Charles University in Prague

Faculty of Social Sciences
Institute of Economic Studies

MASTER'S THESIS

Catholic Religion, Corporate Governance, and Executive Compensation

Author: **Bc. Jan Šarapatka**

Supervisor: **Jiří Novák M.Sc., Ph.D.**

Academic Year: **2015/2016**

Declaration of Authorship

The author hereby declares that he compiled this thesis independently; using only the listed resources and literature, and the thesis has not been used to obtain a different or the same degree.

The author grants to Charles University permission to reproduce and to distribute copies of this thesis document in whole or in part.

Prague, July 28, 2016

Signature

Acknowledgments

The author is grateful to his supervisor Jiří Novák M.Sc., Ph.D. for providing important ideas and useful comments, author's family for creating comfortable environment for writing the thesis, and to his friends, especially Daniel Vopat, for their patience and contributive consultations.

Abstract

I find a significant positive compensation premium for executives employed by firms headquartered in Catholic counties. I document that the compensation premium holds only for board member executives and that it is related to weaker corporate governance in Catholic regions. In addition, I explore several corporate governance measures and reveal that weaker corporate governance is a result of more developed connection networks among executives in Catholic regions. I document that even though a denser executive's social network is associated with worse operating performance, it enables the executive to reach higher pay. Therefore, I suggest that executives in Catholic regions are using their more developed social networks and weaker corporate governance to extract additional rents from the firm. My findings are consistent with a larger development of social ties in more community-focused Catholic regions than in more individualistic Protestant regions. I contribute by showing how religion deters efficiency of the top executive labor market through social ties.

JEL Classification	G30, G32, J33, Z12
Keywords	executive compensations, corporate governance, religion, Catholicism, executive networks

Author's e-mail	jan.sarapatka@live.com
Supervisor's e-mail	jiri.novak@fsv.cuni.cz

Abstrakt

V práci nacházím signifikantní kladnou prémii v odměnách vrcholových manažerů zaměstnaných firmami, které mají své sídlo v katolických okresech. Ukazuji, že prémii v platech obdržují pouze vrcholoví manažeři, kteří jsou členy představenstva, a že prémie je spjata s horší správou firem v katolických regionech. Dále jsem zkoumal několik měr správy nemovitostí a ukazuji, že horší správa nemovitostí je důsledkem více rozvinutých sociálních sítí mezi manažery v katolických regionech. V práci prezentuji, že ačkoliv širší sociální síť vrcholových manažerů je spojena s horším provozním výkonem firem, umožňuje jim dosáhnout vyšší odměny. Navrhuji tudíž, že vrcholoví manažeři v katolických regionech využívají jejich více rozvinutých sociálních sítí a horší správy nemovitostí, aby získali dodatečnou rentu na úkor firmy. Má zjištění jsou v souladu s více rozvinutými sociálními vztahy v katolických regionech, které jsou zaměřeny více na komunitu, oproti více individualistickým protestantským regionům. Mým přispěním je ukázka toho, jak víra narušuje efektivitu pracovního trhu vrcholových manažerů skrze sociální vztahy.

Klasifikace	G30, G32, J33, Z12
Klíčová slova	odměňování manažerů, správa a řízení společností, náboženství, katolicismus, manažerské kontakty

E-mail autora	jan.sarapatka@live.com
E-mail vedoucího práce	jiri.novak@fsv.cuni.cz

Contents

List of tables

List of figures

Master's Thesis Proposal

Institute of Economic Studies
Faculty of Social Sciences
Charles University in Prague

Author:	**Bc. Jan Šarapatka**	Supervisor:	Jiří Novák M.Sc., Ph.D.
E-mail:	sarapaj@student.cuni.cz	E-mail:	jiri.novak@fsv.cuni.cz
Phone:	+420 721 038 802	Phone:	+420 222 112 314
Specialization:	Finance, Financial Markets and Banking	Defense Planned:	June 2016

Proposed Topic:

Religion and executive compensation

Motivation:

Cultural environment is without a doubt very important determinant of people's behavior thus it also determines behavior of firms that are ruled by people. This thesis focuses on religion, which is one of the most important parts of culture. Increasing amount of available data enables economists to include such variables into their equations and so many different hypotheses on religion have been tested in past two decades. For example Stulz and Williamson (2003) found that Catholic countries do not protect the rights of creditors as well as Protestant countries. Barro and McCleary (2003) even found that macroeconomic development is negatively correlated with church attendance. This thesis will try to explore and document the relationship between religion and executive compensations.

Core, Holthausen, and Larcker (1999) suggested that executive compensations are negatively correlated with corporate governance efficiency. They discovered that executive compensations are higher when the CEO is more involved in the board and when the board is less efficient. In addition, Volonté (2015) found that Catholic cantons in Switzerland are positively correlated with having one-tier boards whereas Protestant cantons are positively correlated with having two-tier boards. Such fact is explained by aversion of Protestants to hierarchical structures and Catholics being used to hierarchical structure from their church. Thus, the Protestants prefer two independent boards while the Catholics just one.
Putting these two researches together might suggest that religion-based behavior can lead to higher executive compensations of the Catholics if they are more involved in the board or the board is less efficient and lower executive compensations of the Protestants if they are supervised by more independent or more efficient board. The thesis will focus on explaining differences in executive compensations by comparing corporate governance in Protestant and Catholic states in USA.

In their paper, Barsky, Juster, Kimball, and Shapiro (1997) state that Protestants are generally more risk averse than Catholics. Hilary and Hui (2009) followed by an empirical paper in which they showed that higher risk aversion leads to higher required internal rate of return thus to lower rates of investment. They also found the rate of investment is lower for Protestants than for Catholics. It proposes that religion might have an impact on firm performance by the difference in investment rates, which impact firm's future growth. It may be another explanation for the Catholics to be paid more than the Protestants since they are less risk averse and invest in projects with lower rate of return, which turns in larger firm's growth. The thesis will also focus on exploring the hypothesis whether the religion can impact executive compensations via firm economic performance, specifically investments.

The outcome of the thesis will be a unique research result stating how Catholic and Protestant religion impacts executive compensations and what mechanism is behind this relationship. The main possible explanations are that religion influences compensations through corporate governance and that religion influences compensations through economic performance.

Hypotheses:

1. Hypothesis #1: Executives are paid more in Catholic than in Protestant states.
2. Hypothesis #2: Corporate governance is more hierarchal and the power of corporate governance is more concentrated in Catholic states than in Protestant states.
3. Hypothesis #3: Rates of investment are higher in Catholic than in Protestant states.

Methodology:

First of all, previous research on the topic will be reviewed and summarized using various databases (e.g. Scopus or EconLit).

Next, all necessary data will be gathered, analyzed and adjusted. The dataset should include firm-level data on executive compensations in USA and rates of Catholicism and Protestantism in the states where the companies' headquarters are located. In addition, other data such as investment rates or board and ownership structure will be used to explain the relationship between religion and executive compensations in more detail. Since the variables change also over time econometric methods applicable on panel data will be used.

The hypothesis #1 is expected to be confirmed by significantly positive coefficient of Catholic variable and significantly negative coefficient of Protestant variable in the regression with executive compensations as dependent variable. It might be necessary to split the regression depending on possible multicolinearity of variables Catholic and Protestant. Of course, the regression will include some control variables to overcome omitted variable problem. If the hypothesis is confirmed corporate governance variables will be used as dependent variables and Catholic and Protestant as independent variables to help explain the result from hypothesis #1. To test whether religion influences economic performance investments will be regressed on religion variables.

When the results are obtained robustness check will follow and conclusions will be made.

Expected Contribution:

The thesis will explore how religion is related to other economic and non-economic variables. Author will try to find and explain differences in executive compensations, corporate governance and economic outcomes using religion as an explanatory variable. By that, the thesis will contribute to the understanding of the differences among companies, which might be of crucial interest for many economic actors. It will help owners to apply right forms of corporate governance to avoid excessive executive compensations. Investment decisions will be explained by religion, which will help managers to control investment levels more efficiently. Last but not least, it will provide additional information on company's management and performance to the investors, which might be useful for company valuation.

Outline:

1. Introduction: Introduction to the religion topic and motivation of hypotheses
2. Literature review: Summary on existing literature on the topic
3. Data analysis: Description and analysis of gathered dataset
4. Methodology: Reasoning and brief explanation of econometric methods that are used in the thesis
5. Discussion of results: Description of empirical evidence and its comparison to existing literature
6. Concluding remarks: Summary of the key findings, their implications and suggestions for further research

Core Bibliography:

Barro, R., McCleary, R., 2003. Religion and economic growth. *American Sociological Review, 68*, 760–781.
Barsky, R., Juster, F., Kimball, M., Shapiro, M., 1997. Preference parameters and behavioral heterogeneity: an experimental approach in the health and retirement study. *Quarterly Journal of Economics, 112*, 537–579.

Core, J. E., Holthausen, R. W., Larcker, D. F., 1999. Corporate governance, chief executive officer compensation, and firm performance. *Journal of Financial Economics, 51,* 371-406.
Hilary, G., Hui, K. W., 2009. Does religion matter in corporate decision making in America? *Journal of Financial Economics, 93*, 455-473.
Stulz, M. R., Williamson R., 2003. Culture, openness, and finance. *Journal of Financial Economics, 70*, 313–349.
Volonté, Ch., 2015. Culture and corporate governance: The influence of language and religion in Switzerland. *Management international review, 55,* 77-118.

1 Introduction

This thesis examines the relationships between Catholic religion, corporate governance, and executive compensation. Starting with A. Smith (1776), previous literature documents that religion influences not only people but also the economy. Economists find, for example, relationships between clergy and economic development (Smith, 1776), church attendance and macroeconomic development (Barro and McCleary, 2003), religiosity level and investment rates (Hilary and Hui, 2009), or religion and creditor rights (Stulz and Wiliamson, 2003). In addition, many economists report differences in wages based on people's religion (e.g. Ewing, 2000 or Pitts et al., 2011). Both Ewing (2000) and Pitts et al. (2011) document a positive wage premium for people who endorse the Catholic religion. They suggest the premium is caused by the higher human capital of Catholics who possess qualities such as honesty or discipline. However, only very little research examines whether the Catholic denomination impacts also executive compensations, which differ significantly from non-executive wages in their level and structure. Grullon et al. (2009) concludes that a higher number of Protestant and Catholic adherents and churches in a region decreases significantly CEO and top executive pay in the region since religiosity deters undesirable corporate behavior. I attempt to explore in more detail the relationship between executive compensation and Catholic religion in the USA and I provide contrary empirical evidence to the one of Grullon et al. (2009). I base my research on results of Volonté (2015) and Lubatkin et al. (2005) who conclude that religion influences corporate governance and Core et al. (1999) who find that corporate governance is considered to be closely related to executive compensation. Thus, I aim to examine the relationships between Catholic religion, corporate governance, and executive compensation.

My results document significant positive compensation premium for executives employed by firms headquartered in US counties with high proportions of Catholic adherents. I document that the compensation premium holds only for board member executives. By decomposing executive compensation to salary, bonus, and other direct compensation, I find that the compensation premium is the largest and most significant for other direct compensation, followed by premium in bonus, and the smallest but still significant premium in salary. This corresponds with the rent extraction view on compensation determination, which claims that the rent extraction is executed mostly through the least transparent means of compensation (e.g. Bebchuk and Fried, 2004). The rent extraction view is also supported by the fact that I document the premium only for executives who are members of the board of directors. These executives usually have more power and are more able to extract rents. Since rent extraction is strongly related to the quality of corporate governance, I propose that religion projects to the executive compensation through corporate governance. I notice the disappearance of the compensation premium when I control for corporate governance

variables in my regressions. In addition, I document that corporate governance quality in counties with high proportion of Catholic adherents, hereinafter referred to as Catholic regions, is weaker as measured by various corporate governance indices. Moreover, I find that firms headquartered in Catholic regions are more likely to suffer from accounting concerns and they pay abnormally high audit fees, which corresponds with weaker corporate governance.

When I look for differences in corporate governance between firms headquartered in Catholic and non-Catholic regions, I find that the corporate governance in Catholic regions exhibits more developed networks and connections among executives. I document that CEOs of firms headquartered in Catholic regions have more links to the non-home firm's boards of directors than in non-Catholic regions. Moreover, CEOs in Catholic regions sit on more non-home firm's boards. In addition, firms headquartered in Catholic regions use dual-class share listing more widely, which gives power only to a small group of shareholders who might be family relatives or managers. I also document larger boards in Catholic regions. I conclude that the Catholic religion enters corporate governance in Catholic counties by higher sociability of Catholics. By sociability I mean the creation of social networks and connections, supporting each other, and cooperating. It is in accordance with findings of Volonté (2015) who concludes that difference in board structure in Switzerland comes from the difference between individualist Protestants (two individual board tiers) and community based Catholics (one hierarchical board tier). It also corresponds with the research of Arruñada (2004) who provides empirical evidence that Catholics are more tolerant of public fraud and that they are more willing to cover up for their friends than Protestants. Arruñada (2010) also finds that Catholics give more importance to family ties and they prefer personal exchange to impersonal exchange. To demonstrate that firms do not benefit from these connections but executives do, I document that firms whose CEO's have more connections have weaker corporate governance and worse economic performance, while their CEOs receive higher compensation. In particular, I estimate that each additional CEO's seat on a non-home firm's board of directors decreases inverted and normalized G-index by 2%, sales growth by 2%, and ROA by 1% while it increases total CEO compensation by 19%. Therefore, I suggest that executives in Catholic regions are using their more developed social networks and weaker corporate governance to extract additional rents from the firm.

I perform several checks to control whether my results do not suffer from omitted variable bias or biased standard errors. I use Demerjian et al. (2012) measure to control, whether the compensation premium in Catholic counties is not a premium for higher managerial abilities. If executives in Catholic regions had higher managerial abilities, they should receive a compensation premium. In addition, I provide empirical evidence that the premium is not caused by flatness of employment contracts. Carlin and Gervais (2009)

suggest that executives in regions with high morality standards should be offered flatter compensation contracts. If the Catholics had better qualities such as honesty and discipline, they should be compensated more using fixed salary and less using incentive parts of compensation (i.e. flatter compensation contracts). However, I document premium in all parts of compensation. Moreover, I perform robustness check of estimated standard errors by using various levels of clustering. None of the checks questions my results.

My findings contribute to the discussion of the impact of culture on corporate governance and executive compensation for three reasons. First of all, they improve the understanding of the executive compensation's level and structure by introducing Catholic religion as a determinant of a higher level of executive compensation, especially a higher level of other parts of compensation rather than salary or bonus. I estimate that the executive compensation increases by approximately 0.5% for each 1% increase in the Catholic rate. The finding will hopefully help in future research of executive compensations to prevent omitted variable bias of its results since religion is related not only to the executive compensations but also to the firm performance, taxes, and many other variables. Second, my work contributes to the understanding of how religion enters company decision-making processes and corporate governance. I stress that religion can be a significant determinant of corporate governance, which has consequences for the whole firm. In particular, I suggest that religion can enter a firm's corporate governance through the sociability of its executives. Finally, my results point out the issues of corporate governance in the Catholic regions and provide additional information for shareholders and investors about the specifics of the corporate governance in these regions. I document that more developed social networks negatively impact a firm's corporate governance and performance, while providing executives who hold a seat on the firm's board of directors with higher compensations. Based on my results, shareholders and policy makers in counties with high rates of Catholicism might revise their corporate governance policies to prevent rent extraction done by executives through their social networks and to prevent poor firm performance in Catholic counties, which both harm shareholders' profits.

The work is structured as follows. Section two reviews the most relevant literature and motivates my hypotheses. Section three describes my dataset, data adjustments, and control variables and develops methodology for testing my hypotheses. Section four presents and discusses estimation results. Section five concludes.

2 Literature review and hypotheses

2.1 Executive compensation

Despite the large number of economists researching the area of executive compensation, I do not yet know all the factors, which impact executive compensation. This thesis should contribute to the current understanding of executive compensation by introducing Catholic religion as an explanatory variable thus showing the influence of culture on executive compensation.

I start by exploring the composition of executive compensation. According to Frydman and Jenter (2010), the most common components are salary, annual bonus, payouts from long-term incentive plans, restricted option grants, and restricted stock grants. In addition, they consider contributions to defined-benefit pension plans, various perquisites, and severance payments as other possible sources of executive compensation. The components are very neatly described in the work of Murphy (1998). In Figure 1, I depict the development of level and structure of CEO compensation. The main trend I notice in the graph is declining share of salary and increasing share of bonuses and other parts of compensation, which provide incentives for managers to maximize company's value thus shareholders' wealth. In addition, the US Internal Revenue Code Section 162(m) states that salaries higher than $1 million are not tax deductible while the compensation based on performance is tax deductible in any amount (Choe et al., 2014). That provides an extra incentive not to increase executives' salaries but to provide them with more stocks and options.

Past research investigates two main characteristics of executive compensation; its level and its structure. Both of them set up important incentives that impact company's decision making thus their performance. It has been one of the most important issues in the area of corporate governance since the beginning of 20th century, when corporate ownership and corporate control split (Berle and Means, 1932). The incentives have to be set up correctly in order to eliminate principal-agent problem between shareholders and executives, which I discuss in next paragraphs. Some people think executive compensations are way too high. In Frydman and Jenter's (2010) work, in their Figure 2, I notice almost exponential growth in level of CEO compensation since 1960. In addition, between the years 1992 and 2008, executive compensation in the USA more than doubled in large and medium sized companies (Frydman and Jenter, 2010). To explore what drives the development, following two sections summarize the main opinions on executive compensation determination.

2.2 Competitive pay

There are two mainstream views on the determination of executive compensation. First view is represented by research suggesting that executive compensations are determined by competition on the labor market. Thus, the research proposes to explain level of executive compensation using various performance related variables. Rosen (1982) and Himmelberg and Hubbard (2000) support the view compensations are competitive by stating that a little more talent of an executive can lead to large increases in company value due to scale of operations. Thus, a larger firm benefits more from talented executives since the marginal product of executive labor for the larger firm is higher, and so the larger firm should offer larger compensation. Economists focus also on connection between stock price performance and executive compensation (Murphy, 1985). Of course, the better the stock price performance the higher the executive compensation is expected. All of these theoretical explanations have been already tested empirically. Roberts (1956) finds a relation between compensation level and industry, profit, or size. Hubbard and Palia (1995) propose that the size is not the only firm property, which impacts the marginal product of labor. They find a relationship between company's size and executive compensation too, but in addition, they find empirical evidence suggesting that executive compensations might be driven by competition on the market depending on market openness or deregulation. The higher is the level of competition, the higher is the marginal product of more skillful executive, so the demand for talented executives increases, and they receive higher compensations. Another reason for higher compensations might be higher volatility in the business environment (Dow and Raposo, 2005) or internal technical efficiency of production (Ciscel and Carrol, 1980). However, in their work, O'Reilly et al. (1988) document that particularly compensation committee pay explains CEO compensations better than economic features such as firm performance, size or human capital. So is there a better predictor of executive compensations? I examine the possibility in the next section.

