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Abstract

My thesis examines causes and consequences of gender pay gap at the CEO level in a statistically representative sample of selected stock exchange listed companies in the USA using publicly available data.

With my statistical analysis, I was investigating the influence of company size and profitability on cash compensation of CEOs. Observation period was from 1991 until 2008. My research confirms the fact that females are still underrepresented at CEO positions in U.S. publicly traded companies, both in terms of observations as well as in absolute numbers. Over the period under study these numbers have increased, but both are in 1-digit range. Raw gender gap was 23%, proving that females are still earning less than their male colleagues. According to my regression analysis which was investigating only cash compensation, while controlling for various company related characteristics such as size and profitability, has delivered result for gender pay gap in the range between -31% up to +12,5%. Further extension of models with CEO characteristics would help to narrow down the results.

Zusammenfassung

In meiner Diplomarbeit habe ich die Ursachen und Folgen der geschlechtsbedingten Lohnunterschiede bei den CEOs in einer statistisch repräsentativen Stichprobe von ausgewählten börsennotierten Unternehmen in den USA untersucht.

Anhand meiner statistischen Analyse, wurde der Einfluss der Firmengröße und –profitabilität auf die Geldkompensation der Vorstandssprecher erfasst. Der Beobachtungszeitraum erstreckte sich über die Jahre 1991 bis 2008. Zusätzlich bestätigen meine Nachforschungen die Tatsache, dass Frauen in Führungspositionen bei US-börsennotierten Unternehmen immer noch unterrepräsentiert sind, sowohl in der Anzahl als auch im Anteil. Im Beobachtungszeitraum haben sich beide dieser Kennzahlen vergrößert, bewegen sich jedoch noch immer im einstelligen Bereich. In absoluten Zahlen verdienen Frauen 23% weniger als ihre männlichen Kollegen. Die von mir durchgeführten Regressionsanalysen zur Barbezahlung, haben einen geschlechterspezifischen Gehaltsunterschied im Bereich von -31% bis +12% gezeigt. Die Analysen kontrollierten die Faktoren wie Barbezahlung, firmenbezogene Eigenschaften, Firmengröße und –profitabilität. Diese Ergebnisse wären weiter eingrenzbar, wenn das statistische Modell um die persönlichen Merkmale der Vorstandssprecher erweitert werden könnte.

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1 Introduction

There are several reasons why I chose the topic of gender pay gap for my thesis. I was brought up and schooled in former Yugoslavia, at that time a country with a socialist plan economy with strong emphasis on gender equality in all aspects of life. Both in my immediate family and in the wider community, I could observe female leaders in prominent positions and it would have never occurred to me that it could or should work any other way - both because of my upbringing and education and because of the many examples of successful, professional women in my surroundings.

I gathered my first professional experiences working for international humanitarian organizations in Vienna, but also in Bosnia, Iran and Jordan. Differences in treatment of national and international staff I could witness at times were very disturbing to me. What was even more disturbing, however, was the fact that women were treated differently than men in the professional context even in the most developed economies in the world. To me, this meant that the very basic idea of social justice, whereby equal pay is paid for equal work, was hurt. I was outraged and wanted to find possible explanations for this injustice, if any where available.

Ideally, it would have been interesting to me to examine the causes and consequences of gender pay gap in the countries where I live or have strong ties to: Austria or countries of former Yugoslavia. However, finding relevant data on this phenomenon in Europe proved to be almost impossible, which caused me to change my focus to the stock exchange listed companies in the USA with strong disclosure requirements. More specifically, my focus will be on the gender pay gap at the level of Chief Executive Officer (CEO) in a statistically representative sample of selected companies. One of the most important reasons for concentrating on such a small and homogenous group is the basic assumption that there are fewer differences in observed characteristics in the human capital of this narrow group compared to the highly heterogeneous broad work force. In general, it can be assumed that CEOs form a relatively homogenous group of people with a similar education level, professional experience, human

capital and also similar unobserved characteristics like motivation and career orientation. Also, data available on CEO pay levels for New York Stock Exchange (NYSE) listed companies is publicly available and much more reliable than similar data on their counterparts in other parts of the world.

Therefore, I use a sample of CEOs from US companies. Data collected in this paper are from the US Securities and Exchange Commission (SEC) website¹, Data were analysed for the period between 1991² and 2008. In total, there are 1367 observations (CEO years) with 225 unique CEOs, 17 out of which are females, for a total number of 86 unique companies.

The thesis is organized as follows: after a brief introduction, describing general issues of compensation in general and executive compensation in particular, I am, in Section 3, providing a glimpse into the theoretical and historical overview of gender pay gap and related research. Data and variables used in the research are explained in Section 4. The empirical study on executive compensation in USA is presented in Section 5. Further sections include: conclusion, list of acronyms, references, tabulated statistical results and a data appendix.

¹ <http://www.sec.gov/edgar/searchedgar/companysearch.html>

² Earlier data was not available at SEC website

2 Compensation

2.1 Overview

The issue of compensation in general and gender-related compensation specifically is a very broad and complicated one. I will only try to briefly mention some of the most important historical turning points in the discussion of work compensation and the disparity of income between men and women.

Through most of the history, women were almost exclusively focused on domestic and child-rearing duties and have not been expected or even allowed to engage in any economic activity outside of the home, especially not in those kind of activities which would generate income.

The first, and for the longest time the only exception to this rule were women conducting religious ceremonies. Priestesshood functions were used to carve out space for women in patriarchal societies. Priestesses enjoyed rights and liberties denied to most women, such as their own property and income, freedom of movement and the prestige of public office.

Some Greek priestesses, for instance, received a share of the harvest and other wealth. The Vestals of Rome enjoyed freedom from male oversight in managing their affairs.³

One justification for unequal treatment of men and women in terms of the value of their work can be found in the Bible:

“Speak unto the children of Israel and say unto them: When a man shall clearly utter a vow in person unto the Lord, according to thy evaluation, then thy evaluation shall be for a male from 20 years old unto 60 years old, even thy evaluation shall be 50 shekels of silver, after the shekel of the sanctuary. And if the speaker be a female, then thy evaluation shall be 30 shekels,” Leviticus 27:2⁴

³ <http://www.suppressedhistories.net/articles/priestesses.html>

⁴ Via Fuchs (1971)

In Europe, the Church prohibited women's religious leadership, but it persisted for centuries in witchcraft and folk religion.

Islam introduced significant changes in the socio-economical standing of women and enabled their more prominent and proactive role in society, securing, among other things, their rights to own property.

“The Quran explains that men and women are equal in creation and in the afterlife, but not identical. In the Caliphate, both men and women were involved in diverse occupations and economic activities. Women were employed in a wide range of commercial activities and diverse occupations: as farmers, construction workers, dyers, spinners, etc.), but also as investors, doctors, nurses, brokers, lenders, scholars, etc. Medieval Muslim hospitals commonly employed female nurses. Muslim women also held a monopoly over certain branches of the textile industry, the largest and most specialized and market-oriented industry at the time, in occupations such as spinning, dyeing, and embroidery. Muslim hospitals were also the first to employ female physicians.”⁵

Female property rights and wage labour were relatively uncommon in Europe until the Industrial Revolution in the 18th and 19th centuries.

The Industrial Revolution was partially fuelled by the economic necessity of many women to increase their family's income by working outside the home, often in the mills or coal mines. Still, most women found jobs in domestic service, textile factories, and piece workshops. For some, the Industrial Revolution provided independent wages, mobility and a better standard of living. For the majority, however, factory work in the early years of the 19th century resulted in a life of hardship. Men assumed supervisory roles over women and received higher wages. Some new work roles and protest outlets, including feminism, developed by 1914.⁶

“The proportion of married women engaged in paid work in the United States increased more than tenfold during the past century, from less than 5% in 1890 to more than 60%! Much of the increased employment

⁵ http://en.wikipedia.org/wiki/Women_in_Islam

⁶ <http://www.schoolshistory.org.uk/IndustrialRevolution/womenandchildren.htm>

occurred in the years after 1940, and the 1940's mark an apparent break with the past in terms of women's work" (Goldin, 1989)

The World War I mobilized women into the civilian work force to replace dead or conscripted men. Women were called on to do work and take on roles that were outside the traditional gender expectations. As well as paid employment, women were also expected to take on voluntary work such as knitting clothes and preparing hampers for soldiers on the front. In Great Britain, women were working in factories making ammunition and farming the land.

