

# Investor Response to Appointment of Female CEOs and CFOs

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## Abstract

We study the impact of appointing women to top executive positions from an investor perspective. We analyze whether shareholders value announcement of appointment of women to top positions differently than they do appointment of men. This study uses an international sample of 100 announcements of top executive appointments of women who replace men and investigates how shareholders respond to such appointments. This research combines an event study with a matched pair analysis to compare the response from investors regarding appointment of female versus male CEOs and CFOs. We establish that investors do not seem to value appointment of women significantly differently from that of men. This finding suggests that, from the investor perspective, there appears to be no business case for a particular gender when it comes to appointing a CEO or CFO.

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## **Introduction**

The lack of women in top management positions is a frequently discussed and researched topic in the business community and in the academic literature (Adams 2016). This literature is very diverse regarding theories and methods and the results are quite varying (see Post and Byron 2015). Often, performance and quality differentials between men and women are assumed to be behind the lack of equal female representation; reducing inequality is also thought to come at a cost (Bohnet et al. 2016; Golding 2014; Niederle et al. 2013). Others argue that a cultural gender bias causes the imbalance, thereby excluding talented people (Abdullah et al. 2016; Adams and Funk 2012; Hillman et al. 2002). Until recently, the focus of most of this research was on the role of women on boards, but there has emerged a new strand of literature that studies gender at the executive level as well (Dezsö et al. 2016; Faccio et al. 2016; Huang and Kisgen 2013; Kahn and Vieito 2013; Wang and Kelan 2013). The majority of studies on gender and firm performance rely on accounting data and focus on how firms respond to the presence of female executives. However, these studies usually disregard the investor perspective. One problem with most of this literature is that it is endogeneity-plagued, meaning that the decision to appoint a female board member need not be independent of firm characteristics or that both may be determined by hidden or omitted variables (i.e., explanatory variables may correlate with error terms).

This study adds to the literature by investigating the role of gender at the top executive level from a shareholder perspective. Shareholders have incentives to thoroughly assess the potential impact of all types of news on firm equity value. Stock price reactions summarize expected changes in firm performance for all future dates. In our view, the forward looking perspective of the shareholder provides a highly relevant framework to study the role of gender in firm stock-price performance. Ahern and Dittmar (2012) focus on the stock price response to mandatory increases in female board representation. Our study focuses on the leading executive positions on the board. Thus far, perception of perceived suitability of men and women has been studied mainly experimentally. For example, Haslam and Ryan (2008) report experimental investigations among management graduates, high school students, and business leaders. We investigate, on the basis of stock market data, investor

perception regarding announcement of appointment of female top executives replacing males. We rely on the notion of market efficiency, which assumes that stock markets reflect the fundamental value of a listed firm, that is, the discounted sum of all expected future cash flows (i.e., the in-equilibrium perspective of markets, Demsetz 1983). From this perspective, only unexpected information can impact firm value, but not all such information need be actually value relevant. This notion is at the heart of finance theory (Demsetz 1983; Fama 1970, 1991, 1995; Jensen 1978).

We investigate whether the announcement of appointment of a female CEO or CFO is followed by a response that is significantly different from announcement of appointment of a male top executive. Efficient market theory posits that if shareholders deem female representation beneficial, they will place a higher value on the firm. However, if shareholders believe that female representation worsens firm performance, which would reflect the view that the current situation of underrepresentation is optimal, they will lower firm valuation. Given these contrasting perspectives, the issue of which view actually holds is an empirical matter. Ideally, we could also establish what drives any such differential. Unfortunately, the sample does not contain enough observations to allow for a more structural approach (see Athey and Imbens 2017).

This study investigates the positions of CEO and CFO, as they are the most important positions in a firm in that they are responsible for overall strategy and performance and usually are the “face” of the firm in relation to stakeholders and society. While the impact of the CEO on firm performance is substantial, it is also contingent on other key executives (see Carpenter and Sanders 2002; Hambrick 1995); CFOs are critical in this respect, especially following introduction of the Sarbanes–Oxley Act of 2002 (Chava and Purnanandam 2010; Gore et al. 2011).