2.3 Rent extraction and corporate governance

From the second point of view, executive compensations are driven by the executives themselves. This view is called "rent extraction" since executives use their power to extract rents from the firm. Already in 1776, Adam Smith in his famous work *The Wealth of Nations* claimed that "*…being the managers rather of other people's money than of their own, it cannot well be expected that they (directors) should watch over it with the same anxious vigilance with which the partners in a private copartnery frequently watch over their own*." Therefore, he suggests that managers tend to watch over their own money more than over the firm money, which gives the incentives for rent extraction. Almost a hundred years back from today, Berle and Means (1932) claimed, in line with Smith, that if shareholders fail to

perfectly monitor executives, executives will behave according to their self-interest and they will benefit on shareholders' expense. In their principal-agent model of corporate governance, Jensen and Meckling (1976) well describe the problem of delegation of power from the shareholders (principal) to the executives (agent). They conclude this principal-agent problem emerges due to agency costs, which depend, among other things, on executive inventiveness and statutory and common law. In correspondence with the principal-agent problem, many economists (e.g. Holthausen and Larcker, 1999) suggest that executive compensations might increase with weaker corporate governance since there are greater agency problems. Opposed to that, Hermalin (2005) presented his theory that compensation could be positively correlated with corporate governance quality. He claimed that diligent boards monitor their CEOs more to improve their estimates of CEOs' abilities. Such more monitored CEOs then have to increase their effort to increase the boards' estimate of their abilities to retain the job. Thus, Hermalin proposes that CEOs who work in firms with more diligent boards have to work harder and that they want to be compensated correspondingly.

There is a scant empirical evidence for Hermalin's proposition of positive relationship between executive compensation and corporate governance efficiency. Chhaochharia and Grinstein (2009) document even opposite relationship and they conclude that CEO pay decreases after changes in regulation, which strengthen board oversight. In addition, lot of researchers claim that executive compensation increases with weaker corporate governance. They also explore specific corporate governance issues, which enable rent extraction. Finkelstein and Hambrick (1989) find that CEO compensation increases with CEO power and decreases with board vigilance. Bebchuk and Fried (2004) discuss in their work, whether the executive compensation can be explained by optimal contracting approach or whether a rent extraction approach, as they label it, should be taken into consideration. They analyze large amount of empirical evidence on executive compensation and they conclude that rent extraction has significant impact on executive compensation through managerial power. They argue that using the rent extraction approach might solve puzzles that the optimal contracting approach fails to solve such as almost uniform use of at-the-money options, the broad freedom given to executive to unwind incentives and to choose the time of unwinding, or the systematic correlation between managerial power and pay. In addition, they claim the rent extraction is executed by managers wisely through the least transparent operations using stock options, perquisites, pensions, and severance pay. Kuhnen and Zwiebel (2009) state that perquisites, pensions, and severance pay can be part of compensation but hiding it from shareholders makes it suspected of rent extraction. In line with Bebchuk and Fried (2004), Yermack provides empirical evidence that rent extraction is done through the least transparent operations when he documents that weak corporate governance leads to large perquisites (Yermack, 2006) and that powerful CEOs are given options before good news are released and the stock prices increase (Yermack, 1997).

Even though the rent extraction theory often well explains variation in executive compensations, it does not explain the overall pattern that I can observe in past decades. Hermalin (2005) concludes that most indicators document significant improvement of corporate governance in the last three decades. In addition, Huson et al. (2001) claim that boards consist of more outside directors than in 1970s meaning the boards have become more independent thus efficient. Despite the fact that corporate governance quality keeps increasing, the executive compensations increase as well. Thus, rent extraction theory alone does not explain the level of executive compensations and it should be combined with competitive pay view when explaining executive compensations. So I need to consider both views e.g. when I choose control variables.

Now, when I am aware of possible relationship between corporate governance and executive compensation, let me focus on the US corporate governance to find out whether it is possible to have differences in corporate governance under developed US legislation. Corporate governance in the USA is regulated by the federal securities law, the state securities law, and the state corporate law. Massen (1999) claims the federal law and the state security laws aim on protection of shareholders by forcing corporations to disclose their board practices. State corporation laws regulate structure and responsibilities of boards of directors. Since these law sources are not harmonized across US states, different firms face different responsibilities (Emmerich et al., 2015). In addition, each corporation can set up freely their own articles of incorporation and by-laws thus set up its own rules (Maassen, 1999). These firm-specific mechanisms can be further decomposed to the internal and external corporate governance (Cremers and Nair, 2005). Thus, there are differences in corporate governance among US states and also among firms within the states. For example, Massen (1999) argues that even though majority of US states require corporations to have a board of directors they do not require specific structure and composition. Another example he gives is that one-tier boards, which are characteristic for the USA corporations, can have either separated function of CEO and chair positions of the board or they can have so called CEO duality, which means that the CEO is also the chairman of the board at the same time. Emmerich et al. (2015) find that there is an increasing trend in separating the function of a chairman and a CEO. Between 2002 and 2012, the fraction of firms listed on the S&P 500 index that had the two functions separated increased from 22% to 43%. Massen (1999) ads that some boards are composed mostly of executive directors while others are composed mostly of non-executive directors. These and many other differences in the corporate governance among US firms might lead to differences in executive compensations.

2.4 Religion

One of the widely used cultural variables is religion. Religious beliefs influence people's perception of various economic problems and decision-making. The aim of this thesis is to contribute to the existing literature by exploring relationship between Catholic religion, corporate governance, and executive compensation. Such a connection will add an extra vantage point of looking at both the corporate governance and executive compensations.

Previous research documents that religion is very important variable for explaining various economic issues. For example, Adam Smith, already in 1776, described the connection between clergy and economic growth. Another example provide Stulz and Wiliamson (2003) by documenting that religion works better as a predictor of creditor rights than usually used variables such as income per capita, openness to international trade, language, or legal system origin. Fukuyama (1995) suggests that religion also impacts economic development via trust. In line with Fukuyama (1995), Guiso, Sapienza, and Zingales (2004) provide empirical evidence that trade in goods, financial assets, and foreign direct investments are positively related to trust. Hilary and Hui (2009) explore the impact of religion on corporate decision making in the USA. Their results provide empirical evidence that companies in US counties with high levels of religiosity tend to require a higher internal rate of return than counties with low levels of religiosity. Higher internal rate of return leads to lower investment rates, higher undiscounted profits, and lower long-term growth due to lack of investments. Another example how religion enters economic processes provides work of Carlin and Gervais (2009) who analyzed the impact of work ethic on firm's employment contracts. They documented that virtuous agents have good incentives embedded in their ethic, usually religion, so they can be given higher fixed wages and lower incentive-based compensations, which lowers the risk exposure of both employees and firms. Another example provides Barro and McCleary (2003) who document that church attendance is negatively correlated with macroeconomic development. They argue it is because religion impacts decision making of individuals, which transfers to the company decision making, which then transfers to the macroeconomic development. I expect the impact of religion on differences in company behavior within US based on Hilary and Hui (2009) who document that individuals of the same religion tend to cluster in a county and the firms in such county are then forced to employ those religious individuals. It is important empirical evidence for my research to be able to use my data by county on religion since I have to assume that individuals of the same religion cluster in a county and are employed there. Moreover, authors argue that religion reflects in firms' corporate culture and behavior, which is again one of my key assumptions. All of the studies in this paragraph find a relationship between behavior of economic actors and religion in general. Since I want to examine the impact of Catholic religion, next sections focus in more detail on literature related to Catholic religion specifics.

2.5 Catholicism

Nowadays, Catholics are the largest Christian group and the second-largest religious group in the world after Islam (Winston, 2012). In the USA, it also ranks second in the number of adherents after Protestants according to my dataset. Next sections summarize past research, which finds differences between Catholic and non-Catholic adherents or regions.

2.6 Work ethic

Catholics have a few specific qualities based on their religion. First Catholics' quality is their work ethic. One of the first who focused on the differences among workers based on their religion was Max Weber in his work called The Protestant Ethic and the Spirit of Capitalism (1930). In the work, Weber proposes that it is not just coincidence and historical reasons why Protestants had higher wages in the beginning of 20th century. He suggests Protestant wages are higher due to the differences between Catholic and Protestant religion. According to him, Protestants better adjust to changes and work hard (spirit of capitalism), while Catholics stick to their traditions and do not adjust to changes (traditionalism). He claims that modern capitalism evolved due to Protestant work ethic. Opposed to that, for example Blum and Dudley (2001) argue, based on European history of 20th century, that the Protestant work ethic is fragile theory. For my research I will presume that there are differences in Catholic and Protestant work ethic but I will not assume that all Weber's research is valid since I do not find the same compensation pattern as Weber in my dataset.

Several economists document Catholic wage premium (e.g. Ewing, 2000 or Pitts et al., 2011). Ewing (2000) concludes that the premium emerges due to the fact that Catholics possess qualities such as honesty, discipline, or trustworthiness, which increase their human capital and improve their labor market characteristics. Even though work ethic on high level is common quality of Catholics and Protestants, it is viewed by economists differently for Catholics and for Protestants and, as far as I found out, no one documents Protestant wage premium in the USA. In his work, Furnham (1988) claims that people who claim allegiance to the Protestant work ethic most likely blame unemployment on laziness and lack of effort. Thus, it is possible to suggest that they are willing to work for lower wages. Empirical evidence is provided by Blood (1969) who documents that workers affiliating to the Protestant work ethic are more satisfied with their paid work so they do not ask for more. Thus, compensations in counties with higher rates of Catholicism are expected to be higher than in counties with lower rates of Catholicism also because the less Catholic counties will be more Protestant since the Protestantism is the largest religious group in the USA.

Based on Ewing (2000) and e.g. Pitts, Misra, and Henry (2011) who document Catholic wage premium in the USA, I want to explore whether the premium exists also for large

executive compensations and whether it is not only a premium for non-executive workers. In addition, I control for more variables than previous research to ensure that the compensation premium is not caused by any coincidental correlation.

Thus, my first hypothesis is:

Hypothesis #1: Executive compensations are higher in counties with higher rates of Catholicism.

2.7 Risk aversion

Next, I summarize literature concerning religion and risk aversion. Miller and Hoffmann (1995) find that more religious individuals are also more risk averse. Moreover, Barsky, Juster, Kimball, and Shapiro (1997) followed by Hilary and Hui (2009) document that Catholics are less risk averse than Protestants. The risk aversion might project into executive compensation through firm performance. Hilary and Hui (2009) provide empirical evidence that the risk aversion is projected to firm behavior and that companies in highly religious US counties behave less risky than companies in low religious US counties. In line with that, Sauner-Leroy (2004) reported that firms invest less as they are more risk-averse. It follows that firms in Catholic counties are expected to invest less than firms in highly non-religious counties but they are expected to invest more than firms in highly Protestant counties. According to Hilary and Hui (2009), lower investment rates project into higher profitability such as return on assets and into lower growth such as return to equity. These differences in firm performance might lead to differences in executive compensations.

2.8 Private benefits

In this section, I review the literature that connects religion and private benefits of control. Private benefits of control might be also an important source of extra pay that a CEO can receive. Since I focus on executives in this work, I can use, as a definition of private benefits, Jensen and Mekling's (1976) definition, which states that private benefits of control are the perquisites that top executives extract. Coffee (2001) documents that there are differences in private benefits among countries. His findings are supported by the work of Dyck and Zingales (2004) who explore that Catholic countries have significantly higher private benefits of control than countries affiliated with other religions, while Protestant countries have significantly lower private benefits of control then countries affiliated with other religions. That could directly suggest that Catholic executives are expected to receive compensation premium by extracting private benefits. However, they measure private benefits of control as "the difference between the price per share paid for the control block and the

price on the Exchange two days after the announcement of the control transaction, divided by the price on the Exchange after the announcement and multiplied by the proportion of cash flow rights represented in the controlling block", which measures private benefits of controlling shareholders. Executives in my dataset are usually not one of the controlling shareholders but they might benefit from helping controlling shareholders to extract rent. Even though the research does not say anything directly about higher CEO rent extraction in Catholic countries, it suggests weaker investor protection and corporate governance in Catholic countries, which might lead to compensation premium.

2.9 Investor protection and creditor rights

For historical reasons there might be a difference between financial and capital markets in Catholic and non-Catholic countries. One of Catholic characteristics is their historical attitude towards ownership. Based on the Bible (Ps. 24:1), which claims, "The earth and its fullness belong to the Lord," Catholics believed that everything belongs to the God and private ownership does not exist. Based on St. Augustine's work from 5th century, Dougherty (2003) concludes that private ownership exists only because the right to own is recognized by temporal rulers but it is not granted by the Creator. This perception of private ownership might have had an impact on development of financial and capital markets and law frameworks in Catholic countries. In particular, it might have slowed down the development of the capital and financial markets in Catholic countries. Stulz and Williamson (2003) document higher financial and capital market development in Protestant countries than in Catholic countries. They conclude it was caused by the Calvinist Reformation, which did not disapprove private ownership and perceived interest as a usual part of business while Catholic Church viewed the payment of interest as dishonest behavior. In addition, Stulz and Williamson (2003) find that debt issuances relative to GNP are lower in Catholic than in Protestant countries. It supports the hypothesis of lower level of financial and capital market development in Catholic countries than in Protestant countries. The impact on companies in Catholic countries is ambiguous. On one hand, they might suffer from less investments and trade. On the other hand, they might face smaller competition as the economy is less open and it is harder for their competitors to obtain financing. Hand in hand with market development goes development of creditor rights. Stulz and Williamson (2003) provide empirical evidence that religion explains variation in creditor rights better than openness to international trade, language, income per capita, or legal system. They claim that Catholic countries have worse investor protection than other countries. They add that Catholic countries also have weaker enforcement of the rights provided by investor protection.

La Porta et al. (2000) document that strong investor protection is connected to effective corporate governance. When firms are forced by stronger investor protection to e.g.

obey higher accounting rules or increase disclosure, information asymmetry between shareholders and managers decreases and corporate governance becomes more efficient. Connecting this research to the above stated finding that Catholic countries have worse investor protection proposes that Catholic states should have less effective corporate governance due to worse investor protection. Less effective corporate governance leads to higher executive compensations since there are grater agency problems (Core et al., 1999). Again, the same hypothesis is attained, that Catholic executives are more likely to have larger compensations because of their weak corporate governance mechanisms, which comes from their religion specifics.

2.10 Corporate governance

Since I find a few indirect links between religion and corporate governance, I focus also on the literature that links religion and corporate governance directly. Lubatkin et al. (2005) suggest two ways how religion can impact corporate governance. First, they argue that religion impacts formal institutions such as the political, legal, and financial systems. These institutions then influence corporate governance. Second, they propose that religion can determine primary socialization of agents. They conclude that religion specific beliefs and perceptions can enter corporate governance and influence opportunistic behavior of executives through the socialization of agents. Another direct link suggests Volonté (2015) who provides empirical evidence that Catholic cantons in Switzerland are more likely to have one-tiered board structure while Protestant cantons are more likely to have two-tiered board structure. The one-tier board is more hierarchical, which is in accordance with Catholic Church structure. On contrary, the two-tier board is more independent, which is in accordance with Protestantism that is based more on individualism (Stulz and Wiliamson, 2003). The two-tier board consists of two independent boards; management board and supervisory board. CEO is usually a member of the one-tier board but not of the second tier of the two-tier board. Thus, Protestants' second tier, the supervisory board, can independently control executives, and so decrease the CEO power and protect the firm from rent extraction. On the other hand, CEOs in Catholic cantons in Switzerland can influence their compensations via one-tier board, where they are usually present. Therefore, based on Volonté's research, I suggest there might be analogical differences in corporate governance across states in the USA and so executive compensations might be higher in Catholic counties than in Protestant counties due to weaker corporate governance, especially due to higher CEO power and less independent monitoring.

Previous sections provide 4 propositions why Catholic compensation premium might be related to corporate governance quality. (1) Dyck and Zingales (2004) document higher private benefits in Catholic countries, which are directly connected to weaker corporate

governance and higher executive compensation. (2) Stulz and Williamson (2003) find worse investor protection in Catholic countries. Worse investor protection indicates weaker corporate governance (La Porta et al., 2000), which can lead to larger compensations through rent extraction. (3) Volonté (2015) proposes that firms in Catholic regions are more likely to have more hierarchical board structures while firms in Protestant regions are more likely to have board structures based on independence. Thus, he suggests that religion impacts corporate governance, which can cause the Catholic executive compensation premium since more hierarchical and less independent board structure might be more vulnerable to rent extraction done by executives. (4) Stulz and Williamson (2003) argue that Catholic religion is based on community. In addition, Lubatkin et al. (2005) suggests that religion can enter corporate governance and influence opportunistic behavior of executives through the socialization of agents. I propose this Catholic sociability in communities might increase opportunities for rent extraction. In fact, the difference in board structure in proposition (3) comes from the difference between individualist Protestants and community based Catholics (Volonté, 2015).

Based on these four propositions with the stress on Volonté (2015) who provides empirical evidence of differences in corporate governance between Catholics and Protestants in Switzerland I expect there are analogical differences in corporate governance in the USA. I examine whether firms headquartered in Catholic regions exhibit lower indices of corporate governance quality, suffer from more accounting concerns, and pay abnormally high audit fees. In, addition, I test if passage of Sarbanes-Oxley Act, which increased corporate governance quality, negatively impacted these abnormally high audit fees. Finally, I explore whether the Catholic compensation premium is related to the weaker corporate governance by adding corporate governance variables as control variables to my original estimation and observing if its magnitude lowers and its significance switches off. So I hypothesize:

Hypothesis #2: Corporate governance quality is lower in counties with higher rates of Catholicism.

Hypothesis #3: Catholic compensation premium is related to corporate governance quality.

2.11 Social networks and other differences

This section describes some other differences between Catholics and non-Catholics with focus on creating social networks and cooperation. One of the differences is in public, Catholic, and Protestant schooling. The difference is best described in the meta-analysis by Jeynes (2013), in which he concludes that Catholic school students reach better results than

students in public schools, especially in non-standardized tests. Protestant school students reach better results than students in public schools as well but they reach better results in standardized tests. Thus, Catholics are the most suitable for rent extraction since they perform well in non-standardized tests. It signals their flexibility and inventiveness, which are crucial for successful rent extraction (Jensen and Meckling, 1976).

Another Catholic characteristic is higher level of trust. Guiso et al. (2005) document that religion influences the level of trust. They estimated that Catholic religion increases the level of trust by approximately 7.5% compared to non-religious individuals. Fukuyama (1995) found that trust impacts economic development. In addition, Guiso et al. (2004) document that trust is positively related to trade in goods, financial assets, and foreign direct investments. Thus, higher level of trust among Catholics could lead to better economic performance and higher levels of socialization and cooperation. However, according to Guiso et al. (2005), the same 7.5% premium in the level of trust holds also for Protestants, who are the largest religious group in the USA, thus to which Catholics should also be compared. It follows that both Catholics and Protestants could have different firm performance from non-religious people and cooperate more than non-religious people thus increase their power and reach higher executive compensations.