During World War II, approximately 400,000 women served with in the Army of the United States. Nineteen million American women filled out the home front labor force, not only in war factory jobs, especially in aviation, but in transportation, agricultural, and every type of office work. Women joined the federal government in massive numbers. Additionally, female volunteers contributed to the war effort by planting victory gardens, canning produce, selling war bonds, donating blood, salvaging needed commodities and sending care packages. At first, most American men were reluctant to allow women into traditional male jobs, but women proved that they could not only do the job but in some instances they did it better than their male counterparts.

Once females were in the workforce different reason led them to keep working. Goldin (1989) argues that WWII was not solely responsible for the continuing participation of females in work force. Increase in clerical jobs, decline in working hours, increased real wages as well as declining fertility rates were also responsible. Even after the War, due to the still dominant traditional division of labor in the family, women primarily focus on childcare and housework and therefore have less time and effort available for working outside the home. The re-installation of a clear distinction between male and female dominated jobs could be noted as soon as the need to substitute men in active military service subsided.

Even as late as the 1960ies, 1970ies, the focus of working women was more on gaining access to different kinds of employment and not so much on the level of their compensation.

The distinction between male and female dominated jobs was maybe not so clear in countries with formerly socialist economies, such as in former Yugoslavia. Some of the more prominent manifestations of the proclaimed equality of men and women were in the labor market, where some women were holding prominent managerial spots, and a concept of a different remuneration of their work was unheard of at that time.

During the 1980ies, the term “glass ceiling” was introduced to describe *“the seen, yet unbreachable barrier that keeps minorities and women from rising to the upper rungs of the corporate ladder, regardless of their qualifications or achievements.”*⁷ The difficulties in the professional advancement of above mentioned groups had, of course, a direct impact on their compensation level. This only demonstrates the complexity of the gender pay gap issue.

2.2 Executive Compensation

Most recently, especially since the global financial and economic crisis, executive compensation became a contagious topic broadly and almost constantly discussed in all media outlets and on various levels.^{8,9,10,11} The focus of these discussions has very often been on annual bonuses paid to CEOs and top-level managers, which have very often been publically perceived as exorbitant.

One of the misconceptions about executive compensation is that CEOs and other top-tier managers solely make direct decisions about their own compensation. Usually, the executive compensation is decided by so

⁷ Recommendations of the Federal Glass Ceiling Commission Washington, D.C. November 1995 <http://www.dol.gov/oasam/programs/history/reich/reports/ceiling2.pdf>

⁸ <http://www.wsws.org/articles/2006/dec2006/blan-d22.shtml>

⁹ <http://www.eurasiareview.com/27082012-were-all-subsidizing-free-lunches-for-americas-ceos-oped/>

¹⁰ <http://www.usatoday.com/money/companies/management/story/2011-11-07/100-million-dollar-chairmen/51116304/1>

¹¹ <http://www.businessweek.com/stories/2006-08-21/sec-shoves-executive-pay-into-the-spotlightbusinessweek-business-news-stock-market-and-financial-advice>

called compensation committees. Such committees consist of outside members of the board of directors.

Companies own human resources department usually proposes the initial compensation, which is normally sets in such a way as to reflect the company size and at least partially match similar packages offered by relevant peer companies, which are not necessarily within the same industry. Future performance of the company is also a major factor in determining performance related component of the CEO compensation.

Nevertheless, the fact that the initial salary proposal is submitted by a department in the direct chain of command of the CEO causes this process appearing in a less than transparent light. Murphy (1999) has dedicated a full chapter to a very detailed description of this process.

2.2.1 Components

According to New York Stock Exchange rules, every listed company has to publish the earnings of their five most compensated executives in their proxy statements. According to Murphy (1999), most compensation packages consist of the following components:

- Base salary
- Stock options
- Annual bonuses
- Long term incentive plans

The base salary is usually based on similar salaries in relevant peer companies. It represents the fixed portion of the compensation. Stock options are tied to some vesting period and aim at motivating managers to stay with the company for a longer time period. Annual bonuses are tied to the company's short-term performance. Typically, such plans have several threshold values in terms of company's performance. Based on achieved targets, a different percentage of the agreed bonus is paid out. Long-term incentive plans include restricted stock plans, multi-year accounting-based performance plans as well as retirement plans. As of 2006, most companies have replaced bonuses with "non-equity incentive plan compensation" for tax reasons. Compared to bonuses, non-equity

incentive plans are considered to be performance based according to IRS rules¹² and therefore fully deductible. (Balsam, 2012)

The importance of each component might vary across different industries and over time. The major portion of the increase of the total CEO compensation can be attributed to the increased portion of stock options and their grant-date values. In general, stock options have become the largest portion of all compensation packages in almost all industries. The largest increase in average compensation is, not surprisingly, noticed in financial industries. (Murphy, 1999)

For my empirical study, I have used cash compensation only, consisting of the base salary, the annual bonus and other annual compensation, since calculating the value of stock options and stock ownership would have exceed the scope of this paper.

¹² Section 162 (m)

3 Gender pay gap

The OECD defines the gender pay gap as the difference between male and female earnings expressed as a percentage of male earnings¹³.

The European Commission defines it as the average difference between men's and women's hourly earnings.¹⁴

The gender pay gap is usually measured as the ratio of female to male median yearly earnings among full-time, year-round (FTYR) workers.

Critics of the hourly-based definition emphasize that currently, less than 50% of the workforce in US is paid on hourly basis¹⁵. The situation in most European countries will be similar.

Most broadly, the gender pay gap has been attributed to differences in personal and workplace characteristics between women and men (education, hours worked, occupation etc.), as well as direct and indirect discrimination in the labor market (gender stereotypes, customer and employer bias etc.)

3.1 Scientific explanations and concepts

Today, there are countless studies and surveys dealing with gender pay gap and proving that females are being paid less for the same work than males. According to Blau et al. (2000) based on weekly earnings of full time employees, between 1950s and 1970s the ratio was at 60%¹⁶. In next three decades it increased to 76,5 %. Same is observed in different countries all over the world: "*Yet pay differentials persist in all countries ranging from 10 to 30 percentage points.*" (Wirth, 2002)¹⁷ Similar observations are made for more specific and homogenous groups like a study of UK academic labor market conducted by Booth et al., (2005).

¹³ <http://www.oecd.org/social/familiesandchildren/38752746.pdf>

¹⁴ http://ec.europa.eu/justice/gender-equality/gender-pay-gap/index_en.htm

¹⁵ <http://www.pay-equity.org/info-opposition.html>

¹⁶ Page 76

¹⁷ Page 3

These studies tried to address this issue from various perspectives and find answers to questions such as: what causes the gender pay gap in general, and in the executive compensation in particular, how significant is it, what are the best approaches to counter it, etc.

Most of the research on gender pay gap are broad studies that do not concentrate on special target groups. However, there are several exceptions, like Bertrand et al. (2000); Kirchmeyer (2002); Yurtoglu et al. (2007), which all concentrate on managerial positions. There have also been several studies on gender pay gap within academic ranks like Gander (1997). One related study by Wenneras et al. (1997) examined the peer-review system in scientific journals, which is regarded as a highly objective process. Still, the study has demonstrated that female applicants for grants with same amount of impact points were given much less competence points than their male counterparts, without any obvious reason.

