

**CEO Compensation of Listed Companies in Switzerland:
Empirical Studies on Firm Financial Performances, Risk, and
Peer Group Comparisons**

DISSERTATION
of the University of St. Gallen,
School of Management,
Economics, Law, Social Sciences
and International Affairs
to obtain the title of
Doctor of Philosophy in Management

submitted by

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Dissertation no. 4443

Difo-Druck GmbH

The University of St. Gallen, School of Management, Economics, Law, Social Sciences, and International Affairs hereby consents to the printing of the present dissertation, without hereby expressing any opinion on the views herein expressed.

St. Gallen, November 2, 2015

The President:

Prof. Dr. Thomas Bieger

To my family,

Feriha, Ahmet, Andreas, and Minnie

Acknowledgements

Writing this dissertation has been a long and challenging journey. This page is dedicated to the people who always supported me throughout the entire process.

I owe my deepest gratitude to my supervisor Prof. Dr. Martin Hilb for providing his valuable feedback, intellectual guidance, and support during my dissertation and for giving me an opportunity to work for him at HSG as a research associate, which helped me improve my skills and knowledge to be a successful academic.

My special thanks go to my co-supervisor, Prof. Dr. Pascal Gantenbein, for his feedback and support that improved the quality of the dissertation.

I am indebted to Dr. Stephan Hostettler and Mr. István Lajtai (HCM Hostettler Company) who supported me for Paper III by sharing their expertise in executive compensation and by reviewing my peer group selections. In addition, the model in Paper I (time-lag approach) is also approved by Mr. Lajtai.

I would like to express my gratitude to my Statistician friend, Mr. Yasin Kutuk, for his advice in the methods, and to Ali & Dilek Orbay for the revision of the English language of my dissertation and to the doctoral office at the University of St. Gallen, especially Ms. Anna Schlegel, for their constant help and quick responses to my inquiries.

Finally, thanks to Prof. Dr. Linard Nadig, Prof. Dr. Jürg Schwarz, and Dr. Imke Keimer for their support while I was working at HSLU, IFZ.

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Abstract

Executive compensation is still a prominent topic. After the corporate scandals and strong public opposition to overpayments, scholars, policy makers, politicians, and stakeholders have turned their attention to the appropriateness of compensation contracts. This empirical dissertation is made up of three papers concerning three conceptually related factors of CEO compensation and the moderation effect of Corporate Governance variables. In detail, it is concerned with the overall research question whether CEOs' compensation in Swiss publicly traded companies are financially appropriate or optimal contracts based on the three pillars- (1) pay-for-performance, (2) risk, and (3) peer group comparison (benchmarks). Each factor is the topic of one of the three papers. Finally, it is found that Risk (beta) and peer group compensation (benchmarking) are the significant predictors of the total CEO compensation, whereas firm performance is not. In other words, CEO pay and firm performance are decoupled. Corporate Governance factors have a moderating effect on the association between CEO compensation, firm performance, and peer group comparison.

Keywords: CEO compensation, pay-for-performance, risk, peer groups, Corporate Governance, moderation, and Switzerland

CEO Entschädigungen der Börsennotierten Unternehmen in der Schweiz: Empirische Forschung Über Finanziell Leistungen, Risiko, und Peer Group Vergleiche

Zusammenfassung

CEO Entschädigungen sind immer noch ein bedeutendes Thema. Nachdem die Unternehmensskandale und die starken öffentlichen Widerstände gegen die Überzahlungen, Wissenschaftlern, politischen Entscheidungsträgern, Politikern und den Interessengruppen ihre Aufmerksamkeit auf die Angemessenheit der Vergütung zu den Verträgen gezeichnet haben. Diese empirische Dissertation besteht aus drei Papieren und ist eine Studie über drei Faktoren der CEO Entschädigung unter der Moderation von Corporate Governance. Im Detail betrifft es die Gesamtfragestellung, ob Ausgleichs CEOs in Schweizer börsennotierte Unternehmen, finanziell geeignet sind oder optimal Verträge auf der Grundlage der drei pillars- (1) Pay-for-Performance, (2) Risiko und (3) Peer-Group zu vergleichen sind(Benchmarks). Jeder Faktor ist das Thema einer der drei Papiere. Schließlich wird festgestellt, dass Risk (beta) und Peer-Group-Vergütung, (Benchmarking) signifikante Prädiktoren für die Gesamt CEO Entschädigungen sind, während der Unternehmenserfolg es nicht ist. Mit anderen Worten, der CEO Bezahlung und der Unternehmenserfolg sind entkoppelt. Corporate-Governance-Faktoren haben mäßige Wirkungen auf die Assoziation zwischen CEO Entschädigung, Unternehmensperformance und Peergroup-Vergleich.

Stichwörter: CEO Entschädigungen, Finanziell Leistungen, Risiko, und Peer Group Vergleiche, Corporate Governance, Mäßigend Variabel und die Schweiz

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List of Abbreviations

Beta (β): Systematic risk or un-diversifiable risk

BOD: Board of Directors

CAPM: Capital Asset Pricing Model

CEO: Chief Executive Officer

CG: Corporate Governance

CH: Switzerland

CHF: Swiss Local Currency, Swiss Franc

CPI: Consumer Price Index

DEF14a: Definitive Proxy Statement 14a

DV: Dependent variable

EU: European Union

EPS: Earnings per Share ratio

FINMA: Swiss Financial Market Supervisory Authority

ISS: Institutional Services Shareholder Consultancy

IV: Independent variable

MTB: Market to Book ratio

MV: Market Value of the Firm

OaEC (in English): Ordinance against Excessive Compensation in Listed Stock Companies

PwC: PricewaterhouseCoopers

RDT: Resource Dependence/Dependency Theory

ROA: Return on Asset ratio

SEC: Security Exchange Commission

Sigma (σ): Unsystematic risk, diversifiable risk, residual risk, or idiosyncratic risk

SIX: Swiss Stock Exchange

SMI Index: Swiss Market Index

SMIM Index: Swiss Market Mid-Cap Index

SPI: The Swiss Performance Index (all shares in SIX)

TQ: Tobin Q ratio

TMT: Top Management Team

TSR: Total Shareholders Return

VC: Variable Compensation

VegüV (in German): Ordinance against Excessive Compensation in Listed Stock Companies

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Introduction of the Dissertation

1. Motivation for the Study

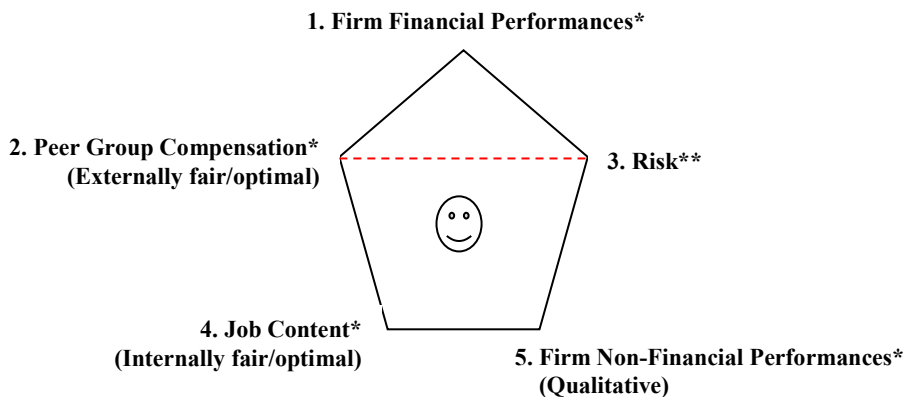
Executive compensation is still a prominent topic. After the corporate scandals and strong public opposition to overpayments, scholars, policy makers, politicians, and stakeholders have turned their attention to the appropriateness of compensation contracts. They have started searching a formula to find appropriate, proper, and fair executive compensation. Regulators have also amended their principles on Corporate Governance and Remuneration around the world. In fact, CEOs' compensation is the one in the spotlight because the highest pay in the company belongs to CEOs.

To curb overpayments, politicians in Switzerland proposed binding say-on-pay and claw-back (payback) in the Minder initiative. The majority of the Swiss citizens (sixty-eight percent) considered the Minder Initiative as a solution for more fair compensation on March 3, 2013. In addition to Switzerland, the U.K gave the shareholders a binding vote (say-on-pay) since 2009. The European Union Commission has also proposed "binding say-on-pay" to cope with short-term tendencies and to increase the link between management pay and firm performance (Chasan, 9 April 2014; EU Commission, 9 April 2014; O'Donnell & Cruise, 6 March 2013). On the other hand, in the USA, the say-on-pay is non-binding (advisory) (Chasan, 9 April 2014). Another proposal from Swiss politicians to limit executive salaries was the '1 to 12 Initiative', which aimed to cap the executive salaries at 12 times those of a company's lowest-paid employee (Revill, 2013). However, this solution of the Young Socialist party did not seem realistic, and it was rejected by 65 percent of the Swiss voters (NZZ, 24.11.2013). By contrast, the EU Commission managed to cap the Banker's bonuses. Effective as of January 2014, the EU agreed to cap banker's variable compensation (bonuses) at a year's salary (a mandatory 1:1 ratio). It can be raised to two years' pay (2:1 ratio) with explicit shareholders' approval (Barker, February 28, 2013; BBC, February 28, 2013; Waterson, February 28, 2013).

All of these attempts around the world are to figure out a formula for a fair and appropriate executive pay. In addition, Mary Schapiro, SEC Chair, stated "the inappropriate compensation level was due to a lack of accountability of boards (not

effective corporate governance), short-termism, lack of pay-performance link, and poor risk management controls” (Theodore, 2010). From the scholars’ viewpoint, the optimal framework of executive compensation should be based on job content (internally), peers (externally), and corporate success (pay-for-firm performance) (Hilb, 2009). Barkema and Gomez-Mejia (1998) described the appropriate framework of the executive compensation with the help of three criteria. The first one is the performance criterion, made up of pay-performance link, peers compensation, long-term performance consideration. The second one is governance regarding the effectiveness of Corporate Governance system of the firm. The last criteria are contingencies, such as national culture, the tax system, strategy, and firm and industry characteristics.

Then, according to all previous discussions on appropriate and fairly paid CEO compensation structure, I came up with my proposed framework for appropriate (optimal) executive compensation on the pentagon below (Figure 1):



Source: Author’s Proposal, derived from Hilb’s Triangle (2009) and FINMA (2010)

*: From Hilb’s Magic Triangle, Hilb (2009), Glocal Management of Human Resources, pg.245 ** Principle 4- Risk and Executive Remuneration (FINMA, 2010)¹

Figure 1: Framework of Appropriate (Optimal) CEO Compensation

¹FINMA-Principle 4: The structure and level of total remuneration is aligned with the firm’s risk policies and designed so as to enhance risk awareness.

As shown in figure 1, CEO compensation is appropriate when it is in line with firm financial and non-financial performances, risk, peer group's compensation, and job content at the same time. These five factors are the key drivers for optimal CEO compensation; however, non-financial (qualitative) performances² and job content³ are pretty hard to measure for external researchers due to time constraints and confidentiality policies of the companies. For this reason, in Papers I, II and III, only the first three criteria are investigated for the listed Swiss firms. First three criteria focus on 'financially' appropriate CEO compensations. On the other hand, it is strongly recommended that boards should use this pentagon framework to develop both financially and non-financially optimal compensation contracts. Appropriate compensation level fulfills the expectation of shareholders, stakeholders, and the public, and it contributes to a healthy economy.

The main motivation is the significance of the topic. Research on CEO compensation is necessary for several reasons. First, furnishing CEOs with optimal and performance-related compensation is beneficial for a healthy economy (Canyon, February, 2006). Second, "executive compensation is defined based on board decision and firm strategy, so it is one of the important parts of strategic leadership. Third, the reward system of the company is a crucial component of the organization's structure, which determines the motivation and performance of the top managers and performance of the firm (Finkelstein & Boyd, 1998)".

Another motivation is the gap in the literature. Although there are various studies on the link between CEO pay and firm performance, the inconsistent findings in the literature sparked my curiosity to pursue further research on this topic. Second, there is a lack of *contemporary and comprehensive* research for Switzerland, so a holistic picture of the Swiss market is still missing. For this reason, Paper I and Paper II investigate all listed Swiss companies from 2007 to 2013. Third, there is no adequate research to conclude on the moderating effect of Corporate Governance on CEO pay-for-performance. Fourth, even though various scholars

² Non-financial performances: They are the qualitative performances, such as reputation, customer loyalty, employee satisfaction, and so on.

³ Job Content: It means that CEO compensation should be internally fair (pay gap between CEO's Compensation and Senior Managers' compensation).

have investigated pay-for-performance, not many of them have reported robust statistical findings and considered the accurate time lag between firm performance and CEO compensation. Fifth, the link between CEO pay and risk is scarcely analyzed because it is a relatively recent topic, and it drew the attention of researchers, especially after the last financial crises and regulations on risk in 2009-2010. Sixth, the study on the association between CEO compensation and peer group compensation is sparse because of the complexity of the selection of right peers. Most of the studies are focused mainly on the US market.

To sum up, this dissertation is aimed to fill these gaps in the literature, so it is a pretty innovative and relevant study.

2. General Approach

In line with the author's proposed framework (figure 1) of an appropriate CEO compensation, the Paper I investigates the association between firm performance and CEO compensation, and Paper II focuses on the link between risk and CEO compensation. Finally, Paper III is concerned with the relationship between peer group's compensation and CEO compensation at the focal firm. Each paper analyzes one of the key factors of the CEO compensation by controlling industry, corporate governance, firm and CEO characteristics, tax, and cost of living effect. In other words, it is a study on three conceptually related factors of CEO compensation under the moderation of Corporate Governance variables.

On each paper, the links among dependent, independent variables, and moderators are set forth based on supporting theories, such as Agency, Resource Dependency, Managerial Power, Organizational, and Social Comparison Theories, and previous literature. Therefore, it is obvious that this dissertation is built on a solid theoretical framework and literature review.

The samples of Paper I and Paper II are all listed Swiss firms from 2007 to 2013 (1470 and 1442 firm-year panel data for Papers I and II respectively⁴), which

⁴ Due to the different missing values for some of the variables, each paper has different firm-year sample size.

makes this research contemporary, comprehensive and generalizable. Paper III focuses on top 100 companies (SIX UBS 100 Index) quoted to Swiss Stock Exchange from 2010 to 2013 (364 firm-year panel data²). The robust and reliable findings of Paper III are generalizable for the 100 most highly traded and capitalized companies in the Swiss market.

All of these papers are empirical. The financial data are compiled from ThomsonOne Banker and Orbis databases, and the hand-collected Compensation and Corporate Governance data are from the annual reports. The link between the dependent and independent variables is analyzed with the appropriate panel data regression methods in Stata program. Various robustness checks for normality, linearity, collinearity, homoscedasticity, autocorrelation, endogeneity, and reverse causality are reported, as well. Consequently, it can be evidently stated that this dissertation is a rigorous and robust empirical research.

3. Structure of the Dissertation

As argued in previous sections and displayed in Figure 2, this dissertation is a study of three relevant papers on CEO compensation. The key factors affecting CEO compensation, e.g. firm financial performance, risk, and peer group compensation, are empirically analyzed in each paper.

The introduction reveals the gap in the literature and practice, and it highlights the motivation, contribution, and approach of the dissertation. After paper III, in integration and conclusion part, the results of each paper are summarized, and then convergent outcomes and implications are reported. To sum up, the three papers are designed to be autonomous, and their results are integrated at the end of the dissertation.

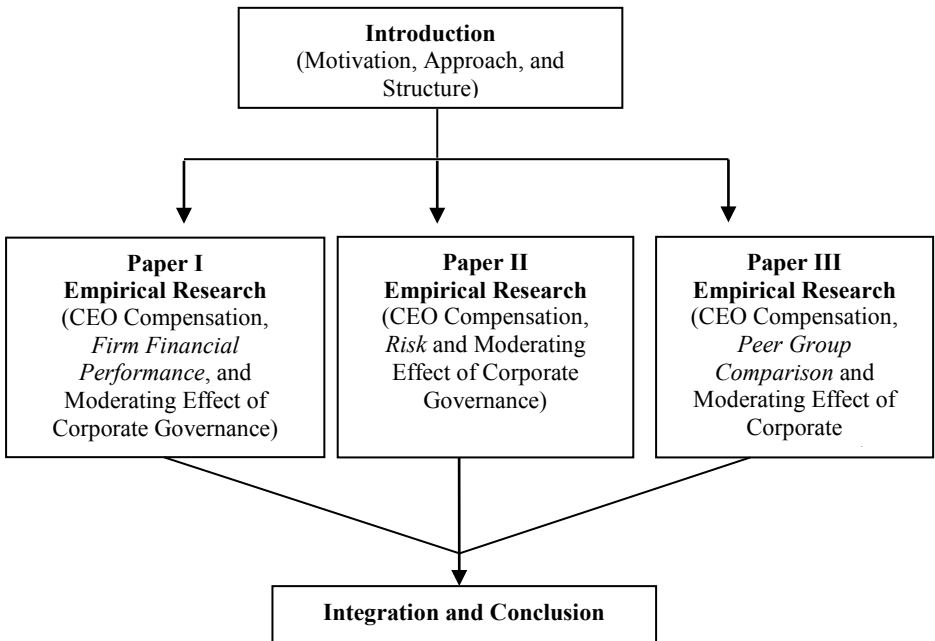


Figure 2: Structure of the Dissertation

Paper I has followed the research questions:

1. Is there any link between firm accounting performance and CEO compensation?
2. Is there any relationship between firm market performance and CEO compensation?
3. If there is a significant association between firm financial performance and CEO compensation, if so, is it in the positive or negative direction?
4. Are the Corporate Governance variables moderating the relationship between firm financial performance and CEO compensation?
5. If there is a significant moderation, does it have an enhancing or dampening effect?

Paper II investigates following the research questions:

1. Is there any relation between risk and CEO compensation?
2. If there is a significant association between risk and CEO compensation, is it linear or curvilinear?

3. Are the Corporate Governance variables moderating the relationship between risk and CEO compensation?
4. If there is a significant moderation, does it have an enhancing or dampening effect?

Paper III answers following the research questions:

1. Is the CEO compensation at the focal firm significantly predicted by the CEO Compensation at the peer group?
2. If there is a significant association, is it in the positive or negative direction?
3. Are the Corporate Governance variables moderating the relationship between CEO Compensation at the focal firm and CEO Compensation at the peer group?
4. If there is a significant moderation, does it have an enhancing or dampening effect?

These research questions are empirically tested in the Swiss market. The results presented in this paper are robust, comprehensive, contemporary, rigorous, reliable, and generalizable. It is the first detailed study on CEO compensation, which reveals a holistic picture of the firms on the Swiss Stock Exchange.

Paper I

Empirical Study on CEO Compensation, Firm Financial Performances, and Moderating Effect of Corporate Governance: Evidence from the Listed Companies in Switzerland

Empirical Study on CEO Compensation, Firm Financial Performances, and Moderating Effect of Corporate Governance: Evidence from Listed Companies in Switzerland

M. Mehtap Aldogan Eklund

Abstract

This empirical study investigates the relationship between firm financial performance and CEO compensation from the perspective of Agency theory. The nexus of pay-for-performance is desirable for healthy economy and organizations. The lack of association or negative relationship between firm performance and CEO pay is an indication of agency conflicts, weak Corporate Governance structure, Managerialism, or cronyism. Therefore, the moderating effect of Corporate Governance is also examined by drawing on a tenet of Resource Dependence, Managerial Power, and Organization theories. Consideration of Corporate Governance as a moderator is one of the contributions of this paper because prior studies have mainly regarded it as a control variable. CEO's compensation in Switzerland is a worthwhile topic to be investigated because it is the highest in Europe and even the second-highest in the world after the USA. Moreover, the recent regulations on CEO pay, binding say-on-pay, and claw-back (The Rip-off Initiative) drew the attention more in Switzerland. Thanks to the rich dataset, this paper is the first detailed study presenting a big picture of the Swiss Stock Exchange. Panel data regression is utilized to analyze all listed Swiss firms from 2007 to 2013 (210 firms, 1470 firm-year) after various robustness checks. The robust and rigorous findings reveal that apart from ROA, there is no association between firm performances (TSR, Tobin Q, EPS) and variable CEO compensation. On the other hand, ROA is negatively related to variable pay, which is an indication of the agency problem. For total CEO compensation, no significant impact is noted for both firm accounting and market performances. Surprisingly, board independence is not moderating, but board size and CEO duality are the moderators for the nexus of pay-for-performance. The implication of this study is necessary for academicians, board members, and regulatory bodies because it demonstrates the weaknesses in the CEO contracts in Switzerland, and gives some advice to figure out the optimal contracts.

1. Introduction

The purpose of this study is to investigate the existence and the direction of the link between firm performance and CEO compensation under the assumptions of Agency Theory. It also aims to delve into the moderation effect of corporate governance on the association between firm performance and CEO compensation under the predictions of Resource Dependence, Managerial Power, and Agency Theories.

For the details of the variables, firm performance (independent variable) is measured by accounting and market performances. Return on Asset (ROA) and Earning per Share (EPS) ratios analyze the firm accounting performance, and Tobin Q and Total Shareholder Return (TSR) are for the firm market performances. CEO compensation (dependent variable) is examined under three categories- total compensation in CHF, variable compensation in CHF, and the percentage of variable compensation. The moderator is Corporate Governance variables, which are board size, board independence, and CEO duality.

It is a worthwhile topic for research because the link between pay and performance (pay-for-performance) motivates CEOs to work harder and to increase profits and firm values (Michael Firth, Fung, & Rui, 2006). On the other hand, ensuring that the process is not corrupted is a goal of Corporate Governance (Canyon, February, 2006). Therefore, Corporate Governance factors are considered as a moderator in this paper, which makes it more interesting to read and which contributes significantly to practice and academy. Above all, Switzerland is a right and timely choice to investigate this issue due to its nature and the recent amendments. For instance, (1) the highest CEO pay in Europe is in Switzerland (2) The Rip-off or Abzocker Initiative in 2013 forced a change in the Swiss business culture on compensation from consensus or discretionary to obligatory culture (3) 'Binding Say-on-Pay' was addressed both in the Constitution and in Company Law (Ordinance) as of January 2014 (4) Effective as of January 1, 2014, Claw-back was entered into the Constitution and Business Law with three years imprisonment or fine not exceeding the equivalent of six times the CEO's annual compensation (5) The last intriguing event was the reaction of the Swiss citizens to the 1:12

Initiative (referendum), which required not to pay to the CEOs of the publicly traded Swiss firms 12 times more than the ‘lowest paid staff’ in the company. However, on 24 November 2013, 65.3 percent of Swiss voters rejected this initiative (NZZ, 24.11.2013).

A substantial number of articles published in top-tier journals and studies prepared by Swiss consulting companies are reviewed. It is noted that the current state of knowledge on this topic is controversial. Some scholars agreed on the positive association between CEO pay and firm performance while others found either no significant relationship or negative link. The conflicting results can be explained by the different country settings, such as US, UK, Germany, Sweden, Norway, New Zealand, Australia, Japan, Singapore, Hong Kong, Switzerland, or by different financial performance measures, or by diverse company datasets. For instance, some studies in Switzerland are not robust, comprehensive, and up-to-date. The conflicting and incomplete work motivated me to conduct research in this topic, which is prevailing the holistic view in Switzerland.

In addition to the conflicting results, there are an insufficient number of studies investigating the moderating effect of Corporate Governance on CEO pay-for-performance, which is the second gap in the literature. So far, Corporate Governance variables were mainly considered as control variables; however, a couple of studies explicitly mentioned the significance of Corporate Governance variables as a moderator.

Afterwards, by taking the findings of the paper into account, the contribution of this paper can be summarized as follows: (1) In contrast to previous studies in Switzerland, this paper analyzes all publicly traded Swiss companies from 2007 to 2013, so it depicts a true, recent, and broad picture of Switzerland. (2) The results are detailed, robust, and generalizable. (3) The findings, mainly indicating a lack of pay-for-performance link, are quite useful for the regulators who recently promulgated rigid laws and principles in Switzerland. (4) Consideration of Corporate Governance as a moderator is also a significant contribution to the literature. (5) It contributes to Resource Dependence Theory because it is found

that larger boards are enhancing moderator for the link between ‘total CEO compensation’ and TSR. On the other hand, for the optimal ‘variable compensation’, the smaller boards are more efficient and effective to establish a pay-for-performance link, especially for ROA and Tobin Q. This variation can be explained by the complexity of the variable compensation, e.g., options and incentives, which may require unity of command by having a small board. Furthermore, this finding furnishes the view that “no single theory explains the nexus between board structure and performance (Jackling & Johl, 2009)”. (6) More interestingly, as a support of 31 percent of Swiss firms having CEO duality and as a support of Organization Theory, but in contrast to prevalent Managerial Power theory, it is found that CEO duality strengthens the association between total CEO compensation and EPS. This interesting finding can be explained by a unity of command at the top of the firm, which provides decision-making authority and sends reassuring signals to stakeholders.

The remainder of the paper is organized into eight sections. First, Swiss regulations and principles on compensation are provided. Second, a theoretical framework is presented. Third, the prior empirical literature on CEO pay-for-performance and the moderating effect of Corporate Governance factors (board size, board independence, and CEO duality) is summarized and synthesized. Fourth, main and sub-hypotheses and methodology are stated. The rest of the sections are dedicated to findings, conclusions, implications, limitation, and future research.

2. Regulations and Principles on Compensation in Switzerland

Switzerland is an interesting country to investigate due to its consensus/discretion reporting culture, highest CEO and chairman compensation in Europe⁵ (Bilanz, 2012; Goergen & Renneboog, 2011; Tomlinson, 2004; Weber & Obermatt, 2010), and recent change from voluntary to “Binding Say-on-Pay” (the Rip-off or the Abzocker Initiative).

⁵ As demonstrated on Appendix 7, the highest CEO pay in the Europe is in Switzerland. Even though this figure came from 2005, recent studies are still consistent with this result (Weber & Obermatt, 2010).

Before January 1, 2014, in Switzerland, Code of Obligation (Gesetz-Art 663bbis) was mandatory for all listed companies in the Swiss Exchange (SIX) (Gesetze, 2007). In addition, listed companies in SIX had to comply with the Swiss Stock Exchange 07/09 Directive, which was on “comply or explain” basis. Section 5 of this Directive was dedicated to compensation (SIX, 2009). EconomieSuisse had also issued the Principle on Corporate Governance (“Swiss Code” of Best Practice for Corporate Governance) in 2002 (EconomieSuisse, 2002), and it was revised in 2007 by adding a special section, appendix, on compensation (Economiesuisse, 2007). The principles of EconomieSuisse are on a “comply-or-explain” basis for the publicly traded firms in SIX. All of these regulations were in line with each other in their contents.

In addition, ‘banks and financial institutions quoted on SIX’ have to abide by the *FINMA Circular (2010/1)* on remuneration schemes, which was effective as of 2010. It includes the risk factors to design incentive amounts (FINMA, 2010). Effective from January 1, 2012, *Basel III Pillar 3 remuneration disclosure requirements* are also obligatory for the publicly traded banks and financial institutions in Switzerland (PWC, 2011, July 5).

However, after the referendum on the Minder Initiative (the Rip-off or Abzocker Initiative) on March 3, 2013, the consensus based business culture changed in Switzerland. 68% of Swiss citizens voted “yes” for the Minder Initiative in the referendum (NZZ, 03.03.2013; James Shotter & Barker, 03.03.2013). This high approval of the Minder Initiative may be a result of the Sfr72m golden goodbyes of Daniel Vasella, the departing Chairman of the Swiss pharmaceuticals company Novartis (James Shotter, 27.2.2013). Then, in a year, the Federal Council and the Swiss Parliament converted the Initiative into law. The Minder Initiative required four key changes: (1) Binding Say-on-Pay in the annual general meeting, (2) new election procedures of BOD, executive board, and advisory board (3) prohibited compensation (golden handshake, golden parachutes/goodbyes, advance compensation), and (4) criminal sanctions, such as imprisonment up to 3 years and pay-back (clawback) obligations up to six times the CEO’s annual salary (Hänni & Nikitine, 3 March 2013; Rey, 2014).

Ethos spokesman, Mr. Vinzenz Mathys, stated that before the Minder Initiative, “only 44 (20%) of the Swiss-listed companies and 16 (80%) of the SMI-Firms implemented ‘voluntary’ Say-on-Pay (Konsultativabstimmungen) principle and compared with other wealthy countries, Switzerland had very poor shareholder rights (Hays, 2011, July; zCapital, 2007)”. In contrast to the good sides of the Initiative, other scholars believed that the criminal sanctions up to 3 years and shareholders’ binding decision on the selection of board of director, executive committee, and advisory board in the annual general meeting may not be a real solution to the problem (Binder, 2013a, 2013b).

Finally, as of January 1, 2014, Swiss listed companies are subject to the new regulations regarding excessive compensation. For instance, the Swiss Federal Council promulgated *Article 95-Paragraph 3 (Art.95 Para 3)* of the Swiss Federal Constitution (Confederation, 18 May 2014). Based on Art. 95 Para 3, “*Ordinance Against Excessive Compensation in Listed Stock Companies (OaEC or VegüV)*” was issued and replaced Article 663bbis of the Swiss Code of Obligations (Federation, 20 November 2013). These are the mandatory regulations on compensation in Switzerland prepared in line with “the Minder Initiative”.

Furthermore, for the publicly traded firms, EconomieSuisse and Swiss Stock Exchange revised their principles on Corporate Governance and Compensation in 2014 (*Economiesuisse, 2014*). SIX Directive 2014 entered into force on 1 October 2014 and replaced the Directive on Corporate Governance (07/09 Directive) (SIX, 1 September 2014).

To sum up, related to the title of this dissertation, the most significant changes in the Swiss Code 2014 are the requirements for compensation disclosures on performance-based-compensation and the composition of peer groups. Moreover, shareholder interest is changed to companies’ sustainable (stakeholders’) interest, and Board composition requires adequate diversity and female members (Rey, 2014). However, the risk perspective and its alignment with firm remuneration schemes are not covered satisfactorily by the Swiss Code. In other words, in line

with FINMA (2010) Remuneration Principle 4, Swiss Code should also ask for disclosure in the annual report or remuneration report indicating the level of total compensation and its alignment with risk for all listed companies in Switzerland.

3. Theoretical Framework

The theoretical framework of this paper mainly depends on Agency Theory. In fact, the predicted link between firm performance and CEO compensation is derived from Agency Theory. Besides this main link, the moderating impact of independent board members is also developed from Agency Theory.

On the other hand, the moderating effects of board size and CEO duality come from Resource Dependence Theory and Managerial Power Theory, respectively.

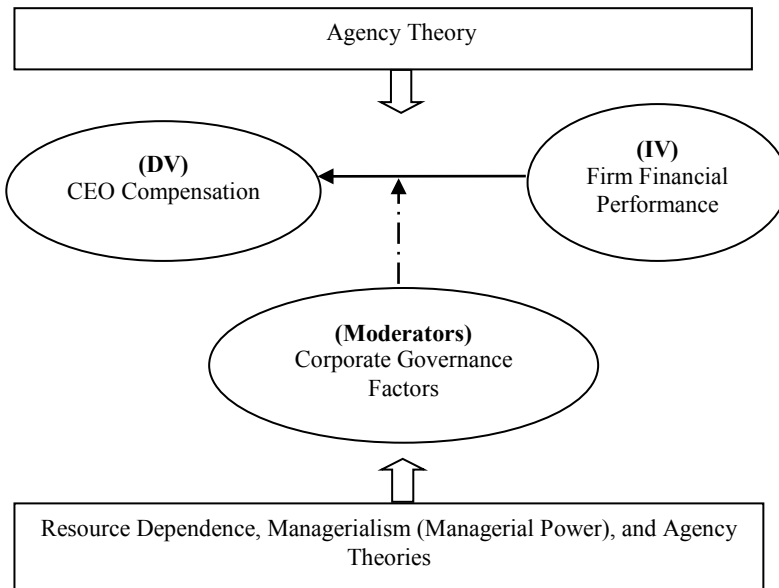


Figure 3- Theoretical Framework

3.1 Agency Theory

Agency Theory emerged from the papers of Alchian and Demsetz (1972) and Jensen and Meckling (1976) (Clarke, 2008). The second milestone was Eisenhardt's article on Agency Theory and its assessments in 1989 (Eisenhardt,

1989). Agency Theory is an extension of Managerial Power Theory, even though its roots stem from diverse disciplines, e.g., Management and Accounting (Luis R. Gomez-Mejia, Berrone, & Franco-Santos, 2010). Both Agency Theory and Managerial Power Theory depend on individualism or self-interest (H. Abdullah & Valentine, 2009). Agency Theory believes that agents are risk averse, and agents' interests may differentiate from the interest of principals (conflict of interest) (Tosi, Werner, Katz, & Gomez-Mejia, 2000).

Due to a lack of trust between the agent (manager/CEO) and the principal (shareholder/owner), agency cost is incurred. To minimize the agency cost and conflict of interest, board of directors or compensation committees and shareholders should establish the compensation contract that rewards the CEO when he strives to maximize firm performance and shareholder's wealth (pay-for-performance) (Doucouliagos, Haman, & Askary, 2007; Luis R. Gomez-Mejia et al., 2010).

Drawing on this main tenet of Agency Theory, *ceteris paribus*, it is hypothesized that there is a positive relationship between firm performance and CEO pay (the existence of pay-for-performance, H₁).

In addition to H₁, H₃ is constructed on Agency Theory prediction. Gomez-Mejia et al. (2010) declared that by depending on the principles of Agency Theory, monitoring of agent (CEO) is a major factor in decreasing an agency cost, and independent board of directors are stronger in monitoring the nexus of pay-for-performance. For instance, it is claimed that "independent directors on boards watchdog independently in situations where a conflict of interest between shareholders and managers occurs (Jackling & Johl, 2009)." They also provided some support to Agency Theory by concluding that "a greater proportion of independent (non-executive) directors on boards is associated with improved firm performance, which may result in higher CEO compensation."

According to the literature and Agency Theory, it is hypothesized in this paper that independent board members enhance the relationship between firm performance and CEO pay (H₃), other things being equal.

3.2 Resource Dependence Theory

Resource Dependency or Dependence Theory (RDT) gained importance after the article of Pfeffer and Salancik (1978). The basic arguments of this theory are that “organizations depend on resources, resources are based on power, and power and resource dependency are directly linked together, which are the key factors for the company’s success (Pfeffer & Salancik, 1978)”.

This theory focuses on “the role of directors providing or securing essential resources for an organization through their linkage to the external environment because gaining access to resources is critical to firm success (H. Abdullah & Valentine, 2009; Gantenbein & Volonté, 2013; Hillman, Canella, & Paetzold, 2000) “.

Management literature views Board of Directors as a valuable resource for a company. “Using Resource Dependency Theory, large boards with a high level of a link to an external environment would improve a company’s access to various resources, which improves Corporate Governance. Furthermore, larger boards are likely to have more knowledge, skills, pool of expertise, and resources for the organization (Jackling & Johl, 2009)”.

In the light of the Resource Dependence Theory (RDT), other things being equal, it is hypothesized that board size enhances the association between firm performance and CEO compensation (H₂). In other words, larger boards are more successful in managing the positive link between pay and performance because of their pool of expertise, skills, and resources.

3.3 Managerial Power Theory

Inconsistent with the assumption of Agency Theory, Managerialism or Managerial Power Theory believes that “managers may use their discretion to benefit

themselves or their self-interest (Lucian A. Bebchuk & Fried, 2003; Clarke, 2008). In simpler terms, a powerful CEO dominates the board, and decouples the pay-performance link (Buchholtz, Young, & Powell, 1998)”.

According to Bebchuk and Fried (2003), “Managerialism postulates that pay is less sensitive to performance in firms when managers have relatively more power. Other things being equal, managers would have more power when i) the board is relatively weak (the majority of executive directors), ii) there are no large number of outside shareholders, iii) there are fewer institutional shareholders, iv) CEO duality exists”. Primarily, Managerial Power Theory proposes that if a CEO is also the chairperson, then that CEO has more power to influence the BODs in their decisions on CEO pay (Capezio, Shields, & O'Donnell, 2011).

CEO may have power over the board of directors because the CEO has inside knowledge of the firm's activities, and BODs must rely on the information that is provided to them by the CEO. Although shareholders prefer a strong link between CEO pay and performance to avoid CEO's shirking, the CEO can better satisfy his self-interest and maximize his discretion when CEO pay and firm performance are decoupled (Buchholtz et al., 1998). In addition, another scholar revealed that “CEO prefers a weak link between pay and performance because CEO may pursue his interests with lower risk and greater flexibility when pay and performance are decoupled (Young & Buchholtz, 2002).”

Consequently, consistent with Managerial Power Theory, other things being equal, it is formulated that CEO duality decreases the association between CEO pay and firm performance (H₄).

On the other hand, there are competing theories (Organization and Stewardship theories) with Managerialism. Organization and Stewardship theories are built on trust. For instance, Stewardship Theory suggests that “unifying the role of the CEO and the chairperson (CEO duality) reduces agency cost and increases firm performance (H. Abdullah & Valentine, 2009). Organization Theory also believes in the advantages of CEO duality. Finkelstein and D'aveni (1997) addressed that

Barnard (1938), Fayol (1949), and Pfeffer (1981) are the leading researchers of Organization Theory. In the light of their findings, “the consolidation of the two most senior management positions establishes a unity of command at the top of the firm, which provides decision-making authority and sends reassuring signals to stakeholders. In contrast, non-duality creates various authorities and conflicts among senior managers. Because CEO leadership is an essential part of the success of the organization, a strong and powerful leadership can help a firm reach its objectives and adapt to environmental demands (Finkelstein & D'aveni, 1997)”.

By considering the two conflicting theories, it can be stated that CEO duality is a “double-edged sword.”

4. Literature Review

In the previous section, the theoretical framework was built. However, these theories are not without empirical support.

After the theoretical framework of the paper, the previous literature on CEO pay-for-performance and the moderating effect of Corporate Governance factors, especially board size, board independence, and CEO duality are analyzed.

CEO Pay-for-Performance

Prior research on CEO compensation and firm performance can be grouped into three categories: positive, negative, and no significant relationships. These conflicting results could be explained by distinct datasets, such as datasets from diverse countries, time, companies, firm performances, and compensation components.

Scholars conducted research between 1985 and 2015 in various countries, e.g., the USA, the UK, Germany, Italy, Australia, the Netherlands, Norway, Sweden, Switzerland, New Zealand, Japan, Hong Kong, and Singapore. Mainly the USA, the UK, and Australia were analyzed. After the financial crises and recent amendments in regulations/principles around the world, the nexus of pay-for-

performance has drawn more attention. The details and the synthesis of these articles are in Appendix 6, but the summary is reported in the following paragraphs.

According to Berrone and Gomez-Mejia (2009), Brick et al. (2006), Canyon and Schwalbach (2000), Carpenter and Sanders (2002), Doucouliagos (2007), Engelmann-Zach (2013), Firth et al. (1999), Fong, Misangyi, and Tosi (2010), Gunasekaragea and Wilkinson (2002), Jensen and Murphy (1990), Kato and Kubo (2006), Lee (2009), Li, Yany, and Yu (2015), Murphy (1985), Ozkan (2011), PwC (2014), Randoy and Nielsen (2002), Sun and Cahan (2009), firm financial performance is *positively* related to CEO pay. In other words, the higher firm financial performance is experienced, the higher CEO compensation is paid, which is in line with the tenet of Agency Theory.

On the other hand, other researchers noted that practice does not always stick to the principles of Agency Theory. Because of Managerialism, agency problems, Cronyism, and weak Corporate Governance structures, the positive association between pay and performance is tainted. Basu et al. (2007), Boyd (1994), Brick et al. (2006), Brunello, Graziano, and Parigi (2001), Capezio et al. (2011), Gigliotti (2013), Gomez-Mejia et al. (1987), Izan et al. (1998), Schaeltti and Weber (2011), Ozkan (2011), Randoy and Nielsen (2002), Shaw and Zhang (2010), Tosi et al. (2000), Drobetz, Pensa, and Schmid (2007), Wanzenried, Piazza, Perdergnana (2005), Young and Buchholtz (2002) demonstrated that firm financial performance is not significantly associated with CEO pay.

The last group of scholars highlighting the existence of the agency problem in the determination of an optimal CEO compensation contract reported a negative relationship. The negative association between firm performance and CEO compensation was reported by Buchholtz et al. (1998), Buck et al. (2003), Core et al. (1999), Duffhues and Kabir (2008), Rost and Osterloh (2009). Basu et al. (2007) and Core et al. (1999) explained this negative relationship by agency problem and weaker Governance structures. In more detail, “their results reveal that firms with weaker Governance structures have greater agency problems; that

CEOs at firms with greater agency problems receive higher compensation; and that firms with greater agency problems perform worse (J E Core, Holthausen, & Larcker, 1999)".

After this snapshot of the literature review on pay-for-performance, the synthesis of the literature could be summarized as follows: (1) Although there are various papers on this subject, researchers have heavily focused on total compensation. That is, not many scholars have studied equity-based compensation, but this dissertation considered both total and variable compensation. (2) Not many studies have taken the accurate time-lag between pay and performance into consideration. On the other hand, in this dissertation, an advanced time-lag model is developed based on previous literature and interviews with the compensation experts. (3) There is still a need for analyzing recent data, especially for Switzerland, after the current changes in practice and regulations.

Previous Research on CEO Pay-for-Performance in Switzerland

Two empirical articles about CEO pay in Switzerland have been published so far. The article named as 'Estimating the Cost of Executive Stock Options: Evidence from Switzerland' was released in one of the top tier Corporate Governance Journals in 2007 – Corporate Governance: An International Review. The dataset of this paper was 78 listed companies in 2002. Even though the first aim of the scholars was not to test pay-for-performance sensitivity, they also reported that the sensitivity between CEO stock option compensation and firm performance (ROA and annual stock return) is not significantly significant (no association). In addition, for the variable CEO pay, larger boards pay higher wages, indicating potential agency conflicts (Drobetz, Pensa, & Schmid, 2007). This result is in line with the findings of variable pay (H_{2.1} and H_{2.3}). The dampening effect of larger boards in the relationship between firm performance and variable pay is disclosed in Figure 7 and Figure 9.

The second published article was a Meta-Analysis including 100 Swiss listed companies in 2005 and 2006. It is called 'Management Fashion Pay-for-Performance for CEOs' and was published in SBR (Schmalenbach Business

Review) in 2009. It concluded that the rise in TSR increased cash pay, but not equity compensation. In contrast, an increase in stock performance decreases stock compensation (negative link). The negative nexus was explained by authors as follows: “best-paid executives did not perform better; executive compensation practice does not use long-term incentives to align the interests of executives and shareholders (Rost & Osterloh, April 2009).” The agency conflict and the negative association between firm market performance (Tobin Q) and variable pay are also highlighted in the Paper I for SMI and SMIM firms on Part 7.2, Table 25.

The rest are unpublished works, such as a dissertation, practical research, and working papers. The results of the following papers are not as robust as those of Drobetz et al. (2007) and Rost and Osterloh (2009). The third empirical paper on Swiss CEO pay was a dissertation at the University of St. Gallen. Engelmann-Zach (2013) demonstrated that total CEO compensation had a positive link with ROE, ROA, and MTB for 48 SMI and SMIM firms for the years 2007-2010. Even though the author did not perform robustness tests for endogeneity or reverse causality or she did not lag variables to cope with reverse causality, the result was worthwhile reporting. On Table 25, section 7.2, it is demonstrated that there is a positive relationship between firm performance (EPS and TSR) and total pay for SMI and SMIM firms from 2007-2013 (317 firm-years) after robustness checks.

The fourth research for Switzerland focused on 22 cantonal banks from 2002 to 2004. Wanzenried, Piazza, and Perdergnana (2005) stated that firm performance (TSR and ROE) does not explain executive compensation in Cantonal Swiss banks. Instead, the financial situation of the cantons and firm size are more important determinants of executive compensation.

The last two studies are from the practice. Obermatt (2010), the consulting firm, compiled the data for 146 large listed firms from 2008 to 2010. It is reported that TSR and EBITDA are not related to variable CEO pay in Switzerland. In contrast, PwC (2014) analyzed SMI and SMIM firms from 2007-2014 and found that ROE and TSR are significantly associated with variable CEO pay, but ROA is not. In

addition to variable pay, there are a significant positive relationship between EBITDA and total CEO pay.

As seen above, there are contradicting results, and none of the studies have analyzed all listed firms quoted on Swiss Stock Exchange, so a holistic picture is still missing. In addition, CEO compensation in Switzerland is as significant as the one in the USA and the UK because, after the USA, the highest paid CEOs are in Switzerland. In essence, they are paid even more than the British CEOs.

Previous Research on Corporate Governance Factors

Board Size

Because board size is a major factor for board functioning, numerous researchers have performed studies on board size and its direct (main) effect on CEO pay. Previous scholars who explored the main effect do not have a consensus on whether large boards enhance or impair Corporate Governance by controlling CEO power and CEO pay (Eisenberg, Sundgren, & Wells, 1998; Forbes & Milliken, 1999; Gantenbein & Volonté, 2013; Goodstein, Gautam, & Boeker, 1994; Jackling & Johl, 2009; D. Lin, Kuo, & Wang, 2013; Ntim, Lindop, Osei, & Thomas, 2010; Ozkan, 2007; David Yermack, 1996).

Forbes and Milliken (1999), Goodstein et al. (1994), and Jackling and Johl (2009) pointed out the advantages of large boards. For example, “using Resource Dependence Theory, it is anticipated that larger boards are likely to have more knowledge, skills, pool of expertise, and resources for the organization. They also enhance Corporate Governance by reducing CEO domination and power over the board, which helps to decrease CEO salary or increase pay-performance sensitivity”.

On the other hand, Lin et al. (2013) believe that “the advantages of large boards are overwhelmed by efficiency losses in communication, decision-making, and coordination.” “Difficulty in coordination makes it harder for the members to use their skills effectively” (Martin J Conyon & Peck, 1998; D. Lin et al., 2013). Due to the inefficiencies of large boards, it was found that larger board size is linked to

higher CEO compensation in the UK (Ozkan, 2007). According to Ntim et al. (2010), in South Africa, pay-for-performance sensitivity is weaker in the firms with large boards.

In the light of two different perspectives on large board size, it is decided to consider board size as a moderator of the relationship between firm performance and CEO pay, which is one of the contributions of this study.

Board Independence

“Independent and Non-executive board members can make a decision on CEO remuneration more independently than management, and they can base the compensation more objectively on firm performances (Chhaochharia & Grinstein, 2009; Geletkanycz & Boyd, 2011; Guthrie, Sokolowsky, & Wan, 2012; J. Lee, 2009)”. For instance, Ntim et al. (2010) concluded that pay-performance sensitivity is stronger in firms with more independent BODs.

In addition to the literature examining the main (direct) effect of board independence on CEO compensation, Capezio et al. (2011) investigated board independence as a moderator of CEO pay-for-firm-performance. By contrast, they did not find any moderating effect of board independence for Australian Public Companies in the ASX 500 Index (Capezio et al., 2011). It is also the case for Swiss publicly listed companies, based on the findings in section 7.4.

CEO Duality

When the board chairperson is also the CEO, the board’s strength in monitoring and overseeing is reduced as a result of a conflict of interest (S. N. Abdullah, 2004). Boyd (1994) also addressed that “in terms of Managerial Power Theory, CEO duality has a negative relationship with the degree of board control, which weakens the connection between firm performance and CEO pay (Finkelstein & D’aveni, 1997)”

On the other hand, Finkelstein and D’aveni (1997) emphasized that CEO duality is a double-edged sword. Drawing on the principles of Organization Theory, “the

consolidation of two most senior management positions provides a unity of command at the top of the firm, which establishes an efficient and unambiguous decision-making process and augments the financial performance of the company (Finkelstein & D'aveni, 1997)".