Arruñada (2004) finds that Catholics work less than Protestants and that they volunteer more than Protestants. He measures volunteering as a principal component composed of political, charitable, religious, and any other kind of volunteer work respectively. He also provided empirical evidence that Catholics are more tolerant of public fraud and that they are more willing to cover up for their friends than Protestants. In addition, Arruñada (2010) documents that Catholics give more importance to family ties and they prefer personal exchange to impersonal exchange. According to Landes (1998), Catholic countries incline to create bonds between Church and state that decrease competition and protection of private property rights. In addition, Landes argues that they become xenophobic. Based on that, one might suggest that Catholics stick together, create powerful groups to maintain control, and cooperate within these groups. The grouping would limit competition as Landes suggests and it would increase aversion to the other groups, which would explain their xenophobia. In line with Landes, Stulz and Wiliamson (2003) claim that the main difference between Catholic and Protestant religion is that Protestant religion is based on individualism while Catholic religion is based more on community. I would also like to recall Volonté's (2015) finding that difference in board structure comes from the difference between individualist Protestants and community based Catholics. Therefore, I expect Catholics to create more bonds among themselves and cooperate more than Protestants and, based on previous paragraph, even more than non-religious people. Thus, I examine whether Catholics are more connected by

exploring their links to the non-home firm's boards, number of seats on the non-home firm's boards, board size, and dual-class share listing usage.

I formulate my last hypothesis as:

Hypothesis #4: Executives in more Catholic counties exhibit larger connection networks and more cooperation.

3 Data, variables, and methods used

This part addresses the data and methods that are used in the thesis. After describing my dataset, I provide description of the variables, their measures, adjustments, and usage in regression models. In the last section I discuss used estimation methods.

3.1 Data sources

Most of the data that are used in this thesis come from ExecuComp database, which tracks executive compensation in S&P 500 firms for years 1992-1993 and S&P 1500 firms from 1994 to 2012. It follows that the available dataset covers period from 1992 to 2012 and it provides more than 230 000 observations. In addition, I use data on religion, which I gathered from the Association of Religion Data Archives. The data were collected in 1990 and they contain numbers of members of 133 Judeo-Christian church bodies for 3 141 counties. For corporate governance I use Bebchuk's et al. (2009) E-index, Gompers, Ishii, and Metrick's (2003) G-index, and corporate governance ratings from MSCI ESG Stats. The E-index is available for years 1990-2006 with more than 14 000 observations, which were successfully merged by firm and year with 91 360 observations in ExecuComp database. The G-index data cover period from 1990 to 2013 with more than 24 000 observations. I merge them by firm and year with 101 239 observations from ExecuComp database. For managerial abilities I use measure constructed by Demerjian et al. (2012). The measure is available for all years 1992-2012 and I merge it with 26 846 out of total 35 875 observations for CEOs in ExecuComp database. In addition, I use data on taxes provided by Tax Foundation, which assign tax level to 157 850 observations in ExecuComp dataset by state and year for all US states and all years 1992-2012

3.2 Key variables

3.2.1 Executive compensation

My main dependent variable is total executive compensation (*Comp*), which consists of basic annual salary, annual bonus, and sum of all other direct compensations over the given financial year. It is measured in dollars. Since the distribution of total executive compensation is positively skewed I perform logarithmic transformation to obtain better fit of my models with more normally distributed residuals, which is one of the assumptions of OLS method to be efficient (Wooldridge, 2015). I label the resulting variable *Log comp*. In some models I segment the total compensation back to the salary (*Salary*), bonus (*Bonus*), and other direct compensation (*Othercomp*). I perform again the logarithmic transformation on all these variables for the same reason. Final variables are labeled *Log salary*, *Log bonus*, and *Log othercomp*.

3.2.2 Catholic religion

My key independent variable is the rate of Catholicism in a county where the company's headquarters is located. Since the religiosity in a county usually does not change rapidly over time the data were collected by the Association of Religion Data Archives only twice in past three decades. I assume that the distribution of religion stays approximately the same and I use only the data for year 1990. I think it is a good idea to use the year 1990 even though my sample starts in 1992 because it takes time until people learn all about the religion and until it translates into their behavior. In addition, sometimes it is more important in what religion people were raised than what is their actual religion since the behavioral patterns are already embedded in them from their childhood. I measure the rate of Catholicism as a ratio of number of adherents of Catholic Church in a county to the total number of inhabitants in the county. Adherents are considered to be all members, their children, and others who regularly attend services or participate in the congregation. Thus, the variable can attain any number between 0 and 1. Zero is attained in several counties while the maximum attained rate is 79%. I label the variable *Cath rate* and I call regions with high *Cath rate* Catholic regions, as I already defined them in the introduction, and regions with low *Cath rate* non-Catholic regions. Even though there is a little loss of information about magnitude of the Catholic rate in a county, sometimes I need to use indicator variable for Catholic religion (e.g. as an independent variable to the difference-in-differences estimation). Thus, I create indicator variable (*Cath county*), which divides counties to Catholic and non-Catholic. I first calculate the median of *Cath rate* and then construct the variable to be equal to one if the value of *Cath rate* in a county is higher than a median *Cath rate* and to be equal to zero otherwise. Hereinafter I refer to the regions as Catholic counties and non-Catholic counties respectively, when I use *Cath county* variable.

3.2.3 Corporate governance

As I concluded in the literature review part, the difference between executive compensations in Catholic and non-Catholic counties might be caused by religion through differences in corporate governance. Many economists suggest that Catholics are expected to have different corporate governance based on their religion (e.g. Dyck and Zingales, 2004, Lubatkin et al., 2005, or Volonté, 2015). Different corporate governance leads to differences in executive compensations (e.g. Chhaochharia and Grinstein, 2009, Core et al., 1999, or Hermalin, 2005). Thus, I have to use corporate governance variables to explore whether my hypotheses hold.

Since the corporate governance has many characteristics, I use multiple variables to represent it. The most important are three indices of corporate governance quality. First index I use is so called E-index created by Bebchuk, Cohen, and Ferrell (2009). The letter "E" stands for (managerial) entrenchment. The index is composed of six characteristics of

entrenched managers; staggered boards, limits to shareholder bylaw amendments, poison pills, golden parachutes, and supermajority requirements for mergers and charter amendments. They put equal weight to all these characteristics and add values 0 or 1 for each characteristic meaning that the characteristic either is or is not present in a company. The E-index takes value from 0 if the company does not possess any of these characteristics up to six if the company possesses all the entrenchment characteristics. I create variable normalized and inverted E-index by dividing it by six to take values between 0 and 1 and then inverting it (multiplying by -1 and adding 1) so the index represents increasing corporate governance quality by increasing level from 0 to 1. I label the adjusted index *Inv. E-index*.

As next corporate governance variable I use so called G-index created by Gompers, Ishii, and Metrick (2003). Based on the data from Investor Responsibility Research Center (IRRC), they construct the index using 24 governance rules, which limit shareholder rights (increase managerial power). They put equal weights to all 24 provisions so the G-index can reach minimum value of 0 if a firm does not use any of these provisions and maximum value of 24 if a firm uses all 24 provisions to limit shareholder rights. I create variable normalized and inverted G-index by dividing it by 24 to take values between 0 and 1 and then inverting it (multiplying by -1 and adding 1) so the index represents increasing corporate governance quality by increasing level from 0 to 1. I label the adjusted index *Inv. G-index*.

Moreover, I use also data on corporate governance from MSCI ESG Stats database. The database lists strengths and concerns for the largest U.S. firms, among other things, in the area of corporate governance. I use the total numbers of corporate governance strengths (*Corp gov strengths*) and concerns (*Corp gov concerns*) as proxies for corporate governance quality. In addition, I construct an index based on these total numbers. I compute the index as a difference between number of firm's corporate governance strengths and concerns. Resulting variable ranges from -4 to 2 and I label it *Corp gov*. The higher the variable, the more corporate governance strengths and the less concerns the company possesses, thus it has better corporate governance.

In addition to these three general indexes, I use many corporate governance specific variables. Yermack (1996) provides empirical evidence to the theories that small boards of directors are more effective so I control for the board of directors size (*Board size*). Bebchuk et al. (2000) argue that usage of dual class stocks combines incentive problems of (1) dispersed ownership with low level of control over executives and (2) controlled structure with too concentrated power of large blockholder. Thus, I take advantage of indicator variable *Dual class*, which takes value of 1 if the firm issues dual class stocks and 0 otherwise. Based on Stulz and Williamson (2003) and Landes (1998) who suggest that Catholics create communities, I use number of linkages among executives, which is measured as a number of

links of an executive to the non-home firm's boards of directors, and a number of seats that a CEO sits on non-home firm's boards of directors. I label the former *Linkages* and the latter *Seats*.

Last but not least, I create indicator variable to capture the effect of passage of Sarbanes-Oxley Act in 2002 on corporate governance. The variable takes value 1 for years higher than 2002 and 0 otherwise. I label it *SOX*.

3.3 Control and other variables

Literature does not say anything directly about impact of Catholic religion on executive compensations. However, it gives many clues why there might be a difference. To prevent omitted variable bias it is necessary to control for all variables, which are correlated with both Catholic religion and executive compensation.

3.3.1 Risk aversion and firm performance

Another explanation for differences in executive compensation that might be correlated with religion is firm performance. Logically, since the large part of executive compensation is performance based it has to increase with higher firm performance. Religion could be one of the sources of differences in company performance. Hilary and Hui (2009) argue that companies in highly religious US counties behave less risky than companies in low religious US counties. Less risky firm behavior leads to lower investment rates (Sauner-Leroy, 2004). In addition, Barsky, Juster, Kimball, and Shapiro (1997) document that Catholics are more risk averse than non-religious people but less risk averse than Protestants. Thus, firms in Catholic counties are expected to invest less than firms in highly non-religious counties, but they are expected to invest more than firms in highly Protestant counties. According to Hilary and Hui (2009), lower investment rates project into higher profitability such as return on assets and lower growth such as return to equity. Since the executive compensations should be highly correlated with both firm growth and return on assets (ROA), it is meaningful to use them as control variables. I approximate firm growth by growth of sales, which I measure as an annual percentage change in total dollar sales, and which I label *Sales growth*. To control for profitability I compute *ROA* (return on assets) as a ratio of income before extraordinary items to book value of assets, *ROE* (return on equity) as the ratio of net income divided by common shareholders' equity, and buy and hold stock return accumulated over a fiscal year (*BH return*).

Differences in growth then lead to the differences in company size. If Catholics invest less than non-religious people but more than Protestants, they should have smaller firms than non-religious people but larger than Protestants. Already in 1956, Roberts suggested that executive compensation depends on size of the company. Rosen (1982) and Himmelberg and

Hubbard (2000) concluded that in larger firms executives can be paid more due to the scale of operations. As a proxy for size I use two variables. First, I use market value of equity (labeled *Market Val*, which I compute as a product of the number of shares outstanding and their closing price at the last trading day of the fiscal year. Second, I use firm revenues estimated by total dollar sales, and labeled *Sales*. Since these variables have distribution similar to exponential, I perform logarithmic transformation to account for the skewness and large outliers and create variables *Log market val* and *Log sales*.

Dow and Raposo (2005) document that executive compensations are higher in more volatile environment. In addition, Miller et al. (2002) provide empirical evidence that CEOs are also compensated for the firm specific risk. Due to the differences in risk aversion between Catholics and non-Catholics, I must also include a variable that captures business risk of the firm. First, the business risk size might differ between Catholic and non-Catholic regions due to the risk aversion difference. Second, the pay for risk might differ based on risk aversion of executives. The more risk averse groups are expected to be compensated more for the volatility of company performance, since executive compensation is largely performance-based and for the risk of bankruptcy, which might lead to enormous decrease in compensation and loss of executive's reputation. Since the Catholics are more risk averse than non-religious people and less risk averse than Protestants, they should receive higher executive compensations than non-religious people but lower executive compensations than Protestants. I approximate the risk by logarithm of standard deviation of firm's monthly stock returns in the particular fiscal year, which I label *Log return volatility*.

3.3.2 Taxes

Furnham (1988) documents that Protestants perceive taxes negatively. He states it is caused by their high work ethic and their opinion that everyone should work hard and not to rely on social security. It corresponds to the view that Protestants are rather individualists (e.g. Stulz and Williamson (2003) or Landes (1998)). On the other hand, Catholics who are more likely to create communities could oppose taxation less than other people. In line with literature, I find the difference and I depict the higher taxation in Catholic counties compared to the Protestant counties in

Figure 3. I notice that the tax burden is higher in Catholic than in Protestant counties by 1 to 2 percentage points. Since the differences in tax margin can influence the taxable parts of executive compensations (Goolsbee, 1997), I have to control for tax level. As a measure of taxation I use overall tax burden on residents' income in a state from the Tax Foundation. They compute tax burden as a percentage of residents' income that they pay in state and local taxes. I label the variable *Tax*.

3.3.3 Other control variables

In addition, as control variables, I include the most influencing variables on executive compensation in the regressions. One of them is tenure of the executive in the company since longer tenure might be caused by extraordinary skills of the executive or the executive might become more entrenched. Higher executive compensation of longer tenured executives is documented by Finkelstein and Hambrick (1989). The executive tenure is directly measured in years in my dataset and it is labeled *Tenure*. Next, I include indicator variable female due to the fact that women executives receive on average lower compensation than men executives (e.g. Bartlett and Miller (1985)). The variable (*Female*) is equal to one if the executive is a woman and it is equal to zero if the executive is a man. In addition, I add indicator variable CEO to distinguish between the effect of Catholic religion on CEO's and other executives. The variable (*CEO*) is equal to one, if the executive performed as CEO in the particular fiscal year, and zero otherwise. Last but not least, I control for CEO abilities. There is no doubt that CEOs with more abilities could have higher compensations. As Ewing (2000) suggests abilities can be also correlated with Catholic religion. He states that Catholics possess special characteristics that increase their human capital. I use measure constructed by Demerjian et al. (2012), which I label *Abilities*. They first compute firm efficiency using data envelopment analysis (DEA) and then they regress the firm efficiency on six firm characteristics to remove firm-specific efficiency from the measure thus to obtain measure of pure management-specific efficiency.

3.4 Data adjustments and descriptions

To overcome spurious correlation of inflation trending variables I adjust all inflation related variables such as compensations, sales, or market value for Consumer Price index. I use the average CPI for 1982-1984 as the baseline. Next, I performed logarithmic transformation on variables, such as compensations, firm size, or sales, to account for skewness of the variables thus to increase the probability that my residuals fulfill the normality assumption, which is crucial for OLS method to be efficient (Wooldridge, 2015). In addition, I winsorized at 1% level all variables that were suspected of containing outliers to eliminate possible large impact of these observations on my results. Table 18, enclosed in the appendix, provides summary of variables definitions and Table 1 summarizes the basic statistics for my variables. Variables are already winsorized but not transformed logarithmically for easier interpretation. Table 2 displays correlation matrix including the most important variables.

Table 1: Descriptive Statistics

Variable abbreviation	*Units*	*#Obs*	*Mean*	*Std. Dev.*	*Min*	*Max*
Comp	1000$	167 946	1 027.1	1 449.0	67.8	9 297.6
Salary	1000$	189 268	198.1	122.7	18.3	670.5
Bonus	1000$	189 268	107.6	193.0	0	1 194.7
Othercomp	1000$	167 946	696.2	1 248.3	0	7 971.9
Cath rate	-	121 009	.26	.15	0	.79
Cath county	0 or 1	231 202	.21	.41	0	1
Market val	1mil$	179 979	5 364.4	13 653.6	41.4	98 677.7
Sales	1mil$	190 156	4 231.3	9 107.6	17.3	61 587.0
Sales growth	-	181 959	.14	.20	-.20	1.17
ROA	-	190 144	.09	.11	-.38	.37
ROE	-	189 925	.08	.43	-2.37	1.98
BH return	-	172 870	.06	.50	-.82	2.45
Return volatility	-	178 538	.03	.01	.01	.07
CEO	0 or 1	231 202	.15	.36	0	1
Female	0 or 1	231 202	.06	.24	0	1
Tenure	years	231 202	4.35	3.41	1	16
Age	years	182 626	51.5	7.98	13	96
Abilities	-	172 671	.014	.14	-.31	.40
Inv. E_index	-	91 360	.60	.21	.17	1
Inv. G_index	-	101 133	.62	.11	.38	.83

Continued on next page

Table 1 Continuing

Corp gov	-	50 206	-.66	.89	-4	2
Corp gov strengths	-	98 070	.14	.38	0	3
Corp gov concerns	-	98 070	.48	.61	0	4
Board size	seats	110 958	9.23	2.36	5	16
Dual class	0 or 1	87 436	.08	.26	0	1
Audit fees	-	109 692	.14	.59	-6.00	3.93
Accounting concerns	0 or 1	47 206	.07	.25	0	1
Linkages	links	231 202	.95	3.69	0	23
Seats	seats	231 202	.10	.35	0	2

Table 2: Correlation matrix

	Log comp	*Cath rate*	*Audit fees*	*Corp gov*	*G-index*	*ROA*	*Sales growth*	*Tax*	*Seats*
Log comp	1.000								
Cath rate	0.041	1.000							
Audit fees	0.116	0.122	1.000						
Corp gov	-0.255	-0.021	-0.067	1.000					
G-index	-0.066	-0.020	-0.053	0.081	1.000				
ROA	0.164	-0.037	-0.069	-0.001	-0.052	1.000			
Sales growth	0.109	-0.037	-0.174	-0.077	0.095	0.086	1.000		
Tax	0.061	0.545	0.085	0.014	0.030	-0.016	-0.025	1.000	
Seats	0.306	0.057	0.090	-0.043	-0.066	0.022	-0.042	0.047	1.000

3.5 Methodology

To estimate the models I use mainly Ordinary Least Squares method (OLS) since it is the most efficient estimator if its assumptions hold (Wooldridge, 2015). Following subsections discuss verifying the assumptions and dealing with their violations.

3.5.1 Multicollinearity

To address the issue of multicollinearity I compute *variance inflation factor (vif)* for all variables included in a model. The factor is computed as follows. First, independent variable of my interest is regressed on all the remaining independent variables. Then, unexplained variance (one minus R-squared) is saved. The *vif* is computed as an inverse to the unexplained variance. By rule of thumb the unexplained variance should be at least 10% (0.1), otherwise my model would suffer from multicollinearity. Thus, the *vif*, which is an inverse, should not be higher than 10 (=1/0.1). I report the results for all models in Appendix.