Our empirical strategy is to combine the event study methodology with a matched pair analysis to determine whether investors indeed respond differently to a female top executive appointment than to a male appointment. The results are of particular interest to investors, existing boards, and to recruiters for corporate boards, since this study is an empirical test of the notion that female CEOs and CFOs are “costly” (or not) from an investor perspective. From a societal

perspective, the study is relevant in that it sheds light on the value relevance of gender in top executive positions.

The remainder of this paper proceeds as follows: First, we review the literature and present our hypotheses. We then detail methods to test our hypotheses and introduce the data. Next, we present and discuss our results. Finally, we summarize our findings and set forth our conclusions.

## **Background and Hypotheses**

This section discusses the study background and introduces the hypotheses. The focus is on the literature regarding financial market performance and CEO turnover, then the literature on gender and boards, and finally on the literature on gender of top management and firm stock market performance. Then, our hypotheses are articulated.

One strand of the literature addresses CEO turnover and stock market response. Investor reaction to CEO or management changes in general are widely investigated, but the results are mixed. Weisbach (1988), Denis and Denis (1995), Huson et al. (2004), and Pessarossi and Weill (2012) find positive market reactions to (forced) CEO turnover announcements. However, Reinganum (1985), Beatty and Zajac (1987), Warner et al. (1988), and Niño and Romero (2007) find no significant response. Further, Dedman and Lin (2002) establish that markets react negatively to CEO turnover announcements. A widely acknowledged problem is that the event of the announcement of a new CEO is usually confounded by that of the withdrawal of the old CEO. Financial market analysis is not suitable to disentangling the impact on firm equity value of this type of news. As such, it is not possible to separate investor response regarding these two aspects. There is a closely related literature on the background of the new CEO. In this respect, the distinction between insider and outsider is highlighted (e.g., Furtado and Rozeff 1987; Johnson 1996); usually, appointment of an insider as new CEO is more highly valued than appointment of an outsider.

The gender differences literature relies predominantly on the governance perspective, is usually concerned about fairness issues, and investigates the role of gender mainly at the board level (Adams 2016; Adams and Ferreira 2009; Adams and Funk 2012; Bernardi et al. 2012; Haslam and

Kisgen 2008; Post and Byron 2015; Terjesen et al. 2009). The key notion here is that female directors bring different skills to the board. Board diversity may improve skill complementarities of the board as a whole (Anderson et al. 2011). In particular, women are regarded as being more risk-averse, less overconfident, and more sensitive to social signals in determining appropriate behavior (Croson and Gneezy 2009). Differences in talents, perspectives, and behavior between men and women, among many other factors, can affect the ability to monitor and discipline corporate managers (Hillman et al. 2002). Post and Byron (2015) perform a meta-analysis of the literature on women on boards and firm performance. These authors review 140 studies and find that female board representation is positively associated with accounting returns, especially in countries with strong shareholder protection. One concern with this research is that the identification strategy does not clearly rule out that the choice of a female board member is related to particular board or firm characteristics.

Another strand of literature consists of stock market performance studies regarding gender in relation to boards and top management. Post and Byron (2015) find that the relationship between female board representation and market performance is positive but not statistically significantly different from zero. Based on the results from more than 70 studies, Post and Byron (2015) find that female board representation is not significantly related to market performance. These authors also find that the mean effect size associated with female board representation and market returns is significantly lower than the mean effect size associated with female board representation and accounting returns. Most studies in this strand of literature focus on gender and boards. For example, Ahern and Dittmar (2012) find a negative impact on stock market returns from announcement of a mandatory increase in female board representation in Norway. Chapple and Humphrey (2014) find weak evidence of a negative correlation between multiple women on the board and market performance. In contrast, Campbell and Mínguez-Vera (2008) find that investors do not appear to penalize firms that increase the number of female board members, and Francoeur (2008) finds that there is no statistically significant performance difference between firms with high and low female board member representation. Regarding top executives, Lee and James (2007) closely relates to our work. These authors study top management team announcements in the US from 1999 to 2000, which