Besides the main effects, the moderating impact of CEO duality was analyzed by Buchholtz et al. (1998). However, they demonstrated that "CEO duality did not moderate the relationship between firm performance (TSR) and CEO pay for 500 industrial publicly held American corporations in 1992 (Buchholtz et al., 1998)".

Finally, there is insufficient research concerning the moderating impact of board size, independence, and CEO duality on the relationship between firm performance and CEO pay, especially for Switzerland. To the best of my knowledge, Capezio et al. (2011), and Buchholtz et al. (1998) are the only researchers in this area. Nevertheless, they did not cover a recent dataset. It can be concluded that there is still a gap in the literature on this topic which should be investigated further. One of the aims of this paper is filling this gap.

5. Hypotheses

Based on the theories and the literature reviews discussed in Sections 3 and 4, the following hypotheses are formulated:

Hypotheses regarding CEO Compensation and Firm Financial Performance:

H₁: Ceteris paribus, a positive relationship exists between accounting (ROA, EPS) and market (Tobin Q and TSR) performances of the firm and CEO compensation. (Agency Theory prediction)

H_{1.1}: The higher ROA is reported, the more variable compensation is paid to the CEO.

H_{1.2}: The higher EPS is reported, the more variable compensation is paid to the CEO.

H_{1.3}: The higher Tobin Q is reported, the more variable compensation is paid to the CEO.

H_{1.4}: The higher TSR is reported, the more variable compensation is paid to the CEO.

H_{1.5}: The higher ROA is reported, the higher percentage of variable compensation is paid to the CEO.

H_{1.6}: The higher EPS is reported, the higher percentage of variable compensation is paid to the CEO.

H_{1.7}: The higher Tobin Q is reported, the higher percentage of variable compensation is paid to the CEO.

H_{1.8}: The higher the TSR is reported, the higher percentage of variable compensation is paid to the CEO.

H_{1.9}: The higher ROA is reported, the more total compensation is paid to the CEO.

H_{1.10}: The higher EPS is reported, the more total compensation is paid to the CEO.

H_{1.11}: The higher Tobin Q is reported, the more total compensation is paid to the CEO.

H_{1.12}: The higher TSR is reported, the more total compensation is paid to the CEO.

Hypotheses regarding Moderators:

H₂: Ceteris paribus, **board size** increases the effect of firm accounting (ROA, EPS) and market (Tobin Q and TSR) performances on CEO compensation. (Resource Dependence Theory prediction)

H_{2.1}: ROA is positively associated with variable CEO compensation when the board size is high (large) and negatively associated with it when the board size is low (small).

H_{2.2}: EPS is positively associated with variable CEO compensation when the board size is high (large) and negatively associated with it when the board size is low (small).

H_{2.3}: Tobin Q is positively associated with variable CEO compensation when the board size is high (large) and negatively associated with it when the board size is low (small).

H_{2.4}: TSR is positively associated with variable CEO compensation when the board size is high (large) and negatively associated with it when the board size is low (small).

H_{2.5}: ROA is positively associated with the percentage of variable CEO compensation when the board size is high (large) and negatively associated with it when the board size is low (small).

H_{2.6}: EPS is positively associated with the percentage of variable CEO compensation when the board size is high (large) and negatively associated with it when the board size is low (small).

H_{2.7}: Tobin Q is positively associated with the percentage of variable CEO compensation when the board size is high (large) and negatively associated with it when the board size is low (small).

H_{2.8}: TSR is positively associated with the percentage of variable CEO compensation when the board size is high (large) and negatively associated with it when the board size is low (small).

H_{2.9}: ROA is positively associated with total CEO compensation when the board size is high (large) and negatively associated with it when the board size is low (small).

H_{2.10}: EPS is positively associated with total CEO compensation when the board size is high (large) and negatively associated with it when the board size is low (small).

H_{2.11}: Tobin Q is positively associated with total CEO compensation when the board size is high (large) and negatively associated with it when the board size is low (small).

H_{2.12}: TSR is positively associated with total CEO compensation when the board size is high (large) and negatively associated with it when the board size is low (small).

H₃: Ceteris paribus, **the percentage of independent Board Members** increases the effect of firm accounting (ROA, EPS) and market (Tobin Q and TSR) performances on CEO compensation. (Agency theory prediction)

H_{3.1}: ROA is positively associated with variable CEO compensation when the percentage of independent Board Members is high and negatively associated with it when the percentage of independent Board Members is low.

H_{3.2}: EPS is positively associated with variable CEO compensation when the percentage of independent Board Members is high and negatively associated with it when the percentage of independent Board Members is low.

H_{3.3}: Tobin Q is positively associated with variable CEO compensation when the percentage of independent Board Members is high and negatively associated with it when the percentage of independent Board Members is low.

H_{3.4}: TSR is positively associated with variable CEO compensation when the percentage of independent Board Members is high and negatively associated with it when the percentage of independent Board Members is low.

H_{3.5}: ROA is positively associated with the percentage of variable CEO compensation when the percentage of independent Board Members is high and negatively associated with it when the percentage of independent Board Members is low.

H_{3.6}: EPS is positively associated with the percentage of variable CEO compensation when the percentage of independent Board Members is high and negatively associated with it when the percentage of independent Board Members is low.

H_{3.7}: Tobin Q is positively associated with the percentage of variable CEO compensation when the percentage of independent Board Members is high and negatively associated with it when the percentage of independent Board Members is low.

H_{3.8}: TSR is positively associated with the percentage of variable CEO compensation when the percentage of independent Board Members is high and negatively associated with it when the percentage of independent Board Members is low.

H_{3.9}: ROA is positively associated with total CEO compensation when the percentage of independent Board Members is high and negatively associated with it when the percentage of independent Board Members is low.

H_{3.10}: EPS is positively associated with total CEO compensation when the percentage of independent Board Members is high and negatively associated with it when the percentage of independent Board Members is low.

H_{3.11}: Tobin Q is positively associated with total CEO compensation when the percentage of independent Board Members is high and negatively associated with it when the percentage of independent Board Members is low.

H_{3.12}: TSR is positively associated with total CEO compensation when the percentage of independent Board Members is high and negatively associated with it when the percentage of independent Board Members is low.

H₄: Ceteris paribus, the **CEO Duality** decreases the effect of firm accounting (ROA, EPS) and market (Tobin Q and TSR) performances on CEO compensation. (Managerial Power theory prediction)

H_{4.1}: ROA is negatively associated with variable CEO compensation when CEO duality exists and positively associated with it when there is no CEO duality.

H_{4.2}: EPS is negatively associated with variable CEO compensation when CEO duality exists and positively associated with it when there is no CEO duality.

H_{4.3}: Tobin Q is negatively associated with variable CEO compensation when CEO duality exists and positively associated with it when there is no CEO duality.

H_{4.4}: TSR is negatively associated with variable CEO compensation when CEO duality exists and positively associated with it when there is no CEO duality.

H_{4.5}: ROA is negatively associated with the percentage of variable CEO compensation when CEO duality exists and positively associated with it when there is no CEO duality.

H_{4.6}: EPS is negatively associated with the percentage of variable CEO compensation when CEO duality exists and positively associated with it when there is no CEO duality.

H_{4.7}: Tobin Q is negatively associated with the percentage of variable CEO compensation when CEO duality exists and positively associated with it when there is no CEO duality.

H_{4.8}: TSR is negatively associated with the percentage of variable CEO compensation when CEO duality exists and positively associated with it when there is no CEO duality.

H_{4.9}: ROA is negatively associated with total CEO compensation when CEO duality exists and positively associated with it when there is no CEO duality.

H_{4.10}: EPS is negatively associated with total CEO compensation when CEO duality exists and positively associated with it when there is no CEO duality.

H_{4.11}: Tobin Q is negatively associated with total CEO compensation when CEO duality exists and positively associated with it when there is no CEO duality.

H_{4.12}: TSR is negatively associated with total CEO compensation when CEO duality exists and positively associated with it when there is no CEO duality.

6. Methodology

6.1 Sample and Data Collection

The sample of this paper is the listed companies in Switzerland. 276 firms are quoted on the Swiss Stock Exchange, and 236 of them are coded under Swiss country code (CH) or domiciled in Switzerland. (SIX, 2015b). After subtracting one of the double listed companies (such as Lindt&Sprungli disclosed with two different shares classes, N and PS), delisted companies (e.g., Società Elettrica Sopracenerina SA (SES), Weatherford International Ltd, etc.), and the investment companies managed by an investment manager or managed without an executive committee and BOD (such as OTI Energy AG, Private Equity Holding AG, ENR Russia Invest SA, etc.), 210 firms or **1470 firm-year** panel dataset⁶ left. It includes **seven years** from 2007 to 2013. 2007 is the initial year because the disclosure of the executive compensation or compensation report entered into the annual reports by an amendment to the Swiss code in 2007 (Swiss Code of Best Practice for

⁶ “A longitudinal, or panel, data set is one that follows a given sample of individuals/firms over time, and thus provides multiple observations on each individual/firm in the sample”.

http://www.univ-orleans.fr/deg/masters/ESA/CH/Geneve_Chapitre0.pdf

Corporate Governance, Appendix on the executive compensation) (Economiesuisse, 2007).

Hand-collected data for CEO compensation, Corporate Governance variables, and CEO characteristics were used. They were manually collected from annual reports published on the companies' web pages and Geschäftsberichte Bibliothek⁷.

Firm financial performances and other controlling variables were compiled from ThomsonOne Banker and Orbis Databases.

6.2 Model, Variables/Definitions, and Method

Model

The CEO compensation equation is constructed as follows:

For Model 1-without interaction variables:

$$\begin{aligned} \text{LN (CEO Compensation)}_t = & \beta_0 + \beta_1 \text{Firm Financial Performance}_{t, \text{lagged}} + \beta_2 \text{Firm Age}_t \\ & + \beta_3 \text{Firm Size}_t + \beta_4 \text{Insitutional Ownership}_t + \beta_5 \text{Family firm}_t + \beta_6 \text{State Ownership}_t + \\ & \beta_7 \text{CEO Age}_t + \beta_8 \text{CEO Tenure in firm}_t + \beta_9 \text{CEO Tenure as manager}_t + \beta_{10} \text{CEOs} \\ & \text{Ownership}_t + \beta_{11} \text{CEO Nationality}_t + \beta_{12} \text{Perc of Foreign BOD Mem}_t + \beta_{13} \text{CEO} \\ & \text{Duality}_t + \beta_{14} \text{Board size}_t + \beta_{15} \text{Perc of Indep member in BOD}_t + \beta_{16} \text{Existence of} \\ & \text{Comp Comm}_t + \alpha + u_{it} \end{aligned}$$

For Model 2-with interaction variables:

$$\begin{aligned} \text{LN (CEO Compensation)}_t = & \beta_0 + \beta_1 \text{Firm Financial Performance}_{t, \text{lagged}} + \beta_2 \text{Firm Age}_t \\ & + \beta_3 \text{Firm Size}_t + \beta_4 \text{Insitutional Ownership}_t + \beta_5 \text{Family firm}_t + \beta_6 \text{State Ownership}_t + \\ & \beta_7 \text{CEO Age}_t + \beta_8 \text{CEO Tenure in firm}_t + \beta_9 \text{CEO Tenure as manager}_t + \beta_{10} \text{CEOs} \\ & \text{Ownership}_t + \beta_{11} \text{CEO Nationality}_t + \beta_{12} \text{Perc of Foreign BOD Mem}_t + \beta_{13} \text{CEO} \\ & \text{Duality}_t + \beta_{14} \text{Board size}_t + \beta_{15} \text{Perc of Indep member in BOD}_t + \beta_{16} \text{Existence of} \\ & \text{Comp Comm}_t + \beta_{17} (\text{Firm Financial Performance}_{t, \text{lagged}} * \text{CEO Duality})_t + \beta_{18} (\text{Firm} \\ & \text{Financial Performance}_{t, \text{lagged}} * \text{Board size})_t + \beta_{19} (\text{Firm Financial} \\ & \text{Performance}_{t, \text{lagged}} * \text{Perc of Indep member in BOD})_t + \alpha + u_{it} \end{aligned}$$

⁷ <http://bibliothek.gb-symposium.ch/login.html>

The detailed definitions of the variables are discussed in the following section and Table 1.

Variables/Definitions

The definition of the variables on my models is summarized in Table 1:

Variables	Definitions
CEO's Compensation (Dependent Variables) ³	
LNTotalComp	Natural log (Ln) of Total CEO Compensation
LNVarComp	Natural Log (Ln) of Variable Compensation (It includes incentives and variable bonus or variable cash compensations)
Perc of VarComp	Percentage of Variable Compensation (the ratio of the variable compensation to total compensation)
Financial Accounting Performance (Independent Variables) ²	
Return on Asset (ROA)	Net Income/Total Assets
Earnings Per Share (EPS)	Net Income/Outstanding share of the company's stock
Financial Market Performance (Independent Variables) ²	
Total Shareholder's Return (TSR)	(Price end-Price begin)/Price begin
Tobin Q	Market Cap/(Equity book Value + Liability book value)
Control Variables (Firm and CEO Characteristics)	
Firm Age ¹	Date of incorporation
Firm Size ²	LN(Total Asset)
Institutional Ownership ³	Percentage of Institutional shareholders
Family firm ³	Family firm (Dummy Variable, 1: If it is a family firm, 0: otherwise)
State Ownership ³	State ownership (Dummy Variable, 1: If there is a state ownership, 0: otherwise)
CEO Age ³	Age of the CEO (Year of Birth)
CEO Tenure in firm ³	CEO's tenure in the firm
CEO Tenure as Manager ³	CEO's tenure as a senior manager
CEOs Ownership ³	CEO's percentage of ownership in the firm
CEO Nationality ³	CEO nationality (Dummy Variable, 1: Swiss, 0: Non-Swiss)
Perc of Foreign BOD Mem ³	Percentage of foreign (non-Swiss) board members (the ratio of Non-Swiss board members to total board members)
Corporate Governance Control Variables (BOD and Committee Characteristics)	
CEO Duality ³	CEO duality (Dummy Variable, 1: if Duality exists, 0: otherwise)
Board Size ³	Number of board members

Perc of Indep member in BOD ³	In this dissertation, independence is defined as a percentage of non-executive board members (the ratio of non-executive board members to total board members)
Existence of Comp Comm ³	Existence of the compensation committee (Dummy Variable, 1: Exists, 0: Otherwise)

¹ from Orbis Database, ² from ThomsonOne Banker, ³ from Annual Report

Table 1 - Definitions of the Variables

1. Dependent Variables

The dependent variable is the CEO compensation. Before discussing the details, it is aimed to start with the definition of the compensation. Total Compensation includes three main core elements (Hilb, 2009):

- (1) Fixed Compensation (Basic Awards)
- (2) Variable Compensation (Short-term incentive pay and long-term incentive pay)
- (3) Additional Payments

Fixed compensation and additional payments do not “vary according to results or performance achieved. It is determined by the organization’s pay policy, structure, and size”⁸. However, variable compensation changes with the level of performance achieved or reached (Hilb, 2007). Hilb (2009) has also disclosed the components of the total compensation as seen in Figure 4:

<i>Basic Reward</i>	<i>Variable Reward</i>	<i>Additional Payments</i>
<p>-Basic Salary: It does not vary according to performance or results.</p>	<p>- Premium: Spontaneous reward for exceptional performance - Bonus: Short-term variable reward - Incentive: Long-term variable reward</p>	<p>- Social (legal) benefits - Fringe benefits</p>
Direct Proportion		Indirect Proportion

Source: Martin Hilb (2009), *Global Management of Human Resources*, pg 245

Figure 4: Components of Total Compensation

⁸http://www.worldatwork.org/home/html/compensation_home.jsp

In addition, on page 68, Hilb (2007) suggested 50 % of the variable and 50% of the fixed compensation, as revealed in Figure 5.

<u>Portion</u>	<u>CEO</u>	
Variable Compensation	50%	-Short-term variable (1Y)- 50% -Long Term variable (3Y)- 50%
Fixed Compensation	50%	-
Total Compensation	100%	-

Source: Hilb (2007), Neues Integriertes Konzept der VR-, GL- und Personal Honorierung, pg.68

Figure 5- Total Compensation Matrix

Besides the definition of compensation, Hilb (2004) addressed the evaluation basis of CEO’s total compensation according to his “Glocal Shared Value Approach” (Hilb, 2012). For instance, on page 56, Hilb (2007) argued that “60% of the CEO’s total compensation should be determined based on firm financial performance, and it should be divided into two portions: 30% of short-term (1 year) and 30% long-term (3 years) financial performances. The rest (40%) should be subject to non-financial performance, such as reputation, customer loyalty, employee satisfaction, so on”. However, this paper focused merely on the financial performance of the firm as an evaluation criteria of pay-for-performance. Non-financial performance criteria should be covered in future studies.

In the literature, CEO compensation was measured in various ways. Most typically, total CEO compensation and total cash compensation have been employed. Some researchers, but not so often, focused on stock options and incentives. “Total compensation is a better proxy for CEO compensation than its components because some companies (such as Airesis, Alpine Selec, BVZ Holding, Cham Paper Group, Conzzeta Holding, EMS-Chemie, so on) may not have bonus plans, but they may adjust CEO salary to compensate the CEO (Sun & Cahan, 2009)”. Hence, I focused on total compensation on this paper in addition to variable compensation. Variable compensation was also employed to fill the gap in the literature.

Total compensation includes salary, short-term bonus, long-term bonus or loyalty bonus, social security or pension contribution, other benefits (payment in-kinds), and incentives (stock options, share-based awards, LTIP, restricted or conditional Stock Awards).

Variable compensation encompasses CEO compensations changing with the level of performance achieved or reached, such as short-term bonus, long-term bonus, and incentives (stock options, share-based awards, LTIP, restricted or conditional Stock Awards). Percentage of the variable compensation is the ratio of variable compensation to total compensation. The annual reports provided the variable compensation in CHF, which referred to Black-Sholes method as a valuation technique.

Like previous scholars (Chhaochharia & Grinstein, 2009; R. A. Lambert & Larcker, 1987; Sun & Cahan, 2009), natural log (Ln) of total compensation and natural log (Ln) of variable compensation are utilized as dependent variables. “There are two advantages of taking log transformation of the dependent variable. First, it is more likely that the dependent variable has a normal distribution, which is the main assumption of the regression analysis. Second, the log transformation can reduce the difference in the magnitude of compensation across companies. As a result, it alleviates the effects of heteroscedasticity (Sun & Cahan, 2009)”.

2. Independent Variables

Two accounting based (ROA and EPS) and two market-based (Tobin Q and TSR) measures of firm performance are used. These ratios are financial indicators that firms most commonly use to evaluate firm and CEO performance (Doucouliagos et al., 2007; L. Gomez-Mejia, Tosi, & Hinkin, 1987; Gunasekaragea & Wilkinson, 2002; Lipman & Hall, 2008; Mercer, 2009; Merhebi, Pattenden, Swan, & Zhou, 2006; Shaw & Zhang, 2010). In addition, it is mentioned that there are two prevalent ratios in literature and practice to measure the market performance of the firm, which are Tobin Q and Shareholder’s return (TSR) (Stiglbauer, 2010).

Return on Asset (ROA) is a widely used ratio for pay-for-firm performance in the literature. It is also one of the important indicators for evaluating CEO performance. It assesses the firms' efficiency to create a profit by the use of total assets (Carpenter & Sanders, 2002; Tosi et al., 2000). As shown in Table 1, it is calculated as "Net Income / Total Assets."

Annual Earnings per Share (EPS) is based on the ratio of net income to shares outstanding (Doucouliagos et al., 2007). EPS indicates "whether our net income growth is being achieved over time in a manner that is lucrative for our stockholders" (Lipman & Hall, 2008). As seen in Table 1, it is calculated as "Net Income / Outstanding share of a company's stock."

Tobin Q (TQ) is an approximation of the market valuation and an indication of the future performance of the enterprise (Gunasekaragea & Wilkinson, 2002; David Yermack, 1996). Previous scholars also classified Tobin Q as a market-based measure of firm performance, and it was measured by the ratio of "the company's market value to its book value" (R. B. Adams & Ferreira, 2009). In this study, Chung and Pruitt's calculation of Tobin Q is used. It is market value of the securities issued by the firm (market cap) divided by book value of the assets (Carter, D'Souza, Simkins, & Simpson, 2010). As shown in Table 1, Tobin Q is equal to "Year-end Market Cap⁹ / (Equity Book Value + Liability Book Value)".

Total shareholders Return (TSR) measures the "performance of firms' stock" in the equity market (Tosi et al., 2000). TSR is "the ultimate means to compare the firm's performance for its stockholders relative to its competitors" (Lipman & Hall, 2008). In Table 1, TSR is measured as (Price end - Price Begin) / Price Begin.

These independent variables are lagged from 1 to 3 years (t-1 to t-3) based on the logic of compensation contracts described in annual reports and previous literature. Some of the researchers emphasized the importance of using *lagged variables* to measure the actual link between firm performance and CEO remuneration by

⁹Calculation of the Year-end market cap is retrieved from ThomsonOne Banker Database, (Year-end Market Cap= Market Price Year End * Common Shares Outstanding).

criticizing the scholars who assumed that the pay-performance link is contemporaneous by default (Berrone & Gomez-Mejia, 2009; Doucouliagos et al., 2007; Duffhues & Kabir, 2008; M. Firth, Tam, & Tang, 1999; Izan, Sidhu, & Taylor, 1998; Ozkan, 2011; Sanders & Hambrick, 2007; Shaw & Zhang, 2010). For instance, Doucouliagos et al. (2007) on pages 1365 and 1366 indicated that “pay and performance association is not contemporaneous”. Izan et al. (1998) also expressed that “CEO compensation may lag realization of performance because compensation committee may take time to adjust CEO compensation to reflect prior year performance.” Consequently, the same lagged variable approach is followed in this paper to ensure measurement accuracy and to cope with reverse causality (Endogeneity). The reverse causality is discussed in section 7.5 - *Robustness checks*. Even though this three year lagged approach between pay and performance aims to cope with causality issue and to disclose the long-term effect, it has to be accepted as a limitation of the study that some longer term effects, e.g., more than three years, cannot be shown in this sample.

In fact, in this paper, the lagged variable approach is improved under the guidance of annual reports and three milestone papers of Hilb (2007), Buck et al. (2003), Shaw and Zhang (2010). It is the other contribution of this paper because this measurement approach more accurately and robustly captures the construct of interest. To illustrate, Hilb (2007), Buck et al. (2003), Sanders and Hambrick (2007), and Shaw and Zhang (2010) mentioned that there is generally a three-year time lag for the variable compensation, such as the standard three-year incentive plan. The lag for total compensation is from 1 to 3 years because it includes both short-term and long-term compensation. In other words, BOD or compensation committee decides the CEO's short-term compensation_t based on his/her performance (firm financial performance)_{t-1}, which is the performance of the prior year. For the long-term compensation and the total compensation, BOD or compensation committee determines the CEO's long-term and total compensation_t according to his/her last three years' performances_{from t-1 to t-3} equally. This approach is also supported by the experts in practice, e.g., Mr. Istvan Lajtai, Compensation Expert at consulting firm, HCM Hostettler Company.

Therefore, in this paper, for the variable compensation, the performance measurement was calculated based on the following formula, for instance, for ROA:

$$ROA = [(1/3 * ROA_{t-1}) + (1/3 * ROA_{t-2}) + (1/3 * ROA_{t-3})]$$

For the *total compensation*, the performance measurement was gauged based on the following formula, for instance, for ROA:

$$ROA = [(Percentage\ of\ short\text{-}term\ compensation_t * ROA_{t-1}) + Percentage\ of\ long\text{-}term\ compensation_t * ((1/3 * ROA_{t-1}) + (1/3 * ROA_{t-2}) + (1/3 * ROA_{t-3}))].$$

3. Moderators

“Moderator variable (z) is a variable that affects the direction and/or strength of the relation between an independent or predictor variable (x) and a dependent or criterion variable (y). Thus, two variables x and z are said to interact in their accounting for variance in y when over and above any additive combination of their separate effects, they have a joint effect (Helm & Mark, 2010)”.

$$\text{Interaction Model: } y = b_0 + b_1X + b_2Z + b_3X*Z$$

“Whether or not we find a moderating effect can be judged by the significance of the regression coefficient b_3 belonging to the interaction term ($X*Z$) (Helm & Mark, 2010).”

In this paper, three corporate governance variables are considered as moderators of CEO pay by drawing on the central tenets of Agency Theory. Agency Theory postulates that a strong Corporate Governance mechanism helps companies decrease information asymmetry and agency cost, and it causes a high pay-performance sensitivity (PPS) of CEO’s compensation (Amzaleg, Azar, Ben-Zion, & Rosenfeld, 2014; Capezio et al., 2011; Luis R. Gomez-Mejia et al., 2010). For instance, Core et al. found that “firms with greater agency problems not only pay higher CEO compensation, but also perform worse (J E Core et al., 1999)”. Ntim et al. (2010) also addressed the importance of monitoring. It was noted that “the pay-for-performance sensitivity (PPS) improves in firms with strong governance.”

In detail, they found that "the pay-for-performance sensitivity (PPS) appears to be stronger in firms with more independent boards, but weaker in firms with larger boards and CEO duality (Ntim et al., 2010)".

Tosi et al. (2000) stated that in the previous literature, corporate governance variables were mainly considered as control variables; however, they may play a major role as a moderator for the CEO pay and firm performance, which was proposed for future studies.

Based on the theory and previous literature, I have defined board size, board independence, and CEO Duality as the moderators of CEO compensation.

Board Size:

Board size is measured as the total number of board members on the board of the company.

Percentage of Independent Board Members:

Percentage of independent (non-executive) members in this research is a proxy for board monitoring and governance structure, computed as the ratio of non-executive board members to the total number of board members (Martin J Conyon & Peck, 1998). Non-executive directors are those who do not have an employment affiliation with the firm on whose board they serve (Geletkanycz & Boyd, 2011).

CEO Duality:

In this paper, the variable of "CEO Duality" aims to measure CEO duality in the firm, which is a binary variable (1: CEO duality, 0: otherwise). CEO duality exists when a company's CEO is also a Chairman of the Board (S. N. Abdullah, 2004).

4. Control Variables

A comprehensive set of control variables is used. Twelve control variables used in this analysis can be grouped into the following categories: (1) Firm characteristics, (2) CEO characteristics, and (3) Percentage of Foreign BOD members, and existence of a compensation committee

The first set can be grouped under “firm characteristics”, one of the important factors for the performance related executive pay (Eriksson, 2000). Firm size, firm age, and ownership structure (institutional, state ownerships, and family firm) are the control variables of firm characteristics in this paper.

In detail, most widely recognized variables for CEO compensation are *firm size* and *firm age* (S. P. Lee & Chen, 2011; Yim, 2013). Firm size is controlled by using natural log (Ln) of a firm’s total assets. Firm age is the date of incorporation, which is available on Orbis database. The results of the association of firm size with CEO compensation are indicating either positive relationship or no relationship: Boyd and Lambert et al. stated that “the correlation between CEO compensation and firm size is much smaller, and it was found that the changes in an executive's compensation are not primarily driven by changes in firm size (Boyd, 1994; R. Lambert, Larcker, & Weigelt, 1991)”. On the other hand, “Economic Theory postulates that executive pay and company size should be related (L. Gomez-Mejia et al., 1987)”. Consistent with Economic Theory, some scholars found a positive relationship between firm size and CEO compensation (Finkelstein & Hambrick, 1989; J. Lee, 2009; Tosi et al., 2000).

Furthermore, for the CEO pay and firm financial performance sensitivity, an interesting finding is noted that “the pay-performance sensitivity is less sensitive at large companies than at smaller companies (Cashman, 2010; Hartzell & Starks, 2003).” For the firm age, Lee and Chen (2011) and Yim (2013) have found a negative link between firm age and CEO compensation. Last firm characteristics considered as a controlling variable on this paper are the type of the ownership. State ownership and family firm are dummy variables. They are coded as “1” for the existence of state or family ownership, “0” otherwise. Institutional ownership is the percentage of an institution’s stake in the firm. Previous studies have also linked institutional ownership, state ownership, and family ownership to CEO compensation (David, Kochhar, & Levitas, 1998; Luis R. Gomez-Mejia, Larraza-Kintana, & Makri, 2003; Hartzell & Starks, 2003; Khan, Dharwadkar, & Brandes, 2005; Lam, McGuinness, & Vieito, 2013; McConaughy, 2000; Su, 2011). More

specifically, Khan et al. (2005) pointed out that “the concentration of institutional ownership decreases salary, options, and total compensation”. According to David et al. (1998), institutional ownership concentration is also negatively related to the level of CEO compensation. Likewise, Lam et al. (2013) and Su (2011) reported negative relationship for the State ownership. Specifically, they noted that “state ownership reduces CEO pay level.” For the family ownership, Gomez-Mejia et al. (2003) and McConaughy (2000) reported that “family member CEOs of family-controlled firms receive lower total income than outsider CEOs.”

The second set of the control variables accounted for “CEO characteristics” (Eriksson, 2000; Nadkarni & Herrmann, 2010), e.g. CEO age, CEO tenure in the firm and as a manager in other companies, CEOs ownership, and nationality. CEO ownership is controlled as a proxy for CEO power or entrenchment, measured as the percentage of ownership stake in the firm. Previous literature revealed that CEO compensation is higher at the higher levels of CEO ownership (Berrone & Gomez-Mejia, 2009; Finkelstein & Boyd, 1998; Khan et al., 2005). For the *CEO age*, measured as a year of birth, it was reported that “the relationship between CEO salaries and age are significantly related, and this association is weakening over time (McKnight, Tomkins, Weir, & Hobson, 2000).” Another CEO characteristic in the research is CEO nationality, which is a dummy variable, 1 for Swiss nationality and 0 for otherwise. Randoy and Nielsen (2002) also showed that “nationality was a significant control variable in explaining differences in executive compensation in Sweden and Norway”.

The last control variable concerning CEO is the tenure: Years of experience of the CEO in the firm and the practice as head of senior management. In the literature, Pfeffer (1981) interpreted CEO’s tenure as a proxy for CEO power because when his/her tenure in the firm increases, it also increases the power of the CEO in that firm, which has been used as a predictor and a control variable of CEO compensation in numerous studies (Finkelstein & Boyd, 1998; Hill & Phan, 1991; Mangel & Singh, 1993; Pfeffer, 1981; Zajac & Westphal, 1995). For the CEO tenure, researchers have found an association between tenure and CEO compensation, but they did not agree on the way of direction. Some believed that

“longer CEO tenure leads to greater compensation (Mangel & Singh, 1993)”, and some showed that “there is a positive relationship between CEO tenure and CEO cash compensation, but at over 18 years of tenure, CEO cash pay started declining (Finkelstein & Hambrick, 1989).” In contrast, in Sweden and Norway, they found a negative link between CEO tenure and CEO compensation due to social pressure. In other words, “social pressure suggests that the relation between CEO power and CEO compensation would be moderated or even reduced by strong stakeholder groups (Randoy & Nielsen, 2002)”.

The final set is made up of the percentage of foreign BOD members and the existence of a compensation committee. Percentage of foreign BOD members measures the ratio of non-Swiss board members to the total number of board members. Randoy and Nielsen (2002) believe that “foreign influence on the board increases the board’s tolerance for higher CEO compensation” and they also proved that “foreign board membership is positively and significantly associated with CEO compensation in Sweden and Norway (Randoy & Nielsen, 2002).” The final controlling variable is the existence of a compensation committee, dummy variable, “1” for the existence and “0” for non-existence. Previous researchers argued that the existence and composition of remuneration committees might be relevant to the level of CEOs compensation (Barkema & Gomez-Mejia, 1998). They believed that “compensation committees, especially the strong ones, are better able to keep CEO compensation under control (Boyd, 1994; Martin J Conyon & Peck, 1998; Daily, Johnson, Ellstrand, & Dalton, 1998; Ntim et al., 2010; O’Reilly, Main, & Crystal, 1988; Petra & Dorata, 2008)”.

To sum up, all of the control variables in this model have been selected based on in-depth literature review. Consequently, it increased the reliability and validity of the models in this paper.

Method

OLS regression is vulnerable to Endogeneity which is made up of omitted variable bias, measurement error, and simultaneity or reverse causality (Guse, 2003; ucl.ac.uk, 2008; Waldinger). On the other hand, panel data regression, especially

Fixed Effects regression, absorbs endogeneity problem (R. B. Adams & Ferreira, 2009; Baltagi, 2012). Because the panel data in this paper consist of 210 firms between 2007 and 2013 (1470 firm-year dataset) and multiple observations for each firm, simple ordinary least squares (OLS) regression is not appropriate. Thus, panel data regression (fixed effects or random effects) is utilized in line with prior research on compensation (Chhaochharia & Grinstein, 2009; Wade, O'Reilly, & Pollock, 2006; Wade, Porac, Pollock, & Graffin, 2006).

The methods summarized in Table 2 were selected based on Hausman and some additional tests in Stata statistical program. First, to decide on the types of panel data regression (either fixed effects or random effects), I ran Hausman test. By definition, “the Hausman test checks the H_0 (difference in coefficients not systematic) that the coefficients estimated by the efficient random effects estimator are the same as the ones estimated by the consistent fixed effects estimator. If they are insignificant (P-value, Prob>chi2, larger than 0.05), then it is safe to use random effects. If you get a *significant P-value*, however, you should *use fixed effects* (Princeton, 2007; Torres-Reyna, 2007; Woolridge, 2001)”.

After the accurate method is selected, further analyses are performed. For example, if Hausman test forced me to use fixed effects regression, it is by default “firm fixed effects regression”. Moreover, the need for “time” dummies (time fixed effects) should be analyzed, so “testparm” syntax was run in Stata. As a rule of thumb, “if the p-value (Prob>F) is bigger than 0.05, we fail to reject the null (H_0) that the coefficients for all years are jointly equal to zero, so no time fixed effects are needed in this case (Torres-Reyna, 2007)”. In simpler terms, time (year) does not have any significant impact on the variation of the CEO compensation. In that case, only (firm) fixed effects regression was used. Otherwise, firm-time fixed effects regression was run, as shown in Table 2.

Now it is the right time to discuss the logic of (firm) fixed effects in detail. “Estimating a fixed-effects model is equivalent to adding a dummy variable for each firm, and it controls constant unmeasured differences across firms that may explain differences in CEO compensation. For instance, some companies pay very

well, but others pay less for comparable positions, or some companies ask for more complex tasks from CEO (Chhaochharia & Grinstein, 2009; Wade, Porac, et al., 2006)”. Thus, firm dummies are important to control for these firm-specific differences.

After these diagnostic checks, it is concluded that the methods used on this paper are accurate and appropriate to this dataset.

Type of CEO Compensation	ROA	EPS	Tobin Q	TSR
Variable Compensation (in CHF)	Firm Fixed Effect	Firm Fixed Effect	Firm Fixed Effect	Firm Fixed Effect
Percentage of Variable Compensation (%)	Firm and Time Fixed Effect	Firm and Time Fixed Effect	Firm and Time Fixed Effect	Random effect ¹
Total Compensation (in CHF)	Firm Fixed Effect	Firm Fixed Effect	Firm Fixed Effect	Firm Fixed Effect

1: Due to the consistency, the model was also run with firm time fixed effects regression and the findings on TSR and interaction effects are the same, not significant at 10% level. Hence, the reported finding is robust.

Table 2- Methods Used in the Research

7. Findings

7.1 Descriptive Statistics

Table 3 to Table 11 below are provided to gain further understanding of the firm and Corporate Governance, CEO, and CEO compensation characteristics of Swiss publicly traded firms. Table 5 shows that average board size in Swiss firms is seven. However, it is eleven and eight for the firms quoted on the SMI Index, and those on the SMIM index, respectively, as seen in Table 3 and Table 4. The scholars who strongly believed the effectiveness of the small board size have already reported that “when the boards are beyond seven or eight people, they are less likely to function effectively and are easier for the CEO to control (managerial power) (Eisenberg et al., 1998; Jackling & Johl, 2009; M. Jensen, 1993; David Yermack, 1996)”.

In Table 5, the average percentages of board independence and foreign (non-Swiss) board members are 91% and 24%, respectively. The percentages of board independence (95%) and foreign members (54%) are higher in the firms on the SMI Index (refer to Table 3). It can be concluded that Blue-Chip-Index companies tend to have more international (foreign) and independent board members.

In addition, 76% of Swiss public companies have remuneration committee, as revealed in Table 5.

Year	% of Family Owned	% of State-Owned	Avg Board Size	Avg % of Independent BOD	Avg % of Non-Swiss (Foreign) BOD	% of Firms with Compensation Committee
2007	25	5	10.4	95	50	100
2008	25	5	10.5	96	53	100
2009	20	5	10.4	95	53	100
2010	20	10	10.5	95	54	100
2011	25	10	10.8	96	53	100
2012	20	10	10.9	95	57	100
2013	20	5	10.7	95	59	100
7 Years Average			10.60	95	54	100

Note: The number of SMI Firms is 20.

Table 3 - Firm and Corporate Governance Characteristics of Swiss Publicly Traded Firms in the SMI Index

Year	% of Family Owned	% of State-Owned	Avg Board Size	Avg % of Independent BOD	Avg % of Non-Swiss (Foreign) BOD	% of Firms with Compensation Committee
2007	27	4	7.8	87	40	100
2008	27	4	7.4	89	35	96
2009	23	-	7.4	87	42	100
2010	23	-	7.9	88	44	100

2011	23	4	7.9	89	42	100
2012	23	4	7.9	88	44	100
2013	23	4	8.0	90	44	100
7 Years Average			7.76	88	42	99

Note: The SMI MID (SMIM Index) comprises the 30 largest mid-cap stocks in the Swiss equity market. The Swatch Group was also listed on SMI Index, so it was excluded from SMIM Index. Lindt&Sprungli was disclosed with two different shares N and PS in SIX SMIM Index, so it was included once on the above chart. The data of AMS and DKSH Companies were not available, so they are excluded from this table. Finally, 26 Mid-Cap Companies were depicted on the above table.

Table 4 - Firm and Corporate Governance Characteristics of Swiss Publicly Traded Firms in the SMIM Index

Year	% of Family Owned	% of State-Owned	Avg Board Size	Avg % of Independent BOD	Avg % of Non-Swiss (Foreign) BOD	% of Firms with Compensation Committee
2007	32	16	7.08	89	22	70
2008	33	16	6.95	90	23	72
2009	32	15	6.94	89	24	75
2010	32	15	6.96	90	25	77
2011	32	17	6.96	91	25	79
2012	32	17	7.0	90	26	80
2013	32	14	6.92	96	26	79
7 Years Average			6.97	91	24	76

Note: 276 Firms are listed on the Swiss Stock Exchange (SIX) and 236 of them are coded under Swiss Country Code (CH). In my sample, *non-Swiss firms* (such as 3M, Company, Abbott Laboratories, Siemens AG, Commerzbank AG, etc.), *one of the double listed companies*, (such as Lindt&Sprungli disclosed with two different shares N and PS) and *delisted companies*, (e.g., Società Elettrica Sopracenerina SA (SES), Weatherford International Ltd, etc.), *and some of the investment companies managed by an investment manager* or managed without an executive committee and BOD (such as OTI Energy AG, Private Equity Holding AG, ENR Russia Invest SA, etc.) *were eliminated. It includes 210 firms per year and 1470 firm-year.*

Table 5- Firm and Corporate Governance Characteristics of All Publicly Traded Swiss Firms

Tables 6 to 8 disclose the CEO characteristics of listed companies in Switzerland. As shown in Table 8, the average CEO age is 52 and 31% of the firms have a single person in both Chairman and CEO positions (CEO Duality). In addition, 5%

of the CEOs are also a member of the compensation committee. On the other hand, CEO Duality is 36 % in the firms on the SMI index and 41% in the firms on the SMIM index, as reported in Tables 6 and 7.

Year	Avg % of CEO ownership	% of Firm Having Swiss CEO	Avg CEO Age	% of Firms Having CEO Duality	% of Firms having CEO on Compensation Committee
2007	0.3	35	55	40	0
2008	0.3	30	53	35	0
2009	0.2	25	53	35	0
2010	0.2	25	53	35	5
2011	0.3	30	53	40	5
2012	0.3	25	53	35	5
2013	0.3	30	54	35	5
7 Years Average	0.3	28.6	53.3	36.4	2.9

Table 6 - CEO Characteristics of Swiss Publicly Traded Firms in SMI Index

Year	Avg % of CEO ownership	% of Firm Having Swiss CEO	Avg CEO Age	% of Firms Having CEO Duality	% of Firms having CEO on Compensation Committee
2007	0.6	54	51	50	3.9
2008	0.5	46	51	42	0
2009	0.5	46	51	42	0
2010	0.5	50	52	46	3.9
2011	0.4	46	54	42	0
2012	0.3	38	53	31	0
2013	0.3	42	53	31	0
7 Years Average	0.4	46.2	52.2	40.7	1.1

Table 7 - CEO Characteristics of Swiss Publicly Traded Firms in SMIM Index

Year	Avg % of CEO ownership	% of Firm Having Swiss CEO	Avg CEO Age	% of Firms Having CEO Duality	% of Firms having CEO on Compensation Committee
2007	5	67	52	32	7
2008	5	66	52	33	5
2009	4	67	51	34	4
2010	4	67	52	34	5
2011	4	69	52	30	5
2012	3	68	53	30	5
2013	4	67	53	28	3
7 Years Average	4.1	67.3	52.1	31.3	4.9

Table 8 - CEO Characteristics of All Publicly Traded Swiss Firms

In Tables 9 to 11, the descriptive findings on CEO compensation in Swiss listed companies are demonstrated. Based on the compensation benchmark¹⁰ (refer to Figure 5), the best practice percentage allocation for variable to fixed CEO compensation should be 50 % to 50%. The Swiss firms on the SMIM index are much closer to that benchmark: 51% variable compensation to 49% fixed compensation, which was reported on Table 10. These allocations are 60% to 40% for the firms on the SMI index (Table 9) and 34% to 66% for all listed Swiss firms (Table 11).

In general, based on the descriptive findings, it can be inferred that if the firm size is getting larger, the long-term portion of variable compensation is increasing. For instance, in Table 9, the SMI firms have 70% long-term variable compensation and 30% short-term variable compensation compared to 38% long-term compensation and 62% of short-term compensation of Swiss listed companies, reported in Table 11.

¹⁰ Prof. Dr. Martin Hilb (2007), Neues Integriertes Konzept der VR-, GL- und Personal Honorierung, pg.68

Year	Avg. % of Variable Compensation	Avg. % of <u>Short-Term Variable</u> Compensation	Avg. % of <u>Long-Term Variable</u> Compensation	Avg. % of Fixed Compensation
2007	60	28	72	40
2008	57	29	71	43
2009	62	28	72	38
2010	59	30	70	41
2011	58	32	68	42
2012	62	30	70	38
2013	63	30	70	37
7 Years Average	60.1	29.6	70.4	39.9

Table 9- CEO's Compensation Characteristics of Swiss Publicly Traded Firms in SMI Index

Year	Avg. % of Variable Compensation	Avg. % of <u>Short-Term Variable</u> Compensation	Avg. % of <u>Long-Term Variable</u> Compensation	Avg. % of Fixed Compensation
2007	56	42	58	44
2008	48	45	55	52
2009	48	45	55	52
2010	51	48	52	49
2011	54	42	58	46
2012	51	43	57	49
2013	52	44	56	48
7 Years Average	51.4	44.1	55.9	48.6

Table 10- CEO's Compensation Characteristics of Swiss Publicly Traded Firms in SMIM Index

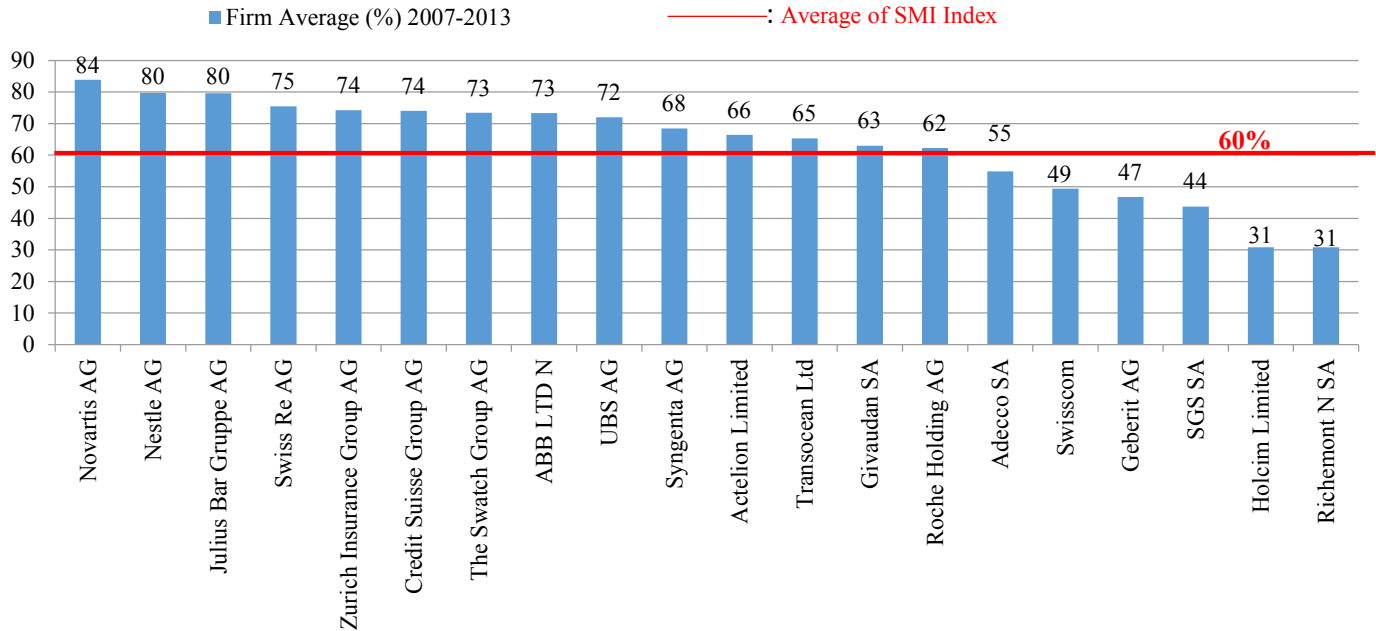
Year	Avg. % of Variable Compensation	Avg. % of <u>Short-Term Variable</u> Compensation	Avg. % of <u>Long-Term Variable</u> Compensation	Avg. % of Fixed Compensation
2007	37	62	38	63
2008	33	60	40	67

2009	33	61	39	67
2010	34	65	35	66
2011	33	62	38	67
2012	33	59	41	67
2013	34	62	38	66
7 Years Average	33.9	61.6	38.4	66.1

Table 11- CEO's Compensation Characteristics of All Publicly Traded Swiss Firms

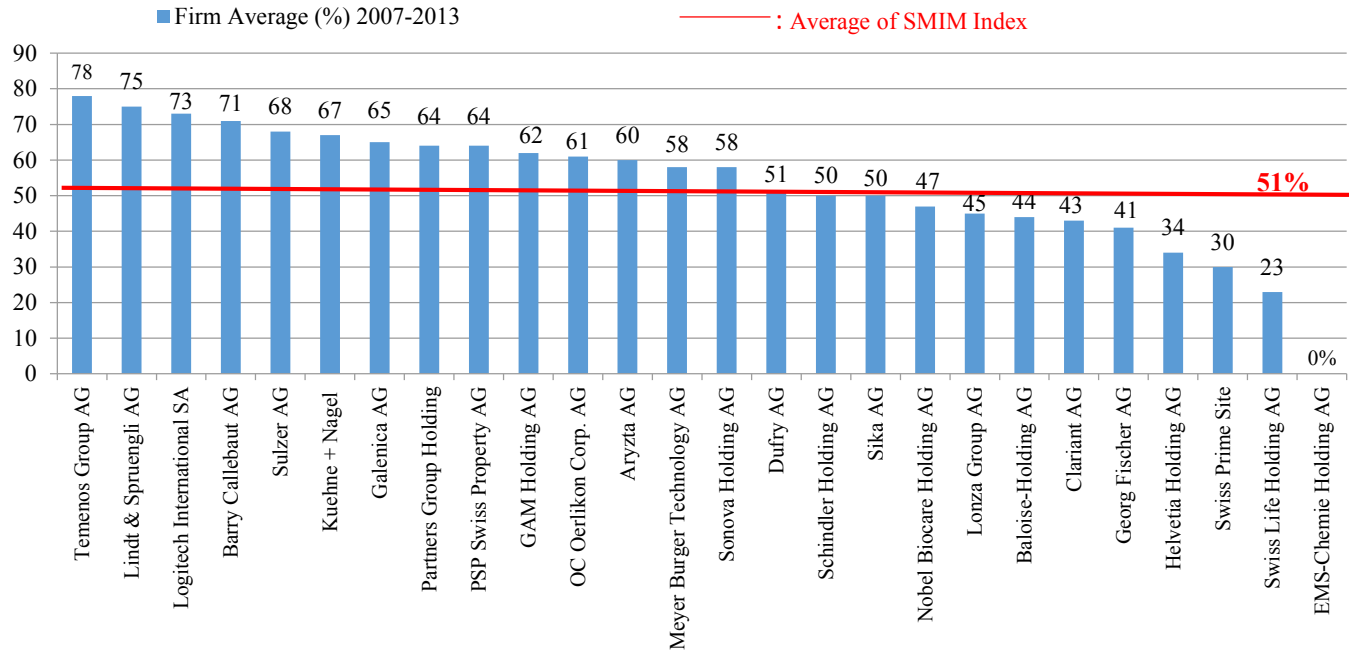
Besides the yearly disclosure of the variable compensations for the Swiss-listed companies, in Chart 1 and Chart 2, the percentages of CEO variable compensations of 20 largest blue-chip stocks (SMI index), which represents about 85% of the free-float market capitalization of the Swiss equity market¹¹, and 30 largest mid-cap stocks (SMIM index) are displayed. Chart 1 shows that based on the cumulative variables from 2007 to 2013, Novartis (84%), Nestle, and Julius Bar (80%) have the two highest percentages of variable compensation, which is way above the mean value of the SMI index (60%). On the other hand, the lowest are Holcim (31%) and Richemont (31%). In Chart 2, the two highest percentages of variable compensation for the SMIM companies belong to Temenos (78%) and Lindt&Sprungli (75%), and the two lowest are EMS-Chemie (0%) and Swiss life (23%).

