerably the probability of further relaxations of fair value accounting rules yet to come. Hence, I predict a positive market reaction in line with hypothesis 1.

Event No. 27:	**FASB issues FSP FAS 157-3 and ABA asks SEC to override rule**	**Pred. Sign: +**

This event window consists of two related events. First, on October 10, 2008, during a special board meeting, the FASB discusses FSP FAS 157-d on fair value measurement in inactive markets, which was originally issue on October 3, 2008 (see event 26). According to Reuters, the FASB decided to clarify some parts of the original proposal. The original approach, however, remains unchanged (Chasan, RN, 2008h). Reuters cites FASB members as stating that

[77] Also see Burns (DJN, 2008b).

the clarifications are intended "to make sure companies were not completely disregarding market transactions in illiquid markets, but rather using them as one of many inputs" (Chasan, RN, 2008h). As it turns out, the final amendment makes an important distinction between "market dislocations" and forced or distressed sales. Compared to the proposal, the FASB emphasizes that there is no automatism that triggers a deviation from illiquid market prices when determining fair value. Rather, "determining fair value in a dislocated market depends on the facts and circumstances and may require the use of significant judgment about whether individual transactions are forced liquidations or distressed sales" (FASB, 2008b, p. 3). The amendment is effective as of October 10, 2008, and is also applicable to fiscal periods ending before October 10, 2008, for which financial statements have not been issued yet (FASB, 2008b, p. 7). According to Reuters, the FASB announced on October 10, 2008, to issue the final amendment (FASB Staff Position No. FAS 157-3) sometime during the weekend beginning Saturday, October 11, 2008 (Chasan, RN, 2008h). According to the FASB's website, however, the final document was released already on Friday, October 10, 2008.[78] Nevertheless, it is unclear if the document was available to market participants on Friday before market close. Accordingly, this event window includes both Friday, October 10, 2008, and Monday, October 13, 2008 regardless of the second event.

Second, on October 13, 2008, the financial press reports about a letter from the American Bankers Association (ABA) sent to SEC Chairman Christopher Cox (Anderson and Reilly, WSJ, 2008; Chasan, RN, 2008a; Anderson and Reilly, WSJ.com, 2008). The letter is concerned with FSP FAS 157-d as issued by the FASB on or after October 10, 2008. The letter emphasizes that FSP FAS 157-d still requires financial institutions to incorporate liquidity risk in fair values recognized on the balance sheet. The ABA asks the SEC to suspend immediately FSP FAS 157-d without replacement. The letter states: "[...] the actions taken by the [...] [FASB] on October 10, 2008, [...] ignores [...] the intent of the SEC's release on September 30, 2008. Given [...] the seeming inability of the FASB to address in a meaningful way the problems of using fair value in dysfunctional markets, we believe it is necessary for the SEC to use its statutory authority to step in and override the guidance issued by the FASB" (American Bankers Association, 2008a, p. 1). The letter continues and concludes that the SEC should not only suspend FSP FAS 157-d, but also issue guidance on other-than-temporary impairments, suspend the current proposals for off-balance sheet items, i.e., securitizations, and finally "suspend work [...] on any project that would require fair value in any future accounting standards pending Congressional review of the study mandated by the Emergency Economic Stabilization Act" (American Bankers Association, 2008a, p. 2).

Predicted Sign: This event has two implications. First, it confirms previous expectations about more guidance related to fair value measurement. The amendment is likely to give management more leeway when measuring fair value in inactive markets. Also, the

[78] http://www.fasb.org/cs/ContentServer?c=Pronouncement_C&pagename=FASB%2FPronouncement_C%2FStatusPage&cid=1176154824930(last retrieved: July 15, 2010).

amendment is effective immediately and, thus, already applicable to the third quarter of 2008 financial statements. Second, the continuing efforts of the ABA are directed towards even more leeway in fair value measurement. The proposal would give banks additional flexibility when determining fair value since a suspension of FSP FAS 157-d would reset the status quo of regulatory guidance on fair value accounting back to September 30, 2008, and, thus, back to the letter titled "SEC Office of the Chief Accountant and FASB Staff Clarifications on Fair Value Accounting", issued by the SEC as a press release (see event No. 26). This letter is more generous regarding the incorporation of liquidity risk when determining fair value because it does not contain the additional clarification on the issue decided upon by the FASB during its special board meeting on October 10, 2008. In essence, the ABA tries to cherry-pick the initial part of the guidance, which does not yet embrace restraining clarifications on liquidity risk. Hence, I predict a positive market reaction in line with hypothesis 1.

Event No. 28: SEC announces that PPS can be treated as debt **Pred. Sign: +**

On October 16, 2008, Reuters reports about a letter from SEC Chief Accountant Conrad Hewitt sent to FASB Chairman Robert Herz (Chasan and Younglai, RN, 2008b). The letter addresses the accounting treatment of perpetual preferred securities (PPS) under SFAS 115 and is concerned particularly with other-than-temporary impairments (SEC, 2008a). Under SFAS 115, hybrid securities, such as PPS, are more likely treated as equity instruments even though they possess a substantial number debt-like characteristics. The letter announces that the SEC will not object preparers, who treat PPS as debt securities until the FASB has provided additional clarification on this issue (SEC, 2008a). The debt-like treatment of PPS allows issuers to rely on debt characteristics, such as credit risk, for impairment testing. For instance, a debt-like PPS is not impaired until the issuer's credit risk deteriorates substantially (SEC, 2008a). Compared to the treatment for equities, the debt impairment model is likely to defer impairments into the future rather than recognize them more timely. Reuters cites Donna Fisher, the ABA's director for tax and accounting, as commenting on the letter that "this is an important clarification, but even more important is the SEC's commitment to reassess other-than-temporary impairment" (Chasan and Younglai, RN, 2008b).

Predicted Sign: This event has two main implications. First, it is likely to allow preparers to defer impairment losses into the future relative to the previously prevalent impairment model based on an equity-classification of PPS. Second, this event demonstrates that efforts by lobbyist, special interest groups and politicians to interfere with the accounting standard setting process become more and more fruitful. Note that the ABA asked the SEC to address other-than-temporary impairments in its letter from October 13, 2008. The fact that the SEC issues a clarification on other-than-temporary impairments only a couple of days after the ABA's letter, suggests that additional efforts concerning relaxed accounting rules for financial instruments might be equally successful. Market participants are thus likely to build expectations about further relaxations. Hence, I predict a positive market reaction in line with

hypothesis 1.

Event No. 29: FASB/SEC fix CPP accounting issue	**Pred. Sign: +**

On October 20, 2008, the Wall Street Journal reports that the SEC and the FASB plan to fix an accounting issue related to government bailout funds provided under the Troubled Asset Relief Program (TARP) Capital Purchase Program (CPP) (Solomon, WSJ, 2008).[79] Under the CCP, the U.S. government provided nine of the largest U.S. banks with total bailout funds of $125 billion. The equity injection plan constitutes that banks sell preferred stock to the US government and, at the same time, issue warrants, which allow the government to purchase common stock in the future at an agreed-upon strike price. The accounting problem occurred since banks would have to recognize a liability for the future equity issuance resulting from the exercise of the warrants (Solomon, WSJ, 2008). Since warrants are derivative financial instruments, similar to a written call option, they would have to be accounted for as trading liabilities at fair value through profit and loss. Accordingly, rising bank share prices would coincide with increasing fair value of the related trading liability and thus trigger losses, which contradicts the intentions of the CCP (Solomon, WSJ, 2008). On October 21, 2008, Reuters and Dow Jones News (DJN) report that the SEC and the FASB plan to allow banks to account for the warrants as permanent equity (Younglai, RN, 2008d; Edwards, DJN, 2008). DJN cites the related draft document as stipulating that "[...] companies can classify the warrants as permanent equity, provided that the issuer [...] has sufficient authorized but unissued shares of class(es) of stock that may be required upon settlement in addition to shareholder approval" (Edwards, DJN, 2008). DJN also cites Scott Talbott, chief lobbyist at the Financial Services Roundtable (FSR), as commenting on the issue that "essentially, what they're doing is waiving GAAP when it comes to these warrants" (Edwards, DJN, 2008). Robert Willens of Robert Willens LLC, a New York-based accounting and tax advisory firm, is cited by DJN as stating that "It's just totally consistent with what they've been doing over the past few weeks: suspending rules, terminating others, and ensuring any accounting problems that the TARP and the CPP create are going to be taken care of" (Edwards, DJN, 2008).

Predicted Sign: This event paves the way for the CCP to become fully effective in reestablishing the capital base of several major US banks. The "accounting fix" allows banks to avoid losses, which had otherwise occurred due to changes in fair value of the warrant-related trading liability. Hence, I predict a positive market reaction in line with hypothesis 1.

Event No. 30: FAF asks SEC not to overrule fair value accounting, mark-to-market roundtable, no further guidance soon by SEC	**Pred. Sign: –**

On October 28, 2008, the financial press reports about a letter from Robert Denham,

[79] See also Solomon (WSJ.com, 2008).

Chairman of the Financial Accounting Foundation (FAF) to SEC Chairman Christopher Cox (Chasan, RN, 2008e; Burns, DJN, 2008h). The letter asks Christopher Cox not to cave-in to political pressure to overturn current fair value accounting rules, or any rules established by the FASB (FAF, 2008). The letter argues that overruling FASB pronouncements would harm both investors' confidence in financial statement information and the integrity of the FASB as a private standard setting body (FAF, 2008, p. 2). Also on October 28, 2008, Reuters reports that the SEC plans soon no further guidance on fair value accounting, particularly not regarding the use of judgment when measuring fair value. But the Commission does not rule out that additional guidance might be released before year end (Younglai, RN, 2008f).

On October 29, 2008, the debate on fair value accounting continues publicly during a SEC roundtable on mark-to-market accounting (Burns, DJN, 2008f; Younglai, RN, 2009g).[80] At this roundtable, William M. Isaac, Chairman at Secura Group of LECG, a financial service consultancy, and former Chairman of the U.S. Federal Deposit Insurance Corporation (FDIC), claims that "[...] it's beyond dispute that mark to market accounting has been senselessly destructive of bank capital and is a major cause of the current crisis we have in the financial markets and the economic decline we're facing now" (SEC, 2008c, p. 25). Regarding the CPP, he is cited by Reuters as arguing that "we have one hand of government handing out cash. And just as fast [...] the SEC and the FASB rule is destroying it" (Younglai, RN, 2009g). In contrast, Scott Evans, Executive Vice President, Asset Management and CEO of TIAA-CREF's investment advisory subsidiaries Teachers Advisors, Inc. and TIAA-CREF Investment Management LLC, argues at the same SEC round table that mark-to-market accounting "[...] is a fundamental mechanism to provide investors with important transparency and to the underlying risks in economic value of assets held by public entities. The roots of today's crisis have many causes, but fair value accounting is not one of them" (SEC, 2008c, pp. 18-19).

Predicted Sign: This event has several implications. First, the letter by FAF Chairman Robert Denham demonstrates the FAF's commitment to support the FASB's position on fair value accounting. This decreases the probability of a suspension or substantial relaxation, even though the adjustment of expectations about the probability might be trivial since the FAF is among the rather subordinate players in the current debate. The SEC announcement that no additional guidance will be released in the immediate near term implies no immediate relaxation of fair value accounting rules and, thus, is consistent with a negative market reaction based on hypothesis 1. The impact of the roundtable held by the SEC is hard to assess, since there is no agreed-upon outcome. However, it seems that the roundtable gave proponents of fair value accounting a more prominent stage, while critics had previously dominated the

[80] As part of the Emergency Economic Stabilization Act of 2008 (EESA), Congress mandated the SEC to conduct a study on the consequences of fair value measurement as stipulated by SFAS 157 during the financial crisis (SEC, 2008b). The final report of the SEC is available at http://www.sec.gov/news/studies/2008/marktomarket123008.pdf (last retrieved: July 15, 2010). See Friedmann et al. (2008) on the July 9, 2008 SEC roundtable.

public domain. This decreases the likelihood of immediate relaxations of fair value accounting rules and is consistent with a negative stock market reaction in line with hypothesis 1. Overall, I predict a negative market reaction in line with hypothesis 1.

Event No. 31:	**PCAOB considers guidance on fair value accounting**	**Pred. Sign: +**

On November 10, 2008, Reuters reports that the Public Company Accounting Oversight Board (PCAOB) might issue additional guidance on fair value accounting (Wutkowski, RN, 2008a). Reuters cites PCAOB Chairman Mark Olson as saying that "We're looking at how fair value accounting is standing up to the stresses of today's economy. We're looking if there is a need for additional guidance" (Wutkowski, RN, 2008a).

Predicted Sign: This event increases the probability of additional guidance by the PCAOB. Additional guidance usually comes along with more leeway regarding fair value measurement. Hence, I predict a positive market reaction in line with hypothesis 1.

Event No. 32:	**No support for SFAS 157 replacement from SEC roundtable participants**	**Pred. Sign: −**

On November 21, 2008, the SEC holds its second roundtable on fair value accounting.[81] According to Reuters, there was agreement among the roundtable participants that fair value accounting rules should be modified but not replaced (Younglai, RN, 2008a). Reuters cites Donald Nicolaisen as saying that "You do need enough [fair value] information in the market place so the market can absorb, digest and compare companies" (Younglai, RN, 2008a).[82]

Predicted Sign: This event conveys information about different stakeholders' attitude towards fair value accounting rules. Seemingly, there is little support among roundtable participants to abandon or replace fair value accounting rules. Even though roundtable participants have no authority to make any decision on accounting rule changes, it is likely that views expressed during the roundtables will be reflected in the SEC's study on fair value measurement and, thus, incorporated into recommendations made to Congress. As a consequence, the lack of support for a replacement of fair value accounting rules during the roundtable decreases the likelihood that the SEC will supersede SFAS 157 or recommend to Congress to take legislative action. Overall, this event decreases the probability that fair value accounting rules will be replaced. Hence, I predict a negative market reaction in line with hypothesis 1.

Event No. 33:	**SEC announces additional guidance until year end**	**Pred. Sign: +**

[81] See, e.g., http://www.sec.gov/spotlight/fairvalue/marktomarket/agenda112108.htm.

[82] Donald Nicolaisen is a former SEC chief accountant (2003-2005) and serves on the boards of directors of Verizon Communications Inc. (since 2005), MGIC Investment Corporation (since 2006), Morgan Stanley (since 2006) and Zurich Financial Services (since 2006). See http://people.forbes.com/profile/donald-t-nicolaisen/53359 (last retrieved: March 10, 2011).

On December 4, 2008, Reuters reports that the SEC currently works on additional guidance on fair value accounting (Younglai, RN, 2008u). Reuters cites SEC Chairman Christopher Cox as stating that "we are working with FASB as they prepare guidance that will be useful for year-end" (Younglai, RN, 2008u).

Predicted Sign: This event conveys information to the market about additional fair value guidance. As a matter of experience from previous guidance, it is likely that this guidance allows firms more leeway regarding fair value measurement. Hence, I predict a positive market reaction in line with hypothesis 1.

Event No. 34:	**Draft of SEC study seeks no suspension of fair value accounting**	**Pred. Sign: –**

On December 8, 2008, the financial press reports about details of the SEC's Congress-mandated study on fair value accounting during the financial crisis (Scannell, WSJ, 2008a; Singh, RN, 2008; Burns, DJN, 2008g). According to the Wall Street Journal (WSJ), the draft document of the SEC's study recommends not to suspend fair value accounting, but to work on additional guidance to address problems with fair value measurement under distressed market conditions (Scannell, WSJ, 2008a). The WSJ reports that the draft document itself does not contain any specific guidance. Rather, the SEC is likely to suggest that the FASB issues additional guidance on the issue, including, but not limited to recommendations on valuation inputs in distressed markets, on the criteria regarding when a market is actually "distressed", and on valuation models that are applicable under distressed market conditions (Scannell, WSJ, 2008a). Finally, the WSJ reports that the SEC might propose that impairment models for financial assets could be "re-examined with fresh eyes" (Scannell, WSJ, 2008a). Dow Jones News (DJN) cites SEC Chairman Christopher Cox as stating that "companies would benefit from additional guidance on applying current rules to illiquid markets. [...] mark-to-market accounting is important to investors and shouldn't be compromised" (Burns, DJN, 2008g). According to DJN, Christopher Cox also commented on the role of the FASB during the debate on fair value accounting by saying that "[...] accounting standard setting should remain an independent function, aimed at producing neutral, objective assessments of a company's financial health, and not be used as a tool to move the economy one way or another" (Burns, DJN, 2008g).

Predicted Sign: This event conveys information to the market about the likely outcome of the SEC's Congress-mandated study on fair value accounting. Based on the information reported by the financial press, it seems fairly clear that a suspension of fair value accounting is not on the table any more at least as far as the SEC is concerned. This event reduces substantially the probability that fair value accounting is going to be suspended or significantly relaxed after all. Instead, firms will face additional guidance regarding fair value measurement. Even though such guidance might provide some leeway regarding fair value measurement, a reduction of the scope of fair value balance sheet recognition becomes highly unlikely at this

point. Hence, I predict a negative market reaction in line with hypothesis 1.

Event No. 35: FASB requires more off-balance sheet disclosures **Pred. Sign: +**

On December 11, 2008, the FASB publishes "FSP FAS 140-4 and FIN 46(R)-8, Disclosures by Public Entities (Enterprises) about Transfers of Financial Assets and Interests in Variable Interest Entities" (Anonymous, DJN, 2008f; Chasan, RN, 2008f; FASB, 2008f). The FSP intends to improve disclosures about off-balance sheet items as an immediate step, given that the comprehensive amendments to SFAS 140 and FIN 46(R) are still pending (FASB, 2008f). The FSP takes effect for both quarterly and annual reporting periods ending after December 15, 2008, and, thus, affects the 2008 annual reporting of most financial institutions (FASB, 2008f). The FSP stipulates various additional disclosure requirements. Generally, the FSP amends SFAS 140 by requiring additional disclosures about the continuing involvement of a transferor in securitizations or asset-backed financing arrangements (FASB, 2008a, p. 3). The FSP also amends FIN 46(R) by requiring additional disclosures about the involvement in variable interest entities (VIE), including, but not limited to information about the judgments and assumptions made when determining whether VIEs have to be consolidated (FASB, 2008a, p. 4).

Predicted Sign: This event increases the disclosure requirements for firms involved in off-balance sheet activities. Since the amendment does not alter consolidation rules and, thus, has no impact on the balance sheet, I predict a positive market reaction in line with hypothesis 2 for this "disclosure-only" event.

Event No. 36: FASB studies expanding fair value accounting **Pred. Sign: –**

On December 12, 2008, the Wall Street Journal (WSJ) reports that the FASB has instructed its staff to start a project on financial instruments (Reilly, WSJ, 2008b).[83] According to the WSJ, one scenario likely to be examined by the FASB staff is a holistic approach extending fair value accounting to loans and other financial instruments currently accounted for at amortized costs (Reilly, WSJ, 2008b). The WSJ cites FASB member Thomas Linsmeier, who states that "accounting is contributing to the crisis by providing insufficient information to identify which institutions are likely to survive this crisis. Despite flaws, mark-to-market accounting is the best approach [...]" (Reilly, WSJ, 2008b).

Predicted Sign: This event builds expectations about an expansion of fair value accounting. Even though the holistic approach is only one of the scenarios examined by the FASB, there is a positive probability that the FASB ultimately stipulates an extension of fair value accounting under which loans would be recognized and measured on the balance sheet at fair value rather than amortized costs. Hence, I predict a negative market reaction in line with

[83] Also see Reilly (WSJ.com, 2008a).

hypothesis 1.

Event No. 37:	FASB beliefs more fair value accounting can re-establish trust	Pred. Sign: –

On December 19, 2008, the Wall Street Journal (WSJ) reports about the FASB's project that might expand the use of fair value accounting (Reilly, WSJ.com, 2008b). According to the WSJ, the fact that the FASB puts fair value accounting back on the agenda "could signal an attempt to grab back the debate over accounting and its role in the crisis" (Reilly, WSJ.com, 2008b). The WSJ cites FASB member Thomas Lindsmeier as claiming that "of 17 banks seized this year by the Federal Deposit Insurance Corp., just 10% of their average total assets were marked to market prices. These banks were failing for reasons other than mark-to-market accounting, namely bad lending" (Reilly, WSJ.com, 2008b). According to the WSJ, this leads the FASB to believe that investors are likely to favor more fair value accounting rather than less. The WSJ also reports about a study by the RiskMetrics Group, which reveals that "59% of publicly traded bank-holding companies trade below their third-quarter net worth" and concludes that the fact that investors substantially discount banks' balance sheet values results from a lack of fair value accounting (Reilly, WSJ.com, 2008b).

Predicted Sign: This event conveys background information about the FASB decision to put accounting for financial instruments back on the agenda. The report by the WSJ suggests that beliefs at the FASB fortify that more fair value accounting rather than less could be the solution to investors' distrust regarding bank assets. Accordingly, the information conveyed by this event substantiates a non-negative probability that the FASB attempts to increase eventually the scope of fair value accounting. Hence, I predict a negative market reaction in line with hypothesis 1.

Event No. 38:	FASB proposes impairment relief	Pred. Sign: +

On December 22, 2008, the financial press reports that the FASB issued for public comment the FASB Staff Position (FSP) EITF 99-20-a "Amendments to the Impairment and Interest Income Measurement Guidance of EITF Issue No. 99-20" (Scism and Reilly, WSJ, 2008; Chasan, RN, 2008o; Scism and Reilly, WSJ.com, 2008; Anonymous, DJN, 2008e).[84] The FSP proposes amendments to Emerging Issues Task Force (EITF) Issue No. 99-20 "Recognition of Interest Income and Impairment on Purchased Beneficial Interests and Beneficial Interests

[84] The date of the press release on the FASB's website suggests that the FSP was posted online on Friday, December 19, 2008. The financial press, however, does not report about the FSP before Monday, December 22, 2008. Reuters even claims that the documents were published on Monday, December 22, 2008, rather than on Friday, December 19, 2008 (Chasan, RN, 2008o). The WSJ states that the FSP was issued "late Friday" (Scism and Reilly, WSJ, 2008). Overall, the reports in the financial press suggest that the FSP was not available to market participants before market closing at 4 p.m. EST. Hence, I set the event window to Monday, December 22, 2008.

That Continue to Be Held by a Transferor in Securitized Financial Assets" to reduce complexity and increase the consistency of other-than-temporary impairments of available-for-sale and held-to-maturity debt instruments (FASB, 2008g). Particularly, the proposed amendments affect the impairment guidance concerned with other-than-temporary impairments of beneficial interests in securitizations that are not of high credit quality (FASB, 2008h, Notice for Recipients, p. 1). While EITF Issue No. 99-20 previously required the exclusive use of market inputs, the amendment proposes that preparers can use reasonable management judgment when assessing financial assets within the scope of the FSP for impairment, particularly in distressed markets and when the assets underlying the securitization are still performing. The use of management judgment relates to the probability that contractual cash flows can be collected when due (FASB, 2008h, pp. 1-8). The amended guidance would be effective for quarterly and annual reporting periods beginning after December 15, 2008 (FASB, 2008h, p. 4).

Predicted Sign: The proposed amendment would give management more leeway when assessing for impairment financial assets that originate from securitization. It would allow management to avoid losses caused by contemporary market conditions, particularly losses that result from liquidity pricing and are likely to reverse over time. Hence, I predict a positive market reaction in line with hypothesis 4.

Event No. 39: SEC against suspending fair value accounting **Pred. Sign: –**

On December 30, 2008, the SEC reports to Congress the results of its study on fair value accounting rules (Younglai, RN, 2008e; Crittenden, DJN, 2008).[85] As part of its study, the Commission makes a total of eight recommendations to Congress regarding accounting standards for financial instruments (SEC, 2008b, pp. 7-10). The two main recommendations advocate the following:

1. "SFAS No. 157 should be improved, but not suspended": the Commission argues that a suspension of SFAS 157 would cause inconsistencies in fair value measurement and lead to conflicting guidance (SEC, 2008b, p. 7).
2. "Existing fair value and mark-to-market requirements should not be suspended": the Commission argues that a suspension of mark-to-market accounting would "erode investor confidence in financial statements" and that fair value accounting does not "appear to be the 'cause' of bank and other financial institutions' failures" (SEC, 2008b, p. 7).

Predicted Sign: This event confirms previous expectations (i.e., event No. 34) about the SEC's support for fair value accounting and its reluctance to endorse substantial modifications that go beyond additional application guidance. The SEC clearly advocates no suspension of

[85] Also see Crittenden (WSJ.com, 2008). See SEC (2008e) for an overview of the Commission's activities associated with fair value accounting.

fair value accounting rules and rejects a relation between fair value accounting and bank failures. This makes it unlikely that Congress could be willing to enact by law modifications to accounting standards, which contest the position of both enforcement agencies and private accounting standard setters. Overall, this event increases the likelihood that a suspension of fair value accounting is off the table. Hence, I predict a negative market reaction in line with hypothesis 1.

Event No. 40:	**Dodd and Frank support modifications of fair value accounting**	**Pred. Sign: +**

On February 5, 2009, the financial press reports that the Obama administration's rescue plan for the financial system could include relaxations of fair value accounting (Gray, FT.com, 2009; Mnyandu, RN, 2009; Seetharaman, RN, 2009; Drawbaugh and Younglai, RN, 2009). Reuters, however, reports that regardless of earlier rumors the SEC and the Treasury department are not discussing a suspension of fair value accounting (Drawbaugh and Younglai, RN, 2009). Instead, the SEC and the FASB are currently working on additional guidance. Reuters also cites Barney Frank, Chairman of the House Financial Services Committee, as commenting that "one of the things I think we should be exploring is the extent to which you can retain mark-to-market but make the consequences discretionary with the regulators rather than automatic" (Drawbaugh and Younglai, RN, 2009). Christopher Dodd, Democratic Chairman of the Senate Banking Committee, is cited as saying that "it might be possible to modify fair value accounting rules for banks facing steep write-downs of troubled assets without abandoning the underlying accounting standard" (Drawbaugh and Younglai, RN, 2009).

Predicted Sign: This event conveys information about ongoing efforts by policy makers to amend fair value accounting to avoid write-downs. The fact that the SEC and the FASB prepare additional guidance increases the probability of additional relaxation of fair value measurement rules for certain assets. The fact that political heavyweights Christopher Dodd and Barney Frank, after whom the Dodd-Frank Act was later named, support modifications of fair value accounting rules further increases the likelihood of considerable additional guidance, which relaxes fair value accounting rules. Hence, I predict a positive market reaction in line with hypothesis 1.

Event No. 41:	**Fair value modifications could be part of the financial rescue plan**	**Pred. Sign: +**

On February 10, 2009, Reuter reports that the Obama administration's plan to rescue the financial system might include a "tweak" to fair value accounting (Younglai, RN, 2009a).[86] According to Reuters, Christopher Dodd commented on the issue by stating that "You ought to be able to come up with some creative idea that doesn't retreat from mark-to-market but

[86] The report appears long after market close. Therefore, I set the event day to the following trading day.

would allow some response when you have a pro-cyclical environment" (Younglai, RN, 2009a).

Predicted Sign: I predict a positive market reaction in line with hypothesis 1 since this event positively affects the probability that modifications of fair value accounting rules might be part of the Obama administration's financial rescue plan.

Event No. 42: FASB Chairman strictly opposes fair value modifications **Pred. Sign: –**

On February 12, 2009, in an interview with Reuters FASB Chairman Robert Herz opposes modifications to fair value accounting rules as part of the Obama administration's rescue package but supports further guidance on fair value measurement (Chasan, RN, 2009c).[87] Robert Herz tells Reuters that "no major changes to mark-to-market rules are currently planned, despite recent talk on Capitol Hill and in the markets that mark-to-market accounting could be tweaked" and adds that "the SEC did its study and obviously we agree with their main conclusion that fair value should not be suspended or significantly revised" (Chasan, RN, 2009c). Regarding Christopher Dodd's pro-cyclicality argument, Robert Herz points out that "there's pro-cyclicality built into everything that you report. It tends to make people take individual actions that might not be in the interest of reviving the economy, but our mission is to create standards that provide investors in the markets with the right information. Counter-cyclical actions can be taken by others" (Chasan, RN, 2009c).

Predicted Sign: This event conveys information to the market, which affects the probability that an "accounting tweak" will eventually be part of the rescue plan. The seemingly fierce opposition of FASB Chairman Herz to modifications of fair value accounting reduces the likelihood that related legislation will eventually relax substantially fair value accounting. Hence, I predict a negative market reaction in line with hypothesis 1.

Event No. 43: More FASB guidance but no modifications **Pred. Sign: –**

On February 18, 2009, the FASB announces its kick-off of new projects to improve both fair value measurements and disclosures (Kell, DJN, 2009; Lynch and Kell, DJN, 2009; Chasan, RN, 2009i). Particularly, the FASB aims to improve fair value measurement guidance with respect to determining when a market is inactive and when a financial transaction is distressed (FASB, 2009f). The board also plans to provide additional guidance on fair value measurements for alternative investments, such a interests in hedge funds and private equity funds (FASB, 2009f). Improved guidance on fair value disclosures is intended to address additional disclosures on the sensitivities of fair values and on transfers within the fair value hierarchy (e.g., between level 2 und 3) (FASB, 2009f). The FASB expects the guidance on fair value measurements to be ready by the second quarter of 2009; the disclosure guidance is expected to become effective for 2009 year-end reporting (FASB, 2009f). FASB Chairman Robert Herz comments on the

[87] Also see Chasan (RN, 2009b).

project by stating that "the SEC expressed continued support of fair value accounting in its study, but recommended consideration of potential improvements in the guidance surrounding the application of fair value principles. We agree that more application guidance to determine fair values is needed in current market conditions" (FASB, 2009f). Dow Jones News (DJN) cites Edward Yingling, President of the American Bankers Association (ABA) as commenting on the FASB announcement by saying that "We are disappointed that FASB ignored the need to more directly repair the problems regarding other-than-temporary impairments [OTTI] in the projects announced today. The SEC twice recommended that the FASB re-examine OTTI expeditiously" (Lynch and Kell, DJN, 2009).

Predicted Sign: This event has several implications. First, it increases the probability that additional guidance on fair value measurement is going to be published soon by the board. Second, this event increases the probability that additional disclosures will provide information to investors not previously contained in financial reports. The dimension of the projects related to both fair value measurements and disclosures, however, is unclear. The comments by Robert Herz seem so suggest that the FASB plans to make only minor modifications, which are unlikely to compromise or even question marking-to-market as a measurement principle. As a consequence, this event decreases the probability of substantial modifications to fair value accounting. The comments by Edward Yingling also suggest that the financial industry hoped for more comprehensive modification plans. Also, there is anecdotal evidence suggesting that prior to the FASB announcement expectations built about a more substantial "accounting tweak". Overall, this event seems to confirm the FASB's reluctance to make any significant modifications to current rules despite growing concerns of legislators. Rather, the boards attempts to stick with minor "guidance-only" amendments. This is in line with the arguments brought forward by FASB Chairman Robert Herz on February 12, 2009 (see event No. 42). Hence, I predict a negative market reaction in line with hypothesis 1 because the FASB's announcement leaves expectations unfulfilled about substantial modifications and causes a reversal of expectations, which is likely to outweigh the positive effects of rather immaterial additional disclosures and measurement guidance.

Event No. 44:	**PCAOB being asked for more guidance, Congress announces fair value hearing, bipartisan bill aims to transfer accounting oversight to new body**	**Pred. Sign:** +

Event window No. 44 is a three-day window. It comprises the following consecutive events, which are all of the same predicted sign.

1. Several trade groups ask the PCAOB for more guidance on fair value accounting.
2. A Congress subcommittee schedules a hearing on fair value accounting.
3. Two lawmakers propose a bill to create a new accounting oversight body.

On March 4, 2009, the financial press reports about a letter sent to the PCAOB by several trade groups, including the American Council of Life Insurers (ACLI), the Mortgage Bankers Association (MBA), the Financial Services Roundtable (FSR), the American Bankers Asso-

ciation (ABA), the National Association of Home Builders (NAHB), the Property Casualty Insurers Association of America (PCIAA), the Real Estate Roundtable (RER), the Financial Services Forum (FSF), the Council of Federal Home Loan Banks (FHLB), and the Federal Home Loan Banks of Chicago, Atlanta, Indianapolis, Seattle and Des Moines (Lynch, DJN, 2009j; Younglai, RN, 2009f). The letter asks the PCAOB to issue auditing guidance related to fair value accounting. DJN cites the letter as stating that "past and future actions by the SEC and the FASB [...] will go for naught if the auditing profession is not given appropriate guidance and standards for auditing the application of fair value. [...] In part, because all components of the financial reporting community are not on the same page, drastic write-downs of certain illiquid assets that are not required to be written down under the literature continue and credit markets remain frozen" (Lynch, DJN, 2009j). According to the letter, guidance by the PCAOB should encourage the auditing profession to assess fair value measurements in a "balanced" rather than a "pessimistic" fashion (Lynch, DJN, 2009j).

Also on March 4, 2009, Reuters reports that the Capital Markets Subcommittee of the House Financial Services Committee decided to hold a hearing on fair value accounting scheduled for March 12, 2009 (Younglai, RN, 2009f; Vorman, RN, 2009). According to Reuters, the Chief Accountant of the SEC and Chairman of the FASB are likely to testify. Reuters also reports that the House Financial Services Committee currently discusses alternative accounting procedures for distressed assets in inactive markets, such as the separation of credit and liquidity risk when measuring fair value (Younglai, RN, 2009f). Reuters cites Paul Kanjorski, Chairman of the House Financial Services Capital Markets Subcommittee, as commenting that the committee is interested in examining "fair-minded, incremental and achievable fixes" to fair value accounting (Vorman, RN, 2009). He outlines that "while companies need stability, investors still need accurate information. We therefore cannot allow for fantasy accounting that wishes away bad assets by merely concealing them" (Vorman, RN, 2009).

On March 6, 2009, Reuters reports about a bipartisan bill introduced by two lawmakers, who intend to re-organize the oversight of accounting standard setting (Wutkowski, RN, 2009d). The "Federal Accounting Oversight Board Act of 2009" seeks to transfer the authority to set accounting standards from the SEC to the newly created Federal Accounting Oversight Board (FAOB) (Wutkowski, RN, 2009d). While actual standard setting would still be delegated to the FASB, the FAOB would oversee the standard setting process. The American Bankers Association (ABA) supports the bill. Reuters cites ABA President Ed Yingling as commenting that "the current framework for accounting oversight, though well intentioned, has proved inadequate and must be fundamentally revised" (Wutkowski, RN, 2009d).[88]

Predicted Sign: This event increases the probability that the PCAOB issues guidance soon, which could encourage auditors to be more generous when assessing the compliance of fair value measurement practices with Generally Accepted Accounting Principles (GAAP).

[88] The bill was introduced and referred to the House Financial Services Committee on March 5, 2009, but was never reported to House or Senate. See http://www.govtrack.us/congress/bill.xpd?bill=h111-1349.

The event also conveys information about the seriousness of efforts on Capitol Hill to seek relaxations of fair value accounting. While the comments of Paul Kanjorski related to the committee hearing seem to be rather moderate, the introduction of the bill likely seeks to increase pressure on both the SEC and the FASB to comply with political demands directed towards relaxations of fair value accounting standards. Overall, this event increases the probability of modification to fair value accounting rules and of more liberal auditing instructions. Hence, I predict a positive market reaction in line with hypothesis 1.

Event No. 45: Congress sets ultimatum for fair value modifications	**Pred. Sign: +**

Event window No. 45 is a three-day window. It comprises the following consecutive events surrounding the Committee hearing on March 12, 2009.

1. The Chief Accountant of the SEC, the Chairman of the FASB and industry representatives will testify on fair value accounting before the House subcommittee.
2. Ben Bernanke urges faster improvements to fair value accounting.
3. Lawmakers during the Committee hearing on March 12, 2009 set the FASB an ultimatum related to additional guidance and impose substantial pressure on standard setters and regulators to modify fair value accounting.

On March 10, the financial press reports details about the upcoming hearing before the House Financial Services Capital Markets Subcommittee on March 12, 2009. Dow Jones Newswires (DJN) reports that the recently appointed successor of Conrad Hewitt, James Kroeker, Chief Accountant of the SEC, FASB Chairman Robert Herz, and Kevin Bailey, Deputy Comptroller for Regulatory Policy at the Office of the Comptroller of the Currency, will testify before the Committee (Lynch, DJN, 2009e).[89] Testimonies by industry representatives include, among others, William Isaac, Chairman of the Secura Group of LECG. Barney Frank, Chairman of the House Financial Services Committee, is cited by DJN as commenting that "the mark-to-market rule has clearly got to be made better. There has to be more flexibility in its application. There has to be discretion in what its consequences are" (Lynch, DJN, 2009e).

Also on March 10, 2009, Ben Bernanke, Chairman of the U.S. Federal Reserve (Fed) in a speech before the Council on Foreign Relations enunciates his views on fair value accounting (Rappeport, FT.com, 2009; Bull, RN, 2009; Younglai, RN, 2009d; Drawbaugh and Felsenthal, RN, 2008). Reuters reports that Chairman Bernanke opposes a suspension of fair value accounting, but recommends substantial improvements quickly. He is cited as stating that "Given what is going on in the world, we should look to identify the weak points of mark-to-market and try and make some improvements on a more expeditious basis. We need to do a lot more to provide guidance to the financial institutions and to the investors about what are reasonable ways to address valuation of assets that are being traded or if traded at all in highly illiquid, fire-sale type markets" (Younglai, RN, 2009d). Also according to Reuters,

[89] Also see Lynch (DJN, 2009h).

rumors have been spread around Capitol Hill that the U.S. government plans a temporary suspension of fair value accounting (Younglai, RN, 2009c). Anonymous sources, however, told Reuters that the SEC is currently not planning to suspend fair value accounting (Younglai, RN, 2009c).

On March 11, 2009, several constituents, including the SEC and the FASB, set the stage for the March, 12, 2009 committee hearing. SEC Chairman Mary Shapiro testifies before the House Appropriations Financial Services Subcommittee and clarifies the SEC position on fair value accounting by stating that "[...] there is undoubtedly a lot of difficulty in determining the value of illiquid assets in the kind of market we are experiencing right now. It is not our intention that these assets be written down to zero" (Lynch, DJN, 2009f). While conceding that fair value accounting needs improvements, Mary Shapiro also elucidates that the SEC does not support a suspension of fair value accounting (Lynch, DJN, 2009f). She also emphasizes that the FASB's guidance on fair value accounting will be released by the second quarter of 2009 (Younglai, RN, 2009b). FASB member Lawrence Smith speaks at a U.S. Chamber of Commerce conference and points out that "we do have some problems [...] in fair value accounting. It seems like people are not exercising as much judgment as they could have" (Wutkowski and Poirier, RN, 2009). Reuters also cites the prepared written testimony of FASB Chairman Robert Herz, which states that "decisions on capital adequacy and responses to capital impairments cannot, and should not, be driven solely or mechanically from balance sheet results. [...] Their [i.e., prudential regulators] role is different from ours, and our standards are not specifically designed to meet their objectives. Concerns [... are] more effectively addressed through regulatory mechanisms and via fiscal and monetary policy rather than trying to suppress or alter the financial information reported to investors and capital markets" (Poirier and Vorman, RN, 2009). In his prepared written testimony, Kevin Bailey, Deputy Comptroller of the Currency, concedes that fair value accounting should not be suspended (Lynch, DJN, 2009c), but also points out that "it is [...] incumbent on supervisors and standard setters to continue efforts to enhance current practices through additional guidance" (Poirier, RN, 2009; Lynch, DJN, 2009c). Tom Donohue, chief executive of the U.S. Chamber of Commerce is cited by Reuters as saying at a conference that "mark to market did not cause the current crisis, but it is needlessly exacerbating it. Unfortunately the debate on this subject [...] has been dominated to the extremes to no one's benefit" (Wutkowski, RN, 2009a).

On March 12, 2009, the Capital Markets Subcommittee of the House Financial Services Committee holds its hearing on fair value accounting. The hearing is extensively covered in the financial press (Lynch, DJN, 2009i; Younglai and Wutkowski, RN, 2009; Lynch, DJN, 2009a; Orol, DJN, 2009c; Lynch, DJN, 2009g; Braithwaite and O'Connor, FT.com, 2009; Lynch, WSJ.com, 2009; Braithwaite and O'Connor, FT, 2009; Lynch, DJN, 2009d).[90] Dur-

[90] Also see Lynch (DJN, 2009b).

ing the hearing, lawmakers impose substantial pressure on regulators and standard setters, particularly the FASB, and effectively set an ultimatum for additional guidance of fair value accounting. FASB Chairman Robert Herz eventually caves in to the pressure and pledges that guidance on fair value measurement will be available within three weeks time, rather than until the second quarter of 2009. Subcommittee Chairman Paul Kanjorski is cited by several sources as stating during the hearing that "if the regulators and standard setters do not act now to improve the standards, then the Congress will have no other option than to act itself" (e.g., Lynch, DJN, 2009i; Younglai and Wutkowski, RN, 2009). He also clarifies his earlier position on the matter by stating that "previously, I have taken the position that the Congress should not interfere through legislation in the area of establishing specific accounting rules. It seemed best that such technical work be left to the regulators, standard setters and financial experts. We can, however, no longer deny the reality of the pro-cyclical nature of mark-to-market accounting. It has produced numerous unintended consequences, and it has exacerbated the ongoing crisis" (Lynch, DJN, 2009b). Similarly, House Financial Services Committee member Spencer Bachus is cited as announcing during the hearing that "if FASB and the SEC refuse to use their authority to provide useful and timely guidance, this Congress may have no choice but to act in their place" (Younglai and Wutkowski, RN, 2009). He is also cited by DJN as saying in a statement that "the SEC and the Financial Accounting Standards Board lack the sufficient sense of urgency" and he adds in a letter to SEC Chairman Mary Shapiro that "the SEC and FASB have failed to take action" Lynch (DJN, 2009d). Chairman Paul Kanjorski summarizes the hearing by stating that "I'm assuming from what we heard today, in three weeks we're not going to have to worry about anything. We want them [the FASB] to get off their duff and move and get this resolved" (Lynch, DJN, 2009i).[91] DJN also reports that Representative Mark Kirk already introduced draft legislation aiming to suspend fair value accounting (Orol, DJN, 2009c).

Among the potential "tweaks" to fair value accounting discussed during the hearing is a separation of fair value changes stemming from liquidity risk versus those resulting from credit risk. The proposals discussed intend to recognize immediately in profit or loss only fair value losses resulting from deteriorations of credit risk. Losses stemming from changes in liquidity risk are not to be recognized until de-recognition (i.e., sale of the asset) according to the discussed proposals (Younglai and Wutkowski, RN, 2009; Orol, DJN, 2009c; Lynch, WSJ.com, 2009).

Representatives from the banking industry react positively to the results of the hearing. Ken Lewis, at the time CEO of Bank of America Corp., is cited by the Wall Street Journal as commenting: "I actually think we will get some relief" (Lynch, WSJ.com, 2009). William Isaac, Chairman of the Secura Group of LECG, is cited as saying that "he was glad to hear the lawmakers push the SEC and FASB on the issue". He added that "I hope you [Congress]

[91] Also see Lynch (WSJ.com, 2009).

hold their [FASB and SEC] feet to the fire. They [FASB and SEC] just have been terribly negligent not to deal with this issue" (Lynch, DJN, 2009g).

Predicted Sign: This event conveys information about politicians' willingness to interfere with private standard setting in order to modify current fair value accounting rules. The pressure and the ultimatum imposed on the FASB increase substantially the likelihood of timely guidance to fair value accounting. The discussions during the hearing about a separation of credit from liquidity risk also increase the likelihood that the FASB proposes guidance in a substantial dimension rather than paying lip service only. Hence, I predict a positive market reaction in line with hypothesis 1.

Event No. 46:	**FASB proposes more modifications to fair value measurement and OTTIs**	**Pred. Sign:** +

On March 16, 2009, the financial press reports first details of the planned FASB guidance on fair value measurement when markets become inactive (Rapoport, DJN, 2009d; Wutkowski, RN, 2009c; Rapoport, DJN, 2009h). According to DJN, the FASB said that the proposals will allow firms to exercise "significant judgment" when determining fair value in inactive markets (Rapoport, DJN, 2009d).[92]

On March 17, 2009, the FASB issues two proposals on guidance for financial instruments' accounting (FASB, 2009g).[93] The first FASB Staff Position (FSP), FSP FAS 157-e, "Determining Whether a Market Is Not Active and a Transaction Is Not Distressed", contains the expected guidance on fair value measurement (FASB, 2009e). FSP FAS 157-e proposes a two-step procedure for assessing whether a market is inactive and a transaction is distressed. In the first step, preparers use their own judgment to determine whether the market for a financial instrument is active. Preparers'c judgment is based upon the evaluation of a variety of market characteristics, which include, but are not limited to, recent transaction volume, variations of price quotations over time or among different market makers, the continuing presence of correlations between indices and the asset's fair value, the existence of abnormal liquidity risk premiums, and abnormal width of bid-ask spreads (FASB, 2009e, p. 4). If the entity's judgment in step 1 suggests that the market is inactive, step two automatically assumes that the quoted price of the asset originates from a distressed transaction unless the entity can present evidence of the contrary. Unless there is contrary evidence, the entity is required to use a valuation model to determine fair value (FASB, 2009e, pp. 4 f.).

[92] Also see Rapoport (DJN, 2009h).

[93] It is unclear when exactly the proposals were published. The FASB website suggests that the proposals were posted on March 17, 2009. Reuters, however, reports that the FASB issued the proposals on March 18, 2009 (Chasan, RN, 2009h; Chasan and Jones, RN, 2009). To the best of my knowledge, detailed information on the actual proposals does not appear in the financial press before March 18, 2009. I find it likely that the proposals were posted on the FASB website late Tuesday, March 17, 2009. This explains the timing difference between reports in the financial press and the website's time stamp. Therefore, March 18, 2009 is included in the event window because the news appear after market close on March 17, 2009.

The second staff position, FSP FAS 115-a, FAS 124-a, and EITF 99-20-b "Recognition and Presentation of Other-Than-Temporary Impairments", provides guidance on impairments of available-for-sale and held-to-maturity securities (FASB, 2009d). The publication of the second staff position is a surprise to a certain degree since the FASB had not indicated any guidance on other-than-temporary impairments (OTTI) when announcing its new projects related to guidance for financial instruments on February 18, 2009 (see event No. 43). Only two days ago, on March 16, 2009, DJN cites Donna Fisher, the ABA's senior vice president of tax, accounting and financial management, as complaining about the first announced details of the upcoming FASB guidance by saying that "it doesn't go far enough. [...] Until guidelines address temporary impairment charges, you still have an inaccurate picture of capital. The problem is that companies will be recording losses that are much greater than the losses they will [eventually] incur" (Rapoport, DJN, 2009h).

The FSP proposes that OTTI of debt securities are no longer recognized entirely in profit or loss. Rather, the FSP proposes that an entity recognizes in income the loss in fair value that is attributable to credit deterioration. The decline in fair value, however, that is attributable to other non-credit factors, such as liquidity is recognized in other comprehensive income if the entity has the ability and the intention to hold the security until recovery of the cost basis (FASB, 2009d, p. 5).

Regarding the economic impact of the annoucements, Columbia Business School Accounting Professor Robert Willens is cited by DJN on March 31, 2009 as estimating that the two new FASB proposals could "hike their [banks'] earnings on average by 20%" (Orol, DJN, 2009a).

Predicted Sign: This event confirms expectations about relaxations of fair value accounting and the treatment of OTTI. The proposed amendments to fair value measurement rules allow banks more judgment when determining fair value. Particularly, a transaction is automatically assumed distressed if the bank evaluates the market as inactive and if there is no transaction-based contrary evidence. Therefore, it becomes easier for preparers to deviate from market-based level 1 and 2 measurements in favor of model-based level 3 measurements. Since marking-to-market becomes less prominent relative to marking-to-model, preparers likely gain more discretion over the timing of loss recognition. The proposed amendments of OTTI follow the recommendations by Congress and separate credit losses from liquidity losses regarding the recognition in income. Firms would have to recognize in profit or loss only losses that stem from credit-related factors. Liquidity-related losses remain in other comprehensive income. This has important implications for regulatory capital. An OTTI would usually affect regulatory tier 1 capital through retained earnings. Since retained earnings are lower relative to the no-impairment case, tier 1 capital is also lower. If preparers can retain the liquidity-based part of the impairment in other comprehensive income, which does not affect tier 1 capital given the line item is positive overall, the reduction of tier 1 capital induced by the impairment is lower compared to the case, in which both credit and liquidity related losses would have to be recognized in profit or loss. Thus, the proposed amendment protects tier 1 capital against

liquidity-induced losses of available-for-sale and held-to-maturity debt instruments.[94] Hence, I predict a positive market reaction in line with hypotheses 1 and 4.

Event No. 47: FASB plans to revamp soon accounting rules for financial instruments **Pred. Sign: +**

On March 24, both the IASB and the FASB announce further steps in response to the financial crisis after a joint board meeting in London (Chasan, RN, 2009e). The planned steps include the replacement of current accounting standards for financial instruments and off-balance sheet items. The boards emphasize their intent to issue proposals for the replacement of current accounting standards within the next months (IASB, 2009e).

Predicted Sign: The efforts by both the FASB and the IASB to replace current fair value accounting standards increase the likelihood that recently issued guidance will be more comprehensively incorporated into new accounting standards. Hence, I predict a positive market reaction in line with hypothesis 1 even though the fact that the boards also plan to revamp their off-balance sheet rules could induce a negative market reaction.

Event No. 48: Barney Frank for reversal of held-to-maturity losses; PCAOB considers guidance **Pred. Sign: +**

On March 31, 2009, the financial press reports that Barney Frank, Chairman of the House Financial Services Committee, argues at a banking convention in favor of relaxed impairment rules for held-to-maturity securities (Crittenden, DJN, 2009b; Orol, DJN, 2009a; Crittenden, DJN, 2009a). Barney Frank is cited as saying that financial firms should not record losses if they intend to hold the assets until maturity. Interestingly, he adds that accounting standard setters should permit banks to make such changes retrospectively by allowing them to restate previous financial statements. He is cited by DJN as saying that "he would ask the Securities and Exchange Commission to consider a mechanism whereby banks could apply to roll back certain write-downs for some types of assets" (Crittenden, DJN, 2009b).[95] Columbia Business School Accounting Professor Robert Willens is cited as commenting on Barney Frank's proposals by saying that "FASB doesn't traditionally do that [i.e., allow restatements to reverse losses], but Frank's pressure could make it happen" (Orol, DJN, 2009a).

On April 1, 2009, Reuters reports that the PCAOB considers additional guidance on fair value accounting to bring auditing standards in line with the recent FASB proposals (Younglai, RN, 2009e). Reuters cites PCAOB spokeswoman Colleen Brennan as announcing that "the PCAOB will evaluate the FASB's final accounting guidance to determine whether

[94] Note that the proposal requires that OTTIs of held-to-maturity debt instruments, which are recognized in other comprehensive income, are going to be amortized over the remaining life of the assets (FASB, 2009d, p. 6). This, however, does not materially change the protective effect since the OTTI impact on net income and retained earnings is stretched over the life of assets, rather than recognized as a one-time bath.

[95] Also see Crittenden (DJN, 2009a).

any conforming amendments to the auditing standards will be necessary, or whether other guidance would be helpful" (Younglai, RN, 2009e).

Predicted Sign: This event conveys information about efforts by the influential House Financial Services Committee Chairman Barney Frank to relax the impairment rules for held-to-maturity financial instruments. These efforts would allow banks to reverse losses by restating prior financial statements. The fact that the PCAOB considers additional auditing guidance is likely to facilitate the transition to the relaxed guidance proposals by the FASB. Hence, I predict a positive market reaction in line with hypothesis 1.

Event No. 49:	**FASB okays fair value measurement and impairment guidance**	**Pred. Sign:** +

On April 2, 2009, the FASB voted to adopt the proposals issued on March 17, 2009 (event No. 46) on fair value measurement in inactive markets, related disclosures and on other-than-temporary impairments (OTTI) (Rapoport, DJN, 2009c; Murphy, DJN, 2009; Orol, DJN, 2009b; Rapoport, DJN, 2009g; Hughes, FT.com, 2009c; Anonymous, RN, 2009b; Wutkowski, RN, 2009b; Yoon, RN, 2009). The FASB made minor changes to the seeming automatism resulting in a "distressed transaction" any time a market is evaluated as "inactive", but otherwise approved the proposals without modifications (Anonymous, RN, 2009b). The amendments are effective for the second quarter of 2009, but can be adopted voluntarily for the first quarter of 2009. The official amendment documents will be released in the following week.

Predicted Sign: This event confirms expectations about relaxed accounting rules for financial instruments, which allow banks more discretion when measuring fair value and assessing impairments. Particularly, non-credit related OTTIs are no longer recorded in income. Hence, I predict a positive market reaction in line with hypotheses 1 and 4.

Event No. 50:	**FASB issues FSPs on fair value measurement and impairment guidance**	**Pred. Sign:** +

On April 9, 2009, the FASB issues the FASB Staff Position (FSPs) decided upon during the board meeting on April 2, 2009 (event No. 49) (Anonymous, DJN, 2009c; Chasan, RN, 2009g). FSP FAS 157-4 "Determining Fair Value When the Volume and Level of Activity for the Asset or Liability Have Significantly Decreased and Identifying Transactions That Are Not Orderly" provides guidance on fair value measurement and, particularly, on the evaluation of markets being inactive using "significant judgment" and the question of whether a transaction is distressed (FASB, 2009h). FSP FAS 107-1 and APB 28-1 "Interim Disclosures about Fair Value of Financial Instruments" stipulates additional disclosure requirements in quarterly reports on the fair values of financial instruments not recognized at fair value on the balance sheet (FASB, 2009h). Finally, FSP FAS 115-2 and FAS 124-2 "Recognition and Presentation of Other-Than-Temporary Impairments" amends the recognition of other-than-temporary impairments by splitting impairment charges for debt securities into credit-related and non-credit related parts. Non-credit related impairments are no longer recognized in profit

or loss, but in other-comprehensive income if the entity has the ability and intention to hold the assets until maturity or until the loss in fair value reverses (FASB, 2009h).[96]

Predicted Sign: This event confirms the FASB vote from April 2, 2009 and reduces the last uncertainty related to the new guidance on fair value measurements and impairments. It also adds additional disclosures. Accordingly, I predict a positive market reaction in line with hypotheses 1 and 2.

Event No. 51:	**FASB plans to publish soon stricter off-balance sheet standard**	**Pred. Sign: –**

On April 30, 2009, the financial press reports about comments made by FASB Chairman Robert Herz on off-balance sheet items and securitization accounting during an accounting conference in New York (Rapoport, DJN, 2009f; Chasan, RN, 2009d). Reuters cites Robert Herz as saying that the current standard has been "stretched, abused and violated" and that the FASB plans to issue within the next months the new standard, which should become effective in 2010 (Chasan, RN, 2009d).

Predicted Sign: This event conveys information about the FASB ongoing effort to replace off-balance sheet rules. Apparently, the FASB still aims to strengthen substantially the accounting for off-balance sheet items and securitization despite continuing pressure from Congress. Accordingly, this event increases the likelihood of more rigorous off-balance sheet accounting rules, which could affect banks' balance sheets already in 2010. Hence, I predict a negative market reaction in line with hypothesis 3.

Event No. 52:	**FASB approves new off-balance sheet rules**	**Pred. Sign: –**

On May 18, 2009, the FASB approves by vote new off-balance sheet standards that amend SFAS 140 and FIN 46(R) (Rapoport, DJN, 2009a; Chasan, RN, 2009k). Among the main changes is the elimination of the Qualifying Special Purpose Entity (QSPE)-concept. The FASB plans to publish the final standards in June 2009 (FASB, 2009a).

Predicted Sign: This event confirms previous expectations about more rigorous off-balance sheet rules. Hence, I predict a negative market reaction in line with hypothesis 3. However, since the approval by the board was fairly predictable, it is likely that the market reaction is rather modest.

Event No. 53:	**New off-balance sheet rules substantially shrink bank equity**	**Pred. Sign: –**

On May 22, 2009, Dow Jones News (DJN) reports about a research report investigating the impact of the new off-balance sheet rules on bank equity by Bimal Shah, who is an

[96] April 10, 2009, is not a trading day ("Good Friday"). Hence, I set the event window to April 9, 2009 only.

analyst at Fox-Pitt Kelton.[97] According to DJN, Shah finds that the new off-balance sheet rules substantially shrink banks' equity ratios. For instance, the new standards would reduce Bank of America's tangible common equity ratio in the first quarter of 2010 by 0.7 percentage points from a projected 3.8% to 3.1% (Eckblad, DJN, 2009). Similarly, the new standard would reduce the tangible equity ratio of Wells Fargo (J.P. Morgan) by 0.69 (0.45) percentage points from a projected first quarter 2010 ratio of 4.41% (4.40%) to 3.72% (3.95%) (Eckblad, DJN, 2009).

Predicted Sign: This event conveys information about the impact of the new off-balance sheet rules on bank equity. It substantiates concerns in the financial industry that stricter off-balance sheet rules affect considerably the equity ratios of banks. Hence, I predict a negative market reaction in line with hypothesis 3.

Event No. 54:	**Policymakers being asked to postpone stricter off-balance sheet rules**	**Pred. Sign:** +

On June 3, 2009, the financial press reports about a letter sent by lobbying groups associated with the financial industry, including among others the Chamber of Commerce, the Mortgage Bankers Association (MBA), and the American Council of Life Insurers (ACLI), to Treasury Secretary Timothy Geithner and other policymakers (Holzer, DJN, 2009; Pulliam, WSJ.com, 2009).[98] The letter asks policymakers to interfere with the FASB in order to postpone the adoption of the new off-balance sheet standards by arguing that the rules endanger the recovery of the securitization market. The securitization market, however, would be vital to the recovery of the economy as a whole since it ensures sufficient lending, according to the letter (Holzer, DJN, 2009). Dow Jones News cites the letter as claiming that "[We] urge policymakers to ensure that any sweeping accounting changes are appropriate and not untimely, and that they do not exacerbate the current economic issues facing American households and businesses" (Holzer, DJN, 2009).

Predicted Sign: This event confirms information about the financial industry's lobbying efforts against more rigorous off-balance sheet rules. The lobbying efforts increase the likelihood that the FASB caves in to political pressure and postpones the adoption of the new standard beyond early 2010. Hence, I predict a positive market reaction in line with hypothesis 3.

Event No. 55:	**FASB issues stricter off-balance sheet rules**	**Pred. Sign:** −

[97] Fox-Pitt Kelton is an investment bank focusing on financial institutions, which was later acquired by Macquarie Group, see http://www.macquarie.com (last retrieved: August 3, 2010).

[98] Pulliam and McGinty (WSJ, 2009) contains an interesting record of the financial industry's lobbying expenses and campaign contributions to House Financial Services Committee members in association with the debate on fair value accounting, and, particularly, the March 2009 Congressional hearing and the guidance-ultimatum set by lawmakers.

On June 12, 2009, the FASB issues its new standards on off-balance sheet items, SFAS 166 "Accounting for Transfers of Financial Assets" and SFAS 167 "Amendments to FASB Interpretation No. 46(R)" (FASB, 2009i; Anonymous, DJN, 2009d). SFAS 166 revises SFAS 140 "Accounting for Transfers and Servicing of Financial Assets and Extinguishments of Liabilities". The essential modifications include the elimination of the QSPE-concept and additional disclosures on transfers of financial assets (FASB, 2009j). SFAS 167 revises FIN 46(R) "Consolidation of Variable Interest Entities" by amending the consolidation requirements for under-capitalized companies, which are not controlled by voting rights (FASB, 2009j).

Predicted Sign: The publication of the new standards reveals the last details of the FASB's attempts to require more rigorous off-balance sheet rules. Also, the timely publication by the board comes in advance of political interference resulting from the financial industry's lobbying efforts against the new rules. Even though future political interference is not ruled out entirely, the publication makes it likely that subsequent alterations of the new standards are more difficult to achieve. Hence, I predict a negative market reaction in line with hypothesis 3.

Event No. 56:	**FASB proposes more disclosures on credit quality and allowance for credit losses**	**Pred. Sign: +**

On June 24, 2009, the FASB proposes additional disclosures by issuing the exposure draft (ED) "Disclosures about the Credit Quality of Financing Receivables and the Allowance for Credit Losses" (FASB, 2009j; Anonymous, DJN, 2009b). The ED proposes two levels of aggregation for disclosures on financing receivables: the portfolio segment and the class of financing receivables (FASB, 2009c, p. iv). Based on this aggregation definition, the ED proposes different types of additional disclosures, such as roll-forward schedules for credit loss allowances over different periods on a portfolio segment basis, the fair value of loans on a portfolio segment basis and credit quality information by class of financing receivables (FASB, 2009c, p. iv).

Predicted Sign: This event conveys information about planned additional disclosures on financial instruments. Hence, I predict a positive market reaction in line with hypothesis 2.

Event No. 57:	**FASB discusses full fair value approach for financial instruments**	**Pred. Sign: −**

On August 13, 2009, the FASB discusses an expansion of fair value accounting during its board meeting (Rapoport, DJN, 2009e; Chasan, RN, 2009j; Rapoport, WSJ, 2009).[99] Under the plans discussed by the FASB, the scope of fair value accounting would be extended to all financial instruments recognized on the balance sheet and, thus, also be applicable to loans, which are currently accounted for at amortized costs. According to Reuters, the FASB plans to issue an exposure draft on the issue in early 2010 (Chasan, RN, 2009j). Reuters cites Donna

[99] Also see Rapoport (WSJ.com, 2009).

Fisher, who serves as senior vice president of tax, accounting and financial management at the American Bankers Association (ABA), as commenting that "the ABA is deeply concerned", adding that "What the accounting boards are discussing now would be the biggest accounting change we've ever seen" (Chasan, RN, 2009j).

Predicted Sign: This event conveys information about the FASB's plans to move accounting for financial instruments to a full fair value approach, under which all financial instruments would be accounted for at fair value on the balance sheet. The scope extension to loans would substantially magnify the alleged adverse implications of fair value accounting in the financial industry. Overall, this event increases the likelihood that more assets are going to be accounted for using fair value accounting. Hence, I predict a negative market reaction in line with hypothesis 1.

Event No. 58:	**FASB proposes more fair value disclosures**	**Pred. Sign:** +

On August 28, 2009, the FASB proposes additional fair value disclosures by issuing exposure draft (ED) "Improving Disclosures about Fair Value Measurements", which updates SFAS 157 "Fair Value Measurements", or Subtopic 820-10 of the FASB Accounting Standards Codification, respectively (FASB, 2009k, Stempel, RN, 2009).[100] The ED proposes several additional disclosures, primarily related to the fair value hierarchy. The proposal includes, among other disclosures, additional information about the behavior of level 3 fair values if the entity changed its valuation inputs to reasonable alternative inputs and about the amounts transferred between level 1 and level 2 (FASB, 2009b, pp. 1 f.).

Predicted Sign: This event conveys information about the FASB's plan to require additional fair value disclosures and increases the likelihood of an expansion of such disclosures. Hence, I predict a positive market reaction in line with hypothesis 2.

Event No. 59:	**More fair value accounting for U.S. institutions relative to international competitors**	**Pred. Sign:** −

On September 14, 2009, FASB Chairman Robert Herz is cited in the financial press as saying that the FASB is likely to propose fair value accounting for more financial instruments relative to the approach taken by the IASB. The FASB's plan to replace current fair value accounting rules would require loans to be accounted for at fair value, while loans seem to remain under historical cost accounting under the IASB's approach (Rapoport, DJN, 2009b).
Predicted Sign: This event confirms the FASB's intention to modify current fair value accounting rules by requiring a full fair value approach, under which loans would also be measured at fair value on the balance sheet. The event also conveys information suggesting

[100] The publication of the ED is time-stamped on the FASB website as of Friday, August 28, 2009. Reports about the ED, however, appear in the financial press on Monday, August 31, 2009. Hence, it is likely that the ED was released late Friday and thus after markets' close. Accordingly, I set the event window to both Friday and Monday.

that the eventual outcome of the replacement process could lead to more fair value accounting for U.S. financial institutions relative to their international competitors. Hence, I predict a negative market reaction in line with hypothesis 1.

Event No. 60: FASB unveils full fair value approach **Pred. Sign: –**

On May 26, 2010, the FASB issues the exposure draft "Accounting for Financial Instruments", which is intended to replace current accounting standards for financial instruments (FASB, 2010b; Anonymous, DJN, 2010a; Rapoport, DJN, 2010; Anonymous, DJN, 2010b; Sanderson et al., FT.com, 2010; Chasan, RN, 2010; Sanderson, FT, 2010). The proposals would require virtually all financial assets to be valued at fair value with changes in fair value recorded either in other-comprehensive income or profit and loss. Some financial liabilities can still be measured at cost (FASB, 2010a, pp. 181-194).

Predicted Sign: This event confirms the FASB intent to introduce a full fair value approach into accounting standards for financial instruments. Compared to current rules, the proposal requires substantially more financial assets to be accounted for at fair value on the balance sheet, particularly, many loans. Hence, I predict a negative market reaction in line with hypothesis 1.

Event No. 61: FASB proposal faces harsh critique **Pred. Sign: –**

On May 28, 2010, the financial press reports about harsh critique of the FASB proposal by members of the financial industry (Rieker, DJN, 2010b).[101] Former FDIC Chairman William Isaac is cited as claiming that "FASB's proposed action will destroy banking as we know it and will make it virtually impossible for small businesses and real estate developers to obtain longer term financing" (Rieker, DJN, 2010b). Christopher Whalen, a managing director of the consulting firm Institutional Risk Analytics, is cited as stating "I view this as madness. We are ignoring centuries of history that say that depositories are not supposed to be affected by short-term market and economic cycles. It is fine and even good policy to require mark-to-market for broker dealers and trading books of banks, but not the loan book" (Rieker, DJN, 2010a). Jason Goldberg, analyst at Barclays Capital writes in a research report that "one of our hopes coming out of the past couple of years was to reduce the pro-cyclicality of bank earnings. These proposals appear to take a step in the opposite direction" (Rieker, DJN, 2010a).

Predicted Sign: The harsh critique by financial industry representatives and Wall Street professionals conveys information about the potential impact of the proposed rules on bank financial statements. The critique suggests that the impact is substantial, thus exemplifying potential adverse effects of fair value accounting. Hence, I predict a negative market reaction in line with hypothesis 1.

[101] Also see Rieker (DJN, 2010a).

Table 4.1
Announcements and Events related to U.S. Accounting Standards for Financial Instruments

This table lists announcements and events related to changes of U.S. accounting standards for financial instruments. Announcements and events are identified through a Dow Jones FACTIVA search of the following sources: Dow Jones Business News, Dow Jones Capital Markets Report, Dow Jones News Service, Financial Times - Print and Online, Reuters News, The Wall Street Journal - Print and Online, and Wall Street Network News. The search query included the following keywords: Financial Accounting Standards Board, FASB, (SEC AND accounting), (Securities and Exchange Commission AND accounting), fair value accounting, mark to market, marking to market, off-balance sheet rules, impairment rules. The search period lasts from January 1, 2007 to June 30, 2010. The search yields a total of 14,871 publication results. In addition to FACTIVA, the websites and news releases of standard setters and regulators were searched and combined with the financial press references. Event windows span two trading days (i.e., $[0, +1]$). Some event windows (No. 4, 15, 17, 23, 25, 32, 37, 38, 41, 42, 50, 53, 55) span only one trading day to avoid overlapping event windows with an opposite sign or contamination of the event window with confounding information.