included 17 announcements of female CEO appointments. They find that cumulative abnormal returns are significant for both male and female appointments. Lee and James (2007 p. 239) predict that “as women executives becomes less unique, there will be less difference in the reaction to the announcement of male appointments and female appointments.” These authors also show that investors react significantly more negatively to announcement of female CEOs than they do to announcement of male CEOs. This finding contrasts with results from studies about gender and boards that rely on accounting measures (see Post and Byron 2015). Adams (2016) is highly critical of research on female representation on boards and in top management. This author reflects particularly upon the weaknesses of the data (definitions, small sample sizes, sample selection) and the theory (especially causal inferences made) and calls for more research. The issue of endogeneity plays a particular role and is difficult to solve, due to the research designs in most of this literature (see also Antonakis et al. 2014).

To complement these strands of the literature, this study first investigates the investor response regarding announcement of appointment of a new top executive. It researches the reaction of the total sample, consisting of both male and female appointments, by testing whether there is an abnormal stock market return following announcement of the appointment of a CEO or CFO. This also is done for the presence or absence of confounding information in the press bulletin that appears with the announcement; when firms produce such information, this could impact their stock returns. We hypothesize that the stock market reaction is more pronounced when such information is announced in the event window. Further, since the literature shows that insiders are valued more positively than outsiders, we expect that there is a more positive (less negative) reaction to the appointment of an outsider than to that of an insider. In addition, it is of interest whether the response to CEO appointments is stronger than those for CFO appointments, assuming that the CEO position is regarded as the most important function in the company. Further, this research extends the predominantly single-country studies to an investigation of the international setting using a sample with observations from 15 industrialized countries.

More importantly, based on the gender-role stereotyping hypothesis of Lee and James (2007), we expect a statistically significant difference in stock price reaction between announcement of appointment of female and male CEOs or CFOs. Therefore, the main hypothesis is as follows: Stock market return reaction after announcement of appointment of a female CEO/CFO is less strong than that following announcement of appointment of a male CEO/CFO. In all cases, the null hypothesis is that there are no statistically significant differences.

## **Materials and Methods**

This research combines the event study approach with matched pair analysis to answer the research question. This section briefly explains the background of the event study methodology. It then discusses the endogeneity problem, sampling, and selection of matches.

Event studies examine the short-term price behavior of securities around specific events (Binder 1998). Fama et al. (1969) find that stock markets are (semi-strong) efficient given the rapid adjustment of stock prices to a particular event. Event studies cannot be used to make inferences about causality. To this extent, alternative approaches are available (see Antonakis et al. 2010, 2014). However, we do not pursue these, as our objective is confined to assess whether there actually is something going on. Further, although our sample of female top executives is more than five times that of Lee and James (2007), it is nevertheless too small to employ sound statistical methods that would find determinants of any out- or under-performance. Note that even the event study can be affected by endogeneity problems if the decisions of the firms appointing either a male or female top executive are driven by some unknown underlying variable. Therefore, several sensitivity tests are conducted.

Event studies are rooted in efficient market theory. Fama (1995 p. 76) states that “[...] in an efficient market, at any point in time, the actual price of a security will be a good estimate of its intrinsic value [...].” A more general definition is provided by Jensen: “A market is efficient with respect to information set  $\theta_t$  if it is impossible to make economic profits by trading on the basis of information set  $\theta_t$ ” (Jensen 1978 p. 96). Realization of the information set may change over time, but

no systematic economic profits can be made for any realization of this information set. The implication here is that whatever news is announced, investors will immediately incorporate its effect into the stock price; thus, the market is semi-strong efficient. In this case, there can be abnormal returns (in contrast to the case of strong market efficiency, where all information is known).

