

St. Petersburg University
Graduate School of Management

Master in Management

THE RELATIONSHIP BETWEEN CEO TENURE AND
FIRM FINANCIAL PERFORMANCE IN ENERGY
COMPANIES

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Saint Petersburg

2018

Abstract

This paper studies the relationship between chief executive officer (CEO) tenure and firm financial performance based on a sample of energy companies across the European Union for the years between 2013 and 2016. The model differentiated between firm financial performance measured by Tobin's Q and return on assets (ROA). While the empirical research shows a direct positive linear correlation between Tobin's Q and CEO tenure, no such significant findings were displayed for firm performance in terms of ROA. Additionally, the study suggests that in the oil & gas subsector a longer CEO tenure is associated with better performance, while in the utilities as well as the renewables subsector the opposite is evident. The potential impact of CEO tenure on managerial decisions and company strategies with regards to CEO appointment are discussed.

Key words: CEO tenure, firm financial performance, energy industry

Declaration of Authorship

I hereby declare that I have written this Master Thesis myself, independently and without the aid of unfair or unauthorized resources. Whenever content has been taken directly or indirectly from other sources, this has been indicated and the source referenced. This Master Thesis has not been previously presented as an examination paper in this or any other form in Russia or abroad. This Master Thesis is identical with the thesis assessed by the examiner.

Saint Petersburg, May 23, 2018



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Introduction

A chief executive officer (CEO) is the highest-ranking executive in a company and as such is responsible for the overall success of an organisation. “The CEO manages the company, glorifying in its successes and taking the blame for its failures”, (Coates & Kraakman, 2010, p. 2). This statement strongly emphasized on the vital role a CEO plays within an organisation as well as on his or her direct accountability for the overall firm’s performance.

Apart from being responsible for strategic and investment decisions, the CEO has the task to convey a strong image and general representation of the organisation both internally (employees, board of directors) as well as externally (clients, investors, competitors, etc). A good CEO should signal credibility, ensure confidence throughout the market, attract investors and establish credible, strong relationships with various stakeholders. However, a CEO cannot achieve this overnight. In order to generate visible results in these areas, more time is required. The same holds true for organisational, industry and firm specific learning. The more time an employee spends in a company, the better he or she performs daily tasks, as he or she acquires more knowledge and better insights in the company. Couldn’t this also be the case for CEOs? CEOs usually face extremely high expectations in term of short-term performance improvement and fast results. This is highly problematic, as strategic decisions require significant amounts of time to generate results. Especially in heavy industries such as the steel, energy, or the ship manufacturing industries, the return on investment requires longer time compared to products and services in the services sector. Therefore, it is important to understand the implication of the amount of time a CEO serves in a firm.

For this purpose, the term CEO tenure is introduced. According to Webster, tenure is the act, right, manner, or term of holding something (such as a landed property, a position, or an office). In the context of an organisation, a CEO’s tenure refers to the time a person spends holding the position of chief executive officer in a firm.

This research will focus on the relationship between a CEO tenure and the financial performance of an organisation, concentrating on the energy industry in the European union. While there is a substantial research already conducted in this area, most of the existing studies are based on a sample comprising companies across various industries (Vintila, Onofrei, and Gherghina, 2015; Wang, Holmes, Oh, and Zhu, 2016; Limbach,

Schmid, and Scholz, 2016). However, previous studies have shown that there is a variance in results between companies from more dynamic industries, such as the computer industry and less dynamic industries, such as the food, retail, and the energy industries (Henderson, Miller, and Hambrick, 2006; McClelland, Barker, and Oh, 2012). Hence, the present study aims at filling this gap by investigating the influence of the years a CEO spends in office on the firm financial performance across energy companies. Given the strategic importance of the energy sector for the world economic, social, and technological development, understanding the factors influencing the performance of energy firms is crucial for the overall success of the industry.

The remainder of the paper is structured as follows: in the next sector the existing literature on the importance of the CEO, CEO tenure and firm performance is reviewed. Based on the findings derived from the scientific literature, the research gap and research questions are specified. Afterwards, the sample set as well as the research methodology are described, following which the results of the empirical model are presented. Finally, in the discussion part the scientific and managerial implication of the results are presented.

1. Literature review

While the scientific literature provides various insights on the relationship between CEO attributes and firm performance, the majority of existing research takes a broader view on this topic without examining the specifications of particular industries or markets. Furthermore, the findings with respect to this issue are often conflicting and divergent in terms of variables and focus points. The following review of existing literature will first present a general overview of the expected influence a CEO has on firms and consequently on firm performance. Afterwards, by adopting a more narrow approach and thus concentrating on a specific CEO attribute, namely CEO tenure, the existing research on the relationship between CEO tenure and organisational developments and finally CEO tenure and firm financial performance, which is the also the focal point of this scientific research, will be examined.

1.1. The CEO

A chief executive officer (CEO) is the highest-ranking executive in a company and as such is responsible for the overall success of an organisation. According to Coates and Kraakman (2010, p.2) the CEO “manages the company, glorifying in its successes and taking the blame for its failures”. This statement strongly emphasized on the vital role a CEO plays within an organisation as well as on his or her direct accountability for the overall firm performance. He or she represents the company, shapes its culture and values, sets the tone for its vision. Taking this into account, it is not surprising to see the extensive amount of scientific research focusing on the influence CEOs have on firm outcomes.

Over time, researchers have approached this question from different perspective. Some have taken a more general point of view considering the contribution of a CEO to the overall company performance (Thomas, 1998; Mackey, 2008). Findings are however partly controversial: one of the most influential studies evaluating the relationship between company performance and organizational leaders, conducted by Lieberman and O'Connor (1972) argues that although individual leaders have an impact on organizational performance due to their distinctive leadership qualities, in a common market environment situational factors are prevailing. Building on this and examining the leadership-corporate performance issue in the retail market in the UK, Thomas (1998) states that while within the company leaders, such as chief executive officers, can account

for differing outcomes, a comparison between different firms and thus the variance in performance can be mostly attributed to the distractive characteristics of the organizations themselves, such as firm size, rather than to the performance of leaders. The latter is said to explain only between 3.9 and 7 percent of the variance in performance.

A more recent study by Wasserman, Nohria, and Anand (2010) addresses a slightly different question. Instead of asking “Does leadership matter?”, the authors aim at finding “When does leadership matter?”. By examining 531 companies from 42 industries, the scholars show that a CEO effects 14.7 percent and 13.5 percent of the variance in firm outcomes measured by using ROA and Tobin’s Q, respectively, which is similar to the findings by Lieberman and O’Connor in amount of 14.5 percent of variance explained. However, the study by Wasserman, Nohria and Anand is unique as it also takes into consideration variations across industries. For example, in industries characterized by abundance of opportunities, as well as ease in terms of exchange between parties, CEO’s attribution to company performance is lower. The same holds true for industries with low industry concentration and low levels of growth rates. In a different setting, Mackey (2008) measures the contribution of CEOs to overall organisational performance. However, in the sample only firms whose CEOs have worked for more than one firm in the sample are included. Findings show that CEOs can be held accountable for 29.2 percent of unexplained variance in company profitability (ROA) and 12.7 percent in business-segment profitability. Additionally, contradicting previous research, the authors suggest that CEOs have a stronger impact on firm performance compared to other factors, such as industry and corporate effects. Later, Hambrick and Quigley (2014) use a technique, which considers industry performance together with the respective CEO’s years in office and excludes firm’s own performance. They find that CEOs effect is attributable to 35.5 percent of the variance in company outcomes, again measured by ROA. Later, by collecting a larger company sample Quigley and Hambrick (2015) examine CEO effects on firm performance in a time span of 60-year time for 1,015 companies across 30 industries in the United States. Their findings suggest that the effect of CEOs on company performance increased significantly for the period between 1950 and 2009.

A different approach was also presented by Crossland and Hambrick (2007), researching the variance between the impact of CEOs on company performance across different regions, more specifically 100 firms from the United States, 100 firms from Japan, and

100 firms from Germany. By introducing the term “national system”, the authors collectively express the characteristics of different regions, including economic factors, or institutions, that characterize the nation state within which a firm is “principally located, or headquartered...such factors are national values, corporate governance practices, legal systems, and government regulations”. The results state that the United States is the country with the highest CEO effect on variability in firm performance with 13.40 percent, followed by Germany with 9.40 percent, and Japan with the lowest score of 4.64 percent (variance in company performance is measured by ROA). Those findings indicate that there are differences in terms of CEO power across countries worldwide in addition to industrial characteristics that need to be considered.

Apart from the general relationship between CEOs and firm performance, scholars have also researched the implications of managerial experience on organisations. A study by Custódio, Ferreira, and Matos (2013) shows that general managerial skills are valued higher among CEOs compared to firm-specific managerial experience. Building on it, Falato, Li, and Milbourn (2015) study the relationship between CEO experience, compensation, and performance and find that CEOs’ compensation is dependent on their industry credentials, reputation in the press, and educational background. Additionally, CEOs with better credentials and working for larger companies show a stronger performance on the job. By taking a different point of view, Cai, Sevilir, and Yang (2015) show that CEOs who have previously worked at certain companies called “CEO factories” deliver superior performance later at their executive positions. This in turn amplifies that high-quality training is positively correlated with subsequent firm performance.

Some researchers touched upon softer dimensions concentrating on the relation between CEO’s personality and firm outcomes. According to Kaplan, Klebanov, and Sorensen (2012), CEOs’ execution-related abilities such as persistence, work ethic, aggressiveness, high standards are associated with better company outcomes, while interpersonal skills, such as teamwork, integrity, listening skills are not seen as an indication for better performance. Later, Gow, Kaplan, Larcker, and Zakolyukina, (2016) develop a framework categorizing CEOs’ “Big Five” traits and find that certain CEO characteristics, such as openness and extraversion influence company outcomes. Partly contradicting those results Page (2018), argues that CE attributes explain variability in compensation, however have little impact on firm value.