While all studies confirm the existence of the gender pay gap and its significance, the explanations to its causes and proposed solutions to its complete bridging or at least its reduction are vastly different. As can be read in Gender global report for 2009¹⁸, most economies and countries have acknowledged the existence of gender pay gap as a problem and are using different approaches in trying to deal with it.

Several different approaches try to offer explanations as to causes of and mechanisms behind gender pay gap. Some argue that, if the gender pay gap existed, companies would be well advised to replace their male employees with female ones and by doing so, significantly reduce labour costs (Farrell, 1993). Due to the fact that companies still prefer to hire males, the implication could be that the gender gap does not exist. This argument would, of course, be valid for any kind of discrimination, not only regarding gender. At first glance, this argument seems very logical, but there are several problems with it.

First of all, labour and hiring markets are imperfect. Individuals have certain sets of qualifications and characteristics and may not transit easily from one job to another. Also, firing one employee and hiring a new one

¹⁸ <https://members.weforum.org/pdf/gendergap/report2009.pdf>

creates transitional costs, but it also causes hidden monetary and non-monetary expenses as well as potential productivity losses during the training and is therefore not necessarily attractive for the employer. Of course, even if employers would decide to replace all male workers with female ones, there are simply not enough females to cover all currently male-held jobs.

The mechanisms used to counter-balance both causes and consequences of gender pay gap vary significantly across geographic areas and depend on the socio-economical system, as well as the cultural and legal heritage of each country. The 2009 report concludes that the gender pay gap is generally closing, but this is still not happening at the necessary and desired speed. *“Out of the 115 countries that have been covered in 2006, 2007, 2008 and 2009, 97 countries—over 80%—have improved their performance over the last four years, while 18 have shown widening gaps.”* Also, it emphasises that there is no universal solution to the gender pay gap problem.

Apparent male advantages in the workplace, both those expressed in monetary and non-monetary terms, cannot be explained with a single approach. Gender pay gap is a complex interaction between many factors which are still rather hard to fully understand and explain. Different human capital qualifications, maternity laws, apparent discrimination by employees or customer level discrimination, different household obligations due to sociological and cultural norms are just few factors which can be used to explain the gender pay gap. Below, I will briefly mention the most important ones.

3.1.1 Segregation

The process in which one group of people is driven into certain kind of jobs is called segregation. In cases of a clear division between male and female dominated jobs (“pink collar”), we speak of **horizontal or occupational segregation**. Obvious examples for female dominated jobs would be flight attendants, child care, health care, administrative assistance and teaching.

Horizontal segregation is very important in connection with the gender pay gap, as “female jobs” are usually less paid than “male jobs” (England, 1982; England et al., 1988). Typically “female jobs” are paid less even if the scope of the position, related responsibility and performed tasks are the same as in a typically “male job”. Due to the fact that the pay discrimination in this case is against a whole occupation, this implies that a male working in a female dominated job will also get paid less. This effect is also called “evaluative discrimination” (Achatz et al., 2004).

Vertical segregation is a situation in which females are underrepresented at certain hierarchical levels. *“The situation where gender pay gaps are typically wider at the top of the wage distribution is known as the ‘glass ceiling’. It is one of the most compelling metaphors recently used for analysing inequality between men and women in the workplace, to describe a barrier to further advancement once women have attained a certain level. They can see their male counterparts promoted while they are not.”* (Kee, 2005)

At this stage, it is worth mentioning two terms related to vertical segregation: “glass walls” and “sticky floors”.

According to Wirth (2002) glass walls are described as: *“A significant problem contributing to the difficulties facing women to reach the top seems to be the fact that few senior women are in the so-called “line” positions that involve profit-and-loss or revenue generating responsibilities and which are critical for advancement to the highest levels.”*

“In contrast, the ‘sticky floor’ can be viewed as the opposite scenario of the ‘glass ceiling’, when the gaps widen at the bottom of the wage distribution. Booth et al. (2003) defined it as a situation arising where otherwise identical men and women might be appointed to the same pay scale or rank, but the women are appointed at the bottom and men further up the scale.” (Kee, 2005)

It is a known fact that the number of high-ranking female managers is very low. Bell (2005) has shown that even if a female accomplishes to be one of the five most paid officers in a company, the chances of her becoming a CEO are very small. However, the same study has shown evidence for a

direct link between the chance of having a female CEO and the gender of members of the Board of Directors. Companies managed by women tend to have higher number of female executives than their peer companies managed by men.

“...as women advance through ranks, differences in the treatment of men and women that arise from imperfect information about women’s abilities, as in “statistical discrimination” models (Phelps 1972, Aigner and Cane 1977) and “pollution” models of discrimination (Goldin 2002), will narrow as more and better individual specific information is obtained. “

Industrial segregation among managers has been researched by Farrell et al. (2005). *“Women are more likely to be managing companies that specialize in health and social services and in trade. These are also sectors where a disproportionate share of lower level managers are women, ... On the other hand, very few women hold top-level positions in agriculture, construction, mining and in “heavy” manufacturing industries.”*

According to Polachek (1981) one of the explanations for the segregation is **self-selection**. Due to their preference to choose jobs which are more “compatible” with family responsibilities and duties, females tend to self-segregate themselves. Typical jobs would be part-time jobs, menial jobs and jobs with small human capital investment, which will be explained in this paper under 3.1.6. This argumentation is obvious for horizontal and industrial segregation. The resulting argument for explaining the vertical segregation looks as follows: if females were willing to commit full-time to their careers, their numbers in higher paid position would increase.

England (1982) showed that, contrary to the self-selection theory, females planning to have children did not choose typical “female jobs” more frequently than other females. In addition, it has been proven that male-dominated jobs actually have more flexibility and autonomy than female-dominated jobs.

The assumption that women choose lower-paid occupations hoping for the flexibility necessary to manage their family obligations is simply wrong. This has been proven by Glass (1990). *“Finally, evidence here suggests*

that predominantly female jobs are not necessarily jobs with characteristics that accommodate family responsibilities. On the contrary, workers in predominantly female jobs were less likely to report that their jobs were flexible or easy to perform.”

3.1.2 Cumulative Causation

The concept of “cumulative causation” was introduced by Myrdal (1944) when he used it to describe the impact of racial discrimination. It says that small, negative steps sum up over time and can make a huge difference in the end. In a short run, each time a person does not get promoted does not have to have a large effect on ones’ immediate income. However, if this happens more often compared to a person belonging to another group, at the end of the life-time, it will result in a large pay gap.

In the research conducted by Wood et al. (1993) have examined the development of the pay gap of lawyers who graduated from University of Michigan Law School. Already at the beginning of their carriers, female lawyers were earning 7% less than their male colleagues. This can be partially explained by apparently less efficient initial salary negotiating skills of female graduates (Babcock, 2002). Another important finding from that study is those male students were willing to negotiate their starting salaries eight times more often than their female colleagues. Fifteen years into their carriers, the gap rose to 40%. Controlling for several factors like childbirth, grades and average working hours mainly due to motherhood obligations this gap reduces to 18%.

According to Riley et al. (2002) in an environment which is lacking clear guidelines how evaluation should be conducted women were performing worse. In addition males were entering negotiation with higher targets and were achieving higher outcomes in mixed-gender pairs by 30%¹⁹. When females were negotiating on behalf of someone else, the performance gap was closed. This proves that females are not lacking negotiation skills, but maybe don’t feel entitled to demand higher value for them self.

¹⁹ Page 12

3.1.3 Gender Stereotypes and Bias

Members of low-status groups (i.e. women, racial minorities) are subject to negative stereotypes and attributes concerning their work-related competences. Due to gender stereotypes and biased view of female abilities, especially in terms of leadership skills, females have it much harder to get to a top position job.

According to Eagly et al. (2002) "*perceived incongruity between the female gender role and leadership roles leads to two forms of prejudice: (a) perceiving women less favorably than men as potential occupants of leadership roles and (b) evaluating behavior that fulfils the prescriptions of a leader role less favorably when it is enacted by a woman.*" In addition, if and when they manage to enter high-status, male-dominated work settings, women are often subjected to tougher scrutiny than their male colleagues.