3.5.2 Error independence and autocorrelation

Another assumption that needs to be satisfied is the independence of error term and explanatory variables. Since my data have panel structure it would be good to control for firm and county specifics and use fixed effects estimator. I expect the autocorrelation to be present since compensation of an executive in a year will be a good predictor of the compensation of the executive in consecutive year. When using the fixed effects estimator, the observations are differenced and the firm and county specific error would disappear. However, the main variable, in which I am interested, is the rate of Catholicism in a county and it does not vary over time. Thus, I cannot difference my annual data because I would lose my most important variable. Since I am aware of this shortcoming in my dataset, I cluster my standard errors by county and fiscal year to obtain robust results. I do not cluster on an executive or firm level since Cameron (2012) suggests that the clustering should be done only on the highest level in case of nested clustering. I do not cluster on state level, which is the highest, because Kézdi (2004) claims that there should be at least 50 clusters of approximately same size to obtain consistent cluster-robust standard errors. There are 50 US states in my dataset but they form only 42 clusters and they are not of the same size. At the end of the results part I provide robustness check for different levels of clustering.

3.5.3 Homoscedasticity

Since I use dual-cluster-robust standard errors my statistical inference is also robust to heteroscedasticity.

3.5.4 Time trending

To overcome spurious correlation between time trending variables and to prevent coincidental correlation caused by year specific effects I include year indicator variables for

each year (e.g. 2004 variable will be equal to one if the year is 2004, and zero otherwise) except one to avoid multicollinearity with the intercept. I do not report their coefficients to save space since they do not carry any important meaning for my results.

3.5.5 Other estimation methods

In a few supporting equations I use logit and probit regression models for estimation since my dependent variable is binary. I then report only marginal effects computed at means of all variables. I compute cluster-robust standard errors on county level in these models.

4 Models and results

In the first part of this section, I test Hypothesis #1 that executives in counties with higher rate of Catholic religion receive higher compensation. In the second part, I investigate the relationship between Catholic religion and corporate governance and I link Catholic compensation premium to the corporate governance. The last part explores differences between corporate governance in Catholic and non-Catholic counties and suggests possible causes of the differences.

4.1 Executive compensation and Catholic religion

I begin by testing Hypothesis #1 that executives employed by firms headquartered in more Catholic regions receive higher total compensation. I do it by regressing logarithm of total executive compensation on rate of Catholic adherents and my control variables discussed above. The equation is labeled Model (1). I include lag of firm's market value rather than current market value since the salary and other parts of compensation are more likely to be negotiated based on the last year's market value than on the upcoming one. I also include lag of buy and hold return variable since the last year's performance can have impact on this year's compensation through the negotiation process. In order to find, which executives exhibit the Catholic premium, I decompose the estimation on CEOs who hold a seat on firm's board of directors and CEOs who do not, and on non-CEO executives who hold a seat on firm's board of directors and those who do not. Hereinafter I refer to the board of directors as the *board*. In line with previous literature, which suggests the premium is caused by differences in human capital, I expect the premium to hold for all executives, even though it could be larger for executives who also hold a seat on the firm's board and CEOs due to operations of scale.

Model (1): Compensation premium and Catholic religion

$$\begin{aligned} Log\ comp\ = {} & \alpha_0 + \beta_1 * Cath\ rate + \beta_2 * Lag\ log\ market\ val + \beta_3 * Log\ sales \\ & + \beta_4 * BH\ return + \beta_5 * Lag\ BH\ return\ + \beta_6 *\ Log\ return\ volatility \\ & + \beta_7 * Tenure\ + \beta_8 * Tax + \beta_9 * Sales\ growth + \beta_{10} * ROA \\ & + \beta_{11} * Female + \varepsilon \end{aligned}$$

In Table 3, I present estimation results of Model (1) with restrictions on observations based on executive functions in a firm. Compared to the theoretical Model (1) I omit variables *ROA*, *Sales growth*, and *Female* since they were neither jointly significant in any of the restricted estimations nor in the estimation with non-restricted observations (p-value of F-test when included in the non-restricted estimation equaled 0.14). In the first column, I find positive relationship between Catholic religion and compensation of executives who are not

board members. However, the coefficient is not significant even on 90% level of significance. In the third column, I document even negative relationship between Catholic religion and compensation of CEOs who are not board members. The result is again insignificant, possibly due to small number of observations (CEOs who are not board members). Therefore, I cannot reject that these coefficients are statistically different from zero and I conclude that I do not find compensation premium for any executives of firms headquartered in Catholic regions who are not board members. On the other hand, in the second column, I document high and very significant premium for non-CEO executives of firms headquartered in Catholic regions who are board members. Moreover, in the last column, I notice that CEOs who are board members obtain also compensation premium if the firm is headquartered in a Catholic region. Both of these results are significant on 99% confidence level. I conclude that the premium holds only for those CEOs and executives who hold a seat on firm's board of directors. Thus, I cannot fully confirm Hypothesis #1 since I did not find enough empirical evidence to reject that the coefficient of Catholic rate is significantly different from zero for other executives. This result rules out many possible sources of the premium. I suggest the premium is not caused by any factor that is common for all executives in Catholic regions such as price level, taxes, work ethic, and so on. Otherwise, it would hold for all executives.

Next, I repeat the estimation of Model (1) including observations on all executives who are board members and I decompose the total compensation to salary, bonus, and other compensation to find the size of Catholic premium and to find which parts of the executive compensation exhibit the Catholic premium.

I display estimation results in Table 4. The first column describes that there exists compensation premium for board member executives in more Catholic regions. The model estimates that the compensation increases approximately by 0.51% when the rate of Catholic adherents in the county where the firm is headquartered is higher by 1%. The decomposition to the salary, bonus, and other direct compensation captured by the letter columns indicates that there are slightly higher salaries (0.24% increase for 1% increase in Catholic rate) and much higher other direct compensation (0.90% increase for 1% increase in Catholic rate) in more Catholic regions. Bonuses are also higher in more Catholic regions (0.58% increase for 1% increase in Catholic rate), even though the coefficient is significant only on 95% level of confidence. Other coefficients work as I expected. Total executive compensation increases with firm value (*Lag log market val*), firm's sales (*Log sales*), stock performance (*BH return* and *Lag BH return)*, and firm risk (*Log return volatility)*. Tenure increases compensation through significant increase in salary. Tax burden increases salary, but the coefficient significance is slightly under 90% level of significance. On 90% level of significance it decreases other direct compensation. It might be caused by higher taxation of capital gains in the regions with higher tax burden. Then, executives would prefer to receive compensation in

salaries and bonuses rather than other income such as stocks or options but it would need to be further researched to conclude.

Table 3: Catholic Premium and executive rank

	Log comp (Non-CEO executives without a seat on the board of directors)	*Log comp (Non-CEO executives with a seat on the board of directors)*	*Log comp (CEOs without a seat on the board of directors)*	*Log comp (CEOs with a seat on the board of directors)*
	coef/t	*coef/t*	*coef/t*	*coef/t*
Cath rate	0,119	0,439***	-0,108	0,487***
	(1,34)	(2,83)	(-0,18)	(3,92)
Lag log market val	0,347***	0,309***	0,446***	0,285***
	(17,92)	(14,79)	(6,16)	(14,39)
Log sales	0,110***	0,140***	0,084*	0,183***
	(6,90)	(5,72)	(1,66)	(9,56)
BH return	0,223***	0,244***	0,238***	0,240***
	(14,22)	(11,50)	(3,33)	(13,47)
Lag BH return	0,028*	0,061**	0,119	0,061***
	(1,93)	(2,42)	(0,88)	(4,02)
Log return volatility	0,378***	0,311***	0,074	0,143***
	(8,64)	(6,00)	(0,30)	(2,69)
Tenure	0,021***	-0,008	0,013	-0,007*
	(8,19)	(-1,34)	(0,86)	(-1,70)
Tax	0,043***	0,017	0,025	0,018
	(3,78)	(0,75)	(0,45)	(1,45)
Intercept	3,549***	4,099***	1,716*	3,489***
	(22,93)	(13,72)	(1,84)	(15,82)
Year FE	Yes	Yes	Yes	Yes
N	53 676	11 501	311	13 832
Adj. R-squared	0,514	0,390	0,453	0,456

*The table reports regression results for Model (1) with restrictions on observations based on executives' position in a firm. In the first column, observations are restricted to non-CEO executives who **are not** board members. In the second column, observations are restricted to non-CEO executives who **are** board members. In the third column, observations are restricted to CEOs who **are not** board members and in the last column the observations are restricted to CEOs who **are** board members. The dependent variable is either logarithm of total compensation (Log comp) or logarithm of its components (Log salary, Log bonus, and Log othercomp). Other variables are defined in Table 18. All continuous variables are winsorized at 1% level. T-statistics are reported in parentheses and are based on dual-clustered standard errors at the county and year level. Statistical significance at 1%, 5%, and 10% level is depicted as ***, **, and * respectively.*

In addition, Figure 4 depicts graphically the difference between executive compensations in Catholic and non-Catholic counties and its development over time. The Figure 4 depicts that median executive compensation is constantly higher in Catholic counties and it ranges from less than 10% in 2008 up to almost 50% in 2000.

Table 4: Catholic compensation premium

	Log comp	*Log salary*	*Log bonus*	*Log othercomp*
	coef/t	*coef/t*	*coef/t*	*coef/t*
Cath rate	0,509***	0,244**	0,577**	0,904***
	(3,55)	(2,24)	(2,22)	(3,11)
Lag log market val	0,306***	0,019	0,091***	0,528***
	(17,46)	(0,92)	(2,74)	(11,58)
Log sales	0,145***	0,153***	0,288***	0,137***
	(6,74)	(12,19)	(7,51)	(3,52)
BH return	0,246***	0,012	0,293***	0,342***
	(15,64)	(1,00)	(10,35)	(6,77)
Lag BH return	0,060***	-0,010	0,149***	-0,016
	(3,37)	(-0,97)	(7,04)	(-0,29)
Log return volatility	0,218***	-0,077**	-0,024	0,250***
	(5,83)	(-1,98)	(-0,30)	(2,96)
Tenure	0,001	0,021***	-0,005	-0,013*
	(0,30)	(6,92)	(-0,64)	(-1,69)
Tax	0,016	0,023	0,017	-0,051*
	(1,00)	(1,54)	(0,48)	(-1,72)
Intercept	3,740***	3,648***	1,601***	1,154**
	(18,63)	(21,44)	(4,08)	(2,08)
Year FE	Yes	Yes	Yes	Yes
N	25 409	25 611	14 928	24 920
Adj. R-squared	0,401	0,250	0,269	0,175

*The table reports regression results for Model (1). The dependent variable is either logarithm of total compensation (Log comp) or logarithm of its components (Log salary, Log bonus, and Log othercomp). Other variables are defined in Table 18. The observations are restricted only to board member executives. All continuous variables are winsorized at 1% level. T-statistics are reported in parentheses and are based on dual-clustered standard errors at the county and year level. Statistical significance at 1%, 5%, and 10% level is depicted as ***, **, and * respectively.*

The results presented in Table 4 suggest that the reason for higher compensations could be related to the corporate governance. Bebchuk and Fried (2004) claim that the rent extraction is done by managers through the least transparent operations using stock options, perquisites, pensions, and severance pay, which are in my case described by *othercomp*

variable. The coefficient of *Cath rate* is more than three times higher in the model with dependent variable *othercomp* than with dependent variable *salary* and by more than 50% higher than with dependent variable *bonus*. Table 4 displays that in a firm located in a county with higher Catholic rate by 1% an executive will have salary higher by only 0.24 % and bonus higher by only 0.58% while other direct compensation higher by 0.90%. In addition, in salaries and bonuses rather than other income such as stocks or options but it would need to be further researched to conclude. In Table 3, I present results that the Catholic compensation premium holds only for board member executives, which rules out many possible drivers of compensation premium that are common for all executives in Catholic regions such as work ethic. Based on my results and my literature review I follow by testing whether there are differences in corporate governance between Catholic and non-Catholic regions and whether the premium is related to these differences.

4.2 Corporate governance and Catholic compensation premium

In this part, I first analyze whether there is worse corporate governance in firms headquartered in Catholic regions (Hypothesis #2) and then I link the Catholic compensation premium to the corporate governance quality (Hypothesis #3). Regarding the relationship between Catholic religion and corporate governance I expect that (1) corporate governance indices of firms headquartered in Catholic counties are lower, (2) firms headquartered in counties with higher proportion of Catholic adherents are more likely to be connected with accounting concerns, and that (3) they pay excessive audit fees, which were relatively lowered by the passage of the SOX Act. Regarding the link of Catholic compensation premium and corporate governance I predict that adding corporate governance quality variables to the compensation premium model will switch off the premium significance.

If the corporate governance is worse in counties with higher proportion of Catholic religion, firms headquartered in these regions are expected to have lower indices of corporate governance quality. To test it I use as dependent variables three corporate governance indices; inverted and normalized E-index, *Corp gov* index decomposed to strengths and concerns, and inverted and normalized G-index, which are described in control variables section. As independent variables I use indicator variable *Cath county* to capture the difference between Catholic and non-Catholic regions and variables to control for firm size (*Log market val* and *Log sales*), performance (*ROA* and *Sales growth*), and risk (*Log return volatility*). I expect larger companies as measured by sales to have more issues with quality of corporate governance and firms with larger market value to have better corporate governance since corporate governance projects to the perception of investors thus to the market value. Based on e.g. Bhagat and Bolton (2008) I expect firms with higher corporate governance quality to

be positively related to the firm performance (higher *ROA* and *Sales growth*). Model (2) displays the equation to be tested.

Model (2): Corporate governance indices and Catholic religion

$$Inv.E\_index \text{ or } Inv.G\_index \text{ or } Corp\ gov\ concerns \text{ or } Corp\ gov\ strengths = \alpha_0 + \beta_1 * Cath\ county + \beta_2 * Log\ market\ val + \beta_3 * Log\ sales + \beta_4 * Log\ return\ volatility + \beta_5 * ROA + \beta_6 * Sales\ growth + \varepsilon$$

Table 5 presents estimation results of Model (2). The former column displays results for inverted and normalized E-index. The coefficient of *Cath county* is estimated to be -0.037. The significance level is 90%. Therefore, I document that firms headquartered in Catholic counties have on average lower inverted and normalized E-index by approximately 3.7%. In fact it means that their executives are more entrenched thus lower quality of corporate governance is expected. Next column displays results for inverted and normalized G-index. The coefficient of *Cath rate* equals approximately -0.186, which means that firms headquartered in Catholic counties have lower inverted and normalized G-index by approximately 18.6%. The level of significance with dual-cluster robust standard errors is again 90%. The letter two columns show results for *Corp gov concerns* and *Corp gov strengths*. I document that firms headquartered in Catholic counties have on average more corporate governance concerns by 0.13 concerns on 90% level of significance. On the other hand, they do not have significantly more corporate governance strengths. The coefficient is equal to only 0.03 and it is not significant even on 90% level of significance. Coefficients of other independent variables turned out to be in accordance with my expectations. Higher market value is connected to the better corporate governance but it is also connected to higher number of corporate governance concerns. I notice in all four versions of my model that larger firms in terms of sales suffer from worse corporate governance. As I expected, firm performance is positively related to the corporate governance quality. I document that return on assets is negatively related to number of corporate governance concerns and that sales growth is positively related to the inverted and normalized G-index. I conclude that corporate governance quality is poorer in firms headquartered in Catholic counties than in non-Catholic counties.

Table 5: Corporate governance indices and Catholic religion

	Inv. E_index	*Inv. G_index*	*Corp gov concerns*	*Corp gov strengths*
	coef/t	*coef/t*	*coef/t*	*coef/t*
Cath county	-0,037*	-0,186*	0,134*	0,027
	(-1,83)	(-1,86)	(1,66)	(0,59)
Log market val	0,043***	0,011***	0,147***	0,039***
	(4,43)	(2,74)	(5,96)	(3,80)
Log sales	-0,020**	-0,014***	0,043**	-0,011**
	(-2,14)	(-3,12)	(-2,38)	(1,17)
Log return volatility	0,097***	0,010***	0,199***	0,020
	(4,15)	(5,76)	(6,07)	(0,97)
ROA	-0,063	0,015	-0,346***	-0,018
	(-0,80)	(0,41)	(-2,87)	(-0,19)
Sales growth	0,039	0,044***	-0,148	-0,022
	(1,13)	(2,65)	(-1,38)	(-0,52)
Intercept	0,865***	0,873***	-0,625**	0,288*
	(9,76)	(21,12)	(-2,11)	(-1,73)
Year FE	Yes	Yes	Yes	Yes
N	40 921	46 244	41 269	58 226
Adj. R-squared	0,077	0,083	0,076	0,040

*The table reports regression results for Model (2). The dependent variables are proxies for corporate governance quality (Inv. E_index, Inv. G_index, Corp gov concerns, and Corp gov strengths). Other variables are defined in Table 18. All continuous variables are winsorized at 1% level. T-statistics are reported in parentheses and are based on dual-clustered standard errors at the county and year level. Statistical significance at 1%, 5%, and 10% level is depicted as ***, **, and * respectively.*

To provide additional evidence that corporate governance is worse in firms headquartered in Catholic counties I explore other issues related to corporate governance. One of the issues is audit fees level. According to Bedard and Johnstone (2004), boards of directors and audit committees are expected to control quality of financial reporting thus help external auditors to control it. However, if the external auditors doubt quality of corporate governance mechanism in a firm they might increase their audit effort and charge higher audit fees as a premium for potential additional costs for auditing such firm with higher corporate governance risk (Bedard and Johnstone, 2004). Therefore, if firms headquartered in more Catholic regions have weaker corporate governance they should be charged more on audit fees. Moreover, I expect that after passage of Sarbanes-Oxley Act (SOX), which established strict rules for corporate governance, corporate governance practices in firms in Catholic

counties were forced to improve thus their excessive audit fees should decrease compared to the firms in non-Catholic counties. I base my prediction on previous research (e.g. DeFond and Lennox, 2011) that uses passage of Sarbanes and Oxley Act as an external shock to the corporate governance. This quasi-natural experiment can be tested using difference-in-differences method (Wooldridge, 2015). As dependent variable I use *Audit fees*, which measures abnormal logarithm of aggregate audit fees adjusted for industry fixed effects. As independent variables I include proxies for firm size (*Log market val* and *Log sales*) and firm performance (*ROA* and *Sales growth*). Based on previous research (e.g. Bedard and Johnstone, 2004) I expect larger firms as measured by sales to pay higher audit fees due to more complex and labor-intensive audit work. On the other hand, I expect negative coefficient of market value since higher audit fees are related to some concerns that market also perceives negatively. I predict audit fees to be lower for healthy, well performing firms with high *ROA* and *Sales growth* also in line with Bedard and Johnstone (2004). To use the difference-in-differences method I add three indicator variables to capture the different effect of the SOX on Catholic and non-Catholic counties. As a base I choose non-Catholic counties before the SOX. So my indicator variables are (1) Catholic county, which represents the treatment group, (2) SOX, which indicates whether the policy applied in a given year, and (3) their interaction term. My main interest in this model is in the coefficients including Catholic county. The *Cath county* coefficient will present the difference between audit fees paid by firms headquartered in Catholic and non-Catholic counties. The *Cath county*SOX* coefficient will display the difference in SOX impact on firms headquartered in Catholic counties compared to non-Catholic counties. If the coefficient turns out to be significantly negative it suggests that passage of the Sarbanes and Oxley Act improved corporate governance in Catholic regions compared to the non-Catholic regions and decreased excessive audit fees paid by firms located in Catholic regions.