No.	Date	Event Window	Event Short Description	*Exemplary Press or Announcement Headline* Event Long Description	Source[a]	Pred. Sign
1	5/9/07	5/9-10	FASB likely to review hedge accounting	*FASB Weighs Simplifying Complex Accounting Rule: Reilly (WSJ, 2007).* The WSJ reports that the FASB considers a comprehensive review of SFAS 133 related to hedge accounting. The potential review is a result of substantial complaints from preparers. It is, however, still unclear at the time whether or not the review leads to a complete overhaul of SFAS 133 and, if so, which direction the FASB is planning to take concerning amendments to and relaxations of current rules.	WSJ	+
2	6/19/07	6/19-20	Congress inquires about SFAS 140	*U.S. lawmakers ask SEC to clarify subprime rule: Poirier (RN, 2007).* Members of the House of Representatives Financial Services Committee (FSC) send a letter to SEC Chairman Christopher Cox asking for a clarification of SFAS 140 rules regarding loan modifications of subprime-related mortgage-backed securities. The inquiry is one of the first political efforts to gain influence over accounting rules for financial instruments.	RN FSC	+
3	7/25/07	7/25-26	SEC clarifies SFAS 140 regarding loan modifications	*U.S. SEC clarifies mortgage accounting rule: Chasan (RN, 2007d).* The SEC clarifies SFAS 140 regarding loan modifications if the default event has not yet occurred but is reasonably foreseeable. According to the clarification, such modifications do not trigger a requirement for the entity to recognize related off-balance sheet mortgage-backed securities on-balance.	RN SEC	+
4	8/21/07	8/21	FASB examines improvements of SFAS 140	*FASB Chairman says securitization rules "broken": Chasan (RN, 2007b).* FASB Chairman Robert Herz announces in an interview with Reuters that the FASB staff is currently examining SFAS 140 with regard to improvements and simplifications. Mr. Herz aims at creating a simpler and more transparent securitization standard.	RN	+

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No.	Date	Event Window	Event Short Description	*Exemplary Press or Announcement Headline* Event Long Description	Source[a]	Pred. Sign
5	10/17/07	10/17-18	No delay of SFAS 157	*FASB decides not to delay fair value rule: Chasan (RN, 2007a).* The FASB decides in 4-3 vote not to delay the planned mandatory adoption of SFAS 157 beyond fiscal years beginning after November 15, 2007. Previously, trade groups had lobbied for a one-year delay of the mandatory adoption claiming that smaller firms were not yet ready to apply the standard due to technical difficulties regarding marking-to-model estimates.	RN DJN	−
6	11/5/07	11/5-6	SEC revises loan commitments	*US SEC revises view on loan commitment accounting: Wutkowski (RN, 2007).* The SEC issues a revised staff bulletin regarding the recognition of servicing fees related to written loan commitments. The staff bulletin allows banks to include the expected future cash benefit of servicing in fair value measurements already at the time the commitment is written rather than at the time it is sold. The revision leads to sooner income recognition of loan servicing fees.	RN DJN	+
7	11/12/07	11/12-13	FASB likely to terminate QSPEs	*U.S. FASB may eliminate certain off-the-books entities: Chasan (RN, 2007c).* Russell Golden, Chairman of the FASB's emerging issues task force, reveals that the FASB's approach towards revising SFAS 140 might lead to a discontinuation of the Qualifying Special Purpose Entity (QSPE) concept.	RN	−
8	1/9/08	1/9-10	SEC approves loan modifications of ARM loans	*U.S. SEC backs subprime loan modification accounting: Poirier (RN, 2008).* In a no-action letter, Conrad Hewitt, the Chief Accountant of the SEC, confirms the SEC's view that loan modifications to securitized adjustable rate mortgage (ARM) loans do not trigger a requirement to account for those pools on-balance even if default has not yet occurred but is "reasonably foreseeable". Hewitt also requires additional disclosure about the impact of such loan modifications for firms filing with the SEC.	RN SEC	+
9	2/14/08	2/14-15	SEC plans to improve disclosures	*U.S. SEC seeks more financial transparency: Younglai (RN, 2008r).* At Senate Banking Committee hearing, Christopher Cox, Chairman of the SEC states that the Commission plans to increase the transparency of disclosure made by Wall Street firms.	RN	+
10	2/29/08	2/29-3/3	FASB terminates QSPEs	*Look Under the Banks' Hoods - FASB to Re-Examine Whether Financing Vehicles That Added to Woes Should Stay Off Books: Reilly (WSJ, 2008d).* The WSJ reports about an interview with FASB Chairman Robert Herz, who indicates that the Qualifying Special Purpose Entity (QSPE) concept will be discontinued. The interview also suggests that the FASB plans in addition to look more generally into the accounting for structured vehicles.	WSJ RN	−

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No.	Date	Event Window	Event Short Description	*Exemplary Press or Announcement Headline* Event Long Description	Source[a]	Pred. Sign
11	3/4/08	3/4-5	PCAOB against modifying fair value	*U.S. audit watchdog says not the time to modify rules: Younglai (RN, 2008m).* Reuters reports that Mark Olson, Chairman of the Public Company Accounting Oversight Board (PCAOB) expresses concerns about ideas to modify current fair value accounting rules in response to the crisis.	RN	−
12	3/13/08	3/13-14	Regulators and SEC push for more disclosure	*U.S. regulators propose mortgage rules revamp: Lawder and Rucker (RN, 2008).* *SEC Aims to Let Firms Explain Crunch Thorns - Market Prices Still Apply But Plan Offers Leeway; Risk of Too-Rosy Views: Reilly and Scannell (WSJ, 2008).* On March 13, 2011, the President's Working Group on Financial Markets publishes recommendations in response to the credit crunch. The key proposal, among other things, recommends enhanced disclosures related to financial assets. On March 14, 2011, the WSJ reports that the SEC plans to issue guidance soon in form of a letter sent to Wall Street firms to encourage them to enhance their disclosure by providing a range of possible values around market prices used in fair value measurements and by revealing details about models used to determine fair values in illiquid markets.	RN WSJ	+
13	3/19/08	3/19-20	FASB issues SFAS 161	*FASB issues new U.S. derivatives accounting rule: Chasan (RN, 2008b).* The FASB issues SFAS 161 "Disclosures about Derivative Instruments and Hedging Activities". The standard requires additional disclosures on fair values, gains and losses, and liquidity risk of financial derivatives.	RN DJN FASB	+
14	3/28/08	3/28-31	SEC focuses on more disclosure, not less fair value	*SEC's new guidance to stop short of suspending 'fair value' rules: Chung and Guerrera (FT, 2008).* The SEC sends the expected letter (see even No. 12) containing guidance on fair value disclosures to 30 Wall Street firms. The Commission, however, is reluctant to promote any modifications to fair value accounting rules not to mention a suspension of the rules.	FT RN	−
15	4/12/08	4/14	FASB reluctant to modify fair value accounting	*Lifting the Lid: Mark-to-market complaints fall on deaf ears: Chasan (RN, 2008l).* Reuters reports that the FASB is reluctant to make any modifications to fair value accounting rules. This position is backed by both the SEC and the CFA institute according to Reuters.	RN	−
16	4/24/08	4/24-25	SEC favors fair value guidance	*Fair value guidance may be needed-US SEC official: Younglai (RN, 2008b).* SEC Commissioner Paul Atkins tells Reuters in an interview that he thinks additional guidance by the SEC on fair value measurements, particularly regarding the use of unobservable level 3-inputs, could be warranted. He does not indicate, however, when the SEC plans to issue such guidance.	RN	+

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No.	Date	Event Window	Event Short Description	*Exemplary Press or Announcement Headline* Event Long Description	Source[a]	Pred. Sign
17	5/2/08	5/2	FASB plans stricter off-balance sheet rules	*FASB Signals Stricter Rules For Banks' Loan Vehicles: Reilly (WSJ, 2008c).* The Wall Street Journal (WSJ) reports about the FASB's planned changes to off-balance sheet rules. According to the WSJ, FASB Chairman Robert Herz indicated that off-balance sheet transactions, which were previously kept off-balance because they qualified as a sale under SFAS 140, are likely to be recorded on-balance under the planned proposal. Also, the FASB aims to provide stricter off-balance sheet rules for other types of transactions as well.	WSJ	−
18	6/4/08	6/4-5	Up to USD 5,000 billion could come back onto the books	*U.S. banks fear being forced to take $5,000bn back on balance sheets: Davies et al. (FT, 2008).* The Financial Times (FT) reports about research by Citigroup analysts, who estimate that the planned changes by the FASB to revise current off-balance sheet rules, could bring up to USD 5,000 billion of assets back onto banks' balance sheets. Also, Reuters reports that the FASB plans to require additional disclosures regarding reputational risk of off-balance sheet structures (Chasan, RN, 2008d).	FT RN	−
19	6/17/08	6/17-18	FASB revision of off-balance sheet rules likely to offset recent balance sheet reductions	*Assets Get Harder to Shake - Balance Sheets Could Swell Again Under Proposal: Reilly (WSJ, 2008a).* The Wall Street Journal reports that the planned FASB revisions of off-balance sheet rules are likely to offset recent efforts by financial firms to reduce their balance sheets. For instance, if Lehman Brother Holding Inc. had to bring 20% of is outstanding off-balance structures bank onto its books, the recent balance sheet reduction would already be offset.	WSJ	−
20	6/24/08	6/24-25	SEC studies improvements to disclosures	*U.S. SEC looks to revamp reporting rules: Wutkowski (RN, 2008b).* The SEC begins a study of disclosure requirements that aims to make disclosures both timelier and more useful to investors by using modern technology and by assessing all existing disclosure requirements.	RN	+

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No.	Date	Event Window	Event Short Description	*Exemplary Press or Announcement Headline* Event Long Description	Source[a]	Pred. Sign
21	7/2/08	7/2-3	Wall Street lobbies against new off-balance sheet rules	*Wall St girds for battle on accounting rules: Chasan and Younglai (RN, 2008a).* Reuters reports that lobbyist of Wall Street firms meets with the FED, the Treasury Department and the SEC to convince regulators to postpone the planned revision of off-balance sheet rules. Also, special interest groups, including the Commercial Mortgage Securities Association (CMSA), the American Securitization Forum (ASF), the Securities Industry and Financial Markets Association (SIFMA), the National Association of Realtors (NAR), the Real Estate Roundtable (RER) and the Mortgage Bankers Association (MBA), started to discuss publicly their concerns about off-balance sheet rules.	RN	+
22	7/21/08	7/21-22	FASB's stricter off-balance sheet proposals already in August	*U.S. FASB plans off-balance sheet proposal soon: Younglai (RN, 2008g).* Reuters reports that the FASB plans to issue possibly already in August its new proposals on off-balance sheet items. According to Reuters, Robert Herz also emphasizes that will propose new rules regardless of the anxiety in the financial industry about the possible implications.	RN	−
23	7/25/08	7/25	Lawmakers ask SEC and FASB to delay off-balance sheet rule	*FASB Urged To Delay Changes To Securitization Accounting: Burns (DJN, 2008c).* Spencer Bachus, Financial Services Committee member, sends a letter to SEC Chairman Christopher Cox and FASB Chairman Robert Herz. The letter request the SEC and the FASB to postpone their planned revision of off-balance sheet rules in order to avoid "unintended consequences".	DJN RN WSJ	+
24	7/29/08	7/29-30	FASB delays off-balance sheet rules	*FASB votes to delay off-balance sheet rule change: Chasan (RN, 2008k).* The FASB votes to delay the adoption of the planned new off-balance sheet rules. The new effective date comprises all fiscal years beginning after November 15, 2009. The FASB had previously planned to require mandatory adoption of the new standard by the end of 2008.	RN FT WSJ	+
25	9/12/08	9/12	FASB requires more disclosure on credit derivatives	*FASB to require more disclosure on derivatives: Chasan (RN, 2008i).* The FASB amends the disclosure requirements of SFAS 133 by requiring additional disclosures on written credit derivatives, particularly credit default swaps.	RN DJN FASB	+

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No.	Date	Event Window	Event Short Description	*Exemplary Press or Announcement Headline* Event Long Description	Source[a]	Pred. Sign
26	9/30/08	9/30-10/2	SEC/FASB issue guidance on fair value measurement	*SEC gives banks more leeway on mark-to-market: Poirier and Chasan (RN, 2008).* *Lawmakers Seek Suspension Of Mark-To-Market Accounting: Burns (DJN, 2008e).* *FASB to seek comment on U.S. fair value changes: Chasan (RN, 2008j).* *Momentum Gathers to Ease Mark-to-Market Accounting Rule: Williamson and Scannell (WSJ, 2008).* 9/30: The SEC releases the "SEC Office of the Chief Accountant and FASB Staff Clarifications on Fair Value Accounting", which intends to provide both guidance and clarity regarding fair value measurement. Also, the FASB announces that additional guidance beyond the scope of the letter on fair value accounting will soon follow. Also, a bipartisan group of 65 lawmakers sends a letter to SEC Chairman Christopher Cox requesting that the SEC immediately suspends fair value accounting in favor of "a mark-to-value mechanism". 10/1: the FASB debates additional guidance during its meeting and decides to issue soon a staff position (FSP) for public comment. 10/2: Spencer Bachus requests a Committee hearing on fair value accounting including testimonies by the SEC, the FASB, the IASB, the PCAOB, as well as auditors, investors and representatives of public companies. 10/3: FASB issues the proposed staff position in its entirety via the board's website.	RN DJN WSJ FASB SEC	+
27	10/10/08	10/10-13	FASB issues FSP FAS 157-3 and ABA asks SEC to override rule	*FASB to release fair value guidance this weekend: Chasan (RN, 2008h).* *Bank group asks SEC to override FASB on fair value: Chasan (RN, 2008a).* During its special board meeting, the FASB discusses the proposed amendments to SFAS 157, which were originally issued on October 3, 2008. The FASB decides to issue the final statement after some clarifications have been incorporated into the initial proposal. The American Bankers Association (ABA) sends a letter to SEC Chairman Christopher Cox asking the SEC to override FSP FAS 157-3 because it still requires banks to incorporate liquidity risk when measuring fair value.	RN WSJ ABA FASB	+
28	10/16/08	10/16-17	SEC announces that PPS can be treated as debt	*U.S. SEC allows change that may delay bank write-downs: Chasan and Younglai (RN, 2008b).* In a letter to the FASB, the SEC announces that it will not object if preparers treat perpetual preferred securities (PPS) as debt and assess these securities for impairment based on a debt impairment model. PPS are often classified as equity securities under SFAS 115.	RN SEC	+

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No.	Date	Event Window	Event Short Description	*Exemplary Press or Announcement Headline* Event Long Description	Source[a]	Pred. Sign
29	10/20/08	10/20-21	FASB/SEC fix CPP accounting issue	*Bank-Equity Program Gets Accounting Fix: Solomon (WSJ, 2008).* The financial press reports that the FASB and the SEC plan to allow banks to count warrants issued amid the TARP CCP as permanent equity to avoid recognizing liabilities and the related losses if bank share rose. Otherwise, warrants had to be accounted for as trading liabilities at fair value through profit and loss.	WSJ WSJ.com RN DJN	+
30	10/28/08	10/28-29	FAF asks SEC not to overrule fair value accounting, mark-to-market roundtable, no further guidance soon by SEC	*SEC Urged To Resist 'Political Pressure' On Accounting: Burns (DJN, 2008h).* *SEC won't issue more FAS 157 guidance soon -source: Younglai (RN, 2008f).* *SEC Gets Conflicting Advice On Mark-to-Market Accounting: Burns (DJN, 2008f).* In a letter to SEC Chairman Christopher Cox, Robert Denham, Chairman of the Financial Accounting Foundation (FAF), argues that overruling FASB pronouncements would harm both investors' confidence in financial statement information and the integrity of the FASB as a private standard setting body (FAF, 2008, p. 2) Also on October 28, 2008, Reuters reports that the SEC plans soon no further guidance on fair value accounting, particularly not regarding the use of judgment when measuring fair value. On October 29, 2008, the debate surrounding fair value accounting continues publicly during a SEC roundtable on mark-to-market accounting.	RN DJN	−
31	11/10/08	11/10-11	PCAOB considers guidance on fair value accounting	*U.S. audit watchdog weighs more fair value guidance: Wutkowski (RN, 2008a).* On November 10, 2008, Reuters reports that the PCAOB considers issuing additional guidance on fair value accounting.	RN	+
32	11/21/08	11/21	No support for SFAS 157 replacement from SEC roundtable participants	*Fair value accounting should not be replaced-US panel: Younglai (RN, 2008a).* According to Reuters, participants of the SEC's roundtable on mark-to-market accounting do not support a replacement or abandonment of fair value accounting rules.	RN	−
33	12/4/08	12/4-5	SEC announces additional guidance until year end	*U.S. SEC working on fair value guidance with FASB: Younglai (RN, 2008u).* Reuters reports that the SEC and the FASB are currently working on more guidance on fair value accounting, which will be effective for 2008 annual financial statements.	RN	+
34	12/8/08	12/8-9	Draft of SEC study seeks no suspension of fair value accounting	*Mark-to-Market Likely to Remain - SEC Is Expected to Keep Accounting Rule but Seek Ways to Refine Its Use: Scannell (WSJ, 2008a).* The financial press reports that the draft document of the SEC's Congress-mandated study of fair value accounting recommends not to suspend fair value accounting, but to work on additional guidance to address problems with fair value measurement under distressed market conditions.	RN DJN WSJ	−

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No.	Date	Event Window	Event Short Description	*Exemplary Press or Announcement Headline* Event Long Description	Source[a]	Pred. Sign
35	12/11/08	12/11-12	FASB requires more off-balance sheet disclosures	*FASB requires more off-balance sheet disclosures: Chasan (RN, 2008f).* The FASB issues "FSP FAS 140-4 and FIN 46(R)-8, Disclosures by Public Entities (Enterprises) about Transfers of Financial Assets and Interests in Variable Interest Entities", which requires public companies to disclose more information about off-balance sheet items. The additional disclosures include information about the continuing involvement in securitizations and about the reasons for not consolidating variable interest entities (VIE).	RN DJN FASB	+
36	12/16/08	12/16-17	FASB studies expanding fair value accounting	*FASB Studies Expanding 'Mark' Rules: Reilly (WSJ, 2008b).* The Wall Street Journal (WSJ) reports that the FASB has instructed its staff to start a project on financial instruments. One scenario likely to be examined by the FASB staff is a holistic approach that extends fair value accounting to loans and other financial instruments currently accounted for at amortized costs.	WSJ	−
37	12/19/08	12/19	FASB beliefs more fair value accounting can re-establish trust	*Going on Offense With Mark-to-Market: Reilly (WSJ.com, 2008b).* A report by the Wall Street Journal (WSJ) suggests that beliefs at the FASB fortify that more fair value accounting rather than less could be the solution to investors' distrust regarding bank assets	WSJ	−
38	12/22/08	12/22	FASB proposes impairment relief	*U.S. accounting body proposes impairment-rule change: Chasan (RN, 2008o).* The FASB proposes amendments to guidance related to other-than-temporary impairments of beneficial interests, which originate from securitizations and are not of high credit quality. The proposal would allow the use of reasonable management judgment about the collectability of contractual cash flows instead of market-only inputs when assessing assets for impairment.	WSJ RN DJN FASB	+
39	12/30/08	12/30-31	SEC against suspending fair value accounting	*SEC To Congress: Improve, Don't Suspend Fair Value Accounting: Crittenden (DJN, 2008).* The SEC reports to Congress about its study on fair value accounting. The Commission advocates no suspension of fair value accounting rules and rejects a relation between fair value accounting and bank failures.		−

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No.	Date	Event Window	Event Short Description	*Exemplary Press or Announcement Headline* Event Long Description	Source[a]	Pred. Sign
40	2/5/09	2/5-6	Dodd and Frank support modifications of fair value accounting	*SEC, Treasury not discussing suspending fair value rule: Drawbaugh and Younglai (RN, 2009).* The financial press reports that the Obama administration's rescue bill might include modifications to accounting rules. Reuters, however, reports that the SEC and the Treasury department are not discussing a suspension of fair value accounting. But Barney Frank and Christopher Dodd tell Reuters that they support modifications to fair value accounting to ease its impact on the current economic environment.	FT.com RN	+
41	2/11/09	2/11	Fair value modifications could be part of the financial rescue plan	*Mark-to-market tweak "may be" in Obama plan-Dodd: Younglai (RN, 2009a).* Reuters reports that Christopher Dodd told journalists that modifications of fair value accounting could be included in the Obama administration's financial rescue plan.	RN	+
42	2/12/09	2/12	FASB Chairman strictly opposes fair value modifications	*FASB head considers more mark-to-market guidance [and opposes changing fair value significantly]: Chasan (RN, 2009c).* In an interview with Reuters, FASB Chairman Robert Herz comments on the ongoing debate about "accounting tweaks" as part of a rescue package and strongly opposes substantial modification or even a suspension of fair value accounting.	RN	−
43	2/18/09	2/18-19	More FASB guidance but no modifications	*FASB Starts Projects To Improve Fair-Value Estimates: Lynch and Kell (DJN, 2009).* The FASB announces a project to improve guidance on fair value measurements and fair value disclosures. The measurement guidance is expected to address the question of when markets become inactive and when transactions are distressed. The disclosure guidance relates to the sensitivity of fair values and to transfer within the fair value hierarchy. The guidance, however, also substantiate expectations that the FASB remains reluctant to make substantial modifications to fair value accounting or even (temporarily) suspend the regime.	RN DJN	−

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No.	Date	Event Window	Event Short Description	*Exemplary Press or Announcement Headline* Event Long Description	Source[a]	Pred. Sign
44	3/4/09	3/4-6	PCAOB being asked for more guidance, Congress announces fair value hearing, bipartisan bill aims to transfer accounting oversight to new body	*U.S. Trade Groups Seek PCAOB Guidance On Fair-Value Accounting: Lynch (DJN, 2009j).* *U.S. Congress to examine mark-to-market accounting: Younglai (RN, 2009f).* *U.S. bill would revamp accounting oversight: Wutkowski (RN, 2009d).* Various trade groups, including among other the ABA and the FSR, ask the PCAOB to issue guidance to encourage auditors to take a "balanced" instead of a "pessimistic" view on fair value measurements. The House Financial Services' Capital Market Subcommittee announces a fair value hearing for March 12, 2009. A bipartisan bill by two lawmakers intends to transfer the authority over accounting standards from the SEC to a newly created oversight body.	RN DJN	+
45	3/10/09	3/10-12	Congress sets ultimatum for fair value modifications	*U.S. Lawmakers Push FASB To Issue Guidance On Fair Value Acctg: Lynch (DJN, 2009i).* *U.S. rulemaker gets mark-to-market ultimatum: Younglai and Wutkowski (RN, 2009).* During a hearing of the Subcommittee on Capital Market of the House Financial Services Committee, lawmakers impose substantial pressure on regulators and standard setters, particularly the FASB, and effectively set an ultimatum for additional guidance of fair value accounting. FASB Chairman Robert Herz eventually caves in to the pressure and pledges that guidance on fair value measurement will be available within three weeks time, rather than until the second quarter of 2009. Among the potential "tweaks" to fair value accounting discussed during the hearing is a separation of fair value changes stemming from liquidity risk versus those resulting from credit risk. The proposals discussed intend to recognize immediately in profit or loss only fair value losses resulting from deteriorations of credit risk. Losses stemming from changes in liquidity risk are not to be recognized until de-recognition (i.e., sale of the asset) according to the discussed proposals.	DJN RN WSJ	+

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Table 4.1 - continued from previous page

No.	Date	Event Window	Event Short Description	*Exemplary Press or Announcement Headline* Event Long Description	Source[a]	Pred. Sign
46	3/16/09	3/16-18	FASB proposes more modifications to fair value measurement and OTTIs	*FASB issues proposals on mark-to-market guidance: Chasan and Jones (RN, 2009).* The FASB issues two proposals on guidance for financial instruments' accounting. The first FASB Staff Position (FSP), FSP FAS 157-e, "Determining Whether a Market Is Not Active and a Transaction Is Not Distressed", contains the expected guidance on fair value measurement and allows management more judgment when regarding the use of valuation models when markets are inactive. The second staff position, FSP FAS 115-a, FAS 124-a, and EITF 99-20-b "Recognition and Presentation of Other-Than-Temporary Impairments", provides guidance on impairments of available-for-sale and held-to-maturity securities. It proposes that only credit-related OTTIs are recorded in profit or loss while liquidity-related OTTIs are recognized in equity.	RN DJN	+
47	3/25/09	3/25-26	FASB plans to revamp soon accounting rules for financial instruments	*IASB, FASB to replace financial instruments rules: Chasan (RN, 2009e).* FASB and IASB announce the replacement of current accounting standards for financial instruments and off-balance sheet items within the next months.	RN	+
48	3/31/09	3/31-4/1	Barney Frank for reversal of held-to-maturity losses, PCAOB considers guidance	*U.S. Rep Frank: Need Mark-To-Market To Be "More Realistic": Crittenden (DJN, 2009b).* *U.S. audit watchdog studies mark-to-market changes: Younglai (RN, 2009e).* Barney Frank, Chairman of the House Financial Services Committee, favors changes to impairment rules for held-to-maturity securities, so that banks do not have to record losses until maturity. In addition, standard setters should allow banks to reverse losses already recorded in prior periods by permitting them to restate their previous results.	DJN RN	+
49	4/2/09	4/2-3	FASB okays fair value measurement and impairment guidance	*FASB OKs Proposals To Ease Mark-To-Mkt Accounting: Rapoport (DJN, 2009g).* On April 2, 2009, the FASB voted to adopt the proposals issued on March 17, 2009 (event No. 46) on fair value measurement in inactive markets, related disclosures and on other-than-temporary impairments (OTTI)	DJN RN WSJ	+
50	4/9/09	4/9	FASB issues FSPs on fair value measurement and impairment guidance	*FASB issues guidance on mark-to-market: Chasan (RN, 2009g).* The FASB issues the FASB Staff Position (FSPs) decided upon during the board meeting on April 2, 2009, on fair value measurement in inactive markets, on additional quarterly disclosures, and on impairments of available-for-sale and held-to-maturity debt securities.	DJN RN	+

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Table 4.1 - continued from previous page

No.	Date	Event Window	Event Short Description	*Exemplary Press or Announcement Headline* Event Long Description	Source[a]	Pred. Sign
51	4/30/09	4/30-5/1	FASB plans to publish soon stricter off-balance sheet standard	*FASB preps new rule on securitization accounting: Chasan (RN, 2009d).* The financial press reports that the FASB finalizes its new standard on off-balance sheet accounting soon. The new, more rigorous standard should become effective as of 2010.	DJN RN	−
52	5/18/09	5/18-19	FASB approves new off-balance sheet rules	*U.S. FASB adopts rule to put more assets on books: Chasan (RN, 2009k).* The FASB approves by vote new off-balance sheet standards that amend SFAS 140 and FIN 46(R). Among the main changes is the elimination of the Qualifying Special Purpose Entity (QSPE)-concept. The FASB plans to publish the final standards in June 2009.		−
53	5/22/09	5/22	New off-balance sheet rules substantially shrink bank equity	*Off-Balance-Sheet Rules Could Weigh On Banks' Capital: Eckblad (DJN, 2009).* According to DJN, a research report by an investment bank finds that the new off-balance sheet rules substantially shrink banks' equity ratios. For instance, the new standards would reduce Bank of America's tangible common equity ratio in the first quarter of 2010 by 0.7 percentage points from a projected 3.8% to 3.1%.	DJN	−
54	6/3/09	6/3-4	Policymakers being asked to postpone stricter off-balance sheet rules	*Industry Groups Push For Review Of Planned US Accounting Change: Holzer (DJN, 2009).* Lobbying groups associated with the financial industry sent a letter to Treasury Secretary Timothy Geithner and other policymakers. The letter asks policymakers to interfere with the FASB in order to postpone the adoption of the new off-balance sheet standards by arguing that the rules endanger the recovery of the securitization market.	DJN WSJ	+
55	6/12/09	6/12	FASB issues stricter off-balance sheet rules	*FASB Issues Statements 166 And 167 Pertaining To Securitizations And Special Purpose Entities: Anonymous (DJN, 2009d).* The FASB issues its new standards on off-balance sheet items, SFAS 166 "Accounting for Transfers of Financial Assets" and SFAS 167 "Amendments to FASB Interpretation No. 46(R).	DJN FASB	−
56	6/24/09	6/24-25	FASB proposes more disclosures on credit quality and allowance for credit losses	*FASB Issues Exposure Draft On Disclosures About The Credit Quality Of Financing Receivables And The Allowance For Credit Losses: Anonymous (DJN, 2009b).* The FASB proposes additional disclosures by issuing the exposure draft (ED) "Disclosures about the Credit Quality of Financing Receivables and the Allowance for Credit Losses".	DJN FASB	+

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Table 4.1 - continued from previous page

No.	Date	Event Window	Event Short Description	*Exemplary Press or Announcement Headline* Event Long Description	Source[a]	Pred. Sign
57	8/13/09	8/13-14	FASB discusses full fair value approach for financial instruments	*FASB Looks To Expand Mark Rules: Rapoport (WSJ, 2009).* The FASB discusses an expansion of fair value accounting during its board meeting. Under the plans, the scope of fair value accounting would be extended to all financial instruments recognized on the balance sheet and, thus, also be applicable to loans, which are currently accounted for at amortized costs.	RN DJN WSJ	−
58	8/31/09	8/31-9/1	FASB proposes more fair value disclosures	*FASB eyes more disclosure on illiquid assets: Stempel (RN, 2009).* The FASB proposes additional fair value disclosures by issuing exposure draft (ED) "Improving Disclosures about Fair Value Measurements", which updates SFAS 157 "Fair Value Measurements", or Subtopic 820-10 of the FASB Accounting Standards Codification, respectively.	RN FASB	+
59	9/14/09	9/14-15	More fair value accounting for U.S. institutions relative to international competitors	*FASB Chair: US May Have Tougher Fair-Value Plan Than IASB: Rapoport (DJN, 2009b).* FASB Chairman Robert Herz is cited as saying that the FASB is likely to propose fair value accounting for more financial instruments relative to the approach taken by the IASB. The FASB's plan to replace current fair value accounting rules would require loans to be accounted for at fair value while loans seem to remain under historical cost accounting under IASB's approach.	DJN	−
60	5/26/10	5/26-27	FASB unveils full fair value approach	*FASB Proposes 'Fair Value' Accounting For Bank Loans: Rapoport (DJN, 2010).* The FASB issues the exposure draft "Accounting for Financial Instruments", which is intended to replace current accounting standards for financial instruments. The proposals would require virtually all financial assets to be valued at fair value with changes in fair value recorded either in other-comprehensive income or profit and loss; some financial liabilities can still be measured at cost.	DJN RN WSJ FASB	−
61	5/28/10	5/28-6/1	FASB proposal faces harsh critique	*FASB Critic Bashes Latest Proposal: Rieker (DJN, 2010b).* The financial press reports about harsh critique of the FASB proposal by members of the financial industry. For instance, former FDIC Chairman William Isaac is cited as claiming that "FASB's proposed action will destroy banking as we know it and will make it virtually impossible for small businesses and real estate developers to obtain longer term financing" (Rieker, DJN, 2010b).	DJN	−

a Source abbreviations: **DJN** = Dow Jones Newswires; **FASB** = Financial Accounting Standards Board; **FT** = Financial Times; **RN** = Reuters News; **WSJ** = Wall Street Journal.

5 U.S. Data

This chapter describes the U.S. data set. Section 5.1 outlines the sample selection procedure. Section 5.2 on page 114 defines variables for the study of U.S. financial institutions and describes variable measurement for both time-series and cross-sectional variables. Section 5.3 on page 135 reports descriptive statistics for the U.S. sample.

5.1 Sample Selection

This section describes the sample selection procedures for two samples of U.S. firms. The first sample consists of 275 U.S. bank holding companies (BHCs). Section 5.1.1 describes the selection of the BHC sample. The second sample consists of 146 U.S. financial service firms (FSFs). Section 5.1.2 describes the selection of the FSF sample.

5.1.1 U.S. Bank Holding Companies

I begin the sample selection for the BHC sample with the 'CRSP-FRB Link'-file from the Federal Reserve Bank of New York (New York Fed).[102] The 'CRSP-FRB Link'-file links the Center for Research in Security Prices (CRSP) at the University of Chicago Permanent Company Number (PERMCO) to the RSSD ID (rssd9001), which is the permanent entity identifier in the U.S. Bank Holding Company Database maintained by the Federal Reserve Bank of Chicago (Chicago Fed). As of the fourth quarter of 2007, the file contains 886 unique RSSD IDs. I exclude 45 entries because the linked PERMCOs are either non-valid (e.g., blank) or expired (i.e., dt_end $<$ 99991231). I exclude 270 entries because the RSSD IDs from the 'CRSP-FRB Link' file cannot be matched to RSSD IDs in the U.S. Bank Holding Company Database. 161 PERMCOs from the 'CRSP-FRB Link' file cannot be matched to PERMCOs in the CRSP daily stock file and are thus also excluded. In addition, I exclude 104 firms with incomplete return histories on CRSP during the estimation window (April 2007 - June 2010). Finally, I require sample firms to have on the U.S. Bank Holding Company Database at least two annual observations of the data items required for cross-sectional tests.[103] This leads to the exclusion of 31 firms. The final sample consists of 275 firms. Table 5.1 on the next page summarizes the selection of the BHC sample.

5.1.2 U.S. Financial Service Firms

I begin the selection of the sample of FSFs with the COMPUSTAT COMPHEAD file. I select all entities with one of the following 4-digit Standard Industrial Classification (SIC) codes:[104]

[102] The 'CRSP-FRB Link' file is available at http://www.newyorkfed.org/research/banking_research/datasets.html (last retrieved: August 15, 2010).
[103] The variables and data items required for cross-sectional tests are described in section 5.2.2 on page 125.
[104] Industry titles are obtained from the SEC's website, see http://www.sec.gov/info/edgar/siccodes.htm.

Table 5.1
Sample Selection - U.S. Bank Holding Companies

This table summarizes the sample selection procedure for the sample of U.S. bank holding companies (BHCs). The final sample consists of 275 BHCs.

Selection Criteria	**No. of Firms**
Unique RSSD IDs (rssd9001) in the CRSP-FRB Link' file	886
Less:	
Non-valid or non-active PERMCOs as of 2007/12/31	(45)
RSSD ID cannot be matched to the U.S. Bank Holding Company Database	(270)
Firms that cannot be matched to the CRSP daily stock file based on PERMCO	(161)
Firms with incomplete return histories on CRSP	(104)
Firms without the required data items in the U.S. Bank Holding Company Database	(31)
Final sample	**275**

6200 Security & Commodity Brokers, Dealers, Exchanges & Services
6211 Security Brokers, Dealers & Flotation Companies
6282 Investment Advice
6311 Life Insurance
6321 Accident & Health Insurance
6324 Hospital & Medical Service Plans
6331 Fire, Marine & Casualty Insurance
6351 Surety Insurance
6361 Title Insurance
6399 Insurance Carriers, Nec
6411 Insurance Agents, Brokers & Service

The COMPHEAD file contains 1,104 matching entries. I delete 47 firms which are not merely domestic U.S. firms based on the International/Domestic/Both Indicator. I merge the remaining firms with the COMPUSTAT-CRSP LINK file. 293 firms cannot by merged. I require sample firms to have on COMPUSTAT at least the 2007 annual observations of the data items required for cross-sectional tests. 504 firms do not meet this requirement. To ensure that firms, which do not have financial instruments on their balance sheet, are excluded from the sample, I require non-missing values for one of the following two COMPUSTAT items: # ist (investment securities - total) and # iati (investment assets - total (insurance)). 69 firms do not meet this requirement. 10 firms cannot be merged with the CRSP daily stock file. Finally, I exclude 34 firms with incomplete return histories on CRSP during the estimation window (April 2007 - June 2010). One of the remaining 147 firms is MetLife Inc. (permco=37138, COMPUSTAT # sic 6311, CRSP # sic 6411). MetLife Inc. is an insurance company based on the SIC, but a bank holding company for regulatory purposes and, thus, included in both the BHC and FSF sample. I remove MetLife Inc. from the FSF sample and keep the firm in the

BHC sample because a maintained hypothesis in this study is that the regulatory framework is a critical factor when considering adverse second order effects of fair value accounting. The final sample consists of 146 firms. Table 5.2 summarizes the selection of the FSF sample.

Table 5.2
Sample Selection - U.S. Financial Service Firms

This table summarizes the sample selection procedure for the sample of U.S. financial service firms (FSFs). The final sample consists of 146 FSFs.

Selection Criteria	**No. of Firms**
Firms on the COMPHEAD file with 4-digit SIC codes equal to 6200, 6211, 6282, 6311, 6321, 6324, 6331, 6351, 6361, 6399, or 6411	1,104
Less:	
Firms with International/Domestic/Both Indicator not equal to D	(47)
Firms that cannot be merged with the COMPUSTAT LINK file	(293)
Firms with no COMPUSTAT data available for Q4 2007	(504)
Firms with missing values for COMPUSTAT item ist (investment securities - total) or COMPUSTAT item iati (investment assets - total (insurance))	(69)
Firms that cannot be merged with CRSP	(10)
Firms with incomplete return histories on CRSP	(34)
MetLife Inc.	(1)
Final sample	**146**

Table 5.3 on the next page summarizes the industry composition of the FSF sample by SIC code. The three largest industry groups are fire, marine and casualty insurance (39.04%, SIC code 6331), security brokers, dealers and flotation companies (15.75%, SIC code 6211), and life insurance companies (11.64%, SIC code 6311). Insurance companies represent about 72.60% (106 firms) of the FSF sample, which makes the sample composition comparable to the insurance sample in Beatty et al. (1996). Beatty et al. compare stock market reactions to the adoption of SFAS 115 of 290 bank holding companies with an insurance sample of 95 firms.

5.2 Variable Measurement

This section defines variables and data inputs. Section 5.2.1 outlines the components of the augmented two-factor market model, which I use to estimate stock market reactions to events surrounding changes to U.S. accounting standards for financial instruments. Section 5.2.2 defines the variables used in cross-sectional tests. Finally, section 5.3 contains descriptive statistics for cross-sectional variables.

Table 5.3
Sample Composition by SIC Code - U.S. Financial Service Firms

This table summarizes the industry composition by SIC code of the sample of U.S. financial service firms (FSFs).

SIC Code	Industry Title	Frequency	Percent	Percent cum.
6200	Security & Commodity Brokers, Dealers, Exchanges & Services	6	4.11	4.11
6211	Security Brokers, Dealers & Flotation Companies	23	15.75	19.86
6282	Investment Advice	11	7.53	27.40
6311	Life Insurance	17	11.64	39.04
6321	Accident & Health Insurance	6	4.11	43.15
6324	Hospital & Medical Service Plans	8	5.48	48.63
6331	Fire, Marine & Casualty Insurance	57	39.04	87.67
6351	Surety Insurance	14	9.59	97.26
6361	Title Insurance	3	2.05	99.32
6399	Insurance Carriers, Nec	1	0.68	100.00
Total		**146**	**100.00**	

Industry titles are obtained from the SEC's website, see http://www.sec.gov/info/edgar/siccodes.htm.

5.2.1 Event Study Variables

Recall from section 3.2.2 (especially, equation (3.14) on page 44) that the augmented market model regression used to estimate the stock market reaction consists of two parts: the two-factor market model return-generating process and the indicator variable augmentation, which captures the stock market reaction to either individual or cumulative events. Section 5.2.1.1 outlines the data inputs of the two-factor market model return-generating process and describes the choice of the interest rate index. Sections 5.2.1.2 and 5.2.1.3 define the indicator variable augmentation of the return-generating process for individual and cumulative events, respectively.

5.2.1.1 Two-Factor Market Model

The event study analysis assumes the following two-factor market model return-generating process:

$$R_{it} = \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \varepsilon_{it} \tag{5.1}$$

with the following data inputs

R_{it}	is the daily stock return of sample firm i on day t obtained from the CRSP daily stock file.
R_t^{MKT}	is the daily return on the CRSP equally-weighted index on day t. The CRSP equally weighted index is constructed from NYSE, AMEX and NASDAQ stocks.

$R_t^{INTEREST}$ is the daily relative change of the 6-months U.S. Treasury bill secondary market rate obtained through Wharton Research Data Services (WRDS) from the Federal Reserve Board's H.15 Report.

While returns of the CRSP equally-weighted index are widely used to account for changes in U.S. stock market returns and are, thus, an obvious choice, it is less clear which interest rate index makes a good proxy for unexpected changes in interest rates and their effect on banks' stock returns. Choosing U.S. T-bills seems natural. However, there is, to the best of my knowledge, no recent research, which investigates systematically the sensitivity of banks' stock returns to interest changes and could, thus, be used to support this choice.[105] Since the market conditions during the estimation window in this study are "unusual" to some extent, I employ the methodology suggested in Flannery and James (1984) to systematically investigate the sensitivity of bank returns to interest rate changes during the estimation window.

Flannery and James (1984) investigate the sensitivity of banks' stock returns to unexpected interest rate changes and link the interest rate sensitivity to the maturity composition of banks' balance sheets. They find that banks' common stock returns are sensitive to movements in nominal interest rates. Their findings suggest that the magnitude of the stock return sensitivity is positively related to the maturity mismatch between nominal bank assets and liabilities. Flannery and James employ the following two-step approach to examine the sensitivity of bank common stock returns to interest rate changes:

1. They examine the autocorrelation coefficients of different interest rate time-series and fit an appropriate third-order autoregressive process, AR(3), on each index time-series.
2. The residuals from the AR(3)-process are obtained for each index time-series and used as a measure of unanticipated interest rate changes in a two-factor market model portfolio regression.

I run this estimation procedure on a total of 41 different interest indices to obtain a broad and systematic picture of the statistical properties of interest indices in relation to bank returns during the estimation window. Appendix A, beginning on page 261, contains the results for all 41 indices. The choice of the 6-months U.S. Treasury bill in equation (5.1) results from this analysis. Here, I report only an extract of five different indices, which are suitable and seem to fit into the two-factor market model framework. Particularly, I report the results for the 3-months and 6-months Treasury bill secondary market rates, a 2-year interest rate swap rate, the 5-year inflation-indexed Treasury constant maturity rate and a 2-months financial commercial paper (CP) rate. All U.S. interest rate data is obtained through WRDS from the Federal Reserve Board's H.15 Report. Table 5.5 shows index tickers and the related index description for the five interest rate indices.

[105] Researchers have employed different indices to account in an augmented market model regression for unexpected changes in interest rates and their effect on bank returns. For instance, Beatty et al. (1996, p. 58) use the daily change in the Shearson-Lehman Brothers Treasury index. Bowen et al. (2010, p. 20) use the daily change in the 3-months Treasury bill secondary market rate.

Table 5.5
Five U.S. Interest Rate Indices

This table shows index tickers and index descriptions of five interest rate indices, which I examine regarding their co-movement with banks' common stock returns.

Index	Index Description
FCPM2	Commercial Paper - Financials 2-months
SWAPSY2	Interest Rate Swaps 2-year
TBM3	Treasury Bills Secondary Market 3-months
TBM6	Treasury Bills Secondary Market 6-months
TCMIIY5	Treasury Constant Maturity, Inflation-indexed 5-year

Source: WRDS.

Table 5.6 on the next page reports descriptive statistics for the five interest rate indices from January 1, 2007 to December 31, 2009. The mean daily relative change in panel A is positive for the 2-months financials CP, the 3-months Treasury bill secondary market rate and the 5-year inflation-indexed constant maturity Treasury rate. It is negative for the 2-year swap rate and the 6-months Treasury bill secondary market rate. Only the mean of the 3-months Treasury bill secondary market rate is significantly different from zero ($p = 0.0798$, significance not tabulated in panel A). Note that the mean daily relative change of both the 3-months Treasury bill secondary market rate and the 5-year inflation-indexed constant maturity Treasury rate are comparatively high with almost 2.9% and 2.6%, respectively. The standard deviation of the constant maturity rate, however, is almost 1.6 times higher compared to the standard deviation of the 3-months Treasury rate, and, hence, the mean is not statistically different from zero at a reasonable level of significance ($p = 0.3200$). I investigate the robustness of the mean of both the 3-months Treasury rate and the constant maturity rate by winsorizing the series at the 5% level in each tail. The mean daily relative change of the winsorized 3-months Treasury rate series is -0.0040276 and not significantly different from zero ($p = 0.2789$), which suggests that the comparatively high mean of the original series is affected by positive outliers. The effect of winsorizing the mean daily relative change series of the constant maturity rate is more pronounced. The mean is reduced to 0.000251 and not significantly different from zero ($p = 0.8579$).

Panel B of table 5.6 on the following page reports correlation coefficients of the five interest rate indices. Coefficients below (above) the diagonal are Pearson (Spearman) correlations. Only the 6-months Treasury bill secondary market rate daily relative change series is significantly correlated with all other indices (Pearson correlations). The significance of the correlation with the 2-months financials CP series, however, is not robust to the non-parametric measure of linear statistical dependence, i.e., the Spearman correlation coefficient is not significantly different from zero. The coefficient is highest, as expected, for the correlation of the 6-months Treasury bill and the 3-months Treasury bill series (Pearson correlation of 0.6892).

Panel C of table 5.6 on the next page reports autocorrelation coefficients for the five series

for one to ten lags (L.1 - L.10). Significance tests in panel C use the Portmanteau test for white noise (Q-test). While daily relative changes of the 5-year inflation-indexed constant maturity Treasury rate series are not significantly autocorrelated up to the tenth lag, the 2-year swap rate is only significantly autocorrelated from lag seven to ten. The autocorrelation coefficients of the 2-months financials CP series are significantly different from zero at the 1% level for all lags. For the two Treasury bill series, autocorrelation coefficients are positive and not significantly different from zero for the first lag, but significantly different from zero at the 1% level for all remaining nine lags. Note that the autocorrelation coefficient of the first lag of the 3-months Treasury bill series is about 16 times as high as the corresponding coefficient of the 6-months Treasury bill series, which again is likely a result of positive outliers.

Table 5.6
Descriptive Statistics of Five U.S. Interest Rate Indices

This table reports descriptive statistics of five interest rate indices from January 01, 2007 to December 31, 2009. Panel A reports daily change summary statistics. Panel B reports correlation coefficients. Coefficients below (above) the diagonal are Pearson (Spearman) correlations. Panel C reports autocorrelation coefficients for the first to the tenth lag (L.1 - L.10) Significance tests pertain to regular correlation coefficients and autocorrelation coefficients (Panel B and C only). Index tickers are defined in table 5.5. Interest rates are obtained through WRDS from the Federal Reserve Board's H.15 Report.

Panel A: Daily Change Summary Statistics

Index	Mean	Std. Dev.	Median	10% Percentile	90% Percentile
FCPM2	0.0071027	0.1636791	0.0000000	−0.1016949	0.0925926
SWAPSY2	−0.0011404	0.0323329	−0.0018132	−0.0380952	0.0374532
TBM3	0.0286601	0.4483184	0.0000000	−0.1176471	0.0909091
TBM6	−0.0019041	0.0768528	0.0000000	−0.0616438	0.0526316
TCMIIY5	0.0255963	0.7050145	0.0000000	−0.0800000	0.0860215

Panel B: Correlation Coefficients

	FCPM2	SWAPSY2	TBM3	TBM6	TCMIIY5
FCPM2	1.0000	0.0621	0.0573	0.0952**	0.0722
SWAPSY2	−0.0539	1.0000	0.2300***	0.3812***	0.4301***
TBM3	0.0529	0.0674	1.0000	0.6892***	0.2583***
TBM6	0.0428	0.2658***	0.2809***	1.0000	0.4132***
TCMIIY5	−0.0142	0.1185***	0.0021	0.0951**	1.0000

Panel C: Autocorrelation Coefficients

	FCPM2	SWAPSY2	TBM3	TBM6	TCMIIY5
L.1	−0.3036***	0.0250	0.0629	−0.0039	−0.0659
L.2	−0.0677***	−0.0310	−0.1287***	−0.2027***	−0.0082
L.3	0.0315***	−0.0363	−0.1280***	−0.1002***	−0.0333
L.4	−0.0167***	−0.0977	0.2321***	−0.0156***	0.0099
L.5	−0.0729***	−0.0420	0.0256***	0.1572***	0.0316
L.6	0.1661***	0.0000	−0.0748***	−0.0755***	0.0006
L.7	−0.1497***	0.1064**	−0.0551***	0.0041***	−0.0277

Continued on next page

Table 5.6 - continued from previous page

L.8	0.0276***	−0.0590**	−0.0084***	−0.0465***	0.0405
L.9	−0.0632***	0.0309**	0.0561***	−0.0259***	−0.0047
L.10	−0.0572***	0.0273*	0.0081***	0.1191***	−0.0163

***, **, * denote $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively, using a two-tailed test.
Significance tests of the autocorrelation coefficients in panel C use the Portmanteau test for white noise (Q-test).

Following Flannery and James (1984), I estimate an autoregressive process for each interest rate time-series. The purpose of this exercise is to generate a series of white noise residuals, which are later used in a two-factor market model regression as a measure of unanticipated interest rate changes. Based on both the autocorrelation and partial autocorrelation function, I assume the fourth order autoregressive process (AR(4)) displayed in equation (5.2).

$$R_t^{INTEREST} = \alpha + \beta_1 R_{t-1}^{INTEREST} + \beta_2 R_{t-2}^{INTEREST} + \beta_3 R_{t-3}^{INTEREST} + \beta_4 R_{t-4}^{INTEREST} + \varepsilon_t \quad (5.2)$$

The daily relative change of an interest rate time-series on day t, $R_t^{INTEREST}$, is regressed on the first four lagged values ($R_{t-1}^{INTEREST}$ to $R_{t-4}^{INTEREST}$) of the same series.

Table 5.7 on the following page reports in panel A estimated coefficients, adjusted R^2 and standard errors of the residuals from five regressions fitting the fourth-order autoregressive process (AR(4)) in equation (5.2) from January 1, 2007 to December 31, 2009. None of the estimated coefficients of both the 2-year swap rate and the 5-year inflation-indexed constant maturity Treasury rate series are statistically significant. Note, however, that the t-statistics of three of the four beta coefficients of the 2-year swap rate series are above one and, thus, of a different magnitude compared to the t-statistics of the 5-year inflation-indexed constant maturity Treasury rate series. The estimated coefficient of the first lag is significantly different from zero at the 10% level for the 2-months financials CP rate series and at the 10% level and the 1% level, respectively, for both the 3-months and 6-months Treasury bill secondary market rate series. The estimated coefficient of the fourth lag is only significantly different from zero for the 6-months Treasury bill series. The adjusted R^2 of all five regressions is around 2% suggesting that relative changes during the first four lags explain only a small fraction of the actual variation of the series.

Panel B of table 5.7 reports autocorrelation coefficients of the residuals of the AR(4) regression in equation (5.2). As in panel C of table 5.6 on the preceding page, significance tests use the Portmanteau test for white noise (Q-test). No autocorrelation coefficient in panel B is significantly different from zero suggesting that the AR(4) process properly accounts for autocorrelation over the ten lags. The lack of significance also indicates that the residuals are consistent with a series generated by a white noise process (Flannery and James, 1984, p. 1146).

Table 5.7
AR(4) Model of Five U.S. Interest Rate Indices

This table reports in panel A estimated coefficients, adjusted R^2 and standard errors of the residuals from five regressions fitting the fourth-order autoregressive process (AR(4)) in equation (5.2) from January 01, 2007 to December 31, 2009. The daily relative change of an interest rate index $R_t^{INTEREST}$ on day t is regressed on the first four lagged values of that same index. Panel B reports the autocorrelation coefficients of the residuals of the AR(4) regression in panel A to check white-noise consistency. Index tickers are defined in table 5.5. Interest rates are obtained through WRDS from the Federal Reserve Board's H.15 Report.

Panel A: AR(4) Regression

$$R_t^{INTEREST} = \alpha + \beta_1 R_{t-1}^{INTEREST} + \beta_2 R_{t-2}^{INTEREST} + \beta_3 R_{t-3}^{INTEREST} + \beta_4 R_{t-4}^{INTEREST} + \varepsilon_t \tag{5.2}$$

Index	α	β_1	β_2	β_3	β_4	Adj. R^2	$S(\epsilon)^a$
FCPM2	−0.0005	−0.0247*	0.0289**	−0.0234*	0.0090	0.0210	0.0499
	(−0.51)	(−1.89)	(2.08)	(−1.84)	(0.89)		
SWAPSY2	−0.0004	0.0481	−0.0397	0.0391	−0.0292	0.0227	0.0094
	(−0.44)	(1.42)	(−1.17)	(1.15)	(−0.86)		
TBM3	−0.0005	0.0037*	−0.0031	−0.0007	−0.0032	0.0227	0.0164
	(−0.47)	(1.83)	(−1.56)	(−0.35)	(−1.62)		
TBM6	−0.0007	−0.0343***	−0.0170	−0.0163	−0.0287**	0.0226	0.0237
	(−0.67)	(−2.77)	(−1.37)	(−1.33)	(−2.35)		
TCMIIY5	−0.0004	−0.0006	0.0005	−0.0009	−0.0001	0.0228	0.0018
	(−0.43)	(−0.46)	(0.44)	(−0.73)	(−0.08)		

Panel B: Autocorrelation Coefficients of the Residuals from the AR(4) Regression

	FCPM2	SWAPSY2	TBM3	TBM6	TCMIIY5
L.1	0.0084	−0.0386	−0.0324	−0.0409	−0.0269
L.2	−0.0121	−0.0086	−0.0342	−0.0006	−0.0140
L.3	0.0216	0.0215	0.0588	0.0247	0.0282
L.4	0.0558	−0.0314	−0.0399	−0.0263	−0.0401
L.5	−0.0641	−0.0292	−0.0270	−0.0153	−0.0331
L.6	−0.0387	0.0031	0.0185	−0.0090	0.0087
L.7	−0.0281	0.0170	0.0018	0.0096	0.0065
L.8	0.0643	0.0312	0.0445	0.0188	0.0404
L.9	0.0196	−0.0045	−0.0197	−0.0395	−0.0175
L.10	0.0445	0.0627	0.0328	0.0550	0.0677

t-statistics in parentheses in panel A.
***, **, * denote $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively, using a two-tailed test in both panel A and B.
Significance tests in panel B use the Portmanteau test for white noise (Q-test).
a $\mathbf{S}(\boldsymbol{\epsilon})$ are the standard errors of the residuals.

Again following Flannery and James (1984), I use the white noise-consistent residuals generated by the AR(4) process in equation (5.2) as a measure of unanticipated interest rate changes. The two-factor market model regression in equation (5.3) estimates the sensitivity

of a portfolio of bank returns to unanticipated interest rate changes.

$$R_t^{VPORT} = \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{RESIDINTEREST} + \varepsilon_t \tag{5.3}$$

R_t^{VPORT} is the daily return on day t of a value-weighted portfolio of 275 U.S. bank holding companies, which I regress on the daily returns of the CRSP equally-weighted index, R_t^{MKT}, and on $R_t^{RESIDINTEREST}$, which is the white noise-consistent residual series generated by the AR(4) process of equation (5.2) on page 119.

Table 5.8 on the following page reports the estimated coefficients of the two-factor market model in equation (5.3) for the five interest rate indices fitted for the period from January 1, 2007 to December 31, 2009. The 2-months financials CP series accounts well for unanticipated interest rate changes. That is, the estimated coefficient of both the daily returns of the CRSP equally-weighted index and the white noise-consistent residuals are statistically significant. Also, the magnitude of the estimated coefficient of the market index relative to the residual series seems more reasonable compared to the other indices. Note, however, that the estimated coefficient of the residual series is slightly smaller compared to the other indices. This suggests that bank returns are slightly less sensitive to unanticipated changes in the 2-months financials CP series. Also, the number of available observations is smaller compared to the other indices.

The estimated coefficients in a regression using the 2-year swap rate series are statistically significant. The coefficient of the residual series is of about the same magnitude as the two Treasury bill secondary market rate indices. The estimated coefficient on the market index, however, is substantially lower compared to the 2-months financials CP series and also about half the magnitude of the two Treasury bill secondary market rate indices.

The estimated coefficients of the two Treasury bill secondary market rate indices are statistically significant. The magnitude of the estimated coefficients of the residual series suggests that bank returns are sensitive to unanticipated changes in Treasury bill secondary market rates. The residuals of 3-months Treasury bill secondary market rate series are virtually free from autocorrelation based on the Durbin-Watson statistic.

The magnitude of the sensitivity of bank returns to unanticipated changes in the 5-year inflation-indexed constant maturity Treasury rate is slightly above the magnitude of the two Treasury bill secondary market rate series. Note, however, that the estimated coefficient on the market index is not significantly different from zero.

Overall, the results suggest that bank returns are sensitive to unanticipated changes of all five interest rate indices. Except for the 5-year inflation-indexed constant maturity Treasury rate series, the indices seem to fit well into the two-factor market model framework. The sensitivity is highest for the two Treasury bill secondary market rate series. For the event study analysis, I choose the 6-months Treasury bill secondary market rate series because of concerns about the influence of outliers in the 3-months series.

Table 5.8
Sensitivity of Bank Portfolio Returns to Interest Rate Changes of Five U.S. Interest Rate Indices

This table reports the estimated sensitivity of a value-weighted portfolio of 275 U.S. bank holding companies (BHCs) to unanticipated changes in five different U.S. interest rate indices from January 01, 2007 to December 31, 2009. The sensitivity is estimated by fitting the two-factor market model regression in equation (5.3). Daily returns of a value-weighted portfolio of 275 U.S. BHCs are regressed on daily returns of the CRSP equally-weighted index and on daily unanticipated interest rate changes measured as the residuals from the fourth-order autoregressive process (AR(4)) in equation (5.2). Index tickers are defined in table 5.5. Daily return observations for the 275 BHCs and daily equally-weighted index returns are from CRSP. Interest rates are obtained through WRDS from the Federal Reserve Board's H.15 Report.

$$R_t^{VPORT} = \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{RESIDINTEREST} + \varepsilon_t \tag{5.3}$$

Index	$\boldsymbol{\alpha}$	$\boldsymbol{\beta_1}$	$\boldsymbol{\beta_2}$	**Durbin-Watson Statistic**	N
FCPM2	−0.0003	0.2164***	0.0181***	3.0087	493
	(−1.24)	(3.88)	(22.36)		
SWAPSY2	−0.0005***	0.0418***	0.0220***	3.3462	548
	(−4.87)	(2.62)	(74.94)		
TBM3	−0.0006***	0.0730**	0.0213***	2.0663	536
	(−4.82)	(2.34)	(38.79)		
TBM6	−0.0005***	0.0879***	0.0212***	1.1773	548
	(−3.12)	(2.98)	(39.20)		
TCMIIY5	−0.0005***	0.0267	0.0224***	2.8295	548
	(−6.10)	(1.15)	(49.07)		

t-statistics in parentheses.
t-statistics are calculated using robust standard errors.
***, **, * denote $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively, using a two-tailed test.

5.2.1.2 Individual Event Variables

As outlined in more detail in section 3.2.2.1 on page 42, I test the stock market reaction to individual events by augmenting the two-factor market model with a series of indicator variables. The augmentation results in 61 indicator variables. Each indicator variable represents one event and is set to one during each day of the event window and to zero otherwise.

5.2.1.3 Cumulative Event Variables

As outlined in more detail in section 3.2.2.2 on page 44, I test the stock market reaction to cumulative events by augmenting the two-factor market model with *SIGNED_MEAN* variables. The *SIGNED_MEAN* variables disentangle the stock market reaction to several groups of events. Events are grouped into *SIGNED_MEAN* variables based on hypotheses 1-4. Table 5.9 on page 124 arranges individual events into their *SIGNED_MEAN* variables. The following five *SIGNED_MEAN* variables are defined in this section:

1. *ALL* is an indicator variable that captures the cumulative stock market reaction to all events defined in table 4.1 on page 99. It is set to +1 for all events with a positive predicted market reaction and set to −1 for all events with a negative predicted market reaction. In line

with hypotheses 1-4, the predicted sign of *ALL* is positive.

2. *LESS_FV* is an indicator variable that captures the cumulative stock market reaction to all events that change the likelihood of less fair value exposure in line with hypothesis 1. The indicator variable is set to +1 for all events that increase (decrease) the likelihood of less (more) fair value exposure. It is set to −1 for all events that decrease (increase) the likelihood of less (more) fair value exposure. It is set to 0 for all other events. Table 5.9 on the next page reports in Panel A all events that are classified as *LESS_FV* events. In line with hypothesis 1, the predicted sign of *LESS_FV* is positive.
3. *MORE_DISCL* is an indicator variable that captures the cumulative stock market reaction to all events that change the likelihood of more fair value disclosure in line with hypothesis 2. The indicator variable is set to +1 for all events that increase (decrease) the likelihood of more (less) fair value disclosure. It is set to −1 for all events that decrease (increase) the likelihood of more (less) fair value disclosures. It is set to 0 for all other events. Table 5.9 on the following page reports in Panel B all events that are classified as *MORE_DISCL* events. In line with hypothesis 2, the predicted sign of *MORE_DISCL* is positive.
4. *LESS_OFFB* is an indicator variable that captures the cumulative stock market reaction to all events that change the likelihood of stricter off-balance sheet rules, which eventually lead to more on-balance recognition of items previously held off-balance. The indicator variable is set to +1 for all events that decrease (increase) the likelihood of more (less) strict off-balance sheet rules. It is set to −1 for all events that increase (decrease) the likelihood of more (less) strict off-balance sheet rules. It is set to 0 for all other events. Table 5.9 on the next page reports in Panel C all events that are classified as *LESS_OffB* events. In line with hypothesis 3, the predicted sign of *LESS_OFFB* is negative.
5. *LESS_IMP* is an indicator variable that captures the cumulative stock market reaction of all events that change the likelihood relaxations to impairment rules, which eventually lead to less timely recognition of impairments. The indicator variable is set to +1 for all events that increase (decrease) the likelihood of more (less) relaxed impairment rules. It is set to −1 for all events that decrease (increase) the likelihood of more (less) relaxed impairment rules. It is set to 0 for all other events. Table 5.9 on the following page reports in Panel D all events that are classified as *LESS_IMP* events. In line with hypothesis 4, the predicted sign of *LESS_IMP* is positive.

Table 5.9
Definition of U.S. *SIGNED_MEAN* Variables

This table defines *SIGNED_MEAN* indicator variables, which disentangle the stock market reaction to several groups of cumulative events. Events are grouped into *SIGNED_MEAN* variables based on hypothesis 1-4. *LESS_FV* in panel A captures the cumulative stock market reaction to all events that change the likelihood of less fair value recognition on the balance sheet in line with hypothesis 1. *MORE_DISCL* in panel B captures the cumulative stock market reaction to all events that change the likelihood of more fair value disclosure in line with hypothesis 2. *LESS_OFFB* in panel C captures the cumulative stock market reaction of all events that change the likelihood of stricter off-balance sheet rules in line with hypothesis 3. *LESS_IMP* in panel D captures the cumulative stock market reaction of all events that change the likelihood of relaxed impairment rules in line with hypothesis 4.

No.	Date	Event Short Description	Indicator
Panel A: *LESS_FV*			
5	10/17/07	No delay of SFAS 157	−1
6	11/05/07	SEC revises loan commitments	+1
11	03/04/08	PCAOB against modifying fair value	−1
14	03/28/08	SEC focuses on more disclosure, not less fair value	−1
15	04/12/08	FASB reluctant to modify fair value accounting	−1
16	04/24/08	SEC favors fair value guidance	+1
26	09/30/08	SEC/FASB issues guidance on fair value measurement	+1
27	10/10/08	FASB issues FSP FAS 157-3 and ABA asks SEC to override rule	+1
30	10/28/08	FAF asks SEC not to overrule fair value accounting, mark-to-market roundtable, no further guidance soon by SEC	−1
31	11/10/08	PCAOB considers guidance on fair value accounting	+1
32	11/21/08	No support for SFAS 157 replacement from SEC roundtable participants	−1
33	12/04/08	SEC announces additional guidance until year end	+1
34	12/08/08	Draft of SEC study seeks no suspension of fair value accounting	−1
36	12/16/08	FASB studies expanding fair value accounting	−1
37	12/19/08	FASB beliefs more fair value accounting can re-establish trust	−1
39	12/30/08	SEC against suspending fair value accounting	−1
40	02/05/09	Dodd and Frank support modifications of fair value	+1
41	02/11/09	Fair value modifications could be part of the financial rescue plan	+1
42	02/12/09	FASB Chairman strictly opposes fair value modifications	−1
43	02/18/09	More FASB guidance but no modifications	−1
44	03/04/09	PCAOB being asked for more guidance, Congress announces fair value hearing, bipartisan bill aims to transfer accounting oversight to new body	+1
45	03/10/09	Congress sets ultimatum for fair value modifications	+1
46	03/16/09	FASB proposes more modifications to fair value measurement and OTTIs	+1
47	03/25/09	FASB plans to revamp soon accounting rules for financial instruments	+1
49	04/02/09	FASB okays fair value measurement and impairment guidance	+1
50	04/09/09	FASB issues FSPs on fair value measurement and impairment guindance	+1
57	08/13/09	FASB discusses full fair value approach for financial instruments	−1
59	09/14/09	More fair value accounting for U.S. institutions relative to international competitors	−1
60	05/26/10	FASB unveils full fair value approach	−1
61	05/28/10	FASB proposal faces harsh critique	−1
All other events			0
Panel B: *MORE_DISCL*			
9	02/14/08	SEC plans to improve disclosures	+1
12	03/13/08	Regulators and SEC push for more disclosure	+1
13	03/19/08	FASB issues SFAS 161	+1
20	06/24/08	SEC studies improvements to disclosures	+1
25	09/12/08	FASB requires more disclosure on credit derivatives	+1

Continued on next page

Table 5.9 - continued from previous page

No.	Date	Event Short Description	Indicator
35	12/11/08	FASB requires more off-balance sheet disclosures	+1
56	06/24/09	FASB proposes more disclosures on credit quality and allowance for credit lossess	+1
58	08/31/09	FASB proposes more fair value disclosures	+1
All other events			0
		Panel C: *LESS_OffB*	
2	06/19/07	Congress inquires about SFAS 140	−1
3	07/25/07	SEC clarifies SFAS 140 regarding loan modifications	−1
4	08/21/07	FASB examines improvements of SFAS 140	−1
7	11/12/07	FASB likely to terminate QSPEs	+1
8	01/09/08	SEC approves loan modifications of ARM loans	−1
10	02/29/08	FASB terminates QSPEs	+1
17	05/02/08	FASB plans stricter off-balance sheet rules	+1
18	06/04/08	Up to USD 5,000 billion could come back onto the books	+1
19	06/17/08	FASB revision of off-balance sheet rules likely to offset recent balance sheet reductions	+1
21	07/02/08	Wall Street lobbies against new off-balance sheet rules	−1
22	07/21/08	FASB's stricter off-balance sheet proposals already in August	+1
23	07/25/08	Lawmakers ask SEC and FASB to delay off-balance sheet rules	−1
24	07/29/08	FASB delays off-balance sheet rules	−1
51	04/30/09	FASB plans to publish soon stricter off-balance sheet standard	+1
52	05/18/09	FASB approves new off-balance sheet rules	+1
53	05/22/09	New off-balance sheet rules substantially shrink bank equity	+1
54	06/03/09	Policymakers being asked to postpone stricter off-balance sheet rules	−1
55	06/12/09	FASB issues stricter off-balance sheet rules	+1
All other events			0
		Panel D: *LESS_IMP*	
28	10/16/08	SEC announces that PPS can be treated as debt	+1
38	12/22/08	FASB proposes impairment relief	+1
46	03/16/09	FASB proposes more modifications to fair value measurement and OTTIs	+1
48	03/31/09	Barney Frank for reversal of held-to-maturity losses; PCAOB considers guidance	+1
49	04/02/09	FASB okays fair value measurement and impairment guidance	+1
50	04/09/09	FASB issues FSPs on fair value measurement and impairment guidance	+1
All other events			0

5.2.2 Cross-sectional Variables

This section defines the variables used in cross-sectional tests. I categorize cross-sectional variables into four different categories in line with hypotheses 5-8. First, section 5.2.2.1 describes variables that measure resilience characteristics such as leverage, firm size and regulatory capital. Second, section 5.2.2.2 specifies variables that measure financial crisis exposure. Examples are the relative magnitude of holdings of mortgage-backed securities (MBS) or the sensitivity of common stock returns to changes in the MARKIT ABX indices. Third, section 5.2.2.3 defines variables that measure a firm's asset mix such as the relative magnitude of trading or available-for-sale securities. Finally, section 5.2.2.4 outlines a measure of the information environment of firms. Throughout this section, I use upper-case letters to refer to data items from the U.S. Bank Holding Company Database maintained by the Federal Reserve Bank

of Chicago (e.g. BHCK2170 for total assets). Lower-case letters refer to data items from COMPUSTAT (e.g., 'at' for total assets).

5.2.2.1 Resilience Characteristics

This section defines the variables, which are used in cross-sectional tests of hypothesis 5 on page 25 (*Resilience-Hypothesis*). The variables related to regulatory capital and prudential regulation are specified only for BHCs if not otherwise indicated. Since FSFs are not subject to the same set of prudential regulation requirements as BHCs, the necessary data items are either not reported or do not exist.

1. *TOTAL_RATIO* is a measure of total regulatory capital. It is a proxy for a BHC's financial strengths (i.e., capitalization) and resilience to external shocks. I use *TOTAL_RATIO* to test hypothesis 5a on page 26 (*Regulatory Capital-Hypothesis*). *TOTAL_RATIO* equals 'the total regulatory capital ratio' (item # BHCK7205). I measure *TOTAL_RATIO* as of the fourth quarter of 2007. I winsorize *TOTAL_RATIO* to 30% to mitigate the effect of extreme positive outliers (1 observation affected).
2. *T1_RATIO* is a measure of core regulatory capital (tier 1). I use *T1_RATIO* to test if the composition and the characteristics of regulatory capital are related to the economic costs and benefits associated with changes to accounting standards for financial instruments. *T1_RATIO* equals 'the tier 1 regulatory capital ratio' (item # BHCK7206). I measure *T1_RATIO* as of the fourth quarter of 2007. I winsorize *T1_RATIO* to 30% to mitigate the effect of extreme positive outliers (1 observation affected).
3. *T2_RATIO* is a measure of supplementary regulatory capital (tier 2). As for *T1_RATIO*, I use *T2_RATIO* to investigate if the composition of regulatory capital is related to the economic consequences of changes to accounting standards for financial instruments. *T2_RATIO* equals the difference of 'the total regulatory capital ratio' (item # BHCK7205) and 'the tier 1 regulatory capital ratio' (item # BHCK7206). I measure *T2_RATIO* as of the fourth quarter of 2007.
4. *LEVERAGE* is a measure of borrowed capital and a proxy for the dependence of firms on external financing. I use *LEVERAGE* to test hypothesis 5b on page 26 (*Leverage-Hypothesis*). For BHCs, *LEVERAGE* equals one minus the tier 1 leverage capital ratio (item # BHCK7204). The tier 1 leverage capital ratio equals tier 1 capital divided by adjusted total assets (Fed, 2010). The higher *LEVERAGE*, the higher is a firm's dependence on external financing. For FSFs, there is no tier 1 leverage capital ratio readily available due to the different regulatory regime for these firms. I proxy a bank-like tier 1 capital ratio as one minus the sum of common/ordinary equity (item # ceq), retained earnings (item # re), capital surplus/share premium reserve (item # caps) minus treasury stock (item # tstk), scaled by total assets (item # at). I measure *LEVERAGE* for both BHCs and FSFs as of the fourth quarter of 2007.
5. *LIQUIDITY* is a measure of short-term financing needs and a proxy for a firm's resilience to external shocks. I use *LIQUIDITY* to test hypothesis 5c on page 27 (*Liquidity-Hypothesis*).

For BHCs, *LIQUIDITY* is equal to the sum of cash and balances due from depositary institutions (item # BHCK0010), non-interest bearing balances and currency and coin (item # BHCK0081) and level 1 fair value assets (item # aqpl1q), scaled by total assets (item # BHCK2170). For FSFs, *LIQUIDITY* equals cash and short term investments (item # cheq), scaled by total assets (item # atq). I measure *LIQUIDITY* for both BHCs and FSFs as of the first quarter of 2008 because disclosures on the fair value hierarchy (i.e., level 1 assets) from prior fiscal periods are not available for most sample firms.

6. *SIZE* is both a common control for unobservable factors and a variable of interest for testing hypothesis 5d on page 27 (*Size and Complexity-Hypothesis*). For both BHCs and FSFs, *SIZE* is the natural logarithm of total assets (items # BHCK2710 and # at, respectively).
7. *COMPLEXITY* represents the categorial effect of structural complexity and possibly risk inherent in a firm's business model. I use *COMPLEXITY* to test hypothesis 5d on page 27 (*Size and Complexity-Hypothesis*). For BHCs, I use the Bank Holding Company Complexity Indicator (item # RSSD9057) from the Bank Holding Company Database to construct *COMPLEXITY*. The BHC Complexity Indicator classifies for prudential regulation BHCs according to the complexity of their business activities. *COMPLEXITY* is an indicator variable, which is set to one if item # RSSD9057 equals 1, 3, 4, 5, 6, 7, or 8. It is set to zero otherwise.[106] Note that using the BHC Complexity Indicator implies testing the joint hypothesis of both the relevance of complexity for adverse second order effects of fair value accounting and the regulators' effectiveness in measuring the actual complexity of a firm's business activities. For FSFs, no regulation-based complexity indicator is readily available. Instead, I follow prior research (see, e.g., Bushman et al., 2004, and the literature cited therein on different measures of business complexity) and construct *COMPLEXITY* based on business segment information obtained from COMPUSTAT. *COMPLEXITY* is set to one for firms with a number of business segments based on item # stype in the 75th percentile of the FSF sample.
8. *RISKY_ASSETS* is a proxy for the riskiness of a BHC's balance sheet. It is calculated as the ratio of assets attracting a risk-weight of 100% relative to all risk-weighted assets. I use *RISKY_ASSETS* to test hypothesis 5e on page 28 (*Asset Risk-Hypothesis*). *RISKY_ASSETS* equals 'total assets, derivatives, and off-balance sheet items by risk weight category - 100%' (item # BHCKB699) scaled by all 'risk-weighted assets (net of allowances and other deductions)' (item # BHCKA223). I measure *RISKY_ASSETS* as of the fourth quarter of 2007.

5.2.2.2 Financial Crisis Exposure

This section defines cross-sectional variables, which capture firms' financial crisis exposure. These variables are used to test hypothesis 6 on page 29 (*Financial Crisis-Hypothesis*). I categorize variables related to financial crisis exposure into two groups: balance sheet-based

[106] See Fed (2010) for additional details on item # RSSD9057.

measures and market-based measures. Balance sheet-based variables measure the relative magnitude of claims in securitized structures recognized on the balance sheet. Such measures can be incomplete for at least two reasons. First, the residual claim in a securitized structure recognized on the balance sheet often accounts only partially for the residual risks borne by the entity holding the asset. This is due to the off-balance sheet nature of securitized structures. Second, there are reasons to believe that non-timely recognition of losses causes balance sheet values not to fully reflect recent market developments (e.g., Vyas, 2011). Accordingly, I also benchmark accounting-based measures against market-based measures, which build upon investors' assessment of the firm's sensitivity towards developments in the securitization market.

Section 5.2.2.2.1 defines *SECURITIZATION*, which measures a firm's securitization exposure based on balance sheet values. However, I also investigate if particular assets originating from securitized structures induce relatively higher benefits from changes to accounting standards for financial instruments. Thus, this section also defines variables, which capture the composition of securitized asset holdings. Variables defined here are specified only for BHCs. Since FSFs are not subject to prudential disclosure requirements similar to BHCs, the required data items are either not readily available or do not exist.

Section 5.2.2.2.2 on page 130 defines market-based measures that proxy firms' financial crisis and securitization exposure. In contrast to balance sheet-based measures, the data items required for market-based measures are readily available from commercial databases. This allows me to investigate the relation between financial crisis exposure and changes to accounting standards for financial instruments for both BHCs and FSFs.