¹¹ (SIX, 2013)



Note: The SMI Index comprises the 20 largest blue-chip stocks in the Swiss equity market.

Chart 1- The Mean Values of Percentage Variable Compensation (%) from 2007 to 2013 in SMI Index



Note: The SMI MID (SMIM Index) comprises the 30 largest mid-cap stocks in the Swiss equity market. The Swatch Group was also listed on SMI Index, so it was excluded from SMIM Index. Lindt&Sprungli was disclosed with two different shares N and PS in SIX SMIM Index, so it was included once on the above chart. The CEO compensation figures of AMS and DKSH Companies were not available in the annual reports, so they are excluded from this chart. Finally, 26 Mid-Cap Companies were depicted on the above chart.

Chart 2- The Mean Values of Percentage Variable Compensation (%) from 2007 to 2013 in SMIM Index

In addition, Appendix 1 summarized the top five firms paying the highest total CEO compensation from 2007 to 2013. Novartis was consistently in the top 5 list in seven consecutive years. Roche was in the list for six years (2007, 2009-2013). Then, Credit Suisse and Nestle were in the list of top five firms for four years (2007, 2009-2010, 2013) and for three years (2007, 2010, 2011) respectively. ABB, Arysza, UBS, Richemont, Rothschild, Swiss Re, Transocean, and Zurich Insurance were the other firms in alphabetical order, which were on the list at least once in 7 years.

In Appendix 2 and Appendix 4, the mean and the median of CEO pays from 2007 to 2013 were disclosed. Lipman and Hall emphasized that “the use of mean (mathematical average) can distort the actual picture if there are any members having either exceedingly high or exceedingly low compensation levels. Alternatively, Median (a middle number in a series) avoids the distortion caused by executives whose compensation is outside normal range”. On the basis of Lipman and Hall, as seen in Appendix 4, the median of CEO pay in SMI-Firms has decreased 19% from 2007 to 2013. Interestingly, the median of CEO pay in all publicly traded Swiss firms has increased 8% from 2007 to 2013, which was reported in Appendix 2. Consistent with my findings, for the median of CEO pay, PwC has also reported a decrease in SMI firms, but an increase in the SMIM firms for the same time periods (PWC, 2014).

Finally, Appendices 3 and 5 demonstrated lowest, highest, and upper and lower quartiles of the CEO pays in thousands from 2007 to 2013. In Appendix 5, the highest CEO pay (in thousands) was 22,679 CHF in 2007 and 13,226 CHF in 2013. The lowest CEO pay (in thousands) for SMI firms was 1,704 CHF in 2007 and 1,713 CHF in 2013. In Appendix 3, for the all Swiss public companies, the lowest CEO pay was 25 (in thousands) in 2007 and 13 (in thousands) in 2013. Furthermore, the huge inequalities in the CEO pay between SMI firms and the rest are pretty obvious in Appendix 3.

7.2 Statistics on Pay-for- Firm Financial Performance

On Table 24, the findings regarding H_1 are summarized:

Type of CEO Compensation	ROA	EPS	Tobin Q	TSR
Variable Compensation (in CHF)	H _{1.1} : Negative relationship (b: -0.20, beta: -0.06, p:0.03)	H _{1.2} :no significant relationship	H _{1.3} :no significant relationship	H _{1.4} :no significant relationship
Percentage of Variable Compensation (%)	H _{1.5} : no significant relationship	H _{1.6} : no significant relationship	H _{1.7} : no significant relationship	H _{1.8} : no significant relationship
Total Compensation (in CHF)	H _{1.9} : no significant relationship	H _{1.10} : no significant relationship	H _{1.11} : no significant relationship	H _{1.12} : no significant relationship

Table 24- H₁: The Relationship between CEO Compensation_(t) and Lagged Firm Performances

As recapped in Table 24 which is the summary of independent variables in Tables 12 to 23, the only significant result was found for H_{1.1}. For the rest, there is no statistically significant evidence for the association between firm performance and the CEO compensation.

In more detail:

H_{1.1}: In Table 12 for Model 1, there is a **negative** significant relationship between ROA and variable CEO compensation at 5% level (b: -0.20, beta: -0.06, p: 0.03). Surprisingly, it is not in the expected positive direction. In contrast to **H_{1.1}**, the higher ROA is reported, the less variable compensation is paid to the CEO. Consistent with the literature, this negative relationship could be explained by the existence of the agency problem and cronyism (Brick, Palmon, & Wald, 2006; Duffhues & Kabir, 2008; Rost & Osterloh, April 2009).

Independent Variable	Dependent Variable		
	LN(Variable CEO Compensation _t)		
	Base Model	Model 1	Model 2
ROA _{t-1 to t-3}	-	-0.20* [2.25]	-0.25† [1.94]

Firm Age	-0.02* [2.17]	-0.03* [2.36]	-0.02* [2.29]
Firm size	-0.02 [0.17]	0.00 [0.03]	-0.01 [0.08]
Institutional Ownership	-0.08 [0.23]	-0.06 [0.17]	-0.07 [0.18]
Family firm	0.15 [0.70]	0.20 [0.96]	0.20 [0.90]
State Ownership	-0.17 [0.96]	-0.15 [0.85]	-0.15 [0.85]
CEO Age	-0.01 [0.66]	-0.01 [0.68]	-0.00 [0.50]
CEO Tenure in firm	0.01 [0.85]	0.01 [0.96]	0.01 [0.76]
CEO Tenure as Manager	0.04** [3.91]	0.04** [4.00]	0.04** [3.85]
CEOs Ownership	-0.06 [0.17]	0.00 [0.01]	0.07 [0.21]
CEO Nationality	-0.08 [0.74]	-0.09 [0.80]	-0.11 [0.96]
Perc of foreign BOD Mem	0.71* [2.45]	0.74* [2.55]	0.70* [2.38]
CEO Duality	-0.03 [0.19]	-0.04 [0.30]	-0.02 [0.14]
Board size	-0.01 [0.44]	-0.01 [0.45]	-0.01 [0.55]
Perc of Indep member in BOD	0.14 [0.27]	0.12 [0.23]	0.32 [0.71]
Existence of Comp Comm	0.20 [0.92]	0.19 [0.88]	0.19 [0.89]
ROA _{t-1 to t-3} *Board SIZE	-	-	-0.06† [1.67]
ROA _{t-1 to t-3} *Per of Indp BOD	-	-	1.19 [1.32]
ROA _{t-1 to t-3} *CEO Duality	-	-	0.06 [0.29]
Intercept	0.85 [0.67]	0.92 [0.73]	0.80 [0.63]

Notes:

Number of
Observations:

856

856

856

Adj-R ² :	0.76	0.77	0.77
Adj-R ² Change:	-	0.01	0.0009
F-Statistic:	2.54**	2.74**	2.55**
Firm Fixed Effect:	Yes	Yes	Yes
Regression Type:	Firm Fixed Effect‡	Firm Fixed Effect‡	Firm Fixed Effect‡
Robust St Errors:	Yes, For heteroskedasticity, but no autocorrelation noted.	Yes, for heteroskedasticity , but no autocorrelation noted.	Yes, for heteroskedasticity, but no autocorrelation noted.

Absolute values of t-statistics are in brackets.

Asterisks and dagger indicate significance at 0.01 (**), 0.05 (*), and 0.10 (†) levels.

‡: Hausman test indicates the fixed effects model as an appropriate model. In addition, "testparm" syntax of Stata failed to reject Hnull, so all years coefficients are jointly equal to Zero (0). That's, time fixed effect is not needed.

- The effect size of the significant moderating variable in the Model 2 is low (f2=0.009).

Table 12- Panel Data Regression of the Relationship between Variable CEO Compensation_t and Firm Accounting Performance (ROA_{t-1 to t-3})

H_{1.2} to H_{1.12}: As seen in Tables from 13 to 23 for Model 1's, there are no significant links (p>0.10) between firm performance and CEO compensation. Hence, H_{1.2} to H_{1.12} were not supported.

Results on CEO'S Variable Compensation

Independent Variable	Dependent Variable		
	LN(Variable CEO Compensation) _t		
	Base Model	Model 1	Model 2
EPS _{t-1 to t-3}	-	-0.00 [0.93]	-0.00 [0.51]
Firm Age	-0.02* [2.14]	-0.02* [2.03]	-0.02* [2.20]
Firm Size	-0.03 [0.21]	0.00 [0.03]	-0.01 [0.07]
Institutional Ownership	-0.08 [0.21]	-0.12 [0.33]	-0.11 [0.32]
Family firm	0.15 [0.73]	0.18 [0.83]	0.19 [0.88]
State Ownership	-0.17 [0.97]	-0.16 [0.92]	-0.16 [0.95]

CEO Age	-0.01 [0.68]	-0.00 [0.47]	-0.00 [0.22]
CEO Tenure in firm	0.01 [0.84]	0.01 [0.91]	0.01 [0.96]
CEO Tenure as Manager	0.04** [3.96]	0.03** [3.79]	0.03** [3.73]
CEOs Ownership	-0.03 [0.10]	0.04 [0.12]	0.04 [0.12]
CEO Nationality	-0.09 [0.84]	-0.09 [0.77]	-0.08 [0.71]
Perc of foreign BOD Mem	0.70* [2.41]	0.59* [2.03]	0.61* [2.08]
CEO Duality	-0.05 [0.43]	0.06 [0.49]	0.04 [0.34]
Board size	-0.00 [0.14]	-0.01 [0.49]	-0.03 [0.94]
Perc of Indep member in BOD	0.10 [0.18]	0.96* [2.22]	0.95* [2.13]
Existence of Comp Comm	0.07 [0.34]	0.03 [0.17]	0.03 [0.13]
EPS _{t-1 to t-3} *Board Size	-	-	-0.00 [1.33]
EPS _{t-1 to t-3} *Per Indep BOD	-	-	-0.00 [0.09]
EPS _{t-1 to t-3} *CEO Duality	-	-	-0.00 [0.02]
Intercept	0.98 [0.76]	-0.04 [0.03]	0.17 [0.14]

Notes:

Number of Observations:	848	838	838
Adj-R ² :	0.76	0.77	0.77
Adj-R ² Change:	-	0.01	0.0002
F-Statistic:	2.41**	2.57**	2.42**
Firm Fixed Effect:	Yes	Yes	Yes
Regression Type:	Firm Fixed Effect [‡]	Firm Fixed Effect [‡]	Firm Fixed Effect [‡]
Robust St Errors:	Yes for heteroskedasticity, but no autocorrelation noted.	Yes for heteroskedasticity, but no autocorrelation noted.	Yes for heteroskedasticity, but no autocorrelation noted.

Absolute values of t-statistics are in brackets.

Asterisks and dagger indicate significance at 0.01 (**), 0.05 (*), and 0.10 (†) levels.

‡: Hausman test indicates the fixed effects model as an appropriate model. In addition, "testparm" syntax of Stata failed to reject Hnull, so all years coefficients are jointly equal to Zero (0). That's, time fixed effect is not needed.

Table 13- Panel Data Regression of the Relationship between Variable CEO Compensation and Firm Accounting Performance (EPS_{t-1 to t-3})

Independent Variable	Dependent Variable		
	LN(Variable CEO Compensation)		
	Base Model	Model 1	Model 2
Tobin Q _{t-1 to t-3}	-	-0.02 [0.28]	-0.05 [0.65]
Firm Age	-0.02* [2.24]	-0.02* [2.01]	-0.02† [1.89]
Firm Size	-0.01 [0.07]	0.02 [0.13]	0.02 [0.20]
Institutional Ownership	-0.14 [0.36]	-0.18 [0.48]	-0.23 [0.66]
Family firm	0.12 [0.59]	0.14 [0.64]	0.14 [0.65]
State Ownership	-0.32† [1.84]	-0.31† [1.82]	-0.37* [2.34]
CEO Age	-0.01 [0.89]	-0.01 [0.75]	-0.00 [0.40]
CEO Tenure in firm	0.01 [0.85]	0.01 [1.07]	0.01 [1.15]
CEO Tenure as Manager	0.04** [4.00]	0.03** [3.54]	0.03** [3.09]
CEOs Ownership	-0.06 [0.19]	0.05 [0.17]	0.10 [0.33]
CEO Nationality	-0.09 [0.78]	-0.08 [0.74]	-0.05 [0.44]
Perc of foreign BOD Member	0.66* [2.29]	0.53† [1.85]	0.53† [1.81]
CEO Duality	-0.02 [0.13]	0.12 [0.97]	0.09 [0.71]
Board Size	-0.01 [0.51]	-0.02 [0.97]	-0.02 [0.82]

Perce of Indep member in BOD	0.13 [0.24]	1.09* [2.46]	1.07* [2.33]
Existence of Comp Comm	0.20 [0.94]	0.19 [0.93]	0.14 [0.65]
Tobin Q _{t-1 to t-3} *Board Size	-	-	-0.05** [2.58]
Tobin Q _{t-1 to t-3} *Per Indp BOD	-	-	-0.46 [1.04]
Tobin Q _{t-1 to t-3} *CEO Duality	-	-	0.03 [0.26]
Intercept	0.98 [0.78]	-0.13 [0.11]	-0.32 [0.25]

Notes:

Number of Observations:	852	840	840
Adj-R ² :	0.77	0.77	0.78
Adj-R ² Change:	-	0.0067	0.0028
F-Statistic:	2.69**	2.90**	3.62**
Firm Fixed Effect:	Yes	Yes	Yes
Regression Type:	Firm Fixed Effect‡	Firm Fixed Effect‡	Firm Fixed Effect‡
Robust St Errors:	Yes, for heteroskedasticity, but no autocorrelation	Yes, for heteroskedasticity, but no autocorrelation	Yes, for heteroskedasticity, but no autocorrelation

Absolute values of t-statistics are in brackets.

Asterisks and dagger indicate significance at 0.01 (**), 0.05 (*), and 0.10 (†) levels.

‡: Hausman test indicates the fixed effects model as an appropriate model. In addition, "testparm" syntax of Stata failed to reject Hnull, so all years coefficients are jointly equal to Zero (0). That's, time fixed effect is not needed.

- The effect size of the significant moderating variable in the Model 2 is low (f2=0.02).

Table 14-Panel Data Regression of the Relationship between Variable CEO Compensation and Firm Market Performance (Tobin Q_{t-1 to t-3})

Independent Variable	Dependent Variable		
	LN(Variable CEO Compensation _t)		
	Base Model	Model 1	Model 2
TSR _{t-1 to t-3}	-	-0.04 [0.70]	-0.06 [0.61]
Firm Age	-0.02* [2.17]	-0.02* [2.16]	-0.02* [2.17]

Firm Size	-0.02 [0.17]	0.00 [0.03]	0.01 [0.11]
Institutional Ownership	-0.08 [0.23]	-0.17 [0.48]	-0.17 [0.47]
Family firm	0.15 [0.70]	0.16 [0.74]	0.18 [0.79]
State Ownership	-0.17 [0.96]	-0.10 [0.55]	-0.10 [0.54]
CEO Age	-0.01 [0.66]	-0.01 [0.66]	-0.01 [0.59]
CEO Tenure in firm	0.01 [0.85]	0.01 [0.85]	0.01 [0.88]
CEO Tenure as Manager	0.04** [3.91]	0.03** [3.86]	0.03** [3.76]
CEOs Ownership	-0.06 [0.17]	0.06 [0.19]	0.06 [0.18]
CEO Nationality	-0.08 [0.74]	-0.07 [0.67]	-0.08 [0.72]
Perc of foreign BOD Mem	0.71* [2.45]	0.62* [2.14]	0.62* [2.16]
CEO Duality	-0.03 [0.19]	0.10 [0.84]	0.12 [0.94]
Board Size	-0.01 [0.44]	-0.02 [0.68]	-0.02 [0.68]
Perc of Indep member in BOD	0.14 [0.27]	1.03* [2.33]	1.05* [2.36]
Existence of Comp Comm	0.20 [0.92]	0.18 [0.86]	0.17 [0.82]
TSR _{t-1 to t-3} *Board Size	-	-	-0.00 [0.07]
TSR _{t-1 to t-3} *Per Ind BOD	-	-	0.52 [0.58]
TSR _{t-1 to t-3} *CEO Duality	-	-	0.03 [0.15]
Intercept	0.85 [0.67]	0.00 [0.00]	-0.10 [0.07]

Notes:

Number of Observations:	856	823	823
Adj-R ² :	0.76	0.77	0.77
Adj-R ² Change:	-	0.0083	0.0007

F-Statistic:	2.54**	2.77**	2.36**
Firm Fixed Effect:	Yes	Yes	Yes
Regression Type:	Firm Fixed Effect‡	Firm Fixed Effect‡	Firm Fixed Effect‡
Robust St Errors:	Yes, for heteroskedasticity ,but no autocorrelation	Yes, for heteroskedasticity ,but no autocorrelation	Yes, for heteroskedasticity, but no autocorrelation

Absolute values of t-statistics are in brackets.

Asterisks and dagger indicate significance at 0.01 (**), 0.05 (*), and 0.10 (†) levels.

‡: Hausman test indicates the fixed effects model as an appropriate model. In addition, "testparm" syntax of Stata failed to reject Hnull, so all years coefficients are jointly equal to Zero (0). That's, time fixed effect is not needed.

Table 15- Panel Data Regression of the Relationship between Variable CEO Compensation and Firm Market Performance (TSR Q_{t-1 to t-3})

Results on CEO'S Percentage of Variable Compensation

Independent Variable	Dependent Variable		
	LN(Percentage of Variable CEO Compensation)		
	Base Model	Model 1	Model 2
ROA _{t-1 to t-3}	-	0.01 [0.52]	0.03 [0.80]
Firm Age	-0.00 [0.31]	-0.00 [0.27]	-0.00 [0.45]
Firm Size	0.01 [0.19]	0.00 [0.13]	-0.00 [0.06]
Institutional Ownership	0.12 [1.32]	0.12 [1.30]	0.11 [1.27]
Family firm	0.02 [0.26]	0.01 [0.20]	0.01 [0.13]
State Ownership	-0.03 [0.49]	-0.03 [0.51]	-0.03 [0.60]
CEO Age	-0.01** [3.02]	-0.01** [3.01]	-0.01** [2.84]
CEO Tenure in firm	-0.00 [0.17]	-0.00 [0.20]	-0.00 [0.26]
CEO Tenure as a Manager	0.00† [1.86]	0.00† [1.83]	0.00† [1.75]
CEOs Ownership	0.11† [1.81]	0.11† [1.71]	0.11† [1.67]

CEO Nationality	-0.02 [0.53]	-0.02 [0.52]	-0.02 [0.56]
Perc of foreign BOD Mem	0.04 [0.51]	0.04 [0.48]	0.03 [0.38]
CEO Duality	-0.03 [0.86]	-0.03 [0.84]	-0.04 [1.01]
Board Size	0.00 [0.33]	0.00 [0.33]	0.00 [0.10]
Perc of Indep member in BOD	-0.05 [0.45]	-0.05 [0.44]	-0.05 [0.39]
Existence of Comp Comm	0.07 [0.97]	0.07 [0.96]	0.08 [0.99]
ROA _{t-1 to t-3} *Board Size	-	-	-0.01 [1.47]
ROA _{t-1 to t-3} *Per Ind BOD	-	-	0.11 [0.36]
ROA _{t-1 to t-3} *CEO Duality	-	-	-0.06 [0.90]
Intercept	0.78* [2.24]	0.78* [2.22]	0.85* [2.41]

Notes:

Number of Observations:	857	857	857
Adj- R ² :	0.55	0.55	0.55
Adj-R ² Change:	-	0.0003	0.0032
F-Statistic:	1.73*	1.64*	1.74*
Firm Fixed Effect:	Yes	Yes	Yes
Time Fixed Effect:	Yes	Yes	Yes
Regression Type:	Firm and Time Fixed Effect‡	Firm and Time Fixed Effect‡	Firm and Time Fixed Effect‡
Robust St Errors:	Yes, for heteroskedasticity, but no autocorrelation	Yes, for heteroskedasticity, but no autocorrelation	Yes, for heteroskedasticity, but no autocorrelation

Absolute values of t-statistics are in brackets.

Asterisks and dagger indicate significance at 0.01 (**), 0.05 (*), and 0.10 (†) levels.

‡: Hausman test indicates the fixed effects model as an appropriate model. In addition, "testparm" syntax of Stata reject Hnull, so all years coefficients are not jointly equal to Zero (0). That's, time fixed effect is needed.

Table 16- Panel Data Regression of the Relationship between Percentage of Variable CEO Compensation_t and Firm Accounting Performance (ROA_{t-1 to t-3})

Independent Variable	Dependent Variable		
	LN(Percentage of Variable CEO Compensation _t)		
	Base Model	Model 1	Model 2
EPS _{t-1 to t-3}	-	-0.00 [0.05]	0.00 [0.17]
Firm Age	-0.00 [0.08]	0.00 [0.20]	0.00 [0.15]
Firm Size	0.01 [0.24]	0.01 [0.49]	0.01 [0.48]
Institutional Ownership	0.12 [1.34]	0.10 [1.13]	0.10 [1.13]
Family firm	0.02 [0.23]	0.02 [0.27]	0.02 [0.23]
State Ownership	-0.03 [0.46]	-0.03 [0.47]	-0.03 [0.46]
CEO Age	-0.01** [3.12]	-0.01** [2.90]	-0.01** [2.94]
CEO Tenure in firm	-0.00 [0.22]	-0.00 [0.11]	-0.00 [0.11]
CEO Tenure as a Manager	0.00† [1.74]	0.00 [1.26]	0.00 [1.28]
CEOs Ownership	0.11† [1.77]	0.12† [1.90]	0.12† [1.87]
CEO Nationality	-0.03 [0.89]	-0.02 [0.70]	-0.02 [0.74]
Perc of foreign BOD Mem	0.01 [0.13]	-0.00 [0.06]	-0.01 [0.13]
CEO Duality	-0.03 [0.87]	-0.01 [0.36]	-0.02 [0.35]
Board Size	0.00 [0.33]	-0.00 [0.02]	0.00 [0.07]
Perc of Indep member in BOD	-0.09 [0.79]	0.04 [0.32]	0.06 [0.41]
Existence of Comp Comm	0.11 [1.58]	0.11 [1.50]	0.11 [1.51]
EPS _{t-1 to t-3} *Board Size	-	-	0.00 [0.35]
EPS _{t-1 to t-3} *Per Ind BOD	-	-	0.00 [0.37]

EPS _{t-1 to t-3} *CEO Duality	-	-	-0.00 [0.17]
Intercept	0.74* [2.12]	0.51 [1.50]	0.51 [1.48]

Notes:

Number of Observations:	849	839	839
Adj-R ² :	0.55	0.56	0.56
Adj-R ² Change:	-	0.0132	0.0011
F-Statistic:	2.00**	1.78*	1.71*
Firm Fixed Effect:	Yes	Yes	Yes
Time Fixed Effect:	Yes	Yes	Yes
Regression Type:	Firm and Time Fixed Effect‡	Firm and Time Fixed Effect‡	Firm and Time Fixed Effect‡
Robust St Errors:	Yes, for heteroskedasticity, but no autocorrelation	Yes, for heteroskedasticity, but no autocorrelation	Yes, for heteroskedasticity, but no autocorrelation

Absolute values of t-statistics are in brackets.

Asterisks and dagger indicate significance at 0.01 (**), 0.05 (*), and 0.10 (†) levels.

‡: Hausman test indicates the fixed effects model as an appropriate model. In addition, "testparm" syntax of Stata reject Hnull, so all years coefficients are not jointly equal to Zero (0). That's, time fixed effect is needed.

Table 17- Panel Data Regression of the Relationship between Percentage of Variable CEO Compensation and Firm Accounting Performance (EPS_{t-1 to t-3})

Independent Variable	Dependent Variable		
	LN(Percentage of Variable CEO Compensation)		
	Base Model	Model 1	Model 2
Tobin Q _{t-1 to t-3}	-	-0.01 [0.82]	-0.01 [0.40]
Firm Age	-0.00 [0.30]	0.00 [0.09]	0.00 [0.16]
Firm Size	0.01 [0.35]	0.02 [0.53]	0.02 [0.60]
Institutional Ownership	0.10 [1.15]	0.08 [0.95]	0.07 [0.85]
Family firm	0.01 [0.16]	0.00 [0.07]	0.01 [0.10]

State Ownership	-0.08 [1.41]	-0.08 [1.48]	-0.08 [1.58]
CEO Age	-0.01** [3.29]	-0.01** [3.10]	-0.01** [3.03]
CEO Tenure in firm	-0.00 [0.18]	0.00 [0.13]	0.00 [0.07]
CEO Tenure as a Manager	0.00* [1.99]	0.00 [1.26]	0.00 [1.05]
CEOs Ownership	0.11† [1.78]	0.14* [2.06]	0.14* [2.12]
CEO Nationality	-0.02 [0.56]	-0.01 [0.41]	-0.01 [0.35]
Perc of foreign BOD Mem	0.02 [0.31]	0.01 [0.08]	0.01 [0.16]
CEO Duality	-0.03 [0.79]	-0.00 [0.05]	-0.00 [0.07]
Board Size	0.00 [0.26]	-0.00 [0.12]	0.00 [0.04]
Perc of Indep member in BOD	-0.05 [0.48]	0.11 [0.78]	0.09 [0.67]
Existence of Comp Comm	0.07 [0.97]	0.07 [0.98]	0.07 [0.88]
Tobin Q _{t-1 to t-3} *Board Size	-	-	-0.01 [1.48]
Tobin Q _{t-1 to t-3} *Per Ind BOD	-	-	-0.00 [0.02]
Tobin Q _{t-1 to t-3} *CEO Duality	-	-	-0.01 [0.36]
Intercept	0.80* [2.29]	0.54 [1.60]	0.51 [1.50]

Notes:

Number of Observations:	853	841	841
Adj-R ² :	0.56	0.57	0.57
Adj-R ² Change:	-	0.01	0.0001
F-Statistic:	1.88*	1.80*	1.77*
Firm Fixed Effect:	Yes	Yes	Yes
Time Fixed Effect:	Yes	Yes	Yes
Regression Type:	Firm and Time Fixed Effect [‡]	Firm and Time Fixed Effect [‡]	Firm and Time Fixed Effect [‡]

Robust St Errors: Yes, Yes, Yes,
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Absolute values of t-statistics are in brackets.

Asterisks and dagger indicate significance at 0.01 (**), 0.05 (*), and 0.10 (†) levels.

‡: Hausman test indicates the fixed effects model as an appropriate model. In addition, "testparm" syntax of Stata reject Hnull, so all years coefficients are not jointly equal to Zero (0). That's, time fixed effect is needed.

Table 18- Panel Data Regression of the Relationship between Percentage of Variable CEO Compensation_t and Firm Market Performance (Tobin Q_{t-1 to t-3})

Independent Variable	Dependent Variable		
	LN(Percentage of Variable CEO Compensation _t)		
	Base Model	Model 1	Model 2
TSR _{t-1 to t-3}	-	0.01 [0.45]	0.01 [0.29]
SMI Index	0.07 [1.34]	0.07 [1.39]	0.07 [1.37]
Firm Age	-0.00* [1.97]	-0.00* [2.12]	-0.00* [2.10]
Firm Size	0.01 [1.36]	0.01 [1.19]	0.01 [1.27]
Institutional Ownership	0.00 [0.06]	0.00 [0.05]	0.00 [0.06]
Family firm	0.01 [0.42]	0.01 [0.41]	0.02 [0.46]
State Ownership	-0.05 [1.43]	-0.05 [1.22]	-0.04 [1.17]
CEO Age	-0.00† [1.70]	-0.00 [1.58]	-0.00 [1.45]
CEO Tenure in firm	-0.00 [0.44]	-0.00 [0.34]	-0.00 [0.23]
CEO Tenure as a Manager	0.00** [2.58]	0.00* [2.11]	0.00† [1.91]
CEOs Ownership	0.06 [0.87]	0.08 [1.13]	0.08 [1.14]
CEO Nationality	-0.02 [0.97]	-0.02 [0.76]	-0.02 [0.87]

Perc of foreign BOD Mem	0.11* [2.12]	0.12* [2.12]	0.12* [2.07]
CEO Duality	-0.04 [1.31]	-0.04 [1.21]	-0.03 [0.98]
Board Size	0.00 [0.51]	0.00 [0.47]	0.00 [0.45]
Perc of Indep member in BOD	-0.19* [2.04]	-0.16 [1.58]	-0.13 [1.26]
Existence of Comp Comm	0.02 [0.45]	0.02 [0.43]	0.02 [0.39]
TSR _{t-1 to t-3} *Board Size	-	-	-0.01 [1.13]
TSR _{t-1 to t-3} *Per Ind BOD	-	-	0.28 [1.54]
TSR _{t-1 to t-3} *CEO Duality	-	-	-0.01 [0.14]
Intercept	0.67** [4.60]	0.64** [4.08]	0.59** [3.88]

Notes:

Number of Observations:	857	824	824
R ² :	0.18	0.18	0.19
R ² Change:	-	0.0001	0.02
Chi-Statistic:	100.00**	100.92**	120.07**
Year Dummy:	Yes	Yes	Yes
Regression Type:	Random Effect [‡]	Random Effect ^{12‡}	Random Effect ^{13‡}
Robust St Errors:	Yes, for Heteroskedasticity, but no autocorrelation noted.	Yes, for Heteroskedasticity, but no autocorrelation noted.	Yes, for Heteroskedasticity, but no autocorrelation noted.

Absolute values of z-statistics are in brackets.

Asterisks and dagger indicate significance at 0.01 (**), 0.05 (*), and 0.10 (†) levels.

‡: Hausman test and Breusch and Pagan Lagrangian multiplier test for random effects are indicating the random effects model as an appropriate model. It is also with sector and time effect (dummies).

Table 19- Panel Data Regression of the Relationship between Percentage of Variable CEO Compensation_t and Firm Market Performance (TSR_{t-1 to t-3})

¹² Due to the consistency, the model was also run with firm-time fixed effects regression and the finding on TSR is the same, not significant at 10% level. Hence, the reported finding in the table is robust.

¹³ Due to the consistency, the model was also run with firm-time fixed effects regression and the findings on the interactions are the same, not significant at 10% level. Therefore, the reported findings in the table are robust.

Results on CEO'S Total Compensation

Independent Variable	Dependent Variable		
	LN(LNTotal CEO Compensation _t)		
	Base Model	Model 1	Model 2
ROA _{t-1 to t-3}	-	-0.01 [0.12]	0.00 [0.05]
Firm Age	-0.01 [0.63]	-0.01 [0.70]	-0.01 [0.73]
Firm Size	0.07 [0.90]	0.08 [0.94]	0.09 [1.03]
Institutional Ownership	-0.18 [0.69]	-0.18 [0.70]	-0.18 [0.69]
Family firm	0.19 [0.93]	0.19 [0.93]	0.19 [0.97]
State Ownership	0.01 [0.08]	-0.02 [0.14]	-0.02 [0.15]
CEO Age	0.00 [0.21]	0.00 [0.22]	0.00 [0.18]
CEO Tenure in firm	0.01† [1.92]	0.01† [1.92]	0.01† [1.93]
CEO Tenure as a Manager	0.02** [2.69]	0.02** [2.67]	0.02** [2.75]
CEOs Ownership	0.29 [1.57]	0.31† [1.70]	0.29 [1.59]
CEO Nationality	0.09 [0.84]	0.09 [0.88]	0.10 [0.92]
Perc of foreign BOD Mem	0.04 [0.19]	0.04 [0.22]	0.05 [0.26]
CEO Duality	-0.11 [1.10]	-0.11 [1.08]	-0.12 [1.12]
Board Size	-0.04 [1.64]	-0.04 [1.64]	-0.03 [1.60]
Perc of Indep member inBOD	-0.38 [1.13]	-0.37 [1.11]	-0.43 [1.20]
Existence of Comp Comm	0.46 [1.44]	0.46 [1.43]	0.46 [1.43]
ROA _{t-1 to t-3} *Board Size	-	-	0.02 [0.84]

ROA _{t-1 to t-3} *Per Ind BOD	-	-	-0.33 [1.04]
ROA _{t-1 to t-3} *CEO Duality	-	-	-0.01 [0.10]
Intercept	-0.19 [0.21]	-0.17 [0.19]	-0.17 [0.18]

Notes:

Number of Observations:	1040	1034	1034
Adj-R ² :	0.90	0.90	0.90
Adj-R ² Change:	-	0.001	0.0001
F-Statistic:	2.31**	2.29**	2.23**
Firm Fixed Effect:	Yes	Yes	Yes
Regression Type:	Firm Fixed Effect‡	Firm Fixed Effect‡	Firm Fixed Effect‡
Robust St Errors:	Yes for heteroskedasticity and autocorrelation.	Yes for heteroskedasticity and autocorrelation.	Yes, for heteroskedasticity and autocorrelation.

Absolute values of t-statistics are in brackets.

Asterisks and dagger indicate significance at 0.01 (**), 0.05 (*), and 0.10 (†) levels.

‡: Hausman test indicates the fixed effects model as an appropriate model. In addition, "testparm" syntax of Stata failed to reject Hnull, so all years coefficients are jointly equal to Zero (0). That's, time fixed effect is not needed.

Table 20- Panel Data Regression of the Relationship between Total CEO Compensation and Firm Accounting Performance (ROA_{t-1 to t-3})

Independent Variable	Dependent Variable		
	LN(LNTotal CEO Compensation _t)		
	Base Model	Model 1	Model 2
EPS _{t-1 to t-3}	- [0.41]	-0.00 [0.41]	-0.00 [1.14]
Firm Age	-0.01 [0.63]	-0.01 [0.83]	-0.01 [0.82]
Firm size	0.07 [0.90]	0.08 [0.99]	0.08 [0.97]
Institutional Ownership	-0.18 [0.69]	-0.22 [0.85]	-0.21 [0.83]
Family firm	0.19 [0.93]	0.18 [0.89]	0.18 [0.90]

State Ownership	0.01 [0.08]	-0.03 [0.21]	-0.03 [0.22]
CEO Age	0.00 [0.21]	0.00 [0.33]	0.00 [0.30]
CEO Tenure in firm	0.01† [1.92]	0.01† [1.90]	0.01† [1.86]
CEO Tenure as a Manager	0.02** [2.69]	0.01* [2.17]	0.01* [2.21]
CEOs Ownership	0.29 [1.57]	0.36* [2.13]	0.37* [2.17]
CEO Nationality	0.09 [0.84]	0.08 [0.74]	0.07 [0.69]
Perc of foreign BOD Mem	0.04 [0.19]	-0.03 [0.13]	-0.04 [0.18]
CEO Duality	-0.11 [1.10]	-0.04 [0.45]	-0.05 [0.49]
Board Size	-0.04 [1.64]	-0.04† [1.69]	-0.03 [1.53]
Perc of Indep member in BOD	-0.38 [1.13]	0.03 [0.12]	0.02 [0.07]
Existence of CompComm	0.46 [1.44]	0.53 [1.57]	0.49 [1.32]
EPS _{t-1 to t-3} *Board Size	-	-	0.00 [0.36]
EPS _{t-1 to t-3} *Per Ind BOD	-	-	0.00 [0.70]
EPS _{t-1 to t-3} *CEO Duality	-	-	0.00** [2.64]
Intercept	-0.19 [0.21]	-0.51 [0.58]	-0.46 [0.52]

Notes:

Number of Observations:	1040	1018	1018
Adj-R ² :	0.90	0.90	0.90
Adj-R ² Change:	-	0.0009	0.0001
F-Statistic:	2.31**	2.27**	55.66**
Firm Fixed Effect:	Yes	Yes	Yes
Regression Type:	Firm Fixed Effect [‡]	Firm Fixed Effect [‡]	Firm Fixed Effect [‡]
Robust St Errors:	Yes for heteroskedasticity and	Yes for heteroskedasticity and	Yes,for heteroskedasticity and

autocorrelation. autocorrelation. autocorrelation.

Absolute values of t-statistics are in brackets.

Asterisks and dagger indicate significance at 0.01 (**), 0.05 (*), and 0.10 (†) levels.

‡: Hausman test indicates the fixed effects model as an appropriate model. In addition, "testparm" syntax of Stata failed to reject Hnull, so all years coefficients are jointly equal to Zero (0). That's, time fixed effect is not needed.

- The effect size of the significant moderating variable in Model 2 is very low ($f^2=0.005$).

Table 21- Panel Data Regression of the Relationship between Total CEO Compensation_t and Firm Accounting Performance (EPS_{t-1 to t-3})

Independent Variable	Dependent Variable		
	LN(LNTotal CEO Compensation _t)		
	Base Model	Model 1	Model 2
Tobin Q _{t-1 to t-3}	-	-0.01 [0.25]	-0.02 [0.71]
Firm Age	-0.01 [0.63]	-0.01 [0.74]	-0.01 [0.69]
Firm Size	0.07 [0.90]	0.08 [0.89]	0.08 [0.90]
Institutional Ownership	-0.18 [0.69]	-0.19 [0.74]	-0.21 [0.83]
Family firm	0.19 [0.93]	0.18 [0.90]	0.16 [0.82]
State Ownership	0.01 [0.08]	-0.00 [0.00]	-0.02 [0.15]
CEO Age	0.00 [0.21]	0.00 [0.33]	0.00 [0.44]
CEO Tenure in firm	0.01† [1.92]	0.01† [1.93]	0.01* [1.99]
CEO Tenure as a Manager	0.02** [2.69]	0.01* [1.98]	0.01† [1.84]
CEOs Ownership	0.29 [1.57]	0.38* [2.16]	0.39* [2.24]
CEO Nationality	0.09 [0.84]	0.08 [0.71]	0.08 [0.78]
Perc of foreign BOD Mem	0.04 [0.19]	-0.03 [0.16]	-0.04 [0.22]
CEO Duality	-0.11 [1.10]	-0.03 [0.32]	-0.04 [0.40]

Board Size	-0.04 [1.64]	-0.04† [1.70]	-0.04† [1.70]
Perc of Indep member in BOD	-0.38 [1.13]	0.05 [0.19]	0.04 [0.13]
Existence of Comp Comm	0.46 [1.44]	0.49 [1.41]	0.48 [1.36]
Tobin Q _{t-1 to t-3} *Board Size	-	-	-0.01 [0.75]
Tobin Q _{t-1 to t-3} *Per Ind BOD	-	-	-0.18 [1.09]
Tobin Q _{t-1 to t-3} *CEO Duality	-	-	0.02 [0.39]
Intercept	-0.19 [0.21]	-0.49 [0.55]	-0.52 [0.59]

Notes:

Number of Observations:	1040	1014	1014
Adj-R ² :	0.90	0.90	0.90
Adj-R ² Change:	-	0.0014	-
F-Statistic:	2.31**	2.13**	2.10**
Firm Fixed Effect:	Yes	Yes	Yes
Regression Type:	Firm Fixed Effect‡	Firm Fixed Effect‡	Firm Fixed Effect‡
Robust St Errors:	Yes for heteroskedasticity and autocorrelation.	Yes for heteroskedasticity and autocorrelation.	Yes for heteroskedasticity and autocorrelation.

Absolute values of t-statistics are in brackets.

Asterisks and dagger indicate significance at 0.01 (**), 0.05 (*), and 0.10 (†) levels.

‡: Hausman test indicates the fixed effects model as an appropriate model. In addition, "testparm" syntax of Stata failed to reject Hnull, so all years coefficients are jointly equal to Zero (0). That's, time fixed effect is not needed.

Table 22- Panel Data Regression of the Relationship between Total CEO Compensation_t and Firm Market Performance (Tobin Q_{t-1 to t-3})

Independent Variable	Dependent Variable		
	LN(LNTotal CEO Compensation _t)		
	Base Model	Model 1	Model 2
TSR _{t-1 to t-3}	-	0.02 [0.52]	0.03 [0.97]
Firm Age	-0.01 [0.63]	-0.01 [0.86]	-0.01 [0.76]

Firm Size	0.07 [0.90]	0.05 [0.57]	0.06 [0.69]
Institutional Ownership	-0.18 [0.69]	-0.19 [0.73]	-0.18 [0.69]
Family firm	0.19 [0.93]	0.17 [0.84]	0.20 [1.02]
State Ownership	0.01 [0.08]	-0.05 [0.32]	-0.06 [0.41]
CEO Age	0.00 [0.21]	0.00 [0.29]	0.00 [0.26]
CEO Tenure in firm	0.01† [1.92]	0.01† [1.89]	0.01† [1.83]
CEO Tenure as a Manager	0.02** [2.69]	0.01† [1.92]	0.01† [1.80]
CEOs Ownership	0.29 [1.57]	0.39* [2.22]	0.42* [2.43]
CEO Nationality	0.09 [0.84]	0.09 [0.87]	0.09 [0.86]
Perc of foreign BOD Mem	0.04 [0.19]	-0.00 [0.01]	0.00 [0.02]
CEO Duality	-0.11 [1.10]	-0.03 [0.34]	-0.03 [0.30]
Board size	-0.04 [1.64]	-0.04 [1.64]	-0.04† [1.70]
Perc of Indep member in BOD	-0.38 [1.13]	0.06 [0.20]	0.05 [0.16]
Existence of Comp Comm	0.46 [1.44]	0.59 [1.61]	0.59 [1.63]
TSR $t-1$ to $t-3$ *Board Size	-	-	0.02* [2.08]
TSR $t-1$ to $t-3$ *Per Ind BOD	-	-	-0.03 [0.15]
TSR $t-1$ to $t-3$ *CEO Duality	-	-	-0.02 [0.21]
Intercept	-0.19 [0.21]	-0.30 [0.33]	-0.43 [0.45]

Notes:

Number of Observations:	1040	982	982
Adj-R ² :	0.90	0.90	0.90
Adj-R ² Change:	-	0.0009	0.0005

F-Statistic:	2.31**	2.20**	3.03**
Firm Fixed Effect:	Yes	Yes	Yes
Regression Type:	Firm Fixed Effect‡	Firm Fixed Effect‡	Firm Fixed Effect‡
Robust St Errors:	Yes for heteroskedasticity and autocorrelation.	Yes for heteroskedasticity and autocorrelation.	Yes, for heteroskedasticity and autocorrelation.

Absolute values of t-statistics are in brackets.

Asterisks and dagger indicate significance at 0.01 (**), 0.05 (*), and 0.10 (†) levels.

‡: Hausman test indicates the fixed effects model as an appropriate model. In addition, "testparm" syntax of Stata failed to reject Hnull, so all years coefficients are jointly equal to Zero (0). That's, time fixed effect is not needed.

- The effect size of the significant moderating variable in Model 2 is very low ($f^2=0.007$).

Table 23- Panel Data Regression of the Relationship between Total CEO Compensation and Firm Market Performance ($TSR_{t-1 \text{ to } t-3}$)

Findings for SMI-SMIM Firms:

In addition, H_1 is tested only for SMI and SMIM firms from 2007-2013. The SMI Index is made up of 20 blue-chip shares. The SMI MID (SMIM Index) comprises the 30 largest mid-cap stocks in the Swiss equity market. The Swatch Group was also listed on the SMI Index, so it was excluded from the SMIM Index. Lindt&Sprungli was disclosed with two different shares N and PS in SIX SMIM Index, so it was included once. The data of AMS and DKSH Companies were not available, so they were excluded. Finally, it is end up with 26 Mid-Cap Companies. After five missing data, the final panel data set for SMI & SMIM firms is 317 firm-years.

Even though the aim of the dissertation is to give the holistic picture on the Swiss Stock Exchange, the results for SMI and SMIM firms are also reported. SMI and SMIM index firms represent more than 85% of the free- float market capitalization of the Swiss equity market.

Same approach and robustness checks were performed for this sub-sample, like those applied to the whole dataset, discussed in previous sections. Therefore, the results are comparable and consistent. The statistical tables are not shown here for the simplicity reasons; however, if requested, they will be provided by the author.

On the other hand the findings regarding independent variables are summarized in Table 25 below:

Type of CEO Compensation	ROA	EPS	Tobin Q	TSR
Variable Compensation (in CHF)	H ₁ : no significant relationship	H ₁ : no significant relationship	H ₁ : negative relationship (b: -0.17, beta: -0.22, p:0.05)	H ₁ : no significant relationship
Percentage of Variable Compensation (%)	H ₁ : no significant relationship	H ₁ : no significant relationship	H ₁ : negative relationship (b: -0.03, beta: -0.30, p:0.03)	H ₁ : no significant relationship
Total Compensation (in CHF)	H ₁ : no significant relationship	H ₁ : Positive relationship (b: 0.001, beta: 0.17, p:0.00)	H ₁ : no significant relationship	H ₁ : Positive relationship (b: 0.19, beta: 0.12, p:0.00)

Table 25- H₁: The Relationship between CEO Compensation_(t) and Lagged Firm Performances only for SMI and SMIM firms.

As seen in Table 25, interestingly, for SMI and SMIM firms, positive total pay-for-firm performance link exists for EPS and TSR. On the other hand, there is a negative relationship between firm market performance (Tobin Q) and variable CEO pay, which indicates the existence of the agency problem, especially for the variable compensation determination process. This negative link between pay-for-performance is also the case for variable compensation in percentage (%). Similarly, this negative nexus of variable pay-for-firm market performance is supported by Rost and Osterloh (2009) in their biggest 100 Swiss firm data set for the years 2005 and 2006.