Hermalin and Weisbach (1998) find that when investors are forward looking, turnover is more sensitive to accounting measures of performance compared to financial market measures. Hermalin and Weisbach (2003) argue that firms decide allocation of resources to governance and production simultaneously. Then, unless the dependency on common determinants is accounted for, the estimates of the association between governance and performance might be biased. This finding aligns with the view of Cook (2008) on how to account for news in financial markets. However, Cornelli et al. (2013) point out that corporate governance arrangements are a black box. Governance seems to be an unobservable variable usually measured by proxies assumed to correlate with the “true” but unobservable latent variable (Cornelli et al. 2013). By focusing on a very visible variable, namely gender, it might be possible to advance this debate. Of course, gender is just one aspect of governance and must not be viewed as a proxy for all arrangements. Stock market information is used, as this study concentrates on shareholder perception and not on firm performance in general. However, there can be a price reaction even in the absence of agency problems. For example, consider a female CEO unexpectedly replacing a male CEO with poor skills rather than a male CEO who makes poor management choices on purpose (as suggested in agency theory). In this case, it is likely that shareholders respond to this positive news with increased demand for the stock.

The date on which the press release naming the top executive’s appointment is published by the particular company is used as the event day ( $\tau = 0$ ). To arrive at the expected stock market returns, we rely on the market and risk adjusted returns model (the market model) (MacKinlay 1997). There is a window before the announcement to estimate the expected return, and then these expected returns are confronted with the actual returns in the event window (the differential is the abnormal return).

Returns ( $R_{i,t}$ ) are calculated as:



$$R_{i,\tau} = \ln(P_{i,\tau}/P_{i,\tau-1}) \quad (1)$$

where  $P_{i,\tau}$  and  $P_{i,\tau-1}$  are the share prices of firm  $i$  at the end of period  $\tau$  and  $\tau-1$ , respectively. This study relies on the return index of the firm to account for dividend payments and share repurchases. Abnormal return is the difference between actual return and normal (expected) return. In line with the literature (e.g., Pessarossi and Weill 2012), the estimation window within this study is set at [-160;-3]. Announcement of the appointment of the new CEO/CFO is at the event day (day 0). It is assumed that a response from market participants to the news about the appointment decision is tractable in the event window only. The sample is checked for potentially well-established confounding events like earnings warnings, stock splits, and divestiture/M&A rumors and announcements in the event window. The returns from the two days immediately before and after the announcement are added to the return on the announcement date itself to gauge the event's total price impact. One issue is whether closer assessment of the impact would be preferable. Most stock exchanges require firms to produce value-relevant information (such as CEO turnover) outside trading hours. Therefore, the day is the best unit to determine the impact of this type of news (Brown and Warner 1985). Further, the estimation window and event window perfectly align in our case.

Estimates of daily abnormal returns (*ARs*) for firm  $i$  at day  $\tau$  can be derived using the following equation:

$$AR_{i,\tau} = R_{i,\tau} - \alpha_i - \beta_i * R_{m,\tau} \quad (2)$$

where  $R_{m,\tau}$  is the return of the (national) stock market index at day  $\tau$ .  $\alpha$  and  $\beta$  are parameters in the market model;  $\alpha$  is the intercept term and  $\beta$  is systematic risk. Firm returns are related to those of the domestic stock market with respect to idiosyncratic risk (see Campbell et al. 2010). Average abnormal returns (*AARs*) are obtained by dividing the sum of the *ARs* by the number of events ( $N$ ):

$$AAR_{\tau} = \frac{1}{N} \sum_{i=1}^N AR_{i,\tau} \quad (3)$$

MacKinlay (1997) argues that event studies should make use of cumulative abnormal returns (*CARs*) when there is uncertainty about the exact date at which the information is incorporated in the

share price. Hence, the use of *CARs* is in line with the choice for a multiple-day event window. In this study, the windows [2;+2], [-1;+1] and [0,+1] are analyzed. Cumulative average abnormal returns (*CAARs*) are calculated by taking the average of the individual *CARs*; *CARs* are calculated as follows:

$$CAR_{i [t_1, t_2]} = \frac{1}{t_2 - t_1 + 1} \sum_{\tau=t_1}^{t_2} AR_{i, \tau} \quad (4)$$

Both parametric and non-parametric tests are employed to determine significance. The first is a standardized cross-sectional test by Boehmer et al. (1991). It is robust to mis-specification due to event-induced variance changes. The tests for *AARs* and the *CAARs* according to the standardized cross-sectional test are done in line with the calculations applied by Campbell et al. (2010). In addition, Corrado's non-parametric rank test is used (Corrado 1989). The calculations for testing *AARs* are in Appendix A. Testing for *CAARs* is done using the same calculations as testing for *AARs*, but security-event *i*'s mean rank (*K*) across the days of the cumulative window is substituted in place of  $K_{i,0}$  and the standard deviation ( $S(K)$ ) is divided by the square root of the number of days in the cumulative window (see Campbell et al. 2010).