5.2.2.2.1 Balance Sheet-based Measures

This section defines the following balance sheet-based measures, which are eventually aggregated into the variable *SECURITIZATION*:

1. *IOS* measures the total amount of interest-only strips (IOS) that BHCs retain as credit enhancements related to securitization structures. *IOS* is the sum of interest-only strips on family residential loans, home equity lines, credit card receivables, auto loans, other consumer loans, commercial and industrial loans, and all other loans (items # BHCKB712 to BHCKB718) scaled by total assets (item # BHCK2170). I measure *IOS* as of the fourth quarter of 2007.
2. *TRADING_MBS* is the total value of all mortgage-backed securities (MBS) held for trading. It equals the sum, scaled by total assets (item # BHCK2170), of
   (a) 'trading assets - mortgage pass-through securities issued or guaranteed by Freddie Mac (FNMA), Fannie Mae (FHLMC) or Ginnie Mae (GNMA)' (item # BHCK3534),
   (b) 'trading assets - other MBS issued or guaranteed by FNMA, FHLMC or GNMA (including collateralized mortgage obligations (CMOs), real estate mortgage investment conduits (REMICs), and stripped MBS)' (item # BHCK3535),
   (c) 'trading assets - all other mortgage-backed securities' (item # BHCK3536).
3. *AFS_MBS* measures the total fair value of MBS classified as available-for-sale. It equals

the sum of the fair values of all

(a) 'available-for-sale mortgage pass-through securities guaranteed by GNMA' (item # BHCK1702),

(b) 'available-for-sale mortgage pass-through securities issued by FNMA and FHLMC' (item # BHCK1707),

(c) 'other available-for-sale pass-through securities' (item # BHCK1713),

(d) 'other available-for-sale MBS (including CMO, REMIC, and stripped MBS) issued or guaranteed by FNMA, FHLMC or GNMA (item # BHCK1717),

(e) 'other available-for-sale MBS (including CMO, REMIC, and stripped MBS) collateralized by MBS issued or guaranteed by FNMA, FHLMC or GNMA (item # BHCK1732),

(f) all other available-for-sale MBS (including CMO, REMIC, and stripped MBS) (item # BHCK1736),

scaled by total assets (item # BHCK2170).

4. *LOAN_SECURITIZATION* is a measure of loan securitization exposure. It equals the sum of 'outstanding principal balances of assets sold and securitized with recourse or other seller-provided credit enhancements' for '1-4 family residential loans' (item # BHCKB705), 'home equity lines' (item # BHCKB706), 'credit card receivables' (item # BHCKB707), 'auto loans' (item # BHCKB708), 'other consumer loans' (item # BHCKB709), 'commercial and industrial loans' (item # BHCKB7010), 'all other loans' (item # BHCKB711). *LOAN_SECURITIZATION* is scaled by total assets (item # BHCK2170). I measure *LOAN_SECURITI ZATION* as of the fourth quarter of 2007.

5. *SECURITIZATION* is a measure of a firm's total securitization exposure. It is the sum of *IOS*, *TRADING_MBS*, *AFS_MBS* and *LOAN_SECURITIZATION*. Since financial institutions also hold asset-backed securities as part of their held-to-maturity portfolio, I add *HTM_ABS*, which is total fair value of the following held-to-maturity items

   (a) 'mortgage pass-through securities guaranteed by GNMA' (item # BHCK1699) or 'issued by FNMA and FHLMC' (item # BHCK1705),

   (b) 'other held-to-maturity pass-through securities' (item # BHCK1710),

   (c) 'MBS (including CMO, REMIC, and stripped MBS) issued or guaranteed by FNMA, FHLMC, or GNMA' (item # BHCK1715),

   (d) MBS (including CMO, REMIC and stripped MBS) collateralized by MBS issued or guaranteed by FNMA, FHLMC, or GNMA' (item # BHCK1719),

   (e) 'all other held-to-maturity MBS (include CMOs, REMICs, and stripped MBS)' (item # BHCK1734).

   SECURITIZATION is scaled by total assets (item # BHCK2170) and measured as of the fourth quarter of 2007.

5.2.2.2.2 Market-based Measures

This section defines three market-based measures of financial crisis exposure. First, I use the MARKIT[107] ABX.HE indices as proxies for investors' expectations about the sub-prime mortgage-backed security market and construct two related variables measuring financial crisis exposure. Second, I define *CRISIS_LOSS* as the maximum relative loss in market capitalization during the financial crisis.

The MARKIT ABX.HE indices track synthetic credit default swap (CDS) prices on fixed, equally-weighted baskets of subprime residential mortgage-backed securities (RMBS).[108] Since the ABX.HE indices began trading in January, 2006, they became a common benchmark for the market pricing of subprime mortgage backed-securities and are widely used by market participants, such as investment banks (e.g., Stanton and Wallace, 2009, pp. 6 f.). Since recently, researchers also employ the ABX.HE indices to study the sub-prime securitization market (e.g., Gorton, 2009a; Stanton and Wallace, 2009, 2011; Vyas, 2011, among others). The ABX indices differ among credit quality and vintage period. The credit quality of the underlying RMBS ranges from AAA, AA, A, BBB, BBB-, and Penultimate AAA (PENAAA).[109] There is a maximum of two vintages per year. For instance, the ABX.HE.AAA.06-1 specifies the first vintage of 2006 with AAA credit quality. I obtain data for the MARKIT ABX.HE indices from Reuters 3000 Xtra.

The first market-based measure of securitization exposure is correlation-based. I define $ABX.HE.X\_corr$ as the Pearson correlation between the daily stock return R_{it} of firm i on day t and the daily relative change of the ABX index with credit quality X and vintage period 2006-1. For instance, $ABX.HE.AAA\_corr$ is the Pearson correlation between the relative daily change of the first ABX vintage of credit quality AAA in 2006 and the daily stock return R_{it} of firm i. $ABX.HE.X\_corr$ measures the co-movement of stock returns of financial institutions with changes in the ABX.HE indices. It is a proxy of how closely equity values of financial institutions co-move with investors' expectations about the subprime securitization market.

The second market based measure of securitization exposure relies on regression analysis. I define $ABX.HE.X$ as the estimated coefficient of the daily relative price change of the first ABX 2006 vintage with credit quality X in a regression of stock returns regressed on changes of the ABX index. For instance, $ABX.HE.AAA$ is the estimated coefficient in a regression of the daily stock return R_{it} of firm i regressed on daily relative changes of the first 2006 ABX vintage with AAA credit quality. Equation 5.4 displays the regression model. β_i equals

[107] MARKIT is a data provider and financial information services firm headquartered in London, UK. See www.markit.com.

[108] See e.g., MARKIT (2008a); Stanton and Wallace (2009).

[109] The ABX.HE.PENAAA indices cover the same pools of assets as the ABX.HE.AAA indices. That is, the same baskets of RMBS with AAA credit quality from different vintages. The ABX.HE.PENAAA indices, however, differ from the ABX.HE.AAA indices in that they track bonds which "are second to last in principal distribution priority in the ABX.HE indices" (MARKIT, 2008b, p. 1). Essentially, this feature leads to a shorter duration and, thus, reduced interest-rate risk (Stanton and Wallace, 2011, p. 1).

ABX.HE.X.

$$R_{it} = \alpha_i + \beta_i R_t^{ABX.HE.X} + \varepsilon_{it} \tag{5.4}$$

where

R_{it}	is the daily stock return of sample firm i on day t obtained from the CRSP daily stock file.
α_i	is the intercept.
β_i	is a slope coefficient used as the variable *ABX.HE.X* in cross-sectional tests.
$R_t^{ABX.HE.X}$	is the daily relative change of the first ABX.HE vintage 2006 with credit quality X on day t; X wildcards credit qualities of AAA, AA, A, BBB, BBB- or Penultimate AAA (PENAAA).
ε_{it}	is an error term.

I measure both *ABX.HE.X* and *ABX.HE_corr* over the two-year period from January 1, 2008 to December 31, 2009.

CRISIS_LOSS is a measure of aggregate loss in market value during the financial crisis. I use $CRISIS\_LOSS_i$ to test if firms that suffer more heavily from the financial crisis benefit relatively more from changes to accounting standards for financial instruments. I define $CRISIS\_LOSS_i$ as the relative aggregate maximum loss in market capitalization of firm i during the three-year period from January 2007 to December 2009.[110] $CRISIS\_LOSS_i$ is computed according to formula 5.5 for each sample firm i:

$$CRISIS\_LOSS_i = \frac{\max\left[MKT\_CAP_i^{01/07 \overset{d}{\rightarrow} 12/09}\right] - \min\left[MKT\_CAP_i^{01/07 \overset{d}{\rightarrow} 12/09}\right]}{\max\left[MKT\_CAP_i^{01/07 \overset{d}{\rightarrow} 12/09}\right]} \tag{5.5}$$

where

$CRISIS\_LOSS_i$	is the relative aggregate maximum loss in market capitalization of firm i.
$MKT\_CAP_i^{01/07 \overset{d}{\rightarrow} 12/09}$	is the daily time-series from January 2007 to December 2009 for market capitalization of firm i. Data for MKT_CAP_i is obtained form CRSP and computet as item # CRSP.PRC multiplied by item # CRSP.SHROUT.

[110] I use an extended three-year time period to ensure that a "pre-crisis" market value is included in the time-series of market capitalization used to compute $CRISIS\_LOSS_i$.

5.2.2.3 Asset Mix

This section defines the following variables to test hypothesis 7 on page 30 (*Asset Mix-Hypothesis*):

1. *TRADING* is a measure of the relative size of the trading portfolio and a proxy of firms' involvement in short-term capital market transactions. *TRADING* equals the total fair value of all trading assets (items # BHCK3545 and # tdst for BHCs and FSFs, respectively) scaled by total assets (items # BHCK2170 and # at for BHCs and FSFs, respectively). I measure *TRADING* for both BHCs and FSFs as of the fourth quarter of 2007.
2. *TRADER* represents the categorical effect of firms that hold trading portfolios. *TRADER* relies on the same data items as *TRADING* but is coded as an indicator variable. It is set to one if the total fair value of all trading assets (items # BHCK3545 and # tdst for BHCs and FSFs, respectively) is non-negative and different from zero. I measure *TRADER* for both BHCs and FSFs as of the fourth quarter of 2007.
3. *AFS* is a measure of the relative size of a firm's available-for-sale (AfS) portfolio. For BHCs, *AFS* equals the total book value of all available-for-sale securities (item # BHCK1773), deflated by total assets (item # BHCK2170). For FSFs, I construct three alternative measures of *AFS* because COMPUSTAT provides no readily available data item for AfS securities.
   (a) As for BHCs, I denote the first variable *AFS*. It equals the sum of 'investment assets (insurance) - securities - total (market)' (item # iatmi) and 'investment securities - total (market) (item # istm)', scaled by total assets (item # at). I include both item # iatmi and item # istm because item # iatmi applies only to insurance companies and companies with insurance operations while # istm is a general financial services item definition (COMPUSTAT, 2010). Item # iatmi is the sum of the following individual items: 'investment assets - equity securities (market)', 'investment assets - fixed income securities (market)' and 'investment assets - securities sundry (market)' (see the Xpressfeed Data Items Manual COMPUSTAT, 2010). Since investment assets comprise in general both available-for-sale and held-to-maturity financial assets, the first component of *AFS* is biased upwards. The bias, however, is likely to be small since financial firms tend to classify only a minor portion, if any, of their fixed-income portfolio as held-to-maturity due to tainting rules.[111] The second component of *AFS*, item # istm, "represents the market valuation of all investment securities other than those classified as insurance investment assets" (item # istm COMPUSTAT, 2010). It is the sum of the following data items: 'investment securities - local governments (market)', 'investment securities - national governments (market)' and 'investment securities - other (market)'. Since # istm comprises primarily fixed-income securities, the item introduces a downward bias into *AFS* and thus appears as a conservative

[111] See, e.g. the evidence on European banks and financial service firms in Breitkreuz and Zimmermann (2011).

measure of available-for-sale financial assets. There is, however, to the best of my knowledge no item available at the time that completely resembles item # iatmi as a general financial services item definition.

(b) The second variable, denoted *AFS2*, is the sum of 'investment assets - total (insurance)' (item # iati) and 'investment securities - total' (item # ist), scaled by total assets (item # at). The first component of *AFS2*, item # iati, comprises 'investment assets - loans total (insurance)', 'investment assets - other (insurance)', 'investment assets - real estate (insurance)', 'investment assets - securities total (insurance)'. The second component of *AFS2*, item # ist, comprises 'investments other than trade or permanent investments', 'securities portfolios', 'investment securities', [...]. *AFS* and *AFS2* differ in that the latter is not limited to securities but also includes non-fungible financial instruments, such as loans held for investment purposes. As a consequence *AFS2* is likely biased upwards and defines an upper bound on the value of the available-for-sale portfolio of FSFs.

(c) The third variable, denoted as *AFS3*, is the sum of 'investment assets - equity securities (insurance)' (item # iaeq) and 'investment securities - equity' (item # iseq), scaled by total assets (item # at). *AFS3* is similar to *AFS* but consists of equity securities only. I limit *AFS3* to equity securities to resolve the classification issue that arises because both available-for-sale and held-to-maturity financial assets are part of the investment security portfolio. Since firms are prohibited from classifying equity securities as held-to-maturity financial assets, all equity instruments labeled as investment assets are included in the available-for-sale category by definition. As a consequence, *AFS3* defines a lower bound on the value of available-for-sale financial assets of FSFs. Limiting *AFS3* to equity securities, however, comes at a cost: the variable is biased downward and this bias is likely severe since fixed-income securities typically compose a major portion of the available-for-sale portfolio of financial firms.

I measure *AFS* (for both BHCs and FSFs), *AFS2* and *AFS3* as of the fourth quarter of 2007.

4. $AFS\Delta FV$ measures the difference between the fair value and the historical cost of a firm's available-for-sale security portfolio. I use $AFS\Delta FV$ to test if second order effects of fair value accounting are related to the relative magnitude of valuation differences that result from the two different accounting regimes (i.e., fair value versus historical cost). For BHCs, $AFS\Delta FV$ equals *AFS* minus the ratio of 'total amortized cost of all available-for-sale securities' (item # BHCK1772) and total assets (item # BHCK2170). For FSFs, $AFS\Delta FV$ equals *AFS* minus the sum of 'investment assets (insurance) - securities - total (cost)' (item # iatci) and 'investment securities - total (cost)' (item # istc) divided by total assets (item # at). I measure $AFS\Delta FV$ for both BHCs and FSFs as of the fourth quarter of 2007.
5. AFS_OCI measures the relative size of the revaluation reserve from available-for-sale (AfS) securities accumulated in other-comprehensive-income (OCI). I use AFS_OCI to test if

the magnitude of gains and losses on available-for-sale (AfS) securities previously accumulated in other comprehensive income is related to the economic costs and benefits of changes to accounting standards for financial instruments. For BHCs, *AFS_OCI* equals 'the net unrealized holding gains (losses) on available-for-sale securities accumulated in other comprehensive income' (item # BHCK8434) relative to 'total equity capital' (item # BHCK3210). For FSFs, *AFS_OCI* equals 'the revaluation reserve' (item # rvlrv) relative to 'shareholders' equity - total' (item # seqq). I measure *AFS_OCI* as of the fourth quarter of 2007.

6. The fair value hierarchy distinguishes between three measurement levels of financial instruments recognized on the balance sheet at fair value. Level 1 comprises only fair values, which are marked-to-market based on quoted prices in active security markets. Level 2 includes fair values, which are marked-to-model based on observable market data. Level 3 consists of fair values, which are marked-to-model based on unobservable inputs and internal assumptions.

   I use the fair value hierarchy to test if firms with a relatively high portion of less liquid assets with less reliable fair value measurements benefit comparably more from changes to accounting standards for financial instruments. In line with the fair value hierarchy, I define the following three variables:

   (a) *LEVEL1* measures the relative size of a firm's level 1 holdings. For both BHCs and FSFs, *LEVEL1* equals 'level 1 assets (quoted prices)' (item # aqpl1q), deflated by total assets (item # atq).

   (b) *LEVEL2* measures the relative size of a firm's level 2 holdings. For both BHCs and FSFs, *LEVEL2* equals 'level 2 assets (mark-to-model based on observable inputs)' (item # aol2q), deflated by total assets (item # atq).

   (c) *LEVEL3* measures the relative size of a firm's level 3 holdings. For both BHCs and FSFs, *LEVEL3* equals 'level 3 assets (mark-to-model based on unobservable, internal inputs)' (item # aul3q), deflated by total assets (item # atq).

   For both BHCs and FSFs, I measure *LEVEL1*, *LEVEL2* and *LEVEL3* as of the first quarter of 2008.

7. *FV* measures the relation between all assets recognized on the balance sheet at fair value to total assets. For both BHCs and FSFs, *FV* equals the sum of *LEVEL1*, *LEVEL2* and *LEVEL3*. I measure *FV* for both BHCs and FSFs as of the first quarter of 2008.

8. *FV2* is an alternative proxy. For both BHCs and FSFs, *FV2* equals the sum of *AFS* and *TRADING*. I measure *FV2* for both BHCs and FSFs as of the first quarter of 2008.

5.2.2.4 Information Environment

This section defines a proxy for a firm's information environment. I define *ANALYSTS* as the mean number of earnings per share (EPS) estimates for each firm during the measurement period. Data on analysts forecasts is obtained from Institutional Brokers' Estimate System (IBES). *ANALYSTS* is calculated based on the number of EPS estimates for the annual

EPS figure of 2007 (IBES item # NUMEST given that field # MEASURE=# EPS, field # FISCALP=# ANN and the year of field # FPEDATS=2007). *ANALYSTS_MEDIAN* is an alternative proxy for the information environment. It is computed the same as *ANALYSTS* but by using the median instead of the mean.

5.3 Descriptive Statistics

This section presents descriptive statistics for the cross-sectional variables defined in the previous sections. Table 5.12 reports summary statistics for the five groups of cross-sectional variables (i.e., resilience characteristics, financial crisis exposure, asset mix, and a firm's information environment). Summary statistics are discussed in sections 5.3.1 to 5.3.4. Correlation matrices are presented along with the discussion of summary statistics in the respective section.

Table 5.12
U.S. Summary Statistics

This table reports summary statistics for cross-sectional variables of 275 bank holding companies (BHCs) and 146 financial service firms (FSFs). Section 5.2.2 on page 125 contains detailed variable definitions. Panels A, B, C, D, E contain descriptive statistics for variables measuring resilience, financial crisis exposure, asset mix and a firm's information environment, respectively. Data is obtained from the Bank Holding Company Database maintained by the Federal Reserve Bank of Chicago, COMPUSTAT, Reuters 3000 Xtra, and from I/B/E/S.

Variable	Sample	N	Mean	Std.Dev.	Min	Q-1	Median	Q-3	Max
Panel A: Resilience Characteristics									
TOTAL_RATIO	BHC	275	12.4784	2.3060	8.4100	10.9200	11.8000	13.2300	30.0000
	FSF	n/a							
T1_RATIO	BHC	275	10.9691	2.5684	6.7900	9.4700	10.2900	11.9100	30.0000
	FSF	n/a							
T2_RATIO	BHC	275	1.5093	0.9053	0.0000	1.0000	1.2400	1.6000	6.0100
	FSF	n/a							
LEVERAGE	BHC	275	0.9093	0.0388	0.3533	0.9025	0.9133	0.9217	0.9597
	FSF	146	0.5034	0.2676	0.0066	0.2959	0.5192	0.7066	0.9772
	Δ		0.4058***	(24.69)			0.39†††	[14.89]	
LIQUIDITY	BHC	275	0.0542	0.0355	0.0114	0.0371	0.0480	0.0614	0.4265
	FSF	146	0.1611	0.1649	0.0012	0.0549	0.0993	0.2094	0.8641
	Δ		−0.1069***	(−10.32)			−0.05†††	[−8.77]	
SIZE	BHC	275	14.9315	1.5608	12.3258	13.8330	14.5731	15.6073	21.5061
	FSF	146	8.3322	1.8132	3.6642	7.0103	8.2481	9.6147	13.8599
	Δ		6.5992***	(39.00)			6.33†††	[16.83]	
COMPLEXITY[a]	BHC	275							
	BHC=1	72	26.18%						
	FSF	146							
	FSF=1	42	28.77%						
RISKY_ASSETS	BHC	275	0.8460	0.0875	0.2561	0.8125	0.8589	0.9002	0.9848
	FSF	n/a							
Panel B: Financial Crisis Exposure									
Sub-Panel B.1: Balance Sheet-Based Variables									
SECURITIZATION	BHC	275	0.0993	0.1030	0.0000	0.0350	0.0750	0.1287	0.7855
	FSF	n/a							
AFS_ABS	BHC	275	0.0017	0.0096	0.0000	0.0000	0.0000	0.0000	0.1478
	FSF	n/a							
HTM_ABS	BHC	275	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0024
	FSF	n/a							

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Table 5.12 - continued from previous page

Variable	Sample	N	Mean	Std.Dev.	Min	Q-1	Median	Q-3	Max
IOS	BHC	275	0.0001	0.0003	0.0000	0.0000	0.0000	0.0000	0.0029
	FSF	n/a							
LOANS_SECURITIZED	BHC	275	0.0134	0.0713	0.0000	0.0000	0.0000	0.0000	0.6926
	FSF	n/a							
TRADING_MBS	BHC	275	0.0005	0.0034	0.0000	0.0000	0.0000	0.0000	0.0353
	FSF	n/a							
AFS_MBS	BHC	275	0.0762	0.0640	0.0000	0.0264	0.0643	0.1067	0.3642
	FSF	n/a							
HTM_MBS	BHC	275	0.0074	0.0278	0.0000	0.0000	0.0000	0.0004	0.2461
	FSF	n/a							
Sub-Panel B.2: Market-Based Variables									
CRISISLOSS	BHC	275	0.7405	0.1673	0.3541	0.6181	0.7485	0.9005	0.9908
	FSF	146	0.7227	0.1651	0.3517	0.6105	0.7201	0.8540	0.9972
	Δ		0.0178	(1.04)			0.0284	[1.06]	
ABX.61.AAA	BHC	275	0.4620	0.3235	−0.2744	0.1970	0.4657	0.6729	1.5922
	FSF	146	0.6837	0.4111	−0.0812	0.3998	0.6067	0.8971	2.0368
	Δ		−0.2218***	(−6.08)			−0.141†††	[−5.05]	
ABX.61.PenAAA	BHC	275	1.0062	0.7299	−0.7568	0.4630	1.0320	1.4178	3.5243
	FSF	146	1.4926	0.8330	−0.0259	0.9317	1.2991	1.9551	5.0673
	Δ		−0.4865***	(−6.19)			−0.2672†††	[−5.24]	
ABX.61.AA	BHC	275	0.2149	0.1499	−0.1014	0.0999	0.2078	0.2915	0.8135
	FSF	146	0.3301	0.1878	0.0353	0.1977	0.2955	0.4284	0.9440
	Δ		−0.1152***	(−6.86)			−0.0877†††	[−6.06]	
ABX.61.A	BHC	275	0.1457	0.1016	−0.1000	0.0694	0.1404	0.2059	0.4825
	FSF	146	0.2229	0.1321	0.0050	0.1297	0.1948	0.2880	0.7984
	Δ		−0.0772***	(−6.66)			−0.0545†††	[−5.66]	
ABX.61.BBB	BHC	275	0.1271	0.0900	−0.1572	0.0589	0.1335	0.1832	0.3784
	FSF	146	0.1714	0.1067	0.0025	0.0991	0.1451	0.2177	0.6951
	Δ		−0.0443***	(−4.50)			−0.0116†††	[−3.38]	
ABX.61.BBB−	BHC	275	0.1551	0.1044	−0.1208	0.0686	0.1683	0.2218	0.4468
	FSF	146	0.2061	0.1127	0.0238	0.1275	0.1826	0.2631	0.6322
	Δ		−0.0509***	(−4.63)			−0.0143†††	[−3.63]	
ABX.61.AAA_corr	BHC	275	0.1070	0.0664	−0.0772	0.0528	0.1129	0.1608	0.2700
	FSF	146	0.1702	0.0626	−0.0138	0.1275	0.1666	0.2147	0.3023
	Δ		−0.0631***	(−9.47)			−0.0538†††	[−8.39]	
ABX.61.PenAAA_corr	BHC	275	0.1225	0.0791	−0.1022	0.0540	0.1379	0.1881	0.3037
	FSF	146	0.2034	0.0682	−0.0024	0.1563	0.2001	0.2527	0.3632
	Δ		−0.0809***	(−10.47)			−0.0621†††	[−9.1]	
ABX.61.AA_corr	BHC	275	0.1041	0.0621	−0.0573	0.0604	0.1112	0.1541	0.2916
	FSF	146	0.1723	0.0545	0.0135	0.1433	0.1716	0.2029	0.3038
	Δ		−0.0682***	(−11.18)			−0.0605†††	[−9.99]	
ABX.61.A_corr	BHC	275	0.0793	0.0508	−0.0415	0.0419	0.0834	0.1171	0.2490
	FSF	146	0.1304	0.0465	0.0022	0.0978	0.1330	0.1579	0.2837
	Δ		−0.0511***	(−10.11)			−0.0495†††	[−9.17]	
ABX.61.BBB_corr	BHC	275	0.0700	0.0455	−0.0507	0.0346	0.0740	0.1064	0.1620
	FSF	146	0.0987	0.0374	0.0019	0.0768	0.0984	0.1234	0.2351
	Δ		−0.0287***	(−6.54)			−0.0245†††	[−5.86]	
ABX.61.BBB−_corr	BHC	275	0.0788	0.0493	−0.0419	0.0411	0.0874	0.1178	0.1779
	FSF	146	0.1130	0.0416	0.0092	0.0851	0.1144	0.1417	0.2675
	Δ		−0.0343***	(−7.15)			−0.027†††	[−6.34]	
Panel C: Asset Mix									
TRADING	BHC	275	0.0059	0.0272	0.0000	0.0000	0.0000	0.0000	0.2930
	FSF	146	0.0346	0.1182	0.0000	0.0000	0.0000	0.0000	0.8003
	Δ		−0.0286***	(−3.84)			0.0000	[0.76]	
TRADER[a]	BHC	275							
	BHC=1	63	22.91%						
	FSF	146							
	FSF=1	25	17.12%						
AFS	BHC	275	0.1532	0.0932	0.0000	0.0925	0.1386	0.1971	0.5345
	FSF	146	0.4122	0.2758	0.0000	0.1369	0.4749	0.6473	0.8640
	Δ		−0.2591***	(−14.14)			−0.3362†††	[−8.03]	

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Table 5.12 - continued from previous page

Variable	Sample	N	Mean	Std.Dev.	Min	Q-1	Median	Q-3	Max
AFS2	BHC	n/a							
	FSF	146	0.4655	0.2979	0.0000	0.1776	0.5693	0.7228	0.8872
AFS3	BHC	n/a							
	FSF	146	0.0318	0.0655	0.0000	0.0000	0.0035	0.0372	0.5214
*AFS*Δ*FV*	BHC	275	0.0002	0.0026	−0.0092	−0.0005	0.0002	0.0009	0.0267
	FSF	146	0.0405	0.1352	−0.1879	0.0000	0.0018	0.0141	0.7357
	Δ		−0.0403***	(−4.94)			−0.0017†††	[−5.26]	
LEVEL1	BHC	275	0.0156	0.0403	0.0000	0.0000	0.0006	0.0072	0.2457
	FSF	146	0.1077	0.1537	0.0000	0.0102	0.0556	0.1207	0.8072
	Δ		−0.0921***	(−9.36)			−0.0551†††[−10.49]		
LEVEL2	BHC	275	0.1317	0.1160	0.0000	0.0385	0.1248	0.1862	0.9556
	FSF	146	0.3515	0.2546	0.0000	0.0699	0.3869	0.5804	0.8259
	Δ		−0.2198***	(−12.15)			−0.2622†††	[−7.67]	
LEVEL3	BHC	275	0.0043	0.0144	0.0000	0.0000	0.0000	0.0025	0.1722
	FSF	146	0.0296	0.0771	0.0000	0.0000	0.0039	0.0269	0.7263
	Δ		−0.0252***	(−5.26)			−0.0039†††	[−7.35]	
AFS_OCI	BHC	275	−0.0003	0.0153	−0.0791	−0.0045	0.0008	0.0059	0.0938
	FSF	146	0.0143	0.0644	−0.1543	0.0000	0.0000	0.0139	0.6517
	Δ		−0.0146***	(−3.57)			0.0008†††	[2.62]	
FV	BHC	275	0.1499	0.1119	0.0000	0.0770	0.1430	0.2011	0.7082
	FSF	146	0.4888	0.2687	0.0000	0.2773	0.5743	0.6886	0.9616
	Δ		−0.3389***	(−18.17)			−0.4313†††[−11.25]		
FV2	BHC	275	0.1591	0.0949	0.0000	0.0980	0.1447	0.2062	0.5345
	FSF	146	0.4468	0.2547	0.0000	0.2374	0.4991	0.6588	0.8640
	Δ		−0.2877***	(−16.69)			−0.3545†††[−10.23]		
Panel D: Information Environment									
ANALYSTS	BHC	275	4.4948	5.3586	0.0000	1.0000	2.5833	5.9583	25.0417
	FSF	146	6.1945	5.6692	0.0000	1.4000	4.2692	10.0000	22.5385
	Δ		−1.6997**	(−3.04)			−1.6859†††	[−3.3]	
ANALYSTS	BHC	275	4.6091	5.5726	0.0000	1.0000	2.0000	6.0000	25.0000
_MEDIAN	FSF	146	6.1986	5.7504	0.0000	1.0000	4.0000	10.0000	22.0000
	Δ		−1.5895**	(−2.75)			−2.0000†††	[−3.06]	

Δ denotes the difference between bank holding companies (BHC) and financial service firms (FSF).
***, **, * denote $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively, using a two-tailed test. t-statistics in parentheses tabulate the significance of the difference in means between BHC and FSF as measured by Δ.
†††, †, † denote $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively, using a two-tailed Wilcoxon-Mann-Whitney rank-sum test. z-scores in brackets tabulate the significance of the difference in medians between BHC and FSF as measured by Δ.
a tags an indicator variable.

5.3.1 Resilience Characteristics

Panel A of table 5.12 on page 135 reports summary statistics for the variables classified as resilience characteristics. This section discusses these summary statistics as well as the correlation matrix contained in table 5.13 on page 139.

TOTAL_RATIO is available for BHCs only. The mean total regulatory capital ratio is 12.48% with a standard deviation of 2.31%. With a median of 11.80%, the distribution is skewed to the right (skewness 2.61, not tabulated). The minimum value of *TOTAL_RATIO* is 8.41%, which exceeds slightly the 8% total regulatory capital threshold stipulated under the Basel II accord. Recall that *TOTAL_RATIO* is winsorized to 30% in the upper tail.

The mean of *T1_RATIO* is 10.97% with a standard deviation of 2.57%. The minimum value of *T1_RATIO* is 6.79%, which is fairly above the tier 1 capital threshold. The median of *T1_RATIO* is 10.29% and the distribution is skewed to the right (skewness 2.29, not tabulated).

Like *TOTAL_RATIO*, *T1_RATIO* is winsorized to 30% in the upper tail.

The mean of *T2_RATIO* is 1.51%. The maximum value of *T2_RATIO* is 6.01% and the distribution is skewed to the right (skewness 2.01, not tabulated).

The mean of *LEVERAGE* for BHCs (FSFs) is 90.93% (50.34%) and of about the same magnitude as the median with 91.33% (51.92%). The difference in both mean and median between BHCs and FSFs is both statistically and economically significant, suggesting that banks on average operate on much higher leverage compared to financial services firms. The standard deviation of *LEVERAGE* for BHCs (FSFs) is 3.88% (26.76%). The high dispersion for FSFs suggests that the use of borrowed capital and the dependence on external financing is more heterogeneous among financial service firms and more widely distributed between 0.66% and 97.72%. In fact, only 3 BHCs report *LEVERAGE* below 85% while the remaining observations are distributed between 85% and 95.97%.

The mean of *LIQUIDITY* for BHCs (FSFs) is 5.42% (16.11%). The difference in *LIQUIDITY* between BHCs and FSFs is both statistically and economically significant. That is, liquidity buffers of financial service firms are on average about three times the magnitude of those of banks. As for *LEVERAGE*, the dispersion of *LIQUIDITY* is higher for FSFs and of about the same magnitude as the mean. The distribution of *LIQUIDITY* is skewed to the right for both BHCs and FSFs. The positive skewness, however, is substantially more pronounced for BHCs (skewness of 5.33 (1.88) for BHC (FSF), not tabulated).

BHCs and FSFs differ substantially in terms of *SIZE*. The mean of *SIZE* is 14.93 (8.33) for BHCs (FSFs) and the difference is statistically significant. The minimum value of *SIZE* for BHCs is 12.32, which is substantially above the mean value of for FSFs (i.e., 8.33). Similarly, the maximum value of *SIZE* for FSFs is 13.86, which is about the same magnitude as the first quartile value of BHCs (i.e., 13.83). Overall, sample banks are substantially larger than financial service firms.

COMPLEXITY is a dummy variable that measures the categorial effect of structural complexity. *COMPLEXITY* is set to one for 72 (42) BHCs (FSFs) suggesting that 26.18% (28.77%) of BHCs (FSFs) are considered complex based on the prudential complexity indicator (the number of business segments).

RISKY_ASSETS is the ratio of assets attracting a risk-weight of 100% relative to all risk-weighted assets and is only available for BHCs. The mean of *RISKY_ASSETS* is 84.60%, which seems fairly high. The median, however, is roughly of the same magnitude suggesting that the high percentage of risky assets is not due to outliers.

Table 5.13 on the following page reports Pearson-correlation coefficients of U.S. resilience characteristics. Note that correlation coefficients for BHCs (FSFs) are below (above) the diagonal. *LEVERAGE* is negatively correlated with *LIQUIDITY* (for both BHCs and FSFs), *TOTAL_RATIO*, *T1_RATIO* and *RISKY_ASSETS*. This suggests that banks, which operate on higher leverage, tend to be less liquid, less well-capitalized and carry more risk on their balance sheet, and vice versa. *LEVERAGE*, however, is positively correlated with *T2_RATIO*. The components of tier 2 capital yield a possible explanation. For instance, subordinated debt

increases tier 2 capital and is also counted as borrowed capital when calculating leverage. Accordingly, more (less) subordinated debt likely relates linearly to a higher (lower) tier 2 capital ratio.

For BHCs, there is a positive linear relationship between *LIQUIDITY* and *SIZE*. This relationship, however, is not statistically significant. In contrast, for FSFs the correlation coefficient is negative and statistically significant. The magnitude of -0.38 is fairly high suggesting a strong negative linear relationship between liquidity and size. For BHCs, *LIQUIDITY* is also positively correlated with regulatory capital ratios, that is *TOTAL_RATIO*, *T1_RATIO* and *T2_RATIO*. The correlation coefficient for *T2_RATIO*, however, is not statistically significant. Nevertheless, the positive linear relation suggests that higher liquidity coincides with higher regulatory capital.

SIZE is negatively correlated with *TOTAL_RATIO* as well as *T1_RATIO* and negatively correlated with *T2_RATIO*. This suggests that larger banks on average are less well-capitalized, but make more extensive use of supplementary regulatory capital (correlation coefficient of 0.6).

Table 5.13
Pearson Correlation Matrix of U.S. Resilience Characteristics

This table reports Pearson-correlation coefficients of U.S. resilience characteristics of 275 bank holding companies (BHCs) and 146 financial service firms (FSFs). Section 5.2.2 on page 125 contains detailed variable definitions. Correlation coefficients of BHC (FSF) are below (above) the diagonal. Data is obtained from the Bank Holding Company Database maintained by the Federal Reserve Bank of Chicago and from COMPUSTAT.

	TOTAL_ RATIO	*T1_ RATIO*	*T2_ RATIO*	*LEVER AGE*	*LIQUID ITY*	*SIZE*	*RISKY_ ASSETS*
TOTAL_RATIO	1.0000						
T1_RATIO	0.9366***	1.0000					
T2_RATIO	−0.1101	−0.4513***	1.0000				
LEVERAGE	−0.5918***	−0.5961***	0.1839**	1.0000	−0.2469**	0.4470***	
LIQUIDITY	0.2450***	0.2131***	0.0195	−0.2358***	1.0000	−0.3798***	
SIZE	−0.1863**	−0.3786***	0.5997***	0.1614**	0.0970	1.0000	
RISKY_ASSETS	−0.3219***	−0.3297***	0.1156	−0.1796**	−0.1213*	−0.0572	1.0000

***, **, * denote $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively, using a two-tailed test.

Overall, the descriptive statistics in this section suggest that BHCs compared to FSFs are relatively less resilient toward shocks in the financial system. BHCs on average operate on higher leverage, maintain less liquidity and devote a fairly high portion of their balance sheet to risky assets. Therefore, hypothesis 5 on page 25 (*Resilience-Hypothesis*) predicts that BHCs benefit relatively more on average from changes to accounting standards for financial

instruments during the financial crisis.

5.3.2 Financial Crisis Exposure

Panel B of table 5.12 on page 135 reports summary statistics for variables measuring financial crisis exposure. This section discusses the summary statistics of both balance sheet-based and market-based variables contained in sub-panels B.1 and B.2, respectively. Table 5.14 on page 142 contains the corresponding correlation matrices.

5.3.2.1 Balance Sheet-Based Variables

SECURITIZATION measures the portion of the balance sheet that banks devote to holdings of securitized financial instruments. It is the sum of the remaining variables in sub-panel B1. Note that sub-panel B.1 reports *SECURITIZATION* only for BHCs since the required data items are not available for FSFs. The mean of *SECURITIZATION* is 9.93% with a standard deviation of 10.3%. This suggests that banks on average devote about 10% of their balance sheets to financial instruments which originate from securitized structures. The distribution of *SECURITIZATION* is skewed to the right (skewness 2.77, not tabulated). Note that the maximum value of *SECURITIZATION* is 78.55% indicating that this particular bank commits roughly 80% of its balance sheet to financial instruments originating from securitized structures.

The mean of *AFS_ABS* is 0.017% with a standard deviation of 0.096% and a median of 0%. This evidences that few sample banks actually hold asset-backed securities in their available-for-sale portfolio (actually, 61 BHCs report non-zero value for *AFS_ABS*, not tabulated). The resulting distribution is substantially skewed to the right (skewness 13.25, not tabulated). Also note that the maximum value of *AFS_ABS* is 14.78%, which demonstrates that one sample bank allocates about 15% of its balance sheet to *AFS_ABS* securities.

For *HTM_ABS* the portion of the balance sheet that banks dedicate on average to this type of securities is even smaller. Both mean and median are zero (actually, only 4 BHCs report non-zero value for *HTM_ABS* resulting in a considerable right-skewed distribution, skewness 16.11, not tabulated). The statistics for *IOS* are similar.

The mean of *LOANS_SECURITIZED* is 1.34% with a standard deviation of 7.13%. The median however is zero suggesting that the mean value is affected by large positive observations. Note that the maximum value is 69.26% indicating that at least one sample bank devotes more than two-thirds of its balance sheet to securitized loans.

The mean of *AFS_MBS* is 7.62%, which reveals that on average the majority of securitized assets is accounted for under this category. In contrast to the other components of securitization, the first quartile value is different from zero with 2.64%. The distribution of *AFS_MBS* is slightly right-skewed (skewness 1.25, not tabulated).

Banks on average hold 0.074% of their total assets as *HTM_MBS*. The median is 0% and the maximum value for *HTM_MBS* securities is 24.61% suggesting that at least one bank allocates about one quarter of its balance sheet to held-to-maturity mortgage-backed securities.

Table 5.13 on page 139 reports in panel A correlation coefficients of balance sheet-based variables of financial crisis exposure. Two additional market-based variables, *CRISISLOSS* and *ABX.61.AAA*, are added for comparison.[112]

There is a positive linear relationship between *SECURITIZATION* and the remaining variables in panel A, except for *CRISISLOSS*. For the balance sheet-based variables *AFS_ABS* to *AFS_MBS*, this relationship is merely technical because *SECURITIZATION* is computed as the sum of these variables. The positive, statistically significant correlation between *SECURITIZATION* and *ABX.61.AAA* is of the expected sign. It evidences the positive relation between a firm's sensitivity to changes in the market valuation of subprime securities and the actual size of its portfolio of those and similar instruments.

Note, however, that the correlation between *CRISISLOSS* and *SECURITIZA TION* is negative and, even though not statistically significant, it is not of the expected sign. Instead, one would expect that the maximum loss in market capitalization during the financial crisis is positively, if at all, correlated with the fraction of a bank's balance sheet that is allocated to financial instruments originating from securitizations; particularly, considering the positive, statistically significant correlation of both *CRISISLOSS* and *SECURITIZATION* with *ABX.61.AAA*. The negative correlation between *CRISISLOSS* and *SECURITIZATION* is largely attributable to the negative and statistically significant correlation between *AFS_MBS* and *CRISISLOSS*. The sign and the significance of this correlation is robust to non-parametric measures of dependence, i.e., the Spearman correlation coefficient is -0.2081, $p = 0.0005$, not tabulated. Excluding *AFS_MBS* when calculating *SECURITIZATION* yields a Pearson correlation coefficient of 0.0634. Although this adjusted coefficient is of the expected sign, it is not statistically different from zero ($p = 0.2951$), which likely is attributable to the limited number of observations taking non-zero values in *SECURITIZATION*. Nevertheless, the significant negative correlation between *AFS_MBS* and *CRISISLOSS* remains an interesting, unexpected empirical finding, although it is possibly driven by measurement error and unobservable, omitted factors correlated with *AFS_MBS*.

[112] The statistical properties of *CRISISLOSS* and *ABX.61.AAA* are discussed in detail in section 5.3.2.2 on page 143.

Table 5.14 – Pearson Correlation Matrix of Variables Measuring U.S. Financial Crisis Exposure

This table reports Pearson-correlation coefficients of variables measuring financial crisis exposure of 275 bank holding companies (BHCs) and 146 financial service firms (FSFs). Panel A (panel B) contains correlation coefficients of balance sheet-based (market-based) variables. Section 5.2.2 on page 125 contains detailed variable definitions. Correlation coefficients of BHC (FSF) are below (above) the diagonal. Data is obtained from the Bank Holding Company Database maintained by the Federal Reserve Bank of Chicago, CRSP and from Reuters 3000 Xtra.

Panel A: Balance Sheet-Based Measures

	CRISIS LOSS (1)	*SECURITIZ.* (2)	*AFS_ABS* (3)	*HTM_ABS* (4)	*IOS* (5)	*LOANS SECURIT.* (6)	*TRADING_MBS* (7)	*AFS_MBS* (8)	*HTM_MBS* (9)	*ABX.61.AAA* (10)
(1)	1.0000									
(2)	−0.0903	1.0000								
(3)	0.0353	0.1766**	1.0000							
(4)	−0.0260	0.0287	−0.0059	1.0000						
(5)	0.1394*	0.2754***	0.0011	−0.0069	1.0000					
(6)	0.1167	0.7043***	0.0170	−0.0006	0.4001***	1.0000				
(7)	0.0668	0.3682***	0.0124	0.0168	0.3109***	0.4929***	1.0000			
(8)	−0.2222***	0.6577***	0.1139	0.0398	−0.0039	0.0111	0.0014	1.0000		
(9)	−0.1436*	0.2756***	0.0028	0.0109	−0.0458	−0.0500	−0.0328	0.0658	1.0000	
(10)	0.3584***	0.2348***	0.1525*	0.0544	0.2750***	0.2544***	0.2717***	0.0545	0.0031	1.0000

Panel B: Market-Based Measures

	CRISIS LOSS (1)	*SECURITIZ.* (2)	*ABX.61.*						*ABX.61.X_corr*					
			AAA (3)	*PenAAA* (4)	*AA* (5)	*A* (6)	*BBB* (7)	*BBB−* (8)	*AAA* (9)	*PenAAA* (10)	*AA* (11)	*A* (12)	*BBB* (13)	*BBB−* (14)
(1)	1.0000		0.6701***	0.6180***	0.6932***	0.6370***	0.6373***	0.6045***	0.2348**	0.0395	0.2161**	0.1349	0.1793*	0.0438
(2)	−0.0903	1.0000												
(3)	0.3584***	0.2348***	1.0000	0.9549***	0.9732***	0.8205***	0.7820***	0.7860***	0.6895***	0.4994***	0.6516***	0.4571***	0.4216***	0.3372***
(4)	0.2918***	0.2260***	0.9479***	1.0000	0.9239***	0.6975***	0.6866***	0.7077***	0.6921***	0.6036***	0.6557***	0.3616***	0.3571***	0.3031***
(5)	0.3861***	0.2033***	0.9345***	0.8913***	1.0000	0.8563***	0.8172***	0.8026***	0.6049***	0.4147***	0.6324***	0.4472***	0.4148***	0.3067***
(6)	0.3510***	0.2247***	0.8443***	0.8049***	0.8779***	1.0000	0.9340***	0.9161***	0.4744***	0.2395**	0.4994***	0.6685***	0.5973***	0.4621***
(7)	0.2791***	0.2204***	0.7799***	0.7723***	0.7615***	0.8344***	1.0000	0.9568***	0.4056***	0.2000*	0.4259***	0.5645***	0.6828***	0.5048***
(8)	0.3192***	0.1980***	0.8125***	0.8050***	0.8187***	0.8475***	0.9413***	1.0000	0.5023***	0.3185***	0.5082***	0.6271***	0.7062***	0.6374***
(9)	0.0262	0.2867***	0.8715***	0.8262***	0.7906***	0.7481***	0.7252***	0.7478***	1.0000	0.9123***	0.9466***	0.6947***	0.5912***	0.6525***
(10)	−0.0713	0.2675***	0.7978***	0.8583***	0.7296***	0.6918***	0.6982***	0.7236***	0.9379***	1.0000	0.8679***	0.5398***	0.4699***	0.5923***
(11)	0.0477	0.2707***	0.8196***	0.7865***	0.8542***	0.7929***	0.7198***	0.7618***	0.9417***	0.8952***	1.0000	0.7300***	0.6207***	0.6656***
(12)	0.0199	0.2590***	0.7070***	0.6754***	0.7231***	0.8783***	0.7532***	0.7632***	0.8434***	0.8033***	0.8858***	1.0000	0.8379***	0.8229***
(13)	−0.0363	0.2382***	0.6301***	0.6261***	0.6010***	0.6969***	0.8869***	0.8227***	0.7876***	0.7769***	0.7821***	0.8325***	1.0000	0.9088***
(14)	−0.0157	0.2268***	0.6574***	0.6551***	0.6452***	0.7127***	0.8298***	0.8787***	0.8224***	0.8148***	0.8317***	0.8530***	0.9378***	1.0000

***, **, * denote $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively, using a two-tailed test.

5.3.2.2 Market-Based Variables

Sub-panel B.2 of table 5.12 on page 135 reports summary statistics for market-based variables measuring financial crisis exposure. The first variable, *CRISISLOSS* measures the maximum loss in market capitalization during the financial crisis. The summary statistics of *CRISISLOSS* demonstrate massive deteriorations in market values of financial institutions during the turmoil period from 2007 to 2009. Banks and financial service firms lose on average 74.05% and 72.27% of their market capitalization, respectively. The difference between BHCs and FSFs is not statistically significant (t-value and z-score somewhat above one). This suggests that banks and financial service firms share to a similar extent losses from the financial crisis. The minimum value of *CRISISLOSS* for banks and financial service firms ranges around 35% indicating that even firms, which were less affected by the crisis, lost more than one-third of their market value. The maximum value of *CRISISLOSS* for both banks and financial service firms is above 99% indicating that firms lost at a maximum virtually their entire market value.

The variables *ABX.61.AAA* to *ABX.61.BBB−* measure the sensitivity of firms' stock returns to changes in the ABX subprime mortgage-backed security indices. For all credit qualities, both the mean and the median of banks are lower than the corresponding values for financial service firms. The difference is statistically significant at the 1% level in all cases. This implies that daily stock returns of financial service firms are more sensitive on average to daily changes in the ABX indices and thus face a higher exposure to developments in the subprime mortgage-backed security market. Also, the average sensitivity for both banks and financial services firms is a monotonically decreasing function of credit quality except for *ABX.61.PENAAA* and *ABX.61.BBB−*. The mean of *ABX.61.PENAAA* is above one suggesting that a change of one percentage point corresponds on average to a change of approximately one percentage point in a bank's stock return. For financial service firms, this effect is even more pronounced with a mean of roughly 1.5.

The variables *ABX.61.AAA_corr* to *ABX.61.BBB − _corr* measure the correlation of firms' stock returns to changes in the ABX subprime mortgage-backed security indices. The statistical properties are similar to the regression-based variables discussed above. That is, the linear relation is positive on average and higher for financial service firms than for banks. This difference is statistically significant at the 1% level in all cases. This suggests that daily stock returns of financial service firms experience a higher degree of co-movement with changes in the ABX subprime mortgage-backed security indices than banks.

Table 5.13 on page 139 reports in panel B correlation coefficients of market-based variables of financial crisis exposure. I add *SECURITIZATION* for comparison. The correlation coefficients are largely as expected. *CRISISLOSS* is positively correlated with all *ABX.61.X* variables for both BHCs and FSFs (rows and columns (3) to (8), respectively). The coefficients are statistically significant at the 1% level. For *ABX.61.X_corr* variables, there is no statistically significant correlation with *CRISISLOSS* for BHCs (rows (9) to (14)). *SECURITIZATION*

is positively correlated with all market-based measures of financial crisis exposure. The coefficients are statisitcally significant at the 1% level with no exception.

Overall, the descriptive statistics in this section indicate that FSFs compared to BHCs face a higher exposure to market-based measures of financial crisis exposure. Regarding hypothesis 6 on page 29 (*Financial Crisis Exposure-Hypothesis*), this seems to suggest that FSFs likely benefit relatively more on average from changes to accounting standards for financial instruments. As a stand-alone prediction, however, this overlooks the possible impact of balance sheet-induced financial crisis exposure for which no data is available for FSFs. Therefore, this section combined with the descriptive statistics from the previous section provide no unambiguous prediction based on hypothesis 6.

5.3.3 Asset Mix

Panel C of table 5.12 on page 135 reports summary statistics for variables measuring firms' asset mix. *TRADING* measures the size of the trading portfolio relative to total assets and is a proxy of firms' involvement in short-term capital market transactions. The mean of *TRADING* for banks and financial service firms is 0.059% and 3.46%, respectively. The size difference between trading portfolios of banks and financial service firms is statistically significant at the 1% level indicating that financial service firms engage at a relatively higher scale in short-term capital market transactions. The comparably high dispersion around the means stems from the fact that only 22.91% of banks and 17.12% of financial service firms (see the indicator variable *TRADER*) engage at all in short-term trading activities.

AFS is a measure of the relative size of a firm's available-for-sale (AfS) portfolio and a proxy for firms' exposure to accounting changes that directly affect this category. Banks on average allocate about 15% of the balance sheet to available-for-sale securities. In contrast, the fraction of the balance sheet that financial service firms commit on average to the available-for-sale category is 41.22% and thus exceeds considerably the corresponding allocation by banks. The difference of 25.91 %-points is significantly different from zero, which confirms that financial service firms on average hold more financial instruments as available-for-sale.[113]

AFS2 is an alternative measure for the available-for-sale portfolio of financial service firms. The mean value is 46.55%, which is slightly above the mean for *AFS* and consistent with *AFS2* being an upper bound on the relative size of the available-for-sale portfolio of financial service firms.

AFS3 is the second alternative measure for the relative size of the available-for-sale portfolio of financial service firms. The mean of *AFS3* is only 3.18%. While this is consistent with *AFS3* being a lower bound of the relative size of the available-for-sale portfolio, the low mean is at strong variance with both *AFS* and *AFS3*. For that reason, I discard *AFS3* from further analysis.

[113] Note, however, that the high mean for FSFs is partly driven by some large observation in the right tail. Nevertheless, based on both the quartile values and the median the difference seems systematic.

$AFS\Delta FV$ measures the difference between fair value and historical cost of firms' available-for-sale security portfolio. This difference is small on average for banks with a mean of 0.02%. Also, the maximum value of $AFS\Delta FV$ is 2.67% for banks. For financial service firms, the difference between fair value and the historical cost of available-for-sale securities is on average 4.05%, which is significantly different from the corresponding value for banks. For FSFs, however, the magnitude of the mean is affected by some large observations in the right tail, e.g., the maximum value for $AFS\Delta FV$ is 73.57%. Nevertheless, the difference between fair value and historical cost seems rather systematic. Note also that the difference in medians is statistically significant as well. Possible explanations include both heterogeneous investment horizons and portfolio strategies.

LEVEL1 measures the relative size of a firm's level 1 fair value holdings. For banks, level 1 financial instruments on average amount to 1.56% of the balance sheet. The maximum value is 24.57% suggesting that banks at a maximum mark-to-market one fourth of their balance sheet. For financial service firms, 10.77% of the balance sheet is marked-to-market on average. The magnitude of the mean, however, is affected by large observations in the right tail, e.g., the maximum value of *LEVEL1* is 80.72%, indicating that one financial service firm marks-to-market about four-fifths of its balance sheet.

For *LEVEL2*, the average allocation on banks' balance sheets sums up to 13.17% with a standard deviation of 11.6%. The maximum value is 95.56% suggesting that banks at a maximum mark-to-model almost their entire balance sheet using observable inputs. For financial service firms, the mean is 35.15%, which evidences that more than one-third of the balance sheet are on average marked-to-model using observable inputs. The difference between banks and financial service firms is statistically significant at the 1% level.

Regarding *LEVEL3*, the statistical properties are similar. While banks devote only 0.43% of their balance sheet to level 3 financial assets, financial service firms on average mark-to-model 2.96% using unobservable inputs. Again, the difference is statistically significant at the 1% level, which implies that financial service firms on average hold more level 3 financial assets than banks.

AFS_OCI measures the relative size of the valuation reserve from available-for-sale securities accumulated in other-comprehensive-income (OCI). The mean is negative for banks with -0.03% and positive for financial service firms with 1.43%. The statistically significant difference suggests that a larger fraction of FSFs' equity is derived from unrealized gains and losses originating from available-for-sale securities. This is consistent with the statistical properties of *AFS*, which on average is significantly higher for FSFs.

FV measures the ratio of assets recognized on the balance sheet at fair value relative to total assets. On average, banks allocate about 14.99% of total assets to balance sheet categories accounted for at fair value. In contrast, financial service firms devote almost half (i.e., 48.88%) of the balance sheet to assets accounted for at fair value. The difference is statistically significant at the 1% level.

FV2 is an alternative proxy for a firm's fair value exposure. The mean of *FV2* is slightly

above the mean of *FV*, i.e., 15.91%. For financial service firms, the mean value of *FV2* is slightly below the mean of *FV* with 44.68%. As for *FV*, the difference in means between banks and financial service firms is statistically significant at the 1% level, which indicates that financial service firms on average recognize substantially more assets at fair value on the balance sheet.

Table 5.15 on the following page reports Pearson-correlation coefficients of variables measuring fair value exposure. *TRADING* is negatively correlated with *AFS* for both banks and financial service firms. For banks, however, the correlation coefficient is not significantly different from zero. For FSFs, the statistically significant negative correlation suggests that firms with large trading portfolios hold on average less available-for-sale financial assets and vice versa. This seems consistent with the business model of financial service firms, such as insurers, which account for most of their financial assets as available-for-sale and hold on average relatively few trading assets. For BHC, *TRADING* is positively correlated with *LEVEL1*, *LEVEL2*, and *LEVEL3*, suggesting that banks with relatively more trading assets account on average for more financial instruments at fair value on the balance sheet. This is in line with the positive statistically significant correlation of trading with *FV* and *FV2*. Note, however, that for FSFs the correlation between *TRADING* and *LEVEL2* is negative and statistically significant at the 10% level. This indicates that FSFs with relatively larger trading portfolios mark-to-model less financial assets using observable inputs. Also for FSFs, *TRADING* is not correlated with both *FV* and *FV2*, which evidences that the relative size of the trading portfolio is on average not an indicator for overall fair value holdings.

AFS is positively correlated with *LEVEL2* and *LEVEL3* for BHCs. The correlation of *AFS* with *LEVEL1* is positive, but not statistically significant. Similar to *TRADING*, there is a positive correlation between *AFS* and *FV* and *FV2*. The correlation coefficient, however, is substantially above the coefficient of *TRADING*. Interestingly, the correlation between *AFS* and *AFS_OCI* is negative and statistically significant at the 10% level. This suggests that for banks a higher fraction of available-for-sale securities is associated with a lower fraction of unrealized gains and losses in equity. For FSFs, the corresponding correlation coefficient is of the opposite (and expected) sign. This in turn indicates that a higher available-for-sale portfolio corresponds to a higher portion of unrealized gains and losses in equity from this category. For banks, there is no statistically significant correlation between $AFS\Delta FV$ and other variables measuring fair value exposure except for *AFS_OCI*. The high and statistically significant correlation between $AFS\Delta FV$ and *AFS_OCI* seems plausible since it evidences that a higher difference between fair value and historical cost of available-for-sale financial assets corresponds to a higher fraction of equity allocated to unrealized gains and losses from these assets.

Table 5.15
Pearson Correlation Matrix of Variables Measuring U.S. Asset Mix

This table reports Pearson-correlation coefficients of variables measuring the asset mix of 275 bank holding companies (BHCs) and 146 financial service firms (FSFs). Section 5.2.2 on page 125 contains detailed variable definitions. Correlation coefficients of BHC (FSF) are below (above) the diagonal. Data is obtained from the Bank Holding Company Database maintained by the Federal Reserve Bank of Chicago and from COMPUSTAT.

	TRADING	*AFS*	*AFS* ΔFV	*LEVEL1*	*LEVEL2*	*LEVEL3*	*FV*	*FV2*	*AFS_OCI*
TRADING	1.0000	−0.3863***	−0.0814	0.2096*	−0.1923*	0.2764***	0.0170	0.0458	−0.0788
AFS	−0.0854	1.0000	0.1516	−0.0374	0.7076***	−0.0173	0.6440***	0.9037***	0.2188**
AFSΔFV	0.0610	0.0026	1.0000	0.0525	0.2067*	−0.1107	0.1941*	0.1264	−0.1289
LEVEL1	0.1556**	0.0380	0.0846	1.0000	−0.2318**	−0.0690	0.3324***	0.0568	−0.0064
LEVEL2	0.2913***	0.5997***	−0.0503	−0.1170	1.0000	−0.0609	0.7974***	0.6771***	0.0035
LEVEL3	0.1726**	0.2535***	−0.1171	0.0287	0.2842***	1.0000	0.1898*	0.1095	0.6079***
FV	0.2216***	0.6842***	−0.0378	0.1889**	0.9242***	0.3814***	1.0000	0.7054***	0.1741*
FV2	0.2027***	0.9584***	0.0201	0.0819	0.6729***	0.2987***	0.7360***	1.0000	0.2004*
AFS_OCI	0.0722	−0.1426*	0.7604***	0.1390*	−0.0677	−0.1421*	−0.0417	−0.1194*	1.0000

***, **, * denote $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively, using a two-tailed test.

Overall, the descriptive statistics in this section suggest that FSFs hold substantially more assets at fair value on the balance sheet than banks. If fair value accounting *per se* triggers adverse second order effects, FSFs are predicted to benefit relatively more from changes to accounting standards for financial instruments based on hypothesis 7 on page 30 (*Asset Mix-Hypothesis*).

5.3.4 Information Environment

Panel D of table 5.12 on page 135 reports summary statistics for variables measuring a firm's information environment. *ANALYSTS* (*ANALYSTS_MEDIAN*) is the mean (median) number of earnings-per-share (EPS) estimates for each firm. For BHCs, the mean number of EPS estimates is 4.49. This is significantly below the mean for FSFs, which is 6.19. The standard deviation, however, is fairly high for banks and financial service firms alike. The median for both BHC and FSF is below the mean suggesting that the distribution is affected by firms with a relatively large number of analysts. The summary statistics for *ANALYSTS_MEDIAN* are similar. The mean for BHCs (FSFs) is 4.61 (6.70). Again, the difference is statistically significant at the 5% level.

Table 5.16 on the following page reports Pearson correlations for *ANALYSTS* and *ANALYSTS_MEDIAN*. I add selected variables from panels A-C of table 5.12 on page 135 for comparison. For banks, *ANALYSTS* is positively correlated with *LIQUIDITY*, *SIZE* and *CRISIS_LOSS* as well as *ABX.61.AAA*. These correlations are consistent with the corresponding coefficients of *ANALYSTS_MEDIAN*. This suggests that analyst following is positively associated with measures of financial crisis exposure and higher for large, liquid firms. Interestingly, the correlation between *ANALYSTS* and *TOTAL_RATIO* is negative and significant at

the 5% level. This evidences that lower regulatory capital ratios coincide with higher analyst following. For financial service firms, there is a statistically significant, positive correlation of *ANALYSTS* with *SIZE*, *FV* (significant at the 10% level) and *ABX.61.AAA*, but not with *LIQUIDITY*.

Table 5.16
Pearson Correlation Matrix of Variables Measuring U.S. Information Environment and Selected Variables from Tables 5.13 to 5.15

This table reports Pearson-correlation coefficients of variables measuring the information environment of 275 bank holding companies (BHCs) and 146 financial service firms (FSFs) as well as selected variables from tables 5.13 to 5.15. Section 5.2.2 on page 125 contains detailed variable definitions. Correlation coefficients of BHC (FSF) are below (above) the diagonal. Data is obtained from the Bank Holding Company Database maintained by the Federal Reserve Bank of Chicago, CRSP, I/B/E/S, COMPUSTAT, and from Reuters 3000 Xtra.

	ANALISTS	*ANALYSTS_MEDIAN*	*LEVERAGE*	*LIQUIDITY*	*SIZE*	*TOTAL_RATIO*	*CRISISLOSS*	*ABX.61.AAA*
ANALISTS	1.0000	0.9955***	0.0116	−0.035	0.5755***		0.0142	0.2240**
ANALYSTS_MEDIAN	0.9968***	1.0000	0.0227	−0.0257	0.5827***		0.0174	0.2253**
LEVERAGE	0.0661	0.0674	1.0000	−0.2469**	0.4470***		0.2606**	0.3235***
LIQUIDITY	0.1292*	0.1252*	−0.2358***	1.0000	−0.3798***		−0.0579	−0.1398
SIZE	0.8406***	0.8431***	0.1614**	0.097	1.0000		0.1979*	0.4408***
TOTAL_RATIO	−0.1697**	−0.1688**	−0.5918***	0.2450***	−0.1863**	1.0000		
CRISISLOSS	0.1731**	0.1785**	−0.0076	−0.1920**	0.1681**	−0.2597***	1.0000	0.6701***
ABX.61.AAA	0.5746***	0.5759***	0.0576	−0.0382	0.6969***	−0.1843**	0.3584***	1.0000

***, **, * denote $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively, using a two-tailed test.

6 U.S. Empirical Results

This chapter reports empirical results of event study and cross-sectional tests for stock market reactions to changes to U.S. accounting standards for financial instruments. Section 6.1 reports event study results. Section 6.2 on page 160 discusses the empirical results of cross-sectional tests. Finally, section 6.3 on page 182 concludes.

6.1 Stock Market Reactions

This section reports and examines the empirical results of event study tests of both individual events and cumulative groups of events in subsections 6.1.1 and 6.1.2, respectively. The evidence contributes to the following questions:

1. Do changes to accounting standards matter to investors because they affect the risk- and return-profile and, thus, the market value of equity of banks and financial service firms? Therefore, are changes to accounting standards associated with stock market reactions of financial institutions which are both economically and statistically significant?
2. Is the direction of stock market reactions to changes of accounting standards for financial instruments consistent with hypotheses 1-4 as outlined in section 2.1 on page 9?

Subsection 6.1.1 contains the related evidence with respect to individual events. Subsection 6.1.2 contains the related evidence regarding cumulative events and reports estimated coefficients of *SIGNED_MEAN* variables.

6.1.1 Individual Events

Table 6.1 on page 152 at the end of this subsection contains the empirical results discussed here. Table 6.1 reports market reactions to 61 key events related to changes of U.S. accounting standards for financial instruments and off-balance sheet items for 275 bank holding companies (BHCs) and 146 financial service firms (FSFs).[114] As outlined in section 3.2.2 on page 42, the stock market reaction is estimated using the augmented market model regression in equation (6.1) on page 152 over the period from April 2, 2007 to June 2, 2010. Equation (6.1) regresses daily stock returns of sample firms on daily returns of the CRSP equally-weighted index, daily relative changes of 6-months U.S. Treasury bills secondary market rates and 61 indicator variables. Each indicator variable D_{kt} represents one event window k. Indicator variables are set to one during the event window and to zero otherwise. The estimated coefficient γ_k can be interpreted as $\overline{CAR}_k(\tau_1, \tau_2)$, which is the average cumulative abnormal return of all sample firms during event k, which spans from event day τ_1 to event day τ_2. That is,

[114] Section 4.2 on page 51 contains a detailed event history; table 4.1 on page 99 provides an overview of the analyzed events.

$k = [\tau_1, \tau_2]$.

For the sample of BHCs, the estimated market reaction is of the predicted sign for 48 events (78.69%) out of 61 events reported in table 6.1. 13 events (21.31%) provoke a market reaction that is (direction-wise) not in line with hypotheses 1-4. I use a binomial test on a dummy variable coded as one if the market reaction to event k is of the predicted sign, and zero otherwise. Testing a hypothetical value of 50% yields $p = 0.0000$ on the one-sided test, i.e., H0: Pr(actual <= hypothesized value), indicating that the actual proportion of market reactions of the predicted sign is significantly above the 50% threshold.[115] This makes it unlikely that market reactions are of the predicted sign due to chance. Overall, the relation between market reactions of the predicted sign to all market reactions is consistent with hypotheses 1-4 for BHCs.

Considering statistical significance, out of the 48 market reactions, which are of the predicted sign, 37 (77.08%) are statistically different from zero at the 10% level or above. In other words, out of the 61 market reactions reported in table 6.1, 37 (60.66%) are both of the predicted sign and statistically different from zero. Only two market reactions (events No. 7 and No. 44) are not of the predicted sign and statistically significant. Similarly in terms of economic significance, the results in table 6.1 are clear-cut. The market reaction for BHCs (i.e., 2-day cumulative average abnormal return) computed over all 61 events is 0.009% (not tabulated). This is equivalent to an annualized return, calculated on a 250-day basis, of 11.35%. The average market reaction computed among events, which are both of the predicted sign and statistically significant, is 0.25% (not tabulated). This is equivalent to an annualized abnormal return of 37.37% on a 250-day basis.

For FSFs, the market reaction is of the predicted sign for 36 (59.02%) out of the 61 events reported in table 6.1. That is, 25 events (40.98%) provoke a market reaction that is (direction-wise) not in line with hypotheses 1-4. However, only 7 market reactios are both of the opposite sign and statistically signifcant (events No. 7, 23, 25, 31, 32, and 42). The binomial test using the hypothetical value of 50% yields $p = 0.1000$ on the one-sided test, i.e., Pr(actual >= hypothesized value). This suggests that the actual proportion of market reactions of the predicted sign above the 50% threshold is unlikely due to chance. This evidence is consistent with hypotheses 1-4.

Regarding statistical significance, out of the 36 market reactions, which are of the predicted sign, 20 (55.56%) are statistically different from zero at the 10% level or above. In other words, out of the 61 market reactions reported in table 6.1, 20 (32.79%) are both of the predicted sign and statistically different from zero. The average market reaction computed among all events is 0.23% (not tabulated). This is equivalent to an annualized return on a 250-day basis of 34.00%.

[115] I use a 50% threshold because if the sign of the market reaction to a given event k was a random variable following a binomial distribution, the expected value for market reactions of the predicted sign would be 50%.

Overall, the evidence on individual events for BHCs reported in table 6.1 on the following page provides strong evidence that changes to accounting standards for financial instruments matter to investors. Stock market reactions are overall of the sign predicted by hypotheses 1-4 and both statistically and economically significant. For FSFs, the evidence is similar but not as pronounced regarding the number of individual events of the predicted sign and their statistical significance. Section 6.1.2 on page 155 reports additional evidence on the overall significance of stock market reactions to cumulative groups of events.