In summary, there is an evident interest among researchers about the role of the CEO within an organization and his or her influence on company outcomes. However, existing studies and hence estimates about the extent to which CEOs' characteristics are directly attributable to firm performance are varying, especially among different industries and markets. Nevertheless, it can be argued that that personal background, previous CEO experience, as well as CEO work style have an impact on firm performance.

1.2. The CEO tenure and organisational development

The existing literature has reviewed the notion of CEO tenure from different perspectives, examining both the merits and the drawbacks of CEO tenure.

One of the most significant studies to touch upon the CEO tenure field was conducted by Hambrick and Fakutomi's (1991). The researchers build on the life cycle theory framework and find that a CEO's tenure consists of five main stages or "seasons", namely: "response to mandate", "experimentation", "selection of an enduring theme", "convergence", and "dysfunction". The authors suggest that firm performance relative to the industry increases in the initial phrases of a CEO tenure in account of learning, higher motivation as well as task interest, and openness. Furthermore, at the beginning of his or her tenure, a CEO is willing to undertake bigger changes and introduce new ideas, however over time this tendency declines. After some time in office, the CEO experiences diminishing task interest, concentrates on highly filtered information and is more prone to believe in the strong correctness of his or her views, which in turn leads to decreasing firm performance. The study shows that a CEO tenure follows a curvilinear performance pattern with company performance reaching its highest point approximately in the middle of the fourth season "convergence" and afterwards starts declining

In 1975 already, approximately 15 years before Hambrick and Fakutomi's (1991)'s work, Meyer conducted a research on changes in leadership and the corresponding effects on organizational structures, by studying 215 city, state, and country finance departments. His findings suggest that long-tenured executives have stronger power to resist external pressures and thus stakeholders. Similarly, Katz's (1982) research also implies that with tenure rigidity and commitment to established policies and practices increase. The longer a CEO is in office, the more averse he or she becomes towards change, as the commitment to the statue quo increases. Executives become certain of their established course of action

and try preventing big changes also in account of fear of risking their stable position within the organisation. This is not surprising, as individuals tend to prefer avoiding losses, in this case possibly resulting from undertaking strategic change, over realizing gains (Kahneman, Knetsch, and Thaler, 1991).

In a similar way, Miller (1991) studies the relationship between a long and short CEO tenure and the match between environment and structure as well as environment and strategy and facilitated by the CEO. The author's sample consists of "small and medium-sized, undiversified, autonomous companies", representing a wide variety of industries and based in the province of Quebec, Canada. His research shows an inverse relation between CEO tenure and above-mentioned matches, which leads to his conclusion that less tenured CEOs are more likely to adapt the organisation's strategy and structure according to the surrounding environment. Additionally, the author argues that this relationship is even stronger in a company setting characterized by uncertain environments and concentrated ownership. He introduces the term "stale in the saddle" in order to describe long-tenured CEOs inability to adapt to the organizational surrounding and the CEOs increased autonomy and influence over the company's stakeholders such as second-tier managers, directors and bankers. Related to this theory, Ryan, Wang, and Wiggins (2009) study the effect between CEO tenure and board monitoring. The authors examine 1,324 firms from S&P 500, S&P Midcap 400, and S&P Smallcap 600 and suggest that CEO tenure negatively correlates with board-of-director monitoring, meaning the longer a CEO is in office, the less frequently the board meets. This is consistent with Hermalin and Weisbach' (1998) and Hermalin' (2005) findings that with time the board's trust in the CEO's abilities gets stronger, CEOs become entrenched and their negotiating power increases, which in turn leads to reduced board monitoring. In addition to this, Onali, Galiakhmetova, Molyneux, and Torluccio (2016) prove that as CEO power increases (measured by CEO ownership, CEO tenure, and unforced CEO turnover), which leads to the CEOs entrenchment, a stronger internal monitoring by the board of directors, presumed those have a large ownership stake in the company, can help increase company performance.

A different model developed by (Altunbaş, Thornton, and Uymaz, 2017) aims at assessing the relationship between CEO tenure and corporate misconduct in the banking industry in the US. The authors argue that the probability of corporate misconduct increases with CEO tenure, however this holds true for banks with poor assets quality and

capitalization as well as low efficiency. According to the study, independent corporate board do not contribute substantially to mitigating such behaviour.

Similar to Hambrick and Fakutomi's (1991) findings that CEOs scale back new changes over the time of their serving, Miller and Shamsie (2001) suggest that product line experimentation declines as executives' tenure increases. This is partly supported by the fact that over time CEOs increase their knowledge of the organization as well as the product offering and the surrounding environment, which leads to an increased confidence in their company portfolio. Wiersema and Bantel (1992) find that low average organisational tenure is positively correlated with strategic change. However, surprisingly higher average team tenure (meaning the time the management team has worked together) is expected to support corporate / strategic changes. In another study, Wu, Levitas, and Priem (2005) examine the CEO tenure-invention relationship. They find an inverted U-shaped correlation between both parameters, peaking at the intermediate-to-late tenure. Furthermore, the authors argue that while long-tenured CEOs are more effective in stable technological environments, as they introduce innovation gradually, in dynamic technological environments short-tenured CEOs can leverage on their experimentation and subsequent learning.

Partly contradicting the above mentioned findings, Musteen, Barker, and Baeten (2010) find a positive relationship between CEO's attitude toward change and the company's attitude towards innovation as CEO tenure increases. However, their sample solely consisted of non-profit confederations in the United States, which might partly explain the deviating behaviour of executives.

Simsek (2007) presents a different approach towards CEO tenure. The author implies that a CEO tenure shapes the risk-taking behaviour of the top management team (TMT) and therefore examines the relationship between the CEO tenure-TMT risk-taking propensities and firm performance (firm performance is assessed by using both financial indicator such as sales growth and non-financial indicators such as market share growth). Long-tenured CEOs are associated with better understanding of the firm's environment, as well as more developed on-the-job and firm specific skills. Additionally, a longer period of time as CEO is associated with higher integration of the CEO both in the firm and the firm-environment. Therefore, it is assumed that long-tenured CEO would have the capabilities to successfully foster risky initiatives. However, the authors also argue that normally increasing tenure is associated with risk aversion due to fear of negative

outcomes. The model shows that CEO tenure indirectly influences firm performance via his or her impact of TMT risk-taking behaviour and the firm's pursuit of entrepreneurial activities.

Part of the literature also focuses on the link between CEO tenure and his or her organisational relationships both internally and externally. For example, Vera and Crossan (2004) suggest that strategic leaders, facilitate learning amongst employees in the form of providing an infrastructure for sharing of idea, practices and experiences, encouraging teamwork and trust. Luo, Kanuri, and Andrews (2013) find a positive relationship between CEO tenure and firm-employees, based on the notion that during their tenure, CEOs learn via various channels, one of which is employees' knowledge, which in turn strengthens the relationship between the two parties and increases employees sense of importance. Additionally, CEOs gain a better understanding of employees needs and constraints (Hatch and Dyer, 2004). Luo, Kanuri and Andrews (2013) also take into account the relationship between CEO tenure and firm-customers. They prove the existence of an inverted U-shaped association between both parameters in account of CEOs concentration on their own paradigm rather than the external market environment.

In a recent research by Zona (2016), the author studies the effects of governance devices on CEO conduct in terms of R&D investments. Although R&D spending largely contribute to developing a competitive advantage for companies, increasing productivity and strengthening corporate performance (Garcia-Manjon and Romero-Merino, 2012), CEOs often perceive R&D investments as risky due to their longer time to monetize an deliver payoffs (Driverand Guedes, 2012). Based on this and by studying more than 300 public US companies, Zona (2016) finds that stock options and board independence lead to increased R&D investments in later CEO tenures, while in early CEO tenures they decrease those.

To sum up, scientist have found multiple dimensions reflecting the impact CEO tenure has on various parts of the organization, mostly suggesting a curvilinear performance pattern between both. The literature implies that as CEO tenure increases, CEOs become more reluctant to change and thus "stale in the saddle". The latter is also associated with CEOs gaining more negotiating power and thus more influence over the board. Additionally, in order to avoid uncertainties and keep their position as CEO, many executives scale back innovation after some years in office. At the same time, long-

tenured CEOs are expected to bring a better understanding of the company environment, organizational processes and products and as well as the company employees.

1.3. CEO tenure and firm financial performance

As explained in the previous section, a CEO tenure influences the company environment, stakeholders, strategy and activities, which in turn have a direct or indirect impact on financial outcomes. Therefore, it is important to understand the relationship between CEO tenure and firm financial performance.

In one of his studies, Miller (1991) found that CEO tenure indirectly influences firm financial performance (ROI, sales growth, and net income growth) through its inverse relation to the match between strategy and environment. However, the researcher did not find any direct relationship between CEO tenure and performance. In a later study, Miller and Schamsie (2001) found that there is an inverse U-shaped relationship between top executive tenure and an organization's financial performance. Their research is based on the notion that over time, CEOs acquire more task knowledge, as well as industry and firm specific expertise, which in turn leads to more effective resource allocation and thus more successful choices. However, their findings show that at the end of a CEO's tenure performance starts declining. As the study focuses on the Hollywood film industry, financial performance is measured by ROS.