Furthermore, research suggests that gender stereotypes, including "biased self-assessments" may be the main reason for occupational segregation, because they influence educational and career decisions. Correll (2001) has found that specific gender-related stereotypes, like saying that women have lower mathematical ability, influence a person's perception of one's own abilities and competence in terms of career relevant qualifications. She also argues that such patterns happen at very early stage in life cycle. "*Since males and females appear to be voluntarily making career-relevant decisions that will carry them, on average, in substantially different occupational directions, it is important to examine these early stages in the supply-side process and ask why men and women make the choices they do.*"

As Guiso et al., (2008) have shown, performance gap is a "self-fulfilling prophecy". In such countries where gender equality is high, like in Sweden, there is almost no gap. On the other hand, in countries like Turkey, this gap is present. This is mainly explained by self-biased self-assessment, as girls attend much less math classes than boys.

"While recognising the utility of preference theory in emphasising values, attitudes and personal preferences as potentially important determinants of

*women's labour market behaviour, it must be noted that this behaviour is influenced by learned cultural and social values that may be thought to discriminate against women (and sometimes against men) by stereotyping certain work and life styles as "male" or "female". While women may rarely be offered work in particular occupations, because they do not have the appropriate education, their educational choices may be dictated, at least in part, by their expectations that these types of employment opportunities are not available to them, as well as by gender stereotypes that are prevalent in society.'*²⁰

A further implication is that females and males have a different feeling for pay entitlement. Not surprisingly, males have much higher expectations. In addition, there is a link between lower status and expected entitlement (Hogue, 2003). Naturally this correlation is not solely reserved for females but also for minorities and other marginalised groups.

There are several well-known examples that prove discrimination toward female employees. Most likely the most famous one is the "blind audition", by now a standard procedure for all major orchestras. During the "blind audition", musicians perform seated behind a screen securing their full anonymity. Neither their gender, nor their race or age is revealed during the audition. This most basic bio-data is normally revealed very early in the selection and hiring process – if not sooner, then by the time the person is interviewed. Goldin et al. (1997) have researched the impact of this procedure. According to their study, around 55% of the increase of female players in orchestras since 1970's can be traced back to blind auditions alone.

Another example is the "waiter experiment" (Neumark, 1996), which was conducted in Philadelphia, where men and women with identical CVs were applying for same jobs in the hospitality industry. A statistically significant evidence of discrimination against women was established. One possible explanation for this might be the reaction of employers to a customer level discrimination.

²⁰ OECD Employment Outlook
2002.<http://www.oecd.org/social/familiesandchildren/18960381.pdf>

Similar results were found by Hekman et al. (2010) in so called Bookcoop Study. Here, test persons who viewed video footage featuring actors of both genders pretending to be an employee helping a customer. The setup for both sides was highly controlled and equal in terms of the location, script and other environmental variables. This shows that customer ratings are not necessarily objective and should not be the only criteria for pay rises and promotions. We should note that male actors were favoured not only by male, but by female test persons as well. Full 38%²¹ of female tester found male actors better.

3.1.4 Allocative discrimination

Allocative discrimination describes the fact that the same work performed by individuals of different gender is valued and consequently paid differently (Achatz et al., 2004). According to Riddgeway (2001) employers are acting in discriminatory way towards their employees based on assumed gender related characteristics. This is valid for hiring, promotion and also for salary levels. Furthermore, people show significant preference for persons with similar characteristics. As a result, a male dominated management will prefer male candidates over equally qualified female ones. In a “reverse” environment Bell (2005) has shown that female-managed companies tend to have a higher number of female executives than their peer companies managed by men.

Basically, gender stereotypes assigning male persons with characteristic and competences such as leadership, deemed crucial for fulfilling managerial tasks, lead to devaluation of female achievements.

“Prejudice against women as leaders and potential leaders would interfere with women’s ability to gain authority and exercise influence and would produce discrimination, when it is translated into personnel decision within organizations and political structures.” (Carli et al., 2001)

A very interesting study about work, earning and life experience of transsexuals before and after their gender transition has been conducted by Wiswall et al. (2006). Although transsexuals have the same human

²¹ Page 25

capital before and after their transition, there are significant changes in their work authority and payment. *“Existing autobiographical and scholarly research demonstrates that for many MTF²² transsexuals, becoming female brings a loss of authority and pay, as well as workplace harassment and, in many cases, termination. On the other hand, for many FTM²³ transsexuals, becoming a man can bring an increase in workplace authority, reward, and respect, as well as new job opportunities and promotions. Transsexuals’ before and after workplace experiences, then, can help make the hidden processes that produce workplace gender inequality visible.”* Another finding of this study was that MTFs tend to commit to their gender transition later in their life, in order to enjoy the advantages of their “male career” as long as possible. On the other side, FTMs tend to do it early in their life, in order to diminish the disadvantages of a “female career”.

3.1.5 Motherhood and Marriage

It is a well-documented fact that females receive a statistically significant “motherhood penalty” on salary (Corell et al., 2007; Korenman et al., 1992). This is valid even when controlled for reduced working hours, experience and educational level which might be a result of time consuming motherhood related tasks as well as interruptions in professional and educational careers (Waldfogel et al., 2000).

Most first-world countries have some form of paternity leave, which should help to bridge this gap and equally distribute the workload related to rising children. *“However, even in relatively gender-equal countries like Sweden, where parents are given 16 months of paid parental leave irrespective of gender, fathers take on average only 20% of the 16 months of paid parental and choose to transfer their days to their partner.”²⁴*

²² MTF: male-to-female transsexual

²³ FTM: female-to-male transsexual

²⁴

http://en.wikipedia.org/wiki/Male%E2%80%93female_income_disparity_in_the_United_States

Waldfoegel (1998) has also shown that marriage status itself also has a negative effect to female wages. Single mothers are worse off, followed by married mothers and married women without children. She also showed that maternity leave narrows the gap as it raised the likelihood that females will return to same employer which in turn results in continued rise in wages. In numbers, 67%²⁵ of mothers with proper coverage returned to their prior employer compared to 47% of mothers without such formal coverage.

The economic risk and resulting costs of a woman possibly leaving jobs for a period of time or indefinitely to nurse a baby is cited by many to be a reason why women are less common in the higher paying occupations such as CEO positions and upper management. A further obstacle for mothers is that their chances to get hired are much lower than those of fully equal male candidates with children. This is also confirmed not only for hiring but also salary level as well as promotions.

3.1.6 Human Capital Approach

By varying human capital accumulation in women and men, one can explain the gender pay gap between those two groups. According to Becker (1993), a different approach to human capital investment over the course of the lifetime can be explained with cost-utility calculation. Each person decides how much resources to invest into his or hers human capital, based on it personal utility expectation.

The idea behind this is that “family oriented” females have smaller utility from formal and informal education as well on-the-job training or any other form of investment in that direction. There are several reasons why this should be valid. Due to children care and therefore resulting breaks / discontinuities in their careers, females will benefit less from their human capital investment. Having invested the same amount of resources, but being able to profit from it for a shorter period, easily explains the lesser utility expectation for females. In addition, any professional knowledge becomes irrelevant during this period (Blau et al, 2000). Women with family

²⁵ Page 151.

also suffer from less compensation due to “family gap” (Waldfogel, 1998). Of course, for the higher paying jobs like CEOs, the costs of staying away from work are much higher than for less paying jobs.

One of the problems with human capital approach is that the amount of training one person takes can also depend on the employer and is not necessarily his or her sole decision. Any investments in employees obey same economical rules like any other investments. Given the fact that females more often break their careers due to familiar responsibilities, they therefore diminish the return on investment from the perspective of employer. As a result, employers tend to hire males for higher positions, and offer females less paid ones. Any female is seen as a potential mother and even those which have no children and do not to plan to have them are being penalized in advance (Wirth, 2002)

3.1.7 (Un)explainable portion of gender pay gap

It is fair to say that anyone to commit more to their job and therefore invest more in their human capital should be rewarded accordingly. This pay difference is seen as a legitimate gap (Blinder, 1973; Oaxaca, 1973), as long as it is a result of one’s own decisions.