Table 6.1
Stock Market Reaction to Individual U.S. Events

This table reports market reactions to 61 key events related to changes of U.S. accounting standards for financial instruments and off-balance sheet items for 275 bank holding companies (BHCs) and 146 financial service firms (FSFs). The stock market reaction is estimated using the augmented market model regression in equation (6.1) over the period from April 2, 2007 to June 2, 2010 (799 trading days). Daily stock returns of sample firms are regressed on daily returns of the CRSP equally-weighted index, daily relative changes of 6-months U.S. Treasury bills secondary market rates and 61 indicator variables. Each indicator variable represents one event window. Indicator variables are set to one during the event window and to zero otherwise. Event windows are defined in table 4.1 on page 99. Daily return observations for sample firms and daily equally-weighted index returns are from CRSP. 6-months U.S. Treasury bills secondary market rates are obtained through WRDS from the Federal Reserve Board's H.15 Report.

$$R_{it} = \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \sum_{k=1}^{K} \gamma_k D_{kt} + \varepsilon_{it} \tag{6.1}$$

			Pred.	BHCs		FSFs	
k	**Date**	**Event Short Description**	**Sign**	γ_k	**t-stat**[a]	γ_k	**t-stat**[a]
1	5/9/07	FASB likely to review hedge accounting	+	0.0001	0.20	0.0030***	2.61
2	6/19/07	Congress inquires about SFAS 140	+	−0.0002	−0.41	0.0014*	1.78
3	7/25/07	SEC clarifies SFAS 140 regarding loan modifications	+	0.0078***	3.49	0.0088***	8.69
4	8/21/07	FASB examines improvements of SFAS 140	+	0.0045***	8.80	0.0049***	11.72
5	10/17/07	No delay of SFAS 157	−	−0.0071***	−12.96	−0.0082***	−14.54
6	11/5/07	SEC revises loan commitments	+	0.0038***	7.35	0.0087***	11.18
7	11/12/07	FASB likely to terminate QSPEs	−	0.0029***	3.58	0.0110***	15.65
8	1/9/08	SEC approves loan modifications of ARM loans	+	0.0036***	3.01	0.0084***	11.82
9	2/14/08	SEC plans to improve disclosures	+	−0.0006	−0.37	0.0068***	4.83
10	2/29/08	FASB terminates QSPEs	−	−0.0023**	−2.37	−0.0020	−0.67
11	3/4/08	PCAOB against modifying fair value	−	−0.0036	−0.70	−0.0027	−0.36
12	3/13/08	Regulators and SEC push for more disclosure	+	0.0018**	2.02	−0.0004	−0.16
13	3/19/08	FASB issues SFAS 161	+	0.0119***	6.03	0.0101**	2.11
14	3/28/08	SEC focuses on more disclosure, not less fair value	−	−0.0020**	−1.97	0.0012	0.58
15	4/12/08	FASB reluctant to modify fair value accounting	−	−0.0119***	−28.53	−0.0043***	−10.92
16	4/24/08	SEC favors fair value guidance	+	0.0050	0.84	0.0036	1.02
17	5/2/08	FASB plans stricter off-balance sheet rules	−	−0.0074***	−18.29	0.0001	0.43
18	6/4/08	Up to USD 5,000 billion could come back onto the books	−	−0.0041***	−3.38	−0.0010	−0.62

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Table 6.1 - continued from previous page

k	Date	Event Short Description	Pred. Sign	BHCs		FSFs	
				γ_k	t-stat[a]	γ_k	t-stat[a]
19	6/17/08	FASB revision of off-balance sheet rules likely to offset recent balance sheet reductions	−	−0.0162***	−11.92	−0.0034	−0.49
20	6/24/08	SEC studies improvements to disclosures	+	0.0044	1.61	0.0049	1.45
21	7/2/08	Wall Street lobbies against new off-balance sheet rules	+	−0.0004	−0.17	0.0058***	9.74
22	7/21/08	FASB's stricter off-balance sheet proposals already in August	−	0.0114	1.24	0.0052	0.32
23	7/25/08	Lawmakers ask SEC and FASB to delay off-balance sheet rule	+	0.0011**	2.14	−0.0066***	−14.56
24	7/29/08	FASB delays off-balance sheet rules	+	0.0094	0.86	0.0062	0.91
25	9/12/08	FASB requires more disclosure on credit derivatives	+	0.0060***	12.82	−0.0107***	−28.30
26	9/30/08	SEC/FASB issue guidance on fair value measurement	+	0.0193***	3.13	0.0141***	2.85
27	10/10/08	FASB issues FSP FAS 157-3 and ABA asks SEC to override rule	+	0.0718***	33.98	0.0641***	31.33
28	10/16/08	SEC announces that PPS can be treated as debt	+	−0.0002	−0.01	−0.0072	−0.87
29	10/20/08	FASB/SEC fix CPP accounting issue	+	−0.0080	−1.48	−0.0004	−0.04
30	10/28/08	FAF asks SEC not to overrule fair value accounting, mark-to-market roundtable, no further guidance soon by SEC	−	−0.0076	−0.67	−0.0039	−0.47
31	11/10/08	PCAOB considers guidance on fair value accounting	+	0.0051***	3.38	−0.0091***	−6.27
32	11/21/08	No support for SFAS 157 replacement from SEC roundtable participants	−	−0.0234***	−10.42	0.0210***	10.66
33	12/4/08	SEC announces additional guidance until year end	+	0.0060***	2.66	0.0270**	2.55
34	12/8/08	Draft of SEC study seeks no suspension of fair value accounting	−	−0.0158***	−16.59	−0.0120***	−6.47
35	12/11/08	FASB requires more off-balance sheet disclosures	+	−0.0049	−1.01	−0.0005	−0.43
36	12/16/08	FASB studies expanding fair value accounting	−	−0.0111	−1.39	−0.0006	−0.04
37	12/19/08	FASB beliefs more fair value accounting can re-establish trust	−	−0.0102***	−12.10	0.0110***	14.86
38	12/22/08	FASB proposes impairment relief	+	0.0220**	2.41	−0.0058	−0.65
39	12/30/08	SEC against suspending fair value accounting	−	−0.0066**	−2.18	0.0011	0.11
40	2/5/09	Dodd and Frank support modifications of fair value accounting	+	0.0089	1.23	−0.0034	−0.73
41	2/11/09	Fair value modifications could be part of the financial rescue plan	+	0.0077***	16.53	0.0219***	52.44
42	2/12/09	FASB Chairman strictly opposes fair value modifications	−	−0.0121***	−15.71	0.0077***	11.12
43	2/18/09	More FASB guidance but no modifications	−	−0.0110**	−2.57	0.0022	0.22
44	3/4/09	PCAOB being asked for more guidance, Congress announces fair value hearing, bipartisan bill aims to transfer accounting oversight to new body	+	−0.0176***	−2.77	0.0012	0.18

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Table 6.1 - continued from previous page

k	Date	Event Short Description	Pred. Sign	BHCs		FSFs	
				γ_k	t-stat[a]	γ_k	t-stat[a]
45	3/10/09	Congress sets ultimatum for fair value modifications	+	0.0232***	2.72	0.0041	1.02
46	3/16/09	FASB proposes more modifications to fair value measurement and OTTIs	+	0.0113***	4.57	0.0004	0.05
47	3/25/09	FASB plans to revamp soon accounting rules for financial instruments	+	−0.0048	−0.83	−0.0095	−1.04
48	3/31/09	Barney Frank for reversal of held-to-maturity losses, PCAOB considers guidance	+	0.0064***	3.14	0.0059**	2.35
49	4/2/09	FASB okays fair value measurement and impairment guidance	+	−0.0032	−1.17	−0.0056	−1.28
50	4/9/09	FASB issues FSPs on fair value measurement and impairment guidance	+	0.0392***	20.10	−0.0027	−1.64
51	4/30/09	FASB plans to publish soon stricter off-balance sheet standard	−	−0.0197***	−8.52	−0.0029	−0.94
52	5/18/09	FASB approves new off-balance sheet rules	−	−0.0057	−0.41	−0.0062	−0.64
53	5/22/09	New off-balance sheet rules substantially shrink bank equity	−	−0.0043***	−10.78	−0.0034***	−9.91
54	6/3/09	Policymakers being asked to postpone stricter off-balance sheet rules	+	0.0064***	6.56	−0.0033	−0.71
55	6/12/09	FASB issues stricter off-balance sheet rules	−	−0.0034***	−4.54	−0.0005	−0.76
56	6/24/09	FASB proposes more disclosures on credit quality and allowance for credit losses	+	−0.0076	−1.53	−0.0048	−1.42
57	8/13/09	FASB discusses full fair value approach for financial instruments	−	−0.0032***	−5.71	0.0015	0.90
58	8/31/09	FASB proposes more fair value disclosures	+	−0.0037	−1.64	0.0019	0.48
59	9/14/09	More fair value accounting for U.S. institutions relative to international competitors	−	−0.0037	−1.17	−0.0069*	−1.72
60	5/26/10	FASB unveils full fair value approach	−	−0.0008	−0.14	−0.0035***	−3.71
61	5/28/10	FASB proposal faces harsh critique	−	−0.0041***	−6.30	0.0003	0.18
α				−0.0006	−1.58	−0.0005	−1.52
β_1				1.1079***	28.48	1.4060***	41.54
β_2				−0.0168*	−1.74	−0.0033	−0.35
Adjusted R^2				0.1589		0.2916	
Number of observations				215,916		114,610	

a t-statistics are calculated based on one-way cluster-robust standard errors, clustered by time.
***, **, * denote $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively, using a two-tailed test.

6.1.2 Cumulative Events

Table 6.2 on page 158 reports the cumulative market reactions to five groups of events related to changes of U.S. accounting standards for financial instruments and off-balance sheet items for 275 bank holding companies (BHCs) and 146 financial service firms (FSFs). The estimated coefficient $\hat{\beta}_3$ on *SIGNED_MEAN* variables represents the cumulative average abnormal return $\overline{CAR}\_K$ of all firms i in the sample in response to all events k, $k = 1, \ldots, K$, covered by the *SIGNED_MEAN* variable (e.g., the *SIGNED_MEAN* variable *MORE_DISCL* covers all disclosure events; therefore, $\hat{\beta}_3$ represents the market reaction $\overline{CAR}\_K$ resulting from increased disclosures).

Panel A of table 6.2 reports the cumulative market reaction to all 61 key events summarized in table 4.1 on page 99. The corresponding *SIGNED_MEAN* variable is *ALL*. The predicted sign of the estimated coefficient $\hat{\beta}_3$ on *ALL* is positive because *ALL* is set to +1 (−1) for all events with a positive (negative) predicted sign. For BHCs, the estimated coefficient on *ALL* is 0.0059, which is equivalent to an annualized abnormal return of $R^{p.a.} = 1.89\%$ computed on a 360-day basis.[116] The estimated coefficient is statistically significant at the 1% level with a t-statistic of 4.68. For FSFs, the estimated coefficient is 0.0027 ($R^{p.a.} = 0.86\%$). It is statistically significant at the 5% level with a t-statistic of 2.31. The difference between BHCs and FSFs is 0.0032 ($R^{p.a.} = 1.02\%$) and statistically significant at the 1% level with a t-statistic of 2.76. Although the estimated coefficients for both BHCs and FSFs are economically significant, the coefficient for FSFs is less than half the magnitude of the estimated coefficient for BHCs. This suggests that BHCs are affected more than twice as much as FSFs (in terms of %-points) by changes to accounting standards for financial instruments and off-balance sheet items. This is consistent with the notion that the conjunction of accounting standards and balance sheet values with prudential regulation and capital requirements causes second order effects of fair value accounting. In addition, the difference between BHCs and FSFs regarding market reactions to changes to accounting standards affecting the balance sheet is biased downwards because the estimated coefficient of the difference in *ALL* accumulates also market reactions to disclosure events (*SIGNED_MEAN* variable *MORE_DISCL*). *MORE_DISCL*, however, is not hypothesized to differ between BHCs and FSFs since additional disclosures do not affect the balance sheet and, thus, have no implications for equity and capital.

Panel B of table 6.2 reports tests of hypothesis 1 (*Less Fair Value-Hypothesis*). The predicted sign of $\hat{\beta}_3$ is positive because *LESS_FV* accumulates events, which relax fair value accounting rules and therefore reduce fair value exposure. For BHCs, the estimated coefficient $\hat{\beta}_3$ is 0.0085 ($R^{p.a.} = 5.39\%$, $d = 58$) statistically significant at the 1% level with a t-statistic of 4.27. For FSFs, the estimated coefficient is less than half the magnitude of the estimated coefficient for BHCs. It equals 0.0036 ($R^{p.a.} = 2.26\%$, $d = 58$) and is statistically significant

[116] Generally, I compute annualized returns on a 360-day basis according to the following formula: $R^{p.a.} = (\beta_3 + 1)^{(360/d)} - 1$, where d is the number of event days coded into the respective *SIGNED_MEAN* variable. $d = 113$ for *ALL*. Annualized returns are not tabulated.

at the 10% level with a t-statistic of 1.86. The difference between BHCs and FSFs is 0.0049 ($R^{p.a.} = 3.08\%$, $d = 58$) and statistically significant at the 5% level with a t-statistic of 2.48. This evidence is consistent with hypothesis 1. That is, changes to accounting standards, which reduce fair value exposure, are associated with positive stock market reactions for financial institutions. These stock market reactions are of considerable economic significance, i.e., $R^{p.a.} = 5.39\%$ for BHCs, indicating the severance of adverse second order effects of fair value accounting for banks. The evidence also suggests that BHCs benefit more than twice as much (%-point-wise) from changes to accounting standards for financial instruments, which ultimately relax fair value exposure, compared to FSFs. The difference in magnitude of the stock market reaction is consistent with the idea that adverse second order effects of fair value accounting are tied to prudential regulation and bank capital requirements.

Panel C of table 6.2 reports tests of hypothesis 2 (*More Disclosure-Hypothesis*). Recall from section 2.1.3 on page 12 that the predicted sign of $\hat{\beta}_3$ is positive because *MORE_DISCL* accumulates events that increase fair value disclosure requirements. Accordingly, tests of hypothesis 2 are tests of the information content of fair values. For BHCs, the estimated coefficient $\hat{\beta}_3$ is 0.0031 ($R^{p.a.} = 10.66\%$, $d = 11$) and statistically significant at the 10% level with a t-statistic of 1.76. For FSFs, the estimated coefficient is of about the same magnitude (0.0028; $R^{p.a.} = 9.58\%$, $d = 11$). It, however, misses slightly the statistical significance threshold of 10%. Nevertheless, the t-statistic of 1.24 is fairly in excess of one (a one-sided test for $\hat{\beta}_3 >= 0$ yields $p = 0.1070$). Correspondingly, the difference between BHCs and FSFs is not significant at any reasonable significance level. This evidence is consistent with hypothesis 2 and suggests that banks and to some extent financial service firms benefit from additional disclosures on financial instruments. Since prudential regulation and capital requirements are not affected by changes to disclosure requirements, the estimated coefficient is consistently positive and of roughly the same magnitude. This evidence supports the notion that fair values contain incremental information useful to investors and analysts. The considerable economic significance of the estimated coefficients (e.g., $R^{p.a.} = 10.66\%$ for BHCs) highlights the importance of disclosures for financial instruments that increase transparency during financial crises.

Panel D of table 6.2 reports tests of hypothesis 3 (*Less Off-Balance Sheet-Hypothesis*). The predicted sign of $\hat{\beta}_3$ is negative because *LESS_OFFB* accumulates events, which ultimately lead to stricter off-balance sheet rules and, hence, to more assets accounted for on-balance; likely to some extent at fair value. For BHCs, the estimated coefficient $\hat{\beta}_3$ is -0.0048 ($R^{p.a.} = -3.34\%$, $d = 51$) and statistically significant at the 1% level with a t-statistic of -2.59. For FSFs, however, the estimated coefficient of -0.0022 is not statistically significant at the 10% level with a t-statistic of -1.30, which is still fairly in excess of one. Note, however, that the difference between BHCs and FSFs is statistically significant at the 10% level with a t-statistic of -1.72. The significantly more negative stock market reaction for BHCs suggests that lax off-balance sheet rules are substantially more beneficial on average for BHCs compared to FSFs. This is in line with expectations about the extent to which firms securitize financial assets. Loan origination activities inherent in banks' but not FSFs' business models are

usually the trigger of both securitization and corresponding off-balance sheet holdings. Overall, the evidence in panel D supports hypothesis 3. That is, stricter off-balance sheet rules are associated with negative stock market reactions.

Panel E of table 6.2 reports tests of hypothesis 4 (*Less Impairment-Hypothesis*). The predicted sign of $\hat{\beta}_3$ is positive because *LESS_IMP* accumulates events, which relax impairment rules and, hence, cause less timely recognition of losses, increase *ceteris paribus* the net present value of future profits and, through this channel, preserve equity and capital. For BHCs, the estimated coefficient $\hat{\beta}_3$ is 0.0094 ($R^{p.a.} = 35.83\%$, $d = 11$) and statistically significant at the 10% level with a t-statistic of 1.90. In contrast, the estimated coefficient for FSFs is not of the predicted sign and with a t-statistic of -0.37 not significant at any reasonable significance level. Correspondingly, the difference of the estimated coefficients for BHCs and FSFs of 0.0106 is statistically significant at the 5% level with a t-statistic of 2.31. This evidence is consistent with hypothesis 4. Also, the evidence suggests that relaxations to impairment rules are substantially more valuable to BHCs than to FSFs. A plausible explanation for the sizeable economic significance of the estimated coefficient for BHCs of $R^{p.a.} = 35.83\%$ is that postponing losses through relaxed impairment rules preserves directly equity and capital without any detour.

Table 6.2 – Stock Market Reaction to Cumulative U.S. Events

This table reports the cumulative market reaction to five event groups related to changes of U.S. accounting standards for financial instruments and off-balance sheet items for 275 bank holding companies (BHCs) and 146 financial service firms (FSFs). The stock market reaction is estimated using the augmented market model regression in equation (3.23) over the period from April 2, 2007 to June 2, 2010 (799 trading days). Daily stock returns of sample firms are regressed on daily returns of the CRSP equally-weighted index, daily relative changes of 6-months U.S. Treasury bills secondary market rates and five *SIGNED_MEAN* variables. *SIGNED_MEAN* variables are indicator variables, which disentangle the stock market reaction to several groups of cumulative events. Table 5.9 on page 124 defines the *SIGNED_MEAN* variables, except for *ALL*, which captures the cumulative stock market reaction to all events defined in table 4.1 on page 99. The difference of the estimated coefficients of the *SIGNED_MEAN* variables between the BHC and FSF sample is tested by estimating equation (3.24). Daily return observations of both BHCs and FSFs are pooled and regressed on the daily returns of the CRSP equally-weighted index, the daily relative changes of the 6-months U.S. Treasury bill rate, the *SIGNED_MEAN* variable, the firm type indicator D^{BHC} and the three interaction variables $D^{BHC \times MKT}$, $\mathrm{D}^{\mathrm{BHC \times INTEREST}}$ and $\mathrm{D}^{\mathrm{BHC \times SIGNED\_MEAN}}$. The t-statistic of the estimated coefficient of $\mathrm{D}^{\mathrm{BHC \times SIGNED\_MEAN}}$ is used to evaluate the significance of the difference of the estimated coefficients of the *SIGNED_MEAN* variables between the BHC and the FSF sample. Daily return observations for sample firms and daily equally-weighted index returns are from CRSP. 6-months U.S. Treasury bills secondary market rates are obtained through WRDS from the Federal Reserve Board's H.15 Report.

$$R_{it} = \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \beta_3 SIGNED\_MEAN + \varepsilon_{it} \tag{3.23}$$

$$\begin{aligned} R_{it} =& \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \beta_3 SIGNED\_MEAN + \beta_4 D^{BHC} + \beta_5 D^{BHC \times MKT} \\ &+ \beta_6 D^{BHC \times INTEREST} + \beta_7 D^{BHC \times SIGNED\_MEAN} + \varepsilon_{it} \end{aligned} \tag{3.24}$$

Panel A: *ALL*

	α	β_1	β_2	β_3	Adj. R^2	N
Predicted Sign				+		
BHCs	−0.0007*	1.1188***	−0.0174**	0.0059***	0.1520	215,916
	(−1.94)	(30.29)	(−2.03)	(4.68)		
FSFs	−0.0003	1.4064***	−0.0125	0.0027**	0.2863	114,610
	(−1.01)	(45.71)	(−1.42)	(2.31)		
Difference				0.0032***	0.1932	330,526
				(2.76)		

Panel B: *LESS_FV*

Predicted Sign				+		
BHCs	−0.0006	1.1149***	−0.0158*	0.0085***	0.1521	215,916
	(−1.47)	(30.39)	(−1.83)	(4.27)		
FSFs	−0.0003	1.4048***	−0.0118	0.0036*	0.2863	114,610
	(−0.78)	(45.56)	(−1.37)	(1.86)		
Difference				0.0049**	0.1933	330,526
				(2.48)		

Panel C: *MORE_DISCL*

Predicted Sign				+		
BHCs	−0.0006	1.1201***	−0.0161*	0.0031*	0.1500	215,916
	(−1.54)	(29.56)	(−1.78)	(1.76)		
FSFs	−0.0003	1.4073***	−0.0118	0.0028	0.2859	114,610
	(−0.89)	(45.86)	(−1.35)	(1.24)		
Difference				0.0003	0.1917	330,526
				(0.16)		

Continued on next page

Table 6.2 - continued from previous page

	α	β_1	β_2	β_3	Adj. R^2	N
Panel D: *LESS_OFFB*						
Predicted Sign				−		
BHCs	−0.0005	1.1209***	−0.0163*	−0.0048***	0.1504	215,916
	(−1.42)	(29.59)	(−1.81)	(−2.59)		
FSFs	−0.0003	1.4074***	−0.0120	−0.0022	0.2859	114,610
	(−0.76)	(45.88)	(−1.37)	(−1.30)		
Difference				−0.0026*	0.1920	330,526
				(−1.72)		
Panel E: *LESS_IMP*						
Predicted Sign				+		
BHCs	−0.0007*	1.1120***	−0.0184**	0.0094*	0.1505	215,916
	(−1.80)	(29.63)	(−2.12)	(1.90)		
FSFs	−0.0002	1.4077***	−0.0117	−0.0013	0.2858	114,610
	(−0.72)	(45.39)	(−1.31)	(−0.37)		
Difference				0.0106**	0.1920	330,526
				(2.31)		

t-statistics in parentheses.
t-statistics are calculated based on one-way cluster-robust standard errors, clustered by time.
***, **, * denote $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively, using a two-tailed test.

Overall, this section provides strong evidence in support of hypotheses 1-4. First, the results suggest that changes to accounting standards for financial instruments matter to investors for both BHCs and FSFs (ALL is positive and statistically significant). The magnitude of the stock market reaction, however, is substantially higher for BHCs compared to FSFs. This suggests that bank-specific factors such as prudential regulation and regulatory capital requirements trigger adverse second order effects. Second, consider the stock market reaction to fair value events. Even though $LESS\_FV$ is of the predicted sign for both BHCs and FSFs, the estimated coefficient is only statistically significant for BHCs. Also, the estimated coefficient for BHCs is about 2.4 times the magnitude of the estimated coefficient for FSFs. Given that FSFs compared to BHCs devote on average more than three times as much of their balance sheet to assets accounted for at fair value[117], I interpret this evidence as suggesting that not fair value accounting *per se* triggers adverse second order effects. Third, the evidence on disclosure events is consistent with the conjecture that fair values contain information that is valuable to investors and analysts. Fourth, the evidence on off-balance sheet events is consistent with hypothesis 3 for BHCs but not for FSFs. Fifth, there is strong evidence that BHCs benefit substantially from relaxed impairment rules. I interpret this evidence as suggesting that strict impairment rules during financial crises trigger similar adverse second order effects as fair value accounting.

[117] See variable FV in panel C of table 5.12 on page 135.

6.2 Cross-Sectional Results

This section reports cross-sectional tests of hypotheses 5-8. Subsection 6.2.1 discusses empirical results of tests of hypothesis 5 (*Resilience-Hypothesis*), which predicts that less resilient financial institutions face higher sensitivity to distortions in capital markets and, therefore, benefit relatively more from changes to accounting standards for financial instruments. Recall from section 2.2.2 on page 24 that hypotheses 5a to 5e add additional detail to hypothesis 5 by specifying predictions regarding regulatory capital, leverage, liquidity, size and complexity, as well as asset risk. The related empirical results are discussed all together in subsection 6.2.1.

Subsection 6.2.2 reports empirical results of tests of hypothesis 6 (*Financial Crisis Exposure-Hypothesis*). Hypothesis 6 predicts that financial institutions with a higher exposure to the financial crisis benefit relatively more from changes to accounting standards for financial instruments.

Subsection 6.2.3 is concerned with empirical results of tests of hypothesis 7 (*Asset Mix-Hypothesis*), which predicts that the magnitude of the stock market reaction to changes to accounting standards for financial instruments is associated with the composition and structure of a firm's balance sheet.

Finally, subsection 2.2.5 reports empirical results of tests of hypothesis 8 (*Information Environment-Hypothesis*). Hypothesis 8 predicts that stock market reactions to disclosure events are negatively related to a firm's information environment.

6.2.1 Resilience Characteristics

Table 6.3 on page 165 reports cross-sectional regression results of U.S. stock market reactions to changes to accounting standards for financial instruments regressed on resilience characteristics of 275 bank holding companies (BHCs) and 146 financial service firms (FSFs). Panels A, B, C, D, and E contain regression results for all 61 U.S. events (*ALL*), fair value events (*LESS_FV*), disclosure events (*MORE_DISCL*), off-balance sheet events (*LESS_OFFB*), and impairment events (*LESS_IMP*), respectively. Cross-sectional results are based on Sefcik and Thompson (1986) time-series portfolio regressions over the period from April 2, 2007 to June 2, 2010 (799 trading days).[118] Models 1-3 in panels A-E of table 6.3 regress stock market reactions to groups of events on measures of regulatory capital (*TOTAL_RATIO*, *T1_RATIO*, and *T2_RATIO*, in models 1, 2 and 3, respectively) as well as on *LIQUIDITY*, *SIZE*, *COMPLEXITY*, and *RISKY_ASSETS*. Because regulatory capital ratios are not defined for FSFs, I estimate models 1-3 only for BHCs. Model 4 regresses stock market reactions on *LEVERAGE*, instead of regulatory capital ratios, and on the resilience characteristics *LIQUIDITY*, *SIZE*, and *COMPLEXITY*. Models 1-4 in panel A-E are controlled for *BETA*. *BETA* is the estimated coefficient on the CRSP value-weighted index return in a market model regression, which regresses the daily stock return of firm i on the CRSP value-weighted index return during

[118] See section 3.3 on page 47 for details of the estimation procedure.

2007 and 2008.

Panel A of table 6.3 on page 165 reports cross-sectional regression results for all 61 U.S. events. The predicted signs of the regulatory capital variables, *TOTAL_RATIO*, *T1_RATIO*, and *T2_RATIO*, are negative because financial institutions with lower regulatory capital are presumably less resilient as well as more sensitive to distortions in capital markets and, hence, are hypothesized to benefit relatively more from changes to accounting standards for financial instruments (*Regulatory Capital-Hypothesis*). Based on the same rationale, the predicted sign on *LEVERAGE* is positive (*Leverage-Hypothesis*). The predicted sign of *LIQUIDITY* is negative because liquidity presumably is a resilience-advancing firm characteristic (*Liquidity-Hypothesis*). The predicted signs of *SIZE*, *COMPLEXITY*, and *RISKY_ASSETS* are positive because these characteristics presumably are resilience-depleting (*Size and Complexity-* and *Asset Risk-Hypothesis*, respectively).

In model 1 of panel A, the signs of all estimated coefficients are as predicted by hypotheses 5a to 5e. The estimated coefficient of *TOTAL_RATIO* is negative and significant at the 10% level with a t-statistic of -1.67. This suggests that BHCs with less total regulatory capital benefit relatively more on average from changes to accounting standards for financial instruments. Also as predicted, the estimated coefficient of *LIQUIDITY* is negative. It is, however, not statistically significant at the 10% level or above with a t-statistic of -0.90. Similarly, the estimated coefficients of both *SIZE* and *COMPLEXITY* are positive as predicted, but not significant with t-statistics of 1.08 and 1.10, respectively. The estimated coefficient of *RISKY_ASSETS* is also positive as predicted but statistically insignificant with a t-statistic of only 0.09.

In model 2 of panel A, the estimated coefficient of *T1_RATIO* is negative as predicted by hypothesis 5a on page 26, and it is statistically significant at the 1% level with a t-statistic of -2.98. The signs of the estimated coefficients of *LIQUIDITY*, *SIZE*, and *COMPLEXITY* are as predicted by hypotheses 5c and 5d, and *SIZE* and *COMPLEXITY* are of similar magnitude as in model 1. None of the three coefficients, however, is statistically significant with t-statistics of -0.56, 0.75, and 0.93, respectively. The estimated coefficient of *RISKY_ASSETS* flips sign compared to model 1, but is not statistically significant with a t-statistic of -0.34.

Model 3 regresses stock market reactions to all events on *T2_RATIO* and on the same remaining resilience characteristics as in models 1 and 2. Hypothesis 5a (*Regulatory Capital-Hypothesis*) predicts a negative sign on *T2_RATIO*. The estimated coefficient, however, is positive and statistically significant at the 1% level with a t-statistic of 3.23. This suggests that firms with higher tier 2 capital benefit relatively more from changes to accounting standards. Related to the resilience hypothesis, this finding seems to suggest that tier 2 capital is actually a resilience-depleting firm characteristic. A possible explanation for the positive coefficient of *T2_RATIO* is that tier 2 capital generally is considered of lower quality by market participants compared to core tier 1 capital. In addition, it is plausible that firms use tier 2 capital as a substitute for higher quality tier 1 core capital, i.e., firms with relatively less tier 1 capital allocate tier 2 capital to reach their endogenously determined total regulatory capital threshold.

Also, correlation statistics in section 5.3.1 on page 137 show a negative linear relationship between *T2_RATIO* and *T1_RATIO*. The Pearson correlation coefficient between the two variables is -0.4513 and statistically significant at the 1% level. Also, there is a positive and statistically significant Pearson correlation between *T2_RATIO* and *LEVERAGE* as well as *SIZE*. These correlation statistics seem to indicate that firms with more tier 2 capital are on average less capitalized in term of tier 1 capital, are bigger, and operate on higher leverage overall.

Model 4 regresses stock market reactions to all U.S. events on *LEVERAGE*, *LIQUIDITY*, *SIZE*, and *COMPLEXITY* for both BHCs and FSFs. For BHCs, the estimated coefficient of *LEVERAGE* is of the predicted sign and significant at the 1% level with a t-statistic of 3.47. For FSFs, however, the coefficient is negative and insignificant with a t-statistic of -0.27. The difference of the estimated coefficients on *LEVERAGE* is 0.0174 and statistically significant at the 1% level with a t-statistic of 3.93. Except for *SIZE*, the estimated coefficients for BHCs and FSFs are fairly similar in magnitude with t-statistics not in excess of one. The estimated coefficient of *SIZE* for FSFs, however, is negative while the estimated coefficient for BHCs is positive as predicted. Nevertheless, both coefficients are not significant at the 10% level or above with t-statistics of -0.23 and 0.99, respectively.

Overall, the results in panel A of table 6.3 suggest that regulatory capital is a main determinant of benefits associated with additional leeway resulting from changes to accounting standards for financial instruments. Interestingly, tier 2 regulatory capital exhibits features of a resilience-depleting firm characteristic, possibly due to the significant negative correlation with tier 1 core capital. The second main result is that *LEVERAGE* is only a significant determinant of stock market reactions for BHCs but not for FSFs. This is consistent with the notion that adverse second order effects of accounting standards for financial instruments occur as a result of the conjunction of accounting rules and balance sheet values with prudential regulation of banks.

Panel B of table 6.3 on page 165 reports cross-sectional regression results for fair value events, i.e., the *SIGNED_MEAN* variable is *LESS_FV*. The predicted signs in panel B are the same as in panel A.

In model 1, the estimated coefficient for *TOTAL_RATIO* is of the predicted sign but somewhat misses the significance threshold of 10% with a t-statistic of -1.31. The estimated coefficients of *LIQUIDITY*, *SIZE*, and *COMPLEXITY* are all of the predicted sign, but only *SIZE* is significant at the 10% level with a t-statistic of 1.73. The positive and statistically significant coefficient of *SIZE* is consistent with hypothesis 5d and suggests that larger BHCs on average benefit relatively more from changes to fair value accounting rules. The estimated coefficient of *RISKY_ASSETS* is not of the predicted sign and insignificant with a t-statistic of only -0.13.

In model 2 of panel B, the estimated coefficient of *T1_RATIO* is of the predicted sign and significant at the 1% level with a t-statistic of -2.98. None of the estimated coefficients

of *LIQUIDITY*, *SIZE*, *COMPLEXITY*, and *RISKY_ASSETS* are statistically significant in model 2.

In model 3 of panel B, *T2_RATIO* is not of the predicted sign, i.e., positive, and statistically significant at the 1% level with a t-statistic of 4.01. This is consistent with the alternative explanation that tier 2 capital exhibits overall the features of a resilience-depleting firm characteristic.

In model 4 of panel B, the estimated coefficient on *LEVERAGE* for BHCs is of the predicted positive sign and significant at the 1% level with a t-statistic of 3.39. For FSFs, *LEVERAGE* is not of the predicted sign and insignificant with a t-statistic of -0.27. The difference in *LEVERAGE* for BHCs and FSFs is significant at the 1% level. This is consistent with the notion that higher leverage and, thus, lower capital causes adverse second order effects of fair value accounting. For BHCs, the estimated coefficients for *LIQUIDITY* and *COMPLEXITY* are of the predicted sign but insignificant. The estimated coefficient for *SIZE* is also of the predicted sign but somewhat misses the 10% significance threshold with a t-statistic of 1.64. For FSFs, the estimated coefficients of *LIQUIDITY*, *SIZE*, and *COMPLEXITY* are of the predicted sign but not significant at the 10% level or above.

Panel C of table 6.3 on page 165 reports cross-sectional regression results for disclosure events, i.e., the *SIGNED_MEAN* variable is *MORE_DISCL*. Panel C contains no expected signs because hypotheses on adverse second order effects of fair value accounting rely on the conjunction of balance sheet values with prudential regulation. Since pure disclosure events do not affect the balance sheet, there are no implications for equity and capital and, hence, no reasons to believe that stock market reactions to disclosure events are in the same way related cross-sectionally to firm characteristics as events affecting the balance sheet. Therefore, the empirical results in panel C are rather exploratory in nature. None of the estimated coefficients in panel C is significant. Only the t-statistics of the estimated coefficients of *COMPLEXITY* exceed one in 4 out of 5 cases. Though not statistically significant, the actual sign is generally consistent with the idea that more complex firms on average benefit relatively more from additional disclosure.

Panel D of table 6.3 on page 165 reports cross-sectional regression results for off-balance sheet events, i.e., the *SIGNED_MEAN* variable is *LESS_OFFB*. The predicted signs in panel D are flipped compared to panels A, B, and E because *LESS_OFFB* contains events, which affect the likelihood of stricter off-balance sheet rules. Stricter off-balance sheet rules put more assets back on the books, which were previously held off-balance. The in turn increases fair value exposure and, thus, is hypothesized to exhibit an association with stock market reactions in the opposite direction. The estimated coefficients in panel D are not significant. Notable t-statistics around one are observed for *LIQUIDITY*. This is consistent with the idea that *LIQUIDITY* is crucial when re-adjusting the balance sheet becomes necessary due to involuntarily putting assets back on the books as a result of stricter off-balance sheet rules.

Panel E of table table 6.3 on the next page reports cross-sectional regression results for impairment events, i.e., the *SIGNED_MEAN* variable is *LESS_IMP*. The predicted signs in panel E are the same as in panels A and B.

In model 1, the estimated coefficient of *TOTAL_RATIO* is of the predicted sign but slightly misses the 10% significance threshold with a t-statistic of 1.63. The estimated coefficients of both *LIQUIDITY* and *COMPLEXITY* are of the predicted sign and significant at the 10% level with t-statistics of -1.71 and 1.92, respectively.

In model 2 of panel E, both *T1_RATIO* and *COMPLEXITY* are of the predicted sign and significant at the 5% and the 10% level with t-statistics of -2.43 and 1.76, respectively. *LIQUIDITY* slightly misses the 10% significance threshold with a t-statistic of -1.50.

In model 3, *T2_RATIO* is again of the opposite sign and significant at the 5% level. The estimated coefficient on *LIQUIDITY* is of the predicted sign and significant at the 5% level with a t-statistic of -2.09.

In model 4 of panel E, *LEVERAGE* is of the predicted sign for both BHCs and FSFs but not significant at the 10% level or above. For BHCs, both *LIQUIDITY* and *COMPLEXITY* are of the predicted sign and statistically significant with t-statistics of -1.79 and 1.83, respectively. Also, the difference in *COMPLEXITY* between BHCs and FSFs is statistically significant at the 10% level. For FSFs, only *SIZE* is significant at the 10% level, but not of the predicted sign suggesting that smaller FSFs on average benefit more from relaxations to impairment rules.

Overall, I find strong evidence that stock market reactions to all events, fair value events and impairment events are negatively related to total regulatory capital, tier 1 regulatory capital and leverage for banks, but not for financial service firms. I interpret this evidence as suggesting that changes to accounting standards for financial instruments, which preserve profits, equity and capital through relaxed requirements to adjust book values to market prices or delayed recognition of losses, provide leeway for banks by reducing pressure on capital. This leeway is on average especially beneficial to weaker, i.e., less capitalized banks. I find no such evidence for financial service firms, i.e., leverage is not significant in any regression, which suggests that the negative association of stock market reactions with capital characteristics is a result of prudential regulation of banks. This is consistent with the notion that adverse second order effects of fair value accounting result from the conjunction of fair value accounting with regulatory capital requirements. I also find strong evidence that tier 2 capital is positively associated with stock market reactions to all events, fair value events and impairment events. I interpret this evidence as suggesting that tier 2 capital is not considered a reliable basis for bank capitalization by market participants. Rather, tier 2 capital exhibits on average signs of a resilience-depleting firm characteristic. I find weak evidence that size is positively related to the stock market reaction to fair value events. This suggests that larger banks tend to benefit more from changes to fair value accounting rules. Also, I find some evidence that

stock market reactions to impairment events are negatively related to liquidity and positively related to complexity for banks, but not for financial service firms.

Table 6.3
U.S. Market Reactions Regressed on Resilience Characteristics

This table reports cross-sectional regression results of U.S. stock market reactions to changes to accounting standards for financial instruments regressed on resilience characteristics of 275 bank holding companies (BHCs) and 146 financial service firms (FSFs). Panels A, B, C, D, E contain regression results for the *SIGNED_MEAN* event variables *ALL*, *LESS_FV*, *MORE_DISCL*, *LESS_OFFB*, and *LESS_IMP*, respectively. Cross-sectional results are based on Sefcik and Thompson (1986) time-series portfolio regressions over the period from April 2, 2007 to June 2, 2010 (799 trading days). For each model, the daily time-series of stock returns of a portfolio of sample firms is regressed on daily returns of the CRSP equally-weighted index, daily relative changes of 6-months U.S. Treasury bills secondary market rates and the respective *SIGNED_MEAN* event variable. Each cross-sectional estimate equals the estimated coefficient of the event variable in regression 6.2, in which the time-series of portfolio returns corresponds to the k^{th} row of a return matrix weighted by the K firm characteristics in a given model according to the weighting scheme $\mathbf{P} = [\mathbf{F'F}]^{-1}\mathbf{F'R'}$. Section 3.3 on page 47 contains details on the portfolio weighting process. The difference of the estimated coefficients between the BHC and FSF sample is tested by estimating equation 6.3. Daily return observations for sample firms and daily equally-weighted index returns are from CRSP. 6-months U.S. Treasury bills secondary market rates are obtained through WRDS from the Federal Reserve Board's H.15 Report.

$$\mathrm{R}_t^{\mathbf{P}=[\mathbf{F'F}]^{-1}\mathbf{F'R'}} = \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \beta_3 SIGNED\_MEAN + \varepsilon_t \tag{6.2}$$

$$\begin{aligned}\mathrm{R}_t^{\mathbf{P}=[\mathbf{F'F}]^{-1}\mathbf{F'R'}} =& \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \beta_3 SIGNED\_MEAN + \beta_4 D^{BHC} \\ &+ \beta_5 D^{BHC\times MKT} + \beta_6 D^{BHC\times INTEREST} + \beta_7 D^{BHC\times SIGNED\_MEAN} + \varepsilon_t\end{aligned} \tag{6.3}$$

Panel A: All Events

	Pred. Sign	Model 1	Model 2	Model 3	Model 4		
		BHC	BHC	BHC	BHC (1)	FSF (2)	Δ (2) − (1)
TOTAL_RATIO	−	−0.0002*					
		(−1.67)					
T1_RATIO	−		−0.0003***				
			(−2.98)				
T2_RATIO	−			0.0014***			
				(3.23)			
LEVERAGE	+				0.0170***	−0.0004	0.0174***
					(3.47)	(−0.27)	(3.39)
LIQUIDITY	−	−0.0074	−0.0045	−0.0094	−0.0052	−0.0029	−0.0022
		(−0.90)	(−0.56)	(−1.19)	(−0.57)	(−0.77)	(−0.23)
SIZE	+	0.0007	0.0005	0.0001	0.0006	−0.0001	0.0007
		(1.08)	(0.75)	(0.17)	(0.99)	(−0.23)	(1.01)
COMPLEXITY	+	0.0007	0.0006	−0.0001	0.0007	0.0005	0.0001
		(1.10)	(0.93)	(−0.15)	(1.08)	(0.74)	(0.13)
RISKY_ASSETS	+	0.0003	−0.0012	−0.0004			
		(0.09)	(−0.34)	(−0.12)			
Controls[a]		YES	YES	YES	YES	YES	YES

Continued on next page

Table 6.3 - continued from previous page

	Pred. Sign	Model 1	Model 2	Model 3	Model 4		
		BHC	**BHC**	**BHC**	**BHC** (1)	**FSF** (2)	Δ (2) − (1)
Panel B: Fair Value Events							
TOTAL_RATIO	−	−0.0002					
		(−1.31)					
T1_RATIO	−		−0.0004***				
			(−2.98)				
T2_RATIO	−			0.0024***			
				(4.01)			
LEVERAGE	+				0.0232***	−0.0006	0.0238***
					(3.39)	(−0.27)	(3.32)
LIQUIDITY	−	−0.0113	−0.0063	−0.0125	−0.0069	−0.0034	−0.0035
		(−0.99)	(−0.55)	(−1.14)	(−0.54)	(−0.63)	(−0.25)
SIZE	+	0.0015*	0.0012	0.0005	0.0014	0.0001	0.0013
		(1.73)	(1.37)	(0.55)	(1.64)	(0.21)	(1.47)
COMPLEXITY	+	0.0002	0.0001	−0.0011	0.0002	0.0011	−0.0009
		(0.22)	(0.08)	(−1.31)	(0.23)	(1.04)	(−0.65)
RISKY_ASSETS	+	−0.0007	−0.0032	−0.0028			
		(−0.13)	(−0.65)	(−0.58)			
Controls[a]		YES	YES	YES	YES	YES	YES
Panel C: Disclosure Events							
TOTAL_RATIO		−0.0000					
		(−0.14)					
T1_RATIO			−0.0002				
			(−0.53)				
T2_RATIO				0.0013			
				(0.91)			
LEVERAGE					−0.0009	−0.0027	0.0018
					(−0.06)	(−0.57)	(0.11)
LIQUIDITY		−0.0037	−0.0011	−0.0034	−0.0081	−0.0050	−0.0031
		(−0.14)	(−0.04)	(−0.14)	(−0.28)	(−0.41)	(−0.10)
SIZE		0.0012	0.0010	0.0006	0.0011	−0.0003	0.0014
		(0.60)	(0.53)	(0.33)	(0.58)	(−0.39)	(0.68)
COMPLEXITY		0.0021	0.0021	0.0015	0.0021	0.0023	−0.0003
		(1.08)	(1.06)	(0.78)	(1.06)	(1.01)	(−0.08)
RISKY_ASSETS		0.0089	0.0077	0.0074			
		(0.79)	(0.69)	(0.68)			
Controls[a]		YES	YES	YES	YES	YES	YES
Panel D: Off-Balance Sheet Events							
TOTAL_RATIO	+	0.0001					
		(0.57)					
T1_RATIO	+		0.0001				
			(0.73)				
T2_RATIO	+			−0.0004			
				(−0.47)			
LEVERAGE	−				−0.0072	−0.0005	−0.0067
					(−0.76)	(−0.17)	(−0.68)
LIQUIDITY	+	0.0165	0.0157	0.0183	0.0170	0.0051	0.0119

Continued on next page

Table 6.3 - continued from previous page

	Pred. Sign	Model 1	Model 2	Model 3	Model 4		
		BHC	**BHC**	**BHC**	**BHC** (1)	**FSF** (2)	Δ (2) − (1)
		(1.06)	(1.02)	(1.22)	(0.98)	(0.70)	(0.63)
SIZE	−	−0.0000	0.0001	0.0001	0.0000	0.0002	−0.0002
		(−0.01)	(0.06)	(0.11)	(0.01)	(0.43)	(−0.13)
COMPLEXITY	−	−0.0008	−0.0007	−0.0006	−0.0008	−0.0012	0.0004
		(−0.68)	(−0.62)	(−0.49)	(−0.66)	(−0.84)	(0.21)
RISKY_ASSETS	−	−0.0017	−0.0013	−0.0020			
		(−0.25)	(−0.19)	(−0.31)			
Controls[a]		YES	YES	YES	YES	YES	YES
Panel E: Impairment Events							
TOTAL_RATIO	−	−0.0006					
		(−1.65)					
T1_RATIO	−		−0.0008**				
			(−2.43)				
T2_RATIO	−			0.0029**			
				(2.06)			
LEVERAGE	+				0.0167	0.0021	0.0147
					(1.04)	(0.42)	(0.87)
LIQUIDITY	−	−0.0453*	−0.0394	−0.0530**	−0.0526*	−0.0185	−0.0341
		(−1.71)	(−1.50)	(−2.09)	(−1.79)	(−1.49)	(−1.07)
SIZE	+	−0.0008	−0.0013	−0.0019	−0.0008	−0.0014*	0.0006
		(−0.42)	(−0.67)	(−1.00)	(−0.39)	(−1.96)	(0.30)
COMPLEXITY	+	0.0038*	0.0035*	0.0022	0.0037*	−0.0017	0.0054*
		(1.92)	(1.76)	(1.13)	(1.83)	(−0.74)	(1.75)
RISKY_ASSETS	+	0.0036	0.0003	0.0036			
		(0.31)	(0.03)	(0.32)			
Controls[a]		YES	YES	YES	YES	YES	YES

t-statistics in parentheses.
***, **, * denote $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively, using a two-tailed test.
a Control is *BETA*. *BETA* is the estimated coefficient on the CRSP value-weighted index in a market model regression, which regresses the daily stock return of firm i on the CRSP value-weighted index during 2007 and 2008.

6.2.2 Financial Crisis Exposure

Table 6.4 on page 170 reports cross-sectional regression results of U.S. stock market reactions to changes to accounting standards for financial instruments regressed on market-based measures of financial crisis exposure (i.e., stock return sensitivity to or correlation with changes in the ABX.HE.61 indices in panels A and B, respectively) of 275 bank holding companies (BHCs) and 146 financial service firms (FSFs). The *SIGNED_MEAN* variables *ALL*, *LESS_FV*, *MORE_DISCL*, *LESS_OFFB*, and *LESS_IMP* are depicted row-wise for BHCs and FSFs. The predicted sign is positive for all events, fair value events, and impairment events because financial institutions with higher stock return sensitivity to or correlation with the sub-prime securitization market, proxied by the ABX.HE.61 indices, face higher financial crisis exposure and, therefore, are hypothesized to benefit more on average from changes to accounting stan-

dards for financial instruments. For off-balance sheet events, the predicted sign flips and is negative because *LESS_OFFB* represents events leading to stricter balance sheet recognition rules while all other *SIGNED_MEAN* variables, except for *MORE_DISCL*, represent events leading to more relaxed recognition rules.

Panel A of table Table 6.4 on page 170 reports cross-sectional regression results for regression-based measures of financial crisis exposure. Cross-sectional regression results for all events are contained in columns 3, 4, and 5 for BHCs and FSFs. The results with respect to both all events and fair value events are consistent with hypothesis 6 for BHCs but not for FSFs. That is, BHCs with higher financial crisis exposure benefit relatively more on average from changes to accounting standards when considering all events and fair value events. For all events and fair value events, all estimated coefficients of BHCs are of the predicted sign with t-statistics consistently in excess of one. For all events, the estimated coefficients for *ABX.61.PenAAA* and *ABX.61.A* are significant at the 10% level with t-statistics of 1.72 and 1.92, respectively. Similarly, the estimated coefficients for *ABX.61.BBB* and *ABX.61.BBB−* are statistically significant at the 5% level with t-statistics of 2.30 for both estimates. Likewise for fair value events, the estimated coefficients of *ABX.61.AAA* and *ABX.61.BBB* are statistically significant at the 10% level with t-statistics of 1.75 and 1.80, respectively. For FSFs, none of the estimated coefficients for all events and less fair value events is of the predicted sign. The coefficients, however, are not statistically significant at the 10% level or above except for *ABX.61.BBB* for fair value events. Instead, the difference between BHCs and FSFs is statistically significant at the 5% level for *ABX.61.A*, *ABX.61.BBB*, and *ABX.61.BBB−* for all events with t-statistics of 2.08, 2.34, and 2.29, respectively. For fair value events, the difference between BHCs and FSFs is statistically significant at the 5% level for *ABX.61.AAA*, *ABX.61.A*, and *ABX.61.BBB* with t-statistics of 2.00, 2.07, and 2.29, respectively, and at the 10% level for *ABX.61.BBB−* with a t-statistic of 1.83. This suggests that the sensitivity to developments in the sub-prime security market is significantly more relevant on average for BHCs compared to FSFs. This is consistent with the notion that the conjunction of accounting standards with prudential regulation causes adverse second order effects because stock market reactions to all events and fair value events are only positively associated with financial crisis exposure for BHCs but not for FSFs.

Columns 9, 10, and 11 of panel A report cross-sectional regression results for more disclosure events. None of the estimated coefficients is statistically significant, neither for BHCs nor for FSFs. This suggests that financial crisis exposure is not related to the economic implications of additional disclosures and, therefore, not associated with the magnitude of stock market reactions to more disclosure events.

Columns 12, 13 and 14 of panel A report cross sectional regression results for off-balance sheet events. All estimated coefficients for both BHCs and FSFs are of the predicted sign. For BHCs, t-statistics are consistently in excess of -1.5 and statistically significant at the 10% level or above except for *ABX.61.AAA*. For FSFs, however, none of the estimated coefficients is

statistically significant. Note that starting from $ABX.61.PenAAA$, the estimated coefficients for both BHCs and FSFs are monotonically decreasing. For BHCs, this suggests that the magnitude of stock market reactions to off-balance sheet events is on average an increasing function of higher exposures to lower credit qualities. The difference between BHCs and FSFs is significant for $ABX.61.AA$ and $ABX.61.BBB-$ at the 10% level with t-statistics of -1.65 and -1.89, respectively. This suggests that for these credit qualities the negative association between stock market reactions to off-balance sheet events is significantly higher for BHCs than for FSFs.

The last three columns of panel A report cross-sectional regression results for impairment events. None of the estimated coefficients is statistically significant at the 10% level or above. This suggests that financial crisis exposure measured by return sensitivity is not a relevant determinant of stock market reactions to impairment events.

Panel B of table 6.4 reports cross-sectional regression results for correlation-based variables of financial crisis exposure. Four of the estimated coefficients are statistically significant. The estimated coefficient for FSFs to fair value events is negative and, hence, not of the predicted sign and statistically significant at the 10% level. For off-balance sheet events, the estimated coefficients are statistically significant at the 5% and the 10% level for $ABX.61.AA\_corr$ and $ABX.61.BBB-\_corr$ with t-statistics of -1.99 and -1.87, respectively. The difference between BHCs and FSFs on $ABX.61.AA\_corr$ for off-balance sheet events is statistically significant at the 10% level with a t-statistic of -1.70. This evidence suggests that financial crisis exposure as measured by correlation-based variables is a relevant determinant of stock market reactions to off-balance sheet events for some credit qualities for BHCs but not for FSFs.

Table 6.4
U.S. Market Reactions Regressed on Market-Based Variables of Financial Crisis Exposure

This table reports cross-sectional regression results of U.S. stock market reactions to changes to accounting standards for financial instruments regressed on market-based measures of financial crisis exposure (i.e., stock return sensitivity to or correlation with changes in the ABX.61 indices) of 275 bank holding companies (BHCs) and 146 financial service firms (FSFs). Panels A, B, C, D, E contain regression results for the *SIGNED_MEAN* event variables *ALL*, *LESS_FV*, *MORE_DISCL*, *LESS_OFFB*, and *LESS_IMP*, respectively. Cross-sectional results are based on Sefcik and Thompson (1986) time-series portfolio regressions over the period from April 2, 2007 to June 2, 2010 (799 trading days). For each model, the daily time-series of stock returns of a portfolio of sample firms is regressed on daily returns of the CRSP equally-weighted index, daily relative changes of 6-months U.S. Treasury bills secondary market rates and the respective *SIGNED_MEAN* event variable. Each cross-sectional estimate equals the estimated coefficient of the *SIGNED_MEAN* variable in regression 6.4, in which the time-series of portfolio returns corresponds to the k^{th} row of a return matrix weighted by the K firm characteristics in a given model according to the weighting scheme $\mathbf{P} = [\mathbf{F'F}]^{-1}\mathbf{F'R'}$. Section 3.3 on page 47 contains details on the portfolio weighting process. The difference of the estimated coefficients between the BHC and FSF sample is tested by estimating equation 6.5. Daily return observations for sample firms and daily equally-weighted index returns are from CRSP. 6-months U.S. Treasury bills secondary market rates are obtained through WRDS from the Federal Reserve Board's H.15 Report.

$$R_t^{\mathbf{P}=[\mathbf{F'F}]^{-1}\mathbf{F'R'}} = \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \beta_3 SIGNED\_MEAN + \varepsilon_t \tag{6.4}$$

$$\begin{aligned} R_t^{\mathbf{P}=[\mathbf{F'F}]^{-1}\mathbf{F'R'}} =& \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \beta_3 SIGNED\_MEAN + \beta_4 D^{BHC} + \beta_5 D^{BHC\times MKT} \\ &+ \beta_6 D^{BHC\times INTEREST} + \beta_7 D^{BHC\times SIGNED\_MEAN} + \varepsilon_t \end{aligned} \tag{6.5}$$

Panel A: Regression-Based Variables

	Pred. Sign	*ALL*			*LESS_FV*			*MORE_DISCL*			*LESS_OFFB*			*LESS_IMP*		
		BHC	**FSF**	**Δ**	**BHC**	**FSF**	**Δ**	**BHC**	**FSF**	**Δ**	**BHC**	**FSF**	**Δ**	**BHC**	**FSF**	**Δ**
ABX.61. AAA	$+/-^a$	0.0031	−0.0002	0.0033	0.0049*	−0.0012	0.0061**	0.0021	0.0008	0.0013	−0.0061	−0.0004	−0.0057	0.0039	0.0012	0.0027
		(1.56)	(−0.26)	(1.53)	(1.75)	(−1.00)	(2.00)	(0.33)	(0.29)	(0.18)	(−1.61)	(−0.26)	(−1.37)	(0.61)	(0.43)	(0.38)
ABX.61. PenAAA	$+/-^a$	0.0015*	−0.0000	0.0016	0.0018	−0.0004	0.0022	0.0012	0.0004	0.0008	−0.0031*	−0.0001	−0.0030	0.0012	0.0007	0.0005
		(1.72)	(−0.01)	(1.55)	(1.40)	(−0.64)	(1.54)	(0.41)	(0.30)	(0.24)	(−1.81)	(−0.08)	(−1.59)	(0.41)	(0.49)	(0.15)
ABX.61. AA	$+/-^a$	0.0063	−0.0011	0.0074	0.0067	−0.0037	0.0103	0.0079	0.0015	0.0064	−0.0168**	−0.0016	−0.0152*	−0.0114	−0.0011	−0.0104
		(1.41)	(−0.59)	(1.52)	(1.07)	(−1.39)	(1.53)	(0.56)	(0.25)	(0.42)	(−1.97)	(−0.43)	(−1.65)	(−0.79)	(−0.17)	(−0.66)
ABX.61. A	$+/-^a$	0.0120*	−0.0020	0.0140**	0.0141	−0.0053	0.0194**	0.0139	0.0009	0.0130	−0.0208*	−0.0024	−0.0184	−0.0024	−0.0010	−0.0013
		(1.92)	(−0.81)	(2.08)	(1.61)	(−1.55)	(2.07)	(0.70)	(0.11)	(0.61)	(−1.74)	(−0.51)	(−1.44)	(−0.12)	(−0.13)	(−0.06)
ABX.61. BBB	$+/-^a$	0.0172**	−0.0016	0.0187**	0.0188*	−0.0068*	0.0256**	0.0188	−0.0016	0.0204	−0.0246*	−0.0036	−0.0210	0.0283	0.0018	0.0265
		(2.30)	(−0.54)	(2.34)	(1.80)	(−1.70)	(2.29)	(0.79)	(−0.18)	(0.80)	(−1.72)	(−0.65)	(−1.37)	(1.17)	(0.19)	(1.02)
ABX.61. BBB−	$+/-^a$	0.0154**	−0.0013	0.0167**	0.0133	−0.0053	0.0186*	0.0199	−0.0028	0.0226	−0.0296**	−0.0032	−0.0263*	0.0141	0.0002	0.0139
		(2.30)	(−0.44)	(2.29)	(1.42)	(−1.33)	(1.83)	(0.93)	(−0.30)	(0.97)	(−2.31)	(−0.59)	(−1.89)	(0.65)	(0.02)	(0.58)
Controls[b]		YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

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Table 6.4 - continued from previous page

	Pred. Sign	*ALL*			*LESS_FV*			*MORE_DISCL*			*LESS_OFFB*			*LESS_IMP*		
		BHC	**FSF**	**Δ**	**BHC**	**FSF**	**Δ**	**BHC**	**FSF**	**Δ**	**BHC**	**FSF**	**Δ**	**BHC**	**FSF**	**Δ**
Panel B: Correlation-Based Variables																
ABX.61.	$+/-^a$	0.0057	−0.0004	0.0060	0.0020	−0.0034	0.0054	0.0106	0.0073	0.0033	−0.0234	0.0031	−0.0265	0.0024	0.0154	−0.0129
AAA_corr		(0.63)	(−0.07)	(0.57)	(0.16)	(−0.43)	(0.37)	(0.37)	(0.41)	(0.10)	(−1.37)	(0.29)	(−1.31)	(0.08)	(0.83)	(−0.38)
ABX.61.	$+/-^a$	0.0072	0.0026	0.0046	−0.0010	0.0035	−0.0044	0.0107	0.0105	0.0002	−0.0242	0.0047	−0.0288	−0.0060	0.0183	−0.0243
PenAAA_corr		(0.83)	(0.52)	(0.46)	(−0.08)	(0.50)	(−0.31)	(0.38)	(0.66)	(0.01)	(−1.44)	(0.49)	(−1.50)	(−0.21)	(1.13)	(−0.74)
ABX.61.	$+/-^a$	0.0042	−0.0043	0.0085	−0.0093	−0.0098	0.0005	0.0184	0.0054	0.0130	−0.0327**	0.0023	−0.0350*	−0.0426	0.0060	−0.0485
AA_corr		(0.49)	(−0.67)	(0.79)	(−0.77)	(−1.08)	(0.03)	(0.67)	(0.26)	(0.38)	(−1.99)	(0.18)	(−1.70)	(−1.52)	(0.28)	(−1.39)
ABX.61.	$+/-^a$	0.0054	−0.0078	0.0132	−0.0085	−0.0164*	0.0079	0.0224	−0.0022	0.0246	−0.0314	−0.0007	−0.0306	−0.0323	0.0048	−0.0371
A_corr		(0.54)	(−1.16)	(1.09)	(−0.60)	(−1.74)	(0.47)	(0.70)	(−0.10)	(0.64)	(−1.63)	(−0.06)	(−1.32)	(−0.99)	(0.22)	(−0.94)
ABX.61.	$+/-^a$	0.0170	−0.0020	0.0190	0.0054	−0.0125	0.0179	0.0243	−0.0233	0.0476	−0.0364	−0.0052	−0.0312	0.0229	0.0269	−0.0040
BBB_corr		(1.27)	(−0.25)	(1.22)	(0.29)	(−1.10)	(0.82)	(0.57)	(−0.90)	(0.96)	(−1.43)	(−0.34)	(−1.05)	(0.53)	(1.02)	(−0.08)
ABX.61.	$+/-^a$	0.0152	−0.0017	0.0169	−0.0023	−0.0054	0.0031	0.0285	−0.0233	0.0518	−0.0463*	−0.0014	−0.0449	0.0009	0.0206	−0.0197
BBB − _corr		(1.17)	(−0.23)	(1.13)	(−0.13)	(−0.52)	(0.15)	(0.69)	(−0.99)	(1.09)	(−1.87)	(−0.10)	(−1.58)	(0.02)	(0.86)	(−0.41)
Controls[b]		YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

t-statistics in parentheses.
***, **, * denote $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively, using a two-tailed test.
a The predicted sign is negative for *LESS_OFFB* and positive otherwise.
b Controls are *LEVERAGE*, *LIQUIDITY*, *COMPLEXITY*, and *SIZE*.

Table 6.5 on the following page reports cross-sectional regression results of U.S. stock market reactions to changes to accounting standards for financial instruments regressed on two variables of financial crisis exposure (i.e., *CRISISLOSS* and *SECURITIZATION*) of 275 bank holding companies (BHCs) and 146 financial service firms (FSFs). Panels A, B, C, D, E contain regression results for the *SIGNED_MEAN* event variables *ALL*, *LESS_FV*, *MORE_DISCL*, *LESS_OFFB*, and *LESS_IMP*, respectively. The predicted sign is positive for all events, fair value events, and impairment events because financial institutions with higher crisis losses or more securitization face higher financial crisis exposure and, therefore, are hypothesized to benefit more on average from changes to accounting standards for financial instruments. For off-balance sheet events, the predicted sign flips and is negative because *LESS_OFFB* represents events leading to stricter balance sheet recognition rules while all other *SIGNED_MEAN* variables, except for *MORE_DISCL*, represent events leading to more relaxed recognition rules.

Panel A of table 6.5 reports cross-sectional regression results for all events. In model 1, the estimated coefficient for BHCs is of the predicted sign but not statistically significant at the 10% level or above with a t-statistic of 1.25. For FSFs, the estimated coefficient is negative and, thus, not of the predicted sign but insignificant with a t-statistic of -0.43. In models 2 and 3, the estimated coefficients for *SECURITIZATION* are not of the predicted sign for BHCs but insignificant with t-statistics of -0.38 and -0.78, respectively. The estimated coefficient of *CRISISLOSS* in model 2 is of about the same magnitude as in model 1 and not statistically significant with a t-statistic of 1.24.

Panel B of table 6.5 reports regression results for fair value events. In model 1, the estimated coefficient for BHCs is of the predicted sign and statistically significant at the 5% level with a t-statistic of 2.49. As in panel A for all events, the estimated coefficient for FSFs is not of the predicted sign and statistically insignificant. The difference between BHCs and FSFs, however, is positive and statistically significant with a t-statistic of 2.50. This suggests that stock market reactions for fair value events are positively associated with crisis loss for BHCs but not for FSFs. In model 2, both *CRISISLOSS* and *SECURITIZATION* are of the predicted sign and the estimated coefficient for *CRISISLOSS* is statistically significant at the 1% level with a t-statistic of 2.61. For *SECURITIZATION*, however, the estimated coefficient is not statistically significant at the 10% level or above with a t-statistic of 1.28. This suggests that *CRISISLOSS* but not *SECURITIZATION* is positively associated with stock market reactions for BHCs.

Panel C of table 6.5 reports cross-sectional regression results for disclosure events. Since I formulate no hypothesis on the association of stock market reactions to disclosure events with financial crisis exposure, the second column of panel C contains no predicted sign. None of the estimated coefficients is significant at the 10% level or above in models 1, 2, and 3.

Panel D of table 6.5 reports cross sectional regression results for off-balance sheet events. For both BHCs and FSFs, the estimated coefficients of *CRISISLOSS* and *SECURITIZATION* in all models are insignificant and not of the predicted sign with t-statistics below 1.

Panel E of table 6.5 reports cross-sectional regression results for impairment events. In

model 1, the estimated coefficient for BHCs is of the predicted sign but not statistically significant. The coefficient for FSFs is again negative but also not statistically significant. The difference, however, between BHCs and FSFs is statistically significant at the 10% level suggesting that the positive association of stock market reactions to impairment events with *CRISISLOSS* is significantly higher for banks compared to financial service firms. In models 2 and 3, no estimated coefficient is statistically significant at the 10% level or above and only the estimated coefficient of *CRISISLOSS* is of the predicted positive sign with a t-statistic of 1.30.

Table 6.5
U.S. Market Reactions Regressed on *CRISISLOSS* and *SECURITIZATION*

This table reports cross-sectional regression results of U.S. stock market reactions to changes to accounting standards for financial instruments regressed on two variables of financial crisis exposure (i.e., *CRISISLOSS* and *SECURITIZATION*) of 275 bank holding companies (BHCs) and 146 financial service firms (FSFs). Panels A, B, C, D, E contain regression results for the *SIGNED_MEAN* event variables *ALL*, *LESS_FV*, *MORE_DISCL*, *LESS_OFFB*, and *LESS_IMP*, respectively. Cross-sectional results are based on Sefcik and Thompson (1986) time-series portfolio regressions over the period from April 2, 2007 to June 2, 2010 (799 trading days). For each model, the daily time-series of stock returns of a portfolio of sample firms is regressed on daily returns of the CRSP equally-weighted index, daily relative changes of 6-months U.S. Treasury bills secondary market rates and the respective *SIGNED_MEAN* event variable. Each cross-sectional estimate equals the estimated coefficient of the *SIGNED_MEAN* variable in regression 6.6, in which the time-series of portfolio returns corresponds to the k^{th} row of a return matrix weighted by the K firm characteristics in a given model according to the weighting scheme $\mathbf{P} = [\mathbf{F'F}]^{-1}\mathbf{F'R'}$. Section 3.3 on page 47 contains details on the portfolio weighting process. The difference of the estimated coefficients between the BHC and FSF sample is tested by estimating equation 6.7. Daily return observations for sample firms and daily equally-weighted index returns are from CRSP. 6-months U.S. Treasury bills secondary market rates are obtained through WRDS from the Federal Reserve Board's H.15 Report.

$$\mathrm{R}_t^{\mathbf{P}=[\mathbf{F'F}]^{-1}\mathbf{F'R'}} = \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \beta_3 SIGNED\_MEAN + \varepsilon_t \tag{6.6}$$

$$\begin{aligned}\mathrm{R}_t^{\mathbf{P}=[\mathbf{F'F}]^{-1}\mathbf{F'R'}} =& \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \beta_3 SIGNED\_MEAN + \beta_4 D^{BHC} \\ &+ \beta_5 D^{BHC\times MKT} + \beta_6 D^{BHC\times INTEREST} + \beta_7 D^{BHC\times SIGNED\_MEAN} + \varepsilon_t\end{aligned} \tag{6.7}$$

	Pred. Sign	Model 1			Model 2	Model 3
		BHC (1)	**FSF** (2)	Δ(2) − (1)	**BHC**	**BHC**
Panel A: All Events						
CRISISLOSS	+	0.0041	−0.0009	0.0049	0.0040	
		(1.25)	(−0.43)	(1.29)	(1.24)	
SECURITIZATION	+				−0.0009	−0.0021
					(−0.38)	(−0.78)
Controls[a]		YES	YES	YES	YES	YES
Panel B: Fair Value Events						
CRISISLOSS	+	0.0112**	−0.0020	0.0133**	0.0117***	
		(2.49)	(−0.73)	(2.50)	(2.61)	
SECURITIZATION	+				0.0042	0.0008

Continued on next page

Table 6.5 - continued from previous page

					(1.28)	(0.22)
Controls[a]		YES	YES	YES	YES	YES
Panel C: Disclosure Events						
CRISISLOSS		−0.0003	0.0037	−0.0041	−0.0009	
		(−0.03)	(0.59)	(−0.34)	(−0.09)	
SECURITIZATION					−0.0057	−0.0054
					(−0.76)	(−0.65)
Controls[a]		YES	YES	YES	YES	YES
Panel D: Off-Balance Sheet Events						
CRISISLOSS	−	0.0014	0.0001	0.0013	0.0019	
		(0.23)	(0.03)	(0.18)	(0.31)	
SECURITIZATION	−				0.0045	0.0039
					(0.99)	(0.78)
Controls[a]		YES	YES	YES	YES	YES
Panel E: Impairment Events						
CRISISLOSS	+	0.0140	−0.0071	0.0211*	0.0135	
		(1.34)	(−1.09)	(1.71)	(1.30)	
SECURITIZATION	+				−0.0058	−0.0098
					(−0.76)	(−1.15)
Controls[a]		YES	YES	YES	YES	YES

t-statistics in parentheses.
***, **, * denote $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively, using a two-tailed test.
a Controls are *LEVERAGE*, *LIQUIDITY*, *COMPLEXITY*, *SIZE*, and *BETA*. *BETA* is the estimated coefficient on the CRSP value-weighted index in a market model regression, which regresses the daily stock return of firm *i* on the CRSP value-weighted index during 2007 and 2008.

Table 6.6 on the following page reports cross-sectional regression results of U.S. stock market reactions to changes to accounting standards for financial instruments regressed on components of *SECURITIZATION* of 275 bank holding companies (BHCs). Columns three to seven contain regression results for the *SIGNED_MEAN* event variables *ALL*, *LESS_FV*, *MORE_DISCL*, *LESS_OFFB*, and *LESS_IMP*, respectively. The predicted sign is positive for all events, fair value events, and impairment events because financial institutions with higher securitization face higher financial crisis exposure and, therefore, are hypothesized to benefit more on average from changes to accounting standards for financial instruments. For off-balance sheet events, the predicted sign flips and is negative because *LESS_OFFB* represents events leading to stricter balance sheet recognition rules while all other *SIGNED_MEAN* variables, except for *MORE_DISCL*, represent events leading to more relaxed recognition rules.

For all events in table 6.6, the estimated coefficients for *HTM_ABS*, *LOANS_SECURITIZED* and *TRADING_MBS* are of the predicted sign. The coefficients, however, are not statistically significant at the 10% level or above. The estimated coefficient of *HTM_MBS*

is statistically significant at the 5% level with a t-statistic of -2.00 but not of the predicted sign. Possibly, the negative coefficient results from the statistically significant correlation of *HTM_MBS* with *CRISIS_LOSS* (see panel A of table 5.14 on page 142).

For fair value events, reported in column four of table 6.6, the estimated coefficients of *IOS*, *LOANS_SECURITIZED*, and *TRADING_MBS* are of the predicted sign. The estimated coefficients of both *LOANS_SECURITIZED* and *TRADING_MBS* are statistically significant at the 5% level with t-statistics of 2.42 and 2.02, respectively, indicating a positive association between the two components of securitization and stock market reactions to fair value events.

Columns five and six of table 6.6 report cross-sectional regression results for disclosure and off-balance sheet events. The estimated coefficients are not statistically significant at the 10% level or above.

Cross-sectional regression results for impairment events are reported in column seven of table 6.6. The estimated coefficient for *HTM_ABS* is of the predicted sign and statistically significant at the 5% level with a t-statistic of 2.12. The estimated coefficient of *AFS_MBS* is also statistically significant at the 10% level with a t-statistic of -1.75. The coefficient, however, is negative and, thus, not of the predicted sign, which likely is a result of the negative and statistically significant correlation between *AFS_MBS* and *CRISIS_LOSS* (see panel A of table 5.14 on page 142).

Table 6.6
U.S. Market Reactions Regressed on Balance Sheet Components of *SECURITIZATION*

This table reports cross-sectional regression results of U.S. stock market reactions to changes to accounting standards for financial instruments regressed on both *CRISISLOSS* and the components of *SECURITIZATION* of 275 bank holding companies (BHCs). The data items required for *SECURITIZATION* are not available for financial service firms (FSFs). Columns 1-5 contain regression results for the *SIGNED_MEAN* event variables *ALL*, *LESS_FV*, *MORE_DISCL*, *LESS_OFFB*, and *LESS_IMP*, respectively. Cross-sectional results are based on Sefcik and Thompson (1986) time-series portfolio regressions over the period from April 2, 2007 to June 2, 2010 (799 trading days). The daily time-series of stock returns of a portfolio of sample firms is regressed on daily returns of the CRSP equally-weighted index, daily relative changes of 6-months U.S. Treasury bills secondary market rates and the respective *SIGNED_MEAN* event variable. Each cross-sectional estimate equals the estimated coefficient of the *SIGNED_MEAN* variable in regression 6.8, in which the time-series of portfolio returns corresponds to the k^{th} row of a return matrix weighted by the K firm characteristics in a given model according to the weighting scheme $\mathbf{P} = [\mathbf{F'F}]^{-1}\mathbf{F'R'}$. Section 3.3 on page 47 contains details on the portfolio weighting process. Daily return observations for sample firms and daily equally-weighted index returns are from CRSP. 6-months U.S. Treasury bills secondary market rates are obtained through WRDS from the Federal Reserve Board's H.15 Report.

$$\mathrm{R}_t^{\mathbf{P}=[\mathbf{F'F}]^{-1}\mathbf{F'R'}} = \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \beta_3 SIGNED\_MEAN + \varepsilon_t \tag{6.8}$$

	Pred. Sign	***ALL***	***LESS_ FV***	***MORE_ DISCL***	***LESS_ OFFB***	***LESS_ IMP***
AFS_ABS	$+/-^a$	-0.0399	-0.0046	-0.0240	0.0405	-0.0494

Continued on next page

Table 6.6 - continued from previous page

	Pred. Sign	*ALL*	*LESS_FV*	*MORE_DISCL*	*LESS_OFFB*	*LESS_IMP*
		(−1.61)	(−0.13)	(−0.30)	(0.85)	(−0.61)
HTM_ABS	+/−[a]	0.2620	−0.6281	1.2732	−0.5605	4.8669**
		(0.37)	(−0.63)	(0.56)	(−0.41)	(2.12)
IOS	+/−[a]	−0.0537	0.1950	−1.4670	0.0958	−0.8112
		(−0.07)	(0.19)	(−0.62)	(0.07)	(−0.34)
LOANS_SECURITIZED	+/−[a]	0.0041	0.0101**	−0.0082	−0.0024	0.0079
		(1.37)	(2.42)	(−0.86)	(−0.42)	(0.81)
TRADING_MBS	+/−[a]	0.0294	0.2074**	−0.1876	0.0745	0.0442
		(0.40)	(2.02)	(−0.80)	(0.53)	(0.18)
AFS_MBS	+/−[a]	−0.0061	−0.0075	0.0011	0.0093	−0.0242*
		(−1.44)	(−1.25)	(0.08)	(1.15)	(−1.75)
HTM_MBS	+/−[a]	−0.0126**	−0.0134	−0.0153	0.0066	−0.0320
		(−2.00)	(−1.52)	(−0.76)	(0.55)	(−1.57)
Controls[b]		YES	YES	YES	YES	YES

t-statistics in parentheses.
***, **, * denote $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively, using a two-tailed test.
b Controls are *LEVERAGE*, *LIQUIDITY*, *COMPLEXITY*, *SIZE*, and *BETA*. *BETA* is the estimated coefficient on the CRSP value-weighted index in a market model regression, which regresses the daily stock return of firm *i* on the CRSP value-weighted index during 2007 and 2008.