In a more recent study, Wang, Holmes, Oh, and Zhu (2016) suggest that CEO tenure and firm strategic actions are negatively correlated, which in turn supports previous findings in this area. However, they also find that CEO tenure is positively associated with firm future performance in general and more specifically in terms of profitability. Similarly, McClelland, Liang, and Barker, III (2010) find that CEO tenure is positively associated with commitment to the status quo within the organisation. However, they find an interesting indirect relationship between CEO tenure and firm financial performance facilitated by the CEO's commitment to the status quo. According to their research, in high discretion industries, such as the computer equipment or electrical components industries, a negative relationship between future firm performance and CEO's commitment to established policies exists (measured by both Tobin's Q and accounting-based measures). This can be explained by the fast-changing environment these companies operate in. Nevertheless, low-discretion industries are characterized by greater

stability as well as aversion towards change. Although the authors do not find a clear evidence for an existing relationship between firm performance in low-discretion industries and CEO's commitment to the status quo, they suggest that such CEOs are less prone to deteriorating company outcomes in case of stronger commitment to the status quo compared to the counterparts in high-discretion industries.

Henderson, Miller and Hambrick (2006) conduct a study examining the different impact of CEO tenure on financial performance in the dynamic computer industry and in the food industry. While in the food industry an inverted U-shaped relation is observed with financial performance declining only after 10-15 years of a CEO serving, CEOs' time in office in computer companies is negatively correlated with profitability. Based on this study, McClelland, Barker, and Oh (2012) further test the variance in firm performance and CEO tenure across different industries in the United States. The authors argue for a negative correlation between longer CEO tenures and future financial performance (measured by ROA) in dynamic industries, however for stable industries such as the retail industry no evidence is found. The study implies that there is no prove for CEO tenure to hurt future performance in less-dynamic industries.

In their research, Vintila, Onofrei, and Gherghina (2015) study the relationship of CEO characteristics, such as CEO age and CEO tenure, and firm financial performance by examining a sample of companies listed on the Bucharest Stock exchange. They find a positive correlation between CEO tenure and Tobin's Q ratio, however no evidence for a curvilinear relationship was extracted. In another similar study by Vintila and Gherghina (2012), that assesses the relationship between CEO characteristics (such as age, tenure, status) and firm financial performance, the authors found that there is a positive relationship between CEO tenure and ROA as well as P/E ratio, however for other financial metrics such as Tobin's Q and ROE the model could not be validated. The later study considers only listed companies from the United States.

Part of the findings of the above-mentioned studies are supported by a research conducted by Limbach, Schmid and Scholz (2016), which proves the inverted U-shaped relation between CEO tenure and Tobin's Q as well as ROA across S&P 1500 companies and suggests a "sweet spot" of 12 years for optimal CEO serving. Additionally, the study examines the effects of the economic environment and concludes that for firms operating in a dynamic and fast changing environment, the optimum CEO tenure is reached earlier, in comparison to companies in stable environments. Observed from the opposite

perspective, Brookman and Thistle (2009) argue that future CEO tenure is partly dependent on their predecessor's performance, as well as their own performance. Furthermore, the authors suggest that the possibility of contract termination increases in the first thirteen years of the position in office and afterwards starts decreasing. However, in the selected sample, only 18 percent of the CEOs have tenure greater than thirteen years. Finally, a positive relationship between tenure and firm performance as well as compensation is found, meaning that the CEO's tenure is expected to be longer as the company shows superior performance. Aligned with these results, in an earlier study Allgood and Farrell (2000) find that similarly, a forced turnover is less likely to incur for a CEO with a tenure higher than ten years. Additionally, it is evident that there is a negative correlation between forced turnover and firm financial performance.

As part of their research, Luo, Kanuri and Andrews (2013) found that firm-employee and firm-customer relationship strength mediate the effects of CEO tenure on firm financial outcomes. In this case financial performance is depicted by stock price (in terms of magnitude and volatility). Their sample consisted of publicly traded companies in the United States.

1.4. Review of the energy sector

The energy industry is one of the vital cornerstones of today's society and the immense progress we have been observing in the world. It is at the heart of the development for all other businesses and hence can largely influence the entire economy. The energy sector is a strategic sector, which accompanies people in every step of their lives: in producing light and heat, transportation of goods, services and people, production of food, clothing, water treatment, etc. Additionally, it does not only support other industries and their advancements, investments in the energy segment drive investments, innovation and job creation across all sectors.

The energy sector comprises all industries engaged in the production, exploration, as well as marketing of energy resources. Overall, the global primary energy consumption grew by 1.0% in 2016, which is fairly similar to the growth of 0.9% and 1% recorded in 2015 and 2014, respectively (BP Statistical Review of World Energy, June 2017). In terms of regions, while in the early 90s' OECD countries accounted for the biggest energy growth drivers, since 1995 the trend has shifted towards developing economies, with China and

India being the major growth contributors, together representing almost half of the increase in demand worldwide.

The International Energy Association classifies energy fuels in five main categories, namely coal, oil, gas, nuclear, and renewables. In the end of 2016, oil accounted for the largest share of energy consumed (approx. 33.3%), followed by coal (28.1%) and natural gas (24.1%). The smallest share was attributed to renewable energy sources such solar and wind power (3.2%) (BP Statistical Review of World Energy, June 2017). However, the status quo and thus the current energy mix is expected to change in the future. In the next 20 years, renewables, together with nuclear and hydroelectric power are supposed to contribute to half of the worlds energy supply increase. Nevertheless, the main energy sources, namely oil, gas, and coal will continue accounting for over 75% of the overall supplies. The main drivers for change are first, the development in emerging economies, due to the rise of the middle class and thus the increasing energy demand. Second, a change in the transport sector leading to increased efficiency of transport vehicles and a shift towards environmental friendly transportation means are expected to impact energy markets (BP Energy Outlook, 2017 edition).

Even though the European Union is the second largest economy and consumes one fifth of the total energy produces worldwide, Europe is still highly dependent on energy resources coming from outside of it. Oil is purchased mostly by OPEC (Organisation of the Petroleum Exporting Countries) and Russia, while gas is mostly purchased from Russia, Norway, and Algeria. The parties involved in energy regulations across the European Union consist of a co-operative grouping of national energy regulators (the Council of European Energy Regulators, or CEER), the Agency for the Cooperation of Energy Regulators (ACER), as well as two approved associations of industry parties for the electricity and gas segments (the European Network Transmission System Operators) (Black, 2013).

In order to improve energy security and improve efficiency in the sector, the European Union has developed a European energy strategy. Improved energy efficiency aims at not only at cutting consumers' energy bills but also protecting the environment. One of the main objectives of the strategy is to increase the share of energy consumed by renewable sources to one fifth of the overall demand until 2020. Efforts put in increasing energy efficiency have a positive effect on economy growth as they further stimulate businesses

as homes insulation, building refurbishing, which in turn leads to new job creations (The European Union Explained: Energy; 2012).

Furthermore, the European Union is developing a new EU energy market legislation, which is also known as the third package, and has the goal of improving the functionality of the internal energy market. It focuses on five main points: unbundling energy suppliers from network operators and hence increasing competition, strengthening the independence of regulators, establishment of the establishment of the Agency for the Cooperation of Energy Regulators (ACER), cross-border cooperation between transmission system operators and the creation of European Networks for Transmission System Operators, and increasing the transparency in retail markets to benefit consumer.

CEO attributes specification in the energy industry

The crucial importance of the energy industry for economic development worldwide as well as its high impact on other industries justify the high regulation observed in the sector. Therefore, leaders in the energy industry are expected to have profound understanding of the regulatory standards and requirements for running the business. Additionally, in order to maintain strong relationships with the governing bodies and other important stakeholders, a strong network of contacts can be considered as an essential asset for CEOs. However, for such network to develop, a long time in office is needed.

Furthermore, as mentioned above, the energy industry is expected to face significant challenges and experience a major transition in the near future. Hence, energy companies need leaders that have not only a comprehensive understanding of the regulatory framework, but also possess both extensive company and industry knowledge. However, an in-depth understanding of the sector and its mechanics, does not necessary means that CEOs should be backwards looking and committed to the excepted norms. Executives in energy firms should challenge the status quo, be willing to innovate, especially considering the new initiatives presented by the EU. Therefore, a leader who is willing to combine the merits of the past with the best practices of the future would be most suitable for leading a company to success. For this to be achieved, a CEO with a profound understanding of the company and the industry is needed, which is considered to be

achiever throughout time and hence with increasing CEO tenure (Miller and Shamsie, 2001).

Previous studies on CEO tenure and its relationship to firm performance have shown that even although a negative correlation between longer CEO tenures and future financial performance (measured by ROA) in dynamic industries exists such as the computer industry, this has not been proven for more stable industries (Henderson, Miller and Hambrick, 2006), (McClelland, Barker, and Oh, 2012). Therefore, it can be expected that CEOs in the energy industry, which can be considered as a rather stable industry, would be associated with stronger performance as CEO tenure increases.

Unfortunately, the scientific literature in the field of CEO characteristics of energy companies is fairly scarce. In account of this and for the purpose of this master thesis, managerial journals were screened. A recent study by PwC (2015) shows that the turnover rate in energy companies (refers to oil and gas firm only) has increased from 2013 to 2015 by approximately 10 percentage points reaching approximately 23%. In this study, utility companies are presented separately and record significantly lower turnover rates of approximately 14 percent and 15 percent in 2013 and 2015, respectively. The difference can be attributed to the sharp fall of the oil prices in 2014, which led to a need of new strategic actions and possible leadership change. Additionally, the results imply that 31 percent of CEOs in utilities company are outside hires, which is very close to the ratio recorded in energy companies (27 percent).

A similar research conducted by Chris Reinsvold (2015) summarizes the CEO trends in the energy industry. The research is concentrated on US and international public oil and gas companies. The results showed that the median tenure for CEOs equates to 4.6 years, while the median age for large-cap CEOs was at 58 and 55 for smaller companies. Furthermore, CEOs with an education in the technical field (i.e. engineering and biology) outnumbered those with a degree in business. With regards to CEO origin, the majority of CEOs proved to be insiders, being promoted within the company to an executive position.