The problems start when different compensations levels cannot be explained with the human capital approach. There are numerous studies proving this (e.g. Blau et al., 2000). In such cases, one has to assume that the observed pay gap has to be a direct result of discrimination or some other form of prejudice against a certain group.

It can be assumed that CEOs should have quite similar human capital. They also share very high levels of motivation for their job and hence their career. Given the established fact that CEO compensation depends on the size and profitability of the company, any significant gender difference in CEO compensation, while controlling for company characteristics, can be seen as unexplainable portion of gender pay gap.

3.2 Gender Pay Gap in the US

In the United States, the gender pay gap is measured as the ratio of female to male median yearly earnings among full-time, year-round (FTYR) workers. The pay data is gathered by the United States Census Bureau²⁶.

The Census Bureau's annual earnings ratios are an important indicator for tracking trends over time. When President Kennedy signed the Equal Pay Act in 1963, women earned 59% of the median annual earnings of working men. This ratio has been improving until 2001, when it reached 76,3%. Since then, it has been steady at high 70's. In real dollars, it is about 10,000 USD per year that a female worker gets paid less than her male counterpart.

Based on full-time employee's hourly earnings, Blau et al. (2000) have shown that:

- a) younger females are faring better than their predecessors
- b) over time, the pay gap is widening, meaning that with forthcoming age, females earn less than their male colleagues.

For example, in the year 1978²⁷, the wage ratio for females aged 25-34 was 0,703, while at the same time for the group of 35-44 this ratio was 0,589. Ten years later, those same groups now 35-44 and 55-64 had respective ratios of 0,687 and 0,647.

According to the latest "Women at Work" report by the Bureau of Labor Statistics²⁸, the pay gap is now at 81%. The wage gap has changed at a rate of less than a half a penny per year. There are even reports that show that in urban areas highly skilled female earn 8% more than their male colleagues. This is partially explained by higher college graduation rates. In addition, *"On an inflation-adjusted basis, earnings for women with college degrees have increased by 33 percent since 1979 while those of male*

²⁶ <http://www.census.gov/#>

²⁷ Table 1

²⁸ via <http://www.forbes.com/sites/jennagoudreau/2011/03/14/jobs-where-women-earn-more-than-men/>

*college graduates have risen by 22 percent.*²⁹ (Bureau of Labor Statistics, Highlights of Women's Earnings in 2009)

US President Obama signed the Lilly Ledbetter Fair Pay Act in 2009. This law extended the statute of limitations on cases where a worker found that they were receiving discriminatory pay, allowing them to sue and receive recompense more than six months after they received the pay. At the same time, Paycheck Fairness Act has been stopped in the US Senate. This act is basically an extension of the already existing Equal Pay Act from 1963.

²⁹ <http://www.bls.gov/cps/cpswom2009.pdf>

4 Data and summary statistics

4.1 Data Sources

As already mentioned, the focus of my research is on the gender pay gap at the CEO level in a statistically representative sample of selected USA-based companies listed at the New York Stock Exchange (NYSE). The source of the data is the website of the US Securities and Exchange Commission (SEC)³⁰. Every company publicly listed on the NYSE is obliged to publish the earnings of their five most highly compensated executives in their yearly proxy statements (DEF14A). Out of this form, it was easy to identify the CEOs and related data. Data was analysed for the period between 1991³¹ until 2008.

The gender of the CEOs has been determined either according to the title (Mr. vs. Ms.) used in the proxy statement or according to the names. There have been only few cases where the gender could not be identified for sure due to the lack of gender specific title and ambiguous names. Those cases have been simply omitted and not included in the sample. In total, there are 1367 observations (CEO years) with 225 unique CEOs, 17 out of which are females, for a total number of 86 companies.

One of the most important reasons for concentrating on such a small and homogenous group is the basic assumption that there are fewer differences in observed characteristics in the human capital of this narrow group compared to the highly heterogeneous broad work force. In general, it can be assumed that CEOs form a relatively homogenous group of people with a similar education level, professional experience, human capital and also similar unobserved characteristics like motivation and career orientation. Also, data available on CEO pay levels for NYSE listed companies is publicly available and much more reliable than similar data on their counterparts in other parts of the world.

Wage-related CEO data I have collected includes the base salary, bonuses and other types of cash compensation. In later years, from 2006 on, most

³⁰ <http://www.sec.gov/edgar/searchedgar/companysearch.html>

³¹ Earlier data was not available at SEC website

of the companies have introduced “Non-Equity Incentive Plan Compensation” instead of bonuses, due to tax advantages.

Those four components have been used to determine the total cash compensation, which I have used for the regression analysis as dependant variable. All amounts in the case study have been adjusted to year 2000 USD level, according to the Consumer Price Index published by the US Department of Labour³².

4.2 Variables

As CEO compensation largely depends on the size and profitability of the company, following company-related data were collected for this study:

- market value (MV);
- total debt (debt);
- net income (IB);
- number of employees (emp);
- assets (AT) and
- sales (S).

In addition to those six collected values which were used to describe the company size, two more variables for describing company profitability were computed from the data:

- return on sales (ROS) and
- return on assets (ROA).

The abbreviations in brackets are used in tables for simplicity. Also, 4-digit industry codes for each company have been collected.

The terms used are defined as follows:

- The market value of common stock is the end-of-fiscal year number of shares multiplied by the end-of-fiscal year price per share;
- Total debt is defined as the book value of the debt;
- Net income is income before extraordinary items (profit after taxes and interest);
- Assets are defined as total assets;
- Sales are simply defined as total revenue;

³² <http://www.bls.gov/cpi/>

- Return on sales is defined as net income divided by sales;
- Return on assets is net income divided by assets

All above variables are reported in millions of USD. Number of employees is represented in thousands.

4.2.1 Dummy variables

Prior to conducting the regression analysis, I had to introduce several dummy variables. The first one was a dummy for gender, whereby male CEOs were denoted with “0” and female ones with “1”.

In order to control for the year, I have used a set of dummies which were denoted Y91, Y92,...Y108. Depending on the subsample used for the regression, variables matching the time period covered by the subsample were used. In order to control for industry, I have introduced two different sets of dummies, both of which were based on Standard Industrial Classification³³ (SIC) codes. Using the first digit of the SIC code, I have created a set of seven variables for the subsample A and another set of six variables for the subsample B.

The first SIC-code digit represents the Industry division, such as Manufacturing or Finance.

The second set was a finer set of dummies, where I have used the first two digits representing the Major Groups. I have created a set of 33 (A) / 28 (B) dummy variables (I1, I2, ... I33).

According to the rules provided by Field (2005), the number of observations compared to the number of predictors is enough in to obtain a reliable regression model as my smallest N = 947.