7.3 Statistics on Control Variables

In addition, the control variables in the Tables from 12 to 23 for Base Models are analyzed, and the following overall conclusions are reached:

- The most important controlling variable is the CEO tenure because it is significant for all types of CEO compensation. In essence, I have found a **positive** significant relationship between CEO's tenure as a manager and CEO

compensation (variable compensation, the percentage of variable compensation and total compensation). As Finkelstein and Hambrick (1989) and Singh and Harianto, (1989) reported, “board’s control over management diminishes as CEO tenure increases (Zajac & Westphal, 1995).” Therefore, it strengthens the CEO’s control over his/her salary, which may be the cause for the positive relationship between CEO tenure and CEO compensation.

- In contrast to Economic Theory (L. Gomez-Mejia et al., 1987) but in line with other scholars (Boyd, 1994; R. Lambert et al., 1991), I found no significant relationship between firm size and CEO compensation. The other firm (firm age) or CEO characteristics (CEO tenure as a manager) are more important than firm size to decide on the level of CEO compensation in Switzerland, so no significant relationship was captured for firm size.
- Consistent with Yim (2013) and Lee and Chen (2011), there is a significant **negative** relationship between firm age and variable CEO compensation. This negative relationship could be explained by the low-growth nature of mature firms (older firms).
- There is a significant **negative** association between CEO Age and percentage of variable CEO compensation. This means that older CEOs have lower levels of incentives, which can be supported by the research of McKnight et al. (2000) because they noted that “the proportion of incentives as a percentage of salary begins to decrease at about age 53.”
- Percentage of Foreign Board Members (non-Swiss membership) is significantly and **positively** associated with variable CEO compensation. Consistent with the study of Randoy and Nielsen (2002), I have found that there is a positive link between foreign board membership and variable CEO pay in Switzerland. One of the explanations could be that foreign board members are more tolerant to higher CEO compensation because of their previous experiences in their own countries.

- There is a **positive** association between CEO ownership and percentage of variable compensation at 10 percent significance level. This finding is consistent with Managerial Power Theory (CEO entrenchment), which postulates that CEOs have a higher control over their own salaries when their power or ownership in the firm increases.

7.4 Statistics on Moderators

In this part, the impact of three moderators (corporate governance variables) in the relationship between firm performance and CEO Duality is analyzed statistically. H₂, H₃, and H₄ were constructed to prove the moderating effect of board size, the percentage of independent Board Members, and CEO Duality.

Results for Board Size (H₂) as a Moderator:

Findings for H₂ are recapped in Table 26 that summarizes the interaction terms on Tables 12 to 23:

Type of CEO Compensation	Variable Compensation	Percentage of Variable Compensation	Total Compensation
ROA*Board Size	H _{2.1} : weak negative interaction (b: -0.06, beta: -0.04, p: 0.10, effect size, f ² = 0.009)	H _{2.5} : no significant interaction	H _{2.9} : no significant interaction
EPS*Board Size	H _{2.2} : no significant interaction	H _{2.6} : no significant interaction	H _{2.10} : no significant interaction
Tobin Q*Board Size	H _{2.3} : negative interaction (b: -0.05, beta: -0.09, p: 0.01, effect size, f ² = 0.02)	H _{2.7} : no significant interaction	H _{2.11} : no significant interaction
TSR*Board Size	H _{2.4} : no significant interaction	H _{2.8} : no significant interaction	H _{2.12} : positive interaction (b: 0.02, beta: 0.03, p: 0.04) effect size, f ² = 0.007)

Table 26- H₂: The Relationship between CEO Compensation and Board Size as Moderator

The significant findings, which are $H_{2.1}$, $H_{2.3}$, and $H_{2.12}$, are analyzed in more detail in the following pages.

$H_{2.1}$: In Table 12 for Model 2, the interaction effect of board size is significant at 10% level (b: -0.06, beta: -0.04, p: 0.10). However, this effect is not in the expected enhancing (positive) direction. In contrast, it is found that there is a **weakly significant negative** interaction between ROA and board size for the variable CEO compensation.

In addition, Figure 6 depicts the moderation path diagram:

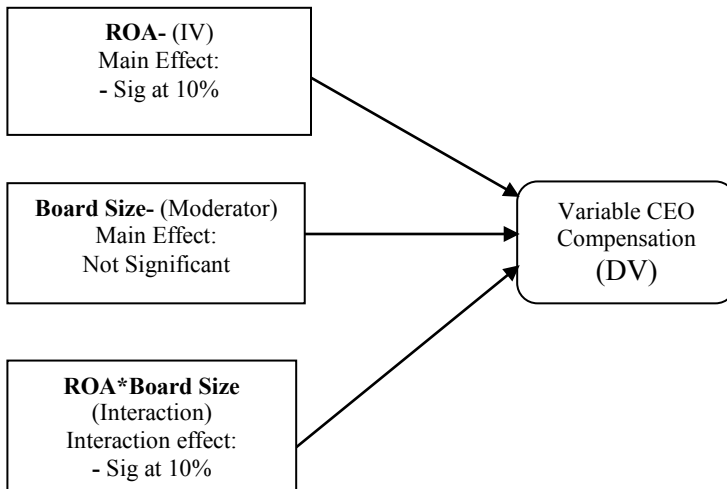


Figure 6- Moderation Path Diagram for the Variable CEO Compensation, ROA, and Board Size¹⁴ (Model 2 in Table 12)

Figure 7 shows that the moderator, board size, has a “damper” (decreasing) effect because the companies that reported a large board size depict a stronger negative relationship between ROA and variable CEO compensation. In other words, in line with the literature supporting the small boards’ efficiency, this result also indicates that the smaller boards are more effective than larger ones to decrease the negative relationship between accounting performance of the firm (ROA) and variable compensation of the CEO, especially for the firms having higher ROA.

¹⁴To cope with spurious moderation and collinearity, the author has centered the independent and moderator variable before calculating the interaction effect, which is in line with the approach of Aiken and West (1991). Therefore, no multicollinearity was noted between the independent variable, moderator and interaction variable. It presents a robust result.

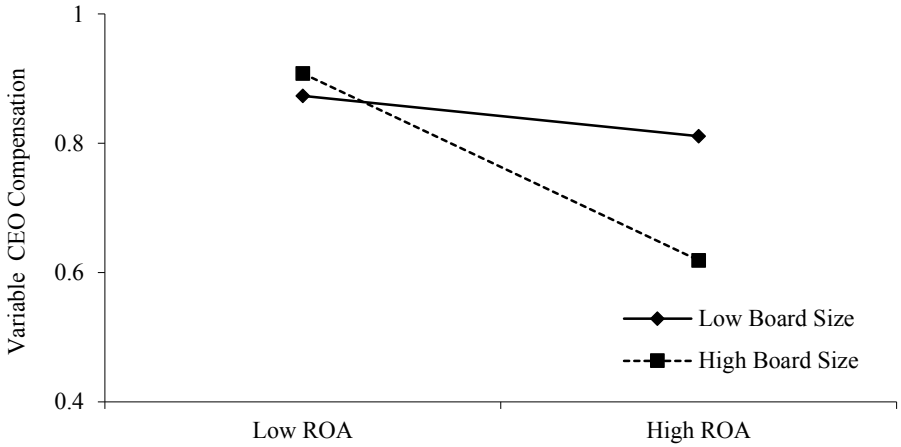


Figure 7- Moderating Effect of Board Size on the Relationship between ROA and Variable CEO Compensation

H_{2.3}: In Table 14 for Model 2, the interaction effect of board size is significant at 1% level (b: -0.05, beta: -0.09, p: 0.01). The direction of this effect is not in line with the expectations; conversely, it is found that there is a significant **negative interaction** between Tobin Q and board size for the variable CEO compensation.

In addition, Figure 8 depicts the moderation path diagram:

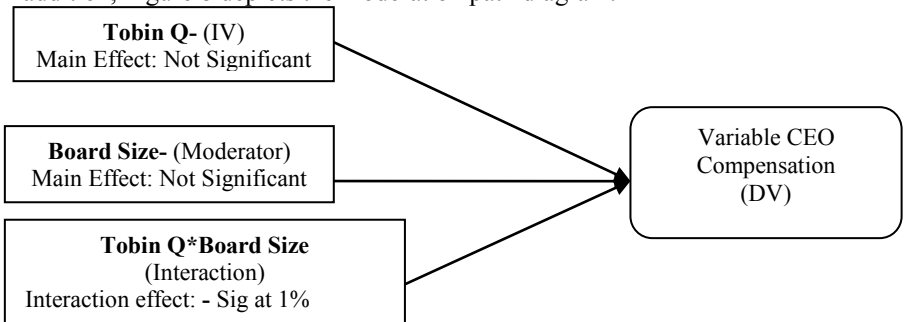


Figure 8- Moderation Path Diagram for the Variable CEO Compensation, Tobin Q and Board Size¹⁵ (Model 2 in Table 14)

¹⁵ To cope with spurious moderation and collinearity, the author has centered the independent and moderator variable before calculating the interaction effect, which is in line with the approach of Aiken and West (1991). Therefore, no multicollinearity was noted between the independent variable, moderator and interaction variable. It presents a robust result.

In line with the scholars' supporting the viewpoint of small boards' efficiency, Figure 9 illustrates that the moderator, board size, has a “damper” (decreasing) effect because, under the condition of large board size, a negative relationship was found between firm market performance (Tobin Q) and variable CEO compensation. In other words, larger boards are decreasing the positive link between Tobin Q and variable CEO compensation, in contrast to smaller boards.

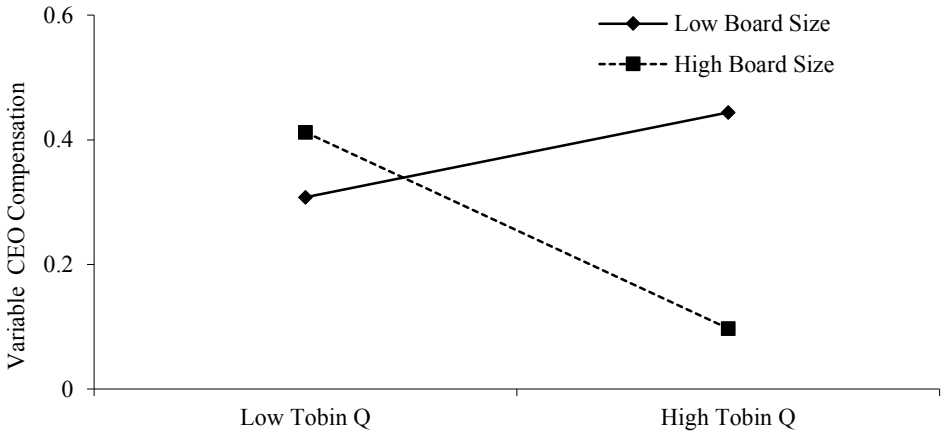


Figure 9- Moderating Effect of Board Size on the Relationship between Tobin Q and Variable CEO Compensation

H2.12: It is accepted. On Table 23 for Model 2, a significant positive interaction is found between TSR and board size at the 5% level (b: 0.02, beta: 0.03, p: 0.04). In other words, it is accepted that the board size has an enhancing (increasing) effect on the relationship between firm market performance (TSR) and total CEO compensation.

In addition, Figure 10 depicts the moderation path diagram:

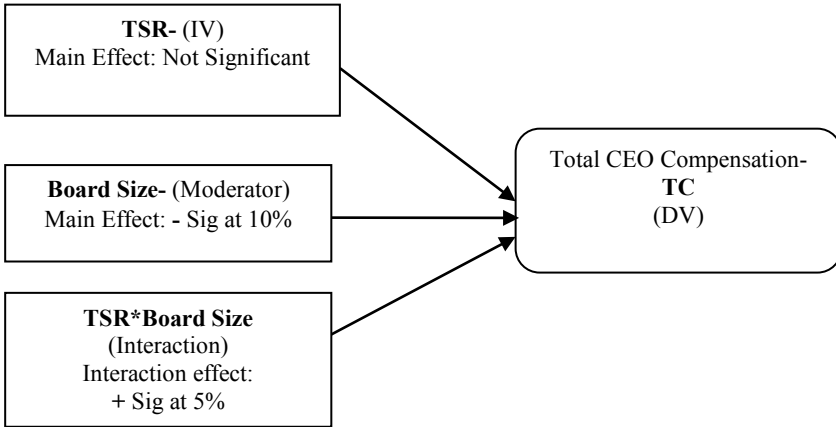


Figure 10 – Moderation Path Diagram for the Total CEO Compensation, TSR, and Board Size¹⁶ (Model 2 in Table 23)

As seen in Figure 11, in line with **H_{2.12}** and Resource Dependency Theory (Jackling & Johl, 2009), TSR is positively associated with total CEO compensation when the board size is high (large) and negatively associated with his/her compensation when the board size is low (small).

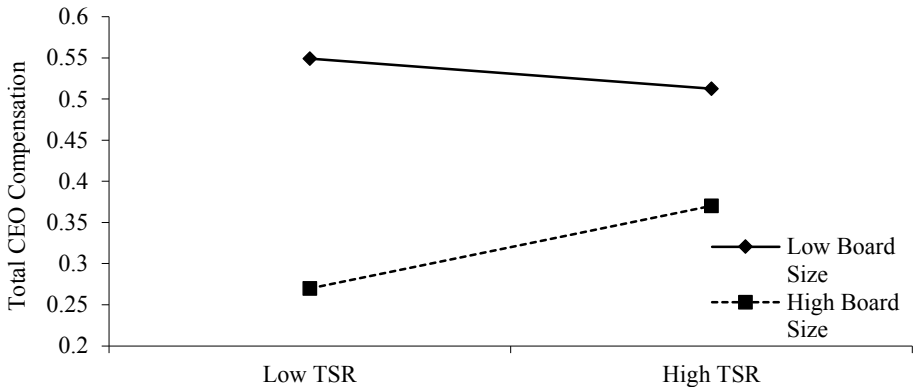


Figure 11- Moderating Effect of Board Size on the Relationship between TSR and Total CEO Compensation

¹⁶ To cope with spurious moderation and collinearity, the author has centered the independent and moderator variable before calculating the interaction effect, which is in line with the approach of Aiken and West (1991). Therefore, no multicollinearity was noted between the independent variable, moderator and interaction variable. It presents a robust result.

Finally, for the rest of the hypotheses of H₂, there is nothing to discuss in depth because of the insignificant findings.

H_{2.2}, H_{2.4}, and from H_{2.5} to H_{2.11}: It is not identified that there is any significant moderating effect of board size ($p > 0.10$) on the relationship between firm performance and CEO compensation. Therefore, they are not supported.

Results for Percentage of Independent BOD (H₃) as a Moderator:

The findings regarding H₃ are recapped in Table 27 that summarizes the interaction terms on Tables 12 to 23:

Type of CEO Compensation	Variable Compensation	Percentage of Variable Compensation	Total Compensation
ROA* PercIndpBOD	H _{3.1} : no significant interaction	H _{3.5} : no significant interaction	H _{3.9} : no significant interaction
EPS* PercIndpBOD	H _{3.2} : no significant interaction	H _{3.6} : no significant interaction	H _{3.10} : no significant interaction
Tobin Q* PercIndpBOD	H _{3.3} : no significant interaction	H _{3.7} : no significant interaction	H _{3.11} : no significant interaction
TSR* PercIndpBOD	H _{3.4} : no significant interaction	H _{3.8} : no significant interaction	H _{3.12} : no significant interaction

Table 27- H₃: The Relationship between CEO Compensation and Percentage of Independent BOD as Moderator

H_{3.1} to H_{3.12}: As illustrated in Table 27 above and Tables from 12 to 23 for Model 2's, there is no significant evidence indicating the moderation effect of the percentage of independent board members on the relationship between firm accounting (ROA, EPS) and market (Tobin Q and TSR) performances and CEO compensation. As a result, H_{3.1} to H_{3.12} (all H₃'s) were not supported.

Results for CEO Duality (H₄) as a Moderator:

The findings regarding H₄ are recapped on Table 28 that summarizes the interaction terms in Tables 12 to 23:

Type of CEO Compensation	Variable Compensation	Percentage of Variable Compensation	Total Compensation
ROA*CEO Duality	H _{4.1} : no significant interaction	H _{4.5} : no significant interaction	H _{4.9} : no significant interaction

EPS* CEO Duality	H4.2: no significant interaction	H4.6: no significant interaction	H4.10: positive interaction, (b: 0.0007, beta: 0.04, p:0.01 effect size, f ² = 0.005)
Tobin Q* CEO Duality	H4.3: no significant interaction	H4.7: no significant interaction	H4.11: no significant interaction
TSR* CEO Duality	H4.4: no significant interaction	H4.8: no significant interaction	H4.12: no significant interaction

Table 28- H4: The Relationship between CEO Compensation and CEO Duality as Moderator

As displayed in Table 28 above, the only significant interaction ($p < 0.10$) is noted for H4.10. Hence, only H4.10 is addressed in more detail.

H4.10: In Table 21 for Model 2, the positive interaction effect of CEO Duality is significant at the 1% level (b: 0.0007, beta: 0.04, p: 0.01). In contrast to Managerial Power Theory or in line with Organization Theory, CEO duality has a significant positive impact on the relationship between EPS and total CEO compensation.

Figure 12 illustrates the moderation path diagram:

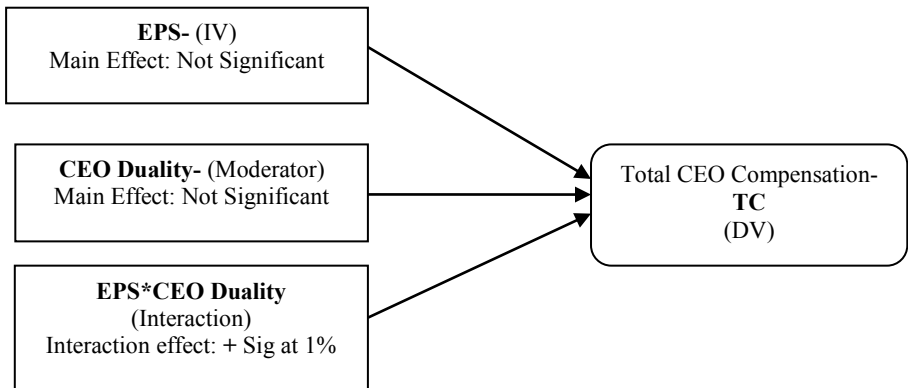


Figure 12 – Moderation Path Diagram for the Total CEO Compensation, EPS and CEO Duality¹⁷ (Model 2 in Table 21)

¹⁷ To cope with spurious moderation and collinearity, the author has centered the independent and moderator variable before calculating the interaction effect, which is in line with the approach of Aiken and West (1991). Therefore, no multicollinearity was noted between the independent variable, moderator and interaction variable. It presents a robust result.

Furthermore, the enhancing moderation of CEO Duality was depicted in Figure 13. As seen in Figure 13, a positive relationship between EPS and total CEO compensation was noted under the condition of CEO Duality.

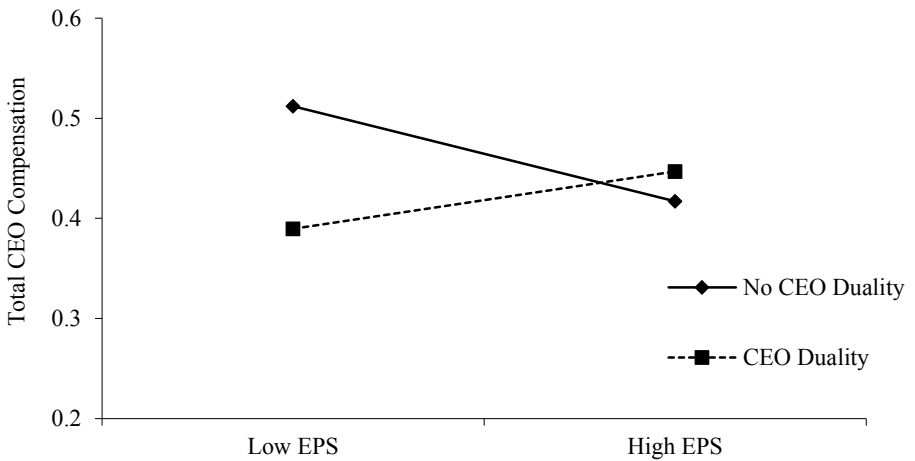


Figure 13- Moderating Effect of CEO Duality on the Relationship between EPS and Total CEO Compensation

Finally, apart from H_{4.10}, the rest of H₄'s are not statistically significant (p>0.10).

H_{4.1} to H_{4.9} and H_{4.11} and H_{4.12}: As seen in Tables 12 to 20 and Tables 22 and 23 for Model 2's, there are no significant interactions, so these hypotheses are not supported.

Comments on Effect Sizes (f²) in Interactions:

As stated in Tables 26 and 28, the effect sizes (f²) of H_{2.1}, H_{2.3}, H_{2.12}, H_{4.10} are 0.009, 0.02, 0.007, and 0.005 respectively. The effect sizes were calculated for the significant (p<0.10) moderators because effect sizes refer to the *magnitude* of the significant interaction variable in my final model, Model 2's.

Effect size (f²), the Cohen's f squared, is an alternative to ΔR² in the hierarchical regression analysis (Ellis, 2010). The change of the coefficient of determination (ΔR²) is also a measure of the effect size of the moderator effect. The R² increase

indicates how much criterion variance is additionally explained by the product term and, therefore, can be ascribed to the moderator effect.

The strength of the moderator effect is displayed in the form of the effect size index (f^2) (Helm & Mark, 2010):

$$f^2 = \frac{R_I^2 - R_B^2}{1 - R_I^2}$$

whereby R_I^2 characterizes the coefficient of determination of the interaction model (Model 2) and R_B^2 the coefficient of determination of the basic model (Model 1).

For the evaluation of the effect size, “Cohen (1988) has proposed the following values of f^2 that are conventionally established: **0.02 = low**; 0.15 medium; **0.35 = high**”. However, the size of the interaction effect turns out to be rather low in many empirical studies, including those on corporate governance (Cohen, 1992; Helm & Mark, 2010). For instance, Aguinis et al. (2005) analyzed the management literature over 30 years to disclose the average effect sizes. They revealed that “the **average effect size** (f^2) is about **0.005**, the **median** about **0.002**.” If this is interpreted based on Cohen’s benchmarks of a low, medium and high effect size, f^2 in the management literature is pretty low in general. In other words, it indicates how difficult to prove a strong moderator effect according to Cohen’s benchmarks (Aguinis, Beaty, Boik, & Pierce, 2005; Helm & Mark, 2010). As a result, Aguinis et al. (2005) addressed that Cohen’s benchmarks were set forth in 1988, so effect sizes of each study should also be evaluated in its context. They showed that “a small (low) effect size could have a meaningful impact for science or practice within its specific context”.

Finally, in line with Aguinis et al. (2005), in my paper, the effect sizes of significant interaction variables are low ($f^2 \leq 0.02$). However, if they are compared with the ones in the previous literature on Corporate Governance, the moderators (board size and CEO duality) have a meaningful impact on the practice and the science.

7.5 Robustness Checks¹⁸

Diagnostic Checks and Model Specification:

The regression diagnostics assure the validity of a model. First, normality, linearity, outliers, and multicollinearity of the models were checked, and the assumptions of regression were met, no exception was noted. In addition to regression diagnostics, each model's Root Mean Square Errors (RMSE), and results of Linktest and Ovttest (Ramsey Reset) tests were reviewed. RMSEs were low and p-values of Linktest and Ovttest were above 0.05, which indicated that models were free from measurement errors and omitted variable bias. In short, all models were properly specified.

Besides, homoscedasticity and autocorrelation could be a problem for a panel dataset. That is why, Modified Wald test for group-wise heteroskedasticity and Wooldridge test for autocorrelation in panel data were run for each model. To cope with heteroskedasticity in the models having variable compensation and the percentage of variable compensation as a dependent variable, a panel data regression with robust standard errors corrected for the heteroskedasticity is run. To deal with heteroskedasticity and autocorrelation in the models having total compensation as a dependent variable, a panel data regression with robust standard errors corrected for the heteroskedasticity and autocorrelation is executed. Thus, the robust models in this paper are free from heteroskedasticity and autocorrelation problems.

Then, endogeneity and reverse causality were considered. As addressed by Darren Henry, some previous studies on corporate governance were plagued by endogeneity (Henry, 2008). Endogeneity means that "independent variables are correlated with error term in a regression model, $E(u|x_i) \neq 0$ " (Antonakis, 2011; Guse, 2003). The residuals of each model were predicted and the correlations between residuals and independent and controlling variables were reviewed. No endogeneity was noted; models are free from endogeneity. Another issue is the

¹⁸ The robustness checks were not disclosed in this paper for the simplicity purposes; however, they can be provided if they are requested from the author.

reverse causality. For the research on the relationship between firm performance and executive compensation, the central concern is the reverse causality (simultaneity) (Guse, 2003; Harrison & Coombs, 2012). “Simultaneity (reverse causality) arises when one or more of the independent variables (x) is jointly determined with the dependent variable (y) (ucl.acc.uk, 2008).” For instance, firm financial performance (x) may impact CEO compensation (y), but it is also possible that successful CEOs, defined by highly paid CEOs (y), may increase the firm financial performance (x). “Reverse causality may bias regression coefficients so that non-significant relationships are reported as significant or significant relationships are reported to be non-significant (Harrison & Coombs, 2012; Woolridge, 2001).” Two defensive approaches were introduced by scholars to deal with reverse causality: (1) the lagged variable approach (2) the instrumental variable or two-stage instrumental variable regression (2SLS) approach (Biorn & Krishnakumar, 2007). For instance, some scholars used lagged variables approach to address the problem of reverse causality (R. B. Adams & Ferreira, 2009; Aldogan, 2014; Berrone & Gomez-Mejia, 2009; Buck, Bruce, Main, & Udueni, 2003; Carter et al., 2010; Doucouliagos et al., 2007; Hilb, 2007; Shaw & Zhang, 2010). More importantly, Benner and Tushman (2002) emphasized that the lagged variable approach in the longitudinal research design provides some assurance to cope with reverse causality without affecting the results of the study significantly (Harrison & Coombs, 2012).

To handle reverse causality in my research, the lagged variable approach is also implemented, which is in line with the logic of CEO’s compensation policies disclosed on the annual reports and literature review. In particular, according to Hilb (2007) and Buck et al. (2003), the performance criteria for the variable compensation vary between the “time lag of 1 to 3 years”. In addition, Shaw and Zhang (2010) stated that “for the short term compensation contracts, in year $t-1$ (one to three years lag for the long term compensation contracts), CEOs and compensation committees agree upon ex-ante contracts to be used in evaluating and rewarding CEO performance in year t .” Therefore, in this paper, the same approach is used to cover accurate period and to cope with reverse causality, which is another contribution of the paper.

In simpler terms, take an example, if the CEO was successful in the year 2012, and then his 2012 performance could positively affect the firm financial performance only for the same year, 2012, not for the years before. The link of reverse causality (y to x) was removed with the help of the lagged variable approach.

Even though the lagged variable approach is sufficient to handle the reverse causality problem in the research, the models with the instrumental variable approach (2SLS regression) are also tested to double check the robustness of the models. The consistent results were obtained for the independent and interaction variables. That is why, the findings reported via panel data regression (fixed and random effects) in this paper are robust and free from reverse causality.

In more detail, to perform 2SLS regression, consistent with the research on the same area (Bhagat & Bolton, 2008; Coughlan & Schmidt, 1985), “CEO turnover” is selected as an instrumental variable. Coughlan and Schmidt (1985) argued that “the lower the CEO turnover is, the higher the firm financial performance should be”; hence, the instrumental variable (CEO turnover in the last seven years) should be correlated with the endogenous or independent (firm performance) variable. In addition, the validity of the instrumental variable is also checked with the help of Hansen J statistic ($p=0.1639$, which should be higher than 0.05). It was proved that CEO Duality is a valid instrument for the models in this paper. In addition, Durbin-Wu-Hausman chi-sq test and Wu-Hausman F test produced p-values higher than 0.05, which indicated the lack of an endogeneity and reverse causality problems.

Finally, the omitted variable issue was also handled by Ovttest (Ramsey Reset) and Fixed Effects regression, consistent with the similar approach of previous scholars (R. B. Adams & Ferreira, 2009; Berrone & Gomez-Mejia, 2009; Carter et al., 2010; Wade, O'Reilly, et al., 2006).

To sum up, the models and the findings of this paper are robust, which is one of the contributions of this study to the CEO compensation field.

Robustness Checks for the Moderation:

In this paper, before concluding on the moderation effect, the models for moderation were controlled for the spurious moderation, which could be caused by collinearity and measurement error.

Collinearity exists when the predictor variable (x) and the moderator variable (z) are highly correlated ($r > 0.90$) with each other, which reduces the power of detecting the moderation effects (Wu, 2011). “The problem of collinearity is reduced by increasing sample size and centering the variables” (Aiken & West, 1991; Jose, 2013; Wu, 2011). Another problem is measurement error. “Measurement error in the model lowers the power of the test and the overall R^2 value (A. F. Hayes, 2013; Wu, 2011)”.

To cope with collinearity, the variables (x and z) in this paper are centered before the interaction variables are calculated. Then, the correlations between predictor (x), moderator (z), and interaction (xz) variables are checked for collinearity. For the measurement error, it is noted that the models with interaction variables (Model 2s) have a higher R^2 than the models without interaction variables (Model 1s) and the R^2 increase is statistically significant ($p < 0.05$).

Finally, it can be concluded that the models of moderation in this paper are robust because they are free from collinearity and measurement error.

8. Conclusion and Implication

In this study, the relationship between firm financial performance and CEO compensation, along with Corporate Governance variables as a moderator, is explored. The positive link between pay and performance is a signal of a healthy organization, free from agency conflicts, with respect to the principles of Agency Theory.

For the SMI and SMIM firms, EPS and TSR are positively related to total CEO pay, but Tobin Q is negatively associated with variable pay in CHF and percentage. It is observed that the board is effective in deciding on cash

compensation, but the managerial power, agency conflict, or cronyism has more impacted on variable compensation. Therefore, it is recommended that a strong Corporate Governance structure be profoundly necessary for the determination of an optimal variable CEO compensation. From the holistic view, agency conflict is more clearly seen in all listed Swiss firms due to a lack of association between pay and performance, apart from ROA. Even worse, ROA is negatively related to variable pay.

After this current picture, the moderation impact of Corporate Governance variables on the relationship of pay-for-performance has been deeply analyzed by using Resource Dependence, Managerial Power and Organization Theories. In fact, Managerial Power and Organization Theories are two competing theories that are used as a support to explain CEO duality.

It is demonstrated that board independence is not a significant moderator for the link between firm performance and CEO pay, but board size and the CEO duality are the significant moderators. More interestingly, larger boards have a dampening effect on the link between ROA, Tobin Q, and variable pay. It means that larger boards are not effective in deciding on optimal variable CEO contract, which is more complex and time-consuming. On the other hand, larger boards have an enhancing impact on the link between TSR and total compensation. In simpler terms, consistent with Resource Dependence Theory, larger boards are more beneficial in determining total pay due to their access to the external environment (peer group comparison).

Finally, the only significant moderation effect of CEO duality is noted between EPS and total compensation. In light of Organization Theory, a unity of command at the top of the firm (CEO duality) strengthens the positive link between EPS and total CEO pay, which sends reassuring signals to stakeholders. However, it is not the case for ROA, Tobin Q, and TSR. Maybe it could be explained that EPS is one of the prevalently used accounting performance measures in practice (Lipman & Hall, 2008; Mercer, 2009), so CEOs have paid additional attention to it to send strong signals to board and shareholders.

To sum up, the overall results are indicating the agency problem and the weak Corporate Governance structure, and it is more apparent for the variable CEO pay. Therefore, the implication of this study is important for academicians, board members, shareholders, and regulatory bodies. For Boards, they should invest more time in strengthening their Corporate Governance, and they should develop proper quantitative approaches or checklists for measuring the link between pay and firm performance. For instance, multiple profitability metrics will help to check the nexus of pay-for-performance (Stern, Oct 17, 2014), which increase the contracting efficiency. However, ‘proper and relative performance measures’ should be selected for short and long term variable compensations (Lipman & Hall, 2008; Mercer, 2009). At this point, the scholars should conduct more research to figure out the proper and relative measures and a way of strengthening the nexus.

For the regulatory board, this result supports the Swiss voters’ decision on the the Minder Initiative. It is obvious that the new regulations and principles on CEO pay (Swiss Code 2014 and OaEC) are very well timed. Hopefully, after the new rules taken into effect, this picture will be changed to a positive direction.

9. Limitation and Future Research

In Paper I, the link between firm financial performances and CEO compensation was tested. Owing to time constraints and difficulties in measurement, non-financial performances (reputation, customer loyalty and complaints, brand recognition, etc.) were not covered, which is the limitation of the study. However, non-financial performances are equally as important as financial performances.

Secondly, the annual reports for 2014 were not available during the preparation of this dissertation, so the impact of the new regulations (Swiss Code 2014 and OaEC) on pay-for-performance could not be measured.

The third limitation is that although three year-lagged approach between pay and performance aims to reveal the long-term effect and cope with causality, some longer term effects, e.g., more than three years, cannot be shown in this sample.

To conclude, these three limitations are recommended as further research topics to the scholars in the area of Compensation, Accounting, and Corporate Governance.

Appendix

Firm Name	2007
Roche Holding	22,679,000
Credit Suisse	22,290,000
Nestle	17,440,958
Novartis	17,037,002
Swiss Re	15,139,000

Appendix 1- Top 5 Highest Total CEO Compensation, 2007

Firm Name	2008
Novartis	20,544,032
ABB	19,203,413
Richemont	9,962,567
Zurich Insurance	9,550,000
Transocean	9,099,764

Appendix 1- Top 5 Highest Total CEO Compensation, 2008

Firm Name	2009
Novartis	20,471,929
Credit Suisse	19,200,000
Swiss Re	12,597,000
Roche	12,437,137
Zurich Insurance	11,850,000

Appendix 1- Top 5 Highest Total CEO Compensation, 2009

Firm Name	2010
Credit Suisse	12,760,000
Novartis	11,721,780

Roche	11,718,157
Richemont	11,511,583
Nestle	10,572,493

Appendix 1- Top 5 Highest Total CEO Compensation, 2010

Firm Name	2011
Novartis	15,722,386
Roche	11,653,192
Nestle	9,799,615
ABB	9,370,278
Aryzta	8,568,000

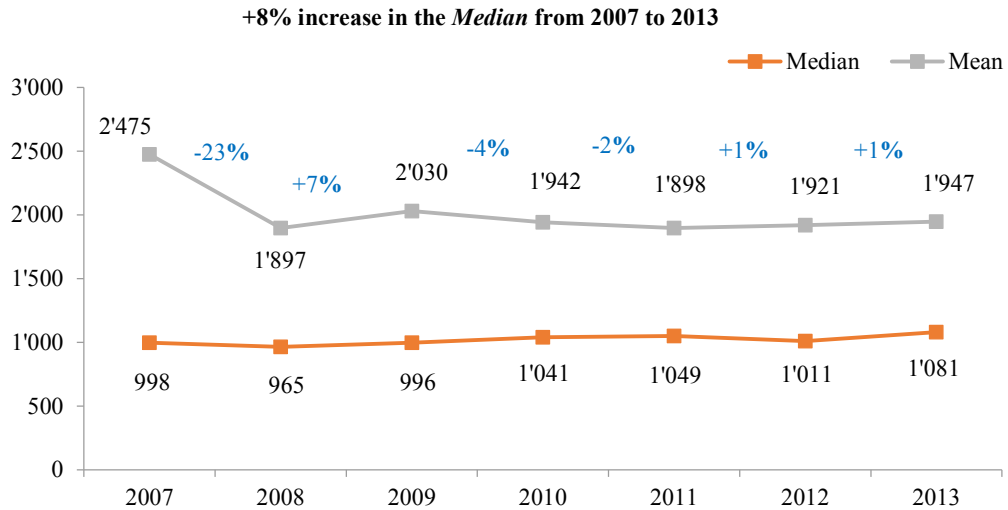
Appendix 1- Top 5 Highest Total CEO Compensation, 2011

Firm Name	2012
Rothschild	19,470,000
Novartis	13,228,188
Roche	13,182,353
Transocean	11,596,825
ABB	10,157,801

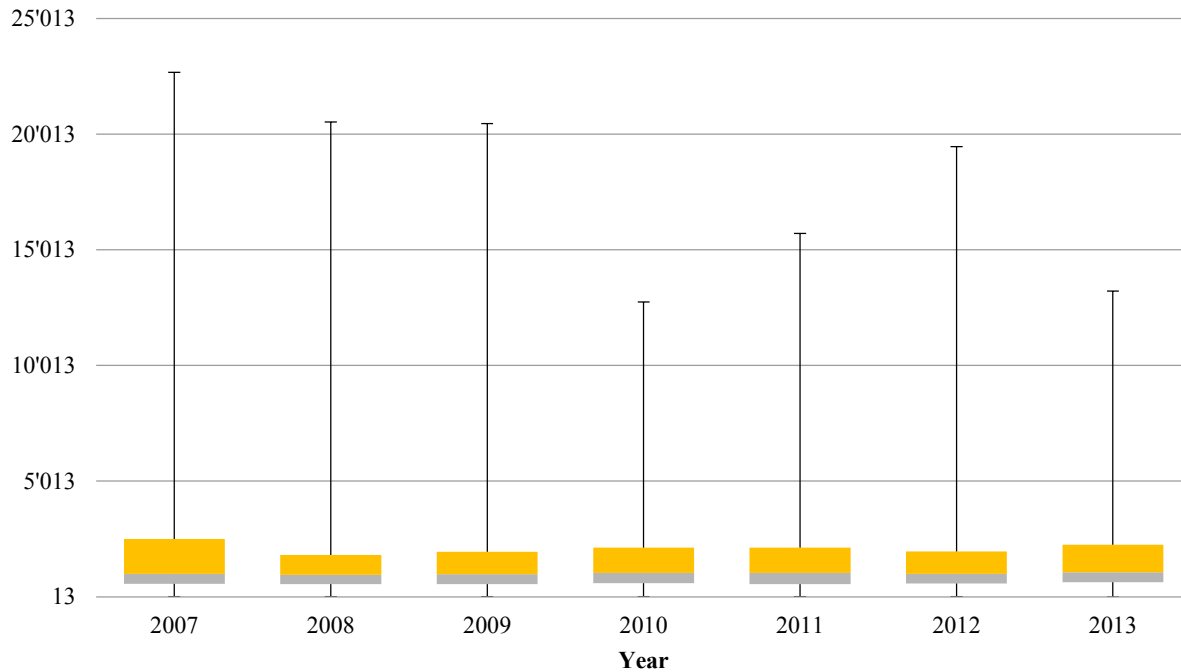
Appendix 1- Top 5 Highest Total CEO Compensation, 2012

Firm Name	2013
Novartis	13,226,287
Transocean	12,554,140
Roche Holding	11,916,938
UBS	10,730,122
Credit Suisse	9,790,000

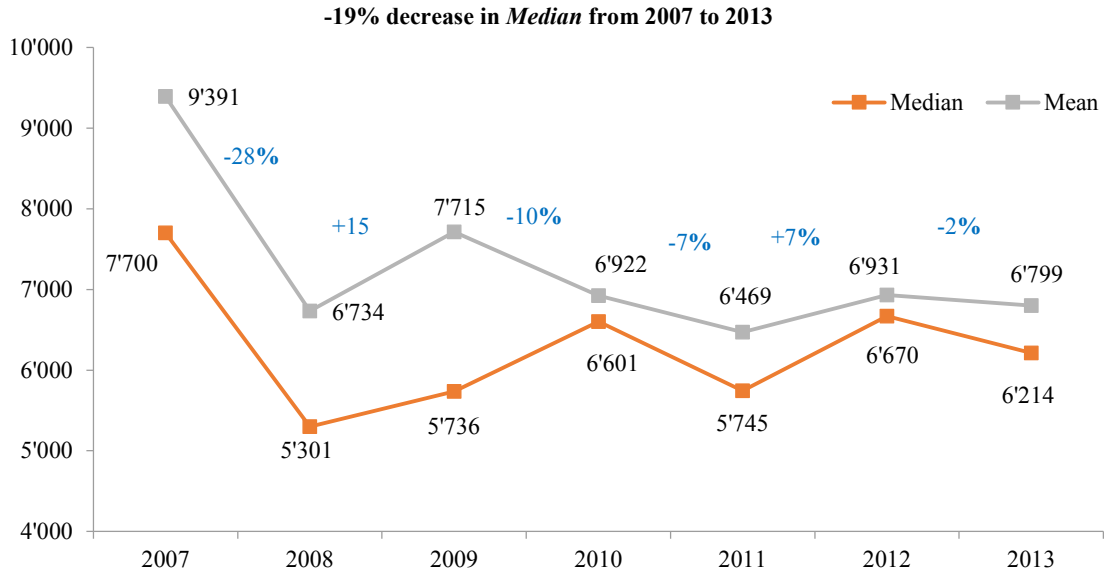
Appendix 1- Top 5 Highest Total CEO Compensation, 2013



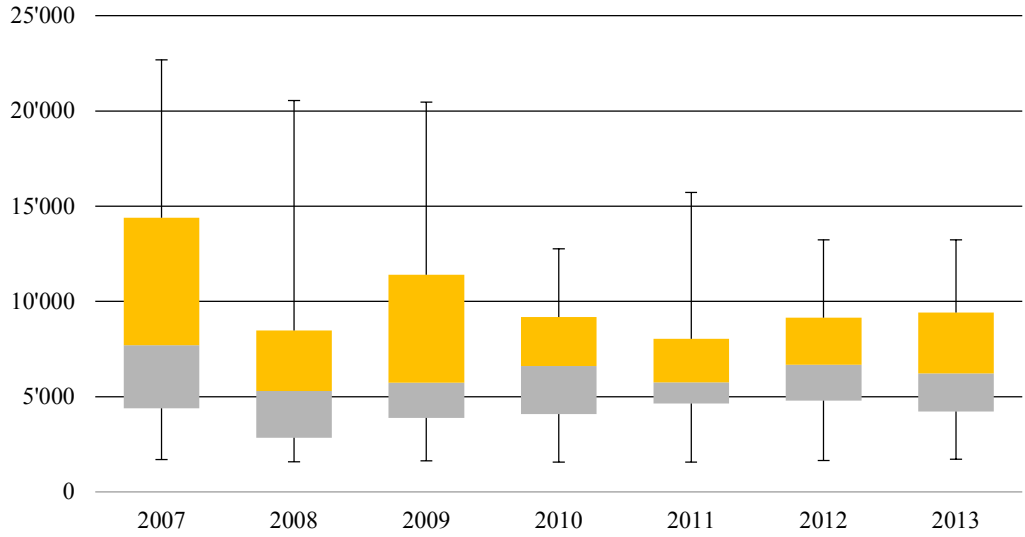
Appendix 2- Mean and Median of Total CEO Compensation (in Thousands)



Appendix 3- Box Plot of Total CEO Compensation (in Thousands)



Appendix 4- Mean and Median of Total CEO Compensation (in Thousands)
in SMI-Firms



Appendix 5- Box Plot of Total CEO Compensation (in Thousands) in SMI-Firms

Appendix 6- Literature Review- Pay for Performance- in an Alphabetical Order

Author	Year	Country	Journal	Theory	Sample	Result	Comments
(Basu, Hwang, Mitsudome, & Weintrop, 2007)	2007	Japan	Pacific-Basin Finance Journal	Theory of the firm	174 large corporations during 1992–1996	The link among total CEO pay and ROA and TSR is not significant , suggesting that current performance measures do not explain current pay very well. - It is addressed that non-significant link indicates agency problem.	-It did not consider the lagging performances. -It did not have an up-to-date dataset, but it contributes to international corporate governance research.
(Berrone & Gomez-Mejia, 2009)	2009	USA	Academy of Management	Institutional theory	469 firms from 1997-2003	- ROE and Tobin Q are positively related to CEO total pay.	- It has more recent data, compared to previous studies. It has comprehensive findings. -However, only CEO total pay was analyzed.

(Boyd, 1994)	1994	USA	Strategic Management Journal	Agency Theory	193 Firms in 1980	CEO Compensation was not significantly related to performance (ROE).	-Only total compensation was analyzed. -Only one year (1980) was considered in the sample.
(Buchholtz et al., 1998)	1998	USA	Group Organization Management	Agency Theory	277 firms in 1992	There is a negative relationship between total CEO compensation and TSR.	It also <i>analyzed CEO duality as a moderator for CEO pay-for-performance, but no significant moderation was noted.</i> -It is an important reference for my paper. -On the other hand, the data set is for 1992, it is not so up-to-date.
(Buck et al., 2003)	2003	UK	Journal of Management Studies	Agency Theory	287 Firms in 1997-1998	“LTIP reduces the sensitivity of executive’s pay to shareholder return. It raises doubts	- It is an important paper due to its findings on LTIP; however, it linked the LTIP’s to the

						concerning both the effectiveness of the LTIP instrument and the validity of agency perspective in this context”.	company’s two year (TSR) performance. It had to be three year performance due to the nature of LTIP.
(Brick et al., 2006)	2006	USA	Journal of Corporate Finance	Agency Theory	237 firms for the years 1992-2001	-CEO cash compensation is positively related to TSR, but it has no significant relationship with Tobin Q and ROA. - CEO total compensation is positively associated with TSR and Tobin Q, but no relation with ROA.	Time lags between <i>t-1 to t-3</i> are taken into consideration, similar to my paper. - This study also considers the “ <i>cronyism</i> ,” so it is a noteworthy study.
(Brunello, Graziano, & Parigi, 2001)	2001	Italy	International Journal of Industrial Organization	Principal–Agent Theory	107 listed firms between 1993 and 1996.	It is noted the small sensitivity of incentive pay to firm performance. However, it is higher in multinational groups and foreign firms.	Even though it did not take lagging performances into account, and it did not have current data, it contributes to international corporate governance research.

(Canyon & Schwalbach, 2000)	2000	UK & Germany	Long Range Planning	Agency and Economic Theory	102 UK Companies from 1969-95, & 48 German Firms from 1968-94	-The finding revealed a significant positive association between CEO's cash pay and firm performance (TSR) in both countries.	- The dataset is not up to date, and it analyzed only cash pay as compensation and shareholders return (TSR) as a firm performance.
(Capezio et al., 2011)	2011	Australia	Journal of Management Studies	Agency and Managerial Power Theories	663 firms between 2005 & 06 and 1998-99.	No significant relationship was found between CEO cash compensation and shareholder (TSR) performance.	-It also analyzed the moderating effect of board structure on CEO pay-performance relationship (no significant moderation was noted). -It is an important reference. - However, only CEO cash compensation and TSR were examined, which is the limitation of the study.
(Carpenter & Sanders, 2002)	2002	USA	Strategic Management Journal	Tournament and Agency Theories	199 S&P firms between 1993-95	ROA and Tobin Q are positively related to CEO pay.	The finding is not so robust, and the data are not up-to-

							date, but it is important study indicating the link between CEO pay and TMT pay.
(J E Core et al., 1999)	1999	USA	Journal of Financial Economics	Agency Theory	205 firms, from 1982 to 1984	- CEO total pay is negatively associated with ROA and TSR. - The negative link is explained by the agency problem and weak corporate governance.	-It indicates a negative link between pay and performance. -It is a significant study showing the prediction of the positive link is not always true.
(Doucouliagos et al., 2007)	2007	Australia	Corporate Governance: An International Review	Agency Theory	154 Banks from 1992-2005	-There are a significant positive relationship between $ROE_{(t-1)}$, $ROA_{(t-1)}$, $TSR_{(t-1)}$ and CEO total compensation. -The positive association was also noted for the firm performances lagged two years.	- It emphasized the importance of lagging performance. - The total compensation of CEO and lagged ROA, ROE, EPS, TSR were investigated. -It is an important reference.