Model (3): Audit fees and Catholic religion

$$\begin{aligned} Audit\ fees = {} & \alpha_0 + \beta_1 * Cath\ county + \beta_2 * SOX + \beta_3 * Cath\ county * SOX \\ & + \beta_4 * Log\ market\ val + \beta_5 * Log\ sales + \beta_6 * ROA + \beta_7 *\ Sales\ growth \\ & + \varepsilon \end{aligned}$$

Table 6 presents estimation results of Model (3). I document that firms headquartered in Catholic counties pay higher audit fees by 20.1%. According to my results, passage of SOX Act, which strengthened rules for corporate governance, increased the level of audit fees on average by approximately 20%. In addition, I notice a decrease in audit fees for firms headquartered in Catholic counties compared to the firms in non-Catholic counties by approximately 8.5% after the SOX passage. Other independent variables work exactly as I expected. Higher audit fees are positively related to the firm size measured by sales and

negatively related to the market value and firm performance, which I measure by ROA and growth of sales. All the results are significant on 99% level of significance except the coefficient of market value, which is significant on 95%. I conclude that firms located in counties with high rates of Catholic adherents pay higher audit fees. I further document that the excess of the Catholic audit fees was reduced by passage of Sarbanes and Oxley Act. I suggest it is caused by weaker corporate governance in these regions and its quality improvement after SOX Act passage.

Table 6: Audit fees and SOX

	Audit fees
	coef/t
Cath county	0,201***
	(4,51)
SOX	0,201***
	(6,40)
*Cath county*SOX*	-0,085***
	(-28,18)
Log market val	-0,043**
	(-2,30)
Log sales	0,125***
	(5,87)
ROA	-0,752***
	(-4,72)
Sales growth	-0,167***
	(-2,92)
Intercept	-0,591***
	(-5,15)
Year FE	No
N	64 541
Adj. R-squared	0,113

*The table reports regression results for Model (3.) The dependent variable is measure of abnormal audit fee (Audit fees). Other variables are defined in Table 18. All continuous variables are winsorized at 1% level. T-statistics are reported in parentheses and are based on dual-clustered standard errors at the county and year level. Statistical significance at 1%, 5%, and 10% level is depicted as ***, **, and * respectively.*

To provide additional evidence I explore the relationship between Catholic religion and accounting concerns. I presume that if firms headquartered in regions with higher rates of Catholic adherents have worse corporate governance they might more likely suffer from accounting concerns. This prediction is in line with e.g. Agrawal and Chadha (2005) who

document higher probability of restatement in firms with weaker corporate governance. To test it I regress indicator variable *Acounting concern* on rate of Catholic adherents and several other independent variables. Since the dependent variable is binary, I also estimate non-linear logit and probit models to verify my results. I expect accounting concerns to be present more likely in larger firms (higher *Log market val* and *Log sales*), firms with more volatile stock returns (higher *Log return volatility*), and less likely in better performing firms (higher *ROA* and *Sales growth*).

Model (4): Acounting concerns and Catholic religion

$$Acounting\ concerns = \alpha_0 + \beta_1 * Cath\ rate + \beta_2 * Log\ market\ val + \beta_3 * Log\ sales + \beta_4 * Log\ return\ volatility + \beta_5 * ROA + \beta_6 * Sales\ growth + \varepsilon$$

Table 7 presents estimation results for Model (4). I find that rate of Catholic adherents in county where the firm is headquartered is positively related to the probability of having accounting concerns. In the former column, I display results estimated by OLS method and I document that 1% increase in the rate increases the probability of accounting concerns by 0.1%. The result is significant on 95% level of significance using dual-clustered standard errors on the county and year level. In the letter two columns, I report results estimated by logit and probit regression models. Since the models are non-linear, I report marginal effects computed at the means of all variables. Even though, the standard errors are clustered only on county level, the results are slightly less significant than for OLS method. The coefficients indicate that 1% increase in the rate of Catholic adherents increases the probability of accounting concerns by 0.06%. Other coefficients resulted in line with my expectations. I found positive relationship between accounting concerns and firm size, especially when measured by market value, between accounting concerns and firm risk, measured by stock return volatility, and negative relationship between accounting concerns and firm performance, measured by ROA and sales growth. I conclude that firms headquartered in more Catholic regions are more likely to experience accounting concerns. I suggest it is an additional evidence of worse corporate governance in these regions.

Table 7: Accounting concerns and Catholic religion

	Accounting concerns (OLS)	*Accounting concerns (Logit)*	*Accounting concerns (Probit)*
	coef/t	*coef/t*	*coef/t*
Cath rate	0,109**	0,062**	0,065*
	(2,18)	(1,96)	(1,79)
Log market val	0,031***	0,019**	0,023**
	(2,62)	(2,09)	(2,48)
Log sales	0,010	0,005	0,005
	(1,16)	(0,82)	(0,73)
Log return volatility	0,066**	0,041*	0,047**
	(2,20)	(1,95)	(2,11)
ROA	-0,198**	-0,114**	-0,143**
	(-2,44)	(-2,03)	(-2,23)
Sales growth	-0,185***	-0,166***	-0,180***
	(-4,89)	(-3,43)	(-3,65)
Intercept	-0,003	-0,251**	-0,285***
	(-0,03)	(-2,86)	(-2,98)
Year FE	Yes	Yes	Yes
N	24 611	21 071	21 071
Adj. R-squared	0,059	0,104	0,106

*The table reports regression results for Model (4). The dependent variable is indicator variable (Accounting concerns), which indicates whether the firm suffers from accounting concerns. Other variables are defined in Table 18. All continuous variables are winsorized at 1% level. The former column displays results for OLS estimation method. T-statistics are reported in parentheses and are based on dual-clustered standard errors at the county and year level. The letter two columns report marginal effects for logit and probit estimation method respectively. The marginal effects are computed at the means of all variables. T-statistics are reported in parentheses and are based on clustered standard errors at the county level. Statistical significance at 1%, 5%, and 10% level is depicted as ***, **, and * respectively.*

Assuming, based on my results, that executive compensation is higher in firms headquartered in counties with high rates of Catholic adherents and that corporate governance quality is lower in these regions, I test whether the compensation premium is related to the corporate governance. My last prediction in this section expects that if the premium is related to the corporate governance it should decrease or even disappear when I control for corporate governance variables. I repeat estimation of Model (1) but this time I include two variables representing corporate governance quality in the model. The first variable represents number of corporate governance concerns in a company and the other one represents inverted and

normalized entrenchment index. Their construction is described in the control variables section. If the corporate governance variables explain the Catholic compensation premium its coefficient will have lower magnitude and it will become insignificant.

Model (5): Corporate governance and executive compensation

$$\begin{aligned} Log\ comp = \ & \alpha_0 + \beta_1 * Cath\ rate + \beta_2 * Lag\ log\ market\ val + \beta_3 * Log\ sales \\ & + \beta_4 * BH\ return\ + \beta_5 * Lag\ BH\ return\ + \beta_6 *\ Log\ return\ volatility \\ & + \beta_7 * Tenure\ + \beta_8 * Tax + \beta_9 * Sales\ growth + \ \beta_{10} * ROA \\ & + \beta_{11} * Female + \beta_{12} * Corp\ gov\ concerns + \beta_{13} * E\_index + \varepsilon \end{aligned}$$

Table 8 displays Catholic premium coefficients when controlled for corporate governance indices based on theoretical Model (5). In the former column, I replicate original results of Model (1) for comparison. In the letter column, I display the result when I include corporate governance quality proxies. The coefficient of inverted and normalized E-index is significant and negative, which is in accordance with prediction that higher entrenchment (lower inverted E-index) leads to higher compensation since it is harder to punish or fire managers. The *Corp gov concerns* coefficient shows significant negative impact of number of corporate governance concerns on CEO compensation. It is again in accordance with my prediction that higher quality corporate governance (less concerns) is able to better prevent rent extraction. My results indicate that if I include these two variables in the original model, the Catholic premium estimated coefficient reduces from 0.5 to 0.2 and it is not significant anymore even on 90% level of significance. Therefore, I conclude that the premium is related to the corporate governance.

Table 8: Corporate governance and Catholic premium

	Log comp	*Log comp*
	coef/t	*coef/t*
Cath rate	0,509***	0,226
	(3,55)	(0,98)
Lag log market val	0,306***	0,284***
	(17,46)	(8,14)
Log sales	0,145***	0,118***
	(6,74)	(2,09)
BH return	0,246***	0,308***
	(15,64)	(4,95)
Lag BH return	0,060***	0,138**
	(3,37)	(2,09)
Log firm risk	0,218***	0,078
	(5,83)	(1,03)
Tenure	0,001	-0,007
	(0,30)	(-1,01)
Tax	0,016	0,033
	(1,00)	(1,11)
Corp gov concerns		0,390***
		(6,14)
Inv. E_index		-0,647***
		(-3,74)
Intercept	3,740***	3.534***
	(18,63)	(8,53)
Year FE	Yes	Yes
N	25 409	3 738
Adj. R-squared	0,4	0,383

*The table reports regression results for Model (5). The dependent variable is logarithm of total compensation (Log comp). The main independent variables are rate of Catholicism (Cath rate) and two corporate governance quality variables (Inv. E_index and Corp gov concerns). Other variables are defined in Table 18. All continuous variables are winsorized at 1% level. T-statistics are reported in parentheses and are based on dual-clustered standard errors at the county and year level. Statistical significance at 1%, 5%, and 10% level is depicted as ***, **, and * respectively.*

4.3 Alternative explanations

4.3.1 Abilities and work ethic

One of the alternative explanations of Catholic premium might be higher managerial abilities or work ethic of CEOs in Catholic counties. It is possible that more skillful CEOs tend to cluster in more Catholic counties or that Catholic CEOs possess more human capital

based on their religion (e.g. they work harder). To test whether the compensation premium for CEOs in more Catholic counties is not caused by the difference in abilities or work ethic I add an extra control variable to the Model (1). In my previous regressions I already control for CEO's tenure, which might also serve as a proxy for his or her experience thus abilities. In this check I offer two more controls for managerial abilities and work ethic. As a first proxy for abilities and work ethic I use measure constructed by Demerjian et al. (2012). This measure includes all the managerial contribution to the firm performance so it captures managerial skills, experience, hard work, care, and so on. In addition, I use age as a simple proxy for abilities and experience. Higher the CEO's age the more experience and knowledge the CEO can have. Since the abilities might increase with decreasing rate, I also include second power of the variable *Age*. The second power was constructed from demeaned age to prevent multicollinearity in the model.

Model (6): Alternative explanation checks for compensation premium:

$$\begin{aligned} Log\ comp = {} & \alpha_0 + \beta_1 * Cath\ rate + \beta_2 * Lag\ log\ market\ val + \beta_3 * Log\ sales \\ & + \beta_4 * BH\ return\ + \beta_5 * Lag\ BH\ return\ + \beta_6 *\ Log\ return\ volatility \\ & + \beta_7 * Tenure\ + \beta_8 * Tax + \beta_9 * Sales\ growth + \beta_{10} * ROA \\ & + \beta_{11}\ * Abilities + \beta_{12} * Age + \beta_{13} * Adj.Age\_sq + \varepsilon \end{aligned}$$

In the first column of Table 9, I recall estimation results of the original equation. Due to the fact that the managerial contribution variable is defined only for CEOs, I recall estimation results from the last column of Table 3, which presents results restricted on CEOs only. In the second column, I use measure constructed by Demerjian et al. (2012) and I notice that even though the sign of managerial contribution variable is positive as I expect, the coefficient is insignificant and it does not change significantly the coefficient of Catholic premium. The Catholic rate coefficient decreases only marginally from 0.465 to 0.442 and stays on 99% level of significance. The *Abilities* coefficient is possibly insignificant due to the fact that I also include outcomes of managerial contribution such as sales or buy and hold return in my regression. Third column reports estimation results when I use CEO's age as a proxy for managerial abilities to check whether the CEOs in Catholic counties are not older and more experienced. The coefficient of age is positive and the adjusted second power of age is significantly negative as I expected. However, the first power is not statistically significant. Nevertheless, it does not change the size or significance of the Catholic premium. The letter column displays estimation results when I include all the proxies for abilities and work ethic in the model. Again, I notice that the Catholic premium coefficient stays over 0.4 and statistically significant on 99% confidence level. Thus, I can conclude that the Catholic compensation premium is not caused by differences in abilities or work ethic.

Table 9: Managerial abilities and executive compensation

	Log comp	*Log comp*	*Log comp*	*Log comp*
	coef/t	*coef/t*	*coef/t*	*coef/t*
Cath rate	0,465***	0,442***	0,442***	0,417***
	(3,70)	(3,38)	(3,56)	(3,26)
Lag log market val	0,287***	0,283***	0,286***	0,282***
	(14,54)	(14,52)	(15,16)	(15,63)
Log sales	0,182***	0,178***	0,179***	0,175***
	(9,52)	(9,30)	(9,19)	(8,90)
BH return	0,241***	0,236***	0,241***	0,236***
	(14,55)	(18,13)	(14,19)	(17,95)
Lag BH return	0,063***	0,062***	0,065***	0,063***
	(4,14)	(3,68)	(4,38)	(3,86)
Log return volatility	0,139***	0,047	0,145***	0,051
	(2,61)	(0,97)	(2,89)	(1,15)
Tenure	-0,006	-0,008*	-0,006	-0,007
	(-1,58)	(-1,90)	(-1,26)	(-1,60)
Tax	0,018	0,019	0,021*	0,022*
	(1,46)	(1,48)	(1,73)	(1,72)
Abilities		0,161		0,175
		(1,09)		(1,18)
Age			0,005	0,006
			(1,27)	(1,38)
Adj. Age_sq			-0,001**	-0,001***
			(-2,55)	(-2,81)
Intercept	3,434***	3,274***	3,275***	3,077***
	(15,56)	(15,25)	(10,46)	(9,81)
Year FE	Yes	Yes	Yes	Yes
N	14 188	13 025	14 171	13 010
Adj. R-squared	0,457	0,464	0,460	0,467

*The table reports regression results for Model (6). The dependent variable is logarithm of total compensation (Log comp). Other variables are defined in Table 18. All continuous variables are winsorized at 1% level. T-statistics are reported in parentheses and are based on dual-clustered standard errors at the county and year level. Statistical significance at 1%, 5%, and 10% level is depicted as ***, **, and * respectively.*

4.3.2 Employment contract flatness

The difference in executive compensation is not driven by a difference in flatness of employment contracts. Someone might suggest that Catholics are more risk-averse than non-religious persons so they obtain more flat contracts (rather fixed than performance based), it means larger salaries since salaries are less risky than for example stocks or options. Or one might suggest that more risk averse Protestants than Catholics should have higher salaries and

lower other components of executive compensation. Such more stable and certain income of Protestants would lead to lower total compensation. However, my results (Table 4) show that Catholics have premium in both salaries and other direct compensation thus the difference in total compensation is not caused by flatness of employment contracts.

4.4 Catholic religion and social networks

Since I have linked the Catholic compensation premium to the corporate governance, I want to compare several corporate governance characteristics of firms headquartered in Catholic counties to firms headquartered in non-Catholic counties to suggest an explanation for why board member executives, employed by firms headquartered in counties with higher proportion of Catholic adherents receive a compensation premium. In addition, I link these differences to the specifics of Catholic religion, mainly to its emphasis of community compared to individualism, which is emphasized by Protestants, the largest religious group in the USA. I hypothesize that community based Catholics should have more developed relationships and cooperate more. Similar hypothesis confirms Arruñada (2010) who based on the survey of more than 19 000 people concludes that Catholics give more importance to family ties, they are more willing to cover up for their friends than Protestants, and they prefer personal exchange to impersonal exchange. Moreover, Kahle and Zhao (2015) find that socially connected outside directors have less career concerns. If the same held for executives in my dataset, Catholic executives with more connections could perform more rent extraction without career concerns while others would be limited by their fear of career concerns. To demonstrate the connections and their impact empirically I explore several measures.

First of all, I look for differences in number of CEO linkages between firms headquartered in Catholic and non-Catholic counties. To provide empirical evidence, I estimate a regression with number of links a CEO has to the non-home firm's boards of directors as the key dependent variable and rate of Catholicism as independent variable. Moreover, I also estimate a model with number of seats a CEO sits on the non-home firm's boards of directors as the key dependent variable. In addition, I include a set of independent variables including company market value, sales, performance measures, managerial abilities, age, and tenure as control variables. I expect the number of linkages and the number of seats to be higher for larger firms (higher *Lag log market val* and *Log sales*) and higher CEO's abilities, tenure, and age (including its second power). If my prediction holds and executives with more connections extract more rent from the company, number of linkages and number of seats should be negatively related to performance measures (*BH return, ROA*, and *Sales growth*). If an alternative explanation holds, more connected executives could be more capable or could use their connections to improve firm profitability, and the relationship would be positive. The profitability coefficients would be also positive if I consider reverse

causality that executives in better performing firms will be more able to reach a link to another board of directors or obtain a seat there. The size and the significance level of the coefficient of Catholic rate will report the relationship between the rate of Catholicism and number of CEO links.

Model (7): CEOs' networks and Catholic religion

$$Linkage \text{ or } Seats = \alpha_0 + \beta_1 * Cath\ rate + \beta_2 * Lag\ log\ market\ val + \beta_3 * Log\ sales + \beta_4 * BH\ return + \beta_5 * ROA + \beta_6 * Sales\ growth + \beta_7 * Abilities + \beta_8 * Tenure + \beta_9 * Age + \beta_{10} * Adj.Age\_sq + \varepsilon$$

More developed relationships among executives can be measured by number of CEO linkages to the non-home firm's boards of directors. The results of Model (7) for the dependent variable *Linkage* are displayed in the former column of Table 10. Surprisingly, I do not find significant positive relationship between CEOs' abilities and number of links to the non-home firm's boards of directors. It might be caused by the fact that they more focus on work for their home firm and do not desire to be linked to large number of boards. I also do not find significant relationships between number of CEO links to the non-home firm's boards and firm market value or firm's accumulated buy and hold return. Since these coefficients (*Lag log market val*, *BH return*, and *Abilities*) are jointly insignificant (p-value of F-test equals 0.23), I repeat the estimation excluding these variables and present the new estimation results in the second column. On 95% confidence level I estimate that if the Catholic rate increases by 1% then the linkage increases by 0.029 links. CEOs in more Catholic countries are then more linked together, which is in accordance with my prediction. Such connections might create more opportunities for a CEO to find help and cooperation to reach higher compensation. Coefficients of firm size proxies are positive as I expected, however, last year's value of firm market capitalization is not statistically significant. Coefficients of firm performance variables are negative, which supports my theory that executive linkages are not beneficial for firm operating performance but for the executive pay.