6.2.3 Asset Mix

Panel A of table 6.7 reports cross-sectional regression results for all events. In models one and two, the estimated coefficients of *AFS* for FSFs are of the predicted sign and statistically significant at the 10% level with *t*-statistics of 1.80 and 1.72, respectively. Also, the difference between BHCs and FSFs with respect to *AFS* is statistically significant at the 10% level in models one and two. This suggests that the positive association of stock market reactions to all events with the relative size of the available for sale portfolio is significantly higher for FSFs compared to BHCs. Similarly, in models three and four the estimated coefficients of *AFS2* and *AFS3* are of the predicted sign and statistically significant at the 5% and the 10% level with *t*-statistics of 2.22 and 1.78, respectively. In model five, the estimated coefficient of *LEVEL3* for FSFs is statistically significant at the 5% level with a *t*-statistic of 2.21. In model seven, the estimated coefficient for FSFs of *FV2* is of the predicted sign and statistically significant at the 10% level with a *t*-statistic of 1.79. This estimated coefficient is significantly higher for FSFs compared to the corresponding coefficient for BHCs.

Panel B of table 6.7 reports cross-sectional regression results for fair value events. In model one, the estimated coefficient of *TRADING* is of the predicted sign for BHCs and FSFs. It is statistically significant, however, only for BHCs with a *t*-statistic of 2.38 (5% level). The difference in coefficients between BHCs and FSFs is also significant at the 5% level with a *t*-statistic of 2.17. Also in model one, the estimated coefficient of *AFS* is of the predicted sign and statistically significant at the 10% level for FSFs but not for BHCs. Similar to model

one, the estimated coefficient of *TRADER* in model 2 is of the predicted sign for both BHCs and FSFs, but statistically significant only for BHCs (10% level; t-statistic of 2.12). *AFS* is statistically significant and of the predicted sign for FSFs but not for BHCs. In models three and four, *AFS2* and *AFS3* are of the predicted sign and statistically significant at the 5% and the 10% level with t-statistics of 2.03 and 1.92, respectively. The estimated coefficients in models five and six of panel B are not statistically significant at the 10% level or above. In model seven, the estimated coefficient of *FV2* for FSFs is statistically significant at the 10% level with a t-statistic of 1.80.

Panel C of table 6.7 reports cross-sectional regression results for disclosure events. The estimated coefficients of $AFS\Delta FV$ are statistically significant for BHCs in models one and two at the 10% and the 5% level, respectively. The negative coefficient suggests that on average firms with higher differences between the fair value and the historical costs of their fair value assets benefit relatively less from changes to disclosure requirements. This in turn, seems to indicate that increased disclosure is more beneficial to firms with low performing assets. That is, the fair value of the assets ranges around or below their historical costs. In models three and four, the estimated coefficients of *AFS2* and *AFS3* are of the predicted sign and statistically significant at the 5% and the 10% level with t-statistics of 2.03 and 1.92, respectively. The estimated coefficients in models five to seven are not statistically significant at the 10% level or above.

Panel D reports cross-sectional regression results for off-balance sheet events. The estimated coefficients in models one to four are not statistically significant at the 10% level or above. In model five, the estimated coefficients of *LEVEL3* for FSFs is of the predicted sign and statistically significant at the 5% level with a t-statistic of -2.29. The difference between *LEVEL2* for BHCs and FSFs is statistically significant at the 10% level with a t-statistic of 1.65 suggesting that the association of stock market reactions with *LEVEL2* fair value holdings is significantly higher for BHCs compared to FSFs. The estimated coefficients in models six and seven are not statistically significant at the 10% level or above.

Panel D of table 6.7 reports cross-sectional regression results for impairment events. The estimated coefficients in models one to three are not statistically significant at the 10% level or above. The estimated coefficient of *AFS3* in model four is statistically significant at the 5% level with a t-statistic of 2.30. The estimated coefficients in models five to seven are not statistically significant at the 10% level or above.

Table 6.7
U.S. Market Reactions Regressed on Asset Mix Variables

This table reports cross-sectional regression results of U.S. stock market reactions to changes to accounting standards for financial instruments regressed on variables measuring the asset mix of 275 bank holding companies (BHCs) and 146 financial service firms (FSFs). Panels A, B, C, D, E contain regression results for the *SIGNED_MEAN* event variables *ALL*, *LESS_FV*, *MORE_DISCL*, *LESS_OFFB*, and *LESS_IMP*, respectively. Cross-sectional results are based on Sefcik and Thompson (1986) time-series portfolio regressions over the period from April 2, 2007 to June 2, 2010 (799 trading days). For each model, the daily time-series of stock returns of a portfolio of sample firms is regressed on daily returns of the CRSP equally-weighted index, daily relative changes of 6-months U.S. Treasury bills secondary market rates and the respective *SIGNED_MEAN* event variable. Each cross-sectional estimate equals the estimated coefficient of the *SIGNED_MEAN* variable in regression 6.9, in which the time-series of portfolio returns corresponds to the k^{th} row of a return matrix weighted by the K firm characteristics in a given model according to the weighting scheme $\mathbf{P} = [\mathbf{F'F}]^{-1}\mathbf{F'R'}$. Section 3.3 on page 47 contains details on the portfolio weighting process. The difference of the estimated coefficients between the BHC and FSF sample is tested by estimating equation 6.10. Daily return observations for sample firms and daily equally-weighted index returns are from CRSP. 6-months U.S. Treasury bills secondary market rates are obtained through WRDS from the Federal Reserve Board's H.15 Report.

$$R_t^{\mathbf{P}=[\mathbf{F'F}]^{-1}\mathbf{F'R'}} = \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \beta_3 SIGNED\_MEAN + \varepsilon_t \tag{6.9}$$

$$\begin{aligned} R_t^{\mathbf{P}=[\mathbf{F'F}]^{-1}\mathbf{F'R'}} =& \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \beta_3 SIGNED\_MEAN + \beta_4 D^{BHC} + \beta_5 D^{BHC\times MKT} \\ &+ \beta_6 D^{BHC\times INTEREST} + \beta_7 D^{BHC\times SIGNED\_MEAN} + \varepsilon_t \end{aligned} \tag{6.10}$$

Panel A: All Events

	Pred. Sign	Model 1 BHC	Model 1 FSF	Model 1 Δ	Model 2 BHC	Model 2 FSF	Model 2 Δ	Model 3 FSF	Model 4 FSF
TRADING	+	0.0100	0.0024	0.0076				0.0034	0.0006
		(0.91)	(0.88)	(0.67)				(1.19)	(0.24)
TRADER	+				0.0003	0.0005	−0.0002		
					(0.48)	(0.51)	(−0.16)		
AFS	+	−0.0043	0.0028*	−0.0071*	−0.0046	0.0028*	−0.0074*		
		(−1.24)	(1.80)	(−1.87)	(−1.35)	(1.72)	(−1.95)		
AFS2	+							0.0035**	
								(2.22)	
AFS3	+								0.0076*
									(1.78)
AFSΔFV		−0.1102	−0.0005	−0.1097	−0.1047	−0.0005	−0.1042	−0.0006	−0.0001
		(−1.57)	(−0.26)	(−1.56)	(−1.48)	(−0.28)	(−1.47)	(−0.28)	(−0.03)
Controls[a]		YES	YES	YES	YES	YES	YES	YES	YES

	Pred. Sign	Model 5 BHC	Model 5 FSF	Model 5 Δ	Model 6 BHC	Model 6 FSF	Model 6 Δ	Model 7 BHC	Model 7 FSF	Model 7 Δ
LEVEL1		−0.0031	0.0002	−0.0033						
		(−0.57)	(0.12)	(−0.58)						
LEVEL2	+	−0.0007	0.0023	−0.0030						
		(−0.30)	(1.56)	(−1.09)						
LEVEL3	+	0.0237	0.0066**	0.0172						
		(1.20)	(2.21)	(0.86)						
FV	+				0.0002	0.0021	−0.0019			
					(0.10)	(1.60)	(−0.71)			
FV2	+							−0.0036	0.0027*	−0.0063*
								(−1.07)	(1.79)	(−1.71)
Controls[a]		YES	YES	YES	YES	YES	YES	YES	YES	YES

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Panel B: Fair Value Events

	Pred. Sign	Model 1			Model 2			Model 3	Model 4	
		BHC	FSF	Δ	BHC	FSF	Δ	FSF	FSF	
TRADING	+	0.0365**	0.0023	0.0342**				0.0033	−0.0001	
		(2.38)	(0.59)	(2.17)				(0.83)	(−0.03)	
TRADER	+				0.0020**	0.0012	0.0008			
					(2.12)	(0.84)	(0.48)			
AFS	+	−0.0045	0.0038*	−0.0083	−0.0060	0.0044*	−0.0103*			
		(−0.93)	(1.77)	(−1.57)	(−1.24)	(1.91)	(−1.94)			
AFS2	+							0.0044**		
								(2.03)		
AFS3	+								0.0115*	
									(1.92)	
AFSΔFV	+	−0.1561	0.0015	−0.1576	−0.1299	0.0016	−0.1315	0.0015	0.0021	
		(−1.59)	(0.52)	(−1.60)	(−1.31)	(0.58)	(−1.33)	(0.53)	(0.72)	
Controls[a]		YES	YES	YES	YES	YES	YES	YES	YES	

	Pred. Sign	Model 5			Model 6			Model 7		
		BHC	FSF	Δ	BHC	FSF	Δ	BHC	FSF	Δ
LEVEL1	+	−0.0064	−0.0000	−0.0064						
		(−0.84)	(−0.01)	(−0.80)						
LEVEL2	+	0.0007	0.0027	−0.0020						
		(0.22)	(1.33)	(−0.53)						
LEVEL3	+	0.0385	0.0022	0.0363						
		(1.39)	(0.52)	(1.29)						
FV	+				0.0022	0.0021	0.0001			
					(0.68)	(1.14)	(0.02)			
FV2	+							−0.0025	0.0038*	−0.0063
								(−0.53)	(1.80)	(−1.22)
Controls[a]		YES	YES	YES	YES	YES	YES	YES	YES	YES

Panel C: Disclosure Events

	Pred. Sign	Model 1			Model 2			Model 3	Model 4	
		BHC	FSF	Δ	BHC	FSF	Δ	FSF	FSF	
TRADING	+	−0.0074	0.0016	−0.0089				0.0033	−0.0001	
		(−0.21)	(0.18)	(−0.25)				(0.83)	(−0.03)	
TRADER	+				−0.0017	−0.0010	−0.0007			
					(−0.78)	(−0.31)	(−0.18)			
AFS	+	−0.0021	0.0035	−0.0057	−0.0015	0.0026	−0.0041			
		(−0.19)	(0.72)	(−0.47)	(−0.14)	(0.50)	(−0.34)			
AFS2	+							0.0044**		
								(2.03)		
AFS3	+								0.0115*	
									(1.92)	
AFSΔFV	+	−0.4360*	0.0045	−0.4406**	−0.4510**	0.0042	−0.4552**	0.0015	0.0021	
		(−1.95)	(0.71)	(−1.97)	(−2.01)	(0.68)	(−2.03)	(0.53)	(0.72)	
Controls[a]		YES	YES	YES	YES	YES	YES	YES	YES	

	Pred. Sign	Model 5			Model 6			Model 7		
		BHC	FSF	Δ	BHC	FSF	Δ	BHC	FSF	Δ
LEVEL1	+	−0.0030	−0.0011	−0.0020						
		(−0.17)	(−0.18)	(−0.11)						
LEVEL2	+	0.0042	0.0015	0.0028						
		(0.58)	(0.31)	(0.32)						
LEVEL3	+	−0.0011	0.0099	−0.0110						
		(−0.02)	(1.04)	(−0.17)						
FV	+				0.0044	0.0014	0.0030			
					(0.60)	(0.34)	(0.35)			
FV2	+							−0.0024	0.0037	−0.0062
								(−0.23)	(0.77)	(−0.52)
Controls[a]		YES	YES	YES	YES	YES	YES	YES	YES	YES

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Table 6.7 - continued from previous page

Panel D: Off-Balance Sheet Events

	Pred. Sign	Model 1			Model 2			Model 3	Model 4	
		BHC	**FSF**	**Δ**	**BHC**	**FSF**	**Δ**	**FSF**	**FSF**	
TRADING	+	0.0221	−0.0021	0.0242				−0.0031	−0.0006	
		(1.05)	(−0.41)	(1.12)				(−0.56)	(−0.12)	
TRADER	+				0.0013	−0.0001	0.0014			
					(0.98)	(−0.07)	(0.61)			
AFS	+	0.0075	−0.0024	0.0099	0.0066	−0.0021	0.0088			
		(1.15)	(−0.80)	(1.37)	(1.01)	(−0.69)	(1.20)			
AFS2	+							−0.0031		
								(−1.03)		
AFS3	+								−0.0062	
									(−0.76)	
AFSΔFV	+	−0.0439	0.0050	−0.0489	−0.0276	0.0051	−0.0327	0.0051	0.0046	
		(−0.33)	(1.32)	(−0.36)	(−0.20)	(1.37)	(−0.24)	(1.34)	(1.19)	
Controls[a]		YES	YES	YES	YES	YES	YES	YES	YES	

	Pred. Sign	Model 5			Model 6			Model 7		
		BHC	**FSF**	**Δ**	**BHC**	**FSF**	**Δ**	**BHC**	**FSF**	**Δ**
LEVEL1	+	0.0046	0.0025	0.0021						
		(0.44)	(0.72)	(0.19)						
LEVEL2	+	0.0059	−0.0026	0.0085*						
		(1.35)	(−0.94)	(1.65)						
LEVEL3	+	−0.0301	−0.0130**	−0.0171						
		(−0.79)	(−2.29)	(−0.45)						
FV	+				0.0053	−0.0021	0.0074			
					(1.21)	(−0.85)	(1.47)			
FV2	+							0.0082	−0.0021	0.0103
								(1.28)	(−0.70)	(1.46)
Controls[a]		YES	YES	YES	YES	YES	YES	YES	YES	YES

Panel E: Impairment Events

	Pred. Sign	Model 1			Model 2			Model 3	Model 4	
		BHC	**FSF**	**Δ**	**BHC**	**FSF**	**Δ**	**FSF**	**FSF**	
TRADING	+	−0.0061	0.0053	−0.0114				0.0055	0.0068	
		(−0.17)	(0.59)	(−0.31)				(0.60)	(0.79)	
TRADER	+				0.0007	0.0015	−0.0008			
					(0.31)	(0.44)	(−0.20)			
AFS	+	−0.0154	−0.0001	−0.0153	−0.0153	0.0002	−0.0156			
		(−1.38)	(−0.02)	(−1.25)	(−1.37)	(0.04)	(−1.26)			
AFS2	+							0.0002		
								(0.05)		
AFS3	+								0.0318**	
									(2.30)	
AFSΔFV	+	−0.0943	0.0072	−0.1015	−0.0911	0.0072	−0.0983	0.0071	0.0064	
		(−0.41)	(1.11)	(−0.44)	(−0.40)	(1.14)	(−0.43)	(1.11)	(0.97)	
Controls[a]		YES	YES	YES	YES	YES	YES	YES	YES	

	Pred. Sign	Model 5			Model 6			Model 7		
		BHC	**FSF**	**Δ**	**BHC**	**FSF**	**Δ**	**BHC**	**FSF**	**Δ**
LEVEL1	+	−0.0175	0.0055	−0.0230						
		(−0.99)	(0.94)	(−1.24)						
LEVEL2	+	−0.0088	−0.0040	−0.0048						
		(−1.19)	(−0.84)	(−0.54)						
LEVEL3	+	−0.0076	−0.0096	0.0020						
		(−0.12)	(−0.99)	(0.03)						
FV	+				−0.0106	−0.0023	−0.0084			
					(−1.43)	(−0.53)	(−0.98)			
FV2	+							−0.0149	0.0006	−0.0155
								(−1.37)	(0.12)	(−1.29)
Controls[a]		YES	YES	YES	YES	YES	YES	YES	YES	YES

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t-statistics in parentheses.
***, **, * denote $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively, using a two-tailed test.
a The predicted sign is negative for *LESS_OFFB* and positive otherwise.
b Controls are *LEVERAGE*, *LIQUIDITY*, *SIZE*, and *COMPLEXITY*.

6.2.4 Information Environment

Table 6.8 reports cross-sectional regression results for variables measuring firms' information environment.

The difference between the estimated coefficients of *ANALYSTS_MEDIAN* for BHCs and FSFs is statistically significant at the 5% level for both fair value and disclosure events with t-statistics of 1.79 and 1.70, respectively. The other estimated coefficients in table 6.8 are not statistically significant at the 10% level or above. This suggests that firms' information environment, as proxied for by *ANALYSTS* and *ANALYSTS_MEDIAN*, is not a significant determinant of the magnitude of stock market reactions to events surrounding changes to accounting standards for financial instruments during the financial crisis.

Table 6.8
U.S. Market Reactions Regressed on Information Environment Variables

This table reports cross-sectional regression results of U.S. stock market reactions to changes to accounting standards for financial instruments regressed on variables measuring the information environment of 275 bank holding companies (BHCs) and 146 financial service firms (FSFs). Cross-sectional results are based on Sefcik and Thompson (1986) time-series portfolio regressions over the period from April 2, 2007 to June 2, 2010 (799 trading days). For each model, the daily time-series of stock returns of a portfolio of sample firms is regressed on daily returns of the CRSP equally-weighted index, daily relative changes of 6-months U.S. Treasury bills secondary market rates and the respective *SIGNED_MEAN* event variable. Each cross-sectional estimate equals the estimated coefficient of the *SIGNED_MEAN* variable in regression 6.11, in which the time-series of portfolio returns corresponds to the k^{th} row of a return matrix weighted by the K firm characteristics in a given model according to the weighting scheme $\mathbf{P} = [\mathbf{F'F}]^{-1}\mathbf{F'R'}$. Section 3.3 on page 47 contains details on the portfolio weighting process. The difference of the estimated coefficients between the BHC and FSF sample is tested by estimating equation 6.12. Daily return observations for sample firms and daily equally-weighted index returns are from CRSP. 6-months U.S. Treasury bills secondary market rates are obtained through WRDS from the Federal Reserve Board's H.15 Report.

$$R_t^{\mathbf{P}=[\mathbf{F'F}]^{-1}\mathbf{F'R'}} = \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \beta_3 SIGNED\_MEAN + \varepsilon_t \tag{6.11}$$

$$\begin{aligned} R_t^{\mathbf{P}=[\mathbf{F'F}]^{-1}\mathbf{F'R'}} =& \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \beta_3 SIGNED\_MEAN + \beta_4 D^{BHC} \\ &+ \beta_5 D^{BHC\times MKT} + \beta_6 D^{BHC\times INTEREST} + \beta_7 D^{BHC\times SIGNED\_MEAN} + \varepsilon_t \end{aligned} \tag{6.12}$$

	Pred. Sign	*ANALYSTS*			*ANALYSTS_MEDIAN*		
		BHC	**FSF**	**Δ**	**BHC**	**FSF**	**Δ**
ALL		0.0001	−0.0000	0.0001	0.0001	−0.0000	0.0001
		(1.13)	(−0.07)	(0.95)	(1.30)	(−0.27)	(1.20)
Controls[b]		YES	YES	YES	YES	YES	YES

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Table 6.8 - continued from previous page

	Pred. Sign	*ANALYSTS*			*ANALYSTS_MEDIAN*		
		BHC	**FSF**	**Δ**	**BHC**	**FSF**	**Δ**
LESS_FV		0.0002	−0.0001	0.0003	0.0002	−0.0001	0.0003*
		(1.25)	(−0.89)	(1.53)	(1.40)	(−1.11)	(1.79)
Controls[b]		YES	YES	YES	YES	YES	YES
MORE_DISCL	−	0.0005	−0.0002	0.0006	0.0005	−0.0002	0.0007*
		(1.46)	(−0.69)	(1.58)	(1.57)	(−0.73)	(1.70)
Controls[b]		YES	YES	YES	YES	YES	YES
LESS_OFFB		−0.0001	−0.0000	−0.0000	−0.0001	−0.0000	−0.0000
		(−0.42)	(−0.30)	(−0.16)	(−0.39)	(−0.24)	(−0.17)
Controls[b]		YES	YES	YES	YES	YES	YES
LESS_IMP		−0.0002	0.0000	−0.0002	−0.0002	0.0000	−0.0002
		(−0.61)	(0.12)	(−0.56)	(−0.62)	(0.04)	(−0.52)
Controls[b]		YES	YES	YES	YES	YES	YES

t-statistics in parentheses.
***, **, * denote $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively, using a two-tailed test.
b Controls are *LEVERAGE*, *LIQUIDITY*, *SIZE*, and *COMPLEXITY*.

6.3 Summary and Conclusion

The preceeding sections of this chapter report empirical results of both event study and cross-sectional tests for U.S. banks and financial service firms. I summarize the main findings a follows:

1. I find strong evidence that changes to accounting standards impose real costs and benefits on both bank holding companies and financial service firms. The economic significance, however, is more pronounced on average for banks compared to financial service firms. I interpret this as evidence in favor of the conjecture that factors unrelated to the accounting regime such as prudential regulation trigger adverse second order effects.
2. I find strong evidence in support of hypothesis 1 (*Less Fair Value-Hypothesis*) for both banks and financial service firms. This evidence suggests that financial institutions benefit from relaxations of fair value accounting rules during financial crisis. However, the magnitude of the effect for banks is about 2.4 times the magnitude of the effect of financial service firms. The difference is statistically significant. I interpret this evidence as suggesting that factors specific to banks such as prudential regulation trigger adverse second order effects of fair value accounting.
3. I find evidence in support of hypothesis 2 (*More Disclosure-Hypothesis*) for banks but not for financial service firms. This evidence suggests that banks benefit economically from increased disclosures on financial instruments during financial crises.
4. I find strong evidence in support of hypothesis 3 (*Less Off-Balance Sheet-Hypothesis*) for banks but not for financial service firms. The difference is statistically significant. I interpret this evidence as suggesting that bank-specific factors cause second order effects of additional on-balance sheet accounting of items previously held off-balance.

An alternative explanation is that financial service firms in my sample on average hold no material asset portfolios originated from securitization.

5. I find strong evidence in support of hypothesis 3 (*Less Impairment-Hypothesis*) for banks. I find no such evidence for financial service firms. The difference is statistically significant. This evidence supports the conjecture that safeguarding equity and thus capital during financial crises rather than the accounting system *per se* triggers the economic consequences of changes to accounting standards for financial instruments.
6. I find some evidence in support of hypothesis 5 (*Resilience-Hypothesis*). Particularly, I find strong evidence that tier 1 and total capital is negatively associated with stock market reactions to all events, fair value events and impairment events.[119] This suggests that banks with lower regulatory capital benefit relatively more on average from relaxations of accounting rules. I also find strong evidence that leverage is positively related with stock market reactions to all events and fair value events for banks but not for financial service firms. The difference in coefficients between banks and financial service firms is statistically significant. This suggests that banks operating on high leverage benefit relatively more on average from changes to accounting standards for financial instruments. I find no conclusive evidence for size, complexity and asset risk. However, I find some evidence that liquidity is negatively associated with stock market reactions to impairment events for banks. This suggests that firms with less liquid assets benefit more on average from changes to accounting standards. I also find strong evidence that tier 2 capital is positively associated with stock market reactions to all events, fair value events and impairment events. This suggests that firms' reliance on lower-quality tier 2 capital is a resilience-depleting firm characteristic. Overall, I interpret this evidence as suggesting that resilience characteristics are cross-sectional determinants of adverse second order effects. This supports the conjecture that changes to accounting standards during financial crises act as a device to maintain weaker banks' resilience to external shocks in financial markets.
7. I find some evidence in support of hypothesis 6 (*Financial Crisis Exposure-Hypothesis*) for banks but not for financial service firms. First, I find some evidence that market-based sensitivity measures of financial crisis exposure are positively associated with stock market reactions to all events and fair value events. There is also some evidence on the predicted opposite relation for off-balance sheet events. The strength of the association seems to be increasing with decreasing credit quality of the underlying RMBS baskets. This evidence suggests that banks with higher sensitivity to the low-quality (subprime) mortgage securitization market benefit relatively more on average from changes to accounting standards for financial instruments. I find no conclusive evidence for correlation-based measures of financial crisis exposure. Second, I find that banks' cu-

[119] For impairment events, there is no evidence of an association of stock market reactions with total capital.

mulative maximum loss in market capitalization during the financial crisis is positively associated with stock market reactions to fair value events. I also find some evidence that the association between stock market reactions to impairment events and crisis loss is on average significantly higher for banks than for financial service firms. I find no evidence that the amount of recognized assets originated from securitization is associated with stock market reactions to changes to accounting standards for financial instruments. I find, however, that the amounts of both securitized loans and mortgage-backed-securities held-for-trading are positively associated with stock market reactions to fair value events. Overall, I interpret the evidence on financial crisis exposure as suggesting that not the accounting system *per se* but rather the exposure to the financial crisis and corresponding pressure on equity and capital trigger the economic consequences of changes to accounting standards for financial instruments.

8. The evidence on hypothesis 7 (*Asset Mix-Hypothesis*) is mixed. I find strong evidence that the amount of trading securities of banks is positively associated with stock market reactions to fair value events. However, I find no further evidence on banks' asset mix. Rather, I find that financial service firms' stock market reactions are positively associated with holdings of available-sale-securities for all events, fair value events, disclosure events, and impairment events. This evidence suggests that the asset mix - if at all - matters for financial service firms rather than banks. This evidence is consistent with the idea that prudential regulation tied to balance sheet values rather than actual asset holdings trigger adverse second order effects for banks.
9. I find no evidence in support of hypothesis 8 (*Information Environment-Hypo- thesis*). Particularly, I find no evidence that market reactions to disclosure events are associated with proxies for firms' information environment.

7 European Background and History of Events

This chapter establishes the European event history, provides detailed background information about each event and determines the predicted sign of the stock market reaction based on hypotheses 1-4. Section 7.1 describes the event identification and selection process. Section 7.2 on the next page provides detailed background information about each event and sets the predicted sign of the stock market reaction. Table 7.3 on page 212 summarizes all events with their predicted signs.

7.1 Identification of Events

As for the U.S. study, I conduct a Dow Jones FACTIVA keyword search to identify events that disseminate information to the market about changes to accounting standards for financial instruments. The search period lasts from January 1, 2007 to December 31, 2009 and includes the following sources: Dow Jones Business News, Dow Jones Capital Markets Report, Dow Jones News Service, Dow Jones International News, Financial Times - Print and Online, Reuters News, Reuters EU Highlights, The Wall Street Journal - Print and Online, and The Wall Street Journal Europe. The keyword query reads as follows (query connectors capitalized): International Accounting Standards Board OR IASB OR IAS 39 OR IFRS 7 OR fair value accounting OR mark to market OR marking to market OR off-balance sheet rules OR (off-balance sheet AND accounting) OR (reclassification AND accounting). The search yields a total of 3,398 publication results.[120]

Out of the 3,398 publication results, I identify all references that either (1) disseminate new information to the market about changes to accounting standards for financial instruments or (2) change the probability that these changes ultimately occur. In addition to FACTIVA, I search websites and news releases of standard setters and regulators, such as the International Accounting Standards Board (IASB) and the Committee of European Banking Supervisors (CEBS) and combine the results with the financial press references. This process leads to 37 key events surrounding changes to international accounting standards for financial instruments. Event windows generally span two trading days (i.e., $[0, +1]$). For some events (e.g., event no. 29), I restrict the event window to one trading day to avoid contamination of the event window with confounding information.

[120] All 3,398 publication results can be obtained from me on request.

7.2 History of Events

This section establishes the event history, provides details as well as background information about each event and determines the predicted sign of the stock market reaction based on hypotheses 1-4.

Event No. 1: IASB plans review of off-balance sheet rules **Pred. Sign: –**

On January 8, 2008, Sir David Tweedie announces a review of off-balance sheet rules as a consequence of the credit crunch (Anonymous, FT, 2008; Anonymous, FT.com, 2008; Hughes, FT, 2008d; Hughes, FT.com, 2008d). He is citet by Reuters as saying that "The IFRS standards are broadly in the right direction. It's a matter of where can we strengthen them where necessary" (Jones, RN, 2008e). According to the Financial Times, Sir Tweedie also states that "What we're trying to do is simplify the accounting so banks can say, 'if it all blows up, this is what we face, but here are the reasons it won't'. That way, people have the information" (Hughes, FT, 2008d). Reuters also reports that the IASB will issue a discussion paper in the second half of 2008 (Jones, RN, 2008e). Among the potential results expected for the discussion paper is the development of a "parallel" balance sheet, which would fully disclose all off-balance sheet items (Hughes, FT, 2008d).

Predicted Sign: Even though the details of the planned review of off-balance sheet items are vague at the time, it seems likely that standard setters aim to strengthen off-balance sheet rules, which would require more items to be recognized on the balance sheet. Therefore, I predict a negative stock market reaction in line with hypothesis 3.

Event No. 2: IASB publishes DP "Reducing Complexity" **Pred. Sign: –**

On March 19, 2008, the IASB publishes the discussion paper "Reducing Complexity in Reporting Financial Instruments" as a first step in a project aiming to replace IAS 39 (IASB, 2008a,h). The discussion paper acknowledges that the mixed measurement model constitutes a main reason for the complexity of financial instruments' reporting under IAS 39. As a long-term solution, the board aims to replace the mixed measurement model by one single measurement method for all financial instruments (IASB, 2008a, p. 43). According to the board, this single measurement model should be based on fair values because "fair value seems to be the only measurement attribute that is appropriate for all types of financial instruments [...]" (IASB, 2008a, p. 43). The fact that the IASB illustrates its commitment to a full fair value approach despite growing criticism of fair value accounting is widely recognized in the financial press (e.g., Hughes, FT.com, 2008a; Anonymous, DJN, 2008a; Hughes, FT, 2008b). The Financial Times titles a report about the discussion paper on March 19, 2008, "Accounting chiefs reject attacks by bankers on 'fair value' system" (Hughes, FT, 2008a). In a column of the Financial Times on March 20, 2008, Sir Tweedie defends the use of fair value

accounting and the long-term solution of a full fair value approach as outlined in the discussion paper. He states that "although fair value has its problems, it does, through the market, have a disciplining effect on an institution's lending and investing decisions. Using historical cost can delude investors that all is well (as was seen with Japanese banks in the 1990s). Much of the pain allegedly caused by fair value in recent months would still have been reported under historic cost because of our impairment principles. Furthermore, in the case of derivatives, the initial cost of instruments is often zero, making cost-based accounting irrelevant" (Tweedie, FT, 2008).

Predicted Sign: This event demonstrates the standard setter's commitment to fair value accounting. In addition, the IABS introduces a non-zero probability of scope extensions to fair value accounting by proposing a full fair value approach. In line with hypothesis 1, I predict a negative stock market reaction for this event.

Event No. 3: EFRAG favors fair value change	**Pred. Sign: +**

On April 3, 2008, Carsten Zielke, Michael Starkie and Thomas Seeberg, who are members of the European Financial Reporting Advisory Group (EFRAG) Technical Expert Group (TEG), argue in favor of changing current fair value accounting rules in a Financial Times column. They claim that " if assets are measured at fair value as at the reporting date, even if the requirements for a liquid and orderly financial market are no longer met, then this measurement reflects an erratic market price and not fair value. This erratic market price is damaging the economy. In order to escape from this vicious circle, and to remain fundamentally self-sufficient in terms of its financial position, Europe must move away from reporting date-based measurement of the market price and start measuring the average market price over a period" (Seeberg et al., FT, 2008; Zielke et al., FT.com, 2008). According to the Financial Times, this is the first sign of disagreement about fair value accounting within the accounting community (Hughes, FT, 2008e; Hughes, FT.com, 2008b). The Financial Times also reports that Internal Market Commissioner Charlie McCreevy believes that fair value accounting in illiquid markets is a real issue and needs to be scrutinized soon (Hughes, FT, 2008e; Hughes, FT.com, 2008b).

Predicted Sign: This event disseminates information to the market about growing concerns of regulators over fair value accounting. These concerns increase the likelihood that regulators interfere with private accounting standard setting in favor of abandoning or modifying current fair value rules. Therefore, I predict a positive stock market reaction in line with hypothesis 1.

Event No. 4: IASB plans new off-balance sheet disclosure rules	**Pred. Sign: +**

According to the Financial Times, the IASB decided on April 17, 2008 not to release a discussion paper on off-balance sheet vehicles and instead issue an exposure draft with a

shortened 60 day consultation period (Hughes, FT, 2008h).[121] Sir David Tweedie tells the Financial Times that the IASB "might even mandate the disclosure - not only saying 'you have to show these things,' but saying 'this is exactly how you're going to show it'. We don't normally do that" (Hughes, FT, 2008h).

Predicted Sign: This event conveys information to the market about efforts of the IASB to speed-up the amendment process regarding disclosure requirements for off-balance sheet items. The increased likelihood of more detailed disclosures on off-balance sheet items in a more timely fashion is consistent with a positive stock market reaction in line with hypothesis 2.

Event No. 5: CESR supports fair value	**Pred. Sign: –**

On May 29, 2008, the Committee of European Securities Regulators (CESR) expresses explicit support for current fair value accounting rules. CESR Chairman Eddy Wymeersch tells Reuters: "We stay with fair value, that's clear. We are not going to challenge fair value" (Jones, RN, 2008f).

Predicted Sign: This event confirms growing opposition among some regulators against replacing or modifying current fair value accounting rules. This in turn decreases the likelihood of short-term modification to IAS 39. Therefore, I predict a negative market reaction in line with hypothesis 1.

Event No. 6: Tweedie: no changes to fair value	**Pred. Sign: –**

On July 10, 2008, Sir David Tweedie tells Reuters in an interview that "we are certainly not thinking of any emergency measures to change what we do at present." He also adds: "I think the commentators are largely backing that, including the regulators, that this is not the time to make drastic changes quickly" (Anonymous, RN, 2008a).

Predicted Sign: This event conveys information to the market about the IASB's reluctance to propose short-term modifications to fair value accounting standards. Thus, this event reduces the likelihood of amendments to IAS 39 in the near term, which is consistent with a negative stock market reaction in line with hypothesis 1.

Event No. 6a: IASB discusses comprehensive disclosure package	**Pred. Sign: n/a**

During its board meeting on September 15, 2008, the IASB discusses a comprehensive disclosure package including disclosures on off-balance sheet items, liquidity risk and the three-level fair value hierarchy (IASB, 2008k). This board meeting, however, is mentioned here for completeness only. I do not include the event in the empirical analysis because it is confounded

[121] Also see Hughes (FT.com, 2008f).

by the bankruptcy of Lehman Brother Holding Inc. On September 15, 2008, Lehman Brother Holding Inc. filed for chapter 11 bankruptcy protection with the United States Bankruptcy Court for the Southern District of New York (see, e.g., www.lehman-docket.com).

Event No. 7:	**Politicians against fair value / IAS 39 consistent with U.S. clarification**	**Pred. Sign: +**

On October 1, 2008, European politicians begin to pressure for more flexibility in European fair value accounting rules after the SEC and the FASB issued guidance on fair value accounting on September 30, 2008. Reuters cites EU Internal Market Commissioner Charlie McCreevy as saying that the European Union will also change their fair value accounting rules if the U.S. does so. He tells Reuters that "we are conscious that if other parts of the globe are going to change this particular area [i.e., fair value accounting], then we will not be found waiting in Europe as our banks would be at a competitive disadvantage" (Anonymous, RN, 2008b). The Financial Times reports that Nicolas Sarkozy, who at the time holds the rotating EU presidency, urges for more flexibility in fair value accounting rules and pushes for an EU wide amendment that allows banks to alleviate the effects of the market turmoil (Hall and Tait, FT.com, 2008; Hughes and Hall, FT, 2008; Hall and Tait, FT, 2008; Hughes and Hall, FT.com, 2008). On October 2, 2008, the IASB issues a press release, which delineates that the clarification issued by the SEC and the FASB on September 30, 2008, is consistent with IAS 39 (IASB, 2008j).

Predicted Sign: This event disseminates information to the market about rising pressure by European political heavyweights, including Nicolas Sarkozy and Charlie McCreevy, on the IASB to modify fair value accounting rules. The political pressure increases the likelihood of near-term modifications of fair value accounting standards and, thus, is consistent with a positive market reaction based on hypothesis 1.

Event No. 8:	**IASB plans to consider reclassification**	**Pred. Sign: +**

On October 3, 2008, the IASB issues a press release to announce further steps in response to the credit crisis. The press release unveils the board's plan to immediately consider the reclassification of financial instruments during its public board meeting on October 15, 2008. The IASB argues that the possibility to reclassify financial instruments out of the fair value through profit and loss category reduces inconsistencies between IFRS and US-GAAP (IASB, 2008e, p. 2; Hughes, FT, 2008c).

Predicted Sign: This event conveys information about the IASB's plans to allow the reclassification of financial instruments in IAS 39. Since reclassifications grant management additional leeway to alleviate the implications of the market turmoil on equity and capital, I predict a positive market reaction in line with hypothesis 1.

Event No. 9: Trustees suspend due process **Pred. Sign: +**

On October 9, 2008, the Trustees of the IASB issue a press release announcing their unanimous approval of steps taken by the IASB in response to the credit crisis (IASB, 2008q). Particularly, they authorize the IASB to omit due process when considering amendments to IAS 39 that would allow immediately the reclassification of financial instruments. According to the press release, the omission of due process could allow reclassifications already for the third quarter of 2008 (Anonymous, RN, 2008c; Anonymous, RN, 2008d). Reuters reports that Internal Market Commissioner Charlie McCreevy plans to propose changes to fair value accounting rules during the week of October 13, 2008. According to Reuters, the proposed rule change would allow banks to account for illiquid assets on a historical cost basis rather than at fair value (Jones, RN, 2008c).

Predicted Sign: This event conveys information about the possible timing of amendments to IAS 39. The omission of due process paves the way for the immediate application of reclassifications within the scope of IAS 39 pending approval of the IASB during its October 15, 2008 board meeting. Therefore, I predict a positive market reaction in line with hypothesis 1.[122]

Event No. 10: IASB publishes "Reclassification of Financial Assets" **Pred. Sign: +**

On October 13, 2008, the IASB issues "Reclassification of Financial Assets - Amendments to IAS 39 Financial Instruments: Recognition and Measurement and IFRS 7 Financial Instruments: Disclosures" (IASB, 2008p; IASB, 2008d). The amendment permits the reclassification of non-derivative financial assets out of the fair value through profit and loss category unless the asset was categorized at initial recognition using the fair value option. It is also required that the entity no longer holds the asset with the intention to sell or repurchase it in the short-term. If the asset is reclassified into loans and receivables, the amendment also requires the entity to have both the intention and the ability to hold the financial asset for the foreseeable

[122] On behalf of the Internal Market Commissioner Charlie McCreevy, a carve-out document was distributed to national accounting standard setters and other stakeholders. I have learned from private email and phone conversations with representatives of the financial reporting unit (F3) of the Internal Market and Services Directorate F for Free Movement of Capital, Company Law and Corporate Governance that the carve-out document is classified non-public and was distributed to the respective constituents on October 10, 2008. I obtained the document from one of the constituent's web servers, where it was (presumably accidentally) hosted for a limited period of time. The document intends to replace paragraph 50 of IAS 39 (as adopted by the EU) as follows: "An entity shall not reclassify a financial instrument into the fair value through profit or loss category while it is held or issued." Prior to the reclassification amendment of October 13, 2008, paragraph 50 of IAS 39 reads as follows: "An entity shall not reclassify a financial instrument into or out of the fair value through profit or loss category while it is held or issued." Apparently, the carve-out document intends to allow fully for reclassifications out of the fair value through profit and loss category without any restrictions (e.g., on derivatives or on the consistency of the features of reclassified financial instruments with the characteristics of loans and receivables at the time of initial recognition). The carve-out document can be obtained from me on request. I do not include the carve-out document in the empirical analysis because its non-public status makes it unlikely that market participants at the time were fully aware of it.

future. The reclassification out of the available for sale category into loans and receivables is permitted if the financial asset had met the definition criteria of loans and receivables at initial recognition (given it had not been classified as available for sale) and if the entity has the intention and the ability to hold the financial asset for the foreseeable future. The amendment was widely covered in the financial press (see, e.g., Hughes, FT, 2008f; Anonymous, DJN, 2008c; Hughes, FT, 2008g; Jones, RN, 2008d; Hughes, FT.com, 2008c).

The reclassification process works as follows. For financial assets that are reclassified into an amortized cost category, the fair value at the time of reclassification becomes the new amortized cost. The assets are then accounted for at amortized cost using the effective interest rate method and are subject to impairment testing. For assets that are reclassified out of the fair value through profit and loss category, any gains and losses previously recognized in profit or loss cannot be reversed. For assets that are reclassified out of the available for sale category, any unrealized gains and losses previously accumulated in other comprehensive income are amortized to profit or loss either over the remaining life of the asset using the effective interest rate method or at the time of sale or disposal of the asset.

The reclassification amendment becomes effective retrospectively for the third quarter of 2008 (July 1, 2008). By allowing retrospective application of the amendment, the IASB meets the recommendation of the trustees, who suggested the application of a potential reclassification amendment for the third quarter of 2008 (IASB, 2008q).

The amendment also requires substantial disclosures on the reclassified financial assets. Among the main required disclosures are the carrying amounts and fair values of all reclassified financial assets for all periods until derecognition, the fair value gains or losses that would have been recognized in profit or loss if they had not been reclassified for each reporting period until derecognition. Overall, the disclosure requirements seem to ensure that all previously available information on reclassified financial assets is still reported.

Predicted Sign: The reclassification amendment grants management substantial leeway to alleviate the balance sheet implications of the market turmoil. Also, the amendment becomes effective retrospectively, which increases its effectiveness in safeguarding equity and capital. Therefore, I predict a positive market reaction in line with hypothesis 1.

Event No. 11: **EU endorses reclassifications / ED "Improving Disclosures [...]"** **Pred. Sign:** +

On October 15, 2008, both the European Commission and the European Parliament endorse the reclassification amendment (e.g., Anonymous, DJN, 2008b; Tait and Hughes, FT.com, 2008; Jones, RN, 2008b; Tait and Hughes, FT, 2008; Jones, RN, 2008g). Reclassifications therefore become available for third quarter financial reports of banks preparing their financial statements according to IFRS as adopted by the EU.

Also on October 15, 2008, the IASB issues ED "Improving Disclosures about Financial Instruments - Proposed amendments to IFRS 7" (IASB, 2008g; IASB, 2008n). The ED proposes

amendments to disclosures of financial instruments in two areas: fair value measurements and liquidity risk. The proposed amendments on fair value measurements require disclosure of a three-level fair value hierarchy similar to SFAS 157. Level 1 disclosures include the fair values of financial instruments, which are determined in active markets for the same instrument; level 2 disclosures apply to financial instruments, whose fair value is determined based on similar instruments in active markets, or from valuation models, for which all significant input parameters are attained from active markets; level 3 disclosures include all fair values, for which valuation models are used that do not rely on observable market parameters. Among others, the amendment also proposes substantial disclosures on movements within the fair value hierarchy and a beginning-of-the-year to year-end reconciliation of movements within level 3 assets and the corresponding impact on total gains or losses recognized either in equity or in profit or loss. Regarding liquidity risk, the ED proposes disclosure of a maturity analysis for derivative financial liabilities, which is based on how the entity manages the liquidity risk of its derivative liabilities. For non-derivative financial liabilities, the ED requires a maturity analysis, which discloses the remaining contractual maturities. If the liquidity management of non-derivative financial liabilities is based on expected maturities, entities would also be required to disclose these expected maturities. Finally, the IASB requires a verbal description of how liquidity risk is managed for both derivative and non-derivative financial liabilities.

Predicted Sign: This event confirms the anticipated endorsement of the reclassification amendment and renders reclassifications effective for third quarter financial reports. The event also disseminates information to the market about plans of the IASB to increase the disclosure requirements for financial instruments. Therefore, I predict a positive market reaction in line with hypotheses 1 and 2.

Event No. 12: IASB publishes guidance on fair value measurement	**Pred. Sign: +**

On October 31, 2008, the IASB publishes educational guidance on the application of fair value measurements in inactive markets (IASB, 2008i). The guidance includes a report of the IASB Expert Advisory Panel and a corresponding IASB staff summary. The panel report is 82 pages strong and titled "Measuring and disclosing the fair value of financial instruments in markets that are no longer active". It discusses various issues regarding measuring and disclosing fair values in inactive markets, including, among others, the categorization of active versus inactive markets, the role of forced transactions, discounted cash flow methodologies and model calibration, as well as the aggregation, granularity and frequency of fair value disclosures (IASB Expert Advisory Panel, 2008). The corresponding IASB staff summary is intended to provide context to the panel report and is exclusively concerned with general measurement issues (IASB, 2008r).

Predicted Sign: This event conveys information to the market about the IASB's ongoing efforts to deal with fair value measurement issues that evolve from the ongoing financial crisis. Particularly, the use of judgment when measuring fair value is at the heart of the released

documents. Although the documents do not modify directly the current measurement regime, they likely induce a more prominent use of judgments in valuation questions. Thus, I predict a positive market reaction in line with hypothesis 1.

Event No. 13: IASB clarifies effective date for reclassifications	**Pred. Sign: –**

On November 27, 2008, the IASB publishes an update to the reclassification amendment of October 13, 2008 in order to clarify the effective date of the amendment (IASB, 2008l). The amendment was issued on request of interest parties (IASB, 2008o, p. 8). It clarifies that reclassifications made on or after November 1, 2008 do not qualify for retrospective application. That is, the fair value of the financial asset at the time of reclassification becomes its new carrying value. Any reclassifications made prior to November 1, 2008, however, qualify for retrospective treatment as of July 1, 2008. That is, an entity can account for reclassified assets at amortized costs for the entire third quarter and not only beginning from the day of reclassification.

Predicted Sign: This event clarifies that retrospective application of the reclassification amendment remains restricted to a limited period of time. This limitation is consistent with a negative market reaction in line with hypothesis 1.

Event No. 14: IASB publishes ED on off-balance sheet risk	**Pred. Sign: –**

On December 18, 2008, the IASB publishes ED 10 "Consolidated Financial Statements" as part of its comprehensive review of off-balance sheet items (IASB, 2008l). The main objectives of the ED include a new definition of control, which replaces the consolidation requirements of IAS 27 and SIC-12, as well as enhanced disclosures about consolidated and non-consolidated entities. The ultimate application of the ED would tighten both consolidation and disclosure requirements and, thus, makes it more difficult to avoid consolidation by means of special structuring (e.g., Jones, RN, 2008a). With regard to the proposed new consolidation requirements, the FT cites Sir David Tweedie as saying that "We have to be pretty ruthless. We have to hit people over the head with a baseball bat on this" (Hughes, FT.com, 2008e).

Predicted Sign: This event conveys information about the IASB's plans to strengthen off-balance sheet accounting rules. Therefore, I predict a negative market reaction in line with hypothesis 3.

Event No. 15: IASB issues ED "Debt Disclosures"	**Pred. Sign: +**

On December 23, 2008, the IASB publishes ED "Investments in Debt Instruments Proposed Amendments to IFRS 7", which proposes additional disclosures for debt instruments (IASB, 2008f). The ED applies only to debt instruments, which are not classified as fair value through profit and loss. It requires disclosures in tabular form of the fair value, the amortized costs

and the carrying value on the balance sheet. The ED also proposes disclosures of the resulting effects on the income statement if all applicable debt instruments had been accounted for either at fair value or at amortized costs (IASB, 2008c).

Predicted Sign: This event increases the likelihood of more comprehensive disclosure requirements for debt instruments. Therefore, I predict a positive market reaction in line with hypothesis 2.

Event No. 16: IASB publishes ED "IFRIC 9 and 16 amendments"	**Pred. Sign: +**

On January 30, 2009, the IASB publishes ED/2009/1 "Post-implementation Revisions to IFRIC Interpretations - Proposed amendments to IFRIC 9 and IFRIC 16" (IASB, 2009i). The exposure draft makes some minor revisions to IFRIC 9 "Reassessment of Embedded Derivatives" and IFRIC 16 "Hedges of a Net Investment in a Foreign Operation". The ED proposes to exclude derivatives embedded in contracts, which are acquired in a business combination, from the scope of IFRIC 9. The ED also allows that the designated hedging instrument in a hedge of net investment of foreign operations is actually held by the hedged entity (IASB, 2009r).

Predicted Sign: This event conveys information about revisions to embedded derivatives and hedge accounting rules, which are rather technical in nature. If any, I predict a positive market reaction based on hypothesis 1.

Event No. 17: IASB plans to replace IAS 39 within months	**Pred. Sign: +**

On February 23, 2009, Reuters reports that the IASB plans to replace IAS 39 within the next months. Philippe Danjou, member of the IASB, is cited by Reuters as saying that "We plan to replace it [IAS 39], the whole thing. We want to stop patching up the standard and we want to write a new one. We are aware that the current model is too complex. We need to simplify. We will move to exposure drafts hopefully within the next six months" (Jones, RN, 2009b).

Predicted Sign: This event conveys information about a complete overhaul of IAS 39. This also increases the likelihood that the replacement standards grant management more leeway regarding fair value accounting and, thus, reduces overall fair value exposure. Therefore, I predict a positive market reaction in line with hypothesis 1.

Event No. 18: IASB issues amendments "Improving Disclosures"	**Pred. Sign: +**

On March 5, 2009, the IASB issues amendments to IFRS 7 "Financial Instruments: Disclosures" (Chasan, RN, 2009f). The amendments incorporate into IFRS 7 the proposals of the ED "Improving Disclosures about Financial Instruments - Proposed amendments to IFRS 7", issued on October 15, 2008. As a result, disclosures on the three-level fair value hierarchy

and on liquidity risk are required for annual periods beginning on or after January 2009. The amended disclosure requirements also move IFRS disclosure requirements closer to U.S. rules (IASB, 2009h).

Predicted Sign: This event confirms expectations about more comprehensive disclosure requirements for financial instruments. Thus, I predict a positive stock market reaction in line with hypothesis 2.

Event No. 19: IASB clarifies reclassification of embedded derivatives	**Pred. Sign: +**

On March 12, 2009, the IASB issues "Embedded Derivatives - Amendments to IFRIC 9 and IAS 39" to clarify the accounting treatment for embedded derivatives when assets are reclassified in accordance with the reclassification amendment of October 13, 2008 (IASB, 2009f). The exposure draft was issued on December 22, 2008. The amendment aims to resolve apparent uncertainty among constituents concerning the reassessment of embedded derivatives when reclassifying the host contract out of the fair value through profit and loss category (IASB, 2009d, pp. 8, 10). Essentially, the amendment stipulates that reclassification of the host contract out of the fair value through profit and loss category requires an assessment of all derivatives embedded in the host contract. Embedded derivatives that meet the requirements of IAS 39 have to be accounted for separately from the host contract. Also, if an entity is unable to measure the separated value of an embedded derivative, the entire instrument (host contract and embedded derivative) cannot be reclassified out of the fair value through profit and loss category (IASB, 2009d).

Predicted Sign: This event removes uncertainty surrounding the reclassification of embedded derivatives and confirms the proposals of the ED from December 22, 2008. Therefore, I predict a positive market reaction based on hypothesis 1.

Event No. 20: IASB seeks input on FASB staff positions	**Pred. Sign: +**

On March 18, 2009, the IASB announces that it will consider the implications of guidance on fair value measurement and impairment rules proposed by the FASB (IASB, 2009o). The guidance proposed by the FASB provides more leeway in fair value measurement by easing the requirements for assets to be marked-to-model rather than marked-to-market. This in turn, is expected to release pressure from suppressed balance sheet values (Hughes and Chung, FT, 2009; Jones, RN, 2009h).

Predicted Sign: This event increases the likelihood that the IASB follows the FASB in relaxing the requirements for marking assets to model. Therefore, I predict a positive market reaction in line with hypothesis 1.

Event No. 21: FASB and IASB joint board meeting I	**Pred. Sign: +**

On March 24, 2009, both the IASB and the FASB announce further steps in response to

the financial crisis after a joint board meeting in London (Chasan, RN, 2009e). The planned steps include the replacement of current accounting standards for financial instruments and off-balance sheet items. The boards emphasize their intent to issue proposals for the replacement of current accounting standards within the next months (IASB, 2009e).

Predicted Sign: The results of the joint board meeting raise the probability that both FASB and IASB come up with a common framework for financial instruments' accounting when replacing current standards. In addition, this event confirms efforts of standardsetters to replace financial instruments' accounting standards in the near term. Thus, I predict a positive market reaction in line with hypothesis 1.

Event No. 22: IASB publishes ED "Derecognition" **Pred. Sign: –**

On March 31, the IASB publishes ED/2009/3 "Derecognition - Proposed amendments to IAS 39 and IFRS 7" as part of its review of off-balance sheet risk (IASB, 2009j). The exposure draft aims to improve both derecognition requirements and the corresponding disclosures on derecognized financial instruments. While IAS 39 uses several different concepts (risks and rewards, control and continuing involvement) to determine whether or not a financial asset should be derecognized, the ED only relies on the concept of control. More specifically, an entity derecognizes an asset if the rights to its cash flows expire, if the asset is transferred and the entity has no continuing involvement in the asset, or if the asset is transferred and the entity has a continuing involvement but the transferee practically controls the asset for his own benefit (ED/2009/3, par. 17A). The IASB claims that the derecognition outcome of the proposed standard will be similar to the outcome based on previous rules in IAS 39. The board, however, also concedes that the derecognition outcome is most likely different under the proposed rules for certain transfers, such as Repurchase Agreements (Repo), which concern "readily obtainable financial assets" (IASB, 2009b).[123]

The amendments of IFRS 7 require substantial additional disclosures regarding assets, which are transferred but have not been derecognized as well as regarding derecognized assets, in which the entity has a continuing involvement. For instance, an entity is required to disclose the following information regarding derecognized assets that compose a continuing involvement: the fair value of the assets and liabilities representing the entity's continuing involvement (ED/2009/3, par. 42D (b)), the amount that best represents the entity's maximum exposure to losses from its continuing involvement, including how the maximum exposure to losses is determined (ED/2009/3, par. 42D (c)), the undiscounted cash outflows to repurchase

[123] Accounting for Repurchase Agreement (Repo) transactions also played a role in the bankruptcy of Lehman Brothers. According to the Valukas Report, Lehman Brothers Holding Inc. created a "materially misleading picture of the firm's financial condition in late 2007 and 2008" by using Reporepo transactions, which were internally referred to as "Repo 105" or "Repo 108". Even though the transactions were virtually identical to standard repo transactions, which are commonly used by banks to obtain or secure short-term financing, Lehman Brothers accounted for these transactions as sales instead of a financing transaction (Valukas, 2010, pp. 732-733). For further details, see (Valukas, 2010, Section III.A.4: Repo 105).

derecognized financial assets, e.g., the strike price in an option agreement or the repurchase price in a repurchase agreement (ED/2009/3, par. 42D (e)).

Predicted Sign: This event unveils part of the IASB's efforts to strengthen off-balance sheet accounting rules. Therefore, I predict a negative market reaction in line with hypothesis 3.

Event No. 23: EU ministers pressure for changes **Pred. Sign: +**

On April 3, 2009, EU politicians and regulators begin to exercise substantial political pressure on the IASB to immediately amend its financial instruments' accounting standards in response to recent U.S. guidance (Anonymous, RN, 2009c; Cohen, DJN, 2009; Jones, RN, 2009e; Parussini and Rousek, DJN, 2009). Previously, the board, supported by the Trustees (IASB, 2009u), refused to instantly align its standards with a new FASB staff position (Hughes, FT.com, 2009b; Anonymous, DJN, 2009e; Hughes, FT, 2009c). The FASB staff position on fair value measurement and debt instrument impairments was published on April 2, 2009. It introduces a 2-step procedure to determine whether a market is inactive. Also, it allows for the recognition of non-credit related declines in the fair value (e.g., due to illiquidity) of debt securities in other comprehensive income instead of profit or loss when recording other-than-temporary-impairments (see events No. 46 and 49 of the U.S. study). Dow Jones International News cites French Finance Minister Christine Lagarde as saying that "We need a level playing field. [There is an] urgent need to reexamine accounting principles" (Parussini and Rousek, DJN, 2009). EU Internal Market Commissioner Charlie McCreevy is cited by Reuters as stating that "This issue has to be addressed immediately" (Jones, RN, 2009e). In an interview with Reuters, European Central Bank Governing Council member Ewald Nowotny argues that "There is a massive danger of disadvantages for the European side. This is something that has to be changed very fast and I have to say that it was difficult for us to understand that the respective European committees are reacting to this challenge in a very slow way. The current combination of accounting rules and Basel II standards for capital buffers in the EU only exacerbated the economic cycle" (Anonymous, RN, 2009c).

Predicted Sign: This event increases the likelihood that the IASB carves in to political pressure and follows suit on the FASB's relaxations of both fair value measurement rules and other-than-temporary impairments. Therefore, I predict a positive market reaction in line with hypotheses 1 and 4.

Event No. 24: IASB rejects U.S. changes **Pred. Sign: –**

On April 24, 2009, the IASB announces that it will not immediately amend its accounting standards in response to the FASB staff position on fair value measurement and debt instrument impairments, which was published on April 2, 2009 (Anonymous, RN, 2009a). Instead, the IASB intends to review IAS 39 comprehensively and to issue exposure drafts within the

next three months. The press release claims that the guidance provided by the FASB staff position on fair value measurement is already consistent with the existing IFRS guidance included in the report of the Expert Advisory Panel published on October 31, 2008. However, the press release acknowledges implicitly that the FASB guidance on the impairment of debt instruments is inconsistent with current IFRSs. Nevertheless, the board "believes that an immediate response [...] is unnecessary" (IASB, 2009q, p. 2).

Predicted Sign: This event demonstrates the IASB's reluctance to act immediately in response to the FASB staff position. This decreases the likelihood of short-term changes to fair value measurement and impairments rules. Also, the IASB's reluctance to act induces the risk that political efforts to interfere with private standardsetting lose momentum. Therefore, I predict a negative market reaction in line with hypotheses 1 and 4.

Event No. 25: EU: fair value changes for 2009 annual reports	**Pred. Sign: +**

On May 7, 2009, EU Internal Market Commissioner Charlie McCreevy makes clear that the EU Commission is committed to intervene on accounting standards for financial instruments if the IASB remains reluctant to follow suit on the recent FASB staff position. He is cited by Reuters as saying that "the calls to back off and leave it to standard setters just misses the point. The IASB cannot set an agenda oblivious to economic and financial developments and fail to deliver" (Jones, RN, 2009f).

Predicted Sign: This event demonstrates the EU's commitment to changes to accounting standards for financial instruments and, thus, increases the likelihood of near term changes. Therefore, I predict a positive market reaction in line with hypothesis 1.

Event No. 26: IASB accelerates IAS 39 replacement	**Pred. Sign: +**

On May 21, 2009, Reuters reports that the IASB is planning to accelerate its IAS 39 replacement project in response to requests of EU politicians (Jones, RN, 2009a). John Smith, member of the IASB is cited by Reuters as saying that "it's true we are trying to be responsive to them [EU Finance Ministers] to get something urgent, but what we are focusing on is the G20 request to reduce complexity by year-end" (Jones, RN, 2009a).

Predicted Sign: This event conveys information to the market that the IASB speeds up its replacement of IAS 39. It also increases the likelihood that the IASB eventually carves in to political pressure and proposes relaxations to both fair value accounting and impairment rules. Therefore, I predict a positive market reaction in line with hypotheses 1 and 4.

Event No. 27: IASB publishes ED "Fair Value measurement"	**Pred. Sign: +**

On May 28, 2009, the IASB publishes ED/2009/5 "Fair Value Measurement" (IASB, 2009l). The objective of the ED is threefold. First, the ED aims to establish a single source of

guidance on fair value measurements to replace the guidance contained in individual IFRS. Second, the definition of fair value is clarified with the objective of disseminating fair value information more transparently to users of financial statements. Third, the ED stipulates improved disclosures about the extent to which fair value information is used in an entity's financial statements and about the valuation inputs, which an entity uses to establish fair value measures (IASB, 2009c, p. 5). The ED defines fair value as "the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date (an exit price)." Fair value in the absence of an actual transaction price at the reporting date, however, coincides with a hypothetical transaction price in the most advantageous market for the financial instrument (IASB, 2009c, p. 5).

Predicted Sign: This event clarifies the IASB's plans regarding fair value measurements. It defines fair value as an exit price in an orderly transaction and proposes improved disclosures for financial instruments. Therefore, I predict a positive market reaction in line with hypotheses 1 and 2.

Event No. 28: IASB publishes DP 'Own Credit Risk" **Pred. Sign: –**

On June 18, 2009, the IASB publishes DP/2009/2 "Credit Risk in Liability Measurement" along with an IASB staff paper (IASB, 2009p, 2008b; IASB Staff, 2009). The discussion paper addresses own credit risk for liabilities, which are measured at fair value. The issue of own credit risk arises from the accounting consequences of liability measurement at fair value during times of distress. Increasing credit risk of financial institutions causes the fair value of their liabilities to decrease. Since financial institutions are able to retire their debt at a lower exit price, fair value accounting rules for financial liabilities require the recording of gains as a consequence of increased credit risk. Accordingly, the higher the deterioration of credit risk, the higher the gain on liabilities measured at fair value. According to the IASB, this accounting procedure seemed counter-intuitive to some constituents and has attracted more criticism and controversy than any other area of fair value accounting (IASB, 2009p). Indeed, bank profits during the financial crisis benefited substantially from the deterioration of credit risk in some cases. For instance, Credit Suisse Group recorded a $ 614 million gain in the first quarter of 2009 resulting from an increase in own credit risk (Hughes, FT, 2009a). The discussion paper concentrates on the question of whether or not liability measurements should represent the probability of a financial institution's default. Three arguments for as well as against incorporating credit risk are presented and discussed. The arguments in favor of incorporating credit risk include consistency at initial recognition, wealth transfer and accounting mismatches. Consistency at initial recognition refers to both time-series and between-liabilities consistency. According to the discussion paper, there is neither a reason why a liability should be accounted for at fair value at initial recognition (the exchange of cash represents fair market value) and not in subsequent periods, nor is there a reason why some liabilities should be accounted for at fair value (including credit risk) while others are

not (IASB Staff, 2009, p. 9). The wealth transfer argument claims that the deterioration of credit risk corresponds to a change in the allocation of the firm's resources between equity and debt holders. The financial statements should represent this wealth transfer (IASB Staff, 2009, p. 12). Accounting mismatches occur if financial assets are measured at fair value and, thus, incorporate changes in credit spreads, but liabilities do not. Accordingly, not incorporating credit risk in liability measurement distorts profit or loss or other comprehensive income (IASB Staff, 2009, p. 14).

Counter-intuitive results, again accounting mismatches and the realization problem are the three arguments put forward against incorporating credit risk. The fact that an entity reports a gain resulting from a deterioration of credit risk seems counter-intuitive according to the discussion paper since a decline in an entity's financial position is naturally associated with losses, not gains (IASB Staff, 2009, p. 16). Accounting mismatches can also occur if credit risk is included in liability measurement because some assets are not accounted for at fair value (e.g., fixed assets or goodwill) or not even recognized on the balance sheet such as some intangible assets (IASB Staff, 2009, p. 17). According to the discussion paper, one major advantage of fair value accounting for financial assets is the fact that realization does not matter and assets can be sold without affecting profit or loss. This presumed advantage, however, does not equivalently exist for financial liabilities since liabilities are seldom transferred or sold (IASB Staff, 2009, p. 18). Finally, the discussion paper shortly points to some alternative measurement approaches. First, measuring all financial liabilities as the present value of expected future cash flows (excluding credit risk) discounted at the risk-free rate. Any difference between cash proceeds and discounted future cash flows is either immediately recognized in profit or loss, or recognized in other comprehensive income and amortized over the time to maturity of the liability. Second, liabilities, which result in an exchange of cash, are measured at the amount of the cash proceeds. Liabilities, which do not involve an exchange of cash, are measured as expected future cash flows discounted at market rates that exclude credit risk (IASB Staff, 2009, pp. 19 f.).

Predicted Sign: This event conveys information about the IASB's plans to amend fair value accounting rules for financial liabilities. The outcome likely limits banks' ability to record gains as a consequence of deteriorations of own credit risk. This in turn limits banks' ability to offset losses on the asset side with gains on the liability side during times of financial distress. During financial crises, the recognition of such gains builds an anti-cyclical buffer. Therefore, I predict a negative market reaction in line with hypothesis 1.

Event No. 29: CEBS wants improved disclosures **Pred. Sign: +**

On June 24, 2009, the CEBS publishes two assessment reports along with a press release as part of its monitoring efforts on banks' disclosures (Jones, RN, 2009c). The first report, titled "Follow-up review of banks' transparency in their 2008 audited annual reports", evaluates 2008 year-end disclosures of a sample of EU banks and some non-EU peers. CEBS reaches the

conclusion that disclosures should be improved in various areas. These areas include fair value measurement and, particularly, disclosures on valuation models and their underlying assumptions; the methodologies employed to assess the impact of own credit risks; the accounting for day-one differences; consolidated and, specifically, derecognised entities along with their related exposures (CEBS, 2009c, p. 1). The second report, titled "Assessment of banks' Pillar 3 disclosures", investigates the quality and comprehensiveness of disclosures under "Pillar III - Market Discipline" of the new Basel accord (Basel II) using a sample of EU banks and some non-EU peers. CEBS identifies the following areas, in which disclosures should be improved: the composition and characteristics of own funds; back-testing information for credit risk and market risk; quantitative information on credit risk mitigations and counterparty credit risk; the granularity of information on securitizations (CEBS, 2009a, p. 1).

As a consequence of the findings, CEBS decides to develop and publish a set of disclosure principles that are intended to enhance bank disclosures in areas that are most affected by the financial crisis (CEBS, 2009b).

Predicted Sign: This event increases the likelihood of improved disclosures for financial instruments. Therefore, I predict a positive market reaction in line with hypothesis 2.

Event No. 30: IASB seeks views on expected loss model **Pred. Sign: +**

On June 25, 2009, the IASB issues a request for information on the feasibility of an expected loss model for the impairment of financial assets (IASB, 2009n).While IAS 39 stipulates an incurred loss, in which impairment losses are only recognized if a loss event occurred, the proposed expected loss model incorporates expectations about future losses and allows for earlier recognition of losses at the time when credit risk changes. The IASB, however, is explicitly not interested in advantages or disadvantages of an expected loss model at this time. Rather, the board seeks inputs about the feasibility of an expected loss model in preparation of an exposure draft on impairment of financial assets. Publication of the exposure draft is planned for October 2009 (IASB, 2009t).

Predicted Sign: This event demonstrates that the IASB is willing overall to modify current impairment rules. An expected loss model likely grants management more discretion to spread credit losses over time. Therefore, I predict a positive market reaction in line with hypothesis 4.

Event No. 31: IASB issues ED "Classification and Measurement" **Pred. Sign: +**

On July 14, 2009, the IASB issues ED/2009/7 "Financial Instruments: Classification and Measurement" as a major first step to replace IAS 39 (IASB, 2009k). The publication of the exposure draft was covered broadly in the financial press (e.g., Vitorovich, DJN, 2009; Hughes, FT.com, 2009a; Jones, RN, 2009j; Hughes, FT, 2009b). The exposure draft proposes major modifications to the classification and measurement regime of IAS 39. While IAS 39

classifies financial assets into four categories (FVtPL, LaR, HtM, AfS), the ED proposes a two-category system. Financial instruments, which have only basic loan features and are managed on a contractual yield basis belong to the first category and are measured at amortized costs. Any other financial instrument is measured at fair value (ED/2009/7, par. 3-5). Depending on both the characteristics of the financial instrument and the entity's discretion, fair value changes are either recognized in other comprehensive income or in profit or loss. Unless the financial instrument is an equity instrument, fair value changes are generally recognized in profit or loss. For non-trading equity instruments, the entity has the unrestricted, but irrevocable option to choose between recognition of fair value changes in other comprehensive income or profit and loss (ED/2009/7, par. 19-21). If the entity chooses to recognize fair value changes in other comprehensive income, dividends originating from the equity instruments also accumulate in other comprehensive income rather than profit or loss (ED/2009/7, par. 22). Additionally, the amounts previously recognized in other comprehensive income are not subsequently recognized in profit or loss (i.e., no recycling). An entity may, however, transfer the cumulative gain or loss within equity, e.g., from OCI to retained earnings (ED/2009/7, par. B24). Based on this proposal, equity instrument classified as fair value through OCI would not touch the income statement at all (impairment provisions do not exist) and, thus, not affect the financial performance of the firm.

Besides classification and measurement, the exposure draft also substantially simplifies the accounting for embedded derivatives (ED/2009/7, par. 6-8), retains the fair value option (ED/2009/7, par. 9) and prohibits reclassification between the two categories after initial recognition (ED/2009/7, par 10).

Overall, exposure draft likely reduces the scope of financial instruments that are mandatorily accounted for at fair value. To illustrate this point, consider the 2009 annual report of BNP Paribas as an example. Table 7.1 on the next page shows the financial instruments section of the consolidated balance sheet of BNP Paribas Group as of December 31, 2009. The line item financial assets at fair value through profit or loss (No. 1, FVtPL), which amounts to 40.28% of total assets, is unlikely to experience major changes as a result of the exposure draft. The position consists primarily of negotiable certificates of deposit, bonds, equity instruments, Repos, loans and trading derivatives (BNP Paribas, 2009, p. 173). These financial instruments are classified as FVtPL either because there are held for trading or because they are designated as FVtPL under the fair value option. It is unlikely that the exposure draft substantially affects this position since all assets on the trading book are also accounted for at FVtPL under the exposure draft. Although some instrument have basic loan features (e.g., the bonds), measuring these instruments at amortized costs also requires management on a contractual yield basis. Asset on the trading book, however, are not managed on a contractual yield basis and, accordingly, cannot be measured at amortized costs (ED/2009/7, par. B13). Since the exposure draft fully retains the fair value option, all assets designated at FVtPL are also eligible for this accounting treatment under ED/2009/7. The effect on both derivatives used for hedging (No. 2) and remeasurement adjustments on interest-rate risk hedged

portfolios (No. 6) is unclear at the time, since the hedge accounting rules of IAS 39 are to be replaced with a later exposure draft.

Table 7.1
Balance Sheet Extract of BNP Paribas Group

This table shows the financial instruments section of the consolidated balance sheet of BNP Paribas Group as of December 31, 2009.

No.	Assets	Dec. 31, 2009[a]	% of TA[b]
1	Financial assets at fair value through profit or loss	828,784	40.28
2	Derivatives used for hedging purposes	4,952	0.24
3	Available-for-sale financial assets	221,425	10.76
4	Loans and receivables due from credit institutions	88,920	4.32
5	Loans and receivables due from customers	678,766	32.99
6	Remeasurement adjustment on interest-rate risk hedged portfolios	2,407	0.12
7	Held-to-maturity financial assets	14,023	0.68
Total Financial Assets		**1,839,277**	**89.39**
8	All other assets	218,421	10.61
Total Assets (TA)		**2,057,698**	**100.00**

a in million Euros.
b TA = Total Assets.
Source: BNP Paribas (2009), p. 108.