The data are obtained from various sources. First, a representative number of press releases of appointments of female CEOs/CFOs was assembled. The Orbis Database was used to find firms announcing appointment of a female CEO/CFO and to collect information on firm sector, size, and location. We selected all announcements regarding the appointment of female CEOs and CFOs between January 2004 and March 2014. All appointments selected concern replacement of a male top executive by a female. Further, we check whether there is a listing on a stock exchange, information about the name of the CEO/CFO, the exact date of the announcement, the industry the firm is in, and the location of its headquarters. Stock return information of the particular firm's stock and the corresponding market index (the prevailing national stock market index of the country where the announcing firm was headquartered) are obtained from Datastream. Afterwards, the announcement dates of these female executives were determined by searching for the corresponding press release on the company website as well as the function (CEO or CFO), whether the executive was an insider, and whether other relevant information was announced during the event window. In this case, 'relevant' is

defined as a press release covering the announcement of other executives or board members and as a press release related to financial issues, such as financial results and dividend declarations. The next step was to find matched pairs regarding announcements of appointments of female CEOs/CFOs. Announcements of male appointments (male CEOs/CFOs replacing another male top executive) are matched to announcements of female appointments as CEO/CFO using three matching criteria: size, industry, and announcement date. Size is measured as total assets, where we allow a range of 30% for the size of the match. The list of events and matches (see Appendix B) shows that the size criterion is met in all matches. In cases where the industry criterion is not met, the closest industry is chosen. Further, we investigate the international perspective and analyze whether performance might be related to cultural issues (Ioannou and Serafeim 2012). The study uses the Gender Gap Index of the World Economic Forum to arrive at scores and ranks of the countries in which the firm is headquartered (see Appendix C).

The data collection process results in 105 announcements of female appointments in 15 countries for the period 2004/1–2014/2. From this data set, five announcements are removed because of confounding events (stock splits, M&A announcements/divestitures, and earnings warnings) in the event window. Our final list of announcements consists of 100 announcements of female appointments and 100 matched announcements of male appointments. Two announcements took place on a Sunday (non-trading day); for these announcements, the next trading day is used as the event day.

Table 1 presents an overview of the main characteristics of the data set. Regarding the size of the 200 companies involved (see Panel A), the table shows total assets of the average firm in the sample at USD 33.7 billion (median is 4.0 billion), operating revenues over assets at 111% (median 82%), and number of employees at 24,447 (median 6,000). As to industry composition, Panel B shows that most announcements were in consumer goods, manufacturing, and other industries. Most announcements occurred in the second half of the period under investigation. As to the international dimension, most announcements were in the US. An overview of key properties of the AARs in the estimation window regarding the stock market response to turnover announcements is in Appendix D. It shows the results of the total sample (male and female appointments combined) and of female and

male appointments separately. We establish that the alphas are not significantly different from zero and that the betas are not significantly different from one. However, the betas for the sample of female CEO and CFO appointment announcements are slightly lower than those of the male appointments. This difference, however, is not statistically significant.

[Insert Table 1 here]

## **Results**

This section reports and discusses the results of our analysis with respect to the sample of announcements of male and female CEO/CFO appointments. First, the results of the main analysis are presented and then those of the sensitivity analysis.

### *Main results*

Table 2 presents the results of the *AAR* for the total sample, consisting of 100 female and 100 male appointments. The table shows a sign switch at the event day compared to the previous day. There is a negative *AAR* at the event day as well as on the first day after the event day. However, none of the reported *ARs* is statistically significant. Hence, the null regarding our first hypothesis cannot be rejected. Therefore, in contrast to, for example, Bonnier and Bruner (1989), but in line with Niño and Romero (2007) and Warner et al. (1988), our results suggest