The letter two columns of Table 10 present estimation results for Model (7) when I use *Seats* as dependent variable. The results document that CEOs of firms headquartered in more Catholic regions sit on higher number of non-home firm's boards. The first of these two columns displays results including all the control variables that I expected to be related to the number of seats. However, the estimation failed to provide significant evidence that CEOs with more abilities sit on higher number of boards or that CEOs of companies with higher market value sit on more boards. In addition, I did not find relation between number of seats and stock return. Thus, based on F-test (p-value equaled 0.32) I omit these three variables, repeat the estimation, and display the results in the letter column. The two insignificant

variables in the letter column (*Tenure* and constant) are jointly significant with p-value rounded to 0.00. I notice that CEOs of larger firms (measured by sales) sit on more non-home firm's boards as I expected and that CEOs sit on more boards more likely when they are older. I estimate that if the Catholic rate increases by 1% then the number of seats increases approximately by 0.0027, significant on 99% level of confidence. CEOs in more Catholic counties are then more linked together by sitting on higher number of boards, which is in accordance with Catholic religion that is community based. Significantly negative coefficients of firm performance measures (*ROA* and *Sales growth*) suggest that CEOs sitting on more non-home firm's boards do not reach better company performance than other CEOs. I propose that CEOs with more social ties focus more than other CEOs on keeping their ties and increasing their compensation and less than other CEOs on firm performance.

Next, I analyze the usage of dual class stock listings in Catholic and non-Catholic counties. Again, I construct a linear model with dual class stock listing as the dependent variable and the rate of Catholicism as the independent variable. Since the dependent variable is binary I also estimate non-linear logit and probit models to verify my results. I control for firm's market value, sales, and return on assets based on Bebchuk et al. (2000) who concluded that companies using dual class stock listings face larger problems with managerial incentives. Thus, they could have worse firm performance.

Model (8): Dual class stock listing and Catholic religion:

$$Dual\ class\ = \alpha_0 + \beta_1 * Cath\ rate + \beta_2 * Lag\ Log\ Market\ Val + \beta_3 * Log\ Sales + \beta_4 * ROA\ + \beta_5 * Sales\ growth + \varepsilon$$

Table 11 shows estimation results for Model (8). Even though the estimation failed to provide significant empirical evidence that dual class stock listing is connected to worse company performance I keep it in the model as it was suggested by Bebchuk et al. (2000). The former column displays estimation results using OLS method with dual-clustered standard errors. In the letter two columns I report estimation of marginal effects computed at means for logit and probit regression models. Their standard errors are clustered only on the county level. Nevertheless, standard errors computed by different estimation approaches are very similar. All models describe that firms headquartered in more Catholic regions use more dual class stock listing than in less Catholic regions. The resulting coefficients of Catholic rate indicate that 1% increase in the proportion of Catholic adherents in the county where the firm is headquartered increases the probability of dual-class stock listing usage approximately by 0.17% estimated by OLS method, or around 0.14% at the means estimated by logit and probit models. Therefore, I conclude that dual-class stock listing is used more in Catholic regions. Since this tool gives special voting power to a group of shareholders it is in accordance with religion explanation that Catholics form groups while e.g. Protestants remain individual. It is

common that the dual class shares are available also for CEOs and other top executives. Such executives then obtain an extra power that can be used to enlarge their compensation.

Table 10: CEOs' networks and Catholic religion

	Linkages	*Linkages*	*Seats*	*Seats*
	coef/t	***coef/t***	**coef/t**	**coef/t**
Cath rate	2,541**	2,853***	0,238**	0,271***
	(2,44)	(2,88)	(2,47)	(2,90)
Lag log market val	0,232		0,018	
	(1,50)		(1,24)	
Log sales	1,052***	1,275***	0,094***	0,112***
	(6,71)	(9,26)	(6,63)	(8,90)
Sales growth	-2,091***	-1,798***	-0,163***	-0,144***
	(-3,08)	(-3,24)	(-2,67)	(-2,80)
ROA	-2,235**	-2,205***	-0,218**	-0,226***
	(-2,19)	(-2,58)	(-2,35)	(-2,82)
BH return	-0,103		-0,011	
	(-0,74)		(-0,84)	
Abilities	-0,495		-0,035	
	(-0,53)		(-0,40)	
Tenure	0,081*	0,068	0,008*	0,006
	(1,77)	(1,63)	(1,75)	(1,59)
Age	0,135***	0,125***	0,013***	0,012***
	(5,81)	(5,82)	(6,04)	(6,02)
Adj. Age_sq	-0,008***	-0,007***	-0,001***	-0,001***
	(-4,99)	(-5,19)	(-5,36)	(-5,65)
Intercept	-17,587***	-17,300***	0,008*	0,006
	(-9,06)	(-9,64)	(1,75)	(1,59)
Year FE	Yes	Yes	Yes	Yes
N	13 174	15 385	13 174	15 385
Adj. R-squared	0,174	0,179	0,158	0,164

*The table reports regression results for Model (7). The dependent variable is either number of links between a CEO and other than home firm boards of directors (Linkages) or number of seats a CEO holds on non-home firm's boards of directors (Seats). Other variables are defined in Table 18. All continuous variables are winsorized at 1% level. T-statistics are reported in parentheses and are based on dual-clustered standard errors at the county and year level. Statistical significance at 1%, 5%, and 10% level is depicted as ***, **, and * respectively.*

Table 11: Dual-class share listing usage and Catholic religion

	Dual class (OLS)	*Dual class (Logit)*	*Dual class (Probit)*
	coef/t	*coef/t*	*coef/t*
Cath rate	0,169***	0,137***	0,147**
	(2,59)	(2,58)	(2,50)
Lag log market val	-0,042***	-0,043***	-0,044***
	(-3,89)	(-4,51)	(-4,20)
Log sales	0,035***	0,031***	0,033***
	(3,40)	(3,50)	(3,31)
ROA	0,077	0,111	0,104
	(0,90)	(1,09)	(0,94)
Sales growth	-0,026	-0,030	-0,021
	(-0,73)	(-0,68)	(-0,47)
Intercept	0,095*	0,117***	-0,163***
	(1,86)	(-2,70)	(-3,46)
Year FE	Yes	Yes	Yes
N	8 002	6 805	6 805
Adj. R-squared	0,027	0,052	0,050

*The table reports regression results for Model (8). The dependent variable is indicator variable whether the firm uses dual-class share listing or not. Other variables are defined in Table 18. All continuous variables are winsorized at 1% level. The former column displays results for OLS estimation method. T-statistics are reported in parentheses and are based on dual-clustered standard errors at the county and year level. The letter two columns report marginal effects for logit and probit estimation method respectively. The marginal effects are computed at the means of all variables. T-statistics are reported in parentheses and are based on clustered standard errors at the county level. Statistical significance at 1%, 5%, and 10% level is depicted as ***, **, and * respectively.*

I also look for difference in board of directors size between firms located in Catholic and non-Catholic counties. Larger board signals more relationships and larger networks. In addition, it indicates worse corporate governance and firm performance (Yermack, 1996). To find out whether firms in Catholic counties have larger boards I create linear model (Model (9)) with board size as the dependent variable and the indicator variable whether the county is Catholic as independent variable. I control for firm's sales growth as suggested by Yermack (1996) and other profitability measures including ROA and stock return volatility. In addition, I control for firm market value and total sales because larger firms are more likely to have larger boards. If the coefficient of indicator variable Catholic county is positive and significant I will be able to conclude that boards of directors are larger in Catholic counties.

Model (9): Board size and Catholic religion:

$$Board\ size = \alpha_0 + \beta_1 * Cath\ county + \beta_2 * Lag\ Log\ Market\ Val + \beta_3 * Log\ sales + \beta_4 * ROA + \beta_5 * Sales\ growth + \beta_6 * Log\ return\ volatility + \varepsilon$$

Figure 5 depicts larger boards of directors in Catholic counties. To provide stronger empirical evidence I estimate Model (9). The estimation results are reported in Table 12. In the former column I estimate that boards of firms headquartered in Catholic counties are on average larger by approximately 0.35 members significant on 95% confidence level. It means that on average more than one out of three firms in Catholic counties have on average one extra member of the board compared to the same sized and performing firms in non-Catholic counties.

Table 12: Board size and Catholic religion

	Board size	*Board size* year <2008	*Board size* year >2007
	coef/t	*coef/t*	*coef/t*
Cath county	0,345**	0,336*	0,345***
	(2,49)	(1,88)	(3,57)
Lag log market val	0,041	0,042	0,141*
	(0,46)	(0,44)	(1,94)
Log sales	0,761***	0,756***	0,696***
	(11,78)	(9,92)	(13,00)
ROA	-2,489***	-3,109***	-1,588***
	(-4,87)	(-5,39)	(-3,42)
Sales growth	-0,821***	-0,710**	-1,012***
	(-2,79)	(-2,00)	(-3,17)
Log return volatility	-1,191***	-1,544***	-0,571***
	(-4,67)	(-4,95)	(-3,39)
Intercept	-0,520	-1,881	0,551
	(-0,58)	(-1,59)	(1,09)
Year FE	Yes	Yes	Yes
N	10 358	6 262	4 096
Adj. R-squared	0,387	0,385	0,402

*The table reports regression results for Model (9). The dependent variable is size of firm's board of directors (Board size). Other variables are defined in Table 18. All continuous variables are winsorized at 1% level. T-statistics are reported in parentheses and are based on dual-clustered standard errors at the county and year level. Statistical significance at 1%, 5%, and 10% level is depicted as ***, **, and * respectively.*

In the Figure 5, I notice that the average board size in Catholic counties converged to the average board size in non-Catholic counties before 2008 and then stabilized still above the

average level in non-Catholic counties. Thus, I repeat my estimation and I split my sample into two subsamples, one including observations for the years before 2008 and the other one including only observations for years after and including 2008. I notice that the coefficient of Catholic religion does not differ much in magnitude but it is more significant for the years after the 2008 crisis than prior to it. It might be caused by larger decreases of firm size in Catholic counties than in non-Catholic counties during the 2008 crisis. The crisis impacted performance related coefficients such as the market value, ROA or volatility. Nevertheless, the signs of the coefficients are the same as before the crisis and in line with my expectations. I document positive relationship between board and firm size and significant negative coefficients of firm performance as suggested by Yermack (1996). I conclude that firms headquartered in Catholic counties have larger boards of directors. Again, this result is in line with my prediction that Catholics have more developed connection networks. It follows that the monitoring might be more diffused, which can contribute to executives' ability to extract rents. In addition, it serves as an extra evidence to the previous section where I claim that firms headquartered in more Catholic regions have weaker corporate governance since larger boards are related to weaker corporate governance (Yermack, 1996).

4.5 Connections, firm performance, and executive compensation

To persuade the reader that the more developed relationships of executives working for firms headquartered in Catholic regions are not beneficial for the firm operating performance and the board member executives do not deserve their compensation premium, I present several regression results providing empirical evidence of negative impact of these connections on corporate governance and firm performance. To test the relationship between connections and corporate governance, I regress previously used corporate governance indices on number of seats that CEOs hold in non-home firm's boards and on number of links the CEOs have to the non-home firm's boards. I use the same control variables as when I tested the relationship between corporate governance and Catholic religion but this time I also control for CEO's age, which might be correlated with both number of connections and corporate governance quality.

Model (10): Number of connections and corporate governance:

$$Inv.E\_index \text{ or } Inv.G\_index = \alpha_0 + \beta_1 * Seats + \beta_2 * Lag\ Log\ Market\ Val + \beta_3 * Log\ sales + \beta_4 * ROA + \beta_5 * Sales\ growth + \beta_6 * Log\ return\ volatility + \beta_7 * Age + \beta_8 * Adj.age\_sq + \varepsilon$$

$Inv.E\_index$ or $Inv.G\_index$

$$= \alpha_0 + \beta_1 * Linkages + \beta_2 * Lag\ Log\ Market\ Val + \beta_3 * Log\ sales + \beta_4 * ROA + \beta_5 * Sales\ growth + \beta_6 * Log\ return\ volatility + \beta_7 * Age + \beta_8 * Adj.age\_sq + \varepsilon$$

Table 13 presents estimation results of Model (10). The *Seats* row documents that CEOs with one more extra seat in non-home firm's board of directors is connected to worse corporate governance of the home firm. In particular, each extra seat is related to lower inverted and normalized E-index by 2.5% significant on 95% confidence level and lower inverted and normalized G-index by 1.6% significant on 99% confidence level. Next row (*Linkages*) documents the same for number of CEO links to non-home firm's boards. Since the number of links is usually much higher than number of seats the coefficients are relatively lower but they can experience large differences. I find that each extra link is connected to lower inverted and normalized E-index by 0.2% significant on 90% confidence level and lower inverted and normalized G-index by 0.1% significant on 99% confidence level. Therefore, I propose that more connections are negatively related to corporate governance quality, which is in line with my prediction that more connected executives in regions with high rates of Catholic religion do not use their connections to improve firm governance.

Next, I want to find out whether the connections that can negatively impact corporate governance quality also impact firm performance. To test it I repeat previous estimation but I replace my dependent variables with measures of firm performance (*Sales growth* and *ROA*). In addition, I would like to examine whether the CEO connections impact their compensation. I test it by replacing Catholic rate variable with links and seats variables in my original equation for executive compensation (Model (1)). The models are constructed as follows.

Model (11): Number of connections and firm performance

$Sales\ growth$ or ROA

$$= \alpha_0 + \beta_1 * Seats + \beta_2 * Lag\ Log\ Market\ Val + \beta_3 * Log\ sales + \beta_4 * Log\ return\ volatility + \beta_5 * Tenure + \beta_6 * Age + \beta_7 * Adj.age\_sq + \varepsilon$$

$Sales\ growth$ or ROA

$$= \alpha_0 + \beta_1 * Linkages + \beta_2 * Lag\ Log\ Market\ Val + \beta_3 * Log\ sales + \beta_4 * Log\ return\ volatility + \beta_5 * Tenure + \beta_6 * Age + \beta_7 * Adj.age\_sq + \varepsilon$$

Model (12): Number of connections and CEO compensation

$$Log\ comp\ = \alpha_0 + \beta_1 * Seats + \beta_2 * Lag\ log\ market\ val + \beta_3 * Log\ sales + \beta_4 * BH\ return + \beta_5 * Lag\ BH\ return\ + \beta_6 *\ Log\ return\ volatility + \beta_7 * Tenure\ + \beta_8 * Tax + \beta_9 * Sales\ growth + \beta_{10} * ROA + \varepsilon$$

$$Log\ comp\ = \alpha_0 + \beta_1 * Linkages + \beta_2 * Lag\ log\ market\ val + \beta_3 * Log\ sales + \beta_4 * BH\ return + \beta_5 * Lag\ BH\ return\ + \beta_6 *\ Log\ return\ volatility + \beta_7 * Tenure\ + \beta_8 * Tax + \beta_9 * Sales\ growth + \beta_{10} * ROA + \varepsilon$$

Table 13: Number of connections and corporate governance

	Inv. E_index	*Inv. E_index*	*Inv. G_index*	*Inv. G_index*
	coef/t	**coef/t**	**coef/t**	**coef/t**
Seats	-0,025**		-0,016***	
	(-2,61)		(-5,53)	
Linkages		-0,002*		-0,001***
		(-2,35)		(-5,33)
Log market val	0,037***	0,037***	0,008***	0,008***
	(3,36)	(3,37)	(3,22)	(3,22)
Log sales	-0,018*	-0,018*	-0,012***	-0,012***
	(-1,83)	(-1,82)	(-4,72)	(-4,69)
ROA	-0,080	-0,080	0,010	0,010
	(-1,07)	(-1,07)	(0,49)	(0,50)
Sales growth	0,092***	0,092***	0,067***	0,067***
	(2,81)	(2,82)	(6,74)	(6,77)
Log return volatility	0,067***	0,067***	0,042***	0,042***
	(2,76)	(2,74)	(6,65)	(6,59)
Age	-0,002	-0,002	-0,001*	-0,001*
	(-1,43)	(-1,44)	(-1,87)	(-1,89)
Adj. age_sq	0,000**	0,000**	0,000***	0,000***
	(2,24)	(2,25)	(4,73)	(4,75)
Intercept	0,823***	0,819***	0,830***	0,827***
	(8,87)	(8,95)	(29,28)	(29,20)
Year FE	Yes	Yes	Yes	Yes
N	13 890	13 890	15 386	15 386
Adj. R-squared	0,068	0,068	0,095	0,095

*The table reports regression results for Model (10). The dependent variables are indices of corporate governance quality (Inv. E_index and Inv. G_index). Other variables are defined in Table 18. All continuous variables are winsorized at 1% level. T-statistics are reported in parentheses and are based on dual-clustered standard errors at the county and year level. Statistical significance at 1%, 5%, and 10% level is depicted as ***, **, and * respectively.*

Table 14 displays estimation results of the Model (11). The former two columns present estimation results with number of CEO seats in a non-home firm's board as the main independent variable. I document significantly negative relation between the number of the seats and both sales growth and return on assets. I estimate the sales growth to be lower by 1.8% for each additional CEO seat, and ROA to be lower by 1% for each extra seat. The letter two columns display estimation results for number of CEO links to non-home firm's boards as the main independent variable. I document 0.2% decrease in sales growth for each additional CEO link and 0.1% decrease in return on assets for each additional link. All these results are significant on 99% level of significance. Other control variables work approximately as I expected. I document positive relationship between market value and firm performance, negative relationships between firm size and growth, negative impact of CEO tenure and age on growth, and negative connection between stock volatility and ROA. In addition, Table 15, which presents estimation results of Model (12), indicates that CEOs with more connections receive higher pay. In particular, one extra seat in a non-home firm's board of directors is connected with 19% increase in CEO compensation. I conclude that more CEOs' connections are negatively related to firm performance and positively related to CEO compensation, which is in line with my prediction that more connected executives in regions with high rates of Catholic religion use their connections to gather benefits for themselves rather than for the firm.

Since I suggest that executives of firms located in Catholic regions have more developed social networks and more connections and that the connections have negative impact on the firm, I should also include estimation of the Catholic religion impact on the firm performance. Thus, I regress main firm performance indicators (S*ales growth, ROA*, and, *ROE*) on Catholic religion and I add control variables influencing firm performance. I expect better firm performance to be positively related to the firm market value since the market reflects the performance in the company valuation. I predict firm performance measures to be negatively related to the firm size due to decreasing returns to scale. I also expect the performance to be related to CEO abilities, which I proxy by CEO tenure and age.