(Duffhues & Kabir, 2008)	2008	Netherlands	Journal of Multinational Financial Management	Agency and Managerial Power theory	135 firms, for the years 1998-2001	-It showed that executive cash pay is significantly negatively related to return on assets, returns on sales, stock return, and Tobin Q. -This negative relation is also explained by agency problems and managerial power theory (managerial entrenchment).	- It is a remarkable study because the authors observed negative link for the four of the firm performances. - The author used lagged performances.
(Drobetz et al., 2007)	2007	Switzerland	Corporate Governance: An International Review	Agency Theory	78 listed firms in 2002	- No relationship was noted between Executive Stock Option and firm performance (ROA and annual stock return).	Although the dataset is not so recent, it is the only article for Switzerland published on high ranked Journal.
(Engelmann-Zach, 2013)	2013	Switzerland	Dissertation	Tournament Theory	48 SMI and SMIM firms for the years 2007-2010.	-CEO compensation has a positive link between ROE, ROA, and MTB. It is reported that the higher CEO compensation, the better firm performance.	In contrast to my paper, in this study, the DV was firm performance and IV was CEO compensation. Therefore, the results are not comparable with the

							<p>ones in my paper.</p> <ul style="list-style-type: none"> - The results were not so robust because the author did not check endogeneity and reverse causality. -The dataset was not inclusive because it only focused on the SMI and SMIM firms, so not generalizable. - Lagged performances were not considered.
(M. Firth et al., 1999)	1999	Hong Kong	Omega	Agency Theory	351 Companies from 1994 and 1995.	-There are positive and significant relationships among CEO total compensation, Tobin $Q_{(t-1)}$, $TSR_{(t-1)}$, and $ROE_{(t-1)}$.	<ul style="list-style-type: none"> - It emphasized the importance of lagging performance. -Even though it was not published in high ranked journals, it disclosed significant findings for CG.

(Fong, Misangyi, & Tosi, 2010)	2010	US	Strategic Management Journal	Equity and Agency Theories	908 firms, between 1990-1999	CEO overpayment is associated with subsequent increases in firm profits (ROA). (positive association)	- It is an interesting study revealing the consequences of overpayment to CEO.
(Gigliotti, 2013)	2013	Italy	The International Journal of Human Resource Management	Principal-Agent Theory	145 firms during the period between 2004 and 2009,	It indicates the absence of a connection between the compensation of managers and the performance of their firm (ROA, ROE, ROI).	It has recent data, and it is an international study on pay-for-performance.
(L. Gomez-Mejia et al., 1987)	1987	USA	Academy of Management	Economic and Behavioral Theories	71 S&P Companies from 1979 to 1982	-The researchers did not find a relationship between CEOs' pay and company performance (ROE, EPS, Market Value, Profit) to be as strong or consistent as the classic economic and behavioral theories.	- The lagged performance was not considered (endogeneity problem). - The statistical findings are not robust, and the study is outdated, but it is an important study for an indication of the historical perspective.

(Gunasekaragea & Wilkinson, 2002)	2002	New Zealand	International Journal of Business Studies	Agency Theory	58 from 1998-2000	- A positive relationship was revealed between TobinQ and CEO Cash Compensation. - A positive relationship was noted among TSR, TSR _{t-1} , and TobinQ and CEO total compensation.	- The impact of variable compensations was not examined. -Lagged performance was taken into account.
(Hilb, 2009)	2009	Switzerland	Book	Various Corporate Governance Theories		(1) Internal Equity: CEOs should be paid based on his/her individual performance in the firm, job content, and loyalty. (2) External Equity: CEOs should be paid consistent with the peer group. (3) Corporate Equity: CEOs should be paid based on firm performance.	This is an important theoretical and practical study for corporate governance literature because it defines the key characteristics of fair CEO compensation.
(Izan et al., 1998)	1998	Australia	Corporate Governance: The International Review	Agency Theory	303 firms from 1987-1992	- The result shows no evidence of a linkage between CEO's compensation (salary and bonus) and firm	- It emphasized the importance of lagging performance. -The authors stated

						performance (ROE and TSR).	that they might not find a significant result because they did not consider the lagged firm performances. - Only cash and bonus compensations were examined, which is the other limitation of the study.
(Michael C. Jensen & Murphy, 1990)	1990	USA	Journal of Political Economy	Agency Theory	1295 firms, for 1974-86	There is a Positive relationship between total CEO pay and TSR.	- It is a pretty old study, but it is an important study to show the link of pay for performance historically.
(Kato & Kubo, 2006)	2006	Japan	Journal of the Japanese and International Economies	Agency Theory	51 firms, for the years 1986-1995	- Japanese CEO's cash compensation is (positively) sensitive to firm performance (ROA). -However, stock market performance tends to play a less important role in the determination of Japanese CEO	-It is obvious that the structure of the effective compensation contracts in Japan is different from the ones in Europe and US. -It is also an important research

						compensation.	for the international Corporate Governance.
(J. Lee, 2009)	2009	Australia and Singapore	The International Journal of Accounting	Agency Theory and Stewardship Theory	150 Firms for the years of 2001 to 2003	For both countries, CEO pay was significantly positively associated with total revenue.	It is a multi-country international study.
(Li, Yang, & Yu, 19 JAN 2015)	2015	USA	Journal of International Financial Management & Accounting	Firm-life-cycle Theory	308 firms (2647 observations) during 13-year period from 1993 to 2005	-CEO stock-based-pay is positively related to firm performance when the firm is in the higher earnings quantile level and negatively associated for firms in the lower levels. (Quantile Regression)	-It is one of the recent studies, especially for the CEO incentive pay.
(Matolcsy & Wright, 2011)	2011	Australia	Accounting and Finance	Agency Theory	3503 firm-years for the period from 1999 to 2005	Firms whose CEOs receive compensation inconsistent with their firm characteristics have lower performance compared to those firms whose CEOs compensation is consistent with their firm characteristics.	-This study is not directly related to pay and performance, but it is indicating the importance of firm characteristics, such as firm age, size, etc., to determine CEO pay because of its impact on performance.

(Kevin J Murphy, 1985)	1985	USA	Journal of Accounting And Economics	Agency Theory	100 firms from 1964-1981	Executive compensation is strongly positively related to corporate performance as measured by shareholder return (TSR) and growth in firm sales.	-It addresses the reasons for the different results on executive compensation and firm performance literature. -The sample does not include the recent period.
(Ozkan, 2011)	2011	UK	European Financial Management	Agency Theory	390 non-financial firms from 1999-2005	- $TSR_{(t-1)}$, was positively significantly related to CEO's cash and total compensation. However, Tobin $Q_{(t-1)}$ was not significantly related to CEO's cash and total compensation.	-The data set is not so up-to-date. However, it has significant findings for British Corporate Governance. - The lagged performance was considered.
(PWC, 2014)	2014	Switzerland	PwC Annual Insight	NA	30 SMIM and 20 SMI firms from 2007 to 2013	-It is found that when profit (EBITDA) varies, total CEO pay varies in the same direction . - ROA has no link with variable CEO compensation. - ROE&TSR are associated with variable	-It is a practical research, so I am not so sure about the robustness of the results and accuracy of the selected statistical methods. However, it gives some idea

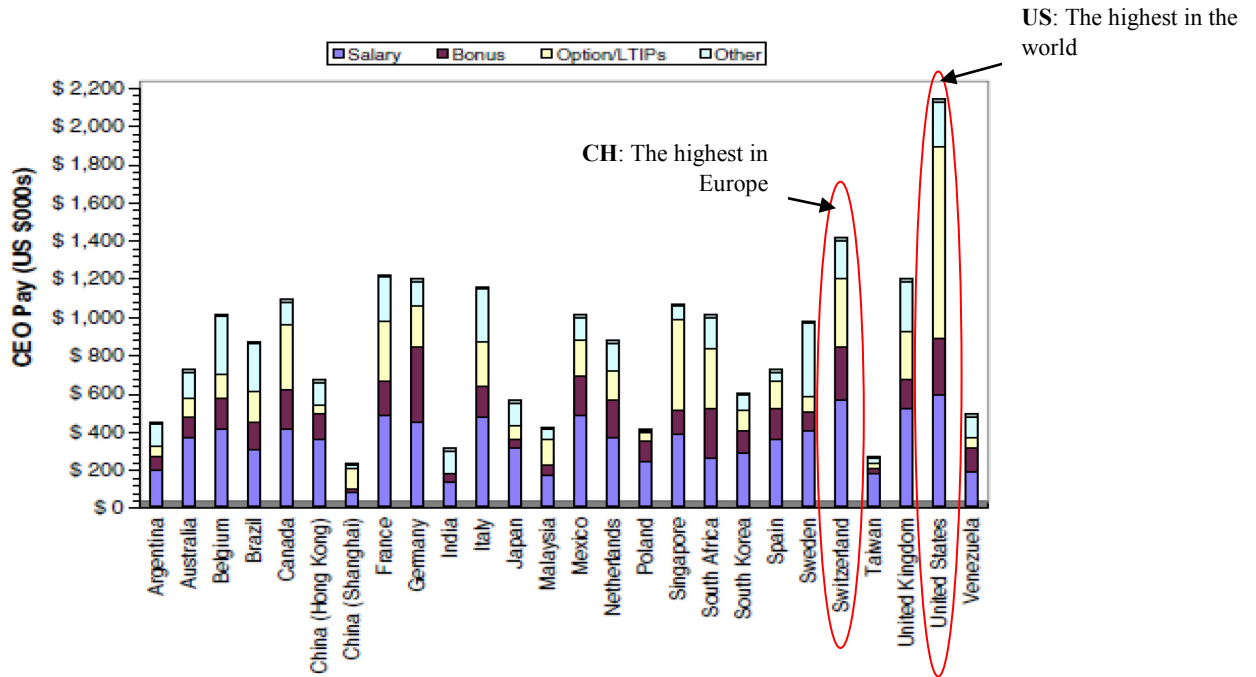
						pay.	about the Swiss market. - In addition, it only includes 50 firms, so results cannot be generalized. - Lagged performances were not considered.
(Randoy & Nielsen, 2002)	2002	Norway and Sweden	Journal of Management And Governance	Agency Theory	224 firms (120 from Norway & 104 from Sweden) in 1998	For both countries, no significant relationship is found between company performance (ROE and TSR) and CEO total compensation. - However, the association between MTB ratio and CEO total compensation is positively significant at the 10% level only for Norwegian companies.	-Total compensation is considered. It could be better to analyze the breakdown of the compensation, as well. -Only 1998 performances of the firms were analyzed. Multiple year performances (panel data) could give more trustworthy results. -However, it is an important study to understand the

							international corporate governance issues.
(Rost & Osterloh, April 2009)	2009	Meta-analysis, Switzerland	Schmalenbach Business Review	Agency Theory	100 companies quoted on the Swiss Exchange in 2005 and 2006.	<ul style="list-style-type: none"> - CEO compensation contributes very little to the increase of the firm's performance, and that total CEO salary and firm performance are not linked. - Surprisingly, an increase in shareholder wealth (TSR) increases cash, but not equity compensation. - An increase in stock performance decreases the total amount and the percentage of stock compensation. It means that <i>best-paid executives did not perform better; executive compensation practice does not use long-term incentives to align the interests of executives and shareholders</i>. 	<ul style="list-style-type: none"> - It includes 100 Swiss Companies. - The finding of the paper is important to indicate the time lag between firm performance and CEO compensation. - Due to the negative relationship between stock performance and stock compensation of CEO, it was concluded that "for executive compensation, long-term incentives were not used to align the interests of executives and shareholders", which is also an interesting finding for top 100 Swiss

							<p>firms.</p> <p>- <i>The main criticism</i> is that the data set of the paper was made up of only top 100 firms, and it covered the years of 2005 and 2006. However, the major changes on remuneration in Switzerland were initiated after 2007, so it is not disclosing an up-to-date and true picture of Switzerland.</p> <p>-Lagged performances were not considered.</p>
(Schätti, 10.12.2011 ; Weber & Obermatt, 2010)	2011	Switzerland	Sonntagszeitung	NA	146 large listed firms from 2008 to 2010	It is found that TSR and EBITDA are not related to variable CEO pay in Switzerland.	<p>Obermatt, the compensation consultants, performed a more detailed study than PwC. Therefore, the results are more reliable and generalizable. I</p>

							interviewed the CEO of Obermatt, Mr. Stern. The methodology seems reliable.
(Schultz, Tian, & Twite, 2013)	2013	Australia	International Review of Finance	Theory of a Firm	From 2000 to 2010, 8594 firm-year observations	- CEO cash bonuses were positively associated with TobinQ. - LTIP was positively related to ROA.	-It is one of the most recent papers on this topic. -The results are interesting and notable.
(Shaw & Zhang, 2010)	2010	USA	The Accounting Review	Agency Theory	75 firms from 1993-2005	- No relationship was found between cash compensation of CEO and firm performance (ROA and TSR). -The result means that CEO cash compensation is not related to firm performance, or it is <u>not</u> punished for poor firm performance.	Only cash compensation of CEO was analyzed.
(Sun & Cahan, 2009)	2009	USA	Corporate Governance: The International Review	Agency Theory and Principal-Agent Theory	812 firms in 2001	-CEO cash compensation is significantly positively associated with	-Only a single year and cash (salary and bonus) compensation were analyzed, as a

						accounting (ROE) and market (TSR) performance.	limitation of the study.
(Tosi et al., 2000)	2000	Meta-Analysis, USA	Journal of Management	Managerialism and Agency Theory	899 firms from 1987-1991	- No relationship was found between executive pay and firm performance (ROA and ROE).	It is a meta-analysis and an important reference.
(Wanzenried, Piazza, & Perdergnana, 2005)	2005	Switzerland	Working paper	Principal-Agent Theory	22 cantonal banks, from 2002-2004	-Firm Performances (TSR and ROE) do not explain the executive compensation in Cantonal Swiss banks. Firm size and the financial situation of the cantons are more important determinants than firm performance.	Even though the finding is not robust, and the dataset is not adequate to generalize the results, it is an important study for the Swiss banking sector, especially for cantonal banks.
(Young & Buchholtz, 2002)	2002	USA	Journal of Managerial Issues	Agency Theory	216 firms from 1991 and 1992	No significant relation was noted between CEO total compensation and TSR.	It is an important reference.



Source: Goergen & Luc (2011), Managerial compensation, Journal of Corporate Finance, Vol.17, pg. 1072

Appendix 7- Level of CEO Pay and CEO Pay Mix, International Comparison in 2005

Paper II

Empirical Study on CEO Compensation, Risk and Moderating Effect of Corporate Governance: Evidence from the Listed Companies in Switzerland

Empirical Study on CEO Compensation, Risk, and Moderating Effect of Corporate Governance: Evidence from Listed Companies in Switzerland

M. Mehtap Aldogan Eklund

Abstract

The risk is grouped under systematic (Beta or un-diversifiable) and unsystematic (Sigma, diversifiable) risks. In this paper, the firm's systematic risk, defined as "the variance of a firm's stock price relative to that of its market portfolio" (David et al., 1998), is measured because it is an un-diversifiable risk and a generally accepted risk proxy in the literature. This empirical study aims to examine the effect of risk on CEO's total compensation and variable pay mix (proportion of variable remuneration to total remuneration) based on the tenet of Agency Theory. In addition, the moderating effects of Corporate Governance factors on the relationship between risk and CEO compensation are investigated, which is one of the contributions of this paper. It is found that total CEO compensation is dependent on risk (Beta), and it is curvilinearly (concave downward curve) related to risk. On the other hand, no significant association is noted between risk and variable pay mix. Corporate Governance factors do not moderate the relationship between risk and CEO compensation; however, firm size and leverage are the most significant control variables. The result of this paper brings some clarity to the conflicting outcomes of the previous literature, and it helps the practitioners figure out the optimal pay mix and the balance between risk and executive compensation. Above all, it is the first study on this topic in Switzerland, where CEOs are paid the highest in Europe. Therefore, the finding is important especially for the Swiss regulatory board and boards of directors.

Keywords: CEO Compensation, Risk, Beta, Corporate Governance, Agency Theory

1. Introduction

The research on CEO compensation endeavors to find the optimal pay mix between performance-contingent compensation (outcome-based contracts) and behavior-based compensation (fixed compensation), especially for the recent years after the financial crises. For instance, Hilb addressed the importance of fair balance between fixed and variable compensation in risky environments, and he had some recommendations on the proportion of variable pay to total pay (Hilb, 2007, 2009). In addition, the Swiss Financial Market Supervisory Authority stated that “the structure and the level of total executive compensation should be aligned with risk and firm risk policies (FINMA, 2010).”

Due to the riskier environment, the boards of directors and the decision makers have to consider the firm risk and market risk in more detail when they are deciding on the optimal pay contracts. The compensation guru Gomez-Mejia and his colleagues have also emphasized that “the concepts of risk are the crucial elements in compensation design (Luis R. Gomez-Mejia et al., 2010)”. The rising trend in the research of risk and executive compensation is noticeable. As seen in Appendix 1, the scholars have started pondering on this topic since 1993, but it recently captured more attention in the top-tier accounting and management journals, such as the *Accounting Review*, the *Journal of Finance*, *Academy of Management*. Previous papers are focused mainly on the USA as well as Taiwan and Japan. Thus, there is a still gap in the literature to investigate the current status in Europe and Switzerland. As already stated in my first paper, the highest CEO compensation in Europe is in Switzerland, which is worth investigating further (Bilanz, 2012; Goergen & Renneboog, 2011).

Based on the previous paragraph, the motivation of this paper is to fill out the gaps in the literature: (1) there is still a lack of research in Switzerland (2) the recent riskier environment induced the scholars to analyze the relationship between risk and executive compensation and to find out the optimal pay mix (3) there are conflicting results in the previous literature, and (4) Corporate Governance variables have not been examined as a moderator yet, so they are considered as a moderator for the first time in this paper. These are also the main contributions of

this paper. These contributions are essential for researchers because it clarifies the current picture in Switzerland, and it gives some insight into the conflicting results in the literature. For practitioners and boards of directors, the proven curvilinear relationship between risk and total CEO pay will guide them while they are drawing up the optimal contract because “optimal CEO compensation contracts must reflect a trade-off between risk-bearing concerns and incentives; risk is an important determinant of executive compensation (Samuel Ray Gray, 1993) ”.

In short, the purpose of this study is to investigate the effect of risk on CEO’s total compensation and variable pay mix drawing on the principles of Agency Theory. Three central assertions of Agency Theory are (1) risk-averse executives and risk-neutral shareholders, (2) trade-off between risk and incentives, and (3) risk premium on total executive pay (Eisenhardt, 1989; S R Gray & Cannella, 1997; Prendergast, 2002).

The risk is defined as “the uncertainty about outcomes or events, especially regarding the future (Bloom & Milkovich, 1998; S R Gray & Cannella, 1997)”. The fundamental principle of Capital Asset Pricing Model (CAPM) breaks down the total risk into two categories: Beta (β) and Sigma (σ). Beta is the un-diversifiable or systematic risk. “This part of the risk cannot be eliminated by diversification because it is related to market or economic factors that systematically affect most firms (Weston, Besley, & Bringham, 1996).” The second part, Sigma, is the firm-specific, unsystematic, diversifiable, residual, or idiosyncratic risk. “Unsystematic risk is associated with random outcomes generated by events or behaviors unique to the firm, and it can be eliminated by proper diversification (Weston et al., 1996)”. Because Beta is an un-diversifiable and generally accepted risk measure in the literature, it is analyzed as a risk proxy on this paper. Besides CAPM, previous researchers have considered some volatility measures and ratios as a risk proxy. For instance, generally accepted risk proxies are as follows: Beta factor, leverage or gearing ratio¹⁹, MTB, asset cover²⁰,

¹⁹ Debt ratio, gearing or leverage ratios are used interchangeably. Total Liability/Total Assets. The proportion of assets financed with debt. If the debt ratio is 1, then all of the assets are financed with debt.
²⁰ Asset Cover is calculated by Net assets/Total Debt.

and firm size (Amran, Bin, & Hassan, 2009; C. R. Chen, Steiner, & Whyte, 2006; S. J. Chen, Chang, Hui-Kuang Yu, & Mayes, 2005; David et al., 1998; Elzahar & Hussainey, 2012; Hunziker, 2012; Linsley & Shrivies, 2006). Another risk proxy from the literature is the ‘income (volatility) risk or income stream risk’ which is calculated by different income measures (Bloom & Milkovich, 1998; Bova, Kolev, Thomas, & Zhang, 2015; Cheng, Hong, & Scheinkman, 2015; S R Gray & Cannella, 1997; G. Lin & Yi-tsen, 2009; Miller, Wiseman, & Gomez-Mejia, 2002; Nguyen, 2011; Palmers & Wiseman, 1999). Bova et al.(2015), Cheng et al. (2015), Lin and Yi-tsen (2009), and Nguyen (2011) measured the income stream risk by standard deviation of a firm’s daily stock return in 12 months or standard deviation of the firm’s monthly stock return for the last 60 months. As well as the standard deviation of stock returns, Miller et al. (2002) and Bloom and Milkovich (1998) used the monthly variation in the Return on Asset (ROA) for five or ten years as an income risk. Gray and Cannella (1997) preferred the volatility in the Return on Sales (ROS) (standard deviation of ROS over the previous three years) as an indication of income risk. Even though I focus only on Beta as a risk factor, other generally accepted risk ratios are entered into the model as control variables, such as leverage, MTB, and firm size, with respect to the research of Bova et al. (2015) and Brezeanu (2011). On the other hand, in practice or the annual reports of the publicly traded Swiss firms, the risk is defined as “market risk, liquidity risk, credit risk, operational (legal compliance) risk, and reputation risk”. In short, the risks that are not covered in this paper are one of the limitations of the study, so they can be investigated in future research.

The remainder of this paper is structured in seven sections. First, theoretical framework and assumptions of Agency Theory on risk and executive compensation are discussed. Second, the previous empirical literature is reviewed. In the third and fourth sections, hypotheses are put forward, and methodology is explained. The fifth and sixth sections are devoted to the findings, conclusion, and implementations. Finally, the limitations of the paper and possibilities for future research are addressed.

2. Theoretical Framework

The theoretical framework of this paper stands on the tenets of Agency Theory. In fact, the predicted link between risk and remuneration is derived from the assumptions of Agency Theory.

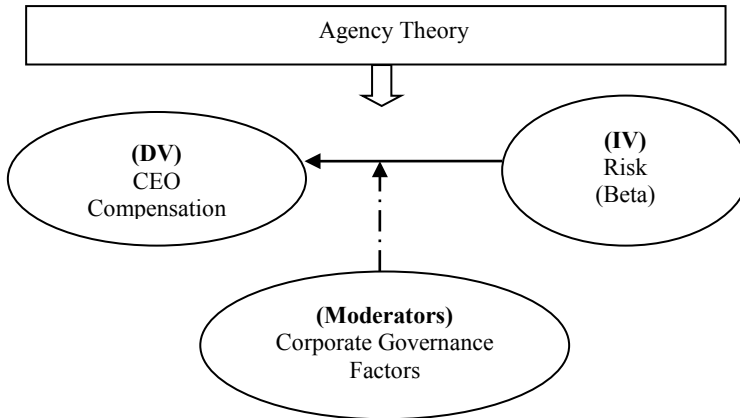


Figure 14- Theoretical Framework of Paper II

Agency Theory postulates that there is a conflict of interest between managers and shareholders (agency cost), and executive compensation especially incentive pay is a means of reducing the agency cost (S R Gray & Cannella, 1997; M. C. Jensen & Meckling, 1976). Furthermore, Agency Theory deals with the relationship between risk and executive compensation. The fundamental insight of Agency Theory is the different risk acceptance level of (risk appetite) agents and shareholders. In detail, it assumes that “in general agents are risk-averse because they are unable to diversify their employment. Shareholders who are capable of diversifying their investments are risk-neutral (Eisenhardt, 1989).” Consequently, to encourage the risk-taking behavior of executives and to hire less risk-averse managers, the riskier firms should pay more risk premium by increasing the level of total compensation (Wright, 2004).

In the riskier firms, risk-averse managers prefer a higher level of behavior-based (fixed) contracts than outcome-based (variable) contracts (Beatty & Zajac, 1994b). In simpler terms, Agency Theory's risk premium proposition states that "the principal is forced to share the cost of risky employment by paying a premium to the agent to keep the agent in high-risk firms. The principal has to increase the agent's total compensation to protect the agent from risk (Eisenhardt, 1989; Stroh, Brett, Baumann, & Reilly, 1996)". Based on the risk premium proposition of Agency Theory, it is hypothesized that there is a significant association between risk (Beta) and total CEO compensation (**H₁**). The hypothesis concerning the curvilinear relation between risk and CEO compensation is formulated based on outstanding research in the USA and McClelland's Theory of Needs-Achievement (Miller et al., 2002). The Theory of Needs postulates that "achievement-motivated people prefer working on moderately difficult tasks (which represent moderate risk situations) to avoid high-risk and low-risk situations (which represent low or high risk)" (Miller et al., 2002; NetMBA, Retrieved 2015). Hence, it is hypothesized that the relationship between risk and CEO compensation is curvilinear (**H₂**).

Then, another core belief of Agency Theory is the trade-off between risk and incentives (Indjejikian, 1999). Generally speaking, it explains that "when outcome uncertainty (risk) is low, the cost of shifting risk to the agent is low and outcome based compensations are the alternative; however, when the risk is high, it becomes expensive to shift the risk to the agent." In other words, it proposes that "outcome uncertainty (risk) is positively related to behavior-based contracts (fixed pay) and negatively associated with outcome-based contracts (performance-based pay) (Eisenhardt, 1989)." In line with this proposition of Agency Theory, it is hypothesized that there is an adverse relationship between risk and variable pay mix (proportion of variable pay to total compensation) (**H₄**).

Finally, Agency Theory proposes that principals or boards of directors should monitor the agent to cope with his/her self-interest and risk-averse behavior (Miller et al., 2002; Stroh et al., 1996). Hence, Corporate Governance factors, such as a high proportion of outside directors (board independence), the separation of CEO and Chairman of the Board positions (CEO duality), and board size, are the

primary control variables for the research on executive compensation (Deutsch, Keil, & Laamanen, 2011). However, by going one step further, a hypothesis is constructed that corporate governance variables are significantly moderating the relationship between risk and CEO's compensation (**H₃**).

3. Literature Review

In the previous section, the theoretical framework of the paper was constructed based on the principles of Agency Theory. In this section, empirical research proving or disproving Agency Theory's propositions of risk and compensation will be discussed in detail.

Even though Agency Theory proposed a negative link between risk and incentive pay (trade-off approach) and a positive association between risk and total pay (risk premium approach), the previous scholars have not reached a consensus on the topic. The conflicting findings could be explained by different ways of measuring the risk (Beta, Sigma, and income stream risk), distinct risk appetite of agents (risk averse, risk neutral, or risk seeking), or diverse sample settings (country and/or year). Due to these findings, in the literature review, it is noted that the relationship between risk and CEO compensation could be positive, negative, or U-shaped (Bloom & Milkovich, 1998; Petacchi, 2013; Prendergast, 2000, 2002; Serfes, 2005). For instance, Wright (2004) also believes "positive, negative, or U-shaped relationship between risk and executive pay is theoretically possible depending on the risk appetite of the agents."

First, for the nexus between risk and incentive pay, Prendergast (2002, p.1077) stated that the "evidence is inconclusive" because some researchers found *negative* (R. Aggarwal & A. Samwick, 1999; Jin, 2000; R. A. Lambert & Larcker, 1987) or positive relation (J E Core & Guay, 1999; Dee, Lulseged, & Nowlin, 2005; Oyer & Shaefer, 2001; Stroh et al., 1996), and some did not even find any statistically significant relationship (Bushman, Indjejikian, & Smith, 1996; David Yermack, 1995) between risk and incentive pay.

Second, consistent with the tenet of Agency Theory, Bloom and Milkovich (1998) indicated that “higher-risk firms tended to increase fixed (based) pay and decrease incentives (variable pay) when risk was higher”. In addition, Cheng et al. (2015) have stated that managers are risk-averse, so they prefer working in less risky firms unless they are compensated for bearing the additional risk (risk premium). In other words, they demonstrated that riskier firms offered higher total pay as compensation to cover the additional risk with which that the managers coped.

Instead of increasing base (fixed) pay or decreasing incentives, another way of dealing with the riskier environment and risk-averse agents is the stock options. “Stock option based compensation overcomes this problem because the downside of a stock option is limited. The stock option provides CEOs with the right to buy shares at pre-determined times and prices, but they are not required to do so (Deutsch et al., 2011)”. There is also empirical support that CEOs compensated with stock options tend to make riskier decisions or to be less risk averse because they participate in the upside of their decisions but not the downside (Beatty & Zajac, 1994a; Deutsch et al., 2011; Sanders & Hambrick, 2007)”. For example, Chen, Steiner and Whyte (2006) demonstrated that riskier American banks offered more stock options or restricted shares to their CEOs than less risky banks to cope with the risky environment and risk-averse agents. It is also important to emphasize a point that the upside risk should be limited by imposing a cap on stock option. Otherwise, managers with just limited downside risk would take excessive risks to gain, and they would have little to lose (Scott R., 2008).

Third, as stated before, the risk can be measured by different aspects. Cheng et al. (2015) computed the risk as Beta (annual Beta of the firm’s stock) and return volatility (firm’s annualized stock return volatility) for the US financial firms from 1992 to 2008. They found that both risk measurements revealed a significant positive link to total CEO compensation. In addition, Miller, Wiseman, and Gomez-Mejia (2002) reported for S&P 500 firms for years 1994 to 1998 that Beta (systematic risk) was positively associated with variable pay mix (proportion of variable pay to total pay) and total compensation. More interestingly, Sigma (unsystematic risk) and income risk (standard deviation of ROA) were

curvilinearly related to variable pay mix and total compensation (Miller et al., 2002).

In contrast, Gray and Cannella (1997) measured the firm risk with Beta (systematic risk), Sigma (unsystematic risk), and income stream risk (standard deviation of ROS). They showed that there was no significant relationship between Beta (systematic risk) and total executive compensation; however, Sigma and income stream risk were significantly and negatively related to total compensation for the 1000 largest publicly traded American firms from 1980 to 1989.

Then, Bloom and Milkovich (1998) disclosed that for the S&P 500 firms, from 1981 to 1988, Sigma (unsystematic risk) had a positive relationship with both incentive pay (performance-contingent pay) and base pay (fixed pay). On the other hand, Beta (systematic risk) had an adverse relationship with incentive pay, but it had no significant association with base pay. Finally, they revealed a negative link between income stream risk (Standard deviation of ROA) and incentive pay, but a positive link between income stream risk and base pay.

In the USA, one of the researchers (Panta, 2011) focused only on idiosyncratic volatility (unsystematic risk) for the publicly traded high-tech US firms in her dissertation, and she found that idiosyncratic risk had a positive effect on a CEO's salary, bonus, equity, and total compensation (Panta, 2011).

Although the majority of the scholars have analyzed American companies, there are some empirical studies carried out in Taiwan and Japan. For 1812 Taiwanese firms between 2005 and 2007, the scholars came up with a remarkable result: "firm age was an important control variable, and the effect of risk on executive compensation depended on firm age. A positive impact was found for the companies in the growth stage, but no significant effect was found for the firms in the mature stage (G. Lin & Yi-tsen, 2009)". It is still a working paper, so it has not been published in any academic journals yet.

For Japanese firms between 1996 and 2003, the author did not concentrate directly on firm risk and compensation, but he was concerned with Corporate Governance and risk-taking behaviors of agents. He emphasized that risk taking was strongly associated with Corporate Governance (Nguyen, 2011). Moreover, Deutsch et al. (2010), Stroh et al. (1996), and Miller et al. (2002) have highlighted that Corporate Governance as a control variable is of paramount importance to the nexus between risk and executive compensation. That is why in this paper, Corporate Governance factors are analyzed as a moderator, which is one of the contributions of this paper to the academy.

To sum up, previous literature could be synthesized as follows: (1) Due to the conflicting results in the literature, there is still a gap to be filled in. (2) Because of the higher risk in markets and firms, the risk is getting to be a more salient determinant or predictor of CEO compensation, which is also supported by the increased amount of research in recent years. (3) A majority of the researchers have analyzed American companies, so there is still a lack of research for the European market, especially for Switzerland and the UK where the CEOs are paid pretty highly in Europe. (4) Whereas Corporate Governance factors were reported as one of the important control variables in the association between risk and executive compensation, they have not been investigated as a moderating variable yet.

After the summary of literature review and synthesis of the literature, it is fair to emphasize that this paper is filling in the various gaps in the literature by analyzing Swiss listed companies from 2007 to 2013 (7 years) and considering the Corporate Governance variables as a moderator.

4. Hypotheses

Based on Agency Theory and the literature review discussed in Section 2 and Section 3, the following hypotheses are formulated:

The Hypotheses regarding risk and total CEO compensation:

H₁: There is a significant association between risk and total CEO compensation, all else equal. (Risk premium prediction of Agency Theory)

H₂: Ceteris paribus, the relationship between risk and total CEO compensation is curvilinear. (Achievement prediction of McClelland's Theory of Needs)

The Hypotheses regarding risk and proportion (percentage) of variable CEO compensation to total CEO compensation:

H₄: There is a negative relationship between risk and percentage of variable CEO compensation, all else equal. (Trade-off prediction of Agency Theory)

The Hypotheses regarding the Moderating Effect:

H_{3.1}: Ceteris paribus, the Corporate Governance variables (board size, board independence, and CEO Duality) are significantly moderating the relationship between risk and CEO's total compensation. (Conflict of interest prediction of Agency Theory)

H_{3.2}: Ceteris paribus, the Corporate Governance variables (board size, board independence, and CEO Duality) are significantly moderating the relationship between risk and percentage of variable CEO compensation. (Conflict of interest prediction of Agency Theory)

5. Methodology

5.1 Sample and Data Collection

The sample of Paper II consists of the listed companies quoted on the Swiss Stock Exchange (SIX) and domiciled in Switzerland. The samples of Paper I and Paper II are the same, but due to missing data in the risk variable, Paper II ended up with 1442 firm-year observations from 2007 to 2013. It is also a panel data. Consistent with Paper I, 2007 was the initial year of the observation because executive compensations (compensation report) were disclosed in annual reports in accordance with the Swiss Code of Best Practice for Corporate Governance, Appendix in 2007 (Economiesuisse, 2007).

CEO compensation, CEO characteristics, and Corporate Governance variables were hand-collected from the annual reports on the web page of each company or Geschäftsberichte Bibliothek²¹.

Beta (systematic risk) and other control variables were obtained from Thomson One Banker (Reuters) database.

5.2 Model, Variables/Definitions, and Method

Model

The CEO compensation equations were constructed using the Random Effects Regression method as follows:

For Model 1:

$$\begin{aligned} \text{LN (Total CEO Compensation)}_t = & \beta_0 + \beta_1 \text{Risk(Beta)}_t + \beta_2 \text{MTB}_t + \beta_3 \text{Leverage}_t + \\ & \beta_4 \text{Firm Age}_t + \beta_5 \text{Firm Size}_t + \beta_6 \text{No of Employee}_t + \beta_7 \text{Percentage of Institutional} \\ & \text{Ownership}_t + \beta_8 \text{Firms in Loss}_t + \beta_9 \text{CEO Age}_t + \beta_{10} \text{CEO Tenure in firm year}_t + \\ & \beta_{11} \text{CEO Tenure as a head or manager}_t + \beta_{12} \text{CEO Nationality}_t + \beta_{13} \text{CEOs} \\ & \text{Ownership}_t + \beta_{14} \text{Perc of Foreign BOD Members}_t + \beta_{15} \text{Board size}_t + \beta_{16} \text{CEO} \\ & \text{Duality}_t + \beta_{17} \text{Perc of Indep member in BOD}_t + \beta_{18} \text{Existance of Risk Comm}_t + \alpha + u_{it} \\ & + \varepsilon_{it} \end{aligned}$$

For Model 2-Curvilinearity:

$$\begin{aligned} \text{LN (Total CEO Compensation)}_t = & \beta_0 + \beta_1 \text{Risk(Beta)}_t + \beta_2 \text{Risk(Beta)}_t^2 + \beta_3 \text{MTB}_t + \\ & \beta_4 \text{Leverage}_t + \beta_5 \text{Firm Age}_t + \beta_6 \text{Firm Size}_t + \beta_7 \text{No of Employee}_t + \beta_8 \text{Percentage of} \\ & \text{Institutional Ownership}_t + \beta_9 \text{Firms in Loss}_t + \beta_{10} \text{CEO Age}_t + \beta_{11} \text{CEO Tenure in} \\ & \text{firm year}_t + \beta_{12} \text{CEO Tenure as a head or manager}_t + \beta_{13} \text{CEO Nationality}_t + \\ & \beta_{14} \text{CEOs Ownership}_t + \beta_{15} \text{Perc of Foreign BOD Members}_t + \beta_{16} \text{Board size}_t + \\ & \beta_{17} \text{CEO Duality}_t + \beta_{18} \text{Perc of Indep member in BOD}_t + \beta_{19} \text{Existance of Risk} \\ & \text{Comm}_t + \alpha + u_{it} + \varepsilon_{it} \end{aligned}$$

²¹ <http://bibliothek.gb-symposium.ch/>

For Model 3-with interaction variables:

$LN(\text{Total CEO Compensation}_t) = \beta_0 + \beta_1 \text{Risk}(\text{Beta})_t + \beta_2 \text{MTB}_t + \beta_3 \text{Leverage}_t + \beta_4 \text{Firm Age}_t + \beta_5 \text{Firm Size}_t + \beta_6 \text{No of Employee}_t + \beta_7 \text{Percentage of Institutional Ownership}_t + \beta_8 \text{Firms in Loss}_t + \beta_9 \text{CEO Age}_t + \beta_{10} \text{CEO Tenure in firm year}_t + \beta_{11} \text{CEO Tenure as a head or manager}_t + \beta_{12} \text{CEO Nationality}_t + \beta_{13} \text{CEOs Ownership}_t + \beta_{14} \text{Perc of Foreign BOD Members}_t + \beta_{15} \text{Board size}_t + \beta_{16} \text{CEO Duality}_t + \beta_{17} \text{Perc of Indep member in BOD}_t + \beta_{18} \text{Existance of Risk Comm}_t + \beta_{19} (\text{Risk} * \text{CEO Duality})_t + \beta_{20} (\text{Risk} * \text{Board size})_t + \beta_{21} (\text{Risk} * \text{Perc of Indep member in BOD})_t + \alpha + u_{it} + \varepsilon_{it}$

and

$\text{Percentage of Variable CEO Compensation}_t = \beta_0 + \beta_1 \text{Risk}(\text{Beta})_t + \beta_2 \text{MTB}_t + \beta_3 \text{Leverage}_t + \beta_4 \text{Firm Age}_t + \beta_5 \text{Firm Size}_t + \beta_6 \text{No of Employee}_t + \beta_7 \text{Percentage of Institutional Ownership}_t + \beta_8 \text{Firms in Loss}_t + \beta_9 \text{CEO Age}_t + \beta_{10} \text{CEO Tenure in firm year}_t + \beta_{11} \text{CEO Tenure as a head or manager}_t + \beta_{12} \text{CEO Nationality}_t + \beta_{13} \text{CEOs Ownership}_t + \beta_{14} \text{Perc of Foreign BOD Members}_t + \beta_{15} \text{Board size}_t + \beta_{16} \text{CEO Duality}_t + \beta_{17} \text{Perc of Indep member in BOD}_t + \beta_{18} \text{Existance of Risk Comm}_t + \beta_{19} (\text{Risk} * \text{CEO Duality})_t + \beta_{20} (\text{Risk} * \text{Board size})_t + \beta_{21} (\text{Risk} * \text{Perc of Indep member in BOD})_t + \alpha + u_{it} + \varepsilon_{it}$

For Model 4:

$\text{Percentage of Variable CEO Compensation}_t = \beta_0 + \beta_1 \text{Risk}(\text{Beta})_t + \beta_2 \text{MTB}_t + \beta_3 \text{Leverage}_t + \beta_4 \text{Firm Age}_t + \beta_5 \text{Firm Size}_t + \beta_6 \text{No of Employee}_t + \beta_7 \text{Percentage of Institutional Ownership}_t + \beta_8 \text{Firms in Loss}_t + \beta_9 \text{CEO Age}_t + \beta_{10} \text{CEO Tenure in firm year}_t + \beta_{11} \text{CEO Tenure as a head or manager}_t + \beta_{12} \text{CEO Nationality}_t + \beta_{13} \text{CEOs Ownership}_t + \beta_{14} \text{Perc of Foreign BOD Members}_t + \beta_{15} \text{Board size}_t + \beta_{16} \text{CEO Duality}_t + \beta_{17} \text{Perc of Indep member in BOD}_t + \beta_{18} \text{Existance of Risk Comm}_t + \alpha + u_{it} + \varepsilon_{it}$

Variables/Definitions

1. Dependent Variables

The dependent variables were total CEO compensation and percentage of variable CEO compensation (variable pay mix). Total compensation was made up of salary,

short-term bonus, long-term bonus or loyalty bonus, social security or pension contribution, other benefits (payment in-kinds), and incentives (stock options, share-based awards, LTIP, restricted or conditional Stock Awards). Variable compensation included CEO compensations changing with the level of performance achieved or reached, such as short-term bonus, long-term bonus, and incentives (stock options, share-based awards, LTIP, restricted or conditional Stock Awards). Percentage of variable compensation was the ratio of variable compensation to total compensation. In general, in the annual reports, variable compensation was disclosed in CHF, and Black-Sholes method was the valuation technique for variable compensation.

Consistent with the prior research, natural log (Ln) of total compensation is used as a dependent variable. “There are two advantages of taking log transformation of the dependent variable. First, it is more likely that the dependent variable has a normal distribution, which is the main assumption of regression analysis. Second, the log transformation can reduce the difference in the magnitude of compensation across companies. As a result, it alleviates the effects of heteroscedasticity (Sun & Cahan, 2009)”.

2. Independent Variables

As discussed earlier in the introduction section, risk can be measured by various proxies, such as Beta (β) or Sigma (σ) (CAPM), income stream (volatility) risk, MTB, or leverage (gearing ratio). In this Paper, Beta (systematic risk) was selected as a risk proxy because it is an un-diversifiable risk and a generally accepted risk proxy in the literature.

Monthly Beta was retrieved from Thomson One Banker (Reuters) database for each company in my sample, and then the company’s annual average was calculated for each year from 2007 to 2013. “Beta is an index reflecting how volatile the company’s stock is in relation to the market. A Beta (β) above 1 (one) indicates a higher stock volatility than the market (Weston et al., 1996)”. “Negative Beta is also possible for the stock that tends to go down when the market goes up, and vice versa (Markowitz, 1958).”

3. Moderators

Corporate Governance factors were the moderators. In line with Paper I and previous research on risk and compensation, the selected Corporate Governance variables were board size, board independence, and CEO Duality (Brezeanu, Al Essawi, Poanta, & Badea, 2011; Cheng et al., 2015; Deutsch et al., 2011; Miller et al., 2002; Stroh et al., 1996).

Board Size:

Board size was gauged as a total number of board of directors in the company.

Percentage of Independent Board Members:

Percentage of independent (non-executive) members was computed as the ratio of non-executive board members to the total number of board members (Martin J Conyon & Peck, 1998).

CEO Duality:

The variable of CEO duality was a binary variable (1: CEO duality, 0: otherwise). CEO duality exists when a firm's CEO is also a chairperson of the board (S. N. Abdullah, 2004).

4. Control Variables

Fourteen control variables were entered into the models after a detailed analysis of the previous literature (Bova et al., 2015; Brezeanu et al., 2011; Deutsch et al., 2011; Hill & Phan, 1991; G. Lin & Yi-tsen, 2009; Miller et al., 2002; Nguyen, 2011; Panta, 2011; Stroh et al., 1996), and they were classified as firm characteristics, CEO characteristics, percentage of foreign BOD members, and existence of a risk committee.

First of all, control variables regarding firm characteristics were firm age, firm size, number of employees, ownership structure, and financial proxies (MTB, leverage, and firms with accounting losses). Secondly, control variables of CEO characteristics were listed as follows: CEO age and nationality, CEO tenure in the

firm and as a head of management, and CEO ownership. Finally, the last variables were the existence of a risk committee and foreign board membership (percentage of non-Swiss board members).

In detail, firm size was measured with the natural log (Ln) of a firm's total assets. Firm age was the date of incorporation, available on the Orbis database. The ownership structure of the company was controlled as the concentration (percentage) of institutional ownership. Financial features of the firm were MTB²² (Market value/Book value), leverage (Total liability/Total equity), and firms with accounting losses (dummy variable, 1: in loss, 0: otherwise).

Then, CEO ownership, a proxy for CEO power, was controlled as a percentage of the ownership share in the firm. CEO age was measured by the year of birth. CEO nationality was a dummy variable- 1 for Swiss nationality and 0 otherwise. CEO tenure as a proxy for a CEO power was the years of experience in the firm and the years of experience as the Head of Senior Management in his/her overall career. Percentage of foreign BOD members measured as the ratio of non-Swiss board members to the total number of board members. The final controlling variable was the existence of a risk committee, dummy variable, 1 for the existence and 0 for non-existence.

Method

The hypotheses were tested using panel data regression because of the multiple observations for each listed firm from 2007 to 2013 (panel data set). The cross-sectional method of Ordinary Least Square (OLS) regression has some shortcomings for panel data or longitudinal studies, so panel data regression was utilized in this paper. Panel data regression is superior to OLS in addressing omitted variable concerns because time-invariant variables can be included (R. B. Adams & Ferreira, 2009; Torres-Reyna, 2007). For instance, Gray and Cannella (1997), Deutsch et al. (2010), and Bova et al. (2015) took the same approach in their studies. As quoted in their articles, “in the panel data, the observations are not

²² Market value of the firm is the year end market cap; the book value of the firm is the total shareholder's equity or net asset value of the firm. NAV (net asset value) of the firm= Total asset – total liability

independent, so this may display different associations between independent and dependent variables across cross-sectional units and this may have dissimilar variances across cross-sectional units. Panel data regression should be considered in panel data studies to correct the shortcomings of OLS (S R Gray & Cannella, 1997)".

To decide on the appropriate panel data techniques (fixed or random effects), Hausman test in Stata statistical program was run. As a result of the Hausman test, 'Random Effect regression' was found to be the appropriate technique for the hypotheses. By definition, "the Hausman test checks (H_0 , difference in coefficients not systematic) that the coefficients estimated by the efficient random effects estimator are the same as the ones estimated by the consistent fixed effects estimator. If they are insignificant (P-value, Prob>chi2, larger than 0.05), then it is safe to use random effects (Princeton, 2007; Torres-Reyna, 2007; Woolridge, 2001)".

"In random effects models, unlike fixed effects, the variation across entities is assumed to be random and uncorrelated with the independent variables in the model and the differences across entities have some influence on the dependent variable in the model (Torres-Reyna, 2007)."

Random Effects Model is (Torres-Reyna, 2007): $Y_{it} = \beta X_{it} + \alpha + u_{it} + \varepsilon_{it}$

Where

- Y_{it} is the dependent variable (DV) where i = entity and t = time.
- X_{it} represents one independent variable (IV),
- β is the coefficient for that IV,
- α is the unknown intercept for the entity,
- u_{it} is the between-entity error term,
- ε_{it} is the within-entity error term

Even though the Hausman test suggested a random effects model ($p > 0.05$), an additional check was performed to see whether the differences across entities had any influence on the dependent variable in the model. To do so, Breusch-Pagan

Lagrange Multiplier (LM) test (“xttest0” syntax) in the Stata program was run and it indicated that random effects model was superior to OLS ($p < 0.05$), and it was an appropriate model for my hypotheses. Consequently, the random effects model was utilized.