*“You'll find a lot of rules of thumb floating about, the two most common being that you should have 10 cases of data for each predictor in the model. or 15 cases of data per predictor, So, with five predictors, you'd need 50 or 75 cases respectively.”*³⁴

³³ http://www.osha.gov/pls/imis/sic_manual.html

³⁴ Page 172

“If you want to test the model overall, then he recommends a minimum sample size of $50 + 8k$, where k is the number of predictors. So, with five predictors you'd need a sample size of $50 + 40 = 90$. If you want to test the individual predictors then he suggests a minimum sample size of $104 + k$, so again taking the example of five predictors you'd need a sample size of $104 + 5 = 109$.”³⁵

All my models were more than satisfying these constraints as number of observations was between 1367 and 947, and number of used predictors was usually around 10-15 based on which set of dummy variables was used

4.3 Regression Equation

General regression equation used in this paper is:

$$\ln(\text{cash}) = c + \beta_1 * \ln(\text{size}) + \beta_2 * \ln(\text{profit}) + \beta_3 * \text{female} + \beta_4 * Y_i + \beta_5 * I_j$$

Where:

- *ln(cash)* is dependent variable.
- *size* is company size and is described by either market value, total debt, net income, number of employees, assets and / or sales.
- *profit* is company profitability and is described ROA or ROS
- *female*, *Y* and *I* are dummy variables as described under 4.2.1.
- Size of indexes *i* and *j* depend on data being used

For example resulting equation for model (3) (Table 3) is:

$$\ln(\text{cash}) = c + \beta_1 * \ln(\text{assets}) + \beta_2 * \ln(\text{ROA}) + \beta_3 * \text{female} + \beta_4 * Y_{1-16}$$

³⁵ Page 173

4.4 Summary statistics

4.4.1 Main sample

The main sample contains 1367 observations (CEO years). As can be seen in the Table 2, panel (A), the total number of companies in the sample is 86. There are 225 unique CEOs. The portion of female CEOs in my sample is 8,71% (119 out of 1367 CEO years).

The collected data encompass the period from 1991 to 2008. The number of companies in “border” years is significantly smaller than the years in between. Some CEOs are represented only once in the sample, and maximum representation is 17. The average tenure in the sample is 6,08 years. The average tenure of female CEO is 7 years, and of male ones 6 years. This figure differs from corresponding figures reported by Bertrand et al. (2000). However, my sample was relatively small compared to approximately 8k³⁶ observations in Bertrand’s study and more importantly that my measurement of tenure is only based on the number of observations which does not reflect any tenure outside of observation period, unlike real data from Standard and Poor’s ExecuComp data. Therefore I have not used tenure in my later regressions model as the underlying data might not be fully accurate..

Additionally, it was not possible to determine for how long the CEOs were in their posts prior to 1991, the starting year of the sample, which might have skewed the results. Especially given the fact that number of CEOs in earlier years in my sample was smaller than in later ones.

According to the sum of all cash compensations as explained in 4.1., the average CEO compensation was 1.283.471 USD. Female CEOs earned 1.050.142 USD and male ones made 1.305.720 USD on average. This gives female to male earning ratio of 80,4%. Naturally, median values were slightly lower. 754.980,05 USD for females and 985.785,4 USD for males. The resulting pay ratio is 76,5%. Those figures are reported in Table 1, panel (A)

³⁶ Table 6

4.4.2 Subsample A

Out of the 1367 initially collected CEO years, I managed to obtain following company-related data for 1104 CEO years: debt, assets, sales and net income. This subsample contained 84 companies and 195 unique CEOs. The portion of female CEO years remained almost the same (8,70% compared to 8,71%). The average tenure for both male and female CEOs was reduced slightly from 7 to 6,4 (f) and 6 to 5,6 (m) years. The period covered by this subsample was from 1991 to 2006.

As stated in the Table 1, panel (B) median/average, a female CEO was earning 717.055,25 / 960.275,67 USD and the male CEO 1.011.459,25 / 1.341.317,40 USD. The resulting wage ratios are 70,9% and 71,6% respectively.

If we take any of the company-related figures as an indicator of a company's size, we will notice that, in all of the cases, female CEOs work in "smaller" companies.

The female to male company size ratio is (Table 2, panel (A)):

- 0,223 when comparing according to sales;
- 0,088 comparing according to debt;
- 0,125 when comparing the assets and
- 0,174 when comparing net income.

My finding with this subsample confirms the well-established fact that "female - run" companies are smaller.

4.4.3 Subsample B

In order to further improve my models, I had to consider additional variables, such as market value and the number of employees. Unfortunately, this data were available for 947 CEO years only, as it can be seen from the Table 1, panel (C), this subsample consists of 72 companies with 163 unique CEOs, 5,52% out of whom are female. The median wage was 713.543,50 USD for female and 1.011.459,25 USD for male CEOs. The resulting wage ratio was 70,5%. The respective results

using average cash-compensations are 905.830,28 USD for female and 1.320.307,66 USD for male CEOs. The resulting wage ratio is 68,6%.

Again, taking any company-related variables and corresponding ratios between female and male led companies into account (Table 2, panel (C)), it is obvious that females are generally running smaller companies. The same findings remain even if we look at other variables, such as market value and number of employees.

In this subsample, female CEOs are making 7,71% of all observations, and 5,52% of all reported CEOs. Average tenure has risen for female CEOs to 8,1 years, with total and male tenure almost unchanged.

5 Interpretation of Regressions

5.1 General

All monetary variables have been adjusted to year 2000 USD level, according to the Consumer Price Index published by the US Department of Labour³⁷. The dependent variable is always the logarithm of cash compensation. Logarithm of variable sales or assets has been used to control for company size. Return on sales and assets have been used to control for the company profitability. Depending on the subsample being used, different sets of dummy variables have been used to control for year and industry as described under 4.2.1.

The results of regressions are reported in Table 3. The values in brackets below the β coefficients are respective standardized error and significance.

5.2 Regression results

Using my initial sample of 1367 observations, I was able to create a regression model comprised of only one dummy variable: gender as independent variable. As expected, the β coefficients for female was - 0.262, which represents 23,0% and the R^2 value of the model was very low at 0,008.

Due to the fact that I did not have all company data for all 1367 CEO years inside of the main sample, I had to use subsamples in order to further control for company size and profitability.

In my next model (2), I have used assets for controlling for company size. Surprisingly, the female coefficient was positive (0,118), which would imply that female CEO earn 12,6 % more than male counterparts in companies of the same size. I have replaced assets with sales (model 3) in order to avoid any mistakes in data I might have, but the results were again positive (0,040 / 4,1%). In both cases, those results were significant and R^2 values

³⁷ <http://www.bls.gov/cpi/>

were around 0,540. Using market value as an independent variable, with the constant sample size of 947, created similar results (4).

Adding ROS or ROA to the regression equation had almost no impact on the female coefficient. Respective β values for ROS and ROA were insignificant. Those 4 regression models are not reported in the Table 3.

In my next step, I have controlled for the year, and the results changed here. Female coefficients fell to 0,082 / 8,5 % (5) and 0,081 / 8,4 % (6), but were still positive. Respective p-values were around 0,175.

Controlling further for industries using both sets for the SIC division and the major industry group had almost no impact on the value of female β , but it became insignificant as can be seen from the representative regression (7). Additionally, in models using ROS to control for profitability, it was also insignificant.

Similar set of models was created using sales as company-size control. Again, the results for β female were positive and mainly insignificant. The same applies to ROS values. In some cases, coefficients from ROS and ROA were negative, which is very hard to interpret.

Given the fact that model (8) included most variables in my research it was also statically the most meaningful one. Size was controlled by sales and profitability by ROA, which indirectly measures the impact of net profit and assets. In addition, at the same time I also controlled for year and industry. Female coefficient was still positive at 0,118 / 12,5 %, R^2 was 0,704, but the ROA coefficient was slightly insignificant at 0,126.

After re-checking all the data for any rounding-, scale- or similar mistakes, I have looked at similar researches, especially at Bertrand et al. (2000) and Yurtoglu et al. (2007). There was a significant difference between their data sets and the one I have used in regard to female-to-male company size ratios. As can be seen in Table 2, panel (C), my size ratios are 0,114 if I check for assets, 0,207 for sales, 0,181 for market value and 0,342 for the number of employees respectively. Compared to ratios used by Yurtoglu³⁸ which are 1,011 for assets and 0,925 for sales, my findings are much

³⁸ Table 2; N = 4676

lower. The same is valid for the data provided by Bertrand³⁹: 0,725 for assets, 0,546 for sales, 0,668 for market value and 0,538 for number of employees.

Given the fact that their numbers of observations were much higher, I have to conclude that my data set in regard to the company size is inferior, even if the number of observations in my sample should be sufficient and statistically significant, as already stated under 4.3.