Model (13): Catholic religion and firm performance

$$Sales\ growth \text{ or } ROA = \alpha_0 + \beta_1 * Cath\ rate + \beta_2 * Lag\ Log\ Market\ Val + \beta_3 * Log\ sales + \beta_4 * Log\ return\ volatility + \beta_5 * Tenure + \beta_6 * Age + \beta_7 * Adj.age\_sq + \varepsilon$$

Table 14: Number of connections and firm performance

	Sales growth	*ROA*	*Sales growth*	*ROA*
	coef/t	coef/t	coef/t	coef/t
Seats	-0,018***	-0,010***		
	(-3,99)	(-4,20)		
Linkage			-0,002***	-0,001***
			(-4,25)	(-4,32)
Log market val	0,057***	0,022***	0,057***	0,022***
	(14,76)	(7,02)	(14,84)	(7,02)
Log sales	-0,037***	-0,006	-0,036***	-0,006
	(-9,06)	(-1,42)	(-9,00)	(-1,39)
Log BH volatility	0,127***	-0,041***	0,127***	-0,041***
	(7,27)	(-5,26)	(7,28)	(-5,26)
Tenure	-0,003***	-0,000	-0,003***	-0,000
	(-3,55)	(-0,69)	(-3,53)	(-0,68)
Age	-0,004***	-0,000	-0,004***	-0,000
	(-5,79)	(-0,24)	(-5,80)	(-0,23)
Adj. age_sq	0,000***	0,000*	0,000***	0,000*
	(5,33)	(1,65)	(5,33)	(1,65)
Intercept	0,669***	-0,177***	0,664***	-0,180***
	(8,23)	(-4,09)	(8,21)	(-4,12)
N	26 998	27 285	26 998	27 285
Adj. R-squared	0,208	0,145	0,208	0,145

*The table reports regression results for Model (11). The dependent variables are firm performance measures (ROA and Sales growth). Other variables are defined in Table 18. All continuous variables are winsorized at 1% level. T-statistics are reported in parentheses and are based on dual-clustered standard errors at the county and year level. Statistical significance at 1%, 5%, and 10% level is depicted as ***, **, and * respectively.*

Table 15: Number of connections and CEO compensation

	Log comp	*Log comp*
	coef/t	coef/t
Seats	0,186***	
	(7,01)	
Linkage		0,017***
		(6,77)
Log market val	0,296***	0,296***
	(18,18)	(18,07)
Log sales	0,145***	0,144***
	(7,53)	(7,45)
BH return	0,249***	0,249***
	(14,36)	(14,29)
Lag BH return	0,067***	0,067***
	(3,21)	(3,24)
Log BH volatility	0,265***	0,269***
	(5,75)	(5,87)
Tenure	-0,001	-0,001
	(-0,16)	(-0,16)
Tax	0,039***	0,039***
	(2,68)	(2,69)
Intercept	3,897***	3,918***
	(18,82)	(18,98)
N	33 123	33 123
Adj. R-squared	0,417	0,417

*The table reports regression results for Model (12). The dependent variable is logarithm of total compensation (Log comp). Other variables are defined in Table 18. All continuous variables are winsorized at 1% level. T-statistics are reported in parentheses and are based on dual-clustered standard errors at the county and year level. Statistical significance at 1%, 5%, and 10% level is depicted as ***, **, and * respectively.*

I present my estimation results in Table 16. In the former column, I provide my estimate of negative impact of Catholic religion on sales growth. I estimate that 1% increase in the rate of Catholic adherents in the county where the firm's headquarters is located leads to 0.05% decrease in the sales growth. The result is significant on 95% confidence level. The middle column displays results of relationship between Catholic rate and ROA. On 95% confidence level I document that 1% increase in the Catholic rate corresponds to 0.04% decrease in ROA. Last but not least, I report the estimated relationship between Catholic rate and ROE. On 99% level of significance I find negative impact of ratio of Catholic adherents in a county where firm's headquarters is located on ROE. I assessed the magnitude of the effect to be 0.09% decrease of ROE for each 1% increase in Catholic rate. The control

variables resulted almost exactly as in the previous model. Based on my results, I conclude that firms located in regions with higher rates of Catholic adherents have worse firm performance. It is in accordance with my prediction that Catholic managers focus more on rent extraction than company performance.

Table 16: Catholic religion and firm performance

	Sales growth	*ROA*	*ROE*
	coef/t	coef/t	coef/t
Cath rate	-0,049*	-0,036**	-0,088***
	(-1,77)	(-1,98)	(-2,80)
Log market val	0,059***	0,024***	0,054***
	(14,78)	(7,67)	(5,07)
Log sales	-0,037***	-0,009**	-0,018**
	(-7,35)	(-2,13)	(-2,02)
Log BH volatility	0,123***	-0,037***	-0,102***
	(6,14)	(-4,31)	(-4,84)
Tenure	-0,004***	-0,001	0,000
	(-4,86)	(-1,10)	(0,27)
Age	-0,004***	-0,000	-0,000
	(-4,88)	(-1,04)	(-0,21)
Adj. age_sq	0,000***	0,000**	0,000
	(5,29)	(2,27)	(0,15)
Intercept	0,646***	-0,128***	-0,602***
	(7,15)	(-2,98)	(-5,64)
N	14 640	14 773	14 772
Adj. R-squared	0,212	0,156	0,066

The table reports regression results for Model (13). The dependent variables are firm performance measures (Sales growth, ROA, and ROE). Other variables are defined in Table 18. *All continuous variables are winsorized at 1% level. T-statistics are reported in parentheses and are based on dual-clustered standard errors at the county and year level. Statistical significance at 1%, 5%, and 10% level is depicted as ***, **, and * respectively.*

My regression and graphs support the Hypothesis #4 that executives employed by firms headquartered in more Catholic regions exhibit larger connection networks and cooperation. I document significantly higher number of CEO links to the non-home firm's boards of directors and higher number of CEO seats on the non-home firm's boards of directors, larger boards of directors, and more widely used dual-class stocks in more Catholic regions. In addition, I find that these social networks are not beneficial for firm operating performance but only for executive pay. I conclude that Catholic religion can impact the way

people socialize, which then reflects in company decision making and executive compensation.

4.6 Robustness check of statistical inference

In this section, I provide robustness check of statistical inference of my results by estimating statistical significance using various variables for clustering. To test and compare the inference I use my core model (Model (1)). I replicate the estimation of the model and compute cluster robust standard errors based on state, county, firm, and executive level respectively. In addition, since I have annual data, I always cluster by financial year. In Table 17, I summarize estimation coefficients and their different t-statistics based on the difference in clustering. In general, the t-statistics are very similar in all cases. Due to the fact, that my key variable (*Cath rate*) is measured on county level, its significance is the lowest when clustered on the county level. Moreover, 5 out of 9 variables have the lowest t-statistics when clustered on the county level. Thus, I conclude that I did not fail choosing the cluster level and my results are robust and valid.

Table 17: Robustness check of statistical inference

	Coef	*t-val (state)*	*t-val (county)*	*t-val (firm)*	*t-val (executive)*
Cath rate	0,509***	(4,49)	(3,55)	(3,87)	(3,87)
Lag log market val	0,306***	(19,76)	(17,46)	(15,72)	(15,71)
Log sales	0,145***	(7,43)	(6,74)	(7,81)	(7,80)
BH return	0,246***	(14,41)	(15,64)	(14,01)	(14,03)
Lag BH return	0,060***	(3,61)	(3,37)	(4,01)	(4,00)
Log return volatility	0,218***	(5,90)	(5,83)	(5,56)	(5,56)
Tenure	0,001	(0,40)	(0,30)	(0,32)	(0,32)
Tax	0,016	(1,06)	(1,00)	(1,14)	(1,13)
Intercept	3,740***	(16,55)	(18,63)	(19,63)	(19,62)

*The table reports regression results for Model (1). The dependent variable is logarithm of total compensation (Log comp) Other variables are defined in Table 18. All continuous variables are winsorized at 1% level. T-statistics are reported in letter four columns and are based on dual-clustered standard errors at the year level and the other level specified in the column heading. Statistical significance at 1%, 5%, and 10% level is depicted as ***, **, and * respectively.*

5 Conclusion

In the thesis, I examine the relationships among Catholic religion, corporate governance, and executive compensation. I find a significant positive compensation premium for executives employed by firms headquartered in US counties with high proportions of Catholic adherents. The premium holds only for executives who sit on board of directors. I document that the executive compensation increases by approximately 0.5% for each 1% increase in the Catholic rate. My results suggest that the premium is related to the corporate governance quality. I find that including corporate governance indices in my regressions lowers the magnitude and eliminates the significance of the premium. I support my findings by documenting that firms headquartered in regions with higher proportions of Catholic adherents perform worse in corporate governance indices, suffer from more accounting concerns, and pay abnormally higher audit fees than firms in other regions. In addition, I document that the abnormally higher audit fees were lowered by passage of SOX Act, which established more strict rules for corporate governance. My findings are consistent with current literature concerning rent extraction, which suggests that the rent extraction is done by manipulating less transparent parts of compensation such as stock and option grants rather than more transparent parts such as salaries (Bebchuk and Fried, 2004). I find that the premium is much larger in the value of received other parts of compensation than in salaries or bonuses. It is also in line with research suggesting that rent extraction is positively related to the power of an executive. Since the executives who hold a seat in the board of directors usually have higher power, it might be the main reason why the compensation premium holds only for these executives. According to my results, the Catholic compensation premium is not related to the firm performance, size, or risk, the CEOs' tenure, age, or abilities, or different income taxes. I also propose that the premium cannot be a result of differences in work ethic or price level. Otherwise, it would have to hold for all executives. Therefore, I conclude the premium is related to corporate governance quality.

Next, I investigate the differences in corporate governance between firms headquartered in counties with high proportions of Catholic adherents and low proportions of Catholic adherents. I find that the main differences in corporate governance are in executives' connection networks. I document that CEOs of firms headquartered in more Catholic regions have higher number of links to the non-home firm's boards of directors and they are members of more boards while not having higher abilities. In addition, I find that these firms use more dual class stock listing and their boards of directors are larger, which contributes to creating more social ties. I document that more links to the non-home firm's boards and more seats on the non-home firm's boards are connected with worse corporate governance, worse firm performance, and higher compensation. In particular, I estimate that each additional CEO's seat on a non-home firm's board of directors decreases inverted and normalized G-index by

2%, sales growth by 2%, and ROA by 1% while it increases total CEO compensation by 19%. Thus, I conclude that more developed connection networks in Catholic regions are not beneficial for firms' operating performance but enable board-member executives to reach higher pay. My findings are consistent with a larger development of social ties in more community-focused Catholic regions than in more individualistic Protestant regions. For further research I propose to gather data on socialization (e.g. data on social media usage) and link them to religion, corporate governance, and executive compensation.

6 References

Agrawal, A., Chadha, S., 2005. Corporate governance and accounting scandals. *Journal of law and economics* 48(2), 371-406.

Anderson, G., 1988. Mr. Smith and the Preachers: The Economics of Religion in the Wealth of Nations. *Journal of Political Economy* 96, 1066–1088.

Aristotle, 2004. Nicomachean Ethics. edited by J. A. K. T. Trans. London: Penguin Books.

Arruñada, B., 2004. The economic effects of christian moralities. Working paper Universitat Pompeu Fabra.

Arruñada, B., 2010. Protestants and Catholics: Similar Work Ethic, Different Social Ethic. *The Economic Journal* 120(547), 890-918.

Baker, G. P., Jensen, M. C., Murphy, K. J., 1988. Compensation and Incentives: Practice vs. Theory. J*ournal of Finance* 63(3), 593–616.

Barro, R., McCleary, R., 2003. Religion and Economic Growth. *American Sociological Review* 68, 760–781.

Barsky, R., Juster, F., Kimball, M., Shapiro, M., 1997. Preference Parameters and Behavioral Heterogeneity: An Experimental Approach in the Health and Retirement Study. *Quarterly Journal of Economics* 112, 537–579.

Bartlett, R. L., Miller, T. I., 1985. Executive Compensation: Female Executives and Networking. *The American Economic Review* 75(2), 266–270.

Bebchuk, L. A., Fried, J. M., 2004. Pay without Performance: The Unfulfilled Promise of Executive Compensation. Cambridge.

Bebchuk, L. A., Cohen, A., Ferrell, A., 2009. What Matters in Corporate Governance? *Review of Financial Studies* 22(2), 783-827.

Bebchuk, L. A., Kraakman, R., Triantis, G., 2000. Stock pyramids, cross-ownership, and dual class equity: the mechanisms and agency costs of separating control from cash-flow rights. Concentrated corporate ownership. University of Chicago Press, 295-318.

Bedard, J. C., Johnstone, K., M., 2004. Earnings manipulation risk, corporate governance risk, and auditors' planning and pricing decisions. *The Accounting Review* 79(2), 277-304.

Berle, A. A., Means, G. C., 1932. The Modern Corporation and Private Property. New York: Macmillan.

Bhagat, S., Bolton, B., 2008. Corporate governance and firm performance. *Journal of corporate finance* 14(3), 257-273.

Blood, M., 1969. Work Values and Job Satisfaction. *Journal of Applied Psychology* 53, 456–459.

Blum, U., Dudley, L., 2001. Religion and Economic Growth: Was Weber Right? *Journal of Evolutionary Economics* 11(2), 207-230.

Carlin, B. I., Gervais, S., 2009. Work Ethic, Employment Contracts, and Firm Value. *The Journal of Finance* 64(2), 785-821.

Chhaochharia, V., Grinstein, Y., 2009. CEO Compensation and Board Structure. *The Journal of Finance* 64(1), 231-261.

Choe C., Tian, G. Y., Yin, X., 2014. CEO power and the structure of CEO pay. *International Review of Financial Analysis* 35, 237–248.

Core, J. E., Holthausen, R. W., Larcker, D. F., 1999. Corporate Governance, Chief Executive Officer Compensation, and Firm Performance. *Journal of Financial Economics* 51, 371–406.

Cremers, K. J., Nair, V. B., 2005. Governance mechanisms and equity prices. *The Journal of Finance* 60(6), 2859-2894.

Ciscel, D. H., Carroll, T. M., 1980. The Determinants of Executive Salaries, An Econometric Survey." *The Review of Economics and Statistics* 62(1), 7–13.

Coffee, J. C., 2001. Do norms matter? A cross-country evaluation. *University of Pennsylvania Law Review* 149(6), 2151-2177.

DeFond, M. L., Hann, R. N., Hu, X., 2005. Does the market value financial expertise on audit committees of boards of directors? *Journal of Accounting Research* 43, 153-193.

DeFond, M. L., Lennox, C. S., 2011. The effect of SOX on small auditor exits and audit quality. *Journal of Accounting and Economics* 52(1), 21-40.

Demerjian, P., Lev, B., McVay, S., 2012. Quantifying Managerial Ability: A New Measure and Validity Tests. *Management Science* 58(7), 1229–1248.

Dougherty, R. J., 2003. Catholicism and the Economy: Augustine and Aquinas on Property Ownership. *Journal of Markets & Morality* 6(2), 479–469.

Dow, J., Raposo, C. C., 2005. CEO Compensation, Change, and Corporate Strategy. *Journal of Finance* 60(6), 2701–2727.

Dyck, A., Zingales, L., 2004. Private Benefits of Control: An International Comparison. *Journal of Finance* 59, 537-600.

Emmerich, A. O., Savitt, W., Niles, S. V., Ongun, S. I., 2015. The Corporate Governance Review. Derbyshire: Encompass Print Solutions.

Finkelstein, S., Hambrick, D. C., 1989. Chief Executive Compensation: A Study of the Intersection of Markets and Political Processes. *Strategic Management Journal* 10, 121–134.

Freeman, R., Katz, L., 1995. Differences and Changes in Wage Structures. Chicago: The University of Chicago Press.

Frydman, C., Jenter, D., 2010. CEO Compensation. *Annual Review of Financial Economics* (2), 75-102.

Fukuyama, F., 1995. Trust: Social Virtues and the Creation of Prosperity. NY: Free Press.

Furnham, A., 1982. The Protestant Work Ethic and Attitudes towards Unemployment. *Journal of Occupational Psychology* 55, 277–285.

Gompers, P., A., Ishii, J., L., Metrick, A., 2003. Corporate Governance and Equity Prices. *Quarterly Journal of Economics* 118(1), 107-155.

Goolsbee, A., 1997. What happens when you tax the rich? Evidence from executive compensation. (No. w6333). National Bureau of Economic Research.

Grullon, G., Kanatas, G., Weston, J., 2009. Religion and corporate (mis) behavior. Available at SSRN 1472118.

Guiso, L., Sapienza, P., Zingales, L., 2004. Cultural Biases in Economic Exchange. NBER WP 11005.

Guiso, L., Sapienza, P., Zingales, L., 2006. Does Culture Affect Economic Outcomes? *The Journal of Economic Perspectives* 20(2), 23-48.

Hermalin, B. E., 2005. Trends in Corporate Governance. *Journal of Finance* 60(5), 2351–2384.

Hilary, G., Hui, K. W., 2009. Does Religion Matter in Corporate Decision Making in America. *Journal of Financial Economics* 93, 455–473.

Himmelberg, Ch. P., Hubbard, R. G., 2000. Incentive pay and the market for CEOs: An analysis of pay-for-performance sensitivity. Tuck-JFE Contemporary Corporate Governance Conference.

Hubbard, R. G., Palia, D., 1995. Executive Pay and Performance: Evidence from the US Banking Industry. *Journal of Finanancial. Economics* 39(1), 105–30.

Huson, M. R., Parrino, R., Starks, L. T., 2001. Internal Monitoring Mechanisms and CEO Turnover: A Long- Term Perspective. *Journal of Finance* 56(6), 2265–2297.

Jensen, M. C., Meckling, W. H., 1976. Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of financial economics* 3(4), 305-360.

Jeynes, W. H., 2008. The Effects of Catholic and Protestant Schools: A Meta-Analysis. *Journal of Catholic Education* 12 (2).

Kang, J., Shivdasani, A., 1995. Firm Performance, Corporate Governance, and Top Executive Turnover in Japan. *Journal of Financial Economics* 38(1), 29–58.

Kézdi, G., 2004. Robust Standard Error Estimation in Fixed-Effects Panel Models. *Hungarian Statistical Review* Special (9), 96-116.

Kuhnen, C. M., Zwiebel, J., 2009. Executive Pay, Hidden Compensation and Managerial Entrenchment. Northwestern University.

Kumar, A., Page, J. K., Spalt, O. G., 2011. Religious Beliefs, Gambling Attitudes, and Financial Market Outcomes. *Journal of Financial Economics* 102, 671–708.

Landes, D., 1998. The Wealth and Poverty of Nations. New York: W. W. Norton.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R., 2000. Investor Protection and Corporate Governance. *Journal of Financial Economics* 58, 3-27.