1.5. Research gap and hypotheses

Given the existing theory and empirical evidence, it can be expected that there is an existing relationship between CEO tenure and firm financial performance, both direct and

indirect. However, for the purpose of this master thesis, the concentration would be on the direct implication between both parameters. Most previous studies imply that an inverse U-shaped relationship between CEO tenure and company outcomes exists, meaning that firm performance increases in the early years of the CEO's office time until at some point performance peaks and thus starts deteriorating afterwards. However, evidence varies across industries, with scholars arguing for no evidence of declining performance in less dynamic industries. Additionally, there is a gap between scientific findings on the optimum CEO tenure for companies in less dynamic industries, and actual results shown in managerial researches. For example, while Limbach, Schmid, and Scholz (2016) suggest a sweet spot of 12 or more years for CEO tenure in less dynamic industries, industry studies show a medium of CEO tenure equating for 4.6 years for energy industries (oil and gas companies) (Reinsvold, 2015).

Furthermore, different market environments could have varying impact on the relationship between CEO tenure and firm outcomes. As shown in a study by Crossland and Hambrick (2007), a big difference between the role of CEOs in the United States, Japan, and Germany exists. This is also represented in Hofstede's cultural dimensions, that can be applied in a corporate setting and hence capture the difference in terms of power distance, individualism vs. collectivism between different countries (as for example between the United States and Europe). Most of the research on CEO tenure and firm performance is however conducted across companies, headquartered in the United States, which leaves this area in Europe partly underrepresented in the scientific literature.

Finally, there are existing arguments both supporting and disapproving of longer CEO tenures. On the one hand, longer-tenured CEOs build stronger relationships within and outside the organisation. Over time, they develop a strong network, gain a better understanding of the company resources, processes, culture, and in general stakeholders (Pfeffer and Salancik, 1978). Although some scholars argue that CEO tenure negatively correlates with strategic change, this does not necessarily point at negative implications on company outcomes. For example, the more time a CEO is in office, the greater his organizational commitment becomes, which in turn reduces the possibility of opportunistic behaviour and hence agency costs (Gong, Law, Chang, and Xin, 2009).

Based on the information presented above, this study will aim at explaining first the relationship between CEO tenure and firm financial performance in energy companies across Europe. Additionally, it will look into whether or not there is a variation of

performance across various performance indicators. Finally, it will assess whether or not there is a difference between the effect of CEO tenure on the performance of energy companies belonging to different subsectors.

2. Methodology

2.1. Data collection and sample

Data for the purpose of the study was collected from multiple sources, which will be explained in detail in the following section.

Initially, a sample of all energy companies was drawn from the Thomson Reuters Eikon. Firms were selected on the basis of their industry focus, size, origin / geographical location as well as operations. The primary search criteria considered only firms with revenue of more than 100 million euro, which were listed on a stock exchange coming from an initial issuer from the European Union. The primary sample included 191 companies in total from the following subsectors: Electric Utilities, Multi-Utilities, Gas Utilities, Water Utilities, Independent Power Producers & Energy Traders, Renewable Electricity, Oil & Gas Exploration & Production, Oil & Gas Drilling, Oil & Gas Equipment & Services, Integrated Oil & Gas, Oil & Gas Refining & Marketing, Oil & Gas Storage & Transportation, Coal & Consumable Fuels. All company websites were screened in order to best assess the suitability of the companies included in the sample. Additionally, Bloomberg was used for double checking companies' primary operation focus. Companies, which were not directly engaged in the exploration, production, or transmission of energy sources were discarded from the list. Among the companies excluded were energy equipment and plant manufacturers, maintenance service providers, oil & gas maritime transportation providers, as well as other third-party providers. Hence, the sample focus lies on up-stream and down-stream energy operators. Companies, which were initially listed on the United Kingdom stock exchange were excluded from the sample due to the decision of the country to leave the European Union resulting in the new EU-27. Additionally, Greek and Rumanian firms were discarded due to the discrepancies between corporate culture in Eastern Europe and Central and Western Europe. Furthermore, obtaining information on some companies from the initial sample proved challenging due to the lack of sufficient data in English (this mostly refers to Hungarian entities). Therefore, those companies were not included in the final company selection. Firms, which underwent a major organisation change during the period studied, such as spin-off, were also excluded from the sample.

Some of the entities included belong to other companies in the sample. Nevertheless, in such cases, the subsidiary companies are listed separately and operate independently from the parent company.

In a second step, all CEO specific information such as CEO tenure, CEO age, CEO compensation, etc. was collected manually, using companies' integrated annual reports, companies' websites delivering information on corporate governance and more specifically on the executive committees and hence the CEO himself / herself. This in turn further implies the uniqueness of the data set and hence the research conducted. Additionally, if information could not be fully retrieved from company sources, Bloomberg as well as other news agencies were screened.

Finally, firm financial information was retrieved from Thomson Reuters Eikon. All financial data collected was in absolute numbers and in euros. Hence, the financial ratios used in the analysis were computed manually.

The final sample consists of 57 energy companies, engaged in both up-stream and down-stream activities, while the period of research captures the years between 2013 and 2016. For most companies, data was available for all four years of observation. In total, 221 observations were collected, which translated into 1148 CEO years in office. The median of CEO tenure equated to 5.2 years, while the CEO tenure exceeding 10 years made up only 14% percent of the whole sample.

2.2. Measurement

Dependent Variables

For the purpose of measuring firm financial performance, first, Return on Assets (ROA) was applied as a dependent variable. In the past, multiple scholars have used ROA or other profitability measures in empirical studies on the relationship between CEOs and their impact on company financial performance. Among those are Wasserman, Nohria, and Anand (2010), Lieberman and O'Connor (1972), Mackey (2008), Later, Hambrick and Quigley (2014), Crossland and Hambrick (2007). Furthermore, ROA has been used in studies examining the connection between CEO tenure and firm financial performance: McClelland, Barker, and Oh (2012), Vintila and Gherghina (2012), and Limbach, Schmid and Scholz (2016). Nevertheless, accounting-focused literature argues that performance

ratios such as ROA have a downside as well. For example, they do not take into consideration either inflation (Whittington, 1983) or risk (Schmalensee, 1981). Furthermore, investments carried out by past management, take time to monetize. Hence, time lag between financial results and CEO activities occur (McGahan, 1998). Additionally, the balance sheet fails to incorporate intangible assets such as brand equity and technical expertise. Nevertheless, in the setting of the energy industry, a sector characterized by high up-front investments in tangible assets, accounting based metrics are suitable indicators for a company's performance.

In order to escape the possible bias of accounting-based measures, researchers often include Tobin's Q in their empirical works. Tobin's Q is the firm's market value relative to its book value. The metric often appears in the scientific literature focused on the CEO impact on firm performance such as Wasserman, Nohria, and Anand (2010), Lieberman and O'Connor (1972), as well as in papers specifically studying CEO tenure and firm financial outcomes: Vintila and Gherghina (2012), Limbach, Schmid and Scholz (2016), McClelland, Liang, and Barker, III (2010), Vintila, Onofrei, and Gherghina (2015). Tobin's Q is considered to be superior compared to pure accounting-based measures, as it can be interpreted as a signal for a company's future performance (McGahan, 1998). While, as mentioned above, accounting metrics suffer from time lags, Tobin's Q is considered to capture the current market situation as it is based on the company's stock. Hence, it is sensitive to both short-term and long-term CEO activities and the investors' perception of the market / company and their prospects. Finally, it captures essential company information such as intangible assets, which is not part of the balance sheet.

Independent Variables

CEO tenure is measured by counting the years a chief executive had been in office. However, in the cases when the CEO was assigned to his / her position later than the 1th of January in the respective year, the first incomplete year of tenure is not considered, due to the limited contribution of the new CEO. In this year, the CEO leaving the position is considered to have had a stronger influence on the company performance in account of his actions and policies from his / her mandate. Similarly, even when the final year of tenure is not fully completed, it is still considered as a full year due to the implications mentioned before. Furthermore, a square of CEO tenure is calculated and included where it is significant. Unless otherwise noted, all predictors are updated annually.

Control Variables

CEO controls

CEOs' previous experience as well as his or her knowledge of the company can have a major impact on the firm financial performance. For this purpose, a dummy variable is used for assessing whether or not the CEO is an insider (=1) or outsider (=0). The same control variable can be seen in the research of Allgood and Farell (2000) and Luo, Kanuri and Andrews (2013). The initial idea to use a dummy variable explaining whether or not a CEO is the founder of the company or not was discarded due to the little representation of founders in the sample obtained.

By increasing their tenure, CEOs grow older, which in turn has an impact both on their knowledge as well as their abilities. Taking this into account, the model is controlled for CEO age, something done previously by Henderson, Milller and Hambrick (2006) and Brookman and Thistle (2009).

Additionally, a CEO's compensation can be both an indicator for his or her motivation as well as abilities and performance. Therefore, originally the model was supposed to be tested for effects derived from CEO compensation. Previously, Brookman and Thistle (2009), McClelland, Barker, and Oh (2012), and Luo, Kanuri and Andrews (2013) have also tested for total CEO compensation in their models. Nevertheless, due to the limited amount of information available on CEO compensation and hence the inability to collect the data for the whole sample, this control variable was dropped in order to not reduce significantly the sample size used in the regression model.

Organisational controls

Similar to Henderson, Milller and Hambrick (2006), McClelland, Barker, and Oh (2012), and Luo, Kanuri and Andrews (2013)'s empirical researches, the number of company employees is used as a measure of firm size and hence controlling for economies of scale. Additionally, the logarithm of operating profit is used for similar purposes. According to Vintila and Gherghina (2012)'s and Brookman and Thistle (2009), it is also possible to apply the logarithm of the companies' total assets, however due to the fact the variable is part of the computation of the dependent variables for firm financial performance, total assets were not used in the model.