Assuming the size ratio is 0 and we only control for gender, which would imply that both male and female work in equally large companies. The resulting β female would be equal to the raw gender pay ratio. If the company size ratio was equal to the gender pay ratio, β female would be equal 0 and that would imply that there is no gender pay gap while controlling for the company size. Equally, when female CEOs work in smaller companies, their compensation level is also proportionally lower, In order for β female to be negative, the company size ratio had to be at least the same as the pay ratio. In cases where the pay ratio is smaller than the size ratio, a female CEO would get paid the same amount if she was working in a bigger company. Another way to interpret this is to say that, while working in a same-sized company, a male CEO would earn more than his female counterpart.

Due to the fact that my raw gender-pay ratio is 0,686⁴⁰ and that company size ratios are smaller (e.g. sales 0,207), it is clear that my β female had to be positive.

In cases represented by my data set, where the size ratio is much smaller than the pay ratio, the implications, also confirmed by the reported regression models are that a female CEO earns more than a male CEO in a company of similar size. It should be stressed out one more time that these findings are valid only while controlling for the company size and gender exclusively. Although these results contradict the general research results, they are statistically correct.

In my next step, I have decided to abolish the company size from my regression models and control for company profitability, year and industry

³⁹ Table 2; N = 46600+

⁴⁰ N = 947

only. As can be seen in the Table 3, models (9) – (12), β female is around -0,370 / -31% for N = 1104 and around -0,320 / -27% for N = 947. In all four cases, I have used the industry dummy for major groups (I33 and I28).

5.3 Further observations

In order to improve my models even further, I would need to collect additional data, especially in regard to company size. Other valuable data would include the age of the CEOs or their real tenure. According to my research, female CEOs have slightly longer tenures than the male ones. This is not completely consistent with some other sources which use a higher number of observations, but the difference in both cases is not too large (Cappelli et al., 2004).

Another improvement of models would for sure be to investigate the impact of personal characteristics of CEOs such as tenure, marital status, previous experience or tenure. With such extended data set one could measure the effects of “motherhood penalty”, “family gap” and human capital on gender pay gap.

The age of the CEOs can also play an important role in determining the effects on the gender pay gap, but I was, unfortunately, not able to collect this data. As reported in a study by Bell (2005), female CEOs are younger than their male counterparts. This can be explained by the fact that females have just started “conquering” the CEO ranks and therefore their average age is lower. Similar findings on the importance of age and tenure in explain the gender gap for CEOs have been confirmed by Bertrand et al. (2000)⁴¹.

Naturally, a full sample of companies with additional variables would give a much better picture and significantly improve the statistical models, but such data is usually only available commercially.

Another phenomenon I briefly looked at is the so called “glass ceiling”. Some people also (mis)use the term “sticky floors”, which is quite similar

⁴¹ Table 6

and has been explained under 3.1.1. In my sample, there are 119 / 8,71% female CEO observations (Table 1, panel (A)). Various authors report similar percentage figures, depending on the time-range covered by studies, those figures vary. According to the US federal Glass Ceiling Commission (1995)⁴² only 3-5% of senior managers are female. Bertrand et al. (2000) report figures between 1,29 and 3,39 %, depending on years. In Table 4, there is an obvious increase in number of female CEO within the sample over the years. This is proof that females are still underrepresented at CEO positions but are slowly gaining ground. Same is true for all higher ranking positions.

As already stated before, Bell (2005) tried to prove the link between the gender of board members and CEOs and other high ranking officers. She also looks into the level of payment in comparison with male-led companies. *“Women executives in women-led firms earn between 10-20% more than comparable executive women in male-led firms and are between 3-18% more likely to be among the highest five paid executives in these firms as well. The paper thereby provides strong empirical evidence that women leaders are associated with positive outcomes for women executives in substantive and important ways.”* Collecting data on gender of the board members and especially of the members of “compensation committees” would be an interesting area to look into.

Looking at the average compensation trend over time, it has started at around 1.000k in 1991 and has increased steadily until 2000 when it reached 1.460k. This increase rate cannot, however, be observed in following years. *“While bonus and other payments remained essentially constant, this drop in base salary was accompanied by a huge increase in the fraction of compensation based on stock options. There is now some evidence that this trend has stopped in 2001 and somewhat reversed afterwards (Economist, 2006).”*⁴³ Due to the fact that I have only controlled

⁴² Recommendations of the Federal Glass Ceiling Commission Washington, D.C. November 1995 <http://www.dol.gov/oasam/programs/history/reich/reports/ceiling2.pdf>

⁴³ Via Yurtoglu et al (2007)

for cash compensations, without looking into stock options, this statement cannot be fully verified.

From Table 5, panel (B) it is also visible that the composition of cash compensation is quite similar for both male and female CEOs. Base Salary is at around 50%, Bonuses are at about 38% and other compensation is at the level of 12%.

6 Concluding remarks

As I have demonstrated with my research as well, females are still underrepresented at CEO positions in U.S. publicly traded companies, but are slowly gaining ground. The percentage of female CEO is still in the one-digit range. However, younger females may be moving into business quickly and successfully more than previous generations. According to Forbes⁴⁴, being a CEO is the best paid female job.

Overwhelming research shows that females are still earning less than their male colleagues and this is also valid for a highly homogenous group like CEOs. The gap might be closing but it is still far from extinct. Numerous models try to explain the reasons for this obvious disparity but the causes of the gender pay gap are still not fully explained. Consequently, there can be no comprehensive recommendations for its bridging.

Various efforts by governments and law makers, which admittedly have increased over the years, are still not resulting in full equality. The most striking fact is that: *“No country in the world has achieved gender equality. The three highest ranking countries—Iceland, Finland and Norway—have closed a little over 80% of their gender gaps, while the lowest ranking country—Yemen—has closed only around 46% of its gender gap.”*⁴⁵

⁴⁴ <http://www.forbes.com/2009/06/25/top-paying-jobs-forbes-woman-careers-salary-employment.html>

⁴⁵ Gender global report for 2009

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8 Appendix: Tables

Table 1: Summary statistics on CEOs' compensation and characteristics

Panel (A)	All	Male	Female	p-value
Compensation	1.283.471 (31.381)	1.305.720 (33.366)	1.050.142 (84.054)	0,022
Salary	634.762 (11.021)	643.319 (11.533)	545.024 (36.552)	0,012
Bonus	497.940 (21.820)	509.515 (23.482)	376.544 (45.487)	0,086
Other	150.769 (10.094)	152.885 (10.749)	128.574 (27.167)	0,497
N	1367	1248	119	8,71%
CEO	225	208	17	7,56%
Tenure	6,08	6,00	7,00	
Panel (B)	All	Male	Female	p-value
Compensation	1.308.183 (35.613)	1.341.317 (38.144)	960.276 (77.495)	0,003
Salary	639.667 (12.067)	652.674 (12.796)	503.098 (31.649)	0,000
Bonus	534.000 (25.160)	551.000 (27.160)	361.000 (45.250)	0,034
Other	134.263 (10.419)	137.890 (11.194)	96.173 (23.056)	0,259
N	1104	1008	96	8,70%
CEO	195	180	15	7,69%
Tenure	5,66	5,60	6,40	
Panel (C)	All	Male	Female	p-value
Compensation	1.288.357 (33.799)	1.320.308 (35.817)	905.830 (79.257)	0,001
Salary	644.014 (13.136)	656.889 (13.817)	489.857 (36.636)	0,001
Bonus	511.958 (20.721)	526.019 (22.066)	343.606 (45.519)	0,019
Other	132.000 (11.490)	137.000 (12.330)	72.400 (19.720)	0,131
N	947	874	73	7,71%
CEO	163	154	9	5,52%
Tenure	5,81	5,68	8,11	

Notes: All data reported in real 2000 dollars adjusted using the US consumer price index. Standard errors are in parentheses. The p-value originates from a two-sided t-test testing the significance of the difference between the means of respective variables for female and male CEOs. Panels differ in number of observations.