The exposure draft ceases entirely the position available-for-sale financial assets (No. 3, AfS), which accounts for 10.76% of total assets. Nevertheless, the exposure draft still contains the concept of recognizing fair value changes in other comprehensive income. Unlike IAS 39, however, this accounting treatment is only applicable to non-trading equity instruments. Table 7.2 on the following page shows the composition of AfS securities of BNP Paribas Group. The accounting treatment for the equity securities, which account for 10.01% of all AfS securities and for 1.09% of total assets, is unlikely to change since these assets are not held for trading and, under the exposure draft, the entity can elect to account for non-trading equity instruments at fair value with fair value changes recognized in other comprehensive income. The accounting treatment for both the negotiable certificates of deposit and the bonds, which collectively account for 89.99% of all AfS securities and for 9.82% of total assets, changes under the exposure draft. Presumably, these instruments have basic loan features. Accordingly, the instruments are accounted for at amortized costs if the entity manages the assets on a contractual yield basis. It is, however, unclear if this is the case. The classification as AfS under IAS 39 does not necessarily imply that the assets are managed based on their market values. Rather, IAS 39 allows fixed-income instrument, which are traded in an active market, to be accounted for at amortized costs only if the entity has the ability and the intention to hold the instruments until maturity. This would result in a classification as

held-to-maturity. However, IAS 39 places restrictions on the sale of debt instruments that are classified as held-to-maturity (so called tainting rules). If the entity manages the debt instruments on a contractual yield basis, but wants to reserve the right to divest part of the portfolio before maturity, IAS 39 would require a classification as available for sale. As a result, the certificates of deposit and the bonds would be accounted for at amortized costs under the exposure draft if they are managed on a contractual yield basis and at fair value otherwise. Fair value changes, however, are recognized in profit or loss and not in other comprehensive income as under IAS 39.

Table 7.2
Available-for-Sale Financial Assets of BNP Paribas Group

This table shows the composition of available-for-sale financial assets of BNP Paribas Group as of December 31, 2009.

No.	Assets	Dec. 31, 2009[a]	% of AfS[b]
1	Negotiable certificates of deposit	28,309	12.60
	Treasury bills and other bills eligible for central bank refinancing	20,408	9.09
	Other negotiable certificates of deposit	7,901	3.52
2	Bonds	173,839	77.39
	Government bonds	122,959	54.74
	Other bonds	50,880	22.65
3	Equities and other variable-income securities	22,475	10.01
Total available-for-sale assets[c]		**224,623**	**100.00**

a in million Euro.
b AfS = Available-for-sale.
c AfS assets before impairment provisions of -3,198 million Euro. AfS assets, net of impairment provisions amount to 221,425 million Euro.
Source: BNP Paribas (2009), p. 175.

The exposure draft also ceases entirely the position held-to-maturity, which accounts for 0.68% of total assets at BNP Paribas Group. The position consists of both bonds and negotiable certificates of deposit (BNP Paribas, 2009, p. 184). Conceptually, the accounting treatment for these assets is unlikely to change since the instruments have basic loan feature and a classification as held-to-maturity under IAS 39 implies that the assets are managed on contractual yield basis. The exposure draft, however, eliminates entirely the so-called tainting rules, which place restrictions on the entity's ability to divest HtM assets before maturity.

Overall, the exposure draft substantially simplifies the accounting rules for financial instruments. It also grants more discretion regarding the recognition of fair value changes in either profit or loss or other comprehensive income (e.g., non-trading equity instruments). The proposed rules are also likely to reduce the amount of financial assets that are mandatorily required to be accounted for at fair value, particularly, regarding fixed-income instruments,

which are traded in active markets (previously AfS assets).

Predicted Sign: Since the exposure draft likely reduces the scope of fair value accounting and therefore fair value exposure, I predict a positive market reaction in line with hypothesis 1.

Event No. 32: Basel Committee favors reclassifications	**Pred. Sign: +**

On August 27, 2009, the Basel Committee on Banking Supervision (BCBS) publishes a comment paper, titled "Guiding principles for the replacement of IAS 39" (Basel Committee, 2009a). The paper intends to "assist the IASB in addressing issues related to provisioning, fair value measurement and related disclosures" (Basel Committee, 2009b). Among other recommendations, the Basel Committee expects new accounting standards for financial instruments to "permit reclassifications from the fair value to the amortised cost category." The committee adds that "this should be allowed in rare circumstances following the occurrence of events having clearly led to a change in the business model" (Basel Committee, 2009a, p. 2). The exposure draft published by the IASB on July 14, 2009, prohibits any reclassifications between the amortized cost and the fair value category. Corresponding financial press reports are tailored to the fact that the Basel Committee as one of the highly influential constituents of the IASB favors reclassifications (e.g., Jones, RN, 2009m; Hannon, DJN, 2009).

In a letter to the IASB, dated September 15, 2009, the Director General of the Internal Market and Services Directorate General (DG) of the European Commission, Joergen Holmquist, comments on the exposure draft "Financial Instruments: Classification and Measurement" (Holmquist, EC, 2009). The main concerns expressed in the letter include the classification requirements for the at-amortized-cost category, the ability to reclassify financial instruments, the recycling into profit or loss of other-comprehensive-income components originating from both fair value changes and dividends, the impact of the new standard on the insurance industry, the measurement of financial liabilities including own credit risk, and the potential burdens of transitioning to the new standard. Mr. Holmquist requests the IASB to consider the following changes to ED/2009/7.

1. Regarding the classification of financial instruments as either at-amotized-cost or at-fair-value, the new standard should give primary consideration to a financial instituitions business model. The characteristics of a financial instrument should only be the subordinate criterion for assessing its classification (Holmquist, EC, 2009, pp. 2-3).
2. Reclassification of financial instruments should be allowed as a consequence of a change of the business model (Holmquist, EC, 2009, p. 3). The letter also states that the discontinuation of the ability to reclassify financial instruments as introduced into IAS 39 in October 2008 would be "politically contentious" (Holmquist, EC, 2009, p. 2).
3. The proposals of ED/2009/7 regarding the recycling into profit or loss of fair value changes and dividends previously accumulated in other comprehensive income (OCI) should be amended (Holmquist, EC, 2009, p. 3).
4. The proposals of ED/2009/7, particularly regarding the valuation of liabilities, impose

special difficulties on insurance companies and should not interfere with ongoing progress on the insurance contract project and on IFRS 4 (Holmquist, EC, 2009, p. 3).

5. ED/2009/7 should allow bifurcation of embedded derivatives if the derivative qualifies for the amortized cost category as a stand-alone instrument (Holmquist, EC, 2009, p. 4). The letter also suggests that the areas related to points three to five should be scoped out of the new standard (Holmquist, EC, 2009, p. 4).
6. The burden of transitioning to the new standard should be eased for early adopters (Holmquist, EC, 2009, p. 4).

This event certainly is relevant to the progression of IFRS 9. However, I am unable to precisely determine the date the letter was released to the public. Particularly, I am unable to identify any related information in the financial press surrounding the day the letter is dated (September 15, 2009). In a similar instance, a letter to the IASB from Joergen Holmquist, dated November 4, 2009, is not covered in the financial press before November 11, 2009 (Anonymous, DJN, 2009a; Sanderson and Tait, FT, 2009a,F; Nixon, DJN, 2009). This leads me to believe that both letters are not released to the public on a timely basis. As a consequence, I do not include these events in the empirical analysis due to substantial uncertainty about when the information reaches the market. If the letter was included in the empirical analysis, I would predict a positive market reaction based on hypothesis 1 because the European Commission increases pressure on the IASB to further relax fair value accounting rules. Given the recent history of how the IASB deals with political interference from the European Union, market participants could reasonably expect further relaxations of the fair value accounting proposals in ED/2009/7. It turns out that the estimated coefficient of an indicator variable set to one during a two-day event window surrounding September 15, i.e., $[0, +1]$, is actually positive and modestly significant ($p = 0.046$ using a two-tailed test). This is in line with hypothesis 1. Nonetheless, I adopt the more conservative approach for the reasons stated above and exclude the letter from the empirical analysis. The substance of the letter is still important for contextual reasons, especially regarding the actual changes made to ED/2009/7 as announced by Sir David Tweedie in his speech in front of the ECOFIN council on October 20, 2009.

Predicted Sign: Although I exclude the letter of Joergen Holmquist from further analysis, I still study market reactions to the recommendations of the Basel Committee as a regulatory heavyweight in banking regulation. The recommendations of the Committee to allow reclassifications increase the probability that IASB will ultimately allow preparers to reclassify financial instruments between categories. This in turn increases managements' discretion and therefore is predicted to provoke a positive market reaction in line with hypothesis 1.

Event No. 33: IASB rejects widening of fair value **Pred. Sign: +**

On September 30, 2009, Sir David Tweedie clarifies that the IASB will not widen the scope of fair value accounting as a response to recent proposals of the FASB. Sir Tweedie tells

Reuters: "We put out our proposals for financial instruments [under which] some items - debt instruments, loan books - would be at cost, the rest at fair value. Their [the FASB] proposal is everything at fair value. I don't think that is acceptable worldwide and in some segments of the United States either" (Jones, RN, 2009k). Previously, the FASB issued proposals, which would also require loans to be measured at fair value and, thus, substantially increase the scope of fair value measurements (e.g., Rapoport, DJN, 2009b).

Predicted Sign: This event demonstrates the IASB's opposition toward a full fair value model as proposed recently by the FASB. Therefore, this event decreases the likelihood of a full fair value model in Europe and internationally. Accordingly, I predict a positive market reaction in line with hypothesis 1.

Event No. 34: Fair value reform wider than planned **Pred. Sign: +**

On October 20, 2009, Sir David Tweedie speaks at the Economic and Financial Affairs Council of the European Union (ECOFIN Council) about the upcoming reform of IAS 39 (Parussini, DJN, 2009b; Jones, RN, 2009g; Parussini, DJN, 2009a). He reassures the board's commitment to publish a final standard in November of 2009 and addresses several issues that constituents of the IASB, particularly the Basel Committee, the Financial Crisis Advisory Group and the European Commission, have raised. These issues include the impact of the business model on the classification of financial instruments, the ruling out of reclassifications, the treatment of own credit risk, the standard's impact on insurance companies and the treatment of dividends originating from equity instruments. Regarding these concerns, Sir Tweedie announces the following changes that the IASB decided to make to its original proposal (ED/2009/7):

1. A financial institution's business model will be the first factor in assessing the classification of financial instruments (IASB, 2009s, p. 4).
2. The ban on reclassifications as originally proposed by the exposure draft has been removed. Instead, reclassifications can result from a change of the business model of a financial institution. Additionally, the reclassification of financial instruments previously accounted for under the fair value option will be allowed during the first-time adoption of the standard to facilitate transition to the new rules (IASB, 2009s, p. 4).
3. Provisions related to the accounting for own credit risk in the proposed standard have been removed to avoid counter-intuitive results. That is, companies will no longer be able to recognize gains as a result of a deterioration of own credit risk (IASB, 2009s, p. 4).
4. Insurance companies will not be required to adopt the new standard before 2013 or 2014 to avoid interference of the new financial instruments standard with the insurance contract project of the IASB (IASB, 2009s, p. 5).
5. The original proposal has been improved with regard to the treatment of dividends originating from equity instruments (IASB, 2009s, p. 5).

Predicted Sign: Sir Tweedie's remarks indicate that the IASB largely complies with the

requests made by the European Commission in its letter from September 15, 2009 concerning the role of the business model, reclassifications, own credit risk and the impact of the new standard on insurance companies. His remarks concerning the treatment of dividends are vague. They seem to imply, however, that the IASB has removed the ban on dividend recycling into profit or loss. Overall, Sir Tweedie also points out that "the final standard will likely result in financial institutions that undertake traditional banking activities of raising deposits and making basic loans applying less fair value accounting rather than more" (IASB, 2009s, p. 3). Therefore, I predict a positive market reaction in line with hypothesis 1.

Event No. 35: FASB and IASB joint board meeting II **Pred. Sign: –**

On October 26, 2009, both the IASB and the FASB discuss their approaches toward new accounting standards for financial instruments in an attempt to reconcile their differing views (Chasan, RN, 2009a). While the FASB aims to extent the scope of fair value accounting to all financial instruments including loans (full fair value model), the IASB proposed a mixed measurement model, in which loans are recognized at amortized costs rather than fair value. Sir David Tweedie is cited by Reuters as saying that "If FASB and IASB can't agree on mixed model or full fair value model, the next best thing is something to move between the two" (Chasan, RN, 2009a). The statement seems to indicate that the IASB is willing to move towards the FASB's position in order to facilitate convergence of accounting standards. Robert Herz, chairman of the FASB, is cited by Reuters as saying that "I think fair value gets a lot closer to showing actual financial condition than amortized cost" (Chasan, RN, 2009a).

Predicted Sign: This event conveys information about the IASB's willingness to reconcile its views on fair value accounting with the FASB. Therefore, this event increases the likelihood of more fair value accounting in the IASB's new financial instruments' standards. Therefore, I predict a negative market reaction in line with hypothesis 1.

Event No. 36: IASB issues "ED Amortised Cost and Impairment" **Pred. Sign: +**

On November 5, 2009, the IASB publishes ED/2009/7 "Financial Instruments: Amortised Cost and Impairment (IASB, 2009m,a). The exposure draft proposes an expected loss model to replace the incurred loss model as stipulated by IAS 39. The incurred loss model was criticized during the financial crisis for overstating both interest revenue before a loss event and impairment losses at the time of the loss event. The expected loss model, in contrast, takes the expected losses over the life-time of the financial instrument into consideration at initial recognition and allows an entity to build up loss provisions. This approach relies on substantial judgment on the side of preparers. The IASB acknowledges this fact and proposes "extensive disclosure requirements [to] provide investors with an understanding of the loss estimates that an entity judges necessary" (IASB, 2009m). Nevertheless, it is likely that the expected loss model introduces considerable discretion among preparers to smooth income. The publication

of the exposure draft was widely covered in the financial press (Elliott, DJN, 2009; Anonymous, FT.com, 2009; Sanderson and Hughes, FT, 2009; Jones, RN, 2009i; Anonymous, FT, 2009; Sanderson and Hughes, FT.com, 2009).

Predicted Sign: This event increases the use of management judgment, allows preparers to smooth profits and grants more discretion regarding the management of impairments. Therefore, I predict a positive market reaction in line with hypothesis 4.

Event No. 37: No EU endorsement of IFRS 9 **Pred. Sign: –**

On November 12, 2009, the IASB publishes IFRS 9 "Financial Instruments" (IASB, 2009g). Voluntary adoption of the standard is permitted for 2009 annual reports. The issuance of IFRS 9 was widely covered in the financial press (e.g., Walker, DJN, 2009a; Walker, DJN, 2009b; Jones, RN, 2009l). The new standard includes the following major changes compared to ED/2009/7.

1. Financial liabilities: IFRS 9 as issued on November 12, 2009, scopes out completely the accounting for financial liabilities. The IASB justifies this step based on concerns of respondents to the exposure draft. The respondents suggested that the board first recognizes fully the results of its project on own credit risk, and other related activities, before finalizing the accounting treatment of financial liabilities (IFRS 9 BC6). Respondents to ED/2009/7 also indicated that the accelerated IAS 39 replacement project resulted from the financial crisis and that the crisis-related issues apply primarily to the accounting treatment of financial assets rather than liabilities (IFRS 9 BC6).
2. Classification approach: IFRS 9 tailors the classification requirements to the business model. That is, the entity's business model for managing the financial asset (IFRS 9.4.1(a)) and the financial asset's contractual cash flow characteristics (IFRS 9.4.1(b)) compose the crucial factors for assessing the classification as either at-amortized-costs or at-fair-value. Specifically, an entity accounts for a financial asset at amortized costs if the business model for managing the asset focuses on the collection of contractual cash flows (IFRS 9.4.2(a)), and if the asset's underlying contractual agreement specifies cash flows on specified dates, which only comprise payments of interest and principal (IFRS 9.4.2(b)).
3. Reclassification: IFRS 9 allows the reclassification of financial assets. IFRS 9.4.9 stipulates that an entity shall reclassify financial assets subsequent to a change in the business model for managing these assets. The classification criteria of IFRS 9.4.1-9.4.4 determine the new classification.
4. Recognition of dividends in profit or loss: IFRS 9 changes the accounting for dividends originating from non-trading equity instruments, which are classified as at fair value through other comprehensive income. Such dividends are now to be recognized in profit or loss rather than OCI (IFRS 9.5.4.5).

Also on November 12, the European Commission decides not to endorse IFRS 9 early (Jones, RN, 2009d; Tait and Sanderson, FT, 2009b; Nixon, WSJ.com, 2009; Sanderson, FT,

2009a; Nixon, DJN, 2009). Instead, the EC announces to evaluate all three phases of the IAS 39 replacement project in their entirety (Phase I: Classification and Measurement; Phase II: Impairment Methodology; Phase III: Hedge Accounting; see, e.g., IFRS 9.IN12). Accordingly, European banks cannot, as originally intended, apply the new standard for their 2009 annual reports. The move of the European Commission is at odds with its prior notion toward IFRS 9, since the G20 and the European finance ministers had previously pressured the IASB to release IFRS 9 timely before year end, so that banks could adopt the new rules for their 2009 annual reports (e.g., Jones, RN, 2009l). The decision is also surprising because the EFRAG already issued a favorable draft endorsement report for public comment (EFRAG, 2009), which was later withdrawn (Nixon, DJN, 2009). Anonymous sources cited by Reuters claim that the move of the EC could allow the IASB to reconcile its approach to replace IAS 39 with the proposals brought forward by the FASB (Jones, RN, 2009l). Since the FASB proposes a broader application of fair value accounting, which extends even to loans, a potential reconciliation compromise could eventually lead to an icrease in the scope of fair value accounting under IFRS as well. The Financial Times cites anonymous Brussels-based sources, which are "concerned that the delay would provide an opportunity for the US standard-setter to push 'full fair value' as the best model for international standards (Tait and Sanderson, FT, 2009a). The FT also cites several industry sources arguing that the delay of the adoption is disadvantageous for the European financial industry. For instance, Douglas Flint, Chief Financial Officer (CFO) of HSBC Holdings plc, is cited as claiming that the delay of the rules puts European banks "at a competitive disadvantage" (Sanderson, FT, 2009b; Sanderson, FT.com, 2009). An anonymous hedge fund manager is cited as stating that the endorsement suspension is "clearly bad for investors. It's more opaque, and more opaque means more high risk, and more high risk means less capital invested" (Sanderson, FT, 2009b; Sanderson, FT.com, 2009). Similarly, Peter Elwin, who is the head of valuation and accounting analysis at JPMorgan Cazenove Limited, is cited by the FT as saying that "US GAAP [for the US], IFRS-lite for Europe and IFRS for the rest [of the world] is now a prospect. And that's certainly not what the capital markets wanted" (Sanderson, FT, 2009b; Sanderson, FT.com, 2009). Reuters cites Ian Coke, who serves as the head of the financial services faculty at the Institute of Chartered Accounting in England and Wales, as arguing that "Non-endorsement would be quite a big setback, particularly for European banks who wanted early adoption and would not be able to do so" (Jones, RN, 2009l).

Predicted Sign: First, the amendments to IFRS 9 as compared to the original proposal ED/2009/7 as issued on July 14, 2009 (event No. 31) were anticipated by the market based on Sir David Tweedie's speech at the ECOFIN Council (event No. 34) and, thus, are no big news. Rather, the decision of the EU not to endorse the new standards comprises new information. This decision has the following implications. First, the IASB regains the opportunity to reconcile its views on fair value with the FASB. This increases the likelihood of more fair value accounting. Second, this event bars banks from adopting the relaxations to fair value accounting for 2009 annual reports. Based on comments from the financial industry as cited

above, it is likely that banks already counted on approval of the new standard. Overall, this event increases the likelihood of modifications of IFRS 9 in favor of more fair value accounting and, therefore, I predict a negative market reaction in line with hypothesis 1.

Table 7.3
Announcements and Events related to International Acconting Standards for Financial Instruments

This table lists announcements and events related to changes of accounting standards for financial instruments. Announcements and events are identified through a Dow Jones FACTIVA search of the following sources: Dow Jones Business News, Dow Jones Capital Markets Report, Dow Jones International News, Dow Jones News Service, The Financial Times (Print), The Financial Times (online, FT.com), Reuters EU Highlights, Reuters News, The Wall Street Journal, The Wall Street Journal Europe. The search query included the following keywords: International Accounting Standards Board, IASB, IAS 39, IFRS 7, fair value accounting, mark to market accounting, fair value, marking to market, reclassification, off-balance sheet items. The search period lasts from January 1, 2007 to December 31, 2009. The search yields a total of 3,398 publication results. In addition to FACTIVA, the websites and news releases of standard setters and regulators were searched and combined with the financial press references. Event windows span two trading days (i.e., $[0, +1]$). Two events (No. 2, 3) are extensively covered in the financial press on the day prior to the announcement. The two event windows are set to $[-1, 0]$. One event window (No. 29) spans only one trading day to avoid overlapping event windows with an opposite sign.

No.	Date	Event Window	Event Short Description	*Exemplary Press or Announcement Headline* Event Long Description	Source[a]	Pred. Sign
1	1/8/08	1/8-9	IASB plans review of off-balance sheet rules	*Off-balance sheet to be focus of accounting review: Jones (RN, 2008e).* The IASB announces a review of off-balance sheet rules as a consequence of the credit crisis. Sir David Tweedie tells Reuters "The IFRS standards are broadly in the right direction. It's a matter of where can we strengthen them where necessary" (Jones, RN, 2008e).	RN FT	−
2	3/19/08	3/18-19	IASB publishes DP "Reducing Complexity [...]"	*Accounting rulemakers defend use of 'fair value': Hughes (FT, 2008b).* The IASB publishes the Discussion Paper (DP) "Reducing Complexity in Reporting Financial Instruments". The DP illustrates the IASB's commitment to a full fair value model for all financial instruments as a long term solution (IASB, 2008a).	FT IASB	−
3	4/3/08	4/2-3	EFRAG favors fair value change	*EU advisers back fair value change: Hughes (FT, 2008e).* In a FT column, members of the Technical Expert Group (TEG) of the European Financial Reporting Advisory Group (EFRAG) argue in favor of changes to current fair value rules in order to "break the write-down spiral" (Seeberg et al., FT, 2008). According to the FT, this is one of the first signs of dissent on fair value rules within the accounting community (Hughes, FT, 2008e).	FT	+
4	4/17/08	4/17-18	IASB plans new off-balance sheet disclosure rules	*Stricter bank disclosure rules are studied by standards body: Hughes (FT, 2008h).* In an interview with the FT, Sir David Tweedie states that the IASB currently works on strict off-balance sheet disclosure rules. He states that "[...] at least if we did this [disclosure], then people would be able to see that in a worst-case scenario exactly how much will come flying back on to the books. This is the issue to hit first because this is where people have been taken aback by what has appeared" (Hughes, FT, 2008h).	FT	+

Continued on next page

Table 7.3 – continued from previous page

No.	Date	Event Window	Event Short Description	*Exemplary Press or Announcement Headline* Event Long Description	Source[a]	Pred. Sign
5	5/29/08	5/29-30	CESR supports fair value	*Top EU regulator sees no challenge to fair value: Jones (RN, 2008f).* Eddy Wymeersch, chairman of the Committee of European Securities Regulators (CESR) expresses support for fair value accounting and considers no challenge to current rules. He tells Reuters: "We stay with fair value, that's clear. We are not going to challenge fair value" (Jones, RN, 2008f).	RN	–
6	7/10/08	7/10-11	Tweedie: no changes to fair value	*Big rewrite of accounting fair value ruled out: Anonymous (RN, 2008a).* In an interview, Sir David Tweedie tells Reuters: "We are certainly not thinking of any emergency measures to change what we do at present." He also adds: "I think the commentators are largely backing that, including the regulators, that this is not the time to make drastic changes quickly."	RN	–
6a†	9/15/08	n/a	IASB discusses comprehensive disclosure package	*Credit Crisis - Disclosure of off-balance sheet entities, liquidity risk, and fair value hierarchy: IASB (2008k).* On its September 15, 2008 board meeting, the IASB discusses a comprehensive disclosure package to improve IFRS 7.	IASB	+
7	10/1/08	10/1-2	Politicians against fair value / IAS 39 consistent with US clarification	*Sarkozy seeks EU-wide accounting rule change: Hall and Tait (FT, 2008).* *EU's McCreevy: will follow changes in fair value: Anonymous (RN, 2008b).* Nicolas Sarkozy and Charly McCreevy call for more flexibility in fair value accounting rules and announce that the EU will change rules if other parts of the world do so. On September 30, 2008, the SEC and the FASB issued guidance on fair value accounting and announced further guidance will follow. The IASB announced on October 2, 2008 that the guidance provided by FASB and SEC is consistent with current IAS 39 rules (IASB, 2008j). Also, on September 30, 2008 the IASB issues a staff draft standard on consolidation to be discussed during its extra board meeting on October 2, 2008.	FT RN	+
8	10/3/08	10/3-6	IASB plans to consider reclassifications	*Bank accounting rules may change: Hughes (FT, 2008c).* The IASB announces its next steps in the credit crisis and unveils its plans to consider possible changes to IAS 39 that allow reclassifications in its upcoming public meetings during the week of October, 13-17.	FT IASB	+
9	10/9/08	10/9-10	Trustees suspend due process	*Top accounting body backs easing fair value in EU: Anonymous (RN, 2008c).* The trustees of the International Accounting Standards Committee Foundation (IASCF) agree to suspend due process on the issue of reclassification and support the IASB in possible efforts to align IAS 39 in accordance with the conclusion of the Economic and Financial Affairs Council of the European Union (ECOFIN council).	RN IASB	+

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Table 7.3 – continued from previous page

No.	Date	Event Window	Event Short Description	*Exemplary Press or Announcement Headline* Event Long Description	Source[a]	Pred. Sign
10	10/13/08	10/13-14	IASB publishes "Reclassification of Financial Assets"	*Global accounting body eases fair-value impact: Jones (RN, 2008d).* *Fair value accounting rules eased: Hughes (FT, 2008f).* The IASB publishes "Reclassification of Financial Assets: Amendments to IAS 39 and IFRS 7" (IASB, 2008d).	FT RN IASB	+
11	10/15/08	10/15-16	EU endorses reclassifications / ED "Improving Disclosures [...]"	*EU backs accounting rule change: Tait and Hughes (FT, 2008).* The EU endorses "Reclassification of Financial Assets: Amendments to IAS 39 and IFRS 7". The IASB issues the Exposure Draft (ED) "Improving Disclosures About Financial Instruments (Proposed Amendments to IFRS 7)" (IASB, 2008g).	FT EFRAG ARC IASB	+
12	10/31/08	10/31-11/3	IASB publishes guidance on fair value measurement	*IASB publishes educational guidance on the application of fair value measurement when markets become inactive: IASB (2008i).* The IASB publishes "Using judgement to measure the fair value of financial instruments when markets are no longer active - An IASB Staff Summary" (IASB, 2008r) and a report by the IASB Expert Advisory Panel titled "Measuring and disclosing the fair value of financial instruments in markets that are no longer active" (IASB Expert Advisory Panel, 2008).	IASB	+
13	11/27/08	11/27-28	IASB clarifies effective date for reclassifications	*IASB updates reclassification amendment for financial instruments to clarify effective date: IASB (2008l).* The IASB updates the reclassification amendment by issuing "Reclassification of Financial Assets - Effective Date and Transition". The amendment clarifies the effective date for reclassifications (IASB, 2008m).	IASB	–
14	12/18/08	12/18-19	IASB publishes ED on off-balance sheet risk	*Accounting body to fight off-balance-sheet ruses: Jones (RN, 2008a).* The IASB publishes Exposure Draft (ED) 10 "Consolidated Financial Statements" as part of its comprehensive review of off-balance sheet risk.	RN IASB	–
15	12/23/08	12/23-29	IASB issues ED "Debt Disclosures"	*IASB proposes additional disclosures for investments in debt instruments: IASB (2008f).* The IASB proposes additional disclosures for investments in debt instruments by issuing ED "Investments in Debt Instruments - Proposed amendments to IFRS 7".	IASB	+
16	1/30/09	1/30-2/2	IASB publishes ED "IFRIC 9 and 16 amendments"	*IASB proposes amendments to IFRIC Interpretations: IASB (2009i).* The IASB publishes Exposure Draft (ED) 2009/1 "Post-implementation Revisions to IFRIC Interpretations - Proposed amendments to IFRIC 9 (Reassessment of Embedded Derivatives) and IFRIC 16 (Hedges of a Net Investment in a Foreign Operation)".	IASB	+

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Table 7.3 – continued from previous page

No.	Date	Event Window	Event Short Description	*Exemplary Press or Announcement Headline* Event Long Description	Source[a]	Pred. Sign
17	2/23/09	2/23-24	IASB plans to replace IAS 39 within months	*Accounting standard setter plans fair value revamp: Jones (RN, 2009b).* Philippe Danjou, member of the IASB, tells Reuters that the board plans to replace IAS 39 within the next six months. He states: "We plan to replace it, the whole thing. We want to stop patching up the standard and we want to write a new one" (Jones, RN, 2009b).	RN	+
18	3/5/09	3/5-6	IASB isssues amendments "Improving Disclosures"	*IASB's mark-to-market rules come closer to US rules: Chasan (RN, 2009f).* The IASB issues amendments to IFRS 7 "Improving Disclosures about Financial Instruments" (IASB, 2009h).	RN IASB	+
19	3/12/09	3/12-13	IASB clarifies reclassification of embedded derivatives	*IASB clarifies the accounting treatment for embedded derivatives when reclassifying financial instruments: IASB (2009f).* IASB issues "Embedded Derivatives - Amendments to IFRIC 9 and IAS 39".	IASB	+
20	3/18/09	3/18-19	IASB seeks input on FASB staff positions	*IASB to consider US changes to fair value rule: Hughes and Chung (FT, 2009).* The IASB seeks input on two staff positions that the FASB issued on March 18, 2009.	FT RN IASB	+
21	3/24/09	3/24-25	FASB and IASB joint board meeting I	*IASB, FASB to replace financial instruments rules: Chasan (RN, 2009e).* The IASB and the FASB announce further steps in response to the global financial crisis on a joint board meeting. The boards agreed to issue standards that replace current standards for financial instruments within a matter of months (IASB, 2009e).	RN IASB	+
22	3/31/09	3/31-4/1	IASB publishes ED "Derecognition"	*IASB proposes improvements to derecognition requirements as part of review of off-balance sheet risk: IASB (2009j).* The IASB issues Exposure Draft (ED) 2009/3 "Derecognition (Proposed amendments to IAS 39 and IFRS 7)" as part of its review of off-balance sheet risk (IASB, 2009o).	IASB	−
23	4/3/09	4/3-6	EU ministers pressure for changes	*EU ministers seek accounting rule change: Jones (RN, 2009e).* EU finance ministers request the IASB to make changes in resposnse to the FASB Staff Positions (FSPs) on fair value measurement and on impairments of debt securities issued on April 2, 2009. EU Internal Market Commissioner, Charlie McCreevy, is cited by Reuters stating that "This issue has to be addressed immediately" (Jones, RN, 2009e).	RN DJN FT	+
24	4/24/09	4/24-27	IASB rejects US changes	*IASB rejects EU calls for immediate changes: Anonymous (RN, 2009a).* The IASB rejects to make immediate changes in line with the staff positions issued by the FASB. The board also lays out its expected timetable for the replacement of IAS 39.	RN IASB	−

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Table 7.3 – continued from previous page

No.	Date	Event Window	Event Short Description	*Exemplary Press or Announcement Headline* Event Long Description	Source[a]	Pred. Sign
25	5/7/09	5/7-8	EU: fair value changes for 2009 annual reports	*EU's McCreevy, accounting body clash over crisis: Jones (RN, 2009f).* The EU Commission pressures for changes to fair value accounting rules for 2009 annual reports. Reuters cites Internal Market Comissioner, Charlie McCreevy, as stating that "The IASB cannot set an agenda oblivious to economic and financial developments and fail to deliver."	RN	+
26	5/21/09	5/21-22	IASB accelerates IAS 39 replacement	*Accounting rule setter speeds up fair value reform: Jones (RN, 2009a).* During its board meeting, the IASB decides and announces an accelarated procedure to replace IAS 39.	RN	+
27	5/28/09	5/28-29	IASB publishes ED "Fair Value Measurement"	*IASB publishes draft guidance on fair value measurement: IASB (2009l).* The IASB publishes Exposure Draft (ED) 2009/5 "Fair Value Measurement".	IASB	+
28	6/18/09	6/18-19	IASB publishes DP "Own Credit Risk"	*Banks face threat on debt values: Hughes (FT, 2009a).* The IASB seeks views on the issue of "own credit risk" and issues Discussion Paper (DP) 2009/2 "Credit Risk in Liability Measurement" (IASB, 2009p).	FT IASB	–
29	6/24/09	6/24	CEBS wants improved disclosures	*EU bank regulators want better company disclosures: Jones (RN, 2009c).* The Committee of European Banking Supervisors (CEBS) wants to improve banking disclosure requirements, including "disclosures on fair value measurement and related methodologies."	RN	+
30	6/25/09	6/25-26	IASB seeks views on expected loss model	*IASB seeks input on feasibility of expected loss model: IASB (2009n).* The IASB issues a request for information on impairment of financial assets using an expected cash flow approach.	IASB	+
31	7/14/09	7/14-15	IASB issues ED "Classification and Measurement"	*IASB proposes simpler fair value rule: Jones (RN, 2009j). IASB proposes shake-up of 'fair value' rules to boost transparency: Hughes (FT, 2009b).* The IASB issues Exposure Draft (ED) 2009/7 "Financial Instruments: Classification and Measurement" (IASB, 2009k).	FT RN IASB	+
32	8/27/09	8/27-28	Basel Committee favors reclassifications	*Top banking supervisor backs easing fair value: Jones (RN, 2009m).* In its recommendations to the IASB, the Basel Committee argues in favor of reclassifications in IFRS 9. IFRS 9 should "permit reclassifications from the fair value to the amortised cost category in rare circumstances" (Jones, RN, 2009m).	RN DJN	+

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Table 7.3 – continued from previous page

No.	Date	Event Window	Event Short Description	*Exemplary Press or Announcement Headline* Event Long Description	Source[a]	Pred. Sign
33	9/30/09	9/29-10/1	IASB rejects widening of fair value	*IASB rejects U.S. plans to widen fair value scope: Jones (RN, 2009k).* Sir David Tweedie tells Reuters that the IASB will not widen its fair value accounting rules as proposed by the FASB. He states that "[The FASB] proposal is everything at fair value. I don't think that is acceptable worldwide and in some segments of the United States either" (Jones, RN, 2009k).	RN	+
34	10/20/09	10/20-21	Fair value reform wider than planned	*IASB Tweedie: To Publish New IAS 39 Accounting Standard In Nov: Parussini (DJN, 2009b) Fair value accounting reform wider than planned: IASB: Jones (RN, 2009g).* Sir David Tweedie confirms that IFRS 9 will be published in November 2009 and that less assets will be valued at fair value.	RN	+
35	10/26/09	10/26-27	FASB and IASB joint board meeting II	*Accounting boards try to reconcile fair value views: Chasan (RN, 2009a).* At a joint board meeting, FASB and IASB attempt to reconcile their differing views on an expansion of fair value accounting. Sir David Tweedie tells Reuters "If FASB and IASB can't agree on mixed model or full fair value model the next best thing is something to move between the two" (Chasan, RN, 2009a). Previous to the joint board meeting, FASB chairman Robert Herz indicated that the FASB favors a more comprehensive expansion of FVA than the IASB (Rapoport, DJN, 2009b)	RN	–
36	11/5/09	11/5-6	IASB issues "ED Amortised Cost and Impairment"	*Global rule-setter IASB unveils latest accounting reform: Jones (RN, 2009i).* The IASB issues Exposure Draft (ED) 2009/12 "Financial Instruments: Amortised Cost and Impairment".	RN IASB	+
37	11/12/09	11/12-13	No EU endorsement of IFRS 9	*Intl Accounting Board Issues New Intl Finl Reporting Standard: Walker (DJN, 2009b). EU delays adoption of accounting rule changes: Tait and Sanderson (FT, 2009b)* The IASB issues IFRS 9. The European Commission announces not to endorse IFRS 9 until the entire replacement project is complete.	DJN FT IASB	–

a Source abbreviations:
ARC = Accounting Regulatory Committee; **DJN** = Dow Jones Newswires; **EFRAG** = European Financial Reporting Advisory Group; **FT** = Financial Times; **IASB** = International Accounting Standards Board; **RN** = Reuters News; **SARG** = Standards Advice Review Group.
† Event excluded due to confounding events on the event date: Lehman Brothers Inc. files for Chapter 11 protection.

8 European Data

This chapter describes the European data set. Section 8.1 outlines the sample selection procedure. Section 8.2 on page 221 defines variables for the study of European financial institutions and describes variable measurement for both time-series and cross-sectional variables. Section 8.3 on page 226 reports descriptive statistics for the European sample.

8.1 Sample Selection

This section describes the sample selection procedures for two samples of European firms. Geographically, I restrict both the banking and the financial service firm sample to the European Economic Area (EEA), which covers the European Union plus Norway, Lichtenstein and Iceland. The reason is that publicly listed firms in the EEA follow the same set of IFRS as endorsed by the European Union. The first sample consists of 190 European banks. Section 8.1.1 describes the selection of this sample. The second sample consists of 140 European financial service firms (FSFs). Section 8.1.2 describes the selection of the FSF sample.

8.1.1 European Banks

I begin the sample selection with all publicly traded banks in the EEA on Bureau van Dijk's database Bankscope.[124] I require banks to prepare their financial statements in accordance with IFRS. This leads to an initial sample of 261 financial institutions. I exclude 42 firms either due to incomplete price histories on Datastream or due to thinly traded stock. That is, I remove firms with series of missing price information of more than 15 consecutive trading days during the estimation period from January, 2007, to December, 2009 and firms with volume information on Datastream for less than 60% of all trading days during the estimation period. I exclude 8 firms, which ceased operations or filed for bankruptcy during the period from January 2007 to December 2009. Finally, I remove 21 firms from the sample for which the required data items for cross-sectional tests are neither available from Bankscope nor from annual reports on the firms' websites. The final sample consists of 190 banks. Table 8.1 summarizes the sample selection.

Table 8.3 on page 220 reports the sample composition of the banking sample by country in columns two to five. With respect to the number of firms in the sample, the top three countries with the highest representation are Italy, France and Norway with 25 (13.16%), 19 (10%) and 17 (8.95%) firms, respectively. In terms of total assets, however, the United Kingdom, France and Germany rank in the top three positions with total assets adding up to € 6.8 trillion (26.19%), € 5.0 trillion (19.50 %) and € 3.0 trillion (11.77%), respectively.

[124] I thank Adam DuMouchelle and Tom Baskind from Bureau van Dijk, New York, NY, for providing me with data access to Bankscope for the purpose of this study.

Table 8.1
Sample Selection - European Banks

This table summarizes the sample selection procedure for the sample of banks in the European Economic Area (EEA). The final sample consists of 190 financial institutions.

Selection Criteria	No. of Firms
Public financial institions in the EEA on Bankscope, which prepare their financial statements according to IFRS	261
Less:	
Incomplete stock price histories on Datastream or thin trading	(42)
Ceased operations or bankruptcy	(8)
Required data items not available on Bankscope or on the company's website	(21)
Final sample	**190**

The size differences of financial institutions in different countries are particularly obvious in Norway. While the country contributes about 9% of the sample firms, these firms account only for about 1% of total assets in the entire sample. The United Kingdom exhibits the opposite relation. The country's contribution regarding the number of firms is only about 6%, but these firms compose about 26% of total assets in the sample.

8.1.2 European Financial Service Firms

I start the sample selection of the European financial service firm (FSF) sample with all active equity securities, which are tagged as major securities with primary quote in the EAA and are assigned the Industry Classification Benchmark (ICB) code 8770 (financial services) on Datastream.[125] This search leads to an initial sample of 829 firms. I remove 561 firms from the sample based on incomplete stock price histories on Datastream or due to thin trading. The exclusion criteria are the same as for banks (see section 8.1.1 on the previous page). To impose an initial criterion on the availability of firm characteristics for cross-sectional tests, I require sample firms to have at least total assets and total equity as of the fourth quarter of 2007 available on Worldscope. 48 firms do not meet this requirement. Finally, I exclude 80 firms, which do not have the required data items for cross-sectional tests available from annual reports on their websites. The final sample consists of 140 financial service firms. Table 8.2 summarizes the sample selection.

Table 8.3 on the following page reports the sample composition of the financial service firm sample by country in columns six to nine. The top contributor to the sample is the United Kingdom with 39 (27.86%) firms representing 29.35% of total assets followed by Germany and France with 22 (15.71%) and 19 (13.57%) firms, respectively. Note that financial service

[125] The ICB is an industry- and sector classification system maintained by the London-based stock market indices provider FTSE. See http://www.icbenchmark.com/.

Table 8.2
Sample Selection - European Financial Service Firms

This table summarizes the sample selection procedure for the sample of financial service firms in the European Economic Area (EEA). The final sample consists of 140 companies.

Selection Criteria	**No. of Firms**
Active major equity securities with primary quote in the EEA and Industry Classification Benchmark (ICB) sector code 8770 (financial services) on Datastream	829
Less:	
Incomplete stock price histories on Datastream or thin trading	(561)
Total assets and total as of Q4-2007 available on Worldscope	(48)
Required data items not available from annual reports on the company's website	(80)
Final sample	**140**

firms differ substantially in size compared to banks. Total assets contributed to the sample by financial service firms add up only to about 2.76% of the aggregate bank balance sheet in the sample.

Table 8.3
Sample Composition by Country

This table reports the country composition of both the European sample of banks and financial service firms. Assets is the sum of total assets as of the fourth quarter of 2007 in billion Euro over all firms in a given country. Total assets are obtained from Bankscope and hand-collected from annual reports.

	Banks				Financial Service Firms			
	No. of Firms	Percent [%]	Assets [bill. €]	Percent [%]	No. of Firms	Percent [%]	Assets [bill. €]	Percent [%]
Austria	8	4.21	407	1.57	1	0.71	13	1.78
Belgium	3	1.58	1,831	7.07	8	5.71	57	8.02
Bulgaria	0				1	0.71	1	0.20
Cyprus	4	2.11	70	0.27	0			
Czech Republic	1	0.53	25	0.10	0			
Denmark	13	6.84	519	2.00	0			
Finland	2	1.05	29	0.11	4	2.86	26	3.61
France	19	10.00	5,049	19.50	19	13.57	117	16.33
Germany	12	6.32	3,047	11.77	22	15.71	155	21.68
Greece	12	6.32	352	1.36	3	2.14	10	1.45
Hungary	2	1.05	36	0.14	0			
Ireland	2	1.05	367	1.42	1	0.71	0	0.02
Italy	25	13.16	2,315	8.94	13	9.29	17	2.42
Liechtenstein	2	1.05	19	0.07	0			

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Table 8.3 - continued from previous page

	Banks				Financial Service Firms			
	No. of Firms	Percent [%]	Assets [bill. €]	Percent [%]	No. of Firms	Percent [%]	Assets [bill. €]	Percent [%]
Lithuania	4	2.11	8	0.03	0			
Luxembourg	1	0.53	71	0.28	4	2.86	2	0.29
Malta	4	2.11	11	0.04	0			
Netherlands	5	2.63	1,448	5.59	1	0.71	4	0.62
Norway	17	8.95	291	1.12	2	1.43	1	0.13
Poland	13	6.84	151	0.58	4	2.86	0	0.06
Portugal	5	2.63	211	0.81	1	0.71	1	0.11
Romania	2	1.05	15	0.06	0			
Slovakia	4	2.11	12	0.05	1	0.71	8	1.19
Slovenia	2	1.05	6	0.02	0			
Spain	9	4.74	1,816	7.01	4	2.86	50	6.99
Sweden	8	4.21	1,009	3.90	12	8.57	41	5.75
United Kingdom	11	5.79	6,783	26.19	39	27.86	210	29.35
Total	190	100.00	25,898	100.00	140	100.00	714	100.00

8.2 Variable Measurement

This section defines variables and data inputs. Section 8.2.1 outlines the components of the augmented two-factor market model. Section 8.2.2 defines the variables used in cross-sectional tests and, finally, section 8.3 contains descriptive statistics for the cross-sectional variables.

8.2.1 Event Study Variables

The augmented market model requires two different types of variable inputs. First, market parameters (stock returns, market and interest rate index returns) are described in section 8.2.1.1. Second, sections 8.2.1.2 and 8.2.1.3 outline the indicator variable augmentation of the market model for tests of stock market reactions to individual and cumulative events, respectively.

8.2.1.1 Two-Factor Market Model

The event study analysis assumes the following two-factor market model return-generating process:

$$R_{it} = \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \varepsilon_{it} \tag{8.1}$$

with the following data inputs

R_{it}	is the daily stock return of sample firm i on day t. Stock prices are obtained form Datastream.
R_t^{MKT}	is the daily return on the STOXX Europe TMI index on day t. Index prices are obtained from Datastream.

$R_t^{INTEREST}$ is the daily relative change of the 3-months AAA-rated Government Euro-area spot rate. Interest rates are obtained from Datastream.

R_{it} are calculated as discrete returns based on daily closing prices obtained from Datastream.[126] Datastream closing prices are adjusted for corporate actions. The estimation window for equation (8.1) spans the period from January, 2008, to December, 2009 (508 trading days).

R_t^{MKT} are computed from daily index closing quotes of the STOXX Europe TMI index. Index quotes are obtained from Datastream. The STOXX Europe TMI index is maintained by the Zurich-based index provider STOXX and covers according to STOXX "the Western Europe region as a whole [...]" and, particularly, "[...] approximately 95 percent of the free float market capitalization across 18 European countries."[127]

$R_t^{INTEREST}$ are computed based on the the 3-months AAA-rated Government Euro-area spot rate. Rates are obtained through Datastream.

8.2.1.2 Individual Event Variables

To test the stock market reaction to individual events, I augment the two-factor market model in equation (8.1) with 37 indicator variables. Each indicator variable represents one event as summarized in table 7.3 on page 212. Each event indicator is set to one during each day of event k and to zero otherwise.

8.2.1.3 Cumulative Event Variables

To test the stock market reaction to series of cumulative events, I augment the two-factor market model with *SIGNED_MEAN* variables. *SIGNED_MEAN* variables disentangle the stock market reaction to several groups of events. Table 8.5 on page 224 arranges individual events into *SIGNED_MEAN* variables. The following six *SIGNED_MEAN* variables are defined in this section:

1. *ALL* is an indicator variable that captures the cumulative stock market reaction to all events defined in table 7.3 on page 212. It is set to +1 for all events with a positive predicted market reaction and set to −1 for all events with a negative predicted market reaction. In line with hypotheses 1-4, the predicted sign of *ALL* is positive.
2. *LESS_FV* is an indicator variable that captures the cumulative stock market reaction to all events that change the likelihood of less fair value exposure in line with hypothesis 1. The indicator variable is set to +1 for all events that increase (decrease) the likelihood of less (more) fair value exposure. It is set to −1 for all events that decrease (increase) the likelihood of less (more) fair value exposure. It is set to 0 for all other events. In line with

[126] The event study results and cross-sectional tests are robust to the return calculation method. For instance, the estimated coefficent of the signed mean variable *ALL* in a market model regression, which regresses discrete (log) stock returns on discrete (log) market returns and discrete (log) changes in interest rates is 0.0037247 with a t-statistic of 4.91 (0.0034516 with a t-statistic of 4.58).

[127] See http://www.stoxx.com/indices/index_information.html?symbol=BKXP (last retrieved: November 23, 2010).

hypothesis 1, the predicted sign of *LESS_FV* is positive.

3. *MORE_DISCL* is an indicator variable that captures the cumulative stock market reaction to all events that change the likelihood of more fair value disclosure in line with hypothesis 2. The indicator variable is set to +1 for all events that increase (decrease) the likelihood of more (less) fair value disclosures. It is set to −1 for all events that decrease (increase) the likelihood of more (less) fair value disclosures. It is set to 0 for all other events. In line with hypothesis 2, the predicted sign of *MORE_DISCL* is positive.
4. *RECLASS* is an indicator variable that captures stock market reactions related to reclassifications between different categories of financial instruments in IAS 39 as well as IFRS 9. It is set to +1 for all events that increase (decrease) the likelihood that the IASB allows (prohibits) reclassifications. It is set to −1 for all events that increase (decrease) the likelihood that the IASB prohibits (allows) reclassifications. It is set to 0 for all other events. In line with hypothesis 1, the predicted sign of *RECLASS* is positive because reclassifications reduce fair value exposure by definition.
5. *LESS_OffB* is an indicator variable that captures the cumulative stock market reaction of all events that change the likelihood of stricter off-balance sheet rules, which eventually lead to more on-balance recognition of items previously held off-balance. The indicator variable is set to +1 for all events that decrease (increase) the likelihood of more (less) strict off-balance sheet rules. It is set to −1 for all events that increase (decrease) the likelihood of more (less) strict off-balance sheet rules. It is set to 0 for all other events. In line with hypothesis 3, the predicted sign of *LESS_OFFB* is negative.
6. *REPLACE* is an indicator variable that captures stock market reactions to the replacement of IAS 39. It is set to +1 for all events that increase the probability of a timely and comprehensive replacement of IAS 39. It is set to −1 for all events that decrease the probability of a timely and comprehensive replacement of IAS 39. It is set to 0 for all other events.

Table 8.5
Definition of European *SIGNED_MEAN* Variables

This table defines signed mean cumulative average abnormal return variables. The variables disentangle the stock market reaction to several groups of events. *LESS_FV* captures the cumulative stock market reaction to events, which affect fair value exposure. *MORE_DISCL* captures the cumulative stock market reaction to events requiring more comprehensive disclosures on financial instruments. *RECLASS* captures the cumulative stock market reaction to events that affect the likelihood that reclassifications of financial instruments will be allowed under IAS 39 as well as IFRS 9. *LESS_OFFB* captures the cumulative stock market reaction to events that change the likelihood of stricter off-balance sheet rules. *REPLACE* captures the cumulative stock market reaction to events that change the likelihood of the replacement of IAS 39.

		Events included in variable		
Variable	**Pred. Sign**	**No.**	**Short Description**	**Indicator**
LESS_FV	+	2	IASB publishes DP "Reducing Complexity [...]"	−1
		3	EFRAG favors fair value change	+1
		5	CESR supports fair value	−1
		6	Tweedie: no changes to fair value	−1
		7	Politicians against fair value / IAS 39 consistent [...]	+1
		8	IASB plans to consider reclassifications	+1
		9	Trustees suspend due process	+1
		10	IASB publishes "Reclassification of Financial Assets"	+1
		11	EU endorses reclassifications / [...]"	+1
		12	IASB publishes guidance on fair value measurement	+1
		20	IASB seeks input on FASB staff positions	+1
		21	FASB and IASB joint board meeting I	+1
		23	EU ministers pressure for changes	+1
		24	IASB rejects US changes	−1
		25	EU: fair value changes for 2009 annual reports	+1
		27	IASB publishes ED "Fair Value Measurement"	+1
		33	IASB rejects widening of fair value	+1
		34	Fair value reform wider than planned	+1
		35	FASB and IASB joint board meeting II	−1
MORE_ DISCL	+	4	IASB strives for strict new disclosure rules [...]	+1
		11	[...] / ED "Improving Disclosures [...]"	+1
		15	IASB issues "Debt Disclosures"	+1
		18	IASB isssues amendments "Improving Disclosures"	+1
		29	CEBS wants improved disclosures	+1
RECLASS	+	7	Politicians against fair value / IAS 39 consistent [...]	+1
		9	Trustees suspend due process	+1
		10	IASB publishes "Reclassification of Financial Assets"	+1
		11	EU endorses reclassifications / [...]"	+1
		13	IASB clarifies effective date for reclassifications	−1
		19	IASB clarifies reclassification of embedded derivatives	+1
		32	Basel Committee favors reclassifications	+1
LESS_OFFB	−	1	IASB plans review of off-balance sheet rules	+1
		14	IASB publishes ED on off-balance sheet risk	+1
		22	IASB publishes ED "Derecognition"	+1
REPLACE	+	26	IASB accelerates IAS 39 replacement	+1
		28	IASB publishes DP "Own Credit Risk"	−1
		30	IASB seeks views on expected loss model	+1
		31	IASB issues ED "Classification and Measurement"	+1
		34	Fair value reform wider than planned	+1

Continued on next page

Table 8.5 - continued from previous page

Variable	Pred. Sign	Events included in variable: No.	Short Description	Indicator
		36	IASB issues "ED Amortised Cost and Impairment"	+1
		37	No EU endorsement of IFRS 9	−1

8.2.2 Cross-sectional Variables

This section defines the variables used in cross-sectional tests. I categorize cross-sectional variables into three different categories in line with hypotheses 5-8. First, section 8.2.2.1 describes variables that measure resilience characteristics such as leverage, firm size and regulatory capital. Second, section 8.2.2.2 specifies variables that measure financial crisis exposure. Third, section 8.2.2.3 defines variables that measure a firm's asset mix such as the relative magnitude of trading or available-for-sale securities.

For the sample of banks, I obtain cross-sectional data items from Bankscope (except for ABX-index data, which is obtained through Reuters 3000 Xtra). On Bankscope, however, a substantial number of balance sheet and regulatory capital items is missing. To maintain sample size, I obtain the 2007-2009 annual reports for all sample banks from their websites and hand-collect missing data items whenever possible. For the sample of financial service firms, I hand-collect all cross-sectional data items from annual reports. As for banks, I obtain annual reports from the companies' investor relations websites. Overall, out of 3,540 cross-sectional observations used in this study, 42.3% (i.e., 1,620) data items are hand-collected.

I store all data items in €-currency in my database. For consistency purposes, I currency-convert data items of sample firms incorporated outside the Euro-Zone by using the currency conversion rates provided by Bankscope for a given financial statement date. In cases where Bankscope provides no currency conversion rate, I convert data items by using the €-foreign exchange rates provided by the European Central Bank (ECB).[128]

8.2.2.1 Resilience Characteristics

To test hypothesis 5a on page 26 (*Regulatory Capital-Hypothesis*), I employ the same set of regulatory capital items as for U.S. bank holding companies (see section 5.2.2 on page 125 for details). *TOTAL_RATIO*, *T1_RATIO*, and *T2_RATIO* measure total regulatory capital, tier 1 regulatory capital, and supplementary tier 2 regulatory capital, respectively. *LEVERAGE* is defined as the leverage ratio and computed as total liabilities over total assets.

SIZE is the natural logarithm of total assets. Total assets are initially stored in single €. *SIZE* is thus not directly comparable to the corresponding U.S. measure, which is initially stored in thousands of U.S. dollars.

I use *RISKY_ASSETS* to test hypothesis 5e on page 28 (*Asset Risk-Hypothesis*). *RISKY_*

[128] Currency conversion rates are available at http://www.ecb.int/stats/exchange/eurofxref/.

ASSETS is defined slightly different compared to the U.S. data set. I compute *RISKY_ASSETS* as the ratio of risk-weighted assets to total balance sheet assets.

I measure all variables as of the fourth quarter of 2007. *TOTAL_RATIO* and *T1_RATIO* are winsorized to a maximum of 30% in the upper tail. *LEVERAGE* and *RISKY_ASSETS* are winsorized at the 5% level in the upper tail. Since the European data set is less rich and lacks the data items required for calculating liquidity and complexity measures, I test neither hypothesis 5c on page 27 (*Liquidity-Hypothesis*) nor the complexity hypothesis.

8.2.2.2 Financial Crisis Exposure

I define the same set of market-based financial crisis exposure variables for European firms as for the U.S. sample. Thus, I measure financial crisis exposure based on the sensitivity of daily stock returns to daily changes in the ABX.HE indices provided by Markit as well as based on correlation between stock returns and index changes. Section 5.2.2.2.2 on page 130 describes the variable construction in detail.

Due to a lack of available data for European banks, I do not construct *SECURITIZATION* as a balance-sheet based measure of financial crisis exposure. I also do not compute *CRISIS_LOSS* for the European samples.

8.2.2.3 Asset Mix

This section defines the following variables to test hypothesis 7 on page 30 (*Asset Mix-Hypothesis*):

1. *AFS* is the total book value of available-for-sale financial assets scaled by total assets.
2. *AFS_OCI* is the total book value of gains and losses from available for sale financial assets accumulated in other comprehensive income (OCI), scaled by total assets.
3. *FVtPL* is the total book value of assets recognized on the balance sheet at fair value with changes in fair value recognized in profit or loss. I measure *FVtPL* relative to total assets.
4. *FVtPLexD* is the same as *FVtPL* but excludes derivatives. I exclude derivatives to test separately if magnitude of the stock market reaction to changes to accounting standards for financial instruments is related to firms' holdings of financial derivatives.
5. *DERIV* is the total book value of derivative financial assets scaled by total assets.
6. *FV* is the total book value of all financial assets accounted for at fair value on the balance sheet relative to total assets.

All variables in this section are measured as of the fourth quarter of 2007 and winsorized at the 5% level in the upper tail.

8.3 Descriptive Statistics

This section presents descriptive statistics for the cross-sectional variables defined in the previous section. Table 8.6 on the following page reports summary statistics of the three groups of cross-sectional variables (i.e., resilience characteristics, financial crisis exposure, and asset mix) for 190 European banks and 140 financial service firms (FSF). Table 8.7 on page 229

reports Pearson correlations. The summary statistics are discussed in subsections 8.3.1 to 8.3.3.

Table 8.6
European Summary Statistics

This table reports summary statistics for cross-sectional variables of 190 European banks and 140 financial service firms (FSFs). Section 8.2.2 on page 225 contains variable definitions. Panels A, B, C, D, E contain descriptive statistics for variables measuring resilience, financial crisis exposure, and asset mix, respectively. Data is obtained from the Bankscope, hand-collected, and from Reuters 3000 Xtra.

Variable	Sample	N	Mean	Std.Dev.	Min	Q-1	Median	Q-3	Max
Panel A: Resilience Characteristics									
TOTAL_RATIO	Banks	190	12.6823	4.4675	8.3000	10.1400	11.4700	12.8600	30.0000
	FSF	*n/a*							
T1_RATIO	Banks	190	10.3965	5.0647	5.2000	7.3000	8.7200	11.8000	30.0000
	FSF	*n/a*							
T2_RATIO	Banks	190	2.4978	1.8693	0.0000	1.1900	2.6000	3.6600	12.6000
	FSF	*n/a*							
LEVERAGE	Banks	190	0.9088	0.0714	0.2930	0.8967	0.9261	0.9433	0.9658
	FSF	140	0.4339	0.2931	0.0009	0.1797	0.4266	0.6804	0.9658
	Δ		0.4749***	(21.49)					
SIZE	Banks	190	23.2390	2.1006	18.7867	21.6810	23.0107	24.7248	26.9423
	FSF	140	20.3687	2.0965	15.7176	18.8659	20.2416	21.8844	25.5514
	Δ		2.8703***	(12.28)					
RISKY_ASSETS	Banks	190	0.6257	0.1982	0.1483	0.4951	0.6511	0.7668	0.9649
	FSF	*n/a*							
Panel B: Market-Based Financial Crisis Exposure									
ABX.61.AAA	Banks	190	0.4375	0.3672	−0.8132	0.1413	0.3817	0.6966	1.4667
	FSF	140	0.3976	0.2722	−0.1426	0.2065	0.3891	0.5446	1.2706
	Δ		0.0398	(1.08)					
ABX.61.PenAAA	Banks	190	0.7594	0.6704	−2.3164	0.2760	0.6859	1.1419	2.5906
	FSF	140	0.7180	0.5022	−0.3486	0.3243	0.7079	1.0060	2.0948
	Δ		0.0414	(0.62)					
ABX.61.AA	Banks	190	0.2176	0.1664	−0.2265	0.0740	0.2062	0.3590	0.6529
	FSF	140	0.2012	0.1288	−0.0565	0.1060	0.1821	0.2745	0.5970
	Δ		0.0165	(0.97)					
ABX.61.A	Banks	190	0.1768	0.1334	−0.1475	0.0742	0.1637	0.2842	0.4723
	FSF	140	0.1590	0.1077	−0.0587	0.0730	0.1518	0.2188	0.4577
	Δ		0.0178	(1.30)					
ABX.61.BBB	Banks	190	0.0865	0.0895	−0.1901	0.0246	0.0767	0.1439	0.3623
	FSF	140	0.0794	0.0693	−0.1061	0.0312	0.0769	0.1236	0.3239
	Δ		0.0072	(0.79)					
ABX.61.BBB−	Banks	190	0.1212	0.1112	−0.2432	0.0446	0.1091	0.1980	0.4142
	FSF	140	0.1107	0.0929	−0.1116	0.0443	0.1064	0.1625	0.4116
	Δ		0.0105	(0.91)					
ABX.61.AAA	Banks	190	0.1605	0.1051	−0.0994	0.0883	0.1694	0.2394	0.3571
_corr	FSF	140	0.1512	0.0880	−0.0634	0.0893	0.1513	0.2120	0.3559
	Δ		0.0093	(0.85)					
ABX.61.PenAAA	Banks	190	0.1469	0.0995	−0.1829	0.0815	0.1455	0.2154	0.3639
_corr	FSF	140	0.1444	0.0881	−0.0807	0.0785	0.1446	0.2113	0.3518
	Δ		0.0025	(0.24)					
ABX.61.AA_corr	Banks	190	0.1657	0.0999	−0.1330	0.0892	0.1772	0.2427	0.3452
	FSF	140	0.1578	0.0822	−0.0407	0.1004	0.1558	0.2149	0.3461
	Δ		0.0079	(0.77)					
ABX.61.A_corr	Banks	190	0.1353	0.0824	−0.0586	0.0794	0.1456	0.1992	0.2950
	FSF	140	0.1249	0.0736	−0.0641	0.0681	0.1202	0.1854	0.2628
	Δ		0.0104	(1.19)					
ABX.61.BBB	Banks	190	0.0602	0.0570	−0.1763	0.0292	0.0610	0.1007	0.1889
_corr	FSF	140	0.0586	0.0457	−0.0614	0.0245	0.0609	0.0906	0.1479
	Δ		0.0017	(0.29)					

Continued on next page

Table 8.6 - continued from previous page

Variable	Sample	N	Mean	Std.Dev.	Min	Q-1	Median	Q-3	Max
ABX.61.BBB−_corr	Banks	190	0.0783	0.0636	−0.2041	0.0443	0.0806	0.1184	0.2393
	FSF	140	0.0737	0.0529	−0.0460	0.0367	0.0753	0.1123	0.1807
	Δ		0.0045	(0.69)					
Panel C: Asset Mix									
AFS	Banks	190	0.0719	0.0777	0.0000	0.0070	0.0581	0.1004	0.3950
	FSF	140	0.0968	0.1415	0.0000	0.0000	0.0099	0.1542	0.3950
	Δ		−0.0248*	(−2.04)					
AFS_OCI	Banks	190	0.0229	0.0547	−0.1064	0.0000	0.0034	0.0297	0.2396
	FSF	140	0.0496	0.1180	−0.2571	0.0000	0.0000	0.0343	0.5161
	Δ		−0.0267**	(−2.75)					
FVtPLexD	Banks	190	0.0898	0.1258	0.0000	0.0067	0.0508	0.1084	0.7586
	FSF	140	0.1967	0.2789	0.0000	0.0000	0.0315	0.3880	0.7586
	Δ		−0.1069***	(−4.68)					
FVtPL	Banks	190	0.1125	0.1461	0.0000	0.0140	0.0607	0.1490	0.7606
	FSF	140	0.1988	0.2788	0.0000	0.0027	0.0338	0.3912	0.7606
	Δ		−0.0862***	(−3.64)					
DERIV	Banks	190	0.0228	0.0439	0.0000	0.0010	0.0054	0.0245	0.2893
	FSF	140	0.0021	0.0063	0.0000	0.0000	0.0000	0.0016	0.0622
	Δ		0.0207***	(5.54)					
FV	Banks	190	0.1855	0.1567	0.0000	0.0800	0.1359	0.2545	0.8511
	FSF	140	0.3270	0.3042	0.0000	0.0609	0.2080	0.6185	0.8511
	Δ		−0.1415***	(−5.50)					

Δ denotes the difference between bank holding companies (BHC) and financial service firms (FSF).
***, **, * denote $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively, using a two-tailed test. t-statistics in parentheses.
†††, †, † denote $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively, using a two-tailed Wilcoxon-Mann-Whitney rank-sum test. z-scores in brackets.

Table 8.7
Pearson Correlation Matrix of Variables Measuring European Asset Mix

This table reports Pearson-correlation coefficients of cross-sectional firm characteristics of 190 European banks and 140 financial service firms (FSF). Section 8.2.2 on page 225 contains variable definitions. Correlation coefficients of banks (FSF) are below (above) the diagonal. Data is obtained from Bankscope, Reuters 3000 Xtra, and hand-collected from annual reports.

	T1 RATIO	*T2 RATIO*	*TOTAL RATIO*	*RISKY ASSETS*	*LEVER AGE*	*SIZE*	*FV*	*DERIV*	*AFS*	*FVtPL exD*	*FVtPL*	*AFS OCI*	*ABX.61. AAA*	*ABX.61. AAA_corr*
T1_RATIO	1.0000													
T2_RATIO	−0.4202***	1.0000												
TOTAL_RATIO	0.9218***	−0.1707*	1.0000											
RISKY_ASSETS	−0.1513*	0.1661*	−0.1069	1.0000										
LEVERAGE	−0.6797***	0.2780***	−0.6560***	−0.1469*	1.0000	0.3952***	−0.5364***	0.0020	−0.1654	−0.3986***	−0.3988***	−0.1076	0.0888	−0.0751
SIZE	−0.5301***	0.1995**	−0.4950***	−0.2409***	0.4559***	1.0000	0.0639	0.1727*	0.0690	−0.0007	0.0025	0.1649	0.3359***	0.4459***
FV	0.0309	−0.0491	0.0100	−0.5692***	0.0620	0.2898***	1.0000	0.0153	0.2813***	0.7775***	0.7783***	0.2636**	0.0315	0.2418**
DERIV	−0.1437*	0.0749	−0.1200	−0.4149***	0.1685*	0.3896***	0.5528***	1.0000	0.1054	−0.0388	−0.0175	0.0401	0.0993	0.0761
AFS	0.0922	−0.0753	0.0834	−0.2904***	−0.1260	0.2311**	0.3633***	0.0146	1.0000	−0.3494***	−0.3473***	0.6327***	−0.1666*	−0.1214
FVtPLexD	0.0096	−0.0395	−0.0184	−0.3733***	0.1397	0.0970	0.8085***	0.3342***	−0.1901**	1.0000	0.9998***	−0.1924*	0.1325	0.2806***
FVtPL	−0.0353	−0.0112	−0.0521	−0.4452***	0.1707*	0.2014**	0.8600***	0.5881***	−0.1590*	0.9588***	1.0000	−0.1915*	0.1341	0.2818***
AFS_OCI	−0.0781	0.0210	−0.0794	0.2431***	−0.0915	0.0506	−0.0601	−0.0303	0.0351	−0.0845	−0.0816	1.0000	−0.1181	0.0287
ABX.61.AAA	−0.2314**	0.0551	−0.2161**	−0.2834***	0.2147**	0.7015***	0.2763***	0.3486***	0.1821*	0.1173	0.2062**	−0.0814	1.0000	0.7905***
ABX.61. AAA_corr	−0.2061**	0.0143	−0.2168**	−0.1439*	0.1388	0.6346***	0.1595*	0.2538***	0.1394	0.0307	0.1034	0.0069	0.8799***	1.0000

***, **, * denote $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively, using a two-tailed test.

8.3.1 Resilience Characteristics

Panel A of table 8.6 on page 227 reports summary statistics for resilience characteristics. The regulatory capital figures, including *TOTAL_RATIO*, *T1_RATIO*, and *T2_RATIO* are only available for banks. Similarly, *RISKY_ASSETS* is computed from prudential disclosures and therefore not available for FSFs. The mean of *TOTAL_RATIO* is 12.68 with a standard deviation of 4.46. The minimum value of *TOTAL_RATIO* is 8.3 suggesting that the least capitalized bank is less than half a percentage point above the 8% regulatory capital threshold. Note that both *TOTAL_RATIO* and *T1_RATIO* are winsorized to 30% in the upper tail. The mean of *T1_RATIO* is 10.40%. The median is 8.72% suggesting that the distribution of *T1_RATIO* is skewed to the right. The mean of *T2_RATIO* is 2.5% with a standard deviation of 1.87.

For banks, the mean of *LEVERAGE* is 0.91 with a standard deviation of 0.07. *LEVERAGE* ranges from a minimum value of 0.29 to a a maximum value 0.97. For FSF, the mean value of *LEVERAGE* is 0.43 and less than half the magnitude of banks. The minimum value of *LEVERAGE* for FSFs is 0.0009 suggesting that one financial institution operates with virtually no leverage. The maximum value for *LEVERAGE* is virtually the same as for banks with 0.97. The difference in means between banks and FSFs is statistically significant at the 1% level with a t-statistic of 21.49. This suggests that banks on average operate on significantly higher leverage than FSFs. In terms of *SIZE*, the mean value for banks is 23.24 with a standard deviation of 2.10. This is significantly higher than the corresponding mean for FSFs of 20.37. The difference is statistically significant at the 1% level with a t-statistic of 12.28.

The mean of *RISKY_ASSETS* is 0.63 with a standard deviation of 0.19 suggesting that more than half of a bank's balance sheet attracts non-zero risk-weight on average.

8.3.2 Financial Crisis Exposure

Panel B of table 8.6 reports summary statistics for market-based measures of financial crisis exposure. Summary statistics of variables measuring stock return sensitivity to changes in the ABX.HE indices are reported in rows 1-6. Rows 7-12 report summary statistics for variables capturing the correlation between stock returns and changes in the ABX.HE indices. With the exception of *ABX.61.BBB−*, the mean sensitivity to changes in the ABX.HE indices seems to be monotonically decreasing with credit quality.[129] This relation holds similarly for the median sensitivity. Generally, the difference in means between banks and FSFs is not statistically significant at the 10% level or above with t-values reaching a maximum of 1.30 for *ABX.61.A*. Similar to sensitivities, the mean correlation does not differ between banks and FSFs at a statistically significant magnitude with t-statistics reaching a maximum of 1.19 for *ABX.61.A*. Overall, these summary statistics suggest no difference in resilience between banks and FSFs based on financial crisis exposure.

[129] Note that *ABX.61.PenAAA* can be considered of higher credit quality compared to *ABX.61.AAA* because the shorter time to maturity of the underlying RMBS basket reduces risk of default.

8.3.3 Asset Mix

Panel C of table 8.6 reports variables measuring firms' asset mix. Except for derivatives, the mean value for all variables measuring asset mix is significantly higher for FSFs compared to banks. The mean of *AFS* for banks is 0.07 suggesting that banks on average classify about 7% of their assets as available-for-sale. For FSFs, the mean of *AFS* is 9.68%, which is significantly above the mean for banks at the 10% level with a t-statistic of -2.04. Note, however, that the median for FSFs is only about one tenth the magnitude of the mean suggesting that the mean is affected by positive outliers.

AFS_OCI, which measures total cumulative gains and losses from available-for-sale securities as a percentage of total assets, is 2.29% for banks and 4.96% for FSFs. The difference is statistically significant at the 5% level with a t-statistic of -2.75.

The mean of *FVtPLexD*, which measures all securities classified as fair value through profit and loss excluding derivatives, is about 9% for banks and about 20% for FSFs. The median, however, is 3.15% for FSFs suggesting again that positive outliers drive up the mean. For banks, *FVtPL* is 11.25% with a high standard deviation of 14.61%. For FSFs, the mean is 19.88%. The difference is statistically significant at the 1% level with a t-statistic of -3.64.

The mean of *DERIV* is 2.28% suggesting that banks on average invest around 2% of their assets in derivatives. Note that the maximum value of *DERIV* is 29.93% indicating that one bank in the sample devotes almost one third of its assets to derivative financial instruments. The mean of *DERIV* for FSFs is only 0.21% and significantly lower compared to banks suggesting that FSFs on average are less active in derivative markets.