Major strategic changes can have a significant impact on variance in company performance. For instance, if the company remains on its general operating track, capital expenditures levels are supposed to remain rather stable in the course of the years. This approach was again used by Henderson, Miller and Hambrick (2006) as well as Geletkanycz and Hambrick (1997) and Westphal, Seidel and Stewart (2001). However, since the underlying model considers every observation as an independent one, a company pattern is not established. Therefore, capital expenditures divided by revenue in order is applied to assess the level of investment intensity for the respective observations. The studies mentioned also consider research and development expenditures and advertising expenditures, however due to the unavailability of data, in this research the focus would be solely on capital expenditures.

Capital structure between companies can vary significantly, especially in the energy industry, which as mentioned above requires both high up-front and running investments. Financial leverage is used as a control variable to test for gearing impact on performance. The same approach was applied by Brookman and Thistle (2009) and Vintila and Gherghina (2012). Similarly, McClelland, Barker, and Oh (2012) and Luo, Kanuri and Andrews (2013) also control for capital structure, however they use a debt-to-asset ratio.

Other controls (industry, year)

Although all companies in the sample are active in the energy industry, it is possible to observe some difference between companies engaged in for example up-stream and down-stream activities. Therefore, dummy variables are used for controlling for the various subsectors of the sample. Three main subsectors have been identified: utilities (comprising water, gas and electricity utility companies, multiutilities, and independent electricity providers), oil and gas companies (Oil & Gas Exploration & Production, Oil & Gas Drilling, Oil & Gas Equipment & Services, Integrated Oil & Gas, Oil & Gas Refining & Marketing, Oil & Gas Storage & Transportation, Coal & Consumable Fuels), and renewable energy companies.

Additionally, the model is controlled for year effects for the years between 2013 and 2016. This variable was included especially in account of the oil price shock that happened in 2014 and negatively impacted a number of companies in the industry. For

this purpose, the year effect control aims to detect any relationship that stems from the industry specifics for the years investigated in the sample.

In the adjacent table all variables used are presented according to their classification. Additionally, a description of the variables as well as the sources used are specified.

Table 1: Description of the variables covered in the empirical research

Variable	Description	Source
Independent variable		
CEO tenure	The tenure of a Chief Executive Officer within a given company, presented in years	Company annual reports / company website
Dependent variables		
ROA	Return on Assets is a financial indicator for the profitability of a company based on its total assets. It is calculated by dividing the net earnings after extraordinary events and before distributions by the total assets and is stated in percent	Thomson Reuters Eikon (computed manually)
Tobin's Q	Tobin's Q or the q ratio is an indicator for the total market of a company relative to its book value. It is calculated on the basis of the total outstanding shares multiplied by the company's share price as of 31.12 and divided by the company's book value as of 31.12	Thomson Reuters Eikon (computed manually)
Control variables		
CEO controls		
Insider vs. outsider	<i>Dummy Variable</i> If the CEO was in the company prior to his or her appointment as CEO, then the variable is equal to 1 If the CEO joined the company at the time of his or her appointment as CEO, then the variable is equal to 0	Company annual reports / company website
CEO age	The age of the CEO expressed in years	Company annual reports / company website
Organisational controls		
Log operating profit	Presents a logarithm of the operating profit	Thomson Reuters Eikon (computed manually)
Capital expenditures to revenue	Capital expenditures relative to total revenue gives information about how aggressively the company is investing in its long-term operational assets. It is calculated by dividing the company's annual investments in property, plant, and equipment by its total sales.	Thomson Reuters Eikon (computed manually)
Employees	Number of full time employees	Thomson Reuters Eikon (computed manually)
External effects		
Year	Used to control for year effects. Year 2013=1 Year 2014=2 Year 2015=3 Year 2016=4	na
Industry	Used to control for industry effects. Utility companies=1 Oil & gas companies=2 Renewable energy companies=3	Thomson Reuters Eikon

Source: Own processing

2.3. Modelling

The data set used for the model comprises of 221 observations for 57 companies, collected for the time period between 2013 and 2016. When a firm or a CEO appear in the sample for all of four years, the CEO tenure as well as his individual characteristics and firm specific characteristics are included in the sample as a separate observation. This is due

to the fact that the observed time span is too short to conduct a time series regression and hence assess the CEO's effect on the firm performance over the course of his or her entire tenure. Therefore, the model is calculated by using a pooled cross-section multiple regression analysis, based on the general model:

$$y_i = \beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \dots + \beta_m x_{mi} + \varepsilon_i$$

where:

y_i = the independent variable (firm financial performance)

β_0 = the intercept or the constant is the expected mean value of Y when all X equal 0. It takes into consideration the effect of all factors influencing firm financial performance and are kept at a stable level through time except the independent variable (and the explanatory variable) quantified in the model

β = the slope captures the expected increase (decrease) in response to a per unit change in X

x_{ji} = the independent variable j for each observation i

ε_i = the residual term of the regression, which captures the effect of factors with random / uncontrollable actions, characterized by the fact that the mean is zero and the variance is constant

i = the respective observation.

Table 2: Classification of the variables from the econometric research

Dependent variable	Independent variables		
Firm performance is measured by the following variables: ROA Tobin's Q	CEO tenure		
	Control variables		
	CEO controls	Organisational controls	External effects
	Insider vs. outsider CEO age	Employees Log operating profit Capital expenditures to revenue	Year Subsector

Source: Own processing

In the table above all variables included according to their roles in the empirical model are presented. Since there are two firm financial performance indicators, for each of those

a separate econometric model is developed. Additionally, as control variables can be classified in three main categories (CEO, organisational, and other controls).

As the relationship between CEO tenure and firm financial performance is not expected to be linear, the model is tested for non-linearity. Besides, in order to remove the multicollinearity problem, which could determine the misrepresentation of the interpretations regarding the results from the models, all models are tested for multicollinearity.

The first model variation is designed to capture the effect of CEO tenure on firm financial performance measured in terms of Tobin's Q.

Model variation 1:

$$\text{Tobin's Q} = \beta_0 + \beta_1 * \text{CEO Tenure} + \beta_2 * \text{Year} + \beta_3 * \text{Subsector} + \beta_4 * \text{CEO Age} + \beta_5 * \text{Insider} + \beta_6 * \text{Log Operating Profit} + \beta_7 * \text{Capex/Revenue} + \varepsilon_i$$

The second model variation is designed to capture the relationship between CEO tenure on firm financial performance measured in terms of ROA.

Model variation 2:

$$\text{ROA} = \beta_0 + \beta_1 * \text{CEO Tenure} + \beta_2 * \text{Year} + \beta_3 * \text{Subsector} + \beta_4 * \text{CEO Age} + \beta_5 * \text{Insider} + \beta_6 * \text{Employees} + \beta_7 * \text{Capex/Revenue} + \varepsilon_i$$

Finally, an interaction term between CEO tenure and the respective subsector will be introduced in the equations with the purpose of analysing the variance between the impact the years a CEO spends holding the position considering the given subsector.

2.4. Descriptive statistics

Table 3: Overview of descriptive statistics

variable name	storage type	display format	value label	variable label
roa	double	%14.2fc		Return on assets
q	double	%14.2fc		Tobin's Q
ceo_tenure	byte	%14.2fc		CEO tenure
year	int	%14.2f		Financial year
subsector	byte	%14.2fc		Industry subsector
age	byte	%14.2fc		CEO age
insider	byte	%14.2fc		Insider vs. outsider
employees	long	%14.2fc		Full-time employees
log_op_profit	float	%9.0g		Logarithm of operating profit
capex_revenue	double	%14.2fc		CAPEX to revenue

Source: Own calculations using Stata

Table 4: Descriptive statistics of the variables

Variable	Obs	Mean	Std. Dev.	Min	Max
roa	221	.0227464	.0592316	-.197826	.3347787
q	217	.503426	.4422846	.0062308	3.785269
ceo_tenure	221	5.19457	3.820182	1	21
year					
2014	221	.2533937	.4359418	0	1
2015	221	.2443439	.430673	0	1
2016	221	.2488688	.4333391	0	1
subsector					
2	221	.2941176	.4566795	0	1
3	221	.0542986	.2271205	0	1
age	201	56.02985	7.531873	36	74
insider	209	.6650718	.4730985	0	1
log_op_pro~t	189	-2.245534	1.081398	-5.730772	-.3369326
employees	210	23002.25	39475.52	17	224000
capex_reve~e	217	.2018241	.3315094	.0000615	2.605833

Source: Own calculations using Stata

Table 4 is a presentation of the descriptive statistics with regards to the sample and the variables included in it.

Concerning the industry and more specifically the energy subsectors, 65% of all observations represent utility companies, 29.4% companies active in the Oil & Gas sector and only 5.4% are renewable energy producers. The majority of the sampled CEOs (66.6%) were already working at the company before being appointed to CEOs. However, in only 5% of all observations were the founders of the company operating as CEOs.

The mean age for all CEOs was at approximately 56, with the youngest CEO being 36 and the oldest 74. The mean length of a CEO tenure equated to circa 5.2 years, however while some CEOs spent only a year in office, other kept the post for 21 years.

On average, CEOs were spending approximately 20.1% of the companies' revenues on capital expenditures, which is expected given the high tangible assets intensity in the energy industry. In terms of profitability, the average Return on assets ratio was 2.3%. The Tobin's Q mean was approximately 0.5, which points that most of the companies were undervalued in the moment of observation.