Lubatkin, M. H., Lane, P. J., Collin, S. O., Very, P., 2005. Origins of corporate governance in the USA, Sweden and France. *Organization Studies* 26(6), 867-888.

Maassen, G. F., 1999. An International Comparison of Corporate Governance Models. 31. Gregory Maassen.

MacCulloch, D., 2010. Christianity: The First Three Thousands Years. New York: Viking books.

Mehran, H., 1995. Executive Compensation Structure, Ownership, and Firm Performance. *Journal of Financial Economics* 38(2), 163–68.

Miller, J. S., Wiseman, R. M., Gomez-Mejia, L. R., 2002. The fit between CEO compensation design and firm risk. *Academy of Management Journal* 45(4), 745-756.

Morrow, P. C., 1993. The Theory and Measurement of Work Commitment. Greenwich: Connecticut: JAI Press Inc.

Murphy, K. J., 1985. Corporate Performance and Managerial Remuneration: An Empirical Analysis. *Journal of Accounting and Economics* 7, 11–42.

Murphy, K. J., 1998. Executive Compensation. University of Southern California.

O'Reilly, C. A., Main, B. G., Crystal, G. S., 1988. CEO Compensation as Tournament and Social Comparison: A Tale of Two Theories. *Admin. Sci. Quart.* 33, 257–274.

Pitts, J. D., Misra, K., Henry, T., 2011. The wages of religion. *International Journal of Business and Social Science* 14(2), 70-81.

Roberts, D. R., 1956. A General Theory of Executive Compensation Based on Statistically Tested Propositions. *Quarterly Journal of Economics* 70(2), 270–94.

Rosen, S. 1982. Authority, Control, and the Distribution of Earnings. *Bell J. Econ.* 13(2), 311–323.

Sauner-Leroy, J. B., 2004. Managers and Productive Investment Decisions: The Impact of Uncertainty and Risk-Aversion. *Journal of Small Business Management* 42, 1–18.

Smith, A., 1976. The Wealth of Nations Chicago. Chicago: University of Chicago Press

Stulz, M. R., Williamson R., 2003. Culture, Openness, and Finance. *Journal of Financial Economics* 70, 313–349.

Tosi, H. L., Greckhamer, T., 2004. Culture and CEO Compensation. *Organizational Science* 15(6), 657-670.

Volonté, Ch. 2015. Culture and Corporate Governance: The Influence of Language and Religion in Switzerland. *Management international review* 55, 77–118.

Weber, M., Parsons, T., Tawney, R. H., 1930. The Protestant Ethic and the Spirit of Capitalism. New York: Scribner's.

Kimberly, W. Unbelief is now the world's third-largest 'religion'. ncronline.org. National Catholic Reporter, 19 Dec. 2012. Web. 29 Apr. 2016.

Wooldridge, J., 2015. Introductory econometrics: A modern approach. Toronto: Nelson Education.

Yermack, D., 1996. Higher market valuation of companies with a small board of directors. *Journal of Financial Economics* 40, 185-211.

Yermack, D., 1997. Good Timing: CEO Stock Option Awards and Company News Announcements. *Journal of Finance* 52(2), 449–476.

Yermack, D., 2006. Flights of Fancy: Corporate Jets, CEO Perquisites, and Inferior Shareholder Returns. *Journal of Financial Economics* 80(1), 211–242.

7 Appendix

Table 18: Variables definitions

Variable abbreviation	*Description*
Comp	CPI-adjusted total executive compensation, which consists of annual salary, annual bonus, restricted stock grants, stock option grants, long term incentives, and other annual compensation over the given financial year.
Salary	CPI-adjusted annual salary for the given financial year.
Bonus	CPI-adjusted annual bonus for the given financial year.
Othercomp	CPI-adjusted sum of restricted stock grants, stock option grants, long term incentives, and other annual compensation for the given financial year.
Cath rate	A ratio of the number of Catholic Church adherents in a county to its total population.
Cath county	An indicator variable, which takes value 1 if *Cath rate* in the county is higher than median *Cath rate* in the USA, and zero otherwise.
Market val	The product of the number of shares outstanding and their closing price at the last trading day of the fiscal year.
Sales	Total dollar net sales for a fiscal year.
Sales growth	Growth of firm sales in past five years. If five years not available at min. 3 years are used.
ROA	Return on assets calculated as the ratio of operating income after depreciation divided by total assets.
ROE	Return on equity calculated as the ratio of net income divided by common shareholders' equity.
BH return	Market adjusted accrued buy and hold stock return for a fiscal year.
Return volatility	Standard deviation of firm’s monthly stock returns in the given fiscal

	year.
CEO	Indicator variable, which takes value of one if the ExecuComp annual CEO indicator equals 1 or if the executive has the highest pay for a firm-year and the executive's job title includes "CEO" or "Chief Executive Officer".
Female	An indicator variable equal to 1 if the ExecuComp gender variable is equal to "female", and zero otherwise.
Tenure	The number of years an executive has worked for the company. The year counter is re-set if the executive is re-employed by the company after more than two years.
Age	Executive's age in years.
Dual class	An indicator variable, which takes value of 1 if the firm issues dual class stocks in a given fiscal year, and 0 otherwise.
Abilities	A measure of CEO abilities constructed by Demerjian et al. (2012).
Inv. E_index	Index of managerial entrenchment constructed by Bebchuk et al. (2009) divided by 6, multiplied by -1, and added 1.
Inv. G_index	Index of corporate governance quality constructed by Gompers, Ishii and Metrick (2003) divided by 24, multiplied by -1, and added 1.
Corp gov strengths	Number of strengths listed in MSCI ESG STATS database for a firm in a given fiscal year.
Corp gov concerns	Number of concerns listed in MSCI ESG STATS database for a firm in a given fiscal year.
Corp gov	Index of corporate governance computed as number of strengths minus concerns listed in MSCI ESG STATS database for a given fiscal year.
Board size	Board of directors size in a fiscal year.
Audit fees	Log of abnormal audit fees paid by a firm in a given fiscal year adjusted for year and industry fixed effects.
Acounting	An indicator variable equal to 1 if a firm is involved in significant

concerns	accounting-related controversies in a given fiscal year according to MSCI ESG STATS database.
Linkages	Number of links a CEO has to the non-home firm's boards of directors.
Seats	Number of seats that a CEO sits on the non-home firm's boards of directors.
Year FE	Year fixed-effects.

Multicollinearity checks

Variance inflation factors for Model (1):

	VIF
Lag log market val	3.44
Log sales	3.31
Log return volatility	1.99
Tax	1.52
Cath rate	1.45
Tenure	1.39
Lag BH return	1.11
BH return	1.08
Year FE	Max. 3.90

Computed VIF for all variables provides check that Model (1) does not suffer from multicollinearity. None of the values exceeds 10 (rule of thumb).

Variance inflation factors for Model (2), Model (4), Model (8), and Model (9):

	VIF
Lag log market val	3.05
Log sales	2.88
Log return volatility	2.01
Sales growth	1.19
ROA	1.17
Cath rate	1.02
Year FE	Max. 3.95

Computed VIF for all variables provides check that Model (2), Model (4), and Model (8) do not suffer from multicollinearity. None of the values exceeds 10 (rule of thumb). Model (9) includes one less variable so the VIF values are even lower than indicated.

Variance inflation factors for Model (3):

	VIF
SOX	6.16
Cath county SOX	6.00
Cath county med	5.38
Log market val	3.15
Log sales	2.93
ROA	1.16
Sales growth	1.15
Year FE	Max. 2.24

Computed VIF for all variables provides check that Model (3) does not suffer from multicollinearity. None of the values exceeds 10 (rule of thumb).

Variance inflation factors for Model (5):

	VIF
Lag log market val	3.59
Log sales	3.33
Log return volatility	1.99
Tax	1.54
Cath rate	1.48
Inv. E_index	1.16
Corp gov	1.16
Tenure	1.16
Lag BH return	1.07
BH return	1.04
Year FE	Max. 7.09

Computed VIF for all variables provides check that Model (5) does not suffer from multicollinearity. None of the values exceeds 10 (rule of thumb).

Variance inflation factors for Model (6):

	VIF
Lag log market val	3.34
Log sales	3.19
Log return volatility	2.08
Age	1.98
Adj. Age_sq	1.86
Tax	1.50
Cath rate	1.43
Tenure	1.39
Lag BH return	1.13
BH return	1.08
Abilities	1.05
Year FE	Max. 15.06

Computed VIF for all variables provides check that Model (6) does not suffer from multicollinearity. None of the key values exceeds 10 (rule of thumb). The only exceeding VIF is for some of my year indicator variables, which are not of my interest so I do not care about bias of their coefficients.

Variance inflation factors for Model (7):

	VIF
Lag log market val	3.40
Log sales	3.19
ROA	1.36
Tenure	1.27
Age	1,23
Abilities	1.22
Sales growth	1.21
BH return	1.14
Adj. Age_sq	1.08
Cath rate	1.02
Year FE	Max. 5.92

Computed VIF for all variables provides check that Model (7) do not suffer from multicollinearity. None of the values exceeds 10 (rule of thumb).

Variance inflation factors for Model (10):

	VIF	*VIF*
Lag log market val	3.02	3.02
Log sales	2.87	2.87
BH return volatility	2.07	2.07
Age	1,90	1,90
Adj. Age_sq	1.81	1.81
Seats	1.23	-
Linkages	-	1.25
Sales growth	1.18	1.18
ROA	1.18	1.18
Year FE	Max. 5.45	Max. 5.45

Computed VIF for all variables provides check that Model (10) does not suffer from multicollinearity. None of the key values exceeds 10 (rule of thumb).

Variance inflation factors for Model (11):

	VIF	*VIF*
Log sales	3.02	3.03
Lag log market val	3.00	3.00
BH return volatility	1.99	1.99
Age	1.83	1.83
Adj. Age_sq	1.71	1.71
Tenure	1.51	1.51
Seats	1.20	-
Linkages	-	1.22
Year FE	Max. 5.82	Max. 5.82

Computed VIF for all variables provides check that Model (11) does not suffer from multicollinearity. None of the values exceeds 10 (rule of thumb).

Variance inflation factors for Model (12):

	VIF	*VIF*
Lag log market val	3.74	3.74
Log sales	3.44	3.45
BH return volatility	2.21	2.21
Tenure	1.38	1.38
Sales growth	1.25	1.25
ROA	1.25	1.25
Seats	1.17	-
Linkages	-	1.20
Lag BH return	1.16	1.16
BH return	1.13	1.13
Tax	1.06	1.06
Year FE	Max. 9.93	Max. 9.93

Computed VIF for all variables provides check that Model (12) does not suffer from multicollinearity. None of the values exceeds 10 (rule of thumb).

Variance inflation factors for Model (13):

	VIF
Lag log market val	3.06
Log sales	3.04
Age	1.99
BH return volatility	1.98
Adj. Age_sq	1.87
Tenure	1.41
Cath rate	1.01
Year FE	Max. 10.15

Computed VIF for all variables provides check that Model (13) does not suffer from multicollinearity. None of the key values exceeds 10 (rule of thumb). The only exceeding VIF is for some of my year indicator variables, which are not of my interest so I do not care about bias of their coefficients.

Supporting figures

Figure 1: The development of CEO compensation between 1992 and 2005

The diagram shows the time development of level and structure of CEO compensations between 1992 and 2005. Average values are used for both the levels and the structure. The values for salaries and bonuses are taken as listed in ExecuComp database and the values for other compensation are calculated as the total compensation minus salary and bonus. All the values are inflation-adjusted to the average CPI level for 1982-1984.

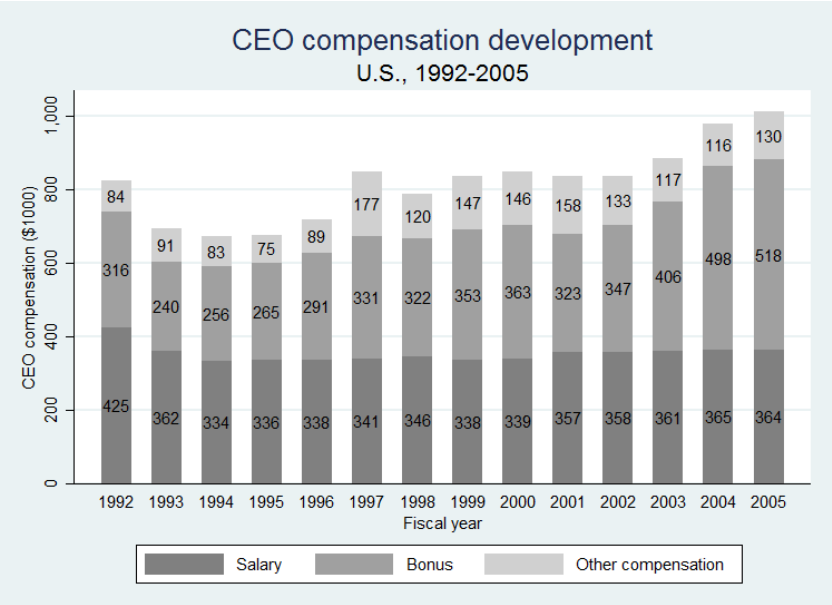
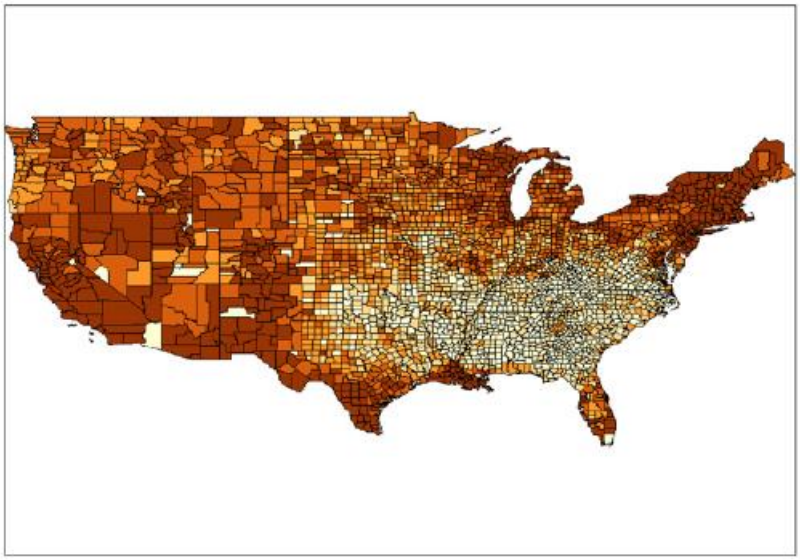


Figure 2: Religiosity composition across the USA

The map depicts geographical distribution of Catholics. Every outlined region represents a county. The darker the color of a county, the higher the Catholic concentration there is. The data are average of 1980, 1990, and 2000 religion data.



Source: Kumar et al. (2011)

Figure 3: Tax comparison (Catholic vs. Protestant counties)

The graph depicts average tax burden from Tax Foundation database computed for Catholic and Protestant states between 1992 and 2012. The horizontal axis displays fiscal year. The vertical axis shows the average tax burden measured as a percentage of residents' income that they pay in state and local taxes in a given year.

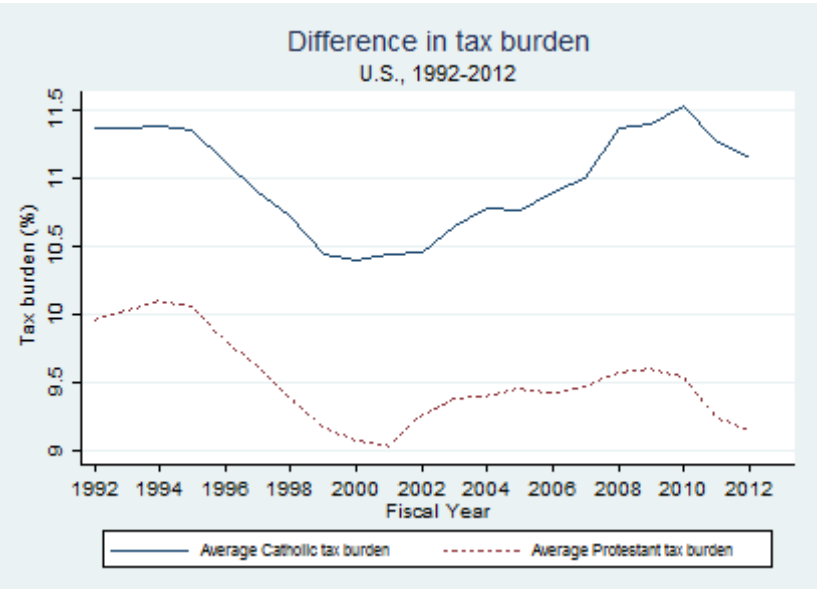


Figure 4: Executive compensation comparison

The figure depicts graphically the development of executive compensation in Catholic counties compared to non-Catholic counties over the years 1992-2012. The vertical axis represents median total executive compensation in $1000 as listed in ExecuComp database. The total executive compensation is inflation adjusted to the average CPI for 1982-1984.

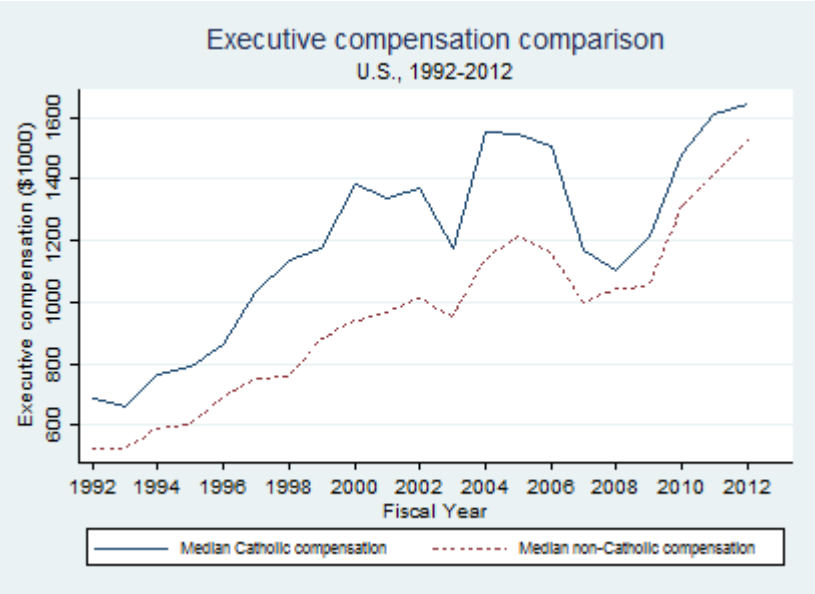


Figure 5: Board size comparison

The graph depicts the development of board of directors size in Catholic and non-Catholic counties over the years 1996-2012. The horizontal axis represents fiscal years. The vertical axis measures average board of directors size as listed in ExecuComp database.