The mean of *FV* indicates that banks (FSFs) on average acoount for 18.55% (32.7%) of their assets at fair value. Overall, the variables measuring asset mix suggest that FSFs hold more asssets at fair value and therefore should be more affected by changes to accounting standards for financial instruments if adverse effects of fair value accounting evolve alone from the presence of this accounting regime.

9 European Empirical Results

This chapter reports empirical results of event study and cross-sectional tests for stock market reactions to changes to European accounting standards for financial instruments. Section 9.1 reports event study results. Section 9.2 on page 238 discusses the empirical results of cross-sectional tests. Finally, section 9.3 on page 252 concludes.

9.1 Stock Market Reactions

This section reports and examines the empirical results of event study tests of both individual events and cumulative groups of events in subsections 9.1.1 and 9.1.2, respectively.

9.1.1 Individual Events

Table 9.1 on page 234 reports market reactions to 37 key events related to changes to accounting standards for financial instruments and off-balance sheet items for 190 European banks and 140 financial service firms. Stock market reactions are estimated using the augmented market model regression over the period from January 2008 to December 2009 (508 trading days). Individual events are represented by indicator variable D_kt, which are set to one during the event window and to zero otherwise. Estimated coefficients on indicator variables D_kt represent $\overline{CAR}_k(\tau_1, \tau_2)$, which is the average cumulative abnormal return of all sample firms i during event k spanning from event day τ_1 to event day τ_2.

For banks, 31 (83.78%) out of 37 individual events are of the sign predicted by hypotheses 1-4. In other words, only six events, i.e., 16.22%, are not of the predicted sign and, thus, direction-wise not in line with hypothesis 1-4. I use a binomial test on a dummy variable coded as one if the market reaction to event k is of the predicted sign and as zero otherwise. Testing a hypothetical value of 50% yields $p = 0.0000$ on the one-sided tests indicating that the actual portion of market reactions of the predicted sign is significantly above the 50% threshold in a non-parametric test. Overall, it is highly unlikely that directional consistency of actual and predicted market reactions is due to chance. Rather, the direction of market reactions of bank stocks is overall consistent with hypotheses 1-4.

In terms of statistical significance, 21 (56.76%) out of 37 events are statistically significant at the 10% level or above. 19 (51.35%) events are both of the predicted sign and statistically significant at the 10% level or above. t-statistics of estimated coefficients for the 19 events range from a minimum of -4.89 (event no. 37) to a maximum of 10.69 (event no. 25). Again, this evidence suggests that market reactions to changes to accounting standards are consistent with hypotheses 1-4 and are not due to chance.

Considering the economic significance of events, which are both of the predicted sign and statistically significant, abnormal returns range from a maximum of 1.76% (event no. 20) to a minimum of -1.04% (event no. 35). The mean market reaction among those events amounts

to 0.50%. Overall, abnormal returns amount to a considerable magnitude given that these returns are computed over event windows as short as one to three trading days.

For financial service firms (FSFs), 26 (70.27%) out of the 37 events are of the predicted sign. Only 14 out of the 26 events are statistically significant at the 10% level or above. That is, 37.84% of all 37 events are both of the predicted sign and statistically significant. This suggests that some stock market reactions for FSFs are consistent with hypotheses 1-4. The effect, however, is substantially less pronounced compared to banks because 23 market reactions are either not of the predicted sign, not statistically significant or both.

Regarding the economic significance of statistically significant market reactions that are of the predicted sign, abnormal returns range from a maximum of 1.98% (event no. 23) to a minimum of -0.7% (event no. 35). The mean market reactions for these 14 events is 0.37%.

Overall, the empirical results table 9.1 on the next page suggest that stock market reactions for banks are consistent with hypotheses 1-4. This holds in terms of both statistical and economic significance. For financial service firms (FSFs), stock market reaction are also generally consistent with hypothesis 1-4, but the effect is less pronounced in terms of the number of stock market reactions that are of the predicted sign and regarding both statistical and economic significance. I interpret this evidence as suggesting that banks benefit relatively more from changes to accounting standards for financial instruments compared to FSFs presumably due to the missing link between balance sheet values and regulatory capital requirements for FSFs.

Table 9.1
Stock Market Reactions to Individual European Events

This table reports market reactions to 37 key events related to changes of accounting standards for financial instruments and off-balance sheet items for 190 European banks and 140 financial service firms (FSFs). The stock market reaction is estimated using the augmented market model regression in equation (9.1) over the period from January 2008 to December 2009 (508 trading days). Daily stock returns of sample firms are regressed on daily returns of the STOXX Europe TMI index, daily relative changes of 3-months AAA-rated Government Euro-area spot rates, country fixed-effects and 37 event indicator variables. Each indicator variable represents one event window. Indicator variables are set to one during the event window and to zero otherwise. Event windows are defined in table 7.3 on page 212. Daily stock prices of sample firms, daily STOXX Europe TMI index quotes and 3-months AAA-rated Government Euro-area spot rate are obtained through Datastream.

$$R_{it} = \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \sum_{k=1}^{K} \gamma_k D_{kt} + \varepsilon_{it} \tag{9.1}$$

The regression model includes country fixed-effects to control for unobservable country differences.

			Pred.	Banks		FSFs	
k	**Date**	**Event Short Description**	**Sign**	γ_k	**t-stat**[a]	γ_k	**t-stat**[a]
1	1/8/08	IASB plans review of off–balance sheet rules	−	−0.0032***	−3.55	−0.0047	−0.98
2	3/18/08	IASB publishes DP “Reducing Complexity [...]”	−	−0.0014	−0.59	−0.0065*	−1.79
3	4/2/08	EFRAG favors fair value change	+	0.0008	0.21	−0.0033*	−1.77
4	4/17/08	IASB strives for strict new disclosure rules for off–balance [...]	+	0.0009	0.39	−0.0004	−0.24
5	5/29/08	CESR supports fair value	−	−0.0003	−0.13	0.0018	0.95
6	7/10/08	Tweedie: no changes to fair value	−	0.0012	0.39	0.0031***	4.22
7	10/1/08	Politicians against fair value / IAS 39 consistent with US [...]	+	0.0075***	2.71	0.0029**	2.48
8	10/3/08	IASB plans to consider reclassifications	+	−0.0099***	−2.86	−0.0188***	−15.82
9	10/9/08	Trustees suspend due process	+	0.0047	0.62	0.0009	0.10
10	10/13/08	IASB publishes “Reclassification of Financial Assets”	+	0.0061*	1.76	0.0133***	5.78
11	10/15/08	EU endorses reclassifications / ED “Improving Disclosures [...]”	+	0.0037***	2.65	0.0028**	2.32
12	10/31/08	IASB publishes guidance on fair value measurement	+	0.0030	0.45	0.0103	0.79
13	11/27/08	IASB clarifies effective date for reclassifications	−	−0.0075	−1.39	−0.0004	−0.09
14	12/18/08	IASB publishes ED on off-balance sheet risk	−	−0.0005	−0.23	−0.0018**	−2.45
15	12/23/08	IASB issues ED “Debt Disclosures”	+	0.0111***	7.16	0.0128***	2.66
16	1/30/09	IASB publishes ED “IFRIC 9 and 16 amendments”	+	0.0053	1.02	−0.0004	−0.63
17	2/23/09	IASB plans to replace IAS 39 within months	+	−0.0033*	−1.65	−0.0045	−0.95

Continued on next page

Table 9.1 - continued from previous page

k	Date	Event Short Description	Pred. Sign	Banks		FSFs	
				γ_k	t-stat[a]	γ_k	t-stat[a]
18	3/5/09	IASB isssues amendments "Improving Disclosures"	+	−0.0009	−0.29	−0.0011	−0.44
19	3/12/09	IASB clarifies reclassification of embedded derivatives	+	0.0078***	8.13	0.0007	0.74
20	3/18/09	IASB seeks input on FASB staff positions	+	0.0176***	9.17	0.0074***	17.25
21	3/24/09	IASB and FASB joint meeting	+	0.0040***	3.39	0.0035	1.28
22	3/31/09	IASB publishes ED "Derecognition"	−	−0.0002	−0.09	−0.0040	−1.21
23	4/3/09	EU ministers pressure for changes	+	0.0161***	3.68	0.0198***	15.89
24	4/24/09	IASB rejects US changes	−	−0.0024	−1.44	−0.0005	−0.28
25	5/7/09	EU: fair value changes for 2009 annual reports	+	0.0069***	10.69	0.0044**	1.97
26	5/21/09	IASB accelerates IAS 39 replacement	+	0.0069***	4.68	0.0024	0.73
27	5/28/09	IASB publishes ED "Fair Value Measurement"	+	0.0015***	3.57	−0.0000	−0.00
28	6/18/09	IASB publishes DP "Own Credit Risk"	−	0.0007	0.15	−0.0020***	−3.62
29	6/24/09	CEBS wants improved disclosures	+	0.0096***	4.07	−0.0008	−0.38
30	6/25/09	IASB seeks views on expected loss model	+	0.0029	1.11	0.0061***	8.07
31	7/14/09	IASB issues ED "Classification and Measurement"	+	0.0051**	2.35	−0.0001	−0.15
32	8/27/09	Basel Committee favors reclassifications	+	0.0020**	2.56	0.0004	0.18
33	9/30/09	IASB rejects widening of fair value	+	0.0048***	5.55	0.0003	0.24
34	10/20/09	Fair value reform wider than planned	+	−0.0012	−0.39	−0.0039**	−1.97
35	10/26/09	FASB and IASB joint board meeting	−	−0.0104***	−3.16	−0.0070**	−2.14
36	11/5/09	IASB issues "ED Amortised Cost and Impairment"	+	0.0013**	2.46	0.0015*	1.79
37	11/12/09	No EU endorsement of IFRS 9	−	−0.0030***	−4.89	−0.0026**	−2.24
α				−0.0000	−0.03	0.0017	0.50
β_1				0.6921***	27.09	0.6084***	29.03
β_2				0.0485***	3.09	0.0421***	3.22
Adjusted R^2				0.1502		0.1156	
Number of observations				96,330		70,980	

a *t*–statistics are calculated based on one-way cluster-robust standard errors, clustered by time.
***, **, * denote $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively, using a two-tailed test.

9.1.2 Cumulative Events

Table 9.2 on the next page reports cumulative market reactions to six groups of events related to changes to accounting standards for financial instruments and off-balance sheet items for 190 European banks and 140 financial service firms (FSFs). The predicted signs of *ALL*, *LESS_FV*, *MORE_DISCL*, and *OFFB* are derived from hypotheses 1-4. The predicted sign of *RECLASS* is positive because I hypothesize that events surrounding possible reclassifications of financial instruments within asset categories of IAS 39 and IFRS 9 are associated with positive market reactions for financial institutions. Also, the predicted sign of *REPLACE* is positive hypothesizing that events surrounding the replacement of IAS 39 are associated with positive market reactions for financial institutions. The underlying rationale of the predicted sign for both *RECLASS* and *REPLACE* is the same as for hypotheses 1: changes to accounting standards, which reduce fair value-exposure, i.e., the impact of balance sheet values on equity and capital, are associated with positive market reactions because such changes relief pressure from binding capital requirements.

For banks, the estimated coefficient of *ALL* is positive and of the predicted sign. It is statistically significant at the 1% level with a t-statistic of 4.91. This suggests that banks exhibit a positive market reaction in line with hypothesis 1-4. This market reaction is also economically significant with an annualized return of 1.84%. For FSFs, the estimated coefficient of *ALL* is also of the predicted positive sign. It is statistically significant at the 5% level with a t-statistic of 2.55. The estimated coefficient is equivalent to an annualized return of 1.14% for FSFs. The difference between banks and FSFs is 0.014 and significant at the 5% level with a t-statistic of 2.12. This is equivalent to an annualized abnormal return of 0.69%.

For banks, the cumulative market reaction to fair value events is of the predicted sign. The estimated coefficient of *LESS_FV* is 0.0041 and significant at the 1% level with a t-statistic of 3.40. The estimated coefficient adds up to an annualized abnormal return of 3.95%. For FSFs, the market reaction is also of the predicted sign but significant at the 10% level with a t-statistic of 1.75. The estimated coefficient of *LESS_FV* is 0.0027, which amounts to an annualized abnormal return of 2.59%. The difference between banks and FSFs slightly misses the 10% significance threshold with a t-statistic of 1.62. Overall, the evidence on fair value events suggests that both banks and financial service firms benefit from changes to accounting standards for financial instruments, which relax fair value accounting rules.

For banks, the estimated coefficient of *MORE_DISCL* is of the predicted sign and statistically significant at the 5% level with a t-statistic of 2.21. The estimated coefficient of 0.0041 adds up to an annualized abnormal return of 17.78%. For FSFs, the estimated coefficient on more disclosure is not statistically significant at the 10% level or above. Also, the difference between the estimated coefficients for banks and FSFs is not statistically significant at the 10% level or above.

For banks the estimated coefficient of *RECLASS* is positive and, thus, of the predicted sign. The coefficient is statistically significant at the 1% level with a t-statistic of 3.58. The

estimated coefficient of 0.0055 adds up to an annualized abnormal return of 15.15%. For FSFs, the estimated coefficient is also positive as predicted and statistically significant at the 10% level. The estimated coefficient of 0.0032 is equivalent to an annualized return of 8.56%. The difference between banks and FSFs is statistically significant at the 10% level with a t-statistic of 1.74. This suggests that banks benefit comparably more on average from changes to accounting standards, which permit reclassification of financial instruments within accounting categories of IAS 39 and IFRS 9, respectively.

The estimated coefficient for off-balance sheet events, i.e., *OFFB* is of the predicted sign for banks, but not statistically significant at the 10% level of or above with a t-statistic of -1.54. For FSFs, the estimated coefficient is both of the predicted sign and statistically significant at the 10% level. For banks, the market reaction to IAS 39 replacement events is of the predicted sign and statistically significant at the 5% level with a t-statistic of 1.98. The estimated coefficient of 0.0023 adds up to an annualized abnormal return of 6.09%. For FSFs, the estimated coefficient is not statistically significant at the 10% level or above with a t-statistic of 1.51. The difference between banks and FSF is also not statistically significant at the 10% level or above with a t-statistic of 0.78.

Table 9.2
Stock Market Reactions to Cumulative European Events

This table reports the cumulative market reaction to six event groups related to changes of European accounting standards for financial instruments and off-balance sheet items for 190 European banks and 140 financial service firms (FSFs). The stock market reaction is estimated using the augmented market model regression in equation (3.23) over the period from January 2008 to December 2009 (508 trading days). Daily stock returns of sample firms are regressed on daily returns of the STOXX Europe TMI index, daily relative changes of 3-months AAA-rated Government Euro-area spot rates, country fixed-effects, and six *SIGNED_MEAN* variables. *SIGNED_MEAN* variables are indicator variables, which disentangle the stock market reaction to several groups of cumulative events. Table 8.5 on page 224 defines the *SIGNED_MEAN* variables, except for *ALL*, which captures the cumulative stock market reaction to all events defined in table 7.3 on page 212. The difference of the estimated coefficients of the *SIGNED_MEAN* variables between the sample of banks and FSFs is tested by estimating equation (3.24). Daily return observations of both banks and FSFs are pooled and regressed on daily returns of the STOXX Europe TMI index, daily relative changes of 3-months AAA-rated Government Euro-area spot rates, country fixed-effects, the *SIGNED_MEAN* variable, the firm type indicator D^{BHC} and the three interaction variables $D^{BHC\times MKT}$, $\mathrm{D}^{\mathrm{BHC\times INTEREST}}$ and $\mathrm{D}^{\mathrm{BHC\times SIGNED\_MEAN}}$. The t-statistic of the estimated coefficient of $\mathrm{D}^{\mathrm{BHC\times SIGNED\_MEAN}}$ is used to evaluate the significance of the difference of the estimated coefficients of the *SIGNED_MEAN* variables between the sample of banks and FSFs. Daily stock prices of sample firms, daily STOXX Europe TMI index quotes and 3-months AAA-rated Government Euro-area spot rate are obtained through Datastream.

$$R_{it} = \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \beta_3 SIGNED\_MEAN + \varepsilon_{it} \tag{3.23}$$

$$\begin{aligned} R_{it} =& \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \beta_3 SIGNED\_MEAN + \beta_4 D^{BHC} + \beta_5 D^{BHC\times MKT} \\ &+\beta_6 D^{BHC\times INTEREST} + \beta_7 D^{BHC\times SIGNED\_MEAN} + \varepsilon_{it} \end{aligned} \tag{3.24}$$

Signed Mean	**Pred. Sign**	**Banks**	**FSF**	**Δ**
ALL	+	0.0037***	0.0023**	0.0014**
		(4.91)	(2.55)	(2.12)

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Table 9.2 – continued from previous page

Signed Mean	Pred. Sign	Banks	FSF	Δ
LESS_FV	+	0.0041***	0.0027*	0.0015
		(3.40)	(1.75)	(1.62)
MORE_DISCL	+	0.0041**	0.0030	0.0011
		(2.21)	(1.32)	(0.48)
RECLASS	+	0.0055***	0.0032*	0.0024*
		(3.58)	(1.75)	(1.74)
OFFB	−	−0.0017	−0.0039*	0.0021
		(−1.54)	(−1.91)	(0.99)
REPLACE	+	0.0023**	0.0014	0.0009
		(1.98)	(1.51)	(0.78)

***, **, * denote $p < 0.01$, $p < 0.025$, $p < 0.05$, respectively, using a one-tailed test if the coefficient has the predicted sign, and a two-tailed test otherwise.
a *t*-statistics in parentheses.
t-statistics are calculated based on one-way cluster-robust standard errors, clustered by time.

9.2 Cross-Sectional Results

This section reports tests of cross-sectional hypotheses. Subsection 9.2.1 discusses empirical results of tests of hypothesis 5 (*Resilience-Hypothesis*), which predicts that less resilient financial institutions face higher sensitivity to distortions in capital markets and, therefore, benefit relatively more from changes to accounting standards for financial instruments. Recall from section 2.2.2 on page 24 that hypotheses 5a to 5e add additional detail to hypothesis 5 by specifying predictions regarding regulatory capital, leverage, liquidity, size and complexity, as well as asset risk. The related empirical results are discussed all together in subsection 9.2.1.

Subsection 9.2.2 reports empirical results of tests of hypothesis 6 (*Financial Crisis Exposure-Hypothesis*). Hypothesis 6 predicts that financial institutions with a higher exposure to the financial crisis benefit relatively more from changes to accounting standards for financial instruments.

Finally, subsection 9.2.3 is concerned with empirical results of tests of hypothesis 7 (*Asset Mix-Hypothesis*), which predicts that the magnitude of the stock market reaction to changes to accounting standards for financial instruments is associated with the composition and structure of a firm's balance sheet.

9.2.1 Resilience Characteristics

Panel A of table 9.3 reports cross-sectional regression results for market reactions to all events. In model 1, the estimated coefficients of *TOTAL_RATIO* and *RISKY_ ASSETS* are of the predicted sign. The coefficient of *SIZE* is negative and, thus, not of the predicted sign. The estimated coefficient in model 1, however, are not statistically significant at the 10% level or above with *t*-statistics of −1.45, −1.12, and 0.26 for *TOTAL_RATIO*, *SIZE*, and *RISKY_ ASSETS*, respectively. In model 2, the estimated coefficient of *T1_RATIO* is of the predicted sign and statistically significant at the 5% level with a *t*-statistic of −2.32 suggesting that banks

with lower tier 1 regulatory capital ratios benefit more on average from changes to accounting standards for financial instruments. The estimated coefficients of *SIZE* and *RISKY_ASSETS* are not statistically significant at the 10% level or above. In model 3, the estimated coefficients of *T2_RATIO* and *RISKY_ASSETS* are of the predicted sign, but not statistically significant at the 10% level or above. The estimated coefficient of *SIZE* is not of the predicted sign, but it is also not statistically significant. In model 4, the estimated coefficients of *LEVERAGE* are of the predicted sign for both banks and FSFs but not statistically significant. The estimated coefficients of *SIZE* are negative and, therefore, not of the predicted sign for both banks and FSFs. Overall, there is strong evidence that tier 1 regulatory capital is negatively associated with stock market reactions to changes to accounting standards for financial instruments. This is consistent with hypothesis 5a.

Panel D of table 9.3 reports cross-sectional regression results for market reactions to fair value events. In model 1, no estimated coefficient is statistically significant at the 10% level or above. In model 2, the estimated coefficient of *T1_RATIO* is statistically significant at the 5% level with a t-statistic of -2.43. This is consistent with the regulatory capital hypothesis, which predicts that firms with lower regulatory capital benefit more on average from changes to accounting standards for financial instruments. In model 3, the estimated coefficients for both banks and FSFs are not statistically significant at the 10% level or above. In model 4, the estimated coefficients of *LEVERAGE* are of the predicted sign, but are not statistically significant. The estimated coefficient of *SIZE* is again negative and, thus, not of the predicted sign. The estimated coefficients in model 4, however, are not statistically significant.

Panel C of table 9.3 reports cross-sectional regression results for disclosure events. The estimated coefficients in models 1-3 are not statistically significant at the 10% level or above. Except for *T2_RATIO* in model 3, all estimated coefficients are of the predicted sign. In model 4, leverage is of the predicted sign for both banks and FSFs. The estimated coefficient for banks is statistically significant at the 5% level with a t-statistic of 2.24. The corresponding coefficient for FSFs is not statistically significant. The difference of the estimated coefficients of *LEVERAGE* is statistically significant at the 5% level with a t-statistic of 1.96. This suggests that leverage is on average a significant determinant of market reactions to disclosure events for banks but not for FSFs. The estimated coefficient of *SIZE* is of the predicted sign for banks but not for FSFs. The negative coefficient of FSFs is statistically significant at the 5% level with a t-statistic of -2.19. This suggests that smaller FSFs benefit more on average from increased disclosure requirements. This seems plausible because smaller firms more likely exhibit more opaque information environments.

Panel D of table 9.3 reports cross-sectional regression results for reclassification events. In model 1, the estimated coefficients of both *TOTAL_RATIO* and *RISKY_ASSETS* are of the predicted sign, but not statistically significant at the 10% level or above. The estimated coefficient of *SIZE* is negative and, thus, not of the predicted sign. It is statistically significant at the 10% level with a t-statistic of -1.78. In model 2, the estimated coefficient on *T1_RATIO* is of the predicted sign and statistically significant at the 1% level with a t-statistic of -2.74.

As in model 1, the estimated coefficient of *SIZE* is negative and, therefore, not of the predicted sign. The negative coefficient is statistically significant at the 1% level with a t-statistic of -2.77 suggesting that stock market reactions to reclassification events are on average negatively related to firm size. In model 3, the estimated coefficient on *T2_RATIO* is positive and statistically significant at the 1% level with a t-statistic of 3.05. This suggests that banks with higher tier 2 ratios benefit relatively more on average from changes to accounting standards, which allow reclassification of financial assets. This is in line with the U.S. evidence, which suggests that higher tier 2 capital, presumably due to its lower quality compared to tier 1 capital, is generally considered a resilience-depleting firm characteristics. As in model 1 in this panel, the estimated coefficient of *SIZE* in model 3 is negative and statistically significant at the 5% level with a t-statistic of -2.56. *RISKY_ASSETS* are of the predicted sign in models 1-3, but generally not statistically significant at the 10% level or above. In model 4, the estimated coefficient on *LEVERAGE* for banks is positive as predicted and statistically significant at the 10% level with a t-statistic of 1.77. For FSFs, the corresponding coefficient is not statistically significant. The difference of the estimated coefficients for *LEVERAGE* between banks and FSFs is statistically significant at the 5% level with a t-statistic of 1.98 suggesting that leverage is on average a significant determinant of market reactions to reclassification events for banks but not for FSFs.

Panel E of table 9.3 reports cross-sectional regression results for off-balance sheet events. The estimated coefficients in models 1-4 are not statistically significant at the 10% level or above. Accordingly, I find no evidence that resilience characteristics of European banks and FSFs are associated with market reactions to events surrounding changes to off-balance sheet rules.

Panel F of table 9.3 reports cross-sectional regression results for market reactions to IAS 39 replacement events. The estimated coefficients in models 1-4 are not statistically significant at the 10% level or above. Accordingly, there is no empirical evidence in the European sample suggesting that resilience characteristics are associated with market reactions to events surrounding the replacement of IAS 39.

Table 9.3
European Market Reactions Regressed on Resilience Characteristics

This table reports cross-sectional regression results of stock market reactions to changes to accounting standards for financial instruments regressed on resilience characteristics of 190 European banks and 140 financial service firms (FSFs). Panels A, B, C, D, E, F contain regression results for the *SIGNED_MEAN* event variables *ALL*, *LESS_FV*, *MORE_DISCL*, *RECLASS*, *LESS_OFFB*, and *REPLACE*, respectively. Cross-sectional results are based on Sefcik and Thompson (1986) time-series portfolio regressions over the period from January, 2008 to December, 2009 (508 trading days). For each model, the daily time-series of stock returns of a portfolio of sample firms is regressed on daily returns of the STOXX Europe TMI index, daily relative changes of 3-months AAA-rated Government Euro-area spot rates, and the respective *SIGNED_MEAN* event variable. Each cross-sectional estimate equals the estimated coefficient of the event variable in regression 9.2, in which the time-series of portfolio returns corresponds to the k^{th} row of a return matrix weighted by the K firm characteristics in a given model according to the weighting scheme $\mathbf{P} = [\mathbf{F'F}]^{-1}\mathbf{F'R'}$. Section 3.3 on page 47 contains details on the portfolio weighting process. The difference of the estimated coefficients between the bank and FSF sample is tested by estimating equation 9.3. Daily return observations for sample firms, daily STOXX Europe TMI quotes and 3-months AAA-rated Government Euro-area spot rates are obtained from Datastream.

$$\mathrm{R}_t^{\mathbf{P}=[\mathbf{F'F}]^{-1}\mathbf{F'R'}} = \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \beta_3 SIGNED\_MEAN + \varepsilon_t \tag{9.2}$$

$$\begin{aligned}\mathrm{R}_t^{\mathbf{P}=[\mathbf{F'F}]^{-1}\mathbf{F'R'}} =& \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \beta_3 SIGNED\_MEAN + \beta_4 D^{Banks} \\ &+ \beta_5 D^{Banks \times MKT} + \beta_6 D^{Banks \times INTEREST} + \beta_7 D^{Banks \times SIGNED\_MEAN} + \varepsilon_t\end{aligned} \tag{9.3}$$

Panel A: All Events

	Pred. Sign	Model 1	Model 2	Model 3	Model 4		
		Banks	Banks	Banks	Banks	FSF	Δ
TOTAL_RATIO	−	−0.0001					
		(−1.45)					
T1_RATIO	−		−0.0001**				
			(−2.32)				
T2_RATIO	−			−0.0000			
				(−0.29)			
LEVERAGE	+				0.0038	0.0011	0.0027
					(1.05)	(0.83)	(0.71)
SIZE	+	−0.0004	−0.0005	−0.0002	−0.0003	−0.0002	−0.0001
		(−1.12)	(−1.41)	(−0.69)	(−0.91)	(−0.86)	(−0.20)
RISKY_ASSETS	+	0.0005	−0.0000	0.0009			
		(0.26)	(−0.02)	(0.51)			
Controls[a]		YES	YES	YES	YES	YES	YES

Panel B: Fair Value Events

TOTAL_RATIO	−	−0.0002					
		(−1.64)					
T1_RATIO	−		−0.0002**				
			(−2.43)				
T2_RATIO	−			−0.0000			
				(−0.12)			
LEVERAGE	+				0.0028	0.0001	0.0027
					(0.55)	(0.06)	(0.50)
SIZE	+	−0.0004	−0.0005	−0.0002	−0.0002	−0.0003	0.0001

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Table 9.3 - continued from previous page

	Pred. Sign	Model 1	Model 2	Model 3	Model 4		
		Banks	Banks	Banks	Banks	FSF	Δ
		(−0.92)	(−1.19)	(−0.41)	(−0.51)	(−0.98)	(0.19)
RISKY_ ASSETS	+	0.0002 (0.07)	−0.0005 (−0.19)	0.0008 (0.33)			
Controls[a]		YES	YES	YES	YES	YES	YES
Panel C: Disclosure Events							
TOTAL_ RATIO	−	−0.0000 (−0.06)					
T1_RATIO	−		−0.0001 (−0.38)				
T2_RATIO	−			0.0002 (0.76)			
LEVERAGE	+				0.0231** (2.24)	0.0016 (0.42)	0.0216** (1.96)
SIZE	+	0.0007 (0.78)	0.0006 (0.66)	0.0007 (0.85)	0.0003 (0.34)	−0.0014** (−2.19)	0.0017 (1.60)
RISKY_ ASSETS	+	0.0054 (1.06)	0.0050 (0.97)	0.0047 (0.90)			
Controls[a]		YES	YES	YES	YES	YES	YES
Panel D: Reclassification Events							
TOTAL_ RATIO	−	0.0000 (0.13)					
T1_RATIO	−		−0.0004*** (−2.74)				
T2_RATIO	−			0.0006*** (3.05)			
LEVERAGE	+				0.0146* (1.77)	−0.0027 (−0.93)	0.0173** (1.98)
SIZE	+	−0.0013* (−1.78)	−0.0020*** (−2.77)	−0.0016** (−2.56)	−0.0016** (−2.39)	−0.0005 (−1.05)	−0.0011 (−1.25)
RISKY_ ASSETS	+	0.0038 (0.95)	0.0014 (0.34)	0.0015 (0.36)			
Controls[a]		YES	YES	YES	YES	YES	YES
Panel E: Off-Balance Sheet Events							
TOTAL_ RATIO	+	0.0001 (0.46)					
T1_RATIO	+		−0.0000 (−0.22)				
T2_RATIO	+			0.0005 (1.48)			
LEVERAGE	−				0.0079 (0.63)	−0.0016 (−0.35)	0.0095 (0.71)
SIZE	−	0.0014 (1.25)	0.0011 (1.00)	0.0010 (1.10)	0.0011 (1.03)	−0.0005 (−0.69)	0.0016 (1.24)
RISKY_ ASSETS	−	0.0029 (0.46)	0.0021 (0.34)	0.0008 (0.12)			

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Table 9.3 - continued from previous page

	Pred. Sign	Model 1	Model 2	Model 3	Model 4		
		Banks	Banks	Banks	Banks	FSF	Δ
Controls[a]		YES	YES	YES	YES	YES	YES
Panel F: IAS 39 Replacement Events							
TOTAL_RATIO	−	−0.0001 (−0.60)					
T1_RATIO	−		−0.0001 (−0.48)				
T2_RATIO	−			−0.0000 (−0.01)			
LEVERAGE	+				−0.0008 (−0.09)	0.0003 (0.09)	−0.0010 (−0.12)
SIZE	+	−0.0001 (−0.09)	−0.0000 (−0.05)	0.0001 (0.14)	0.0001 (0.15)	0.0001 (0.21)	−0.0000 (−0.01)
RISKY_ASSETS	+	−0.0002 (−0.06)	−0.0003 (−0.07)	0.0001 (0.03)			
Controls[a]		YES	YES	YES	YES	YES	YES

t–statistics in parentheses.
***, **, * denote $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively, using a two-tailed test.
a Control is *BETA*. *BETA* is the estimated coefficient on the CRSP value-weighted index in a market model regression, which regresses the daily stock return of firm i on the CRSP value-weighted index during 2007 and 2008.

9.2.2 Financial Crisis Exposure

Table 9.4 on page 245 reports cross-sectional regression results for variables measuring financial crisis exposure. Note that each estimated coefficient in table 9.4 stems from a separate regression. I run *ABX.61.HE* variables in separate regressions due to multicollinearity.

Panel A of table 9.4 reports cross-sectional regression results for both all events and fair value events regressed on regression-based variables of financial crisis exposure. For all events, the estimated coefficients are generally of the predicted positive sign except for *ABX.61.PenAAA*, for which the estimated coefficient for banks is negative. No estimated coefficient for all events in panel A, however, is statistically significant at the 10% level or above. Accordingly, I find no evidence that market reactions to all events are associated on average with regression-based measures of financial crisis exposure. For fair value events in panel A, the estimated coefficients are of the predicted sign with the exception of *ABX.61.BBB*, for which the estimated coefficient is negative for both banks and FSFs. As for all events, the estimated coefficients for fair value events are not statistically significant at the 10% level or above. Therefore, the empirical results in panel A provide no evidence suggesting that market reactions to fair value events are associated with sensitivity-based measures of financial crisis exposure.

Panel B of table 9.4 reports cross-sectional regression results for both all events and fair value events regressed on correlation-based variables measuring financial crisis exposure. The

estimated coefficients for both all events and fair value events are not statistically significant at the 10% level or above. Accordingly, I find no evidence in support of an association of stock market reactions to both all events and fair value events with correlation-based measures of financial crisis exposure.

Panel C of table 9.4 reports cross-sectional regression results for disclosure and reclassification events. For disclosure events, the estimated coefficients for banks are not statistically significant at the 10% level or above. For FSFs, the estimated coefficient of *ABX.61.PenAAA* is statistically significant at the 10% level with a t-statistic of 1.69. Similarly, the estimated coefficients on *ABX.61.A*, *ABX.61.BBB*, and *ABX.61.BBB−* are statistically significant at the 5% level with t-statistics of 1.99, 2.26, and 2.16, respectively. This suggests that market reactions to disclosure events are on average positively associated with financial service firms' sensitivity to changes in the ABX.HE indices. There is, however, no evidence suggesting that this relationship holds similarly for European banks. For reclassification events, the estimated coefficients for banks are not statistically significant at the 10% level or above. For FSFs, the estimated coefficient of *ABX.61.BBB−* .61 is statistically significant at the 10% level with a t-statistic of 1.90.

Panel D of table 9.4 reports cross-sectional regression results for both disclosure and reclassification events regressed on correlation-based variables measuring financial crisis exposure. For disclosure events, the estimated coefficients for both banks and FSFs are not statistically significant at the 10% level or above. For reclassification events, the estimated coefficient for FSFs on *ABX.61.BBB−* is statistically significant at the 10% level. This suggests that the association of stock market reactions to reclassification events with measures of financial crisis exposure is robust to the choice of regression- versus correlation-based measures regarding *ABX.61.BBB−*.

Panel A of table 9.4 reports cross-sectional regression results for both off-balance sheet and IAS 39 replacement events regressed on regression-based variables of financial crisis exposure. For banks, the estimated coefficients for off-balance sheet events are not statistically significant at the 10% level or above. All estimated coefficients, however, are of the predicted negative sign for banks. Also for off-balance sheet events, the estimated coefficient of FSFs for *ABX.61.BBB* is statistically significant at the 10% level with a t-statistic of -1.84. For IAS 39 replacement events, the estimated coefficients for both banks and FSFs are not statistically significant at the 10% level or above. Accordingly, the evidence reported in panel A supports no association of market reactions to IAS 39 replacement events with regression-based measures of financial crisis exposure.

Panel F of table 9.4 reports cross-sectional regression results for both off-balance sheet and IAS 39 replacement events regressed on correlation-based variables measuring financial crisis exposure. The estimated coefficients are not statistically significant at the 10% level or above.

Table 9.4
European Market Reactions Regressed on Variables Measuring Financial Crisis Exposure

This table reports cross-sectional regression results of stock market reactions to changes to accounting standards for financial instruments regressed on resilience characteristics of 190 European banks and 140 financial service firms (FSFs). Panels A, B, C, D, E, F contain regression results for the *SIGNED_MEAN* event variables *ALL*, *LESS_FV*, *MORE_DISCL*, *RECLASS*, *LESS_OFFB*, and *REPLACE*, respectively. Cross-sectional results are based on Sefcik and Thompson (1986) time-series portfolio regressions over the period from January, 2008 to December, 2009 (508 trading days). For each model, the daily time-series of stock returns of a portfolio of sample firms is regressed on daily returns of the STOXX Europe TMI index, daily relative changes of 3-months AAA-rated Government Euro-area spot rates, and the respective *SIGNED_MEAN* event variable. Each cross-sectional estimate equals the estimated coefficient of the event variable in regression 9.4, in which the time-series of portfolio returns corresponds to the k^{th} row of a return matrix weighted by the K firm characteristics in a given model according to the weighting scheme $\mathbf{P} = [\mathbf{F'F}]^{-1}\mathbf{F'R'}$. Section 3.3 on page 47 contains details on the portfolio weighting process. The difference of the estimated coefficients between the bank and FSF sample is tested by estimating equation 9.5. Daily return observations for sample firms, daily STOXX Europe TMI quotes and 3-months AAA-rated Government Euro-area spot rates are obtained from Datastream.

$$\mathrm{R}_t^{\mathbf{P}=[\mathbf{F'F}]^{-1}\mathbf{F'R'}} = \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \beta_3 SIGNED\_MEAN + \varepsilon_t \tag{9.4}$$

$$\begin{aligned}\mathrm{R}_t^{\mathbf{P}=[\mathbf{F'F}]^{-1}\mathbf{F'R'}} =& \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \beta_3 SIGNED\_MEAN + \beta_4 D^{Banks} \\ &+ \beta_5 D^{Banks \times MKT} + \beta_6 D^{Banks \times INTEREST} + \beta_7 D^{Banks \times SIGNED\_MEAN} + \varepsilon_t\end{aligned} \tag{9.5}$$

Panel A: Regression-Based Variables: All Events and Fair Value Events

	Pred. Sign	All Events			Fair Value Events		
		Banks	FSF	Δ	Banks	FSF	Δ
ABX.61.AAA	+	0.0010	0.0002	0.0008	0.0024	0.0016	0.0008
		(0.52)	(0.17)	(0.34)	(0.85)	(0.88)	(0.24)
ABX.61.	+	−0.0002	0.0002	−0.0004	0.0010	0.0008	0.0002
PenAAA		(−0.22)	(0.32)	(−0.35)	(0.63)	(0.92)	(0.09)
ABX.61.AA	+	0.0049	0.0004	0.0045	0.0057	0.0029	0.0028
		(1.18)	(0.16)	(0.91)	(0.98)	(0.77)	(0.40)
ABX.61.A	+	0.0064	0.0009	0.0055	0.0084	0.0021	0.0063
		(1.27)	(0.28)	(0.92)	(1.22)	(0.47)	(0.77)
ABX.61.BBB	+	0.0059	0.0001	0.0058	−0.0008	−0.0035	0.0026
		(0.87)	(0.03)	(0.72)	(−0.09)	(−0.58)	(0.24)
ABX.61.	+	0.0040	0.0015	0.0026	0.0015	0.0016	−0.0001
BBB−		(0.76)	(0.42)	(0.41)	(0.21)	(0.34)	(−0.01)
Controls[a]		YES	YES	YES	YES	YES	YES

Panel B: Correlation-Based Variables: All Events and Fair Value Events

ABX.61.	+	0.0008	−0.0004	0.0011	0.0040	0.0043	−0.0003
AAA_corr		(0.15)	(−0.10)	(0.18)	(0.57)	(0.84)	(−0.03)
ABX.61.	+	−0.0016	0.0007	−0.0023	0.0026	0.0046	−0.0020
PenAAA_corr		(−0.32)	(0.22)	(−0.38)	(0.38)	(0.98)	(−0.24)
ABX.61.	+	0.0022	0.0001	0.0021	0.0031	0.0048	−0.0018
AA_corr		(0.41)	(0.02)	(0.31)	(0.41)	(0.84)	(−0.19)
ABX.61.	+	0.0018	−0.0004	0.0022	0.0060	0.0016	0.0044
A_corr		(0.31)	(−0.07)	(0.28)	(0.75)	(0.23)	(0.41)

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Table 9.4 - continued from previous page

ABX.61. *BBB_corr*	+	−0.0005 (−0.07)	−0.0027 (−0.44)	0.0022 (0.24)	−0.0076 (−0.79)	−0.0064 (−0.76)	−0.0012 (−0.10)
ABX.61. *BBB − _corr*	+	−0.0010 (−0.16)	0.0008 (0.15)	−0.0018 (−0.22)	−0.0048 (−0.56)	0.0015 (0.21)	−0.0063 (−0.56)
Controls[a]		YES	YES	YES	YES	YES	YES

Panel C: Regression-Based Variables: Disclosure and Reclassification Events

	Pred. Sign	Disclosure Events			Reclassification Events		
		Banks	FSF	Banks	Banks	FSF	Δ
ABX.61.AAA	+	0.0010 (0.17)	0.0059 (1.58)	−0.0049 (−0.71)	−0.0016 (−0.35)	0.0034 (1.16)	−0.0050 (−0.92)
ABX.61. *PenAAA*	+	−0.0000 (−0.01)	0.0030* (1.69)	−0.0030 (−0.84)	−0.0006 (−0.23)	0.0016 (1.11)	−0.0022 (−0.75)
ABX.61.AA	+	0.0086 (0.72)	0.0096 (1.25)	−0.0010 (−0.07)	−0.0019 (−0.20)	0.0055 (0.90)	−0.0075 (−0.66)
ABX.61.A	+	0.0092 (0.65)	0.0179** (1.99)	−0.0087 (−0.51)	−0.0059 (−0.52)	0.0048 (0.66)	−0.0107 (−0.79)
ABX.61.BBB	+	0.0043 (0.22)	0.0277** (2.26)	−0.0235 (−1.02)	−0.0140 (−0.91)	0.0046 (0.47)	−0.0186 (−1.02)
ABX.61. *BBB−*	+	0.0028 (0.19)	0.0211** (2.16)	−0.0183 (−1.02)	−0.0025 (−0.21)	0.0148* (1.90)	−0.0173 (−1.21)
Controls[a]		YES	YES	YES	YES	YES	YES

Panel D: Correlation-Based Variables: Disclosure and Reclassification Events

ABX.61. *AAA_corr*	+	−0.0108 (−0.74)	0.0120 (1.14)	−0.0227 (−1.27)	0.0024 (0.21)	0.0017 (0.20)	0.0008 (0.05)
ABX.61. *PenAAA_corr*	+	−0.0119 (−0.84)	0.0101 (1.04)	−0.0220 (−1.29)	0.0048 (0.43)	0.0001 (0.01)	0.0048 (0.35)
ABX.61. *AA_corr*	+	−0.0023 (−0.15)	0.0048 (0.41)	−0.0071 (−0.37)	0.0021 (0.17)	−0.0011 (−0.11)	0.0032 (0.21)
ABX.61. *A_corr*	+	−0.0073 (−0.44)	0.0136 (0.95)	−0.0209 (−0.95)	−0.0018 (−0.13)	0.0016 (0.14)	−0.0033 (−0.19)
ABX.61. *BBB_corr*	+	−0.0132 (−0.67)	0.0184 (1.06)	−0.0316 (−1.20)	−0.0061 (−0.39)	0.0002 (0.01)	−0.0063 (−0.30)
ABX.61. *BBB − _corr*	+	−0.0148 (−0.84)	0.0196 (1.31)	−0.0344 (−1.49)	0.0058 (0.41)	0.0222* (1.85)	−0.0164 (−0.89)
Controls[a]		YES	YES	YES	YES	YES	YES

Panel E: Regression-Based Variables: Off-Balance Sheet and IAS 39 Replacement Events

	Pred. Sign	Off-Balance Sheet Events			IAS 39 Replacement Events		
		Banks	FSF	Banks	Banks	FSF	Δ
ABX.61. *AAA*	$-^b/+$	−0.0024 (−0.34)	−0.0045 (−0.98)	0.0020 (0.24)	0.0043 (0.94)	−0.0012 (−0.42)	0.0055 (1.02)
ABX.61. *PenAAA*	$-^b/+$	−0.0006 (−0.16)	−0.0020 (−0.92)	0.0014 (0.32)	0.0016 (0.66)	−0.0002 (−0.12)	0.0018 (0.63)
ABX.61.AA	$-^b/+$	−0.0075 (−0.52)	−0.0100 (−1.07)	0.0025 (0.14)	0.0110 (1.16)	−0.0010 (−0.17)	0.0120 (1.07)
ABX.61.A	$-^b/+$	−0.0075 (−0.43)	−0.0115 (−1.05)	0.0040 (0.20)	0.0118 (1.04)	−0.0005 (−0.07)	0.0122 (0.91)

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ABX.61. *BBB*	$-^b/+$	−0.0155 (−0.66)	−0.0275* (−1.84)	0.0119 (0.43)	0.0143 (0.94)	0.0000 (0.00)	0.0143 (0.79)
ABX.61. *BBB−*	$-^b/+$	−0.0087 (−0.47)	−0.0211* (−1.77)	0.0124 (0.57)	0.0095 (0.80)	−0.0014 (−0.18)	0.0109 (0.76)
Controls[a]		YES	YES	YES	YES	YES	YES
Panel F: Correlation-Based Variables: Off-Balance Sheet and IAS 39 Replacement Events							
ABX.61. *AAA_corr*	$-^b/+$	−0.0135 (−0.76)	−0.0028 (−0.22)	−0.0107 (−0.49)	0.0134 (1.17)	0.0011 (0.14)	0.0123 (0.87)
ABX.61. *PenAAA_corr*	$-^b/+$	−0.0101 (−0.59)	−0.0034 (−0.29)	−0.0067 (−0.32)	0.0094 (0.85)	0.0046 (0.60)	0.0048 (0.36)
ABX.61. *AA_corr*	$-^b/+$	−0.0158 (−0.86)	−0.0026 (−0.18)	−0.0133 (−0.57)	0.0167 (1.39)	0.0061 (0.65)	0.0106 (0.70)
ABX.61. *A_corr*	$-^b/+$	−0.0141 (−0.70)	−0.0001 (−0.01)	−0.0140 (−0.53)	0.0144 (1.10)	0.0049 (0.44)	0.0095 (0.55)
ABX.61. *BBB_corr*	$-^b/+$	−0.0214 (−0.89)	−0.0164 (−0.78)	−0.0050 (−0.16)	0.0101 (0.64)	0.0036 (0.26)	0.0065 (0.31)
ABX.61. *BBB − _corr*	$-^b/+$	−0.0163 (−0.76)	−0.0232 (−1.27)	0.0069 (0.25)	0.0061 (0.44)	0.0033 (0.28)	0.0028 (0.15)
Controls[a]		YES	YES	YES	YES	YES	YES

t–statistics in parentheses.
***, **, * denote $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively, using a two-tailed test.
a Control is *BETA*. *BETA* is the estimated coefficient on the STOXX Europe TMI index return in a market model regression, which regresses the daily stock return of firm *i* on the STOXX Europe TMI index return during 2007 and 2008.
b The predicted sign is negative for off-balance sheet events and positive otherwise.

9.2.3 Asset Mix

Table 9.5 on page 250 reports cross-sectional regression results for variables measuring asset mix. Panel A of table 9.5 reports cross-sectional regression results for all events. In model 1, the estimated coefficient of *FV* for banks is negative and, thus, not of the predicted sign. The coefficient is, however, not statistically significant at the 10% level or above with a *t*-statistic of −1.24. The estimated coefficient for FSFs is positive as predicted and statistically significant at the 5% level with a *t*-statistic of 2.56. The difference in coefficients between banks and FSFs is statistically significant at the 5% level with a *t*-statistic of −2.27. This suggests that stock market reactions to all events are on average positively associated with holdings of fair value assets for FSFs. There is no such evidence for banks, however. The evidence in panel A also suggests that the effect of the relative magnitude of fair value asset holdings is significantly smaller for banks than for FSFs. In model 2, the estimated coefficient of *FVtPL* for banks is negative and statistically significant at the 10% level with a *t*-statistic of −1.67. For FSFs, the estimated coefficient is of the predicted positive sign and statistically significant at the 10% level with a *t*-statistic of 1.92. The difference in coefficients of *FVtPL* between banks and financial service firms is statistically significant at the 5% level with a *t*-statistic of −2.35 suggesting that the association of stock market reaction to all events with

FVtPL is significantly higher for FSFs. The estimated coefficients on *AFS* and *AFS_OCI* are of the predicted sign for both banks and FSFs. The coefficients, however, are not statistically significant. In model 4, estimated coefficient of *FVtPLexD* is negative for banks and not statistically significant. For FSFs, the coefficient is positive as predicted and significant at the 10% level with a t-statistic of 1.95. The difference between banks and financial service firms is also statistically significant at the 10% level with a t-statistic of -1.69. The estimated coefficient on *DERIV* in model 4 is negative for banks and positive for financial service firms. The coefficients are, however, not statistically significant. The estimated coefficient of *AFS* and *AFS_OCI* are not statistically significant for both banks and FSFs.

Panel B of table 9.5 reports market reactions to fair value events. In model 1, the estimated coefficient of *FV* for FSFs is positive as predicted and statistically significant at the 10% level. The difference between banks and FSFs is also statistically significant at the 10% level with a t-statistic of -1.69. In model 2, the estimated coefficient of *FVtPL* for both banks and FSFs are not statistically significant, but the difference in coefficients is significant at the 10% level with a t-statistic of -1.66 suggesting that the association of stock market reactions to fair value events is significantly higher on average for FSFs than for banks. The estimated coefficient of *AFS_OCI* for banks is significant at the 10% level with a t-statistic of 1.81. This suggests that banks with higher portions of equity allocated to unrealized gains and losses from available-for-sale securities benefit more on average from changes to accounting standards that reduce fair value exposure. In model 3, the estimated coefficient on *DERIV* is negative for banks and statistically significant at the 5% level with a t-statistic of -2.23. For FSFs, the corresponding coefficient is of the opposite sign, i.e., positive as predicted, and also statistically significant at the 5% level with a t-statistic of 2.36. The difference in coefficients is statistically significant at the 1% level with a t-statistic of -2.66. This evidence suggests that FSFs with higher derivative holdings benefit more on average from changes to accounting standards that relax fair value accounting rules. Interestingly, banks exhibit the opposite relationship. This is counter-intuitive since derivative assets increase fair value exposure. *Ex ante*, banks with higher derivative asset holdings are expected to experience on average higher positive abnormal returns from changes to fair value accounting standards. The underlying assumption is that banks use derivative assets primarily to pursue "speculative" trading strategies. However, if banks use derivatives mostly to hedge market risk, higher derivative holding reduce on average banks' sensitivity to market fluctuations and, hence, increase their resilience to external shocks. This alternative explanation turns *DERIV* into a resilience-advancing firm characteristic. The estimated coefficient on *AFS_OCI* is positive for banks as in model 2 and is statistically significant at the 10% level with a t-statistic of 1.86. As in model 2, this suggests that a higher portion of equity allocated to unrealized gains and losses from available-for-sale securities causes banks to benefit more on average from changes to fair value accounting standards.

Panel C of table 9.5 reports cross-sectional regression results for market reactions to disclosure events. In model 1, the estimated coefficients are not statistically significant. Likewise,

no estimated coefficient in model 2 is statistically significant at the 10% level or above. In model 3, the estimated coefficient on *DERIV* for banks is negative and statistically significant at the 10% level. This suggests that benefits of additional disclosure are on average higher for banks with less derivative assets on the balance sheet.[130]

Panel D of table 9.5 reports cross-sectional regression results for reclassification events. The estimated coefficient for FSFs on *FV* in model 1 is positive and significant at the 1% level with a t-statistic of 2.73. The difference in coefficients between banks and FSFs is also statistically significant at the 10% level with a t-statistic of -1.76. In model 2, the estimated coefficient on *FVtPL* is positive and statistically significant at the 1% level for FSFs, but negative and not statistically significant for banks. The difference between banks and FSFs is statistically significant at the 10% level. In model 3, the estimated coefficient on *FVtPLexD* is statistically significant at the 1% level for FSFs with a t-statistic of 2.65. The remaining estimated coefficients in panel D are not statistically significant at the 10% level or above.

Panel E of table 9.5 reports cross-sectional regression results for off-balance sheet events. In model 1, the estimated coefficients on *FV* are not statistically significant at the 10% level or above for both banks and FSFs. In model 2, the estimated coefficient on *AFS* for banks is negative and statistically significant at the 5% level with a t-statistic of -1.99. In model 3, the estimated coefficients on *AFS* is also negative for banks and statistically significant at the 10% level with a t-statistic of -1.95.

[130] Note that this is unlikely a size effect since all regressions in table 9.5 control for size.

Table 9.5
European Market Reactions Regressed on Variables Measuring Asset Mix

This table reports cross-sectional regression results of stock market reactions to changes to accounting standards for financial instruments regressed on resilience characteristics of 190 European banks and 140 financial service firms (FSFs). Panels A, B, C, D, E, F contain regression results for the *SIGNED_MEAN* event variables *ALL*, *LESS_FV*, *MORE_DISCL*, *RECLASS*, *LESS_OFFB*, and *REPLACE*, respectively. Cross-sectional results are based on Sefcik and Thompson (1986) time-series portfolio regressions over the period from January, 2008 to December, 2009 (508 trading days). For each model, the daily time-series of stock returns of a portfolio of sample firms is regressed on daily returns of the STOXX Europe TMI index, daily relative changes of 3-months AAA-rated Government Euro-area spot rates, and the respective *SIGNED_MEAN* event variable. Each cross-sectional estimate equals the estimated coefficient of the event variable in regression 9.6, in which the time-series of portfolio returns corresponds to the k^{th} row of a return matrix weighted by the K firm characteristics in a given model according to the weighting scheme $\mathbf{P} = [\mathbf{F'F}]^{-1}\mathbf{F'R'}$. Section 3.3 on page 47 contains details on the portfolio weighting process. The difference of the estimated coefficients between the bank and FSF sample is tested by estimating equation 9.7. Daily return observations for sample firms, daily STOXX Europe TMI quotes and 3-months AAA-rated Government Euro-area spot rates are obtained from Datastream.

$$\mathrm{R}_t^{\mathbf{P}=[\mathbf{F'F}]^{-1}\mathbf{F'R'}} = \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \beta_3 SIGNED\_MEAN + \varepsilon_t \tag{9.6}$$

$$\begin{aligned}\mathrm{R}_t^{\mathbf{P}=[\mathbf{F'F}]^{-1}\mathbf{F'R'}} =& \alpha + \beta_1 R_t^{MKT} + \beta_2 R_t^{INTEREST} + \beta_3 SIGNED\_MEAN + \beta_4 D^{Banks} \\ &+ \beta_5 D^{Banks\times MKT} + \beta_6 D^{Banks\times INTEREST} + \beta_7 D^{Banks\times SIGNED\_MEAN} + \varepsilon_t\end{aligned} \tag{9.7}$$

Panel A: All Events

	Pred. Sign	Model 1			Model 2			Model 3		
		Banks	FSF	Δ	Banks	FSF	Δ	Banks	FSF	Δ
FV	+	−0.0028	0.0030**	−0.0058**						
		(−1.24)	(2.56)	(−2.27)						
FVtPL	+				−0.0042*	0.0024*	−0.0066**			
					(−1.67)	(1.92)	(−2.35)			
FVtPL exD	+							−0.0026	0.0025*	−0.0050*
								(−0.95)	(1.95)	(−1.69)
DERIV	+							−0.0132	0.0798	−0.0930
								(−1.60)	(1.43)	(−1.64)
AFS	+				0.0045	0.0007	0.0037	0.0046	0.0003	0.0043
					(1.01)	(0.25)	(0.70)	(1.04)	(0.11)	(0.80)
AFS_OCI	+				0.0061	0.0022	0.0039	0.0062	0.0025	0.0037
					(1.17)	(0.59)	(0.62)	(1.20)	(0.69)	(0.58)
Controls[a]		YES	YES	YES	YES	YES	YES	YES	YES	YES
Panel B: Fair Value Events										
FV	+	−0.0030	0.0030*	−0.0059*						
		(−0.96)	(1.83)	(−1.69)						
FVtPL	+				−0.0039	0.0026	−0.0065*			
					(−1.10)	(1.49)	(−1.66)			
FVtPL exD	+							0.0001	0.0027	−0.0026
								(0.03)	(1.55)	(−0.64)
DERIV	+							−0.0254**	0.1819**	−0.2073***
								(−2.23)	(2.36)	(−2.66)
AFS	+				0.0013	−0.0015	0.0028	0.0016	−0.0024	0.0041
					(0.21)	(−0.37)	(0.38)	(0.26)	(−0.60)	(0.55)
AFS_OCI	+				0.0130*	0.0039	0.0091	0.0134*	0.0048	0.0086
					(1.81)	(0.77)	(1.04)	(1.86)	(0.94)	(0.98)
Controls[a]		YES	YES	YES	YES	YES	YES	YES	YES	YES
Panel C: Disclosure Events										
FV	+	0.0011	−0.0007	0.0018						
		(0.17)	(−0.20)	(0.24)						
FVtPL	+				−0.0018	−0.0039	0.0021			

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	Pred. Sign	Model 1			Model 2			Model 3		
		Banks	**FSF**	**Δ**	**Banks**	**FSF**	**Δ**	**Banks**	**FSF**	**Δ**
					(−0.26)	(−1.08)	(0.26)			
FVtPL exD	+							0.0053 (0.68)	−0.0040 (−1.09)	0.0093 (1.09)
DERIV	+							−0.0404* (−1.72)	0.0496 (0.31)	−0.0900 (−0.56)
AFS	+				0.0148 (1.17)	−0.0024 (−0.29)	0.0172 (1.14)	0.0154 (1.22)	−0.0028 (−0.33)	0.0181 (1.20)
AFS_ OCI	+				−0.0049 (−0.33)	−0.0081 (−0.78)	0.0032 (0.18)	−0.0042 (−0.28)	−0.0078 (−0.75)	0.0036 (0.20)
Controls[a]		YES	YES	YES	YES	YES	YES	YES	YES	YES
Panel D: Reclassification Events										
FV	+	−0.0030 (−0.58)	0.0072*** (2.73)	−0.0102* (−1.76)						
FVtPL	+				−0.0044 (−0.76)	0.0077*** (2.66)	−0.0120* (−1.88)			
FVtPL exD	+							−0.0001 (−0.01)	0.0076*** (2.65)	−0.0077 (−1.14)
DERIV	+							−0.0277 (−1.48)	−0.0300 (−0.23)	0.0023 (0.02)
AFS	+				0.0013 (0.13)	0.0026 (0.40)	−0.0013 (−0.11)	0.0017 (0.17)	0.0028 (0.42)	−0.0011 (−0.09)
AFS_ OCI	+				0.0047 (0.40)	0.0052 (0.62)	−0.0005 (−0.03)	0.0051 (0.43)	0.0050 (0.60)	0.0001 (0.01)
Controls[a]		YES	YES	YES	YES	YES	YES	YES	YES	YES
Panel E: Off-Balance Sheet Events										
FV	−	−0.0055 (−0.70)	0.0015 (0.37)	−0.0070 (−0.79)						
FVtPL	−				−0.0017 (−0.19)	0.0031 (0.70)	−0.0048 (−0.49)			
FVtPL exD	−							0.0050 (0.53)	0.0032 (0.71)	0.0018 (0.18)
DERIV	−							−0.0371 (−1.29)	0.2142 (1.10)	−0.2513 (−1.28)
AFS	−				−0.0305** (−1.99)	−0.0032 (−0.31)	−0.0273 (−1.49)	−0.0299* (−1.95)	−0.0043 (−0.42)	−0.0255 (−1.38)
AFS_ OCI	−				0.0042 (0.23)	0.0025 (0.20)	0.0017 (0.08)	0.0048 (0.27)	0.0035 (0.28)	0.0013 (0.06)
Controls[a]		YES	YES	YES	YES	YES	YES	YES	YES	YES
Panel F: IAS 39 Replacement Events										
FV	+	−0.0017 (−0.34)	0.0005 (0.20)	−0.0023 (−0.39)						
FVtPL	+				−0.0025 (−0.43)	0.0001 (0.04)	−0.0026 (−0.41)			
FVtPL exD	+							−0.0026 (−0.43)	0.0001 (0.04)	−0.0027 (−0.40)
DERIV	+							−0.0018 (−0.09)	−0.0640 (−0.51)	0.0622 (0.49)
AFS	+				0.0002 (0.02)	−0.0013 (−0.19)	0.0015 (0.12)	0.0002 (0.02)	−0.0009 (−0.14)	0.0011 (0.09)
AFS_ OCI	+				−0.0169 (−1.44)	0.0051 (0.63)	−0.0220 (−1.54)	−0.0169 (−1.44)	0.0048 (0.58)	−0.0218 (−1.51)
Controls[a]		YES	YES	YES	YES	YES	YES	YES	YES	YES

t–statistics in parentheses.
***, **, * denote $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively, using a two-tailed test.
a Control are *LEVERAGE*, *SIZE*, *BETA*. *BETA* is the estimated coefficient on the STOXX Europe TMI index return in a market model regression, which regresses the daily stock return of firm i on the STOXX Europe TMI index return during 2007 and 2008.

9.3 Summary and Conclusion

The preceeding sections of this chapter report empirical results of both event study and cross-sectional tests for European banks and financial service firms. I summarize the main findings a follows:

1. I find strong evidence that changes to accounting standards impose real costs and benefits on both banks and financial service firms. The economic significance, however, is more pronounced on average for banks compared to financial service firms. I interpret this as evidence in favor of the conjecture that factors unrelated to the accounting regime such as prudential regulation trigger adverse second order effects.
2. I find strong evidence in support of hypothesis 1 (*Less Fair Value-Hypothesis*) for both banks and financial service firms. This evidence suggests that financial institutions benefit from relaxations of fair value accounting rules during financial crisis. The magnitude of this effect, however, is about 1.5 times higher for banks compared to financial service firms.
3. I find strong evidence in support of hypothesis 2 (*More Disclosure-Hypothesis*) for banks. This evidence suggests that banks benefit economically from increased disclosures on financial instruments during financial crisis. I find no such evidence for financial service firms.
4. I find strong evidence that European banks and financial service firms benefit economically from changes to accounting standards that permit reclassifications of financial instruments between accounting categories of IAS 39 and IFRS 9, respectively. The magnitude of this effect, however, is about 1.75 times higher for banks compared to financial service firms.
5. I find some evidence in support of hypothesis 3 (*Less Off-Balance Sheet-Hypo- thesis*) for financial service firms. I find no such evidence for banks. I find this evidence inconclusive given banks are *ex ante* expected to face substantial real costs resulting from stricter off-balance sheet rules.
6. I find some evidence in support of hypothesis 5 (*Resilience-Hypothesis*). Particularly, I find strong evidence that tier 1 capital is negatively associated with stock market reactions to all events, fair value events and reclassification events. This suggests that banks with lower tier 1 capital benefit relatively more on average from relaxations of fair value accounting rules. I also find some evidence that leverage is positively related with stock market reactions to reclassification events suggesting that banks operating on high leverage benefit relatively more on average from changes to accounting standards permitting reclassifications. I find no conclusive evidence for size and asset risk.
7. I find no conclusive evidence in support of hypothesis 6 (*Financial Crisis Exposure-Hypothesis*) possibly due to measurement error.
8. I find some evidence in support of hypothesis 7 (*Asset Mix-Hypothesis*) for financial service firms. Particularly, there is strong evidence that the relative magnitude of fair

value asset holdings of financial service firms is positively associated with stock market reactions to all events, fair value events, and reclassification events. This evidence suggest that the actual portion of the balance sheet devoted to fair value assets is a determinant of the magnitude of stock market reaction to changes to accounting standards for financial instruments. I find no such evidence for banks. This in turn suggests that others factor such as resilience and binding capital requirements trigger adverse second order effects rather than fair value accounting *per se*.

10 Conclusion

This chapter concludes the dissertation. Section 10.1 summarizes the motivation for this study and outlines the main hypotheses accompanied by the main empirical findings. Section 10.2 on page 257 discusses the contribution of this study and points to possible areas for future research.

10.1 Motivation, Hypotheses and Main Results

The financial crisis of 2007-2009 is considered by many the most severe financial meltdown since the great depression in the 1930s. Among the accused culprits, having allegedly caused this financial crisis, is fair value accounting. Fair value accounting, or often synonymously referenced as mark-to-market accounting, can be thought of as measuring balance sheet values of financial instruments with observed market prices or values computed from valuation models. Accounting standard setters, particularly the U.S. FASB and the London-based IASB have fostered fair value accounting during the last two decades claiming it increases transparency and provides decision-useful information to investors. Financial industry representatives and lobbying groups, however, have ever since opposed fair value accounting claiming that it aggravates earnings volatility and, thus, artificially exposes equity and capital to market fluctuations. The ongoing debate surrounding fair value accounting hit its peak during the financial crisis when plummeting asset prices and illiquidity in securitization markets led to substantial write-downs in banks' balance sheets causing failure of financial institutions around the globe. In the course of this debate, the case of fair value accounting was brought forward to political institutions such as U.S. Congress, the European Commission (EC), the Group of Twenty (G20), and the Financial Stability Forum (FSF). Coerced by public pressure and political interference, private accounting standard setters amended accounting standards for financial instruments without due course in an expeditious fashion during the financial crisis. In addition, both the FASB and IASB initiated projects to overhaul and replace entirely their accounting standards for financial instruments. As of 2012, a new set of standards for financial instruments is still pending and not expected before 2013 – about half a decade after the default of Lehman Brothers Holding Inc. in September 2008. The vigorous debate during the financial crisis and the withstanding uncertainty about a new set of accounting standards for financial instruments motivate the research in this dissertation.

I contribute to the debate on fair value accounting by investigating a number of related research questions. First, I study if fair value accounting matters at all to investors (research question No. 1 in section 1.1 on page 1). I use an indirect approach to draw statistical inference on the economic consequences of fair value accounting by investigating stock market reactions of U.S. and European banks to changes to accounting standards during the financial

crisis. If changes to fair value accounting are not associated with stock market reactions for financial institutions, the debate surrounding this accounting regime would turn out as a surprisingly popular fallacy. My main hypothesis that I use in empirical tests rests on the assumption that adverse second order effects of fair value accounting during financial crisis offset economic benefits from incremental information contained in fair values as soon as fair values are recognized on the balance sheet. I find strong evidence that changes to accounting standards for financial instruments are associated with significant stock market reactions for banks. Therefore, I conclude my first research question with a definite "Yes", i.e., fair value accounting standards for financial instruments are economically relevant for bank investors.

Second and third, I aim to shed light on how investors perceive fair value accounting – as a useful information device providing valuable transparency or as a mechanism, which sacrifices senselessly bank equity and capital during times of market turmoil (research questions No. 2 and 3 in section 1.1 on page 1). I investigate this question by testing two related hypotheses. First, I hypothesize that changes to accounting standards that require "more" ("less") fair value accounting on the balance sheet provoke a positive (negative) stock market reaction. Second, I hypothesize that changes to accounting standards that increase (decrease) fair value disclosure provoke a positive (negative) stock market reaction. I find strong evidence in support of both hypotheses. First, events surrounding relaxations of fair value accounting standards are associated with positive stock market reactions. Second, events surrounding amendments requiring increased fair value disclosure are also associated with positive stock market reactions. Therefore, I conclude my second research question as follows: fair values contain information that is valuable to investors, but as soon as fair values are not only disclosed but recognized on the balance sheet, adverse second order effects during financial crisis outweigh the information benefits associated with this accounting regime.

Fourth, I build on the results of the second and third research question and wonder if the adverse second order effects of fair value balance sheet recognition stem purely from this accounting regime or if other factors are at work triggering adverse economic consequences (research questions No. 4 in section 1.1 on page 1). The strategy toward this question is twofold. First, I investigate a second sample of financial firms, which consists of financial service firms, such as insurance firms, asset managers and broker dealers. Consider this second sample a control group for the sample of banks.[131] I conduct the same set of statistical tests on the second sample. The sample of financial service firms differs because sample firms hold on average significantly more assets on the balance sheet at fair value than firms in the banking sample. *Ex ante*, I therefore expect adverse second order effects to be more severe for financial service firms than for banks assuming fair value accounting *per se* triggers net economic costs. However, I find strong evidence of the opposite. Stock market reactions to relaxations of fair value accounting rules provoke significantly higher abnormal returns for banks than for

[131] Note that I do not use the sample of financial service firms as a control group in the statistical sense. Rather, I compare the empirical results of the two samples and conduct tests of differences of the economic effects.

financial service firms. This leads me to believe that other factors specific to banks, such as prudential regulation, contribute to second order effects of fair value accounting.

Second, I investigate events surrounding changes to accounting standards for off-balance sheet items and impairment rules. If adverse second order effects during financial crisis are triggered by fair value accounting *per se*, I would not expect to observe similar stock market reactions to changes of accounting standards in related fields. Particularly, impairment rules apply primarily to assets accounted for at historical costs and hence are not directly linked to fair value accounting. I investigate changes to accounting standards in these related fields by hypothesizing that changes to accounting standards ultimately leading to stricter off-balance sheet rules (more relaxed impairment rules) are associated with negative (positive) stock market reactions. I find strong evidence in support of these hypotheses. This leads me to believe that not fair value accounting *per se* but the effect on income, equity and capital during financial crisis provokes positive stock market reactions to changes to accounting standards for financial instruments. In this sense, strict off-balance sheet and impairment rules trigger similar adverse second order effects as fair value accounting.

This evidence concludes the fourth question by documenting that adverse second order effects are no phenomenon exclusively attributable to fair value accounting *per se* but rather are triggered by bank-specific factors such as prudential regulation. Also, adverse second order effects can be equally well documented for changes to accounting standards in other areas, which trigger write-downs or balance sheet expansion during financial crisis when equity and capital are most deficient.

Fifth, I aim to investigate if certain firm characteristics cause adverse second order effects of fair value accounting. To study this question, I hypothesize that a bank's ability to absorb shocks in the financial system (i.e., resilience), its exposure to the financial crisis, and its balance sheet composition (i.e., asset mix) drive second order effects of fair value accounting. I define the following resilience characteristics and test their cross-sectional association with stock market reactions to changes to accounting standards for financial instruments: regulatory capital, leverage, liquidity, as well as size and complexity. I find strong evidence that U.S. stock market reactions to changes to accounting standards are negatively associated with tier 1 regulatory capital. This suggests that less-capitalized banks are on average more exposed to second order effects of fair value accounting and, therefore, benefit more on average from relaxations of accounting standards for financial instruments. This result provides evidence that prudential regulation as a bank-specific factor is a driver of adverse second order effects when combined with fair value recognition on the balance sheet. The results hold similarly for leverage. Particularly, banks operating on higher leverage benefit relatively more from changes to fair value accounting standards. I also find some evidence that liquidity is positively associated with stock market reactions to impairment rules.

To test the hypothesis that adverse second order effects are positively related to financial crisis exposure, I define the following measures of financial crisis exposure: the maximum loss in market capitalization during the financial crisis, the sensitivity of banks' stock returns

to changes in the securitization market and the portion of assets on a bank's balance sheet devoted to securitization assets. I find evidence for banks but not for financial service firms that the cumulative maximum loss in market capitalization during the financial crisis is positively associated with stock market reactions to fair value events. This evidence suggests that those banks that suffer most from the financial crisis experience on average the most severe adverse second order effects from fair value accounting. I also find some evidence that market-based sensitivity measures of financial crisis exposure are positively associated with stock market reactions to all events and fair value events. This evidence suggests that banks with higher sensitivity to the low-quality (sub-prime) mortgage securitization market benefit relatively more on average from changes to accounting standards for financial instruments. Overall, the evidence on financial crisis exposure suggests that not the accounting system *per se* but the exposure to the financial crisis triggers the economic consequences of changes to accounting standards for financial instruments.

To assess the balance sheet composition as a driver of adverse second order effects, I test the cross-sectional association of stock market reactions with firms' asset mix. I find strong evidence that the amount of trading securities of U.S. banks is positively associated with stock market reactions to fair value events. However, I find no further evidence on banks' asset mix. Rather, I find that financial service firms' stock market reactions are positively associated with holdings of available-sale-securities for all events, fair value events, disclosure events, and impairment events. This evidence suggests that the asset mix - if at all - matters for financial service firms rather than banks. This evidence is consistent with the idea that prudential regulation tied to balance sheet values rather than actual asset holdings trigger adverse second order effects for banks.