3. Results

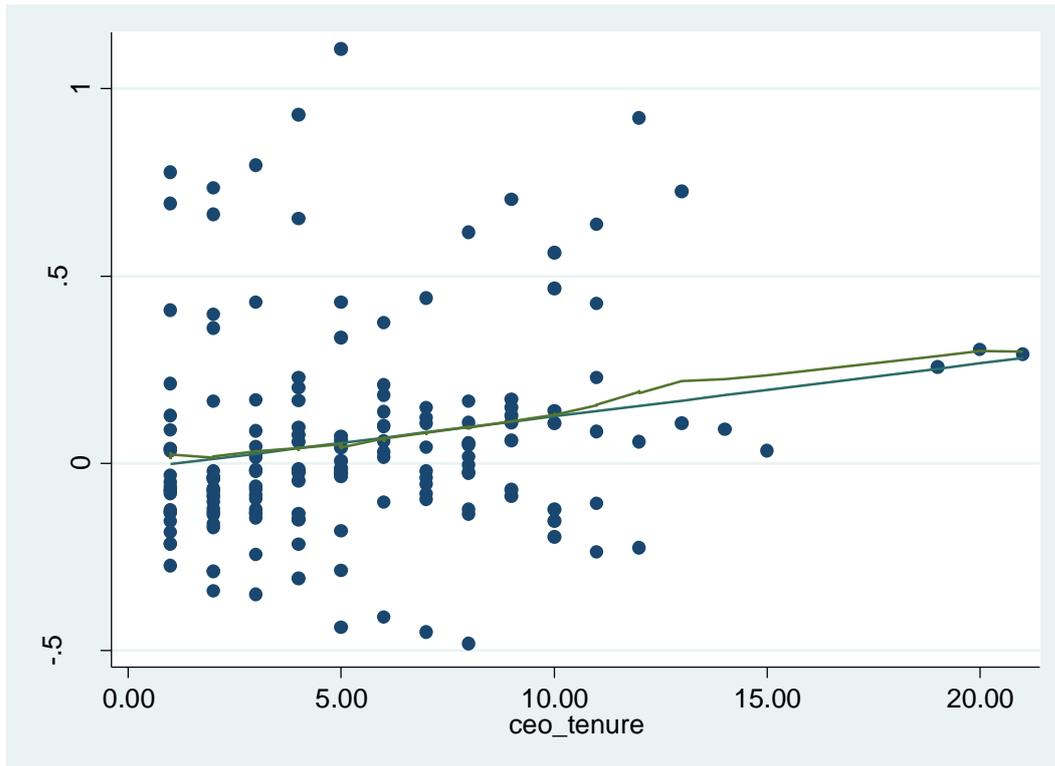
The first model studies the relationship between firm financial performance and CEO tenure. As mentioned above, firm financial performance is measured by two different variables, once by ROA and once by Tobin's Q. Hence, two equations are built for this purpose with differing dependent variables. Multicollinearity was assessed by using variance inflation factors. As presented in Table 8 and 9 in the appendix, the variance inflation factors are fairly low, around 1 for all variables, showing that the independent variables (as well as the control variables) are not correlated within the model and hence the results are not inflated.

Furthermore, the model was tested for omitted variables in order to assess whether or not all variables needed to explain the dependent variable are included. Results are presented in Table 10 and 11 in the appendix and show a p-value of 0.964 and 0.992 for Tobin's Q and ROA, respectively, which is below the usual threshold of 0.05, therefore the null hypothesis can be rejected as the model is specified correctly.

Additionally, the model is tested for heteroskedasticity in order to assess if the variance of the conditional distribution of the independent variables is constant for the sample. By applying the Breusch-Pagan test, the presence of heteroskedasticity in the model is suggested since the null hypothesis that residuals are homoscedastic for Tobin's Q is rejected ($p > 0.00$). However, this does not hold true for the second model variation with dependent variable measured by ROA ($p > 0.328$).

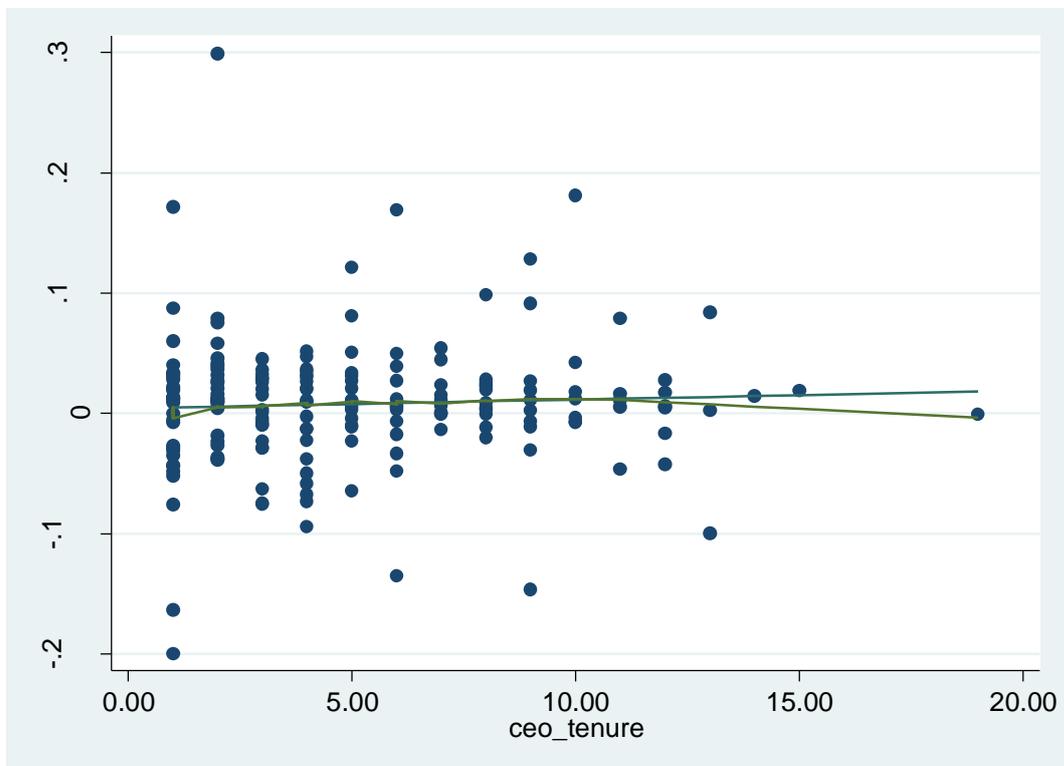
Finally, a test on the non-linear relationship between the dependent and the independent variable is performed, aiming to clarify whether or not polynomial terms should be added to the model. In both model variations, the relationship between firm financial performance and CEO tenure is linear. The same result is presented in the adjacent graphics (Graph 1 and 2).

Graph 1: Scatterplot on the relationship between CEO tenure and Tobin's Q



Source: Own calculations using Stata

Graph 2: Scatterplot on the relationship between CEO tenure and ROA



Source: Own calculations using Stata

The first model variation suggest that there is a positive linear relationship between CEO tenure and Tobin's Q with $p < 0.05$ and t-statistics > 1.96 . Furthermore, the model variation reveals a significant negative relationship between CEO age and Tobin's Q, which was also found in a previous study by Vintila, Onofrei, and Gherghina (2015), however firm financial performance in that study was measured by PER. The same study found no relationship between CEO age and Tobin's Q as well as ROA. Similarly, Vintila and Gherghina (2012) failed to prove a statistically significant relation between the age of a CEO and Tobin's Q. Since the focus of this master thesis is mainly concentrated on the relationship of CEO tenure and company financial performance, future research would be advised to further investigate the interaction between CEO age and firm financial performance.

Furthermore, the model variation suggests a positive correlation between the logarithm of operating profit and Tobin's Q, which can be explained by the positive market reaction in the case of higher operating profit recorded by the company in question. Additionally, year effects do not show any statistical significance and hence do not contribute to the variation in Tobin's Q. The same holds true for capital expenditures as percentage of revenue as well as for the CEO origin.

Finally, the model variation suggests a differing financial performance in terms of Tobin's Q dependent on the energy subsector. According to the results, companies active in the Oil & Gas industry and in the Renewables energy industry yield higher results compared to their peers in the utility subsector. Overall, the model variation is believed to explain approximately 30% of the variance in Tobin's Q.

Table 5: Linear regression CEO tenure and Tobin's Q

```

Linear regression                Number of obs   =      164
                                F(10, 153)     =       7.35
                                Prob > F             =      0.0000
                                R-squared            =      0.3023
                                Root MSE         =      .2819
    
```

q	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
ceo_tenure	.0141282	.006868	2.06	0.041	.0005598	.0276966
year						
2014	-.0101218	.052338	-0.19	0.847	-.1135203	.0932766
2015	.0488124	.0630561	0.77	0.440	-.0757606	.1733854
2016	.0689934	.0630881	1.09	0.276	-.0556428	.1936296
subsector						
2	.2628886	.0530178	4.96	0.000	.1581472	.3676299
3	-.2566529	.0514417	-4.99	0.000	-.3582807	-.1550252
age	-.0147513	.0039966	-3.69	0.000	-.0226469	-.0068557
insider	-.0404173	.0521464	-0.78	0.439	-.1434373	.0626026
log_op_profit	.0743757	.02308	3.22	0.002	.0287791	.1199722
capex_revenue	.1289077	.0794282	1.62	0.107	-.0280099	.2858252
_cons	1.308906	.2241401	5.84	0.000	.8660968	1.751715

Source: Own calculations using Stata

The second model variation, which studies the relationship between CEO tenure and ROA fails to deliver statistically significant results ($p > 0.05$, t -statistics < 1.96) and hence implies that the years a CEO spends in an office do not explain the variance in company financial performance measured by ROA.