For Hypothesis 2 (H_2), the curvilinear relationship between the firm’s systematic risk (Beta) and total CEO compensation was tested by rerunning the random effects regression with independent variable (Beta) and its square ($Beta^2$), consistent with previous research (L.-Y. Chen & Lai, 2015; Miller et al., 2002) and the theory for testing curvilinear relationship (Aiken & West, 1991; Pevalin & Robson, 2009).

6. Findings

6.1 Descriptive Statistics

Table 29 presents the correlation matrix for the variables used in this study. It was found that Beta (risk) was significantly correlated with both total CEO compensation ($b:0.67$, $p < 0.05$) and percentage of variable compensation ($b:0.44$, $p < 0.05$).

Apart from firm age, the percentage of institutional ownership, CEO tenure in the firm, and CEO duality, the rest were significantly correlated with total CEO compensation ($p < 0.05$). For the percentage of variable compensation, it was significantly ($p < 0.05$) correlated with all the variables except the percentage of institutional ownership, CEOs ownership, and CEO duality.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	1.0*															
2	0.63*	1.0*														
3	0.67*	0.44*	1.0*													
4	0.14*	0.19*	0.14*	1.0*												
5	0.15*	0.07*	0.07*	0.20*	1.0*											
6	0.03	-0.06*	-0.05	-0.02	-0.01	1.0*										
7	0.70*	0.39*	0.49*	0.02	0.45*	0.07*	1.0*									
8	0.46*	0.29*	0.28*	0.08*	0.02	0.02	0.44*	1.0*								
9	0.03	-0.01	0.08*	0.01	-0.10 *	-0.14 *	-0.05†	-0.00	1.0*							
10	-0.22*	-0.18*	-0.08*	-0.02	-0.08*	-0.11*	-0.28*	-0.08*	0.10*	1.0*						
11	0.12*	0.11*	-0.03	-0.03	-0.03	0.06*	0.05†	0.10*	-0.09*	0.01	1.0*					
12	0.02	0.08*	-0.04	0.05†	-0.04	-0.06*	-0.05*	-0.03	-0.13*	-0.01	0.35*	1.0*				
13	0.17*	0.16*	0.12*	0.03	-0.04	0.06*	0.09*	0.03	-0.06*	-0.04	0.59*	0.37*	1.0*			
14	-0.37*	-0.20*	-0.35*	-0.04	0.09*	0.09*	-0.16*	-0.26*	-0.14*	-0.12*	-0.02	0.08*	-0.03	1.0*		
15	-0.06*	0.00	-0.11*	0.05†	-0.03	-0.15*	-0.18*	-0.08*	-0.09*	0.08*	0.10*	0.35*	0.09*	0.08*	1.0*	
16	0.46*	0.24*	0.48*	0.12*	-0.09*	-0.19*	0.20*	0.28*	0.20*	0.17*	0.07*	-0.04	0.09*	-0.59*	-0.07*	1.0*

Table 29- Correlation Table

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
17	0.55*	0.29*	0.34†	0.06*	0.31*	0.05	0.70*	0.41*	0.02	-0.14*	0.14*	-0.03	0.12*	-0.19*	-0.21*	0.30*	1.0*			
18	0.02	0.00	0.04	0.05†	-0.20*	-0.16*	-0.19*	0.09*	-0.00	0.12*	0.22*	0.29*	0.22*	-0.08*	0.34*	0.22*	-0.06*	1.00*		
19	0.29*	0.19*	0.16*	-0.00	0.45*	-0.00	0.48*	0.07*	0.00	-0.06*	0.04	0.02	0.07*	-0.03	-0.06*	0.04	0.32*	-0.14*	1.0*	
20	0.12*	0.08*	0.07*	-0.00	0.07*	0.20*	0.19*	0.01	0.04	-0.10*	-0.04	-0.06*	-0.05†	0.02	-0.14*	-0.01	0.17*	-0.33*	0.05†	1.0*

*: Significant at the 5 percent level. †: Significant at the 10 percent level

Legend: 1. LN Total Comp, 2. Percentage of Variable Comp, 3. Beta (Unsystematic Risk), 4. MTB, 5. Leverage, 6. Firm Age, 7. Firm size, 8. No of Employee, 9. % Institutional Ownership, 10. In Loss, 11. CEO Age, 12. CEO Tenure in Firm, 13. CEO Tenure as Manager, 14. CEO Nationality, 15. CEOs Ownership, 16. % Foreign BOD, 17. Board Size, 18. CEO Duality, 19. Existence Risk Comm., 20. %BOD Independence

Table 29- Correlation Table (continuing)

6.2 Statistics on Main Effects

Table 30 reports the results of the random-effects models used to test Hypotheses 1, 2, and 3.1. The base model presents the control variable results. Market to Book Value (MTB), firm size, CEO tenure as a manager, and percentage of foreign members on the board were positively and significantly associated with CEO's total compensation ($p < 0.01$). As expected, leverage was negatively related to CEO's total compensation ($p < 0.01$). On the other hand, the coefficients for the number of employees and CEO tenure in the firm were positive and significant at the 10% level.

'Model 1-random effects' in Table 30 reveals the result of Hypothesis 1 regarding the association between risk and total CEO compensation. A statistically significant link ($b: 0.74$, $p: 0.00$) between risk and total CEO compensation supported H_1 . In other words, a firm's systematic risk had a strong significant impact on the total CEO compensation, which attested to Agency Theory's risk premium proposition. Miller et al. (2002) also demonstrated a significant positive nexus between systematic risk and total compensation.

Furthermore, 'Model 1-OLS' was developed to provide additional assurance to the Model 1-Random Effects model. The standardized coefficients (beta coefficients) were disclosed under 'Model 1-OLS', as well. Consistent with the result of Model 1-Random Effects, 'Model 1-OLS' reported a significant relationship between risk and total CEO compensation ($b: 0.57$, $p: 0.00$, $\beta: 0.20$).

The endogeneity between risk and total CEO compensation was tested under 'Model 1-endogeneity check' in Table 30. The model was free from an endogeneity issue, and detailed explanations were given in Section 6.4 of the robustness checks.

After the reliability and robustness checks, the curvilinearity relationship between risk and total CEO compensation, Hypothesis 2, was examined under 'Model 2-Random Effects' in Table 30. In line with the literature (L.-Y. Chen & Lai, 2015; Miller et al., 2002) and the theory (Aiken & West, 1991; Pevalin & Robson, 2009),

both the independent variable (Beta) and its square (Beta²) were significant (p<0.05) as seen in Table 30 for ‘Model 2-Random Effects’, so it indicated the existence of a curvilinear relationship. That is, H₂ was supported. As shown on page 66 of Aiken and West ‘s book (1991), a positive coefficient of significant independent variable (Beta= b₁:1.60, p:0.00) and a negative coefficient of significant squared variable (Beta²= b₂:-0.58, p:0.02) indicated a concave downward curve. Figure 15 also graphs the concave downward curve between a firm’s systematic risk and total compensation. To be more precise, as discussed on the previous page, Agency Theory’s assumption of a positive link between risk and total compensation (risk premium proposition) is valid up to the moderate risk level. After the moderate risk, McClelland’s Theory of Needs takes over. Because CEOs avoid the high-risk and low-risk situations based on Theory of Needs-achievement (Miller et al., 2002; NetMBA, Retrieved 2015), the riskier firms stop paying higher total compensation after a moderate risk level, which theoretically explains the downward curve. By utilising the same theoretical explanations, Miller et al. (2002) have found the inverse curvilinear relationship between unsystematic risk and total executive compensation.

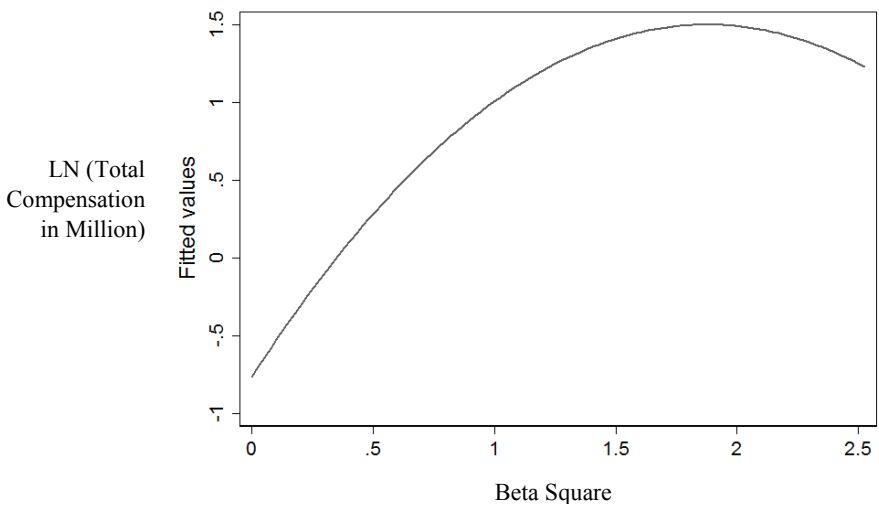


Figure 15- Model of Total CEO Compensation and Firm Systematic Risk (Beta)

Furthermore, ‘Model 2-OLS’ was performed to provide additional assurance. It supported the significant curvilinear relationship between a firm’s systematic risk and total CEO compensation at the 5 percent significance level. Sasabuchi-test (p:0.04) provided support for the inverse curvilinear relationship between risk and total compensation, as well.

Independent Variable	Dependent Variable: LN(Total Comp)						
	Base Model	Model 1 Random Effects	Model 1 OLS	Model 1 Endogeneity Check	Model 2 Random Effects	Model 2 OLS [‡]	Model 3 Random Effects
Lagged Dependent Var.	-	-	-	0.58** [11.22]	-	-	-
Beta (Firm Risk)	-	0.74** [4.91]	0.57** [3.87] Beta: 0.20	0.32** [3.69]	1.60** [4.37]	1.48** [3.69]	1.32** [3.35]
Beta Squared	-	-	-	-	-0.58* [2.41]	-0.61* [2.39]	-0.47† [1.65]
MTB	0.04** [3.94]	0.06** [4.16]	0.07** [3.50] Beta: 0.13	0.03 [2.28]	0.06** [4.01]	0.07** [3.16]	0.06** [4.00]
Leverage	-0.04** [6.73]	-0.03** [5.57]	-0.04** [5.41] Beta: -0.26	-0.01** [2.71]	-0.03** [4.95]	-0.04** [4.27]	-0.03** [4.68]
Firm Age	-0.00 [1.02]	-0.00 [0.28]	0.00 [0.20]	-0.00 [0.16]	-0.00 [0.30]	0.00 [0.25]	-0.00 [0.37]
Firm size	0.33** [11.07]	0.27** [8.69]	0.25** [6.91] Beta: 0.56	0.10** [4.48]	0.27** [8.65]	0.25** [6.73]	0.27** [8.39]
No of Employee	0.00† [1.69]	0.00* [2.00]	0.00 [0.76]	0.00 [1.54]	0.00* [2.04]	0.00 [1.09]	0.00* [2.26]
%Institutional Ownership	-0.09 [0.55]	-0.09 [0.54]	-0.03 [0.16]	-0.03 [0.34]	-0.08 [0.48]	-0.02 [0.13]	-0.06 [0.38]
InLoss	-0.02 [0.35]	-0.02 [0.30]	-0.11 [1.42]	-0.06 [1.00]	-0.02 [0.31]	-0.09 [1.24]	-0.02 [0.35]
CEOAge	-0.00 [0.15]	-0.00 [0.46]	0.01 [1.20]	0.00 [0.24]	-0.00 [0.26]	0.01 [1.39]	-0.00 [0.39]
CEO Tenure in Firm	0.01† [1.78]	0.02† [1.88]	0.00 [0.44]	0.01 [1.27]	0.01† [1.83]	0.00 [0.30]	0.02† [1.84]
CEO Tenure as Manager	0.01** [2.74]	0.01 [1.57]	0.01 [1.26]	0.00 [1.23]	0.01 [1.57]	0.01 [1.48]	0.01 [1.48]
CEO Nationality	-0.03 [0.36]	0.01 [0.15]	-0.18† [1.84]	-0.04 [0.55]	0.01 [0.12]	-0.19† [1.95]	0.01 [0.10]

CEOs Ownership	0.21 [0.69]	0.11 [0.41]	0.07 [0.22]	-0.04 [0.27]	0.15 [0.57]	0.16 [0.51]	0.18 [0.66]
%Foreign BOD	0.57** [3.95]	0.44** [2.71]	0.57** [2.92] Beta: 0.17	0.15 [1.42]	0.44** [2.75]	0.60** [3.05]	0.44** [2.80]
Board Size	-0.01 [0.56]	0.00 [0.08]	0.02 [1.02]	0.01 [0.94]	0.00 [0.17]	0.02 [1.24]	0.01 [0.36]
CEO Duality	-0.04 [0.38]	-0.08 [0.71]	-0.03 [0.20]	0.01 [0.15]	-0.09 [0.78]	-0.05 [0.33]	-0.15 [1.02]
Existence Risk Comm.	-0.03 [0.42]	0.03 [0.32]	0.29* [2.38] Beta: 0.11	0.08 [1.13]	0.02 [0.23]	0.25* [2.11]	0.03 [0.31]
%BOD Independenc	-0.13 [0.47]	-0.25 [0.63]	-0.28 [0.51]	-0.04 [0.13]	-0.24 [0.60]	-0.32 [0.58]	-0.38 [0.87]
Beta*Board Size	-	-	-	-	-	-	-0.04 [0.97]
Beta**%BOD Independenc	-	-	-	-	-	-	0.80 [0.67]
Beta* CEO Duality	-	-	-	-	-	-	0.36 [1.01]
Intercept	-2.18** [4.96]	-2.13** [4.12]	-2.37** [3.89]	-1.06** [2.74]	-2.46** [4.46]	-2.69** [4.33]	-2.16** [3.65]
Notes:							
Number of Observations	921	766	766	705	766	766	766
Number of Groups:	152	145	-	143	145	-	145
Adj-R ² :	0.63	0.65	0.67	0.83	0.6619	0.68	0.6627
Adj-R ² Change:	-	0.02	-	0.18	0.01	0.01	0.0008
Chi-Statistics:	599.69**	677.74**	-	3822.66**	753.00**	-	907.46 **
F-Statistics:	-	-	47.45**	-	-	50.91**	-
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regression type	Random Effects‡	Random Effects‡	OLS	Random Effects‡	Random Effects‡	OLS	Random Effects‡
Robust St Errors:	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust Std. Errors for both Heteroskedasticity and autocorrelation were performed. Absolute values of z-statistics for Random Effects and t-statistics for OLS are in brackets. Asterisks and dagger indicate significance at 0.01 (**), 0.05 (*), and 0.10 (†) levels.

‡: Hausman test and Breusch and Pagan Lagrangian multiplier test for random effects are indicating the random effects model as an appropriate model.

‡: Sasabuchi-test (p-value= 0.04), which is below 0.05, also provides additional support for the inverse curvilinear relationship between Firm Risk (Beta) and Total CEO Compensation.

Table 30- Random Effects and OLS Regression of the Relationship between Total Compensation and Risk

Table 31 shows the results of the random-effects models used to test Hypotheses 4 and 3.2. The results of H₄ and H_{3.2} appear under ‘Model 1-random effects’ and ‘Model 3-random effects’ in Table 31 respectively. The rest in Table 31 were presented to provide additional support, they were not directly related to any hypotheses.

In detail, first, the base model in Table 31 presented the control variable results. Market to Book Value (MTB) and firm size were positively and significantly associated with CEO’s percentage of variable compensation (p<0.01). Leverage, firm age, and firm with an accounting loss were negatively related to the percentage of variable compensation (p<0.01). On the other hand, the coefficients for CEO tenure in the firm and percentage of foreign members on the board were positive and significant at the 5% and 10% levels, respectively. In short, if the base models in table 30 and 31 were reconsidered, then it was reasonable to conclude that firm size and leverage were the most significant controlling variables for both total and variable mix of CEO compensation. However, firm size had a positive impact and leverage had a negative effect on them.

Second, the insignificant coefficient of the risk (b: 0.06, p: 0.21) in Table 31 for ‘Model 1-random effects’ did not support H₄. H₄ was not accepted. There was no evidence of a significant link between firm’s systematic risk and variable pay mix, so Agency Theory’s proposition of trade-off (negative link) between risk and variable pay failed to materialize in this study, which is also in line with the results of Bushman et al. (1996) and Yermack (1995).

For the additional robustness checks, the insignificant result of the risk was reinforced under both ‘Model 1-OLS’ (b:0.04, p: 0.47) and ‘Model 1-Endogeneity check’ (b:0.03, p:0.25) in Table 31. The details about Endogeneity are available in

Section 6.4 of the robustness checks. Due to the consistent findings, it was fair to deduce that the result on H₄ was robust and reliable.

Finally, although I did not hypothesize curvilinear relation between risk and variable pay mix, I checked it on Table 31 for ‘Model 2-Random Effects’ and ‘Model 2-OLS’. There was no evidence of a significant curvilinear relationship between risk and variable pay mix (Beta’s significance is > 0.05 and Beta²’s significance is > 0.05).

	Dependent Variable: Percentage of Variable Compensation						
Independent Variable	Base Model	Model 1 Random Effects	Model 1 OLS	Model 1 Endogeneity Check	Model 2 Random Effects	Model 2 OLS [‡]	Model 3 Random Effects
Lagged Dependent Var.	-	-	-	0.59** [10.81]	-	-	-
Beta (Firm Risk)	-	0.06 [1.26]	0.04 [0.73]	0.03 [1.15]	0.19 [1.20]	0.24 [1.35]	0.13 [0.75]
Beta Squared	-	-	-	-	-0.08 [0.80]	-0.14 [1.16]	-0.01 [0.13]
MTB	0.02** [6.64]	0.02* [2.30]	0.03** [3.40] Beta: 0.19	0.01† [1.85]	0.02* [2.26]	0.03** [3.20]	0.02* [2.40]
Leverage	-0.01** [4.79]	-0.01** [6.28]	-0.01** [3.31] Beta: -0.26	-0.00 [1.62]	-0.01** [6.02]	-0.01* [2.57]	-0.01** [6.21]
Firm Age	-0.00** [3.03]	-0.00** [2.70]	-0.00** [2.92] Beta: -0.13	-0.00* [2.12]	-0.00** [2.68]	-0.00** [2.82]	-0.00** [2.87]
Firm size	0.06** [5.63]	0.05** [4.89]	0.04** [3.17] Beta: 0.38	0.01* [1.97]	0.05** [4.83]	0.04** [3.10]	0.05** [4.83]
No of Employee	0.00 [0.18]	0.00 [0.34]	0.00 [0.12]	0.00 [0.96]	0.00 [0.35]	0.00 [0.23]	0.00 [0.55]
%Institutional Ownership	-0.06 [1.22]	-0.03 [0.64]	-0.02 [0.34]	-0.01 [0.33]	-0.03 [0.61]	-0.02 [0.33]	-0.04 [0.82]
InLoss	-0.07** [3.61]	-0.09** [3.82]	-0.09** [3.39] Beta: -0.14	-0.06** [2.92]	-0.09** [3.79]	-0.09** [3.16]	-0.09** [3.74]
CEOAge	-0.00 [1.00]	-0.00 [0.63]	0.00 [1.06]	0.00 [0.88]	-0.00 [0.56]	0.00 [1.16]	-0.00 [0.40]
CEO Tenure in Firm	0.00* [2.21]	0.00* [2.16]	0.00 [0.58]	0.00 [0.97]	0.00* [2.05]	0.00 [0.47]	0.00† [1.87]

CEO Tenure as Manager	0.00 [0.35]	-0.00 [0.15]	0.00 [1.08]	0.00 [0.22]	-0.00 [0.14]	0.00 [1.22]	-0.00 [0.22]
CEO Nationality	0.03 [1.23]	0.06* [2.17]	0.01 [0.40]	0.02 [1.13]	0.06* [2.13]	0.01 [0.33]	0.06* [2.12]
CEOs Ownership	0.08 [1.16]	0.10 [1.41]	0.02 [0.16]	0.01 [0.10]	0.11 [1.50]	0.04 [0.29]	0.12† [1.71]
%Foreign BOD	0.11† [1.84]	0.16** [2.81]	0.11† [1.68]	0.06† [1.78]	0.16** [2.81]	0.12† [1.80]	0.16** [2.80]
Board Size	0.01 [0.77]	0.00 [0.45]	0.00 [0.35]	-0.00 [0.08]	0.00 [0.49]	0.00 [0.43]	0.01 [1.17]
CEO Duality	-0.02 [0.59]	-0.06* [2.07]	-0.01 [0.28]	-0.03 [1.11]	-0.06* [2.10]	-0.02 [0.38]	-0.03 [0.91]
Existence Risk Comm.	0.02 [0.60]	0.01 [0.36]	0.06† [1.70]	0.02 [0.72]	0.01 [0.33]	0.06 [1.51]	0.01 [0.35]
%BOD Independence	0.00 [0.03]	-0.05 [0.50]	-0.05 [0.34]	-0.07 [0.81]	-0.05 [0.47]	-0.06 [0.38]	0.01 [0.07]
Beta*Board Size	-	-	-	-	-	-	-0.02 [1.17]
Beta*%BOD Independence	-	-	-	-	-	-	-0.55 [1.39]
Beta* CEO Duality	-	-	-	-	-	-	-0.13 [1.23]
Intercept	0.02 [0.14]	0.06 [0.35]	-0.07 [0.37]	0.00 [0.04]	0.01 [0.05]	-0.14 [0.70]	-0.08 [0.38]

Notes:

Number of Observation	921	766	766	705	766	766	766
Number of Groups:	152	145	-	143	145	-	145
Adj-R ² :	0.2940	0.2962	0.3210	0.59	0.2994	0.3260	0.3167
Adj-R ² Change:	-	0.0022	-	0.29	0.003	0.005	0.0173
Chi-Statistics:	264.79**	413.08**	-	849.99**	413.62**	-	473.3**
F-Statistics:	-	-	9.50**	-	-	9.27**	-
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regression type	Random Effects‡	Random Effects‡	OLS	Random Effects‡	Random Effects‡	OLS	Random Effects‡
Robust St Errors:	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust Std. Errors for both Heteroskedasticity and autocorrelation were performed.

Absolute values of z-statistics for Random Effects and t-statistics for OLS are in brackets.

Asterisks and dagger indicate significance at 0.01(**), 0.05 (*), and 0.10 (†) levels.

‡: Hausman test and Breusch and Pagan Lagrangian multiplier test for random effects are indicating the random effects model as an appropriate model.

‡: OLS Regression supports the insignificant findings of Random Effects Regression. It is also an additional support of “lack of curvilinear relationship” between Percentage of CEO’s Variable Pay and Firm Risk.

Table 31- Random Effects and OLS Regression of the Relationship between Percentage of Variable Compensation and Risk

6.3 Statistics on Moderators

Aiken and West (1991) stated that “the problems of collinearity and spurious moderation are reduced by increasing sample size and centering the variables.” Besides the extensive dataset, the variables were centered before the interaction variables were calculated. Then, the correlations between the predictor (x), moderator (z), and interaction (xz) variables were checked for collinearity. No multicollinearity issue was noted, so model 3s with interaction variables were robust and reliable.

More specifically, ‘Model 3- Random Effects’ in Table 30 presents the results of $H_{3.1}$, concerning the moderation impact of Corporate Governance variables on the association between risk and total compensation. As seen in Model 3-random effects, none of the interacting variables (board size= b:-0.04, p: 0.33, board independence= b: 0.80, p: 0.50, CEO duality= b:0.36 , p:0.32) were significant, so $H_{3.1}$ was not accepted.

‘Model 3-Random Effects’ in Table 31 reports the result of the test of $H_{3.2}$ regarding the moderation impact of Corporate Governance variables on the nexus between risk and CEO’s percentage of variable compensation. As depicted on Model 3-random effects, neither of the interacting variables (board size= b:-0.02, p: 0.24, board independence= b:-0.55, p: 0.16, CEO duality= b:-0.13 , p: 0.22) were significant, so $H_{3.2}$ was not supported.

In general, Corporate Governance variables in this study, e.g. board independence, board size, and CEO duality, were neither the significant moderator nor the significant control variables for the relationship between firm systematic risk and CEO compensation. Deutsch et al. (2010) and Cheng et al. (2015) also controlled their model for Corporate Governance variables, but they did not find any significant results, either.

6.4 Robustness Checks

In general, the major problems in panel data sets are homoscedasticity and autocorrelation, so Modified Wald test for group-wise heteroskedasticity and Wooldridge test for autocorrelation were run for each model. Then, I ran a panel data regression with robust standard errors corrected for heteroskedasticity and autocorrelation. In addition, normality and multicollinearity of the models were checked, and no exception was noted. Besides regression diagnostics, each model's Root Mean Square Errors (RMSE), and results of Linktest and Ovttest (Ramsey Reset) tests were reviewed. RMSEs were low and p-values of Linktest and Ovttests were above 0.05, which indicated that models were free from measurement errors and omitted variable bias. In short, all models were properly specified.

Another issue, especially on Corporate Governance research, is endogeneity or reverse causality. First check for the Endogeneity was performed based on its general definition that endogeneity occurs when “independent variables are correlated with error term in a regression model, $E(u|x_i) \neq 0$ ” (Antonakis, 2011; Guse, 2003). The residuals of the models were predicted, and the correlations between residuals and independent and controlling variables were reviewed. No endogeneity was noted; models are free from endogeneity. Then, other remedies were also taken for reverse causality and omitted variable problems. As an example, the regression models in this paper aimed to analyze the impact of risk (x) on executive compensation (y). In fact, what was found was only the association between risk and executive compensation. One could also argue that executive compensation may also impact the firm risk taking. To address the reverse causality issue, I implemented the same technique of Chen, Steiner, and Whyte (2006) and Bova, Kolev, Thomas, and Zhang (2015). Consistent with their research, the lagged dependent variable was entered into the ‘Model 1-endogeneity checks’ in Tables 30 and 31 as an additional control because “the logic of this technique is that the lagged dependent variable absorbs the effects of omitted correlated variables and reverse causality, provided they remain relatively stable” (Bova et al., 2015, pp. 133-135; IMF, 2012, p. Annex4.2). As Bova et al. (2015) stated “the inclusion of lagged dependent variable in the models reduces the

possibility that omitted correlated variables or reverse causality are driving the results”.

In Tables 30 and 31, the adjusted R^2 s were significantly increased after addition of a lagged dependent variable into the ‘Model 1-endogeneity checks’ and the significance levels of independent variable (risk) in the presence of controls for lagged dependent variable were not changed, so it was fair to conclude that the results were free from endogeneity or reverse causality, and they were robust.

7. Conclusion and Implication

The association between risk and CEO compensation has been investigated. One measure of risk (Beta (β)) as the independent variable and two different measures of compensation (total CEO compensation and variable pay mix (proportion)) as dependent variables have been used in this study. The panel data sample includes 1442 firm-year observations from 2007 to 2013.

Several conclusions and implications for literature and practice emerge from the results of this paper. First, Agency Theory’s risk premium approach is tested and proved, and it is found that risk is the significant determiner of total CEO compensation, so the board should align total executive compensation with risk and firm risk policies. Second, the curvilinear relationship between risk and total executive compensation (concave downward curve) suggests a ceiling effect on a CEO’s risk-bearing, which is in line with McClelland’s Theory of Needs (achievement approach). Based on this observation, it is recommended that after the peak or ceiling, it may not be so meaningful or efficient to pay more risk premium or increase total CEO compensation because agents are not willing to take higher risks in general. In fact, each agent has his/her risk appetite, so not to pay ineffective or bogus compensation, the board should invest some time in determining the agent-specific peak or ceiling of risk acceptance. Third, the common conclusion of every model in the paper is that firm size and leverage are the most significant control variables for total CEO compensation and variable pay mix. In essence, firm size is positively associated, and leverage is negatively associated with both total CEO compensation and proportion (%) of variable

compensation to total compensation. Hence, the board should also control the firm's leverage or debt ratio before deciding on the compensation contract. If there is a probable default risk in the firm, it is ineffective to pay higher risk premiums or incentives. Fourth, the result of this paper concerning the link between risk and variable pay mix has brought some clarity to the conflicting literature. Consistent with the arguments of Bushman et al. (1996) and Yermack (1995), no statistically significant association between risk and incentives has been found. Therefore, it refutes the trade-off proposition of Agency Theory.

Finally, the regulatory bodies and Corporate Governance principle setters can benefit from the findings of this paper because apart from FINMA, other regulatory agencies have not explicitly emphasized the importance of the direct link between risk and total compensation yet. For instance, FINMA Directive on Remuneration Scheme (2010) stated that “the firm risk should be considered in the remuneration contracts, and incentives should not encourage the agents to take the inappropriate risk. As a result, total compensation, variable compensation, and proportion of variable compensation should depend on a firm's risk and risk policies (FINMA, 2010)”. On the other hand, the Ordinance Against Excessive Compensation in Listed Stock Companies (OaEC or VegüV), the Swiss Code of Best Practice (2014), and the SIX Directive (2014) did not even mention the firm risk as a criterion to draw up the compensation contracts. It shows that except for the financial industry in Switzerland, the rest are not so aware of the importance of firm risk and its significant impact on total compensation. Therefore, it is suggested that the boards or standard setters should motivate the managers to disclose the association between firm risk, risk policies, and total CEO compensation either voluntarily or comply-or-explain basis in their annual reports.

8. Limitation and Future Research

At least two limitations of this study could be rectified with future research. First, Beta (systematic risk) is the only proxy considered in this paper, so this finding may not be generalizable to other risk proxies, e.g. Sigma (σ , unsystematic risk) and income volatility. Future research can extend the paper by analyzing

unsystematic and income stream risks and by comparing the findings with those of Beta.

Second, this paper presents the holistic picture of the association between a firm's systematic risk and executive compensation in Switzerland because it has analyzed all listed companies in the Swiss Stock Exchange. Even though it is a comprehensive study, this finding may not be generalizable to the blue chip or largest businesses in Switzerland. Future research could concentrate on a sub-sample of SMI²³ and SMIM²⁴ firms and compare the results of these 50 largest companies with those of the Swiss Market.

Despite these limitations, the result contributes to the power of Agency Theory (risk premium approach) and Theory of Needs (Achievement concept) in their explanations of the relationship between a firm's systematic risk and total CEO compensation. It is also an innovative study for the Swiss market because it is the first detailed study on this topic.

²³SMI: Switzerland's 20 largest companies or Blue-Chip-Index

²⁴ SMIM: Switzerland's 30 largest mid-cap companies

Appendix 1 - Literature Review- Risk and CEO Compensation- in an Alphabetical Order

Author	Year	Country	Journal	Theory	Sample	Result	Comments
(Beatty & Zajac, 1994a)	1994	USA	Administrative Science Quarterly	Agency Theory	435 firms in 1984	-It is noted that the riskier firms have a smaller portion of CEO's variable pay in total pay. (negative relationship)	-It is one of the key researches in this area.
(Bova et al., 2015)	2015	USA	The Accounting Review	Agency Theory	9,677 individual firms for the period 1999–2009.	There is a negative link between risk and executive stock compensation. However, a positive link exists between firm risk and executive stock options.	-It is one of the essential and recent literature on the topic of risk and executive compensation, which indicates that this topic is still relevant and worth investigating. -The results are in line with the assumptions of Agency Theory.
(Bloom & Milkovich, 1998)	1998	USA	Academy of Management Journal	Agency Theory	500 firms from 1981 to 1988	Business risk (<i>systematic</i> stock market risk) is negatively related to the use of incentive pay in managerial compensation	-The business (firm) risk was measured with the help of systematic risk, unsystematic risk, and income stream risk. -Income stream risk is operationalized by calculating the standard deviation of ROA over the previous ten years (t-1 to t-10). - It is a noteworthy paper due to

						contracts. - However, the unsystematic stock market risk does not have a significant impact on incentive pay.	its holistic view of risk measurement. -The dataset is not up-to-date, but it is still an essential reference.
(C. R. Chen et al., 2006)	2006	USA	Journal of Banking and Finance	Agency Theory	591 Commercial Banks from 1992-2000	-It is noted that risk impacts compensation contract design. -It is found that banks increasingly employ stock-option based compensation to cope with risky environments and risk-averse agents -It is also found that more risky firms offer more equity-based compensation, such as stock options and	- It is a significant study which notes that riskier firms need equity compensation for their CEOs that limits the loss but offers high gain, such as stock options.

						restricted shares. (positive relationship)	
(Cheng et al., 2015)	2015	USA	The Journal of Finance	Principal-Agent (Agency) Theory	Financial Firms from 1992 to 2008.	-It is found that “riskier firms offer higher total pay as compensation for the extra risk in equity stakes borne by risk-averse managers” (positive relationship) . -“Riskier firms are also more productive and more likely to be held by institutional investors, who are most able to influence compensation.”	-The finding is in line with the risk premium principle of Agency Theory. In other words, riskier firms need to pay an additional risk premium to keep their CEOs. -It is one of the essential and recent literature on the topic of risk and executive compensation, which indicates that this topic is still relevant and worth investigating.
(Dee et al., 2005)	2005	USA	Journal of Corporate Finance	Agency Theory	46 Internet firms from 1997 to 1999 (104 firm-	-It is found that there is a positive link between incentive compensation of	-This unexpected positive relationship was explained by the agency problem that there is a high degree of information asymmetry between CEO and shareholders.

					years of data)	<p>CEO and risk.</p> <ul style="list-style-type: none"> - In addition, it has been proved that pay-performance sensitivity declines with increasing risk. It indicates that risk (variance in the return) is the negatively significant moderator. 	<ul style="list-style-type: none"> - Information asymmetry implies greater monitoring difficulties leading the CEO to invest in high-risk projects to increase his/her incentive compensation. - Internet companies are young, fast-growing and highly volatile. - This paper highlights the impact of the agency problem in the risk related CEO incentives evidently. It also indicates the CEO's managerial power on his/her variable salary. Therefore, it is a significant study from the perspective of Agency theory.
(G. Lin & Yitsen, 2009)	2009	Taiwan	Working paper	Agency Theory	1812 from 2005-2007	<ul style="list-style-type: none"> -The effect of risk on executive compensation depends on firm age. A positive impact was found for the companies in the growth stage, but no significant impact found for the companies in the mature stage. 	<ul style="list-style-type: none"> -Firm age is an important controlling variable. -It is a working paper, not published in a top tier journal.

(Samuel Ray Gray, 1993)	1993	USA	Dissertation	Agency Theory	1000 largest traded firms from 1980-89.	-Risk represents an important determinant of executive compensation. -Optimal CEO compensation contracts must reflect a trade-off between incentives and risk bearing concerns.	Even though it has an old dataset, it indicates the impact of risk on executive pay mix.
(S R Gray & Cannella, 1997)	1997	USA	Journal of Management	Agency Theory	100 firms from 1980 to 1989 with 1000 firm-years.	- It was found that higher risk firms pay less than lower risk firms. In other words, there is a negative relationship between <i>unsystematic</i> firm risk and total CEO compensation.	-Systematic risk (Beta), Unsystematic risk (Sigma) and income stream risk were used to measure the risk. - Unsystematic risk and income stream risk of the firm are significantly and negatively related to total CEO compensation, but no significant support for systematic risk was found. -Income stream risk was calculated by the standard deviation of ROS over the previous three years (t-1 to t-3). - It is a comprehensive and robust panel data study.

(Miller et al., 2002)	2002	USA	Academy of Management Journal	Agency Theory and McClelland's Theory of Needs	423 firms between 1994 and 1998	Variable pay mix and total compensation have a significant curvilinear relationship with <i>unsystematic</i> firm risk, but not supported for systematic risk.	<p>-This paper has two superiorities: 1) Both total compensation and percentage of variable compensation (variable pay mix) were analyzed as dependent variables.</p> <p>2) Both firm-specific (unsystematic) and market (systematic) risks were taken into consideration. However, only firm-specific (unsystematic) risks were found significant predictors for CEO compensation.</p> <p>- Variable pay mix and total compensation have a significant curvilinear relationship with firm-specific risk. It means that CEO compensation is higher under the condition of moderate risk than under the condition of high or low risk, which is in line with McClelland's Theory of Needs- Achievement.</p> <p>-In other words, consistent with agency theory, it was found that there is a trade-off between firm risk and CEO pay.</p>
(Nguyen, 2011)	2011	Japan	Pacific-Basin Finance Journal	Agency Theory	1252 Firms, between 1996-2003	-“All components of risk, especially idiosyncratic	The link between ownership, Corporate Governance structure, and risk are analyzed. Therefore, this paper is a

						<p>(unsystematic or firm-specific) risk, tend to be lower among bank-controlled companies.”</p> <p>-“In contrast, family control is related to a higher idiosyncratic risk, but lower systematic (market) risk.”</p> <p>- “Risk taking is stimulated by the strong corporate control. In short, risk-taking is associated with <i>corporate governance</i> structures”.</p>	critical study for my research to support the Corporate Governance effect on the relationship between risk and CEO compensation.
(Panta, 2011)	2011	USA	Dissertation	Agency Theory	The US publicly traded firms High-tech firms	-Idiosyncratic volatility (risk) has a positive effect on CEOs’ salary, bonus,	-The author of the dissertation has come up with a very interesting conclusion on the relationship between risk and executive compensation: When managerial characteristics, such

						equity and total compensation.	as education, experience, and age, are not included in the estimation, Core and Guay (2002) and Shi (2003) found a positive relationship between firm risk and executive pay. On the other hand, Palia (2001) finds a negative relationship between PPS and risk after controlling for managers' education, experience, and age. Therefore, it is an interesting study.
(Petacchi, 2013)	2013	USA	Theoretical Accounting Research	Agency Theory	Theoretical paper, not empirical	It was concluded that the risk premium was not monotonically increasing with the risk imposed on the agent and her risk propensity.	-The author believes that the trade-off between risk and incentives is not monotonic. Depending on particular cases, such as risk appetite of the agent and riskiness of the firm, the relation can be either positive or negative . - In addition, the author stated that the information asymmetry, corporate communication, and transparency are important factors in managing the link between risk and incentives. It hints at the essential roles of Corporate Governance factors.
(Prendergast, 2000, 2002)	2002	USA	Journal of Political Economy	Agency Theory	Theoretical paper, not empirical	-The relationship between risk and incentive is mixed- either	-It is less costly for all companies to prompt a given action from a less risk-averse manager than a more risk-averse manager because less has to be paid to

						<p>positive or negative.</p> <p>-The crucial factors are the existence of managers with different degrees of risk aversion and competition between firms for these managers.</p>	<p>compensate the less risk-averse manager for the risk he/she bears.</p> <p>-It is a significant study indicating that the level of the risk appetite of managers is a crucial factor in the relation between risk and incentive.</p>
(Sanders & Hambrick, 2007)	2007	USA	Academy of Management	Agency Theory	950 firms over the period 1993 to 2000.	-It was noted that stock option-loaded CEOs deliver bigger losses than bigger gains.	Authors presumed that significant risks or more stock option incentives bring big firm returns based on Agency theory. However, the contradictory result indicates that companies should be more careful in finding the optimal pay mix and in balancing risk and gain.
(Serfes, 2005)	2005	USA	Economics Letters	Agency Theory	Theoretical paper, not empirical	-Even though principle-agent theory predicts a negative link between risk and variable pay, the author believes that “the relationship between risk and incentives could	-It is not a research published in top-tier journals, but the author’s approach or belief is interesting.

						be negative, positive or U-shaped with respect to the degree of risk aversion of CEOs.”	
(Stroh et al., 1996)	1996	USA	Academy of Management	Agency Theory & Classical Organization Theory	309 firms from 1987-1991	<p>- The result supported the Classical Organization Theory that “under higher risk, firms use higher proportions of variable pay.”</p>	<p>- “CEOs in higher risk firms received a greater proportion of their compensation in the form of variable pay,” which is in line with the Classical Organization Theory prediction.</p> <p>- Risk premium hypothesis of Agency Theory was not supported because “total cash compensation strategies did <u>not</u> significantly differentiate managers in risky firms from managers in less risky firms”.</p> <p>In summary, it can be concluded that “in organizations with high levels of turbulence, the firms were shifting the risk of the turbulent environment to the managers through increased variable pay, instead of sharing the cost of the risk by giving higher total compensation, as was predicted by Agency Theory's risk premium hypothesis”.</p>

							- The results of this paper are noteworthy from two conflicting theoretical points of view. However, only the prediction of Classical Organization Theory has found empirical support. Therefore, it is kind of an interesting article for my Paper II.
(Wright, 2004)	2004	Austria	Journal of Economics	Agency Theory	Theoretical paper, not empirical	<p>-Agency theory predicts a negative relationship between risk and variable compensation. In general, firms that operate in more risky environments offer their managers less intense compensation schemes or incentives.</p> <p>-By differing in the degrees of risk aversion of</p>	<p>By introducing competition for heterogeneous managers, who differ in their degrees of risk aversion, into a standard agency model, this paper demonstrates that a negative or positive relationship is theoretically possible.</p>

						the managers, this paper demonstrates that a negative or positive relationship is theoretically possible.	
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Paper III

Empirical Study on CEO Compensation, Peer Group Comparisons and Moderating Effect of Corporate Governance: Evidence from the Listed Companies in Switzerland

Empirical Study on CEO Compensation, Peer Group Comparisons, and Moderating Effect of Corporate Governance: Evidence from Listed Companies in Switzerland

M. Mehtap Aldogan Eklund

Abstract

This empirical study examines whether the listed firms in Switzerland benchmark their CEOs' compensations against those of the peer group when they set up the arm's length compensation contract by depending on the predictions of Social Comparison and Agency Theories. Benchmarking or relative performance (compensation) evaluation removes the impact of sector performance on the company's performance, which shields CEOs from being punished for the uncontrollable incidents, such as a downturn in the market or the sector. It is a worthwhile topic to investigate because accurate benchmarking and the positive relationship between total compensation at the focal firm and total compensation at peer group increase the motivation of the CEOs and strengthen "pay for performance". In line with the tenets of the theories, it is found that in Switzerland, there is a strong positive association between total compensation at the focal firm and that at the peer group. In addition, board independence and CEO duality are the significant Corporate Governance moderators. This finding induces practitioners to disclose peer groups voluntarily in their annual reports and spend more time in finding out accurate and comparable benchmarks. It is also one of the scarce studies investigating the moderating effects of corporate governance on the benchmarking of CEO compensation. Finally, it will inspire academicians to conduct further research by profiting from the findings and the limitation of the paper.

Keywords: Peer Group, Benchmarking, CEO's compensation, Social Comparison Theory, Agency Theory, Switzerland

1. Introduction

The level of total executive compensation has dramatically rocketed up in most countries in Europe, including Switzerland, and in the USA, since 1980 (Garvey & Milbourn, 2006). Evidently, after 1998, the share of the equity-based pay in total executive compensation has increased in Switzerland (Stern, 2003). Due to this tremendous increase in CEO pay, scholars, practitioners, and regulators have turned their attention to the structure and the appropriateness of the compensation contracts. One of the salient topics to judge the appropriateness and arm's-length compensation contracts is benchmarking or peer group comparison. In contrast to various aspects of executive compensation, peer group comparison is a relatively contemporary topic in the literature. The majority of the references were published in the last five years, for its significance has been grasped after 2010. In fact, most of these studies have focused merely on American companies, so there are still potential research areas and as-yet-unsolved problems in the European market. Swiss firms are a noteworthy sample for CEO compensation because the highest CEO pay in Europe is in Switzerland, and it is even the second highest in the world right after the USA (Bilanz, 2012; Goergen & Renneboog, 2011; Weber & Obermatt, 2010). In addition, benchmarking process and picking up appropriate peers are pretty important for the companies to find a right balance between attracting and keeping the talented CEOs and continuing to maximize the stakeholder value (Ivy & Bridges, 2012). Because of the existing gap in the literature and the importance of the topic for the practitioners to design optimal and appropriate executive compensation contracts, this paper delves deeply into this topic in Switzerland.

“CEOs cannot affect the market and sector by their actions, and it is pretty costly for the risk-averse executives to bear relative risks. Thus, Agency Theory postulates that companies should benchmark their executive compensation against peers to filter out market-wide effects” (Garvey & Milbourn, 2006; Rajgopal, Shevlin, & Zamora, 2006). In addition, based on Social Comparison Theory, executive compensation needs to be compared with the compensations of similar social comparisons in the other companies (Festinger, 1954; Singh, 2012). In other words, the central assumptions of Agency Theory and Social Comparison theory

are the use of benchmarking or relative performance evaluation of executive pay contracts (A. Albuquerque, 2009; Frydman & Jenter, 2010; Pittinsky & DiPrete, 2010).

Furthermore, Agency Theory highlights the importance of Corporate Governance factors in peer group comparison (J. Bizjak, Lemmon, & Naveen, 2008). For instance, it is noted that the companies failed in Corporate Governance are not successful to cope with rent extraction (excessive pay) and “Lake Wobegon (Ratchet)²⁵ Effect” during the benchmarking process (DiPrete, Eirich, & Pittinsky, 2010).

Based on the principles of these two theories, this study aims to examine whether CEO’s total pay is anchored to the peer group and whether Corporate Governance variables moderate the association between CEO pay at the focal firm and that at the peer firm. This research contributes to the literature and practice as follows: (1) it is the first study on this topic in Switzerland. (2) In this paper, both international and local peers are gathered for the focal firms with foreign sales, yet previous studies have only focused on the peers in the same geographical territory. Consequently, it provides the readers with more generalizable and reliable results. (3) It is a multidisciplinary research by combining the theories from sociology, management, and accounting. (4) This paper is the first research that has considered tax²⁶ and cost of living effect²⁷ on the executive pay. In other words, CEO’s real disposable income²⁸ at the focal firm has benchmarked against that at international peer companies. (5) It is one of the scarce studies measuring the moderating effect of Corporate Governance instead of considering it as a control variable. (6) It proves that peer group’s CEO compensation is a significant predictor of the CEO compensation at the focal firm, and it encourages the practitioners to disclose their benchmarks voluntarily in the annual reports. (7) The

²⁵ The “Lake Wobegon Effect,” is a potential cause for rising CEO pay. It is occurred when no firm wants to admit to having a CEO who is below average, so no firm pays below average or median, which ratchets up salaries and percolates through all firms (R. M. Hayes & Schaefer, 2009).

²⁶ Individual Income Tax Rate: <http://www.kpmg.com/global/en/services/tax/tax-tools-and-resources/pages/individual-income-tax-rates-table.aspx>

²⁷ Consumer Price Index (CPI): http://www.numbeo.com/cost-of-living/rankings_by_country.jsp?title=2010

²⁸ “Real Disposable Income (RDI) or Discretionary Income (DI)” is calculated by the personal income (total pay) minus personal current tax minus cost of living of the country (Ruser, Pilot, & Nelson, 2004).

findings of this paper motivate EconomieSuisse to reform its peer group principle (item 37 in 2014 Best Practice Code²⁹) similar to the American disclosure regulations in Definitive Proxy Statement (DEF14a), which is much more detailed and explanatory than the Swiss one. (8) Methodology section guides practitioners and scholars on how to choose accurate peers to handle CEOs ‘leapfrogging’ and ‘rent extraction’. (9) Finally, the significant moderators- board independence and CEO duality- reveal the importance of Corporate Governance.

The rest is organized as follows: Section 2 is concerned with the theoretical framework- Agency and Social Comparison theories. It is a framework indicating an association between variables in the theory and establishing a base for the hypotheses. Then, in section 3, the literature review on the topics of peer comparison and relative performance evaluation is disclosed. After the detailed consideration of the theory and the literature, the hypotheses are constructed in section 4. Section 5 is focused on the methodology, such as sample, data collection, model, variables, and the method. Section 6 presents the findings, e.g. descriptive statistics, results on main and moderating effects, and robustness checks. Section 7 analyzes the findings and points out the conclusion and implications of the research. Finally, limitations and the future research are addressed in section 8.