Overall, I conclude the fifth question as follows: the actual portion of assets at fair value on the balance sheet is no significant determinant of adverse second order effects. Rather, adverse second order effects are most severe for less-capitalized banks with high leverage, low liquidity and a high exposure to the financial crisis. These results suggest that the conjunction of fair value accounting with regulatory capital, other resilience-depleting firm characteristics and financial crisis exposure causes adverse second order effects of fair value accounting.

10.2 Contribution and Suggestions for Future Research

This dissertation contributes to the debate on fair value accounting by providing empirical evidence that not fair value accounting *per se* causes adverse second order effects. Rather adverse effects evolve from the conjunction of the accounting regime with prudential regulation, resilience-depleting firm characteristics, and financial crisis exposure. Relaxations of the accounting regime in favor of temporarily higher profits due to postponed write-downs and delayed impairments safeguard equity and capital. This in turn allows banks for the time being to mitigate real costs associated with liquidity pricing, fire sales, regulatory intervention, and bankruptcy. These findings are of interest for academics, regulators, accounting standards setters, and financial industry professionals alike.

The academic contribution centers around two questions: first, do fair values contain information relevant to investors and analysts. Second, does fair value accounting induce inefficient economic outcomes, e.g., because it causes contagion. Regarding the first question, the evidence in this dissertation suggests that fair values contain information valuable to investors and analysts. Particularly, I find strong evidence that changes to accounting standards that enhance disclosure requirements provoke positive stock market reactions. Regarding the second question, I find strong evidence that fair value recognition on the balance sheet is associated with adverse second order effects during financial crises. The evidence, however, also suggests that second order effects evolve from the conjunction of fair value recognition with regulatory capital requirements, resilience-depleting firm characteristics, and financial crisis exposure and, thus, are not caused by fair value accounting *per se*. This in turn suggests that changes to both accounting standards for financial instruments and prudential regulation can provide similar relief to stressed capital requirements of financial institutions. Future research could investigate whether relaxations of prudential capital requirements rather than the accounting regime provide more efficient means to relief banks' stressed capital ratios during financial crises. A possible benefit of amending capital requirements rather than the accounting regime is that information contained in balance sheet values remains undiluted and is available to investors and analysts on a continuous basis. A limitation of the research design in this dissertation is that I provide no direct test of regulatory capital, resilience and financial crisis exposure as causes of adverse second order effects. It could be interesting for future research to design and perform direct tests of prudential regulation as a cause of adverse second order effects when combined with fair value accounting.

The findings are of interest to regulators because they provide evidence on the economic consequences of fair value accounting in conjunction with prudential regulation. Since adverse second order effects occur due to the conjunction of the accounting and the regulatory regime, it seems worthwhile considering the implications of disentangling capital requirements from the accounting regime. Ultimately, distortions in capital markets migrate through the balance sheet into prudential ratios because of the interlinkage of two systems with objectives, which are partly in conflict. While GAAP is generally directed toward decision useful information for investors and therefore almost naturally embraces market volatility into balance sheet values, prudential regulation tends to put conservative principles at the forefront. Future research could investigate if a separation of capital requirements from GAAP balance sheet values alleviates adverse second order effects. Such a separation would require prudential ratios to be computed on a basis different from the GAAP balance sheet. However, I have learned from private conversations with analysts and investment professionals that some believe that disentangling prudential ratios from the GAAP balance sheet would reduce the relevance of GAAP measures. It seems interesting for future research to study if this idea holds empirically and, particularly, if the relevance of information contained in GAAP measures evolves (partly) because these measures build the computational basis for prudential ratios.

The findings are also of interest to regulators because they provide indirect evidence on the

effectiveness of changes to accounting standards to alleviate a financial crisis. Possibly, temporary discontinuation of the interlinkage of market price fluctuation with equity to safeguard regulatory capital can provide an efficient mechanism that complements or even substitutes direct re-infusion of equity previously written down. The cost-effectiveness of direct equity infusion versus amendments to rules that govern equity and capital calculation could be interesting for future public policy research.

The findings are of interest to accounting standard setters because they provide insights on what drives the fierce opposition of the financial industry toward (full) fair value accounting. If standard setters find ways to mitigate adverse second order effects, possibly in cooperation with regulators, they are likely to be more successful on their venue toward more fair value accounting. Also, the findings are of interest as they provide evidence that fair values contain information that is valuable to investors and analysts. This supports attempts of accounting standard setters to increase the scope of fair value accounting.

The findings are of interest to financial industry professionals because they provide evidence on the relevance of the accounting regime for prudential solvency during times of market distress. Particularly, the evidence suggests that classifying financial assets as fair value through profit and loss is associated with adverse second order effects during financial crises. Possibly, this evidence is interesting to industry professionals because classification of financial instruments is based on management's intent and, thus, largely endogenous.

Overall, the debate on the economic consequences of accounting for financial instruments is likely to continue for some time. A variety of issues is still unresolved and accounting standards setters are continuously working on amendments to accounting standards for financial instruments. Therefore, the field of financial instruments' accounting and its capital market implications likely continues to provide rich grounds for future research.

Appendices

A Sensitivity of Bank Returns to Interest Rate Changes

A.1 U.S. Banks and Interest Rate Indices

Table A.1
U.S. Interest Rate Indices

This table shows index tickers and index descriptions of 41 interest rate indices, which are examined regarding their co–movement with bank common stock returns. Index description are from WRDS.

Index	Index Description
AAA	Moody's Aaa
BAA	Moody's Baa
CDM1	CDs Secondary Market 1-months
CDM3	CDs Secondary Market 3-months
CDM6	CDs Secondary Market 6-months
DWPC	Discount Window Primary Credit
EDM1	Eurodollar Deposit (London) 1-months
EDM3	Eurodollar Deposit (London) 3-months
EDM6	Eurodollar Deposit (London) 6-months
FCPM1	Commercial Paper. Financial. 1-month
FCPM2	Commercial Paper. Financial. 2-months
FCPM3	Commercial Paper. Financial. 3-months
FF	Federal Funds
LTAVGY10P	Treasury Long Term Average Inflation-indexed (10 years and above)
PRIME	Bank Prime Loan
SWAPSY10	Interest Rate Swaps 10-year
SWAPSY1	Interest Rate Swaps 1-year
SWAPSY2	Interest Rate Swaps 2-year
SWAPSY30	Interest Rate Swaps 30-year
SWAPSY3	Interest Rate Swaps 3-year
SWAPSY4	Interest Rate Swaps 4-year
SWAPSY5	Interest Rate Swaps 5-year
SWAPSY7	Interest Rate Swaps 7-year
TBM3	TBills Secondary Market 3-months
TBM6	TBills Secondary Market 6-months
TBWK4	TBills Secondary Market 4-week
TCMIIY10	Treasury Constant Maturity, Inflation-indexed 10-year
TCMIIY20	Treasury Constant Maturity, Inflation-indexed 20-year
TCMIIY5	Treasury Constant Maturity, Inflation-indexed 5-year
TCMIIY7	Treasury Constant Maturity, Inflation-indexed 7-year
TCMNOMM1	Treasury Constant Maturity 1-month
TCMNOMM3	Treasury Constant Maturity 3-months
TCMNOMM6	Treasury Constant Maturity 6-months
TCMNOMY10	Treasury Constant Maturity 10-year

Continued on next page

Table A.1 – continued from previous page

Index	Index Description
TCMNOMY1	Treasury Constant Maturity 1-year
TCMNOMY20	Treasury Constant Maturity 20-year
TCMNOMY2	Treasury Constant Maturity 2-year
TCMNOMY30	Treasury Constant Maturity 30-year
TCMNOMY3	Treasury Constant Maturity 3-year
TCMNOMY5	Treasury Constant Maturity 5-year
TCMNOMY7	Treasury Constant Maturity 7-year

Table A.2
Descriptive Statistics of Fourty-one U.S. Interest Rate Indices

This table reports descriptive statistics of 41 interest rate indices from January 01, 2007 to December 31, 2009. Index tickers are defined in table A.1. Interest rates are obtained through WRDS from the Federal Reserve Board's H.15 Report.

Index	Mean Daily Change	Std. Dev.	10% Percentile	90% Percentile
AAA	0.0000929	0.0134844	−0.0149254	0.0163934
BAA	0.0000752	0.0097231	−0.0115108	0.0124611
CDM1	−0.0027722	0.0575897	−0.0476190	0.0359712
CDM3	−0.0033341	0.0425969	−0.0412371	0.0222222
CDM6	−0.0026381	0.0470594	−0.0424242	0.0318471
DWPC	−0.0027731	0.0287610	0.0000000	0.0000000
EDM1	−0.0023775	0.0538843	−0.0185185	0.0037736
EDM3	−0.0026848	0.0324364	−0.0129329	0.0045779
EDM6	−0.0024186	0.0258389	−0.0169492	0.0081818
FCPM1	0.0026283	0.1275958	−0.1041667	0.1000000
FCPM2	0.0071027	0.1636791	−0.1016949	0.0925926
FCPM3	0.0043985	0.1378226	−0.0869565	0.0816327
FF	−0.0005314	0.1037314	−0.0769231	0.0714286
LTAVGY10P	0.0003036	0.0286641	−0.0338164	0.0351759
PRIME	−0.0011830	0.0114295	0.0000000	0.0000000
SWAPSY1	−0.0021237	0.0313622	−0.0344828	0.0321543
SWAPSY10	−0.0000732	0.0225575	−0.0233766	0.0249307
SWAPSY2	−0.0011404	0.0323329	−0.0380952	0.0374532
SWAPSY3	−0.0006803	0.0298052	−0.0331492	0.0347222
SWAPSY30	−0.0000241	0.0197779	−0.0193424	0.0221675
SWAPSY4	−0.0004582	0.0276245	−0.0298103	0.0322581
SWAPSY5	−0.0003065	0.0265615	−0.0295082	0.0312500
SWAPSY7	−0.0001628	0.0242399	−0.0254237	0.0279720
TBM3	0.0286601	0.4483184	−0.1176471	0.0909091
TBM6	−0.0019041	0.0768528	−0.0616438	0.0526316
TBWK4	0.0559339	0.7760457	−0.2500000	0.2222222
TCMIIY10	0.0002457	0.0416728	−0.0466667	0.0497738
TCMIIY20	0.0003027	0.0289361	−0.0339806	0.0341463
TCMIIY5	0.0255963	0.7050145	−0.0800000	0.0860215
TCMIIY7	0.0002677	0.0542638	−0.0569620	0.0625000
TCMNOMM1	0.0423322	0.4591371	−0.2222222	0.2222222
TCMNOMM3	0.0285030	0.4481755	−0.1131222	0.1000000
TCMNOMM6	−0.0020240	0.0761565	−0.0588235	0.0512821
TCMNOMY1	−0.0021556	0.0453269	−0.0465116	0.0425532
TCMNOMY10	−0.0000266	0.0228187	−0.0251397	0.0265252
TCMNOMY2	−0.0008370	0.0483733	−0.0515464	0.0500000
TCMNOMY20	0.0000550	0.0168780	−0.0198238	0.0205011
TCMNOMY3	−0.0004295	0.0426844	−0.0467290	0.0450450
TCMNOMY30	0.0000921	0.0169800	−0.0188679	0.0198676
TCMNOMY5	−0.0002045	0.0341741	−0.0381232	0.0381232
TCMNOMY7	−0.0000687	0.0286601	−0.0314286	0.0342679

Table A.3
Correlation Coefficients of Fourty-one U.S. Interest Rate Indices

This table reports correlation coefficients of 41 interest rate indices from January 01, 2007 to December 31, 2009. Index tickers are defined in table A.1. Interest rates are obtained through WRDS from the Federal Reserve Board's H.15 Report. Correlation coeficients below (above) the diagonal are Pearson (Spearman) correlations.

Index	AAA	BAA	CDM1	CDM3	CDM6	DWPC	EDM1	EDM3	EDM6	FCPM1
AAA	**1**	0.9277***	−0.0351	0.0035	0.0120	−0.0659	0.0529	0.0158	0.0570	0.0205
BAA	0.8878***	**1**	−0.0283	0.0047	0.0368	−0.0457	0.0541	0.0066	0.0312	0.0043
CDM1	0.0094	0.0343	**1**	0.5093***	0.4350***	0.0891**	0.3826***	0.3074***	0.2872***	0.0785*
CDM3	−0.0329	0.0088	0.5577***	**1**	0.6312***	0.0672	0.3083***	0.3271***	0.2986***	0.0466
CDM6	−0.0482	0.0238	0.4463***	0.8123***	**1**	0.0385	0.2272***	0.2621***	0.3391***	−0.006
DWPC	0.0173	0.0270	0.0302	0.0388	−0.0072	**1**	0.1156***	0.0459	0.0661	0.0704
EDM1	0.0806*	0.0762*	0.2559***	0.271***	0.2233***	0.0904**	**1**	0.5738***	0.3928***	0.1479***
EDM3	0.1224***	0.1123***	0.3483***	0.4167***	0.3248***	0.1944***	0.5575***	**1**	0.5441***	0.0941**
EDM6	0.0922**	0.1167***	0.3522***	0.3944***	0.3609***	0.1882***	0.4410***	0.6915***	**1**	0.0278
FCPM1	0.0387	0.0445	−0.0307	0.0848**	0.0260	−0.0542	−0.0475	0.0972**	0.0157	**1**
FCPM2	0.0477	−0.0024	−0.0388	0.0188	0.0030	0.0185	0.0885**	0.0578	0.0393	0.1539***
FCPM3	0.0351	0.0163	−0.0414	0.0259	−0.0820*	0.0285	−0.0061	−0.0447	0.0934**	−0.0921**
FF	−0.0787*	−0.0886**	0.1248***	0.1450***	0.1350***	0.1494***	−0.0134	−0.0177	0.0036	0.0779*
LTAVGY10P	0.7377***	0.7516***	0.0433	0.0581	0.0646	0.0372	0.1320***	0.1124***	0.1189***	0.0804*
PRIME	−0.0015	0.0127	0.0352	0.0433	−0.0033	0.9526***	0.0744*	0.1563***	0.1672***	−0.0356
SWAPSY10	0.5068***	0.4992***	0.1753***	0.2116***	0.1712***	0.0139	0.0348	0.1820***	0.1896***	0.0139
SWAPSY1	0.3380***	0.3490***	0.3117***	0.3385***	0.2842***	0.0795*	0.1338***	0.3355***	0.3425***	0.0793*
SWAPSY2	0.3952***	0.4018***	0.2260***	0.2239***	0.1985***	0.0627	0.0318	0.2329***	0.2553***	0.0480
SWAPSY30	0.4962***	0.4686***	0.0779∗	0.1570***	0.1145***	0.0066	−0.0047	0.1291***	0.1156***	−0.0049
SWAPSY3	0.4353***	0.4288***	0.1917***	0.2213***	0.1811***	0.0657	0.0276	0.1920***	0.2239***	0.0289
SWAPSY4	0.4670***	0.4590***	0.1792***	0.2258***	0.1821***	0.0441	0.0280	0.1880***	0.2094***	0.0493
SWAPSY5	0.4765***	0.4732***	0.1716***	0.2286***	0.1810***	0.0344	0.0196	0.1797***	0.2041***	0.0341
SWAPSY7	0.4915***	0.4874***	0.1803***	0.2286***	0.1865***	0.0227	0.0379	0.1852***	0.1977***	0.0374
TBM3	0.0777*	0.0773*	−0.1263***	−0.0282	−0.0950**	0.0267	0.2271***	0.2198***	0.2564***	0.1886***
TBM6	0.2677***	0.2216***	−0.2274***	−0.2647***	−0.2286***	0.1260***	−0.1275***	−0.0895**	−0.1036**	0.1276***
TBWK4	0.0627	0.0757*	−0.0453	0.0401	−0.0409	0.0331	0.2141***	0.2674***	0.1128***	0.2462***
TCMIIY10	0.6541***	0.6816***	0.0623	0.0578	0.0839**	0.0295	0.1105***	0.1221***	0.0983**	0.0664
TCMIIY20	0.7358***	0.7455***	0.0249	0.0593	0.0612	0.0375	0.1207***	0.1124***	0.1180***	0.0941**
TCMIIY5	0.1375***	0.1288***	−0.0054	0.0085	−0.0041	0.0020	−0.0033	0.0133	0.0129	−0.0033

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Table A.3 – continued from previous page

TCMIIY7	0.6025***	0.6292***	0.0340	0.0468	0.0761*	0.0469	0.0741*	0.0867**	0.0784*	−0.0130
TCMNOMM1	0.0184	0.0373	−0.0985**	0.0149	−0.0739*	0.0523	0.1859***	0.2080***	0.1955***	0.3042***

Index	**AAA**	**BAA**	**CDM1**	**CDM3**	**CDM6**	**DWPC**	**EDM1**	**EDM3**	**EDM6**	**FCPM1**
TCMNOMM3	0.0791*	0.0786*	−0.1283***	−0.0299	−0.0976**	0.0050	0.2363***	0.2235***	0.2595***	0.1916***
TCMNOMM6	0.2704***	0.2253***	−0.2235***	−0.2675***	−0.2282***	0.1262***	−0.1207***	−0.0909**	−0.0956**	0.1237***
TCMNOMY10	0.8333***	0.7853***	−0.0258	−0.0328	−0.0198	0.0387	0.0897**	0.1079**	0.0981**	0.0688
TCMNOMY1	0.4387***	0.3933***	−0.1895***	−0.1870***	−0.1821***	0.1243***	0.0369	0.0214	0.0375	0.1291***
TCMNOMY20	0.9016***	0.8470***	−0.0179	−0.0290	−0.0343	0.0225	0.0457	0.0770*	0.0939**	0.0564
TCMNOMY2	0.5573***	0.5202***	−0.1567***	−0.1360***	−0.1215***	0.0572	0.1304***	0.1259***	0.0655	0.0507
TCMNOMY30	0.9089***	0.8421***	−0.0142	−0.0475	−0.0512	0.0344	0.0306	0.0624	0.0786*	0.0563
TCMNOMY3	0.6259***	0.5695***	−0.1559***	−0.1468***	−0.1413***	0.0644	0.1024**	0.0921**	0.0620	0.0382
TCMNOMY5	0.7230***	0.6838***	−0.0834**	−0.0693	−0.0664	0.0506	0.1046**	0.1092***	0.0940**	0.0548
TCMNOMY7	0.7766***	0.7302***	−0.0404	−0.0335	−0.0313	0.0392	0.0993**	0.1051**	0.0990**	0.0476

Index	**FCPM2**	**FCPM3**	**FF**	**LTA⇝10P**	**PRIME**	**SWAPSY10**	**SWAPSY1**	**SWAPSY2**	**SWAPSY30**	**SWAPSY3**
AAA	0.0746*	0.0725	0.0029	0.7992***	−0.0587	0.5610***	0.3540***	0.4016***	0.5535***	0.4305***
BAA	0.0503	0.0558	−0.0014	0.7957***	−0.0362	0.5650***	0.3564***	0.4011***	0.5609***	0.4356***
CDM1	0.1442***	0.1456***	0.0772*	0.0358	0.0598	0.0140	0.1920***	0.1167***	−0.0274	0.1024**
CDM3	0.0503	0.1091**	−0.0113	0.0859*	0.0515	0.1569***	0.2828***	0.2173***	0.1270***	0.2168***
CDM6	0.0665	0.0497	0.0437	0.1355***	0.0188	0.2057***	0.3443***	0.2886***	0.1533***	0.2837***
DWPC	0.0627	0.1311***	0.1728***	−0.0585	0.9047***	0.0016	0.0176	0.0357	0.0023	0.0407
EDM1	0.1305***	0.1236***	0.0838*	0.1164***	0.0832*	0.0692	0.1510***	0.0793*	0.0470	0.0747*
EDM3	0.0931**	0.0685	0.0372	0.0401	0.0228	0.0815*	0.2053***	0.1394***	0.0417	0.1235***
EDM6	0.1032**	0.1463***	0.0447	0.1142**	0.027	0.1567***	0.2768***	0.2254***	0.1146**	0.2133***
FCPM1	0.1407***	0.0459	0.0154	0.0114	0.0566	0.0317	0.0398	0.0236	−0.0016	0.0161
FCPM2	**1**	0.1474***	−0.0152	0.0636	0.0561	0.0311	0.1147**	0.0621	−0.0043	0.0546
FCPM3	0.0605	**1**	0.0222	0.0783∗	0.1083**	0.0781*	0.1441***	0.1142**	0.0498	0.1156***
FF	−0.0073	0.0504	**1**	0.0237	0.1557***	0.0857*	0.0979**	0.0919**	0.1018**	0.0896**
LTAVGY10P	0.0480	0.0554	0.0490	**1**	−0.0251	0.4663***	0.3670***	0.3756***	0.4246***	0.3862***
PRIME	0.0170	0.0299	0.1633***	0.0251	**1**	−0.0214	−0.0231	0.0011	−0.0204	0.0081
SWAPSY10	−0.0161	0.0953**	−0.0660	0.3617***	0.0086	**1**	0.7068***	0.8360***	0.9299***	0.8909***
SWAPSY1	−0.0182	0.1470***	0.0348	0.3579***	0.0701*	0.6674***	**1**	0.9071***	0.5658***	0.8493***
SWAPSY2	−0.0539	0.1539***	−0.0442	0.3567***	0.0544	0.8201***	0.9074***	**1**	0.6928***	0.9700***
SWAPSY30	−0.0239	0.0438	−0.0362	0.3067***	−0.0021	0.9391***	0.5475***	0.6924***	**1**	0.7580***
SWAPSY3	−0.0297	0.1500***	−0.0521	0.3602***	0.0598	0.8856***	0.8433***	0.9739***	0.7693***	**1**

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Table A.3 – continued from previous page

SWAPSY4	−0.0113	0.1452***	−0.0616	0.3793***	0.0394	0.9269***	0.8072***	0.9506***	0.8182***	0.9867***
SWAPSY5	−0.0156	0.1478***	−0.0595	0.3766***	0.0298	0.9532***	0.7740***	0.9248***	0.8529***	0.9714***

Index	**FCPM2**	**FCPM3**	**FF**	**LTA⇝10P**	**PRIME**	**SWAPSY10**	**SWAPSY1**	**SWAPSY2**	**SWAPSY30**	**SWAPSY3**
SWAPSY7	−0.0249	0.1220***	−0.0602	0.3717***	0.0173	0.9852***	0.7266***	0.8797***	0.9023***	0.9379***
TBM3	0.0529	0.0969**	−0.0153	0.0630	0.0313	0.0533	0.0695*	0.0674	0.1029**	0.0551
TBM6	0.0428	−0.0203	0.0732*	0.1939***	0.1256***	0.2227***	0.2027***	0.2658***	0.2868***	0.2604***
TBWK4	0.1706***	−0.0629	0.1361***	0.0848**	0.0334	−0.0384	0.0097	−0.0154	−0.0380	−0.0377
TCMIIY10	0.0096	0.0421	0.0252	0.8962***	0.0236	0.3418***	0.3467***	0.3633***	0.245***	0.3605***
TCMIIY20	0.0557	0.0464	0.0584	0.9907***	0.0226	0.3632***	0.3494***	0.3507***	0.3158***	0.3552***
TCMIIY5	−0.0142	−0.0149	−0.0105	0.1607***	−0.0017	0.0741*	0.0930**	0.1185***	0.0482	0.1156***
TCMIIY7	0.0028	0.0213	−0.0077	0.8472***	0.03440	0.3327***	0.3349***	0.3582***	0.2564***	0.3577***
TCMNOMM1	0.2091***	−0.1093**	0.1398***	0.0408	0.0532	−0.0606	−0.0490	−0.0581	−0.0416	−0.0671
TCMNOMM3	0.0520	0.0939**	−0.0233	0.0594	0.0143	0.0558	0.0708*	0.0676	0.1017**	0.0554
TCMNOMM6	0.0411	−0.0137	0.0666	0.1977***	0.1260***	0.2218***	0.2035***	0.2660***	0.2845***	0.2610***
TCMNOMY10	0.0572	0.0638	−0.0890**	0.7882***	0.0129	0.5274***	0.3962***	0.4621***	0.4796***	0.4942***
TCMNOMY1	0.0127	0.0185	0.0080	0.4155***	0.1232***	0.3077***	0.3824***	0.4220***	0.3233***	0.3983***
TCMNOMY20	0.0211	0.0626	−0.0774*	0.7977***	−0.0001	0.5485***	0.3950***	0.4540***	0.5363***	0.4911***
TCMNOMY2	0.0441	0.0364	−0.1645***	0.5678***	0.0293	0.3313***	0.3730***	0.4279***	0.2909***	0.4238***
TCMNOMY30	0.0213	0.0623	−0.0668	0.7613***	0.0127	0.5616***	0.3669***	0.4367***	0.5678***	0.4797***
TCMNOMY3	0.0532	0.0324	−0.1435***	0.6143***	0.0322	0.3528***	0.354***	0.4206***	0.3046***	0.4326***
TCMNOMY5	0.0207	0.0496	−0.1196***	0.7166***	0.0219	0.4489***	0.4030***	0.4678***	0.3991***	0.4853***
TCMNOMY7	0.0151	0.0326	−0.1042**	0.7556***	0.0140	0.5174***	0.4166***	0.4847***	0.4681***	0.5133***

Index	**SWAPSY4**	**SWAPSY5**	**SWAPSY7**	**TBM3**	**TBM6**	**TBWK4**	**TCMIIY10**	**TCMIIY20**	**TCMIIY5**	**TCMIIY7**
AAA	0.4681***	0.4974***	0.5278***	0.1816***	0.3289***	0.0792*	0.7318***	0.8003***	0.6236***	0.7056***
BAA	0.4702***	0.5027***	0.5328***	0.1568***	0.3057***	0.0733	0.7314***	0.7958***	0.6347***	0.7057***
CDM1	0.0894**	0.0720	0.0562	−0.0239	−0.0184	−0.0328	0.0567	0.0229	0.0348	0.0399
CDM3	0.2121***	0.2090***	0.1977***	−0.0093	0.0165	0.0761*	0.0746∗	0.0786∗	0.0933**	0.0830*
CDM6	0.2660***	0.2585***	0.2469***	−0.0165	0.0085	0.0624	0.1238***	0.1158***	0.1055**	0.1180***
DWPC	0.0311	0.0197	0.0050	0.1767***	0.1361***	0.1397***	−0.0369	−0.0554	−0.0329	−0.0401
EDM1	0.0812*	0.0827*	0.0869*	0.0787*	0.0657	0.0564	0.0931**	0.1140**	0.1001**	0.0933**
EDM3	0.1110**	0.1004**	0.1006**	0.0651	0.0945**	0.0173	0.0473	0.0363	0.0366	0.0279
EDM6	0.2005***	0.1943***	0.1798***	0.1277***	0.1390***	0.1135**	0.0917**	0.1122**	0.0973**	0.0777*
FCPM1	0.0218	0.0196	0.0328	0.0273	0.0618	0.0546	0.0274	0.0107	0.0430	0.0318
FCPM2	0.0475	0.0452	0.0309	0.0573	0.0952**	0.0473	0.0911**	0.0557	0.0722	0.0800*

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Table A.3 – continued from previous page

FCPM3	0.1185***	0.1185***	0.0972**	−0.0084	−0.0021	0.0537	0.0865*	0.0662	0.0925**	0.0851*
FF	0.0905**	0.0838**	0.0846*	0.1107**	0.0887**	0.0794*	0.0071	0.0238	0.0163	0.0132

Index	**SWAPSY4**	**SWAPSY5**	**SWAPSY7**	**TBM3**	**TBM6**	**TBWK4**	**TCMIIY10**	**TCMIIY20**	**TCMIIY5**	**TCMIIY7**
LTAVGY10P	0.4143***	0.4358***	0.4519***	0.1821***	0.3334***	0.1002**	0.9031***	0.9865***	0.7917***	0.8842***
PRIME	−0.0024	−0.0100	−0.0230	0.1662***	0.1310***	0.1290***	−0.0055	−0.0247	−0.0051	−0.0069
SWAPSY10	0.9240***	0.9456***	0.9766***	0.2006***	0.3230***	0.1288***	0.4527***	0.4573***	0.4122***	0.4239***
SWAPSY1	0.8203***	0.8010***	0.7635***	0.2309***	0.3815***	0.1421***	0.3983***	0.3564***	0.4455***	0.3979***
SWAPSY2	0.9474***	0.9258***	0.8901***	0.2300***	0.3812***	0.1568***	0.4113***	0.3710***	0.4301***	0.3929***
SWAPSY30	0.7948***	0.8245***	0.8745***	0.1872***	0.2745***	0.1150**	0.3756***	0.4208***	0.3326***	0.3550***
SWAPSY3	0.9845***	0.9707***	0.9452***	0.2220***	0.3616***	0.1521***	0.4120***	0.3804***	0.4224***	0.3910***
SWAPSY4	**1**	0.9892***	0.9707***	0.2157***	0.3572***	0.1459***	0.4343***	0.4060***	0.4383***	0.4145***
SWAPSY5	0.9902***	**1**	0.9838***	0.2112***	0.3427***	0.1446***	0.4456***	0.4258***	0.4453***	0.4287***
SWAPSY7	0.9682***	0.9857***	**1**	0.2095***	0.3342***	0.1383***	0.4522***	0.4401***	0.4351***	0.4292***
TBM3	0.0642	0.0487	0.0561	**1**	0.6892***	0.5402***	0.2175***	0.1788***	0.2583***	0.2530***
TBM6	0.2634***	0.2509***	0.2318***	0.2809***	**1**	0.4007***	0.4097***	0.3321***	0.4132***	0.4127***
TBWK4	−0.0274	−0.0374	−0.0391	0.2177***	0.1158***	**1**	0.1105**	0.0957**	0.1687***	0.1475***
TCMIIY10	0.3742***	0.3650***	0.3534***	0.0139	0.1785***	0.0515	**1**	0.8966***	0.8811***	0.9563***
TCMIIY20	0.3755***	0.3731***	0.3695***	0.0605	0.2036***	0.0963**	0.8891***	**1**	0.7804***	0.8724***
TCMIIY5	0.1058**	0.1016**	0.0823*	0.0021	0.0951**	0.0044	0.2632***	0.1675***	**1**	0.9376***
TCMIIY7	0.3676***	0.3660***	0.3481***	−0.0824*	0.1995***	0.0138	0.9351***	0.8385***	0.3006***	**1**
TCMNOMM1	−0.0507	−0.0607	−0.0599	0.4195***	0.2665***	0.8829***	0.0258	0.0514	0.0074	−0.0283
TCMNOMM3	0.0661	0.0502	0.0582	0.9984***	0.2724***	0.2240***	0.0124	0.0569	0.0021	−0.0861**
TCMNOMM6	0.2631***	0.2503***	0.2309***	0.2695***	0.9977***	0.1158***	0.1837***	0.2071***	0.0986**	0.2067***
TCMNOMY10	0.5224***	0.5228***	0.5253***	0.0921**	0.3172***	0.0529	0.7764***	0.7855***	0.1527***	0.7229***
TCMNOMY1	0.3908***	0.3692***	0.3405***	0.2666***	0.6229***	0.2280***	0.4191***	0.4131***	0.2088***	0.4502***
TCMNOMY20	0.5223***	0.5298***	0.5391***	0.0735*	0.3110***	0.0526	0.7146***	0.7961***	0.1209***	0.6558***
TCMNOMY2	0.4216***	0.4011***	0.3652***	0.1837***	0.4298***	0.1027**	0.5994***	0.5653***	0.2426***	0.6099***
TCMNOMY30	0.5158***	0.5275***	0.5444***	0.0603	0.3239***	0.0302	0.6729***	0.7617***	0.1102***	0.6261***
TCMNOMY3	0.4340***	0.4135***	0.3819***	0.1569***	0.3977***	0.1104***	0.6470***	0.6123***	0.2325***	0.6497***
TCMNOMY5	0.5004***	0.4886***	0.4681***	0.1389***	0.3533***	0.0619	0.7342***	0.7120***	0.2051***	0.7170***
TCMNOMY7	0.5343***	0.5293***	0.5243***	0.1146***	0.3197***	0.0520	0.7578***	0.7530***	0.1825***	0.7225***

Index	**TCM⇝M1**	**TCM⇝M3**	**TCM⇝M6**	**TCM⇝Y10**	**TCM⇝Y1**	**TCM⇝Y20**	**TCM⇝Y2**	**TCM⇝Y30**	**TCM⇝Y3**	**TCM⇝Y5**
AAA	0.0957**	0.1810***	0.3256***	0.8685***	0.5255***	0.9221***	0.6323***	0.9269***	0.7025***	0.7715***
BAA	0.0778*	0.1550***	0.3000***	0.8551***	0.5074***	0.9106***	0.6301***	0.9113***	0.6923***	0.7606***

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Table A.3 – continued from previous page

CDM1	−0.0374	−0.0240	−0.0036	−0.0070	0.0233	−0.0148	−0.0015	−0.0353	0.0031	0.0064
CDM3	0.0561	−0.0011	0.0260	0.0322	0.0343	0.0314	0.0408	0.0045	0.0281	0.0398

Index	**TCM⇝M1**	**TCM⇝M3**	**TCM⇝M6**	**TCM⇝Y10**	**TCM⇝Y1**	**TCM⇝Y20**	**TCM⇝Y2**	**TCM⇝Y30**	**TCM⇝Y3**	**TCM⇝Y5**
CDM6	0.0410	−0.0204	0.0225	0.0533	0.0331	0.0641	0.0482	0.0368	0.0158	0.0481
DWPC	0.1439***	0.1757***	0.1362***	−0.0356	0.0826*	−0.0546	0.0273	−0.0548	0.0110	−0.0191
EDM1	0.0522	0.0829*	0.0584	0.0688	0.0931**	0.0450	0.0749*	0.0331	0.0711	0.0882**
EDM3	0.0219	0.0699	0.0926**	0.0348	0.0971**	0.0162	0.0611	−0.0045	0.0508	0.0523
EDM6	0.1171***	0.1256***	0.1515***	0.0747*	0.1554***	0.0647	0.0688	0.0457	0.0732	0.0796*
FCPM1	0.0426	0.0291	0.0508	0.0173	0.0697	−0.0068	0.0521	0.0045	0.0462	0.0396
FCPM2	0.0558	0.0560	0.1005**	0.0851**	0.1161***	0.0281	0.1039**	0.0218	0.1160***	0.1073**
FCPM3	0.0422	−0.0074	0.0043	0.1002**	0.0715	0.0919**	0.0828**	0.0953**	0.0852**	0.0989**
FF	0.0690	0.1160***	0.0927**	0.0035	0.0326	0.0004	−0.0162	−0.0011	0.0075	0.0218
LTAVGY10P	0.0883**	0.1805***	0.3366***	0.8193***	0.5168***	0.8432***	0.6205***	0.8210***	0.6763***	0.7449***
PRIME	0.1328***	0.1660***	0.1320***	−0.0435	0.0766*	−0.0597	0.0232	−0.0594	0.0052	−0.0276
SWAPSY10	0.1297***	0.1927***	0.3260***	0.6128***	0.4468***	0.6057***	0.4999***	0.5814***	0.5360***	0.5912***
SWAPSY1	0.1351***	0.2309***	0.3828***	0.4698***	0.4698***	0.4146***	0.4660***	0.3689***	0.4878***	0.5097***
SWAPSY2	0.1540***	0.2257***	0.3827***	0.5176***	0.4858***	0.4710***	0.5063***	0.4341***	0.5281***	0.5563***
SWAPSY30	0.1201***	0.1770***	0.2764***	0.5499***	0.3669***	0.5884***	0.4130***	0.5741***	0.4532***	0.5048***
SWAPSY3	0.1481***	0.2149***	0.3644***	0.5369***	0.4758***	0.4946***	0.5195***	0.4594***	0.5405***	0.5712***
SWAPSY4	0.1430***	0.2057***	0.3588***	0.5663***	0.4737***	0.5280***	0.5284***	0.4943***	0.5524***	0.5928***
SWAPSY5	0.1428***	0.2006***	0.3438***	0.5900***	0.4735***	0.5564***	0.5382***	0.5240***	0.5643***	0.6093***
SWAPSY7	0.1356***	0.2006***	0.3378***	0.6021***	0.4665***	0.5783***	0.5239***	0.5478***	0.5544***	0.6030***
TBM3	0.5924***	0.9892***	0.6757***	0.2675***	0.5310***	0.2087***	0.3346***	0.1932***	0.3432***	0.3211***
TBM6	0.4396***	0.6768***	0.9871***	0.4754***	0.8067***	0.3841***	0.5538***	0.3597***	0.5653***	0.5410***
TBWK4	0.9648***	0.5381***	0.3967***	0.1353***	0.3912***	0.1180***	0.1904***	0.0983**	0.1807***	0.1673***
TCMIIY10	0.1005**	0.2178***	0.4135***	0.8389***	0.6041***	0.7874***	0.7116***	0.7618***	0.7543***	0.8055***
TCMIIY20	0.0854*	0.1781***	0.3318***	0.8135***	0.5065***	0.8416***	0.6147***	0.8236***	0.6708***	0.7396***
TCMIIY5	0.1604***	0.2548***	0.4141***	0.7526***	0.6320***	0.6903***	0.7405***	0.6541***	0.7701***	0.7878***
TCMIIY7	0.1414***	0.2499***	0.4148***	0.8065***	0.6140***	0.7558***	0.7203***	0.7280***	0.7584***	0.7993***
TCMNOMM1	**1**	0.5837***	0.4328***	0.1443***	0.4174***	0.1270***	0.2139***	0.1102**	0.2010***	0.1835***
TCMNOMM3	0.4267***	**1**	0.6688***	0.2624***	0.5247***	0.2065***	0.3287***	0.1899***	0.3374***	0.3144***
TCMNOMM6	0.2678***	0.2613***	**1**	0.4728***	0.8054***	0.3839***	0.5551***	0.3584***	0.5654***	0.5377***
TCMNOMY10	−0.0049	0.0927**	0.3217***	**1**	0.6883***	0.9388***	0.8186***	0.9251***	0.8801***	0.9490***
TCMNOMY1	0.2348***	0.2674***	0.6272***	0.5765***	**1**	0.5844***	0.8138***	0.5545***	0.8090***	0.7674***
TCMNOMY20	0.0056	0.0744*	0.3158***	0.9417***	0.5393***	**1**	0.7037***	0.9783***	0.7727***	0.8487***
TCMNOMY2	0.0451	0.1856***	0.4364***	0.7765***	0.6897***	0.6639***	**1**	0.6825***	0.9487***	0.9086***

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Table A.3 – continued from previous page

TCMNOMY30	−0.0076	0.0617	0.3275***	0.9157***	0.5149***	0.9790***	0.6284***	**1**	0.7513***	0.8244***
TCMNOMY3	0.0537	0.1568***	0.4031***	0.8387***	0.6830***	0.7332***	0.9513***	0.6968***	**1**	0.9538***

Index	**TCM⇝M1**	**TCM⇝M3**	**TCM⇝M6**	**TCM⇝Y10**	**TCM⇝Y1**	**TCM⇝Y20**	**TCM⇝Y2**	**TCM⇝Y30**	**TCM⇝Y3**	**TCM⇝Y5**
TCMNOMY5	0.0154	0.1393***	0.3593***	0.9344***	0.6486***	0.8392***	0.9007***	0.8035***	0.9345***	**1**
TCMNOMY7	0.0012	0.1152***	0.3261***	0.9600***	0.6056***	0.8856***	0.8330***	0.8553***	0.8846***	0.9682***

Index	**TCM⇝Y7**
AAA	0.8119***
BAA	0.7998***
CDM1	0.0073
CDM3	0.0361
CDM6	0.0537
DWPC	−0.0260
EDM1	0.0850*
EDM3	0.0429
EDM6	0.0721
FCPM1	0.0246
FCPM2	0.0969**
FCPM3	0.0979**
FF	0.0128
LTAVGY10P	0.7812***
PRIME	−0.0348
SWAPSY10	0.6017***
SWAPSY1	0.4932***
SWAPSY2	0.5426***
SWAPSY30	0.5209***
SWAPSY3	0.5596***
SWAPSY4	0.5842***
SWAPSY5	0.6037***
SWAPSY7	0.6050***
TBM3	0.2955***
TBM6	0.5104***
TBWK4	0.1544***
TCMIIY10	0.8280***
TCMIIY20	0.7757***

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Table A.3 – continued from previous page

TCMIIY5	0.7777***
TCMIIY7	0.8110***

Index	**TCM⇝Y7**
TCMNOMM1	0.1636***
TCMNOMM3	0.2898***
TCMNOMM6	0.5078***
TCMNOMY10	0.9754***
TCMNOMY1	0.7286***
TCMNOMY20	0.8896***
TCMNOMY2	0.8631***
TCMNOMY30	0.8695***
TCMNOMY3	0.9237***
TCMNOMY5	0.9832***
TCMNOMY7	**1**

***, **, * denote $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively, using on a two-tailed test.

Table A.4
Autocorrelation Coefficients of Fourty-one U.S. Interest Rate Indices

This table reports autocorrelation coefficients of 41 interest rate indices form January 01, 2007 to December 31, 2009. Index tickers are defined in table A.1. Interest rates are obtained through WRDS from the Federal Reserve Board's H.15 Report.

Index	L.1	L.2	L.3	L.4	L.5	L.6	L.7	L.8	L.9	L.10
AAA	0.0271	−0.0434	−0.0627	−0.0388	−0.0192	0.0389	0.0870	−0.0351	−0.0644	−0.0284
BAA	0.0298	−0.0392	−0.0189	−0.0456	0.0140	0.0521	0.0796	0.0200	−0.0229	0.0308
CDM1	−0.1133***	0.1475***	0.1100***	0.0088***	0.1497***	−0.0934***	0.1242***	−0.0161***	0.0149***	−0.0386***
CDM3	−0.0858**	0.0150	0.1515***	−0.0732***	0.1038***	−0.0277***	0.1063***	0.0280***	0.0654***	−0.0395***
CDM6	−0.2514***	0.0496***	0.1028***	−0.1376***	0.2231***	−0.1372***	0.1649***	0.0313***	−0.0029***	0.0835***
DWPC	0.0146	−0.0125	−0.0112	−0.0112	−0.0126	0.0197	−0.0126	−0.0123	−0.0107	−0.0110
EDM1	0.0076	0.0779	0.0597	−0.0424	0.0544	−0.0111	0.0199	0.1818***	−0.0980***	0.0534***
EDM3	0.3278***	0.1393***	−0.0122***	0.0062***	0.0104***	0.0187***	−0.0148***	0.1371***	0.0915***	0.1231***
EDM6	0.2277***	0.0464***	−0.0241***	0.0518***	0.1113***	0.0722***	0.0262***	−0.0214***	−0.0255***	0.0183***
FCPM1	−0.4080***	0.1170***	−0.0749***	−0.0563***	−0.0377***	0.0798***	−0.0984***	0.0904***	0.1138***	−0.1286***
FCPM2	−0.3036***	−0.0677***	0.0315***	−0.0167***	−0.0729***	0.1661***	−0.1497***	0.0276***	−0.0632***	−0.0572***
FCPM3	−0.3445***	0.1036***	−0.1138***	0.0943***	−0.2558***	0.1491***	−0.0441***	−0.0195***	0.0884***	0.0386***
FF	0.0933**	−0.0154*	−0.2390***	−0.0397***	0.0505***	0.0287***	−0.1296***	−0.1147***	−0.0121***	0.0157***
LTAVGY10P	0.0079	−0.0188	−0.0509	−0.0125	−0.0047	0.0362	−0.0862	−0.0515	−0.0209	−0.0192
PRIME	−0.0143	−0.0144	−0.0128	−0.0128	−0.0145	0.0680	−0.0145	−0.0140	−0.0123	−0.0128
SWAPSY10	−0.0013	−0.0508	0.0028	−0.0223	−0.0366	−0.0528	0.0260	−0.0609	0.1202*	−0.0354
SWAPSY1	0.1408***	−0.0268***	−0.0539***	−0.0802***	0.0526***	0.1022***	0.1138***	−0.0587***	−0.0066***	0.0430***
SWAPSY2	0.0250	−0.0310	−0.0363	−0.0977	−0.0420	0.0000	0.1064**	−0.0590**	0.0309**	0.0273*
SWAPSY30	0.0533	−0.0731*	−0.0148	0.0058	−0.0219	−0.0347	0.0250	0.0175	0.1327*	−0.0417*
SWAPSY3	−0.0105	−0.0584	−0.0126	−0.0704	−0.0544	−0.0268	0.0887	−0.0641*	0.0423*	0.0230
SWAPSY4	−0.0211	−0.0343	−0.0325	−0.0577	−0.0398	−0.0463	0.0831	−0.0830*	0.0818**	−0.0097*
SWAPSY5	−0.0274	−0.0506	−0.0145	−0.0469	−0.0446	−0.0327	0.0615	−0.0654	0.0757	−0.0040
SWAPSY7	−0.0174	−0.0558	−0.0076	−0.0213	−0.0349	−0.0499	0.0525	−0.0640	0.0850	−0.0124
TBM3	0.0629	−0.1287***	−0.1280***	0.2321***	0.0256***	−0.0748***	−0.0551***	−0.0084***	0.0561***	0.0081***
TBM6	−0.0039	−0.2027***	−0.1002***	−0.0156***	0.1572***	−0.0755***	0.0041***	−0.0465***	−0.0259***	0.1191***
TBWK4	−0.0228	−0.0416	0.0175	−0.0384	0.0295	−0.0032	0.0485	0.0896	−0.0506	−0.0359
TCMIIY10	−0.0250	−0.0545	−0.0383	0.0176	0.0363	0.0463	−0.0904	−0.0512	−0.0205	−0.0186
TCMIIY20	0.0156	−0.0255	−0.0623	−0.0091	−0.0069	0.0206	−0.0712	−0.0598	−0.0182	−0.0073
TCMIIY5	−0.0659	−0.0082	−0.0333	0.0099	0.0316	0.0006	−0.0277	0.0405	−0.0047	−0.0163
TCMIIY7	−0.0090	−0.0277	−0.0308	−0.0057	−0.0103	0.0742	−0.0734	0.0079	−0.0027	0.0001

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Index	L.1	L.2	L.3	L.4	L.5	L.6	L.7	L.8	L.9	L.10
TCMNOMM1	−0.0292	−0.0736	0.0057	−0.0491	−0.0025	−0.0372	0.0609	0.0360	0.0276	−0.0552
TCMNOMM3	0.0649	−0.1316***	−0.1210***	0.2291***	0.0270***	−0.0804***	−0.0488***	−0.0007***	0.0492***	−0.0175***
TCMNOMM6	0.0016	−0.2008***	−0.0957***	−0.0098***	0.1404***	−0.0622***	0.0099***	−0.0378***	−0.0341***	0.0956***
TCMNOMY10	0.0163	−0.0776	0.0413	−0.0558	−0.0256	−0.0021	0.0244	−0.0254	−0.0133	0.0083
TCMNOMY1	0.0646	−0.0023	0.0269	−0.0526	−0.0241	−0.0297	0.1141*	−0.0133	0.0403	0.0125
TCMNOMY20	0.0396	−0.0419	0.0014	−0.0221	0.0003	0.0200	0.0415	−0.0228	−0.0408	−0.0074
TCMNOMY2	−0.1051**	−0.0769***	0.0277**	−0.1218***	−0.0443***	−0.0238***	0.0111***	0.0557***	0.0213***	0.0815***
TCMNOMY30	0.0656	−0.0377	0.0129	−0.0052	−0.0129	0.050	0.0719	−0.0092	−0.0349	−0.0191
TCMNOMY3	−0.0820*	−0.0879**	0.0261**	−0.1420***	−0.0620***	−0.0504***	0.0408***	0.0503***	0.0600***	0.1092***
TCMNOMY5	−0.0573	−0.0865**	0.0157	−0.0896**	−0.0498**	−0.0148*	0.0294*	0.0052	0.0134	0.0315
TCMNOMY7	−0.0036	−0.0945*	0.0201	−0.0788*	−0.0264*	0.0181	0.0082	0.0122	−0.0185	−0.0145

***, **, * denote $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively, based on the Portmanteau test for white noise (Q test).

Table A.5
AR(4) Model of Fourty-one Interest Rate Indices

This table reports estimated coefficients, adjusted R^2, standard errors of the residuals and the number of observations from 41 regressions fitting the fourth-order autoregressive process ($AR(4)$) from January 01, 2007 to December 31, 2009. The relative daily change of an interest rate index on day t is regressed on the first four lagged values of that index. Index tickers are defined in table A.1. Interest rates are obtained through WRDS from the Federal Reserve Board's H.15 Report.

Index	Intercept	L.1	L.2	L.3	L.4	$\mathbf{R^2}$	$\mathbf{S(\epsilon)}$	N
AAA	−0.0005	−0.0376	0.0729	−0.0594	0.0198	0.0228	0.0031	548
	(−0.46)	(−0.49)	(0.95)	(−0.77)	(0.26)			
BAA	−0.0005	−0.0220	0.0507	0.0043	0.0836	0.0228	0.0015	548
	(−0.52)	(−0.21)	(0.47)	(0.04)	(0.77)			
CDM1	−0.0003	0.0275	−0.0071	0.0281*	0.0301*	0.0227	0.0183	548
	(−0.28)	(1.61)	(−0.42)	(1.66)	(1.77)			
CDM3	−0.0002	0.0923***	−0.0103	0.0319	0.0081	0.0225	0.0328	548
	(−0.21)	(3.86)	(−0.43)	(1.35)	(0.34)			
CDM6	−0.0003	0.0793***	−0.0007	0.0188	0.0256	0.0226	0.0213	548
	(−0.31)	(3.00)	(−0.02)	(0.69)	(0.94)			
DWPC	−0.0007	0.0074	−0.0500*	−0.0185	−0.0060	0.0228	0.0063	548
	(−0.71)	(0.25)	(−1.71)	(−0.63)	(−0.20)			
EDM1	−0.0003	−0.0235	0.0102	0.0290*	0.0095	0.0228	0.0094	543
	(−0.35)	(−1.38)	(0.60)	(1.69)	(0.55)			
EDM3	−0.0002	0.0861**	−0.0000	−0.0472	0.0330	0.0227	0.0131	543
	(−0.24)	(2.34)	(−0.00)	(−1.24)	(0.90)			
EDM6	−0.0003	0.1107***	−0.0930**	0.0222	−0.0006	0.0227	0.0204	543
	(−0.34)	(2.85)	(−2.34)	(0.56)	(−0.02)			
FCPM1	−0.0004	0.0174**	0.0218**	−0.0048	0.0006	0.0227	0.0161	543
	(−0.43)	(2.00)	(2.27)	(−0.49)	(0.07)			
FCPM2	−0.0005	−0.0247*	0.0289**	−0.0234*	0.0090	0.0210	0.0499	493
	(−0.51)	(−1.89)	(2.08)	(−1.84)	(0.89)			
FCPM3	−0.0000	−0.0048	−0.0429***	−0.0065	−0.0363***	0.0195	0.0710	472
	(−0.04)	(−0.41)	(−3.80)	(−0.61)	(−3.67)			
FF	−0.0005	0.0079	−0.0302***	−0.0042	0.0089	0.0226	0.0226	548
	(−0.48)	(0.85)	(−3.32)	(−0.46)	(0.94)			
LTAVGY10P	−0.0005	−0.0157	0.0364	0.0012	0.0342	0.0228	0.0047	548
	(−0.48)	(−0.49)	(1.12)	(0.04)	(1.05)			
PRIME	−0.0008	0.0026	−0.1494**	−0.0414	−0.0284	0.0228	0.0082	548
	(−0.80)	(0.03)	(−2.03)	(−0.56)	(−0.37)			
SWAPSY10	−0.0005	0.0440	−0.0815*	0.0774*	−0.0544	0.0227	0.0161	548
	(−0.49)	(1.02)	(−1.87)	(1.78)	(−1.25)			
SWAPSY1	−0.0005	0.0440	−0.0357	0.0396	−0.0550	0.0227	0.0083	548
	(−0.47)	(1.16)	(−0.93)	(1.03)	(−1.46)			
SWAPSY2	−0.0004	0.0481	−0.0397	0.0391	−0.0292	0.0227	0.0094	548
	(−0.44)	(1.42)	(−1.17)	(1.15)	(−0.86)			
SWAPSY30	−0.0005	0.0653	−0.1222**	0.0995**	−0.1012**	0.0226	0.0256	548
	(−0.51)	(1.34)	(−2.52)	(2.05)	(−2.09)			
SWAPSY3	−0.0004	0.0516	−0.0453	0.0554	−0.0408	0.0227	0.0135	548
	(−0.44)	(1.48)	(−1.30)	(1.58)	(−1.17)			
SWAPSY4	−0.0005	0.0456	−0.0410	0.0443	−0.0359	0.0228	0.0097	548
	(−0.46)	(1.25)	(−1.12)	(1.21)	(−0.98)			
SWAPSY5	−0.0005	0.0469	−0.0503	0.0519	−0.0375	0.0227	0.0114	548
	(−0.46)	(1.25)	(−1.34)	(1.38)	(−0.99)			
SWAPSY7	−0.0005	0.0480	−0.0692*	0.0677*	−0.0431	0.0227	0.0146	548
	(−0.47)	(1.19)	(−1.70)	(1.66)	(−1.06)			
TBM3	−0.0005	0.0037*	−0.0031	−0.0007	−0.0032	0.0227	0.0164	536

Continued on next page

Table A.5 – continued from previous page

Index	Intercept	L.1	L.2	L.3	L.4	R^2	$S(\epsilon)^a$	N
	(−0.47)	(1.83)	(−1.56)	(−0.35)	(−1.62)			
TBM6	−0.0007	−0.0343***	−0.0170	−0.0163	−0.0287**	0.0226	0.0237	548
	(−0.67)	(−2.77)	(−1.37)	(−1.33)	(−2.35)			
TBWK4	−0.0003	0.0012	−0.0029**	−0.0019	−0.0002	0.0227	0.0181	537
	(−0.35)	(1.05)	(−2.45)	(−1.61)	(−0.20)			
TCMIIY10	−0.0004	−0.0236	0.0349	−0.0156	0.0392*	0.0227	0.0129	548
	(−0.45)	(−1.07)	(1.58)	(−0.70)	(1.75)			
TCMIIY20	−0.0005	−0.0156	0.0235	0.0081	0.0337	0.0228	0.0036	548
	(−0.48)	(−0.49)	(0.73)	(0.25)	(1.04)			
TCMIIY5	−0.0004	−0.0006	0.0005	−0.0009	−0.0001	0.0228	0.0018	548
	(−0.43)	(−0.46)	(0.44)	(−0.73)	(−0.08)			
TCMIIY7	−0.0004	−0.0282*	0.0160	−0.0121	0.0200	0.0228	0.0102	548
	(−0.45)	(−1.68)	(0.94)	(−0.72)	(1.17)			
TCMNOMM1	−0.0002	0.0016	−0.0069***	−0.0058***	0.0022	0.0225	0.0368	534
	(−0.22)	(0.76)	(−3.28)	(−2.69)	(1.08)			
TCMNOMM3	−0.0005	0.0036*	−0.0032	−0.0007	−0.0032	0.0227	0.0160	536
	(−0.47)	(1.79)	(−1.58)	(−0.34)	(−1.61)			
TCMNOMM6	−0.0007	−0.0336***	−0.0180	−0.0168	−0.0298**	0.0226	0.0244	548
	(−0.68)	(−2.71)	(−1.45)	(−1.37)	(−2.43)			
TCMNOMY10	−0.0005	−0.0884**	0.0591	−0.0532	0.0164	0.0227	0.0133	548
	(−0.51)	(−2.10)	(1.40)	(−1.26)	(0.39)			
TCMNOMY1	−0.0010	−0.0839***	−0.0156	−0.0229	−0.0532**	0.0224	0.0377	548
	(−1.01)	(−3.63)	(−0.66)	(−0.98)	(−2.31)			
TCMNOMY20	−0.0005	−0.0881	0.0116	−0.0495	−0.0042	0.0228	0.0053	548
	(−0.52)	(−1.51)	(0.20)	(−0.85)	(−0.07)			
TCMNOMY2	−0.0006	−0.0450**	0.0083	−0.0175	−0.0098	0.0227	0.0106	548
	(−0.59)	(−2.15)	(0.39)	(−0.83)	(−0.47)			
TCMNOMY30	−0.0005	−0.0749	0.0089	−0.0435	−0.0002	0.0228	0.0040	548
	(−0.51)	(−1.30)	(0.15)	(−0.75)	(−0.00)			
TCMNOMY3	−0.0006	−0.0494**	0.0039	−0.0358	0.0027	0.0227	0.0127	548
	(−0.56)	(−2.19)	(0.17)	(−1.58)	(0.12)			
TCMNOMY5	−0.0005	−0.0632**	0.0241	−0.0359	0.0195	0.0227	0.0144	548
	(−0.52)	(−2.28)	(0.86)	(−1.29)	(0.70)			
TCMNOMY7	−0.0005	−0.0855***	0.0203	−0.0501	0.0225	0.0227	0.0164	548
	(−0.53)	(−2.59)	(0.61)	(−1.52)	(0.68)			

a $\mathbf{S}(\boldsymbol{\epsilon})$ are the standard errors of the residuals.
t-statistics in parentheses.
***, **, * denote $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively, using a two-tailed test.

Table A.6
Autocorrelation Coefficients of the Residuals

This table reports autocorrelation coefficients of the residuals of the AR(4) regression in table A.5 to check white-noise consitency. Index tickers are defined in table 5.5. Interest rates are obtained through WRDS from the Federal Reserve Board's H.15 Report.

Index	L.1	L.2	L.3	L.4	L.5	L.6	L.7	L.8	L.9	L.10
AAA	−0.0245	−0.0273	0.0386	−0.0460	−0.0334	0.0130	−0.0027	0.0512	−0.0191	0.0717
BAA	−0.0286	−0.0185	0.0267	−0.0493	−0.0308	0.0090	0.0057	0.0465	−0.0173	0.0770
CDM1	−0.0283	−0.0170	0.0224	−0.0217	−0.0141	0.0110	0.0212	0.0461	−0.0068	0.0790
CDM3	−0.0131	−0.0167	0.0281	−0.0120	−0.0366	0.0217	0.0182	0.0576	−0.0228	0.0901
CDM6	−0.0226	−0.0136	0.0235	−0.0237	−0.0282	0.0165	0.0255	0.0510	−0.0231	0.0815
DWPC	−0.0301	−0.0200	0.0297	−0.0448	−0.0240	0.0067	0.0043	0.0365	−0.0212	0.0736
EDM1	−0.0337	−0.0293	0.0245	−0.0329	−0.0171	−0.0097	−0.0110	0.0568	0.0013	0.0742
EDM3	−0.0394	−0.0046	0.0292	−0.0567	−0.0191	0.0315	0.0117	0.0297	−0.0255	0.0694
EDM6	−0.0256	−0.0153	0.0241	−0.0380	−0.0415	0.0181	0.0222	0.0280	−0.0119	0.0757
FCPM1	−0.0286	0.0071	0.0259	−0.0218	−0.0167	−0.0028	−0.0026	0.0482	−0.0114	0.0530
FCPM2	0.0084	−0.0121	0.0216	0.0558	−0.0641	−0.0387	−0.0281	0.0643	0.0196	0.0445
FCPM3	−0.0264	0.0038	0.0835	0.0288	−0.0284	−0.0646	0.0333	−0.0142	0.0743	0.0256
FF	−0.0279	−0.0326	0.0179	−0.0321	−0.0346	0.0108	0.0015	0.0345	0.0005	0.0730
LTAVGY10P	−0.0297	−0.0256	0.0334	−0.0489	−0.0236	0.0125	0.0097	0.0512	−0.0113	0.0740
PRIME	−0.0339	−0.0210	0.0312	−0.0422	−0.0283	0.0071	0.0026	0.0398	−0.0174	0.0746
SWAPSY10	−0.0362	0.0023	0.0085	−0.0294	−0.0304	0.0045	0.0113	0.0356	−0.0084	0.0646
SWAPSY1	−0.0389	−0.0032	0.0191	−0.0269	−0.0350	0.0037	0.0083	0.0336	−0.0076	0.0579
SWAPSY2	−0.0386	−0.0086	0.0215	−0.0314	−0.0292	0.0031	0.0170	0.0312	−0.0045	0.0627
SWAPSY30	−0.0341	0.0013	0.0093	−0.0231	−0.0334	0.0086	0.0068	0.0344	−0.0094	0.0613
SWAPSY3	−0.0379	−0.0070	0.0154	−0.0287	−0.0266	0.0032	0.0190	0.0310	−0.0039	0.0619
SWAPSY4	−0.0394	−0.0072	0.0189	−0.0313	−0.0274	0.0030	0.0164	0.0332	−0.0056	0.0624
SWAPSY5	−0.0385	−0.0047	0.0157	−0.0292	−0.0302	0.0055	0.0141	0.0360	−0.0071	0.0635
SWAPSY7	−0.0366	−0.0006	0.0107	−0.0281	−0.0317	0.0053	0.0139	0.0360	−0.0076	0.0654
TBM3	−0.0324	−0.0342	0.0588	−0.0399	−0.0270	0.0185	0.0018	0.0445	−0.0197	0.0328
TBM6	−0.0409	−0.0006	0.0247	−0.0263	−0.0153	−0.0090	0.0096	0.0188	−0.0395	0.0550
TBWK4	−0.0263	−0.0203	0.0269	−0.0716	−0.0271	0.0481	0.0191	0.0260	−0.0192	0.0825
TCMIIY10	−0.0178	−0.0349	0.0446	−0.0562	−0.0266	0.0174	0.0013	0.0553	−0.0138	0.0707
TCMIIY20	−0.0315	−0.0210	0.0301	−0.0481	−0.0244	0.0121	0.0096	0.0490	−0.0111	0.0755
TCMIIY5	−0.0269	−0.0140	0.0282	−0.0401	−0.0331	0.0087	0.0065	0.0404	−0.0175	0.0677
TCMIIY7	−0.0119	−0.0351	0.0396	−0.0563	−0.0317	0.0130	0.0067	0.0436	−0.0087	0.0693

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Table A.6 – continued from previous page

Index	L.1	L.2	L.3	L.4	L.5	L.6	L.7	L.8	L.9	L.10
TCMNOMM1	−0.0258	−0.0140	0.0431	−0.0640	−0.0260	0.0420	0.0320	0.0320	−0.0310	0.0545
TCMNOMM3	−0.0325	−0.0340	0.0586	−0.0398	−0.0271	0.0190	0.0017	0.0444	−0.0196	0.0323
TCMNOMM6	−0.0411	−0.0022	0.0256	−0.0245	−0.0158	−0.0084	0.0099	0.0184	−0.0402	0.0530
TCMNOMY10	0.0014	−0.0408	0.0431	−0.0500	−0.0449	0.0165	−0.0136	0.0468	−0.0174	0.0717
TCMNOMY1	−0.0140	−0.0074	0.0141	−0.0166	−0.0459	−0.0032	−0.0070	0.0151	−0.0227	0.0507
TCMNOMY20	−0.0147	−0.0198	0.0357	−0.0439	−0.0417	0.0070	−0.0096	0.0355	−0.0220	0.0667
TCMNOMY2	0.0015	−0.0278	0.0339	−0.0451	−0.0394	0.0027	−0.0061	0.0369	−0.0111	0.0622
TCMNOMY30	−0.0169	−0.0178	0.0358	−0.0449	−0.0383	0.0079	−0.0064	0.0386	−0.0228	0.0694
TCMNOMY3	−0.0013	−0.0268	0.0480	−0.0569	−0.0439	0.0049	−0.0114	0.0413	−0.0173	0.0681
TCMNOMY5	0.0065	−0.0364	0.0466	−0.0607	−0.0431	0.0123	−0.0120	0.0469	−0.0195	0.0742
TCMNOMY7	0.0087	−0.0374	0.0513	−0.0666	−0.0445	0.0064	−0.0131	0.0389	−0.0189	0.0726

***, **, * denote $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively, based on the Portmanteau test for white noise (Q test).

Table A.7
Sensitivity of Bank Portfolio Returns to Interest Rate Changes of Fourty-one U.S. Indices

This table reports the estimated sensitivity of a value-weighted portfolio of 275 U.S. bank holding companies (BHCs) to unanticipated changes in fourty-one different U.S. interest rate indices from January 01, 2007 to December 31, 2009. The sensitivity is estimated by fitting a two-factor market model regression. Daily returns of a value-weighted portfolio of 275 U.S. BHCs are regressed on daily returns of the CRSP equally-weighted index and on daily unanticipated interest rate changes measured as the residuals from the fourth-order autoregressive process (AR(4)) in equation (5.2) on page 119. Index tickers are defined in table A.1. Daily return observations for the 275 BHCs and daily equallyweighted index returns are from CRSP. Interest rates are obtained through WRDS from the Federal Reserve Board's H.15 Report.

Index	Intercept	MKT	INTEREST	Durbin-Watson Statistic	N
AAA	-0.0005^{***}	-0.0011	0.0228^{***}	3.4710	548
	(-8.39)	(-0.15)	(176.40)		
BAA	-0.0005^{***}	-0.0031	0.0229^{***}	1.9940	548
	(-11.98)	(-0.62)	(280.48)		
CDM1	-0.0004^{***}	0.0681^{***}	0.0214^{***}	1.6790	548
	(-3.27)	(2.92)	(41.49)		
CDM3	-0.0004^{***}	0.0941^{***}	0.0209^{***}	2.3532	548
	(-2.63)	(3.95)	(44.62)		
CDM6	-0.0004^{***}	0.0802^{***}	0.0212^{***}	2.4297	548
	(-3.36)	(3.41)	(40.71)		
DWPC	-0.0004^{***}	0.0412	0.0220^{***}	1.4287	548
	(-3.65)	(1.39)	(33.16)		
EDM1	-0.0004^{***}	0.0414^{**}	0.0220^{***}	1.5818	543
	(-3.44)	(2.08)	(47.64)		
EDM3	-0.0003^{***}	0.0366^{*}	0.0222^{***}	1.7601	543
	(-3.15)	(1.92)	(71.74)		
EDM6	-0.0004^{***}	0.0668^{***}	0.0216^{***}	2.8401	543
	(-2.77)	(3.92)	(63.45)		
FCPM1	-0.0003^{**}	0.0595^{***}	0.0216^{***}	1.9607	543
	(-2.53)	(2.81)	(55.32)		
FCPM2	-0.0003	0.2164^{***}	0.0181^{***}	3.0087	493
	(-1.24)	(3.88)	(22.36)		
FCPM3	-0.0000	0.3044^{***}	0.0158^{***}	2.3177	472
	(-0.15)	(4.17)	(16.59)		
FF	-0.0004^{***}	0.1081^{***}	0.0208^{***}	2.0518	548
	(-3.08)	(3.76)	(43.81)		
LTAVGY10P	-0.0005^{***}	0.0272^{***}	0.0223^{***}	2.3603	548
	(-6.88)	(2.73)	(120.86)		
PRIME	-0.0004^{***}	0.0340	0.0222^{***}	1.4868	548
	(-4.46)	(1.65)	(51.04)		
SWAPSY10	-0.0005^{***}	0.0724^{***}	0.0215^{***}	3.4513	548
	(-3.74)	(3.57)	(57.14)		
SWAPSY1	-0.0005^{***}	0.0471^{***}	0.0219^{***}	2.9946	548
	(-5.26)	(3.23)	(80.75)		
SWAPSY2	-0.0005^{***}	0.0418^{***}	0.0220^{***}	3.3462	548
	(-4.87)	(2.62)	(74.94)		
SWAPSY30	-0.0004^{***}	0.1111^{***}	0.0208^{***}	3.3109	548
	(-2.96)	(4.18)	(43.46)		
SWAPSY3	-0.0005^{***}	0.0593^{***}	0.0217^{***}	3.3951	548
	(-4.08)	(3.19)	(62.96)		
SWAPSY4	-0.0005^{***}	0.0452^{***}	0.0220^{***}	3.4256	548
	(-4.81)	(2.93)	(75.17)		

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Table A.7 – continued from previous page

Index	Intercept	MKT	INTEREST	Durbin–Watson Statistic	N
SWAPSY5	-0.0005^{***}	0.0535^{***}	0.0218^{***}	3.4686	548
	(-4.43)	(3.27)	(69.93)		
SWAPSY7	-0.0005^{***}	0.0678^{***}	0.0216^{***}	3.4870	548
	(-3.92)	(3.64)	(61.06)		
TBM3	-0.0006^{***}	0.0730^{**}	0.0213^{***}	2.0663	536
	(-4.82)	(2.34)	(38.79)		
TBM6	-0.0005^{***}	0.0879^{***}	0.0212^{***}	1.1773	548
	(-3.12)	(2.98)	(39.20)		
TBWK4	-0.0006^{***}	0.1547^{*}	0.0200^{***}	1.8903	537
	(-4.13)	(1.76)	(12.75)		
TCMIIY10	-0.0005^{***}	0.0418^{***}	0.0220^{***}	3.1010	548
	(-4.15)	(2.63)	(71.66)		
TCMIIY20	-0.0005^{***}	0.0239^{***}	0.0224^{***}	1.8955	548
	(-7.84)	(2.72)	(136.18)		
TCMIIY5	-0.0005^{***}	0.0267	0.0224^{***}	2.8295	548
	(-6.10)	(1.15)	(49.07)		
TCMIIY7	-0.0005^{***}	0.0266^{*}	0.0223^{***}	3.0326	548
	(-4.69)	(1.72)	(81.00)		
TCMNOMM1	-0.0005^{***}	0.1773^{***}	0.0197^{***}	1.7784	534
	(-3.24)	(3.61)	(23.11)		
TCMNOMM3	-0.0006^{***}	0.0713^{**}	0.0213^{***}	2.0703	536
	(-4.88)	(2.32)	(39.27)		
TCMNOMM6	-0.0005^{***}	0.0922^{***}	0.0211^{***}	1.1208	548
	(-3.08)	(3.06)	(37.76)		
TCMNOMY10	-0.0005^{***}	0.0300	0.0222^{***}	3.0612	548
	(-4.07)	(1.58)	(65.34)		
TCMNOMY1	-0.0004^{**}	0.1336^{***}	0.0203^{***}	1.1965	548
	(-2.40)	(4.69)	(38.52)		
TCMNOMY20	-0.0005^{***}	0.0013	0.0227^{***}	2.1255	548
	(-6.43)	(0.11)	(116.59)		
TCMNOMY2	-0.0005^{***}	0.0158	0.0224^{***}	2.5261	548
	(-4.55)	(0.93)	(72.39)		
TCMNOMY30	-0.0005^{***}	-0.0042	0.0228^{***}	2.0666	548
	(-7.46)	(-0.44)	(148.24)		
TCMNOMY3	-0.0005^{***}	0.0072	0.0225^{***}	2.4089	548
	(-4.18)	(0.40)	(66.97)		
TCMNOMY5	-0.0005^{***}	0.0258	0.0222^{***}	2.9071	548
	(-3.90)	(1.35)	(62.67)		
TCMNOMY7	-0.0005^{***}	0.0219	0.0222^{***}	2.5555	548
	(-3.63)	(1.01)	(55.91)		

t-statistics in parentheses. t-statistics are calculated using robust standard errors.
***, **, * denote $p < 0.01$, $p < 0.05$, $p < 0.1$, respectively, using a two-tailed test.

Bibliography

The bibliography in this dissertation consists of three sections. The first section, labeled "References", contains academic references and some references to technical notes (e.g., COMPUSTAT Manual). The second section, labeled "Financial Press References", contains references from the financial press that I use to establish the history of events and to research background information for key events. The third section, labeled "References from Standard Setters and Constituents", contains references from standard setters, regulatory bodies and political institutions.

Many reference documents, particularly from standard setters and other constituents, are obtained via the Internet. However, I do not include explicit URL-addresses in the reference sections because experience confirms that websites and, thus, URLs are subject to frequent change. Readers interested in reference documents can conveniently obtain the respective document via the Internet using a search engine. Also, all documents can be obtained from me on request.

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Curriculum Vitae

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Professional Experience

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