Table 6: Linear regression CEO tenure and ROA

Source	SS	df	MS	Number of obs	=	185
Model	.071976779	10	.007197678	F(10, 174)	=	2.38
Residual	.525906062	174	.003022449	Prob > F	=	0.0114
				R-squared	=	0.1204
				Adj R-squared	=	0.0698
Total	.597882841	184	.003249363	Root MSE	=	.05498

roa	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
ceo_tenure	.0007305	.0012024	0.61	0.544	-.0016427 .0031037
year					
2014	-.000561	.0115029	-0.05	0.961	-.0232642 .0221422
2015	-.0147149	.0116274	-1.27	0.207	-.0376637 .008234
2016	-.0153714	.0115075	-1.34	0.183	-.0380836 .0073409
subsector					
2	.0095233	.0093272	1.02	0.309	-.0088857 .0279322
3	-.0103765	.0172762	-0.60	0.549	-.0444745 .0237214
age	.0001663	.0006246	0.27	0.790	-.0010666 .0013991
insider	-.0023094	.0088745	-0.26	0.795	-.0198249 .0152062
employees	-3.12e-07	1.06e-07	-2.93	0.004	-5.22e-07 -1.02e-07
capex_revenue	-.0428486	.0128089	-3.35	0.001	-.0681294 -.0175677
_cons	.0313247	.0342113	0.92	0.361	-.0361978 .0988472

Source: Own calculations using Stata

Finally, by introducing interaction terms between CEO tenure and the respective subsector, the model variation investigates whether or not a difference between the impact of CEO years spent in office on firm financial performance between various energy subsectors exists. As presented in table 7 below, a negative correlation between CEO tenure and Tobin's Q for companies active in the utilities and renewables subsectors is detected ($p < 0.02$ and $p < 0.00$, respectively). However, the model variation suggests that for companies in the oil & gas subsector the opposite results are expected ($p < 0.00$). In terms of firm financial performance measured by ROA no significant results were found (see Table 16 in the appendix).

Table 7: Coefficient estimates for CEO tenure, Tobin's Q and subsector interaction term

	(1) q	(2) q	(3) q
ceo_tenure	0.0356** (0.0111)	0.00620 (0.00701)	0.0130 (0.00716)
capex_revenue	0.0858 (0.0896)	0.0482 (0.0726)	0.177 (0.121)
log_op_profit	0.0323 (0.0226)	0.0462* (0.0215)	0.0518* (0.0249)
insider	-0.00898 (0.0533)	-0.0306 (0.0513)	-0.0463 (0.0546)
2013.year	0 (.)	0 (.)	0 (.)
2014.year	-0.0179 (0.0583)	-0.0157 (0.0551)	-0.00463 (0.0590)
2015.year	0.0218 (0.0689)	0.0372 (0.0658)	0.0272 (0.0703)
2016.year	0.0690 (0.0686)	0.0802 (0.0650)	0.0542 (0.0693)
age	-0.0132** (0.00401)	-0.0143*** (0.00402)	-0.0137*** (0.00403)
ceo_tenure~ies	-0.0279** (0.00871)		
ceo_tenure~as		0.0449*** (0.00888)	
ceo_tenure~les			-0.0548*** (0.0123)
_cons	1.160*** (0.222)	1.267*** (0.215)	1.274*** (0.225)
N	164	164	164
R-sq	0.189	0.257	0.179

Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Source: Own calculations using Stata

4. Discussion

The empirical model suggests that there is a positive correlation between CEO tenure and firm financial performance in terms of Tobin's Q in the energy industry across the Euperean Union, which is consistent with the findings of Vintila, Onofrei, and Gherghina (2015) and Limbach, Schmid and Scholz (2016). Nevertheless, the research fails to prove such a relationship between CEO tenure and ROA, similarly to previous research conducted by McClelland, Barker, and Oh (2012) and Henderson, Miller and Hambrick, (2006). Furthermore, the research finds a positive interaction term between CEO tenure in the oil& gas subsector and its effect on firm financial performance, while a negative interaction is exhibited for companies from the utilities and renewables subsector. These findings partly contradict a study by PwC (2015), which suggest that CEO turnover in the oil & gas industry is higher compared to the utility industry. However, due to the limited number of observation in the sample used in this master thesis as well as unification of performance variables used for all the subsector, these observation give the basis for future research in this area. Scientific researchers in the future can concentrate on further explaining these variation by first applying a bigger sample of companies from the various subsector in their research and second using subsector specific indicator.

This empirical research enriches the scientific literature by examining the specifications of CEO characteristics in the energy industry. More specifically, it concentrates on the relationship between CEO tenure and firm financial performance. The findings contribute to existent research on CEO tenure, while simultaneously narrowing down the application scope by concentrating on a specific sector. Indeed, while researchers have long acknowledged the need to better understand the uniquely important role of the CEO within the energy industry, the CEO–energy sector interface has generally been unexplored. Additionally, the existing literature on CEO tenure has not delivered a consistent result on the implication between both variables, leaving a room for exploration. The research shows how the duration of a CEO tenure can influence company outcomes and hence help maximize firm financial performance considering the dynamics of the energy industry. However, considering the mean of CEO tenure of approximately 5.2 years, it is difficult to estimate whether or not the relationship between CEO tenure and firm financial performance is following an inverted U-shaped pattern. Furthermore, while the model proves a direct link between CEO tenure and firm financial

performance, it also opens a door for a discussion regarding factors facilitating an indirect link between both variables.

In addition to the contribution evident for the scientific literature, this research enriches the managerial understanding with regards to the importance of CEO tenure and its effect on company performance. In-depth practical implications and recommendation for companies active in the energy industry will be discussed in the sector below.

4.1. Energy specific managerial implication and recommendations

Even though the energy industry is expected to undergo major changes in the upcoming years do the transition to more sustainable energy resources as well as the new regulatory framework implemented by the EU, energy companies should further rely leaders with a proven track record of industry and company insights, who can successfully lead the companies through times of change and possible uncertainty. In highly dynamic industries such as the computer industry CEO's change is often associated with bringing in new ideas, introduction of innovation and in general with the creation of new strategy and way of thinking. While these events can lead to positive results in fast-changing sectors, the energy industry is characterized not only by stability, but also by great responsibilities for the success of other industries. Hence, change should be introduced on a gradual pace by people who possess extensive knowledge and expertise and understand both the traditional operating model as well as the transition happening in the market.

CEO tenure

The proven positive relationship between CEO tenure and firm financial performance implies that longer-tenured CEOs are better seasoned leaders with idiosyncratic and tacit knowledge of the company and its external surrounding. By serving a longer period of time, CEOs accumulate a track record of firm specific knowledge, industry understanding, which matched together can lead to a firm's success. This way they can gain a better confidence and strengthen their position both internally as well as externally. Consequently, the fears of becoming "stale in the saddle" (Miller, 1991) or committed to the status quo and hence reluctant to strategic change or innovation have less of a negative

impact compared to the advantages a long CEO tenure delivers. This is especially important in the setting of the energy industry, which can be referred to as more stable and less prone to changes and disruptive innovation.

For achieving superior performance in the energy industry, CEOs need to possess extensive knowledge of both the industry, the company and all of its assets, operations and stakeholders, as well as understand the dynamics between the external and the internal environment. Additionally, given the importance of the energy industry for the world economy and hence the regulatory requirements imposed by the government and supranational organisations, a profound knowledge of the legislation and the regulations is required. Furthermore, CEOs need to have an established relationship to multiple stakeholders such as regulatory bodies, the government, suppliers and customers, etc. which would ensure a smooth company operation. All of the above mentioned characteristics of success need time to be accumulated. Even excellent practitioners with in-depth understanding of the energy market, would need time in office to learn about the mechanics and specifications of the new company they are starting in as CEOs. In the case of insider hires, a on-job learning about the responsibilities of the new position would be the time-consuming component. This can be seen as some of the explanations for a positive relationship between CEO tenure and firm financial performance.

Hence, companies should be advised to avoid frequent CEO changes and thus stimulate longer-tenure CEOs. In order to achieve this, the focus of both the company and the CEO should lie in the long-term. A feeling of loyalty and responsibility in the CEOs mind should be fostered. One of the most efficient ways to do it would be via the CEO compensation. Usually, a CEO compensation consists of a fixed and variable remuneration parts. The fixed part is paid out in the given period and the exact amount is agreed upon from the beginning on, while the variable compensation is dependent on the targets a CEO achieves in the given period. Targets are usually set between the supervisory board and the CEO and are fairly communicated to both parties. They can be both long- and short-term. Depending on the level of achievement of the targets, the CEO received his or her variable compensation. Furthermore, parts of the variable compensation can be transferred to a compensation bank, where it is deposited for a given period of time, until the targets are achieved to their full extent. Additionally, instead of paying cash in the form of variable compensation, companies can offer CEOs stock options or shares, which would increase the CEO's involvement and loyalty and hence

motivation and for long-term firm success. Thus, a CEO's variable compensation which is based on long-term goals would on the one hand ensure that the CEO undertakes actions that would deliver positive results in the longer period and hence prevent hazardous behaviour aimed at maximizing short-term results and thus short-term compensation. On the other hand, it would develop a sense of loyalty and belonging to the company as well as stimulate the CEO to hold the position for a longer time both based on monetary as well as intrinsic motivation.

Market perception of the CEO

The empirical model postulates that the positive correlation between CEO tenure and firm financial performance is observed only in terms of Tobin's Q and not in terms of ROA. This can be attributed to the fact that ROA captures only the historical data presented in the financial statements, while Tobin's Q includes the market expectations and perception of the company and its leader. A Tobin's Q bigger than 1 implies that the market value of a company is higher than its book value. In dynamic industries such as the pharmaceutical industry or the technological industry this could be connected to the market's expectation for growth of a given company. However, as the energy industry is considered to be a fairly stable sector, unexpected or steep company growth is rarely taking place. Consequently, a strong company performance in terms of Tobin's Q positively correlated with CEO tenure suggests that a long-tenured CEO could be associated with higher market trust in the CEO's capabilities and actions and hence with better future performance of the firm. Those findings find practical relevance for companies and their shareholders as strong market confidence in the company's success and its CEO, would lead to a higher demand for company's shares, which in turn would increase the price per company share and hence the company market value. A superior market valuation and market confidence strengthens the firm's negotiating position, especially in terms of access to financing (lower interest on credit lines) as well as delivers better returns for investors. Based on these findings, companies should invest time and effort in building a strong image, reputation, and presence of the CEO on the market by emphasizing on the CEO's strong track record of success, superior knowledge of the market and capabilities. The company should facilitate an open discussion between the CEO and its stakeholders, which would set the foundations for a strong relationship based on transparency, openness, and accessibility. This could be accomplished by organising

regular call (in necessary meetings) between the CEO and equity analysts and thus frequently updating the market on changes and movements undertaken by the company. Appearances at industry specific conferences as well as fairs and governmental events should further contribute to fostering a thriving atmosphere and relationship between the CEO / the company and external parties. Furthermore, this would increase future and existing investors' trust in firm activities and performance as well as their willingness to invest in the given company rather than in one of its competitors. Additionally, a change in strategy or an introduction of a new product / service would be perceived by investors more positively.

Nevertheless, a negative effect resulting from the market's perception of a given CEO and his/her direct contribution to firm performance might occur. If a CEO is too strongly associated with a given company, a CEO change might lead to abrupt market development. In other words, in the case when the CEO leaves the company, the market could react negatively, which in turn could lead to a significant drop in the company value.

Consequently, we can conclude that the market tends to trust CEOs with longer tenure that have proven their position both in the company and the industry. Furthermore, as mentioned earlier, the energy industry is one of the vital components and drivers of the world development and hence plays a major role in the economy. CEOs in energy companies are not only expected to possess an in-depth knowledge of the industry and the company itself, but also to be able to create and maintain valuable relationships to various stakeholders. It can be assumed that a longer CEO tenure positively contributes to those factors.

4.2. Limitations

While the conducted empirical study is unique given the industry and geographical focus as well as the data, part of which was collected manually, it still posts some limitations that need to be discussed and possibly addressed in further research.

Even though financial information was collected from Thomson Reuters Eikon and is hence expected to be consistent across different companies, all of the information on CEO tenure, CEO compensation, CEO age as well as data on whether or not the CEO is an outsider / insider or founder / non-founder of the company was collected manually.

Consequently, there might be some variations between the data collected from the various annual reports, especially with regards to CEO compensation. Additionally, as part of the essential data was collected manually, the entire sample consists of 221 observations. In the future, the investigation of this topic can be improved by enlarging the sample size both in terms of companies and thus observations. Finally, due to the limited number of companies, it was not possible to control for country effects. This is the reason only control variables for regions in Europe were included.

The overall sample contains data from 57 companies and 221 observations in total, recorded between 2013 and 2016. Due to the fact that the research concentrates only on a four years time span, it does not capture the entire CEO tenure of executives and thus fails to deliver insights on the incremental development of a firm's outcomes under the leadership of a given person. Hence, the empirical study does not deliver insights on the highest / lowest points of financial performance throughout a CEO's tenure. For future research, scientist can try to follow the entire development of a CEO tenure and firm outcomes. Nevertheless, this could prove challenging due to the limitation in account of the manual data collection, as it was the case in this empirical research.

Finally, the presented research examined the direct relationship of CEO tenure and firm financial performance in the energy industry across Europe. Future research could aim at incorporating various proxy variables that could facilitate an indirect relation between the CEO tenure and company outcomes, such as new strategical actions, introduction of innovation, as well as risk aversion. Nevertheless, collecting data on such variables as well as quantifying them might be seen as challenging. According to Barker and Mueller (2002) psychological variables could have a more accurate assessment of drivers behind change, easier to estimate CEO characteristics such as CEO tenure are often preferred as "strategic decision makers must make judgments about competitors based on what can be observed about their competitive history and visible characteristics" (Barker and Mueller, 2002: 799).

Conclusion

The results of this empirical study do not only deliver valuable insights for the academic literature, they also can companies in the decision-making process with regards to the election / re-election of CEOs. Since a longer CEO tenure is associated with better firm financial results and presumably a higher market confidence, companies are advised to avoid often changes and hence high turnover ratios for the position of CEOs. By allowing a given CEO to serve longer at this position, the company would give him or her the change to leverage on the knowledge and skills acquired over the years. This is especially important in the setting of the energy industry, which is one of the main pillars of today's economy and all other industries are dependent on it. Furthermore, this research proposes the need for differentiation between the energy subsector. Hence, understanding the factors influencing the performance of energy firms, such as CEO tenure, will allow companies to operate in a sustainable way leading both the individual firm as well as the whole industry towards success.

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Appendix

Table 8: Multicollinearity test with dependent variable Tobin's Q

Variable	VIF	1/VIF
ceo_tenure	1.19	0.842745
year		
2014	1.48	0.676294
2015	1.47	0.681276
2016	1.46	0.683291
subsector		
2	1.09	0.916184
3	1.19	0.841293
age	1.22	0.817313
insider	1.10	0.909158
log_op_pro~t	1.31	0.763363
capex_reve~e	1.27	0.788695
Mean VIF	1.28	

Source: Own calculations using Stata

Table 9: Multicollinearity test with dependent variable ROA

Variable	VIF	1/VIF
ceo_tenure	1.14	0.880450
year		
2014	1.53	0.651535
2015	1.55	0.646839
2016	1.54	0.651016
subsector		
2	1.09	0.918716
3	1.11	0.902413
age	1.25	0.797806
insider	1.10	0.910225
employees	1.18	0.844391
capex_reve~e	1.16	0.859562
Mean VIF	1.26	

Source: Own calculations using Stata

Table 10: Specification error test with dependent variable Tobin's Q

Source	SS	df	MS	Number of obs	=	164
Model	5.26785836	2	2.63392918	F(2, 161)	=	34.88
Residual	12.1587759	161	.075520347	Prob > F	=	0.0000
				R-squared	=	0.3023
				Adj R-squared	=	0.2936
Total	17.4266342	163	.106911866	Root MSE	=	.27481

q	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
_hat	.9774089	.513017	1.91	0.059	-.0357013	1.990519
_hatsq	.0216104	.4771939	0.05	0.964	-.9207561	.9639768
_cons	.0051275	.1277723	0.04	0.968	-.2471982	.2574532

Source: Own calculations using Stata

Table 11: Specification error test with dependent variable Tobin's Q

Source	SS	df	MS	Number of obs	=	185
Model	.071977064	2	.035988532	F(2, 182)	=	12.45
Residual	.525905778	182	.002889592	Prob > F	=	0.0000
				R-squared	=	0.1204
				Adj R-squared	=	0.1107
Total	.597882841	184	.003249363	Root MSE	=	.05375

roa	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
_hat	1.000405	.2044543	4.89	0.000	.5969997	1.403811
_hatsq	-.0515209	5.174196	-0.01	0.992	-10.26064	10.1576
_cons	.0000329	.006557	0.01	0.996	-.0129046	.0129704

Source: Own calculations using Stata

Table 12: Breusch-Pagan test with dependent variable Tobin's Q

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of q

chi2(1)      =    22.50
Prob > chi2  =    0.0000
```

Source: Own calculations using Stata

Table 13: Breusch-Pagan test with dependent variable ROA

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of roa

chi2(1)      =    0.96
Prob > chi2  =    0.3279
```

Source: Own calculations using Stata

Table 14: Polynomial terms test with independent variable Tobin's Q

```
Ramsey RESET test using powers of the fitted values of q
Ho: model has no omitted variables
      F(3, 150) =      0.21
      Prob > F =      0.8885
```

Source: Own calculations using Stata

Table 15: Polynomial terms test with independent variable ROA

```
Ramsey RESET test using powers of the fitted values of roa
Ho: model has no omitted variables
      F(3, 171) =      1.06
      Prob > F =      0.3661
```

Source: Own calculations using Stata

Table 16: Coefficient estimates for CEO tenure, ROA and subsector interaction term

	(1) roa	(2) roa	(3) roa
ceo_tenure	0.00176 (0.00195)	0.000217 (0.00119)	0.000741 (0.00126)
capex_reve~e	-0.0459** (0.0174)	-0.0472** (0.0175)	-0.0410* (0.0161)
employees	-0.000000297*** (8.26e-08)	-0.000000297*** (8.29e-08)	-0.000000313** (8.51e-08)
insider	-0.00105 (0.00780)	-0.00217 (0.00769)	-0.00228 (0.00796)
2013.year	0 (.)	0 (.)	0 (.)
2014.year	-0.000657 (0.0124)	-0.000669 (0.0123)	-0.000433 (0.0126)
2015.year	-0.0146 (0.0106)	-0.0143 (0.0106)	-0.0146 (0.0107)
2016.year	-0.0150 (0.0103)	-0.0149 (0.0103)	-0.0154 (0.0104)
age	0.000202 (0.000672)	0.000154 (0.000675)	0.000242 (0.000679)
ceo_tenu~ies	-0.00142 (0.00154)		
ceo_tenur~as		0.00200 (0.00166)	
ceo_tenu~les			-0.00214 (0.00129)
_cons	0.0303 (0.0351)	0.0340 (0.0351)	0.0293 (0.0360)
N	185	185	185
R-sq	0.116	0.120	0.114

Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Source: Own calculations using Stata