2. Theoretical Framework

The theoretical framework of the association between dependent and independent variables is built on Social Comparison and Agency theories. In addition, the moderating effect of Corporate Governance variables is derived from the “conflict of interest” assumption of Agency Theory.

²⁹ Swiss Code of Best Practice (2014, Item 37): “The Compensation Committee should scrutinize both salary comparisons with other companies as well as the work of external and internal consultants”. – “Where the remuneration packages of other companies serve as a benchmark, the Compensation Committee should undertake a critical review of the composition of this peer group and of the conclusiveness of the comparisons drawn for its own compensation. It should exclude any companies from the group that would skew the comparative results, either because of a lack of corporate governance or for any other reason(s)” (Economiesuisse, 2014). On the other hand, SIX (2014) and Ordinance, Swiss Federation (2013) did not cover benchmarking or peer group disclosure in their regulations.

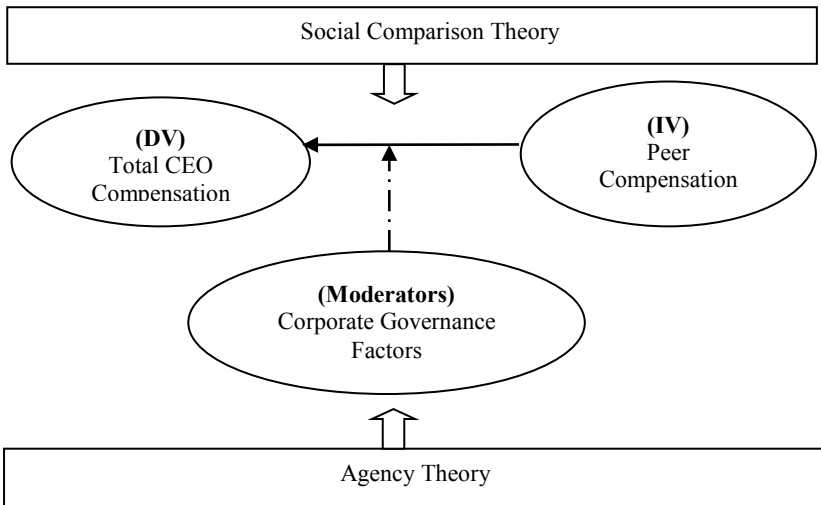


Figure 16- Theoretical Framework of Paper III

2.1 Social Comparison Theory

Festlinger (1954) proposed a theory of Social Comparison that is based on equity, fairness, and organizational justice (Festinger, 1954; O'Reilly et al., 1988). It postulates that “to evaluate their success, individuals need to compare themselves to similar individuals. Individuals tend to select their social comparisons who are slightly better than themselves. Accordingly, the compensation package of CEOs has to be compared to that of other companies of equal or somewhat greater stature” (Singh, 2012). Compensation committees or consultant firms should engage in social comparisons while evaluating and developing CEOs compensation contracts (Martin J. Conyon, Peck, & Sadler, 2009; Daily et al., 1998; Kevin J. Murphy & Sandino, 2010; O'Reilly et al., 1988).

In addition, Stacy Adams’s Equity theory is stemmed from Social Comparison theory (Devers, Cannella, Reilly, & Yoder, 2007). Similarly, Equity theory proposes that to promote social justice and fairness and to reduce economic unrest, there shouldn’t be any dissonance between the salaries of the individuals whose outcome/input ratios are equal. Under-rewarded or over-rewarded individuals will

experience distress, and it will cause lack of motivation (J. S. Adams, 1963, 1965; Huseman, Hatfield, & Miles, 1987).

According to the Social Comparison theory, it is hypothesized that CEO's compensation at the focal firm is positively related to the compensation of CEOs at the peer group, all else equal (H_1).

2.2 Agency Theory

The origin of Agency Theory is coming from Jensen and Meckling (1976), Alchian and Demsetz (1972), and Kathleen Eisenhardt (1989) (Clarke, 2008). "Agency Theory deals with two problems: (1) there is a conflict of interest between the agent and the principal, (2) it is expensive for the principal to monitor what the agent is doing (Eisenhardt, 1989)." The focus of the theory is determining the optimal contract between principal and risk-averse agents. Agency Theory suggests that firm should benchmark its executive compensation against its peer groups because it removes the impact of market performance on the company's performance, it protects the agents from the market-wide risk that they cannot change by their actions, it copes with conflict of interest, and it aligns the agent's preferences with those of the principal (R. Aggarwal & A. Samwick, 1999; Eisenhardt, 1989; Frydman & Jenter, 2010; Garvey & Milbourn, 2006; Janakiraman, Lambert, & Larcke, 1992; Rajgopal et al., 2006). Consequently, Agency Theory's assumption also supports Hypothesis 1 (H_1).

Agency Theory highlights the importance of Corporate Governance factors in the peer group comparison to resolve the monitoring problem. Weak Corporate Governance fails to monitor the likelihood of paying an executive above the median pay level of the peer group (J. Bizjak et al., 2008; Tuna, 2009). It is also stated that the primary responsibility of the compensation committee is to control whether executives are paid in line with the 'unbiased' benchmarks (J. Bizjak et al., 2008; John Bizjak, Lemmon, & Nguyen, 2011). Drawing on the principles of Agency Theory, it is hypothesized that corporate governance factors moderate the link between total CEO compensation at the focal firm and that at peer companies (H_2).

3. Literature Review

In contrast to other aspects of the executive compensation, benchmarking or peer group comparison of CEO remuneration is a relatively contemporary topic, and the majority of the studies have focused only on American companies. In the research area of benchmarking, scholars have analyzed four key issues: the manipulation of the peer group selection, the factors of unbiased benchmark selections, Lake Wobegon (Ratchet) Effect, and the link between the CEO pay at focal firm and that at peer companies.

Peer group comparison or benchmarking means ‘relative compensation evaluation of the CEO’. In simpler terms, focal firms compare their CEOs’ remuneration with those of the peers in the same sector, size, and performance, which filters out market-wide effects (Bannister & Newman, 2003; Gibbons & Murphy, 1990; Mercer, 2009). “The core reason for identifying the peer group is to give a focal company a standard for comparison with other companies”, which helps attracting and keeping the talented CEOs and continuing to maximize the stakeholder value (A. Albuquerque, 2009; Lucian Arye Bebchuk, Fried, & Walker, 2002; Ivy & Bridges, 2012; Mercer, 2009).

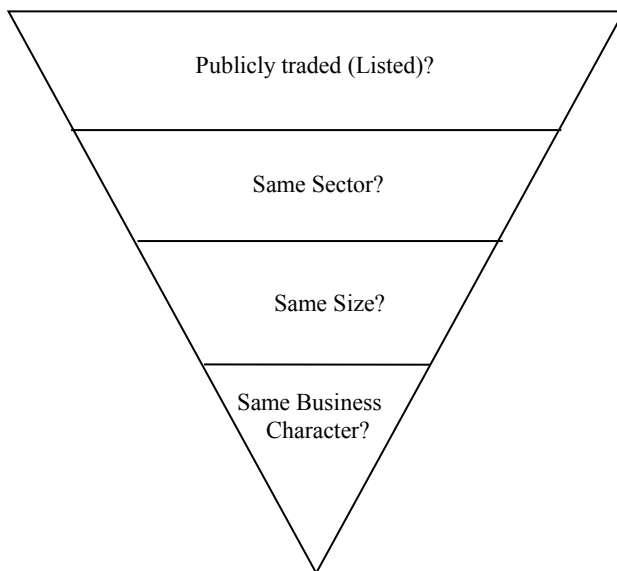
It is important to emphasize the wrong-doing in the practice that peer groups are generally ‘cherry-picked’ by the focal firms to justify their pre-determined conclusion about executive remuneration and the rent extraction (excessive pay to their CEOs) (Lipman & Hall, 2008). For instance, Albuquerque (2009) analyzed the American listed firms from 1992 to 2005, and she compared the peers chosen by the focal firms with expected peer groups chosen by a computer based on company’s industry, size, and performance. Then, it was found that companies tended to select peers with better-paid CEOs, and Benchmarking manipulation boosted the pay about 5% or \$340,000 annually (Tuna, 2009). Other scholars also came to the same conclusion that firms opportunistically selected biased peers or highly paid peers to justify their CEO compensation (A. M. Albuquerque, De Franco, & Verdi, 2013; Michael Faulkender & Yang, 2010; Kim, Kogut, & Yang, 2015; Laschever, 2013). To limit rent extraction and to cope with cherry-picked

peer groups, it is advised that compensation disclosure should be more transparent, and firms should disclose their benchmarks and the rationale behind choosing these peers (Bannister & Newman, 2003; Lucian Bebchuk & Fried, 2002; John Bizjak et al., 2011; M. Faulkender & Yang, 2012). The second precaution to handle biased benchmarking is hiring an independent compensation consultant who works directly with the Board and who does not render other services to the same focal company (Martin J. Conyon et al., 2009; Kevin J. Murphy & Sandino, 2010).

Another issue in the practice is that companies never accept to pay their CEOs at the median level or lower than the median of their peer groups, which causes Lake Wobegon (Ratchet) Effect. For example, 40% of the companies specified that they aimed to pay their CEOs more than the median of their peers to retain or attract valuable human capital in the market or to make the companies look strong (R. M. Hayes & Schaefer, 2009; Tuna, 2009). None of the companies admits having a CEO below average, so they do not want to pay below or even at the median of the benchmarks (R. M. Hayes & Schaefer, 2009). They usually pay their managers at the 75th percentile, which ratcheted up the pay for all CEOs (Jurow et al., 2009). For instance, in the USA, it is noted that Boards choose to create CEO packages targeted from 50th to 90th percentiles of their compensation peer group. Targeting below the 50th percentile is rarely done because it signals lack of performance or talents (Elson & Ferrere, 2013). However, it is not possible that all CEOs are extraordinary or above the average. The boards and compensation committees have to be more realistic while evaluating their CEOs against their peers.

Peer groups should be selected through a systematic method. The process of screening peers is a demanding job, and it depends on multiple criteria. In the literature, scholars have already identified some key factors in forming unbiased and accurate peer groups instead of 'cherry-picking.' Mercer (2009) introduced four criteria as seen in the triangle below. If the focal firm is publicly traded, the peer group has to contain listed firms. Then, the peers should be screened for the same sector, size, and business characters. "By character, they mean factors that relate to a company's business model, operations, or organizational structure., e.g., distribution channels utilized, value proposition to customers for a business model,

and asset intensity or the degree of outsourcing for operations structure“ (Mercer, 2009).



Source: Mercer, Pay-for-Results, pg.119

Figure 17: Triangle for Screening Peer Groups

In addition, Hilb (2005) stressed the following steps for proper benchmarking. The first step concerns firm characteristics similar to focal (disclosing) firms: peer groups in the same *sector*, the same *size*, and similar firm *performance*. The second step is about the *CEO's characteristics* and *the structure of the compensation contracts*. CEO in the disclosing firm should have similar position and responsibilities with the ones at peers. For instance, CEO duality, CEO tenure in the firm and practice, talents of the CEO, CEO's gender and age are the criteria to be considered before benchmarking. Furthermore, in the ideal case, the structure of the compensation contract of the CEO at the disclosing firm should be similar to that of CEOs at peer companies (Hilb, 2005). Hilb's approach has been supported by other researchers and they even went one step further and took firm strategies and firm risk levels into account (M. Faulkender & Yang, 2012; Gong, Li, & Shin, 2011; Kim et al., 2015; Laschever, 2013). Even though Hilb's two-step approach is an ideal scenario for choosing the peers, in this paper only first step (sector-size-

performance benchmarking) approach is utilized due to time constraints, consistent with Bizjak et al. (2008), Faulkender and Yang (2010), Bizjak et al. (2011), Gong et al. (2011), Albuquerque et al. (2013), and Cadman and Carter (2014). On the other hand, in this paper, the model is controlled for *CEO's characteristics*, e.g., CEO's tenure, age, nationality, ownership, and duality.

In detail, Kim et al. (2015), Cadman and Carter (2014), Albuquerque et al. (2013), and Faulkender and Yang (2010) used 'sales within 50-200%, assets within 50-200%, and market cap within 50-200%' as a proxy for firm size. Afterwards, the size matched peers were analyzed further for the performance proxies, such as 'ROA within 50-200%' and 'book-to-market ratio within 50-200%' (John Bizjak et al., 2011; Cadman & Carter, 2014). In addition to academicians, practitioners also accepted sales, asset, and market cap as a proxy for firm size, but with a different percentage range. For instance, Meridian and Glass Lewis compensation consultancy companies in the USA included the peers having a size range from 1/3 to 3 times the target company's size (within 33-300%). On the other hand, Institutional Services Shareholders (ISS) defined the range from 40% to 250% (Meridian Compensation Partners, November 2011; Sowinski, 2013). In this paper, a generally accepted range of 50-200% is utilized, which is consistent with the literature.

Another significant issue is how many peers are adequate for proper benchmarking and whether international peers should be picked or not. Even though there is no magical number, in practice there is a tendency to select 10-30 companies as a peer group (Meridian Compensation Partners, November 2011). On the other hand, ISS Consulting company stated that "company's peer group contains 14-24 companies based on their experiences" (Sowinski, 2013). In line with ISS, Bizjak, et al. (2011) reported an average size of 14 firms in the peer group. Kim et al. (2015), Albuquerque et al. (2013), and Faulkender and Yang (2010) had an average size of 5, 17, and 18 peer groups in their studies, respectively. In this paper, the average number of firms in the peer groups is 5.

For the international benchmarking, Swiss consultants advised that CEOs in Swiss firms should not be benchmarked against those outside Switzerland unless they are international or multinational firms (Gaemperli, 2013). For instance, in the current literature, researchers have focused on the American market, and they have selected only American peer companies. In this paper, both international and local peers are gathered for the focal firms having a foreign sale that is an indication of internationality, so tax and cost of living effects on CEO's compensation (real disposable income) are calculated. This approach of the paper has also been approved by the compensation expert, Mr. István Lajtai (Hostettler & Partners AG/HKP Group) who supported me with his expertise in executive compensation and with the review of my peer group selections.

Finally, the association between CEO's pay at the focal firm and that at the peer firm was investigated by Aggarwal & A. Samwick (1999), Shin (2009), Yang and Yang (2009), Frydman & Jenter (2010), Faulkender and Yang (2012), and Laschever (2013). It is found that the peer group comparison (benchmarking) is a significant predictor of the CEO compensation at focal firms.

Corporate governance factors are examined as a control variable, not as a moderator in the previous studies (J. Bizjak et al., 2008; Michael Faulkender & Yang, 2010). Bizjak et al. (2008) revealed that "peer group benchmarking was more related to economic variables than management entrenchment and corporate governance factors." In contrast, Faulkender and Yang (2010) concluded that if the CEO was the chairperson of the board (CEO duality), and CEO had a longer tenure in the firm, then CEO had more power to manipulate the peer groups. To the best of my knowledge, only one scholar tested the moderating effect of corporate governance variables on the link between CEO's pay at focal and that at peer firms (Shin, 2008, 2009). Shin (2009) found a significant positive interaction between CEO base pay at peers and CEO duality and size of the compensation committee. In other words, CEO duality and size of the compensation committee were positively moderating the relationship between benchmarks and focal firms. It depends on the logic that "firms with CEO duality and with bigger compensation committees pay their CEOs higher than their peers because CEO duality would

induce more managerial power over the board, and a bigger compensation committee would be less capable of counteracting CEOs' demands for peer comparisons (Shin, 2009)." Conversely, no significant interaction was noted for the board independence.

To sum up, peer group benchmarking is a relatively contemporary topic for CEO compensation, especially in the European market because most of the scholars have concentrated on American companies. As a result, this paper fills the gap in the European Corporate Governance literature and the practice in Switzerland.

4. Hypotheses

Based on the theories and the literature review discussed in Section 2 and 3, the following hypotheses are formulated:

Hypotheses regarding Main Effect- Benchmarking:

H₁: Ceteris paribus, CEO's compensation at the focal firm is positively related to the compensation level at peer group (Social Comparison Theory prediction).

Hypotheses regarding Moderators:

H₂: Ceteris paribus, **corporate governance** factors moderate the link between total CEO compensation at the focal firm and that at peer companies (Agency Theory prediction).

H_{2.1}: **Large boards** (board size) are positively moderating the relationship between focal firm's total CEO compensation and its benchmark (peer group compensation), all else equal.

H_{2.2}: **High independence in boards** (board independence) is positively moderating the association between focal firm's total CEO compensation and its benchmark (peer group compensation), all else equal.

H_{2.3}: **CEO Duality** is negatively moderating the nexus between focal firm's total CEO compensation and its benchmark (peer group compensation), all else equal.

5. Methodology

5.1 Sample and Data Collection

The sample firms were identified from UBS 100 Index, which comprises the 100 most highly capitalized companies of Swiss Stock Exchange (SIX, 2015a). After subtraction of the companies with missing values for some of these variables, 91 companies or 364 firm-year observations left. The data was a panel data because it covered the observation of the firms from 2010 to 2013 (4 consecutive years). The CEO compensation at focal and peer firms, CEO characteristics, and Corporate Governance variables were hand-collected from annual reports on the web page of each company. Firm performance, leverage, and firm size were gathered from Thomson One Banker database.

5.2 Model, Variables/Definitions, and Method

The equations were constructed via firm fixed regression as follows:

Model and Formula

For Model 1:

$$\text{LN (Total CEO Compensation)}_t = \beta_0 + \beta_1 \text{LN(Peer Compensation-Continuous)}_t + \beta_2 \text{Peer Compensation-Dummy}_t + \beta_3 \text{TSR}_t + \beta_4 \text{EPS}_t + \beta_5 \text{ROA}_t + \beta_6 \text{Peer Disclosure in Annual Report}_t + \beta_7 \text{Percentage of Institutional Ownership}_t + \beta_8 \text{Leverage}_t + \beta_9 \text{Firm Size}_t + \beta_{10} \text{CEO Age}_t + \beta_{11} \text{CEO Tenure in firm}_t + \beta_{12} \text{CEO Tenure as Manager}_t + \beta_{13} \text{CEO Nationality}_t + \beta_{14} \text{CEOs Ownership}_t + \beta_{15} \text{Existance of Compensation Comm}_t + \beta_{16} \text{Perc of Foreign BOD Members}_t + \beta_{17} \text{Board size}_t + \beta_{18} \text{Perc of Indep member in BOD}_t + \beta_{19} \text{CEO Duality}_t + \alpha + u_{it}$$

For Model 2- with interaction variables:

$$\text{LN (Total CEO Compensation)}_t = \beta_0 + \beta_1 \text{LN(Peer Compensation-Continuous)}_t + \beta_2 \text{Peer Compensation-Dummy}_t + \beta_3 \text{TSR}_t + \beta_4 \text{EPS}_t + \beta_5 \text{ROA}_t + \beta_6 \text{Peer Disclosure in Annual Report}_t + \beta_7 \text{Percentage of Institutional Ownership}_t + \beta_8 \text{Leverage}_t + \beta_9 \text{Firm Size}_t + \beta_{10} \text{CEO Age}_t + \beta_{11} \text{CEO Tenure in firm}_t + \beta_{12} \text{CEO Tenure as Manager}_t + \beta_{13} \text{CEO Nationality}_t + \beta_{14} \text{CEOs Ownership}_t + \beta_{15} \text{Existance of Compensation Comm}_t + \beta_{16} \text{Perc of Foreign BOD Members}_t + \beta_{17} \text{Board size}_t +$$

$$\beta_{18}\text{Perc of Indep member in BOD}_t + \beta_{19}\text{CEO Duality}_t + \beta_{20}\text{LN(Peer Compensation-Continuous)*Board size}_t + \beta_{21}\text{LN(Peer Compensation-Continuous)*Perc of Indep member in BOD}_t + \beta_{22}\text{LN(Peer Compensation-Continuous)*CEO Duality}_t + \alpha + u_{it}$$

In addition to the models, formulas for peer group selection and the calculation of the real disposable income are listed below:

For Formula of Peer Selection:

‘Industry-Size-Performance Peer Groups’ Selection= match **Sector** (SIX Industry definition³⁰ and/or SIC two-digit industry code³¹) + match Firm **Size** (Year End Market cap and Sales within 50-200%) + match Firm **Performance** (ROA within 50-200%)

As discussed in the literature review section, the formula and ranges (%) were derived from the previous research of Kim et al. (2015), Cadman and Carter (2014), Albuquerque et al. (2013), Faulkender and Yang (2010), Bizjak et al. (2011), Gong et al. (2011), and Bizjak et al. (2008).

As a recent study of Faulkender and Yang (2012) argues that “peer manipulation (cherry-pick selection) in the focal firms has become more severe over time to justify their greater CEO pays” (A. M. Albuquerque et al., 2013). Therefore, researchers have to be more critical when examining the peers disclosed on the focal firms’ annual reports, and they have to select international and local peers through a systematic method.

In this paper, as disclosed in the formula above, by using Thomson One Banker’s peer group screen, publicly traded international firms were filtered based on same SIC two-digit industry codes, then potential peers were matched for firm size and then for firm performance. Sales within 50-200% and market cap within 50-200%’ were the proxies for firm size and ‘ROA within 50-200%’ was the proxy for firm performance. For the local peers, the same formula was also utilized with SIX

³⁰ SIX Industry definitions were also utilized while matching with local peers.

³¹ SIC two-digit industry codes were used while matching with international peers.

industry definitions, and manual matching results were considered in addition to Thomson One Banker database.

The international peers were chosen only if the focal firms had foreign sales because the foreign sale was one of the criteria for the internationalization based on international management literature (Autio, Sapienza, & Almeida, 2000, p. 916; Kuivalainen, Sundqvist, & Servais, 2007, p. 256; Sullivan, 1994, p. 331). Then, the potential international peers from the geographical area where focal firms' foreign sales intensified were also in the scope as well as other international benchmarks.

For Formula of Real Disposable Income of CEO at Focal and Peer Companies:

Real Disposable Income of CEO = ((Compensation*Currency Rate)/CPI_{based 2010})*(1-tax rate)

By calculating real disposable income, the impacts of the cost of living and tax rates on CEO compensation at focal and peer firms were omitted, and they became comparable to each other. In simpler terms, apples were compared to apples, instead of oranges.

In detail, all currency rates were converted from the original currency to Swiss Franc (CHF). The currency rates were obtained from the web page of Oanda (www.oanda.com). Consumer Price Index (CPI) or cost of living index by country was available on the web page of www.numbeo.com/cost-of-living/rankings_by_country.jsp?title=2010. Individual income tax rate by country was collected from KPMG web page (www.kpmg.com/global/en/services/tax/tax-tools-and-resources/pages/individual-income-tax-rates-table.aspx).

Variables/Definitions

1. Dependent Variables

The dependent variable is the real disposable income of the CEO at the focal firm, which was calculated based on total CEO compensation. Total compensation is

made up of salary, short-term bonus, long-term bonus or loyalty bonus, social security or pension contribution, other benefits (payment in-kinds), and incentives (stock options, share-based awards, LTIP, restricted or conditional Stock Awards).

Consistent with previous scholars (Chhaochharia & Grinstein, 2009; M. Faulkender & Yang, 2012; Sun & Cahan, 2009), ‘natural log (Ln) of real disposable income of the CEO at focal firm’ was employed as a dependent variable because of its two advantages: (1) it provides normal distribution, which is the main assumption of the regression analysis, (2) it can reduce the difference in the magnitude of compensation across companies, so it alleviates the effects of heteroscedasticity” (Sun & Cahan, 2009). The dependent variable was formulated as ‘Ln(Real Disposable of CEO Compensation_{at focal firm})’.

2. Independent Variables

The independent variable is the real disposable income of the CEO at the peer firm, which was calculated based on the median of CEOs’ total compensations at the peer group. “The median is superior to a mathematical average (mean) of the compensation of peer group executives because use of the mean can distort the so-called average for peer group executive compensation if there are members in the peer groups who have either exceedingly high or low compensation levels. Median (a middle number of the series) avoids the distortion caused by executive compensation outside the normal range (Lipman & Hall, 2008)”. For instance, in practice and academy, various researchers also preferred median to mean (J. Bizjak et al., 2008; Michael Faulkender & Yang, 2010; Stern, 2003, Oct 17, 2014; R. Yang & Yang, 2009). To handle the issues of non-normality and heteroscedasticity that were discussed above, natural log (Ln) of the independent variable was used. Finally, the independent variable was formulated as ‘Ln(*Median* of Real Disposable of CEO Compensation_{at peer group})’, and it was labeled as ‘peer compensation- continuous variable’ in Tables 37 and 38’.

In addition to a continuous variable (value in CHF), a dummy variable for peer compensation (value as 1 or 0) was added to the model, based on the previous

research of Yang and Yang (2009). That is, if the executive compensation at the focal firm is above the median of the peer group, it was coded as ‘1’, otherwise ‘0’.

3. Moderators

Corporate Governance factors were classified as moderators. Corporate Governance variables were defined as board size, board independence, and CEO duality after the detailed review of the literature (J. Bizjak et al., 2008; Michael Faulkender & Yang, 2010; Shin, 2009; R. Yang & Yang, 2009).

Board Size:

Board size was measured as the total number of board of directors at the company.

Percentage of Independent Board Members:

Percentage of independent (non-executive) members was gauged as the ratio of non-executive board members to the total number of board members.

CEO Duality:

The variable of CEO duality was a binary variable, and CEO duality exists when a firm’s CEO is also a chairperson of the board. “1” indicates CEO duality and ‘0’ means no-CEO duality.

4. Control Variables

This model was controlled for 14 variables regarding CEO and firm characteristics, the percentage of foreign board members, and the existence of compensation committee. The control variables entered into the model were determined after a rigorous analysis of the literature. CEO characteristics were made up of CEO age, tenure in the firm, tenure as manager, nationality, and ownership. Firm attributes were firm size, leverage, the percentage of institutional ownership, the existence of peer group disclosure in the annual reports, and firm performance (Return on Asset, Earning per Share, and Total Shareholder Return). The definition of each control variables was given in Table 32 below.

Control Variable	Definition
Firm Characteristics	
Return on Asset (ROA) ¹	Net Income/Total Assets
Earnings Per Share (EPS) ¹	Net Income/Outstanding share of the company's stock
Total Shareholder's Return (TSR) ¹	(Price end-Price begin)/Price begin
Firm Size ¹	LN(Total Asset)
Institutional Ownership ²	Percentage of Institutional shareholders
CEO Characteristics and others	
CEOAge ²	Age of the CEO (Year of Birth)
CEO Tenure in firm ²	CEO's tenure in the firm
CEO Tenure as Manager ²	CEO's tenure as a senior manager
CEOs Ownership ²	CEO's percentage of ownership in the firm
CEO Nationality ²	CEO nationality (Dummy Variable, 1: Swiss, 0: Non-Swiss)
Existence of Compensation Comm ²	Existence of the compensation committee (Dummy Variable, 1: Exists, 0: Otherwise)
Perc of Foreign BODMem ²	Percentage of non-Swiss (foreign) board members (the ratio of Non-Swiss board members to total board members)
Corporate Governance Control Variables (BOD and Committee Characteristics)	
CEODuality ²	CEO duality (Dummy Variable, 1: if Duality exists, 0: otherwise)
Board Size ²	Number of board members
Perc of Indep Member in BOD ²	Percentage of non-executive board members (the ratio of non-executive board members to total board members)

¹ from ThomsonOne Banker ²from Annual Report

Table 32 – Definition of Control Variables

Method

OLS regression is vulnerable to endogeneity which is made up of omitted variable bias, measurement error, and simultaneity or reverse causality (Guse, 2003; ucl.ac.uk, 2008; Waldinger). On the other hand, panel data regression, especially Fixed Effects regression, absorbs endogeneity problem (R. B. Adams & Ferreira, 2009; Baltagi, 2012). Because this paper had multiple observations for each firm (364 firm-year observations) from 2010 to 2013 and OLS has some shortcomings for the panel data sample, the hypotheses were tested by fixed effects regression. “In the panel data, the observations are not independent, so this may display different associations between independent and dependent variables across cross-sectional units and this may have dissimilar variances across cross-sectional units

(S R Gray & Cannella, 1997).” Kim et al. (2015), Laschever (2013), and Shin (2008, 2009) also implemented the same method in their studies, namely fixed effect panel data regression.

To determine the appropriate panel data technique (fixed or random effect), Hausman test in Stata program was run. The significant p-value ($p < 0.05$) urged me to select firm fixed effect regression (Princeton, 2007; Torres-Reyna, 2007; Woolridge, 2001). Besides this, ‘testparm’ syntax of Stata tested the need for time fixed effect. If the p-value is above 0.05, so it failed to reject the null hypothesis that all years’ coefficients are jointly equal to zero. In other words, time fixed effect is *not* needed (Torres-Reyna, 2007).

According to Torres-Reyna (2007), “fixed effect explores the relationship between independent and dependent variables within an entity. Each entity has its individual characteristics that may or may not influence the independent variable. In the fixed effect, it is assumed that something within the entity may affect or bias the independent or dependent variables, and it is needed to be controlled.”

(Firm) Fixed Effect Regression (Torres-Reyna, 2007): $Y_{it} = \beta X_{it} + \alpha_i + u_{it}$

Where

- Y_{it} is the dependent variable (DV) where i = entity and t = time.
- X_{it} represents one independent variable (IV),
- β is the coefficient for that IV,
- α_i is the unknown intercept for each entity,
- u_{it} is the error term,

6. Findings

6.1 Descriptive Statistics³²

Table 33 reports that the volunteer peer group disclosure in their annual reports increased from 16% in 2010 to 27% in 2013 at the top 100 companies quoted on Swiss Stock Exchange. The scholars suggest that companies should disclose their peer groups and their methodology for choosing peer groups in annual reports,

³² The list of the author’s selection of peer groups for each sample firm, which is already reviewed by Mr. Lajtai at Hostettler and Partners AG, is available on demand. The contact detail of the author is mehtap.aldogan@unisg.ch

which increases the transparency and copes with cherry-picked or biased peer group selection (A. M. Albuquerque et al., 2013; Lucian Bebchuk & Fried, 2002; M. Faulkender & Yang, 2012).

Year	Percentage of Top 100 Firms Disclosed their Peer Groups on the Annual Reports³³
2010	16%
2011	18%
2012	23%
2013	27%

Table 33– Percentage of Top 100 Firms (Voluntarily) Disclosed their Peer Groups on the Annual Reports

As already discussed as “Lake Wobegon (Ratchet) Effect” in Section 3 of literature review, companies are not fond of paying their CEOs below or at the median of the peer groups because they believe that it signals worse performance or lack of talents (Elson & Ferrere, 2013), which is also true for Switzerland and which is evident in Table 34 and Charts 3 and 4.

Year	Percentage of Top 100 Firms Paid above the Median of their Peers
2010	86%
2011	86%
2012	85%
2013	93%

Table 34– Percentage of Focal Firms paying their CEOs above the median of the Peer Groups

Table 34 provides the percentage of the firms paying their CEOs above the median of the peer group. In 2010, 86 percent of the top 100 Swiss companies paid higher than their peers, and it increased to 93 percent in 2013.

Charts 3 and 4 visualize the situation in 2013 for 100 Swiss firms and top 50 SMI & SMIM companies, respectively. Blue lines show the total executive

³³ The names of the focal companies which voluntarily disclosed their peers on their annual reports and their peer groups are also available on demand.. Please do not hesitate to contact the author.

compensation at the focal firm and the red lines indicate total compensation at peer group that is the median of peers in the group.

As disclosed on Chart 3, only EMS-Chemie Holding AG, Helvetia Holding AG, Kuoni Reisen Holding AG, Lonza Group AG, Partners Group Holding, and SGS SA paid below the median of the peer group in 2013. The rest were above the median. In other words, for the year of 2013, 6 companies paid below the median and 85 firms paid above the median (in total= 91 sample). Table 35 emphasizes the “Lake Wobegon (Ratchet) Effect” and it shows that 37 out of 85 focal firms paid their CEOs more than twice (200%)³⁴ of the median of the peers. As reported in the last column in Table 35, Aрызta AG, Banque Cantole Vaudoise, OC Oerlikon Corp. AG, Kaba Holding AG, Actelion Limited, Kuehne and Nagel (Kuehne + gel Intertiol), Siegfried Holding AG, Kudelski SA, Julius Bar Gruppe AG, and Basilea Pharmaceutica AG were the top 10 companies which paid tremendously high total compensation to their CEOs in 2013, compared to upper range (200%) of the median of the peers.

Table 36 presents the descriptive statistics for some key variables. The mean (average) of the total compensation at focal firms between 2010 and 2013 was 3,125,730 CHF and that at the peer group was 1,756,134 CHF. The minimum age of a CEO was 36, and the maximum was 69. The average board size was 8. For the independence of the boards, Swiss companies had no issues with independence because even the minimum level of independence was 50%. In the worst case scenario, half of the board members were non-executive members. The average internationality in Board seats (foreign or non-Swiss board members) was 31%.

³⁴ The logic of the range (200%) was already explained in the literature review- Section 3.

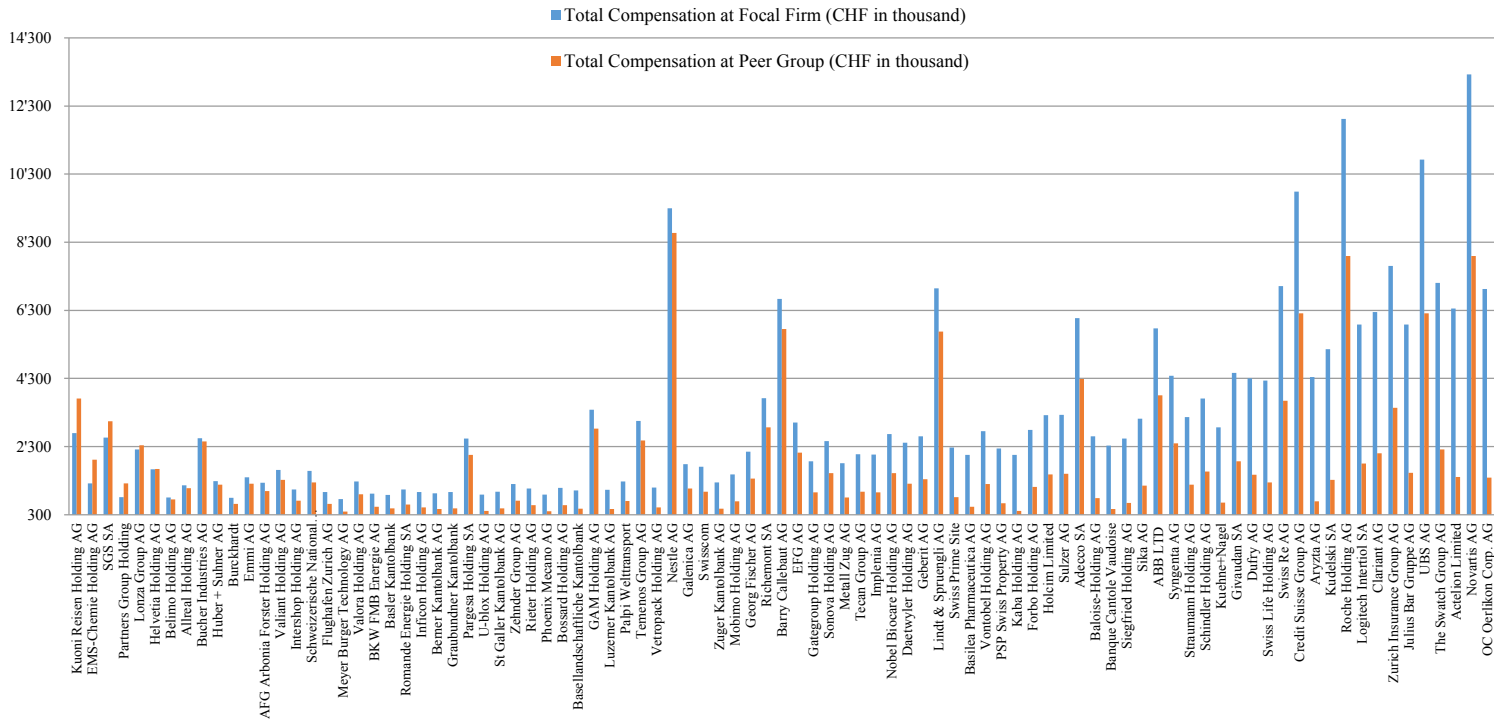


Chart 3* – Comparison of Total Compensation at Focal Firm with that of Peer Firm, Year 2013- Top 100 Swiss Firms**

*: Listed based on the **differences** between total compensation at focal firm and at its peers, **from smallest to largest**.

**.: The sample firms were identified from UBS SA Index, which comprises the 100 most highly capitalized companies of Swiss Stock Exchange. After subtraction of the companies with missing values, 91 companies were left.

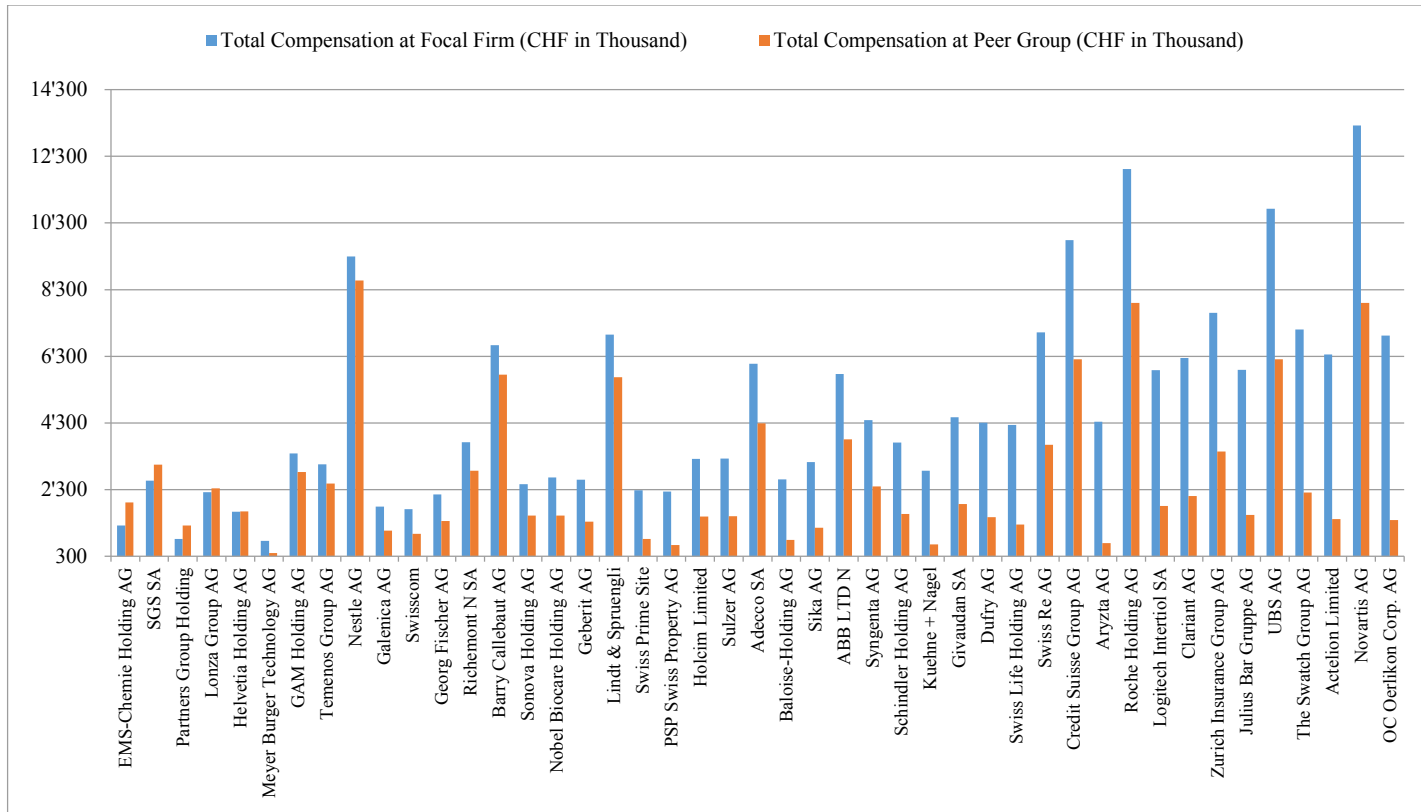


Chart 4* – Comparison of Total Compensation at Focal Firm with that of Peer Firm, Year 2013- SMI and SMIM Index Firm**

*: Listed based on the **differences** between total compensation at focal firm and at its peers, **from smallest to largest**.

** : After subtraction of the companies with missing values, 45 companies were left.

	Firm name	Total Compensation at Focal Firm (CHF)	Total Compensation at Peer Group (CHF)	Twice (200%) of the Total Compensation at Peer Group (CHF)	Percentage More than Twice (above 200%) of the Median of Peer Group
1	Aryzta	4,339,000	690,469	1,380,939	214%
2	Banque Cantale Vaudoise	2,333,232	466,095	932,191	150%
3	OC Oerlikon Corp.	6,923,000	1,386,574	2,773,147	150%
4	Kaba Holding	2,053,102	413,241	826,481	148%
5	Actelion Limited	6,355,848	1,409,231	2,818,461	126%
6	Kuehne + Nagel	2,864,000	657,076	1,314,151	118%
7	Siegfried Holding	2,531,667	645,341	1,290,683	96%
8	Kudelski SA	5,163,870	1,324,934	2,649,869	95%
9	Basilea Pharmaceutica	2,054,567	535,384	1,070,767	92%
10	Julius Bar Gruppe	5,888,057	1,533,718	3,067,436	92%
11	PSP Swiss Property	2,240,000	634,101	1,268,202	77%
12	Swiss Life Holding	4,239,729	1,250,470	2,500,940	70%
13	Baloise-Holding	2,605,060	784,544	1,569,087	66%
14	Logitech	5,879,805	1,804,432	3,608,864	63%
15	The Swatch Group	7,107,597	2,214,483	4,428,965	60%
16	Clariant	6,252,343	2,102,132	4,204,264	49%
17	Dufry	4,307,700	1,469,061	2,938,122	47%
18	Swiss Prime Site	2,275,000	816,027	1,632,054	39%
19	Sika	3,120,000	1,155,738	2,311,476	35%
20	Straumann Holding	3,168,000	1,183,005	2,366,009	34%
21	Zuger Kantolbank	1,251,000	476,151	952,302	31%

22	Forbo Holding	2,793,304	1,119,977	2,239,954	25%
23	Givaudan	4,465,946	1,866,208	3,732,416	20%
24	Schindler Holding	3,709,000	1,567,894	3,135,788	18%
25	Vontobel Holding	2,756,100	1,197,665	2,395,330	15%
26	Metall Zug	1,813,227	808,777	1,617,554	12%
27	Phoenix Mecano AG	890,000	397,453	794,906	12%
28	Zurich Insurance Group AG	7,600,000	3,436,821	6,873,643	11%
29	Luzerner Kantolbank	1,030,417	466,575	933,151	10%
30	u-blox Holding	887,000	406,333	812,667	9%
31	Holcim Limited	3,219,414	1,487,362	2,974,725	8%
32	Implenia	2,069,000	958,936	1,917,872	8%
33	Sulzer	3,230,000	1,497,649	2,995,299	8%
34	Vetropack Holding	1,100,472	510,257	1,020,514	8%
35	Mobimo Holding	1,482,000	693,383	1,386,766	7%
36	Tecan Group	2,073,000	975,416	1,950,832	6%
37	Basellandschaftliche Kantolbank	1,013,897	480,596	961,192	5%

Table 35–Total Compensation at Focal Firm above twice of Total Compensation at Peer Group, Year 2013- Top 100 Swiss Firms

Variable	Obs	Mean	Std. Dev.	Min	Max
Total Compensation at Focal Firm (y)	359	3,125,730	2,781,041	488,241	15,700,000
Total Compensation at Peer Group (x)	364	1,756,134	1,733,591	312,000	9,774,393
CEO Age	347	53.29	5.92	36	69
Board Size	364	8.30	2.74	3	20

Percentage of Independent BOD Members	364	94%	11%	50%	100%
Percentage of Foreign BOD Members	360	31%	29%	0	100%

Table 36– Descriptive of the Variables

Table 37 shows the correlation between variables. It was found that CEO compensation at the disclosing (focal) firm was positively and significantly correlated with peer group compensations (continuous and dummy variable), peer disclosure at annual reports, firm size, the existence of compensation committee, the percentage of foreign board members, board size, and CEO duality. On the other hand, it was positively correlated with CEO age merely at 10 percent level. Unexpectedly, a significant negative correlation was noted between CEO compensation at focal firm and CEO nationality (Swiss=1; 0=otherwise).

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	1.00																
2	0.77*	1.00															
3	0.26*	-0.14*	1.00														
4	0.04	-0.02	0.09	1.00													
5	0.11	0.14†	0.04	0.00	1.00												
6	-0.07	0.03*	-0.20*	0.10*	0.09*	1.00											
7	0.40*	0.41*	0.00	0.00	-0.11†	-0.17†	1.00										
8	0.09	0.10*	-0.05	0.06	-0.15*	-0.07	0.13*	1.00									
9	0.01	0.02	0.03	-0.11†	-0.02	-0.39*	0.07	-0.09*	1.00								
10	0.52*	0.50*	0.05	-0.08	-0.04	-0.36*	0.30*	-0.09	0.66*	1.00							
11	0.14†	0.03	0.25*	0.02	0.02	-0.09†	-0.07†	-0.07†	-0.11*	-0.01	1.00						
12	-0.08	-0.07	-0.08	-0.06	0.28*	0.16*	-0.18*	-0.16*	-0.13*	-0.21*	0.18*	1.00					
13	-0.02	-0.06	0.06	-0.04	0.08	0.04	-0.14*	-0.03	-0.15*	-0.16*	0.54*	0.33*	1.00				
14	-0.49*	-0.51*	0.03	-0.09†	0.12*	0.04	-0.26*	-0.16*	0.11*	-0.20*	-0.02	0.07†	0.09	1.00			
15	-0.03	-0.13†	0.04	-0.07†	0.03	0.03	-0.10†	-0.11†	-0.09	-0.19*	0.18	0.32*	0.17*	0.11*	1.00		
16	0.20*	0.19*	-0.06	-0.05	-0.02	0.01	0.10	-0.08	0.03	0.14*	0.20*	-0.02	0.13*	0.02	0.03	1.00	
17	0.59*	0.51*	0.03	0.07†	-0.08	-0.05	0.44*	0.23*	-0.17*	0.16*	0.04	-0.06	-0.07	-0.68*	-0.08	0.09	1.00

Table 37 - Correlation Table

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
18	0.45*	0.40*	0.11*	-0.07	-0.11*	-0.15*	0.19*	-0.12	0.26*	0.61*	0.23*	-0.17	-0.03	-0.33*	-0.14	0.25*	0.30*	1.00		
19	-0.02	0.04	0.17	-0.01	-0.07	-0.22*	0.03	0.05	0.26*	0.29*	-0.06	-0.21*	-0.11	0.04	-0.16*	0.03	-0.19*	0.09	1.00	
20	0.07*	-0.01	-0.09	-0.03	0.14*	0.16*	-0.13*	0.02	-0.32*	-0.23*	0.21*	0.28*	0.23*	-0.11	0.28*	-0.04	0.20*	-0.02	-0.67*	1.0

*: Significant at the 5 percent level. †: Significant at the 10 percent level

Legend: 1. LnTotalCompensation (TC) at Focal Firm, 2. Peer Compensation (Continuous Variable), 3. Peer Compensation (Dummy Variable), 4. TSR, 5. EPS, 6. ROA, 7. Peer Disclosure at Annual Report, 8. Perc of Insitut Ownership, 9. Leverage, 10. Firm Size, 11. CEO Age, 12. CEO Tenure in Firm, 13. CEO Tenure as Manager, 14. CEO Nationality, 15. CEOs Ownership, 16. Existence of Compen.Comm, 17. Perc of Foreign BOD, 18. Board Size, 19. Perc of Indp BOD, 20. CEO Duality

Table 37 - Correlation Table (continuing)

6.2 Statistics on Main Effect

Table 38 reports the results of the fixed effect models used to test hypotheses 1 and 2, regarding the influence of peer group compensation on the total compensation of the focal company. Model 1 (base model) represents results of the control variables. As expected, existence of the compensation committee (b:0.11, Beta:0.02, p:0.03) and CEO tenure in the firm (b:0.02, Beta: 0.13, p:0.04) were positively associated with CEO compensation at the focal firm. Model 2 measures the impact of peer group compensation on the CEO compensation at the focal firm. It was concluded that peer group compensation (both in CHF b:0.29, Beta:0.28, p:0.00 and in dummy variable b:0.67, Beta:0.26, p:0.00) was a significant predictor of total CEO compensation at the focal firm, providing strong support for Hypothesis 1. In other words, consistent with Social Comparison Theory, CEO compensation at the focal firm is positively (comparable) related to compensation level at peer group.