Table 2: Summary statistics on firm characteristics

Panel (A)	All	Male	Female	% of N
N	1367	1248	119	8,71%
Unique Firms	86			
Panel (B)	All	Male	Female	% of N
N	1104	1008	96	8,70%
Unique Firms	84			
	All	Male	Female	p-value
Assets	5.335 (445)	5.780 (485)	658 (82)	0,001
Sales	4.465 (287)	4.788 (312)	1.068 (163)	0,000
Debt	1.381 (128)	1.500 (140)	132 (31)	0,003
Net Income	301 (25)	324 (27)	57 (15)	0,002
Panel (C)	All	Male	Female	% of N
N	947	874	73	7,71%
Unique Firms	72			
	All	Male	Female	p-value
Assets	5.206 (480)	5.588 (518)	638 (91)	0,006
Sales	4.512 (319)	4.806 (343)	994 (178)	0,001
Debt	1.340 (140)	1.442 (151)	116 (34)	0,011
Net Income	308 (27)	328 (29)	61 (17)	0,007
Market Value	7.831 (607)	8.358 (654)	1.514 (392)	0,003
Employees	21 (1)	22 (1)	7 (1)	0,001

Notes: All monetary data reported in real 2000 dollars adjusted using the US consumer price index. Standard errors are in parentheses. The p-value originates from a two-sided t-test testing the significance of the mean difference of the respective variable between female and male.

Table 3: Regressions – Summary: Dependent variable: Log of Total Compensation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
R²	0,008	0,544	0,535	0,568	0,553	0,557	0,635	0,704	0,436	0,418	0,462	0,456
N	1367	1104	1104	947	1104	1104	947	947	1104	1104	947	947
Const.	13,778 (0,023) (0,000)	11,229 (0,074) (0,000)	11,223 (0,076) (0,000)	11,584 (0,066) (0,000)	11,309 (0,096) (0,000)	11,353 (0,096) (0,000)	11,250 (0,098) (0,000)	11,704 (0,122) (0,000)	14,408 (0,092) (0,000)	14,486 (0,092) (0,000)	14,395 (0,095) (0,000)	14,451 (0,094) (0,000)
Female	-0,262 (0,078) (0,001)	0,118 (0,059) (0,046)	0,040 (0,059) (0,499)	0,021 (0,063) (0,738)	0,082 (0,060) (0,171)	0,081 (0,060) (0,176)	0,060 (0,061) (0,332)	0,118 (0,062) (0,058)	-0,371 (0,074) (0,000)	-0,372 (0,075) (0,000)	-0,323 (0,081) (0,000)	-0,314 (0,081) (0,000)
Pay Gap	-23,0%	12,5%	4,1%	2,1%	8,5%	8,4%	6,2%	12,5%	-31,0%	-31,1%	-27,6%	-26,9%
Asset		0,355 (0,010) (0,000)			0,350 (0,010) (0,000)	0,342 (0,010) (0,000)	0,366 (0,011) (0,000)					
Sale			0,357 (0,010) (0,000)					0,344 (0,013) (0,000)				
Market Value				0,305 (0,009) (0,000)								
ROA						0,712 (0,217) (0,001)	0,708 (0,247) (0,004)	0,388 (0,253) (0,126)	2,137 (0,258) (0,000)		2,141 (0,330) (0,000)	
ROS					0,094 (0,131) (0,471)					0,975 (0,167) (0,000)		1,336 (0,241) (0,000)
Year					yes	yes	yes	yes	yes	yes	yes	yes
Industry							I6	I28	I33	I33	I28	I28

Notes: Values in parenthesis are standard error and significance respectively. I6 denotes dummy for SIC Industry Division. I33 (I28) denotes dummy for SIC Industry Major Group. β female transformed ($e^{\beta} - 1$) is Pay Gap and shows percentage female CEOs earn less / more than male ones.

Table 4: Female/Male Compensation and Respective Ratios Over Time

Panel (A)	Male				Female				F/M ratio					
	Year	Total	Salary	Bonus	Other	Total	Salary	Bonus	Other	Total	Salary	Bonus	Other	# CEO
1991		999.787	586.987	391.318	21.481									
1992		965.276	596.916	301.737	66.623									
1993		995.167	578.134	331.383	85.650	571.997	340.260	118.142	113.595	0,575	0,342	0,119	0,114	0,037
1994		1.115.503	593.491	435.909	86.103	424.905	301.063	112.739	11.102	0,381	0,270	0,101	0,010	0,060
1995		1.154.098	608.810	406.933	138.355	494.016	318.620	164.371	11.024	0,428	0,276	0,142	0,010	0,060
1996		1.184.745	625.840	453.133	105.771	701.017	351.782	156.000	193.235	0,592	0,297	0,132	0,163	0,071
1997		1.178.764	599.051	451.259	128.454	654.322	433.597	191.240	29.485	0,555	0,368	0,162	0,025	0,083
1998		1.367.290	638.325	507.712	221.252	1.155.256	719.245	408.954	27.057	0,845	0,526	0,299	0,020	0,105
1999		1.414.311	674.581	606.404	133.326	817.041	508.990	275.992	32.059	0,578	0,360	0,195	0,023	0,105
2000		1.493.369	662.206	691.082	140.081	1.176.206	569.308	565.420	41.479	0,788	0,381	0,379	0,028	0,105
2001		1.264.709	649.867	468.573	146.270	1.249.731	621.591	505.541	122.599	0,988	0,491	0,400	0,097	0,093
2002		1.428.552	659.500	553.647	215.405	1.143.555	571.313	378.412	193.830	0,800	0,400	0,265	0,136	0,116
2003		1.408.381	652.644	559.510	196.227	892.503	520.208	332.481	39.814	0,634	0,369	0,236	0,028	0,128
2004		1.854.625	678.360	932.729	243.535	1.150.979	555.960	525.653	69.366	0,621	0,300	0,283	0,037	0,140
2005		1.844.918	688.167	1.000.011	156.740	1.225.170	556.201	449.723	219.246	0,664	0,301	0,244	0,119	0,145
2006		1.174.237	691.818	276.660	205.759	1.859.550	745.707	831.036	282.807	1,584	0,635	0,708	0,241	0,083
2007		1.240.657	762.266	214.927	263.464	1.389.557	695.544	227.382	466.631	1,120	0,561	0,183	0,376	0,092
2008		1.230.885	645.386	377.186	208.313	2.274.071	1.013.294	0	1.260.777	1,848	0,823	0,000	1,024	0,053
		1.305.720	643.319	509.515	152.885	1.050.142	545.024	376.544	128.574	0,804	0,417	0,288	0,098	0,087
Panel (B)		Total	Salary	Bonus	Other		Salary	Bonus	Other					
All		1.283.471	634.762	497.940	150.769		49,46%	38,80%	11,75%					
Male		1.305.720	643.319	509.515	152.885		49,27%	39,02%	11,71%					
Female		1.050.142	545.024	376.544	128.574		51,90%	35,86%	12,24%					

Notes: All monetary data reported in real 2000 dollars adjusted using the US consumer price index. Total (compensation) is the sum of salary, bonus and other compensation in the current year. #CEO ratio shows the fraction of female CEOs out of all CEOs (N = 1367).

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Education

- 1996 University of Vienna, International Business Economics
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- 2005 International Mission for Iraqi Elections, Tehran, Iran
- 2005 International Organization for Migration (IOM), Iraq Out of Country Voting Program (OCV), Country Office Tehran, Iran
- 2004 International Organization for Migration (IOM), Out of Afghanistan Registration and Voting (OCRV) Program, Regional Office Tehran, Iran
- 2002-2003 M Design, Sarajevo, Bosnia and Herzegovina
- 1998-2001 Organization for Security and Co-operation in Europe (OSCE) , Secretariat, Vienna, Austria
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