	Dependent Variable: LN(Total Comp)			
Independent Variable	Model 1 (Base Model)	Model 2	Model 3	Model 4 Endogeneity Check
Lagged Dependent Var.	-	-	-	-0.14* [2.28]
Peer Compensation (Continuous Variable)	-	0.29** Beta: 0.28 [2.99]	0.35** [3.38]	0.37** [3.69]
Peer Compensation (Dummy Variable)	-	0.67** Beta: 0.26 [4.65]	0.68** [4.70]	0.62** [4.15]
TSR	0.00 [0.08]	-0.00 [0.03]	-0.00 [0.00]	-0.00 [0.17]
EPS	0.00 [0.16]	0.00 [0.02]	0.00 [0.11]	0.00 [0.18]
ROA	0.41 [0.88]	0.54 [1.34]	0.49 [1.13]	0.60 [1.29]
Peer Disclosure at Annual Report	0.05 [0.48]	0.01 [0.15]	0.00 [0.06]	-0.03 [0.37]
Perc of Insitut Ownership	-0.35 [1.28]	-0.14 [0.49]	-0.14 [0.47]	-0.26 [0.86]

Leverage	-0.03 [1.34]	-0.02 [0.96]	-0.02 [1.40]	-0.01 [0.92]
Firm Size	0.04 [0.23]	0.03 [0.17]	0.04 [0.29]	0.03 [0.21]
CEO Age	-0.01 [0.95]	-0.01 [0.85]	-0.01 [0.77]	-0.00 [0.40]
CEO Tenure in Firm	0.02* Beta:0.13 [2.09]	0.01** Beta: 0.11 [3.49]	0.02** [3.13]	0.02** [2.83]
CEO Tenure as Manager	0.01 [0.67]	0.01 [1.06]	0.01 [1.11]	0.01† [1.78]
CEO Nationality	0.16 [1.17]	0.10 [0.99]	0.13 [1.26]	0.11 [0.93]
CEOs Ownership	2.70 [1.59]	2.82† Beta: 0.11 [1.84]	2.40† [1.85]	2.31† [1.75]
Existence of Compen. Comm	0.11* Beta: 0.02 [2.23]	0.13** Beta: 0.03 [2.82]	0.17** [3.23]	0.18** [3.28]
Perc of Foreign BOD	0.17 [0.51]	0.06 [0.24]	-0.01 [0.05]	0.09 [0.32]
Board Size	-0.05 [1.47]	-0.04 [1.15]	-0.04 [1.47]	-0.05 [1.63]
Perc of Indp BOD	-0.29 [0.96]	-0.25 [0.98]	-0.53 [1.66]	-0.48 [1.43]
CEO Duality	0.00 [0.00]	0.02 [0.21]	0.00 [0.00]	-0.01 [0.06]
Peer Compensation (Continuous Variable)* Board Size	-	-	0.03 [1.27]	0.04 [1.48]
Peer Compensation (Continuous Variable)* Perc of Indp BOD	-	-	-1.19* [2.25]	-1.36* [2.37]
Peer Compensation (Continuous Variable)* CEO Duality	-	-	-0.26† [1.81]	-0.32* [2.10]
Intercept	15.34** [9.33]	10.30** [5.46]	9.44** [4.92]	11.29** [6.40]
Notes:				
Number of Observations:	304	304	304	301
Number of Groups:	78	78	78	78
Adj-R ² :	0.88	0.9112	0.9127	0.9154

Adj-R ² Change:	-	0.03	0.0015	0.0027
F-Statistics:	2.73**	7.60**	6.97**	6.52**
Firm Fixed Effect	Yes	Yes	Yes	Yes
Regression-type	Fixed Effects‡	Fixed Effects‡	Fixed Effects‡	Fixed Effects‡
Robust St Errors:	Yes for heteroskedasticity, but no autocorrelation noted	Yes for heteroskedasticity, but no autocorrelation noted	Yes for heteroskedasticity, but no autocorrelation noted	Yes for heteroskedasti- city, but no autocorrelation noted

Absolute values of t-statistics are in brackets.

Asterisks and dagger indicate significance at 0.01 (**), 0.05 (*), and 0.10 (†) levels.

‡: Hausman test indicates the fixed effects model as an appropriate model. In addition, "testparm" syntax of Stata failed to reject Hnull, so all years coefficients are jointly equal to Zero (0). That is, the time fixed effect is not needed.

Table 38 - Fixed Effects Regression of the Relationship between Total Compensation and Peer Group Compensation

6.3 Statistics on Moderators

“The problems of collinearity and spurious moderation are reduced by increasing sample size and centering the variable (Aiken & West, 1991).” Besides my large dataset, the variables were centered before the interaction variables were calculated. Then, the correlations between the predictor (x), moderator (z), and interaction (xz) variables were checked for collinearity. No multicollinearity issue was noted, so Model 3 with interaction variables was robust and reliable. Model 3 in Table 38 presents the result of Hypothesis 2 regarding the moderation impact of Corporate Governance factors on the nexus between compensation level at the focal firm and that at peers. Board size (b:0.03, p:0.21) was not a significant moderator, so H_{2,1} was not supported. In contrast, board independence and CEO duality were the significant moderators (p<0.10). In detail, on Model 3, the interaction variable of board independence was significant at the 5% level (b:-1.19, p:0.03); however, this effect was not in the expected positive direction. Figure 18 depicted the moderation path diagram for total CEO compensation, peer compensation, and board independence. In short, it was found that higher

independence in the board was negatively moderating the association between focal firm’s total CEO compensation and its benchmark (peer group compensation), all else equal. This significant negative interaction was graphed on Figure 19.

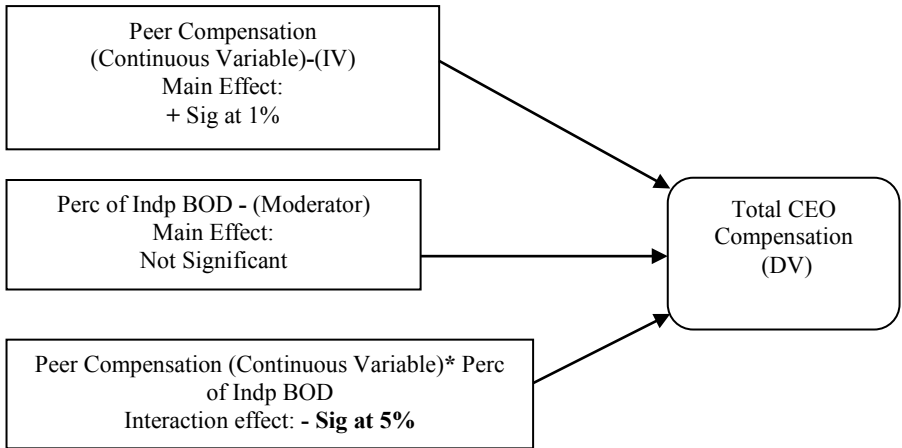


Figure 18- Moderation Path Diagram for Total CEO Compensation, Peer Compensation, and Board Independence³⁵

³⁵To cope with spurious moderation and collinearity, the author has centered the independent and moderator variable before calculating the interaction effect, which is in line with the approach of Aiken and West (1991). Therefore, no multicollinearity was noted between the independent variable, moderator and interaction variable. It presents a robust result.

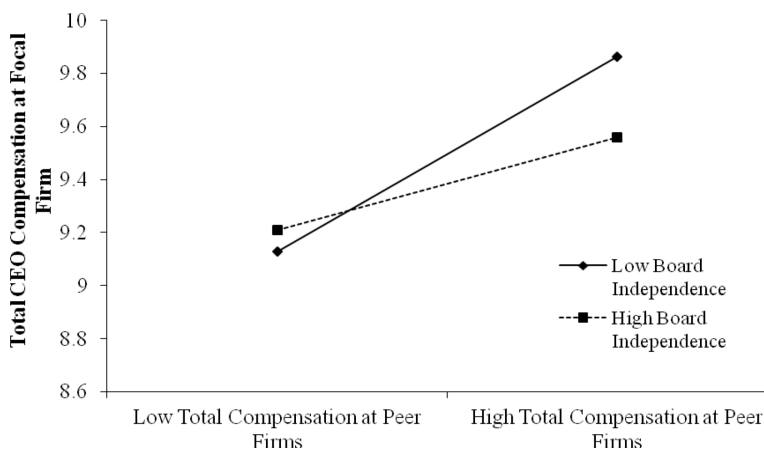


Figure 19- Moderating Effect of Board Independence on the Relationship between Peer Compensation and Total CEO Compensation

This significant negative interaction of board independence could be interpreted based on Figure 19 as follows: at a low level of peer compensation, there was no big difference in the total CEO compensation levels at the focal firm when the board was either highly independent or less (low) independent. Nevertheless, at a high level of peer compensation, independent boards were more conservative than executive members while paying to their CEOs at the focal firm to overcome the public opposition against excessive CEO payments and protect their reputation as objective decision makers (Daily et al., 1998; Shin, 2009).

To the best of my knowledge, Shin (2009) was the only researcher who analyzed the moderating effect of board independence in the relationship between compensation at focal and at benchmarks and he found that board independence was not a significant moderator in the US companies. He interpreted the finding that due to the increased scrutiny of executive directors in recent years, executive directors were also careful like their independent colleagues to keep the positive association between CEO compensation at their firms and compensation at their benchmarks. In simpler terms, executive boards reacted in a similar way with non-executive board members, so no significant variance was noted between them.

Then, as reported in Model 3 in Table 38, CEO Duality ($b:-0.26$, $p: 0.07$) was a significant moderator, so $H_{2,3}$ was supported at the 10% level. Consistent with Agency Theory prediction, CEO duality was negatively moderating the nexus between focal firm’s total CEO compensation and its benchmark (peer group compensation), all else equal. Figure 20 shows the moderation path diagram for total CEO compensation, peer compensation, and CEO duality. This significant negative interaction was graphed on Figure 21.

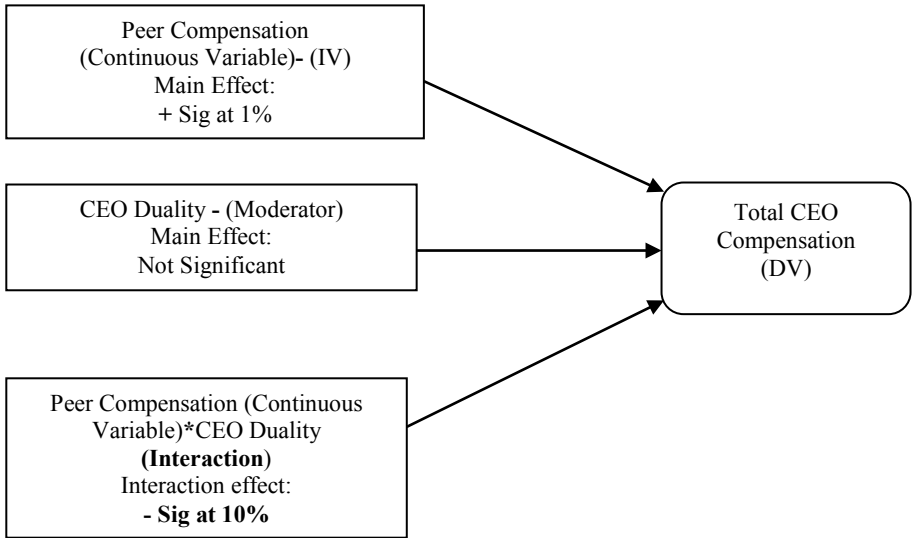


Figure 20- Moderation Path Diagram for Total CEO Compensation, Peer Compensation, and CEO Duality³⁶

This significant negative interaction of board independence could be interpreted based on Figure 21 as follows: at a low level of peer compensation, the focal firms with CEO duality paid their CEOs higher than the focal firms with no-CEO duality, which indicates the managerial power or influence on the board of directors to raise their pay in a lower performance scenario. In addition, at a high

³⁶To cope with spurious moderation and collinearity, the author has centered the independent and moderator variable before calculating the interaction effect, which is in line with the approach of Aiken and West (1991). Therefore, no multicollinearity was noted between the independent variable, moderator and interaction variable. It presents a robust result.

level of peer compensation, focal firms with no-CEO duality retained the desired positive relationship between their compensation and benchmarks.

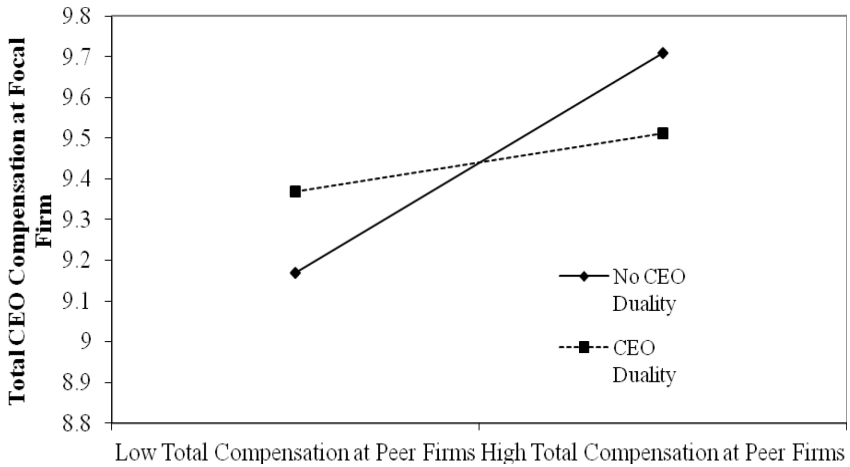


Figure 21- Moderating Effect of CEO Duality on the Relationship between Peer Compensation and Total CEO Compensation

To sum up, the conservatism of independent directors to keep the optimal positive association between CEO compensation at their firms and compensation at their benchmarks, which was seen in Figure 19, disappeared when the CEO was also the chairperson of the board. As a result, companies should avoid CEO duality to keep the desired nexus between CEO compensation at the focal firm and that at peer groups.

6.4 Robustness Checks

In general, the major problems in panel data sets are homoscedasticity and autocorrelation, so Modified Wald test for group-wise heteroskedasticity and Wooldridge test for autocorrelation were carried out. No autocorrelation (p:0.59) was noted in this panel data set, but heteroskedasticity (p:0.00) was present. Accordingly, a fixed effect regression with robust standard errors corrected for heteroskedasticity was run. Normality and multicollinearity of the models were

also checked, and no exception was observed. Besides regression diagnostics, the models' Root Mean Square Errors (RMSE), and results of Linktest and Ovttest (Ramsey Reset) tests were reviewed. RMSEs were low and p-values of Linktest and Ovttests were above 0.05, which indicated that models were free from measurement error and omitted variable bias. In short, the models were properly specified.

Another issue, especially in Corporate Governance Research, is endogeneity or reverse causality. To handle the reverse causality issue, the same technique of previous scholars (J. Bizjak et al., 2008; Bova et al., 2015; C. R. Chen et al., 2006) was implemented in this paper. Consistent with their research, the lagged dependent variable was entered into the 'Model 4-Endogeneity checks' in Table 38 as an additional control because "the logic of this technique is that the lagged dependent variable absorbs the effects of omitted correlated variables and reverse causality, provided they remain relatively stable (Bova et al., 2015, pp. 133-135)". As Bova et al. (2015) stated "the inclusion of lagged dependent variable in the models reduces the possibility that omitted correlated variables or reverse causality are driving the results".

In table 38, the adjusted R^2 in Model 4 with lagged dependent variable increased and the significance level of independent variable (peer group compensation) in Model 4 was not changed (still significant at 1% level), so it was fair to conclude that the results were free from endogeneity or reverse causality, and they were robust.

7. Conclusion and Implication

The public opposition to excessive pay strengthened because the executive compensation has ratcheted up in most of the countries in the world, including Switzerland. Then, scholars and politicians aimed to find an objective and socially comparable compensation scale to cope with excess payment, such as the 1:12 Initiative or the Minder Initiative in Switzerland. Based on the Social Comparison theory, CEO compensation at focal firms should be comparable to and positively

related to compensation level at the peer group because benchmarking removes the impact of market or sector on the company's performance and protects the CEOs from unmanageable risks induced by the market. Consistent with the theory, it was found that there was a significant positive association between the compensation level at the focal firm and that at the peers. It was observed that even though Swiss CEOs were paid under the consideration of their benchmarks, the main concern was how many of the focal firms paid their CEOs more than the median of the peers. Unfortunately, as described in the finding section 6.1, in 2013, 93% of the top 100 Swiss firms paid their CEOs higher than the median of the peers, and even 43% of them paid more than twice the median, which causes a "Lake Wobegon (Ratchet) Effect" in the long run. This result is pretty important for the academicians, practitioners, and regulatory board because it implies biased or 'cherry picked' peer group selection. On this issue, *Economie Suisse* (2014) proposed that "the Compensation Committee should undertake a critical review of the composition of this peer group and the conclusiveness of the comparisons drawn for its own compensation, and it should exclude any companies from the group that would skew the comparative results." In this paper, it is recommended that the Swiss regulators, especially Swiss Stock Exchange Supervisory Authorities, and Swiss Federation, should first formulate new principles about the process of screening the peers and systematic peer group selection methods. Then, they should set new rules for independent consultants or auditors to review peer manipulation and report the result of the review on the companies' annual reports.

For the Corporate Governance variables, it was also reported that independent board members were more conservative at higher levels of peer compensation when paying their CEOs at the focal firm to overcome the public opposition against excessive CEO payments and to protect their reputation as objective decision makers. In addition, CEO duality was negatively moderating the nexus between focal firm's executive compensation and its benchmarks. The moderating effects were another salient part of this paper for the boards and the academicians because it suggests that companies should avoid the CEO duality to keep the desired nexus between CEO compensation at the focal firm and that at peer groups.

Finally, as well as other contributions, it was the first study on this topic in the Swiss market.

8. Limitation and Future Research

Although it is an innovative, rigorous, and relevant study in the area of peer group compensation in Switzerland, every study has some limitations that can be rectified in a future research. First, this paper analyzed the top 100 highly capitalized companies in the Swiss Stock Exchange. Future research can extend the analysis to all publicly traded companies in Switzerland. Second, the international benchmarks were considered and added to the peer group in this paper as a contribution to the literature, whereas the average peer group size was 5. It is advised future scholars to increase the average peer size to 10 – 14 and to compare their results with those of this paper. Third, international peers were chosen based on the focal firms' foreign sales characteristics. Unfortunately, apart from Hong Kong, Asian companies were not transparent enough to disclose their CEOs' compensation, which forced me to add fewer Asian firms in the peer groups due to the missing information. Fourth, the cultural influence on CEO compensation was not taken into account. According to Hilb (2009, pg.17), "organizations and CEO compensation are subject to interrelated spheres of cultural influences, such as national, regional, industry, corporate, professional, and functional cultures". Last, consistent with previous research, the peer group selection criteria in this paper were based on "Sector-Size-Performance" by controlling for CEO age, tenure, nationality, ownership, and duality. Instead of involving CEO characteristics as a control variable, it is suggested academicians to consider them as peer selection criteria, which would end up with more accurate benchmarks. On the other hand, it is a pretty time-consuming activity.

Integration and Conclusion

1. Introduction

This dissertation is concerned with the overall research question of whether CEOs' compensation in Swiss publicly traded companies are financially appropriate or optimal contracts based on the three pillars- (1) pay-for-performance, (2) risk, and (3) peer group comparison (benchmarks), which are developed by Hilb's triangle and FINMA's remuneration schemes on risk.

Past research about pay-for-performance has not reached a consensus. In Switzerland, previous scholars have found contradicting results with different data set and years, and none of them has analyzed all publicly traded firms in Switzerland. Therefore, the real picture is still missing. Paper I aimed to fill this gap in the literature with a recent data set from 2007 to 2013 and to give some explanations for the conflicting results.

Conversely, most of the past studies regarding firm risk and peer group comparison have focused merely on the American market and a few in European companies. To the best of my knowledge, nothing has been published for Swiss firms. As a result, Paper II and Paper III have evidently contributed to academy and practice.

Corporate Governance variables are analyzed as a moderator in all three papers, and most of the previous studies have considered them only as control variables. With this approach, it highlights the significance of Corporate Governance variables to set up financially optimal contracts.

The following parts are integrated as follows: the first part is the summary of each paper. Second, convergent results of the dissertation and its theoretical, methodological, and practical implications are stated. Lastly, limitation and future research are explained.

2. Summary of Individual Paper Results

2.1 Paper I

Paper I investigates the nexus between firm financial performance and CEO's remuneration from the perspective of Agency Theory.

The Paper I has four main hypotheses. H₁ is developed to measure the link between firm financial performance and CEO pay, and H₂, H₃, and H₄ are aimed to examine the moderation effect of Corporate Governance variables:

H₁: Ceteris paribus, a positive relationship exists between accounting and market performances of the firm and CEO compensation. (Agency Theory prediction)

H₂: Ceteris paribus, board size increases the effect of firm accounting and market performances on CEO compensation. (Resource Dependence Theory prediction)

H₃: Ceteris paribus, the percentage of independent board members increases the effect of firm accounting and market performances on CEO compensation. (Agency Theory prediction)

H₄: Ceteris paribus, CEO duality decreases the effect of firm accounting and market performances on CEO compensation. (Managerial Power Theory prediction)

To conclude, for H₁, the only significant result is found for the relationship between ROA and variable CEO compensation. Unfortunately, this relationship is in a negative direction, which indicates the agency conflicts. The rest (EPS, Tobin Q, TSR) reported insignificant results. For the total CEO pay, all of the accounting and market performances of the firms have no significant association. In short, it can be concluded that the pay and performance link in Swiss public firms is decoupled.

For H₂: It is found that large boards are negatively moderating the association between ROA and Tobin Q, and variable CEO compensation, in line with the researchers reporting the efficiency of small boards. On the other hand, large boards are positively moderating the impact of TSR on total CEO compensation, in compliance with Resource Dependence Theory. It implies that large boards are not so efficient in the decision-making process of variable compensation because

variable compensation is more complex than fixed compensation, and involvement of many members in complex issues causes an adverse effect on the pay-for-performance relationship. Conversely, large boards are more successful to set up the positive nexus between total pay and performance because of their high-level link to an external environment and pool of expertise, which help them interpret the bigger pictures (total pay) better than its pieces (variable pay).

For H₃: No empirical support is found for the moderation of percentage of independent board members. This non-significant moderation could be explained as the increased scrutiny of executive directors in recent years, so executive directors are compelled to be careful like their independent colleagues (Shin, 2009). It may cause the lack of moderation effect.

For H₄: Surprisingly, it is noted that CEO duality increases the impact of EPS on total CEO compensation, which is in contrast to Managerial Power theory, but in agreement with Organization Theory. Organization Theory explains this positive moderation as the unity of commands at the top of the firm, which provides decision-making authority and sends reassuring signals to stakeholders (Finkelstein & D'aveni, 1997).

Finally, pay-for-performance, which is the first pillar of establishing 'financially' optimal contracts, plays a crucial role in CEO compensation. The finding of this paper reveals the status quo in Swiss companies, and it impels the scholars, principle setters, and practitioners to find a solution for the decoupled pay-for-performance relationship.

2.2 Paper II

The aim of this study is to investigate the effect of risk on CEO's total compensation and variable pay mix (proportion of variable remuneration to total remuneration), in accordance with the principles of Agency Theory. Moreover, the moderating effects of Corporate Governance factors on the relationship between risk and CEO compensation are analyzed.

In line with the aim of the study, four hypotheses are constructed:

H₁: There is a significant association between risk (Beta) and total CEO compensation, all else equal. (Risk premium prediction of Agency Theory)

H₂: Ceteris paribus, the relationship between risk (Beta) and total CEO compensation is curvilinear. (Achievement prediction of McClelland's Theory of Needs)

H_{3.1}: Ceteris paribus, the corporate governance variables (board size, board independence, and CEO Duality) are significantly moderating the relationship between risk and CEO's total compensation. (Conflict of interest prediction of Agency Theory)

H_{3.2}: Ceteris paribus, the corporate governance variables (board size, board independence, and CEO Duality) are significantly moderating the relationship between risk and percentage of variable CEO compensation. (Conflict of interest prediction of Agency Theory)

H₄: There is a negative relationship between risk and percentage of variable CEO compensation, all else equal. (Trade-off prediction of Agency Theory)

In conclusion, for H₁, it is supported that there is a significant association between risk and total CEO compensation, and risk (Beta) is one of the important factors (beta: 0.20) in predicting the total CEO compensation. What is more, H₂ is also supported, which points out the curvilinear relationship between risk (Beta) and total CEO compensation. This curvilinear relationship between risk and total CEO compensation is explained based on the Achievement prediction of McClelland's Theory of Needs as follows: "the riskier firms stop paying higher total compensation after moderate risk level, which explains the downward curve theoretically (Miller et al., 2002)".

On the other hand, for H₄, there is no statistically significant support to prove the negative relationship between risk and percentage of variable CEO compensation. In brief, H₄ is not supported.

For the moderating effect of Corporate Governance factors, no significant results are found, so both $H_{3,1}$ and $H_{3,2}$ are not accepted.

On the other hand, the most significant controlling variables are reported as leverage (negatively significant) and firm size (positively significant).

Overall, it is the first study on this topic in Switzerland, so the finding is important for Swiss regulatory boards, practitioners, and scholars. The second pillar of establishing ‘financially’ optimal contracts is the ‘risk’ as disclosed in figure 1. Consequently, it is proposed that the board of directors should consider the curvilinear relationship, the level of risk, and risk premium assumptions of Agency Theory before designing an optimal compensation contract for their CEOs.

2.3 Paper III

Based on the principles of Social Comparison and Agency Theories, this study aims to examine whether CEO’s total pay is anchored to the peer group and whether Corporate Governance variables moderate the association between CEO pay at the focal firm and that at peer firm.

The hypotheses were constructed as follows:

H₁: Ceteris paribus, CEO’s compensation at the focal firm is positively related to the compensation level at peer group (Social Comparison Theory prediction).

H₂: Ceteris paribus, **corporate governance** factors moderate the link between total CEO compensation at the focal firm and that at peer companies (Agency Theory prediction).

H_{2,1}: **Large boards** (board size) are positively moderating the relationship between focal firm’s total CEO compensation and its benchmark (peer group compensation), all else equal.

H_{2,2}: **High independence in boards** (board independence) is positively moderating the association between focal firm’s total CEO compensation and its benchmark (peer group compensation), all else equal.

H_{2.3}: CEO Duality is negatively moderating the nexus between focal firm's total CEO compensation and its benchmark (peer group compensation), all else equal.

H₁ and H_{2.3} are accepted. For the main effect, it is found that the benchmark compensation is the significant predictor of total CEO compensation at a focal firm, and there is a positive significant relationship between them, which indicates socially comparable benchmarking.

For the moderating effects, it is noted that CEO duality is negatively moderating the nexus between focal firm's executive compensation and its benchmarks. In other words, it is reported that focal firm with CEO duality is paying its CEO higher than the focal firms with no-CEO duality at lower performance scenario (or at low compensation at peers). For the board independence, it is reported that board independence is a significant moderator. The negative significant interaction of board independence means that at high level of peer compensation, independent boards are more conservative than non-executive members because they want to overcome the public opposition to excessive CEO payments and protect their reputation as objective decision makers, consistent with the logic in the research of Daily et al. (1998) and Shin (2009).

To conclude, as depicted in Figure 1, the third pillar of 'financially' optimal contracts is benchmarking (peer group comparison), so it is suggested that the strong positive association between focal firm's CEO compensation and that of peer group should not be tainted by biased peer group selections and Ratcheting (Lake Wobegon) Effect.

It is also emphasized that the conservatism of non-executive (independent) directors to keep the positive association between CEO compensation at their firms and that at the benchmarks disappears when the CEO is also the chairperson of the board. Accordingly, companies should avoid CEO duality to keep the desired nexus between CEO compensation at the focal firm and that at the benchmarks.

3. Summary of Dissertation Convergent Results and Implications

After having reported the results of individual papers, this section is dedicated to the summary of the convergent results and their implications. The author has aimed to measure the link between CEO compensation and its three main predictors of financial appropriateness and social comparison. Risk (beta) and peer group compensation (benchmarking) are the significant predictors of the total CEO compensation, whereas firm performance is not. In other words, CEO pay and firm performance are decoupled. It is strongly advised that the boards and regulators should anchor firm's total executive compensation to firm market and accounting performance mix, firm risk, and peer group compensation (median of peer group) in order to set up 'financially' appropriate and socially comparable compensation contracts. Even though non-financial performances and internal fairness (job content) could not be measured in this study, they are also the main drivers for optimal compensation contracts and they could not be separated from other three criteria (risk-peer comparison-financial performances).

It is also suggested that to be protected from the Ratcheting (Lake Wobegon) Effect, the Swiss regulators and board should either cap CEO's variable compensation (bonuses) at a year's salary (a mandatory 1:1 ratio) like EU regulators or let independent consultants or auditors review peer manipulation and report the result of the review in the companies' annual reports.

In the following paragraphs, theoretical, methodological, and practical implications are addressed:

Theoretical Implication:

This dissertation has various implications for academics, specifically in the research area of Corporate Governance, Accounting, and Management.

1. Only three aspects of financial fairness index- firm performance, risk, and benchmarking- have been individually analyzed in this dissertation. By utilizing the results of this dissertation, scholars may conduct further research to develop a '*financial fairness index*' by using all five aspects.

2. By considering the results of this dissertation, scholars may create a checklist to measure the financial fairness of the CEO compensation systematically and easily.
3. It is one of the scarce studies in the world and the first one in Switzerland considering the Corporate Governance variables as a moderator, instead of a control variable. It is found that board size and CEO duality are the significant moderators of the relationship between firm performance and CEO total compensation. In addition, board independence and CEO duality are the significant moderators of the association between CEO total compensation at the focal firm and that at the benchmarks. It implies that while searching for the optimal compensation package, scholars and regulators should take Corporate Governance factors into account because they have some impact on it.
4. Unfortunately, it is discovered that there is no association between firm performance and CEO total compensation in Swiss firms quoted on the Swiss Stock Exchange from 2007 to 2013. It implies that CEOs are not paid for performance in Switzerland, which may create bigger problems for the macro economy in the long run.
5. It is observed that even though the firm performance is not a significant predictor of total CEO compensation, firm risk (beta) and peer group comparison are the significant predictors. Therefore, academicians may conduct future research as to how the optimal CEO compensation will be set in a high-risk environment and how the unbiased benchmarking criteria will be determined and implemented.
6. This dissertation is also a guide to systematic peer group selection with international benchmarks. Future scholars may ponder more on this topic because to the best of my knowledge, this paper is the only one taking international peer groups.
7. In a way, the descriptive results of Paper III provide scholars with the indication of ‘wage anchor effect’ (Lake Wobegon Effect) in the Swiss market, so future scholars should analyze this issue in more detail.
8. All three papers in the dissertation had a theory testing approach. In particular, Paper II tested and supported Agency Theory’s risk premium proposition (the link between risk and total compensation) and McClelland’s Theory of Needs-Achievement (the curvilinear relationship between risk and total compensation).

On the other hand, the trade-off approach of Agency Theory (negative association between risk and incentives) was not supported.

9. Unfortunately, Paper I did not find any support for the ‘pay-for-performance’ assumption of Agency Theory, which may indicate the existence of a conflict of interest between principal and agent in Switzerland.

10. Finally, Paper III approved the premise of Social Comparison Theory by supporting the significant positive association between total compensation at disclosing firm and that at peers.

11. For the methodological implications, because of the enormous and recent dataset, more accurate performance measurement approach, three years time-lag consideration for the long-term compensations, and detailed diagnostic checks, this paper provides the readers with more robust, reliable, and generalizable results than those reported in previous studies.

Practical Implications:

After the statistical analysis in this dissertation and the detailed literature review, the following implications can be offered to the board of directors or compensation committee members, and shareholders to help them find out the optimal compensation contracts for their CEOs.

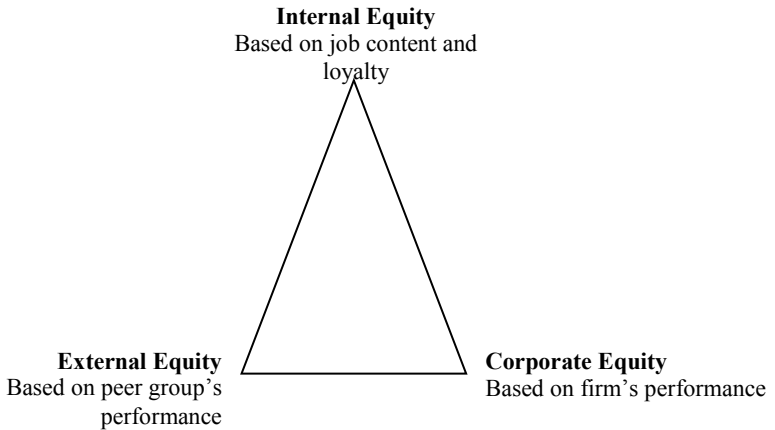
Regarding Optimal Compensation Contracts:

1. Instead of guesswork, the company should perform in-depth quantitative analysis using various criteria. For example, drawing on the main ideas of this dissertation, it is suggested that while determining a CEO compensation contract, you should consider three criteria at the same time: a) pay-for-performance b) pay-not-more-than-peers c) pay-according to-risk of the firm.

2. It is even recommended that the board should develop their own *index* by considering the five factors in Figure 1 (financial and non financial performances, benchmarks, risk, and job content) at the same time to develop optimal compensation contracts.

3. The Board should develop a comprehensive checklist for CEO compensation and discuss each item carefully during the annual meeting or the compensation committee meetings (Hostettler, 2010).

4. Another approach to figure out the optimal compensation contract is that CEO should be fairly rewarded ‘internally’, ‘externally’ and in line with ‘corporate success’, as summarized on the triangle below. However, this fairness is not only for shareholders. It has to be fair to shareholders, employees, customers, and public (Hilb, 2009).



Source: Hilb (2009), *Global Management of Human Resources*, pg.245

Figure 22: Hilb's Magic Triangle of Reward Equity

Regarding Firm Performance and Contents of the Compensation Contracts:

5. For the financial performance, multiple performance measures increase the contracting efficiency (Scott R., 2008). Several profitability metrics should be used to check the nexus of pay-for-performance (Stern, Oct 17, 2014). However, ‘proper and relative performance measures’ should be selected for short and long term variable compensations. For instance, TSR, EPS, ROI, EVA (Economic Profit) are the prevalent metrics used in performance-based long-term incentive plans in practice (Lipman & Hall, 2008; Mercer, 2009).

6. In addition to firm performance, non-financial-performance, such as client and employee satisfaction, reputation, loyalty, so on, should be considered as evaluation criteria to set CEO compensation. Hilb (2007) offered that 40 percent should come from non-financial performance criteria.

7. The ratio between short-term and long-term variable compensation is another factor to be considered (Hilb, 2007).

8. In general, the percentage of the variable compensation in the total CEO pay is proposed as 50 percent (Hilb, 2007).

9. However, an incentive-based compensation contract is not an effective tool during and right after the financial crises (F. Yang, 2014). To illustrate, the incentives of bank CEOs in the USA were not minimized during the crisis, so they suffered from extreme losses due to the crisis (Fahlenbrach & Stulz, 2011). Consequently, the proportion of the incentive-based pay should be reconsidered in anticipation of a crisis.

10. On the other hand, the percentage of the incentive-based compensation also changes based on culture and country. For instance, for Asian firms, incentive payments to CEOs are not so common and are a less significant factor, compared to companies in the USA or Europe (Kato & Kubo, 2006).

11. Another main misconception in practice is to pay bonuses to appreciate a CEO's effort of keeping the loss of the firm at a minimum level, especially during a crisis. However, the firm should carry out a more conservative analysis and make modest payments- even no variable compensation payment while undergoing losses.

12. Another important feature of an effective CEO compensation contract is the "integration". In other words, to promote the collaboration between TMT and CEO, you should not separate the CEO's compensation concepts from those of TMT and employees (Hilb, 2013). To illustrate, some researchers found "when the managers are underpaid compared to the CEO, they are more likely to leave the company. On the other hand, when the pay gaps between CEO, TMT, and employees are smaller, it increases collaboration in the firm, so it augments the firm performance (Henderson & Fredrickson, 2001; Wade, O'Reilly, et al., 2006)".

Most of the listed firms have a significant gap between the salaries of the CEO and the employees. For instance, the CEO of Swisscom earns 35 times more than the 'lowest paid staff' in the company. This ratio is 1:116 in Credit Suisse and 1:1127 in UBS (Maitra, 25.05.2013). Although the proposed ratio of 1:12 (the 1:12

Initiative³⁷) was not the realistic and optimal solution to decrease the salary gap (Hilb, 2013, July), it raised the awareness of the public in Switzerland.

On the other hand, effective as of January 2014, the EU agreed to cap banker's variable compensation (bonuses) at a year's salary (a mandatory 1:1 ratio). It can be raised to two years' pay (2:1 ratio) with explicit shareholders' approval (Barker, February 28, 2013; BBC, February 28, 2013; Waterson, February 28, 2013). In Switzerland, Martin Hilb proposed 0.5:1 ratio, which was already discussed in the previous sections (Hilb, 2007).

13. "Claw-back (payback) is also essential for the compensation contracts to deliver the right message to CEOs. What was not earned must be returned if CEOs are found guilty of misreporting. Thus, compensation contracts should include a Claw-Back provision that requires CEOs to return payments based on accounting figures that are subsequently restated (Lucian Bebchuk & Fried, 2004; Stump & Halstrick, 2012, February 24)".

14. In addition, you should take firm characteristics (firm age, size, sector) and CEO characteristics (CEO's age, tenure) into account during the process of finding out the most effective CEO compensation contract.

15. Instead of going to extremes by paying only incentives or fixed salary, CEO compensation should include various components based on the "strategy" of the firm. In other words, while setting out the CEO pay, you should not forget the strategy of the company (Hostettler, 2010).

Regarding Risk and Compensation Contracts:

16. As proved in Paper II, the risk (Beta) is one of the most important determinants of total CEO compensation, and it is found that risk is curvilinearly related to total CEO compensation. Therefore, the practitioners and board of directors should consider the level of risk and risk premium assumptions of Agency Theory to decide on an optimal compensation contract.

³⁷ Based on 1:12 initiative, CEOs of the publicly traded Swiss firms could not gain 12 times more than the lowest paid staff in the company. However, on 24 November 2013, 65.3 percent of Swiss voters rejected this initiative because they believed that it went too far after the Minder initiative and 1:12 initiative could cause the companies to move their headquarters out of Switzerland, which might ruin the Swiss economy in the long run (NZZ, 24.11.2013).

17. To cope with risky environment and risk-averse managers, instead of increasing base pay and decreasing incentives, another alternative is a stock option with an upper cap, which limits both downside and upside risks, motivates the managers to take a reasonable and manageable risk, and discourages them from an unnecessary excessive risk taking at the same time. In sum, the board should find a right mix of variable pay to handle CEO's risk-taking appetite (Scott R., 2008).

18. The regulatory bodies and Corporate Governance principle setters can benefit from the results of this paper indicating firm risk as one of the significant criteria of the total CEO compensation. It is noted that apart from FINMA, Ordinance Against Excessive Compensation in Listed Stock Companies (OaEC or VegüV), Swiss Code of Best Practice (2014), and SIX Directive (2014) have not emphasized the importance of the direct link between risk and total compensation yet. As a result, it is suggested that the boards or standard setters should motivate the managers to disclose the nexus between firm risk, risk policies, and total CEO compensation in their annual reports.

19. To control compensation risk and bogus compensation plans in riskier companies, "the board should compare the manager's performance to the average performance of similar firms, which is called 'relative performance evaluation (RPE) or benchmarking', so common risk is filtered out of incentive plans" (Scott R., 2008). As a result, peer group comparison or relative performance evaluation (RPE) is also another way to deal with the impact of the risk on compensation contracts.

Regarding Peer Group Compensation (Benchmarking):

20. Another misapplication is that "CEO is getting high bonuses as long as the firm's stock price rises largely even due to market-wide or industry wide-movements". In addition to firm performance, you have to think about the performances of the peers and the industry before distributing bonuses to CEOs, thereby coping with overpayment for unimpressive or mediocre performance (Lucian Bebchuk & Fried, 2004).

21. Peer groups should be objectively and systematically chosen instead of 'cherry-picking'. Peer manipulation only aims to provide support for the high executive compensation levels (Lipman & Hall, 2008). The systematic screening of peers

depends on multiple criteria, such as publicly traded or not, sector, firm size, and business character (Mercer, 2009). In addition to these four characteristics, two more criteria have to be taken into consideration (1) similar firm performance³⁸, and (2) sufficient number of peers (Hilb, 2011).

22. One of the prevalent mistakes in practice is to pay their CEO more than the industry average to keep the talented people in the firm. It led to an escalating average, and this caused a continuous increase in executive pays in the last decade due to ‘wage anchor effect’ (Lake Wobegon Effect) (Lucian Bebchuk & Fried, 2004; Stern, Oct 17, 2014). For this reason, the aim of the board should not be paying above the average, but maybe in or around the average.

23. This paper inspires the Swiss regulators to propose a principle regarding the disclosure of peer group members in the annual reports, e.g., the American disclosure regulations in Definitive Proxy Statement (DEF14a). To limit rent extraction and to cope with cherry-picked peer groups, it is suggested that compensation disclosure be more transparent and firms disclose their benchmarks and the rationale behind choosing these peers (Bannister & Newman, 2003; Lucian Bebchuk & Fried, 2002; John Bizjak et al., 2011; M. Faulkender & Yang, 2012).

Regarding Corporate Governance Variables and Compensation Contracts:

24. To furnish the CEO with an appropriate compensation contract and to continue the long-term success of the company, Corporate Governance plays a primary role (Canyon, February, 2006). For example, as found in Paper I and stated in the literature, Corporate Governance factors contribute to developing effective variable compensation contracts. It is also advised that “compensation committee members require the knowledge of accounting principles, regulations, securities and tax laws, insurance, valuation principles, and the overall executive compensation trends around the world (Anonymous, February, 2004; Reda, January, 2000).”

³⁸ In the practice, for instance, in the US, ISS (Institutional Shareholder Services) and Glass Lewis applied to the limit of 0.4 to 2.5 times and 0.33 to 3 times of the company’s revenue or assets respectively to select the peers in similar performance range (Meridian Compensation Partners, November 2011; Sowinski, 2013). In addition, on the academy, this limit is implemented as 0.5 to 2 times of the company’s revenue (Michael Faulkender & Yang, 2010).

4. Limitation and Future Research

- In Paper I, the link between firm financial performance and CEO compensation was tested; however, non-financial performances (reputation, customer's loyalty and complaints, brand recognition, so on) are equally as important as financial performances. Owing to time constraints and difficulties in the measurement of non-financial performances, Paper I excluded non-financial performances, which could be an interesting further research topic.

- In Paper II, only un-diversifiable risk or systematic risk was investigated. The Beta measured the systematic risk. However, it is suggested that the scholars should consider the unsystematic risk (Sigma) or income stream risk as another independent variables in their future studies.

- In Paper III, not all listed companies, merely top 100 Swiss firms, were analyzed because adequate and accurate peer group selection for approximately all 210 Swiss public firms is a challenging and time-consuming process. Further research could be performed to view the full picture of the Swiss market.

-In Paper III, the average number of peer firms per year was 5; however, it is advised the future researchers to increase the number of peers in the group and compare the results with those of this paper.

- Consistent with previous literature, in Paper III, benchmarks were chosen with 'same sector and similar firm size and performance criteria' by considering CEO characteristics (age, tenure, nationality, duality, ownership) as control variables. Future scholars and practitioners may use CEO characteristics, CEO talent, and firm strategy as a peer selection factor instead of examining them as a control variable, so it increases the validity of the peer group. On the other hand, it is time-consuming if international benchmarks are considered.

- Although sector-size-performances were considered as the criteria for an international peer match in Paper III, the cultural influence on CEO compensation was not taken into account. According to Hilb (2009), "organizations and CEO compensation are subject to interrelated spheres of cultural influences, such as national, regional, industry, corporate, professional, and functional cultures".

- Above all, as seen in Figure 1, a pentagon framework for optimal CEO compensation is made up of five key criteria. The research was performed on the first three criteria in Papers I, II, and III because non-financial (qualitative) performances and job content are hard to measure for the outside researchers due to time constraints and confidentiality policies of the companies. It is the limitation of this dissertation and a future research topic for the scholars.

- Even though it is already an innovative and challenging study by investigating ‘financially’ optimal CEO compensations with the first three criteria, it could be more promising to construct a ‘fairness index’ of CEO compensation by weighting each five criterion on Figure 1 equally. It is strongly recommended for a future study.

Despite the limitations, this dissertation has filled in the biggest gap in the compensation literature, for it is the first study that has analyzed three core aspects of compensation determinants, such as firm performance, risk, and peer group comparison, in the same country setting. It has also contributed to Agency Theory by testing its pay-for-performance, risk premium, board control, and agency cost approaches as a theory-testing study. Furthermore, the results of this dissertation are pretty fruitful and decisive for the Swiss regulatory bodies and board of directors in the practice.

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Curriculum Vitae



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Education

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| 2010 – 2015 | Doctoral Studies at the University of St. Gallen, Switzerland |
| 2001 – 2004 | Master Studies at Marmara University, Istanbul, Turkey
Major: Accounting & Finance (in English) |
| 1996 – 2000 | Bachelor Studies at Marmara University, Istanbul, Turkey
Major: Business Administration, Accounting & Finance |

Work Experience

- | | |
|---------------|---|
| 2015 – Recent | Visiting Consultant at Lucerne University of Applied Sciences and Arts (HSLU), Switzerland |
| 2013 – 2015 | Research Associate at Lucerne University of Applied Sciences and Arts (HSLU), Accounting and Controlling (IFZ), Switzerland |
| 2011 – 2013 | Research Associate at the University of St. Gallen, Leadership and Human Resource Management (IFPM), Switzerland |
| 2008 – 2010 | Ass. Audit Manager at Deloitte, Luxembourg |
| 2007 – 2008 | Experienced Audit Senior at Ernst & Young, USA |
| 2006 | Audit Senior at Deloitte, Caribbean Islands |

- 2003 – 2005 Experienced Audit Ass. and Senior at Ernst & Young, Turkey
- 2003 Financial Controlling Specialist at DiaSA (Carrefour Group), Turkey

Articles Issued in Academic Journals

- 2014 The Excellence of Activity-Based Costing in Cost Calculation: Case Study of a Private Hospital in Turkey, *Journal of Health Care Finance*, Vol. 41, No. 1 (Peer-Reviewed Journal)
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- 2005 The Impact of Non-Audit Services on Institutional Investors' Perception of Auditor Independence: Evidence from Turkey, *Journal of Marmara University, Öneri* (Peer-Reviewed Journal),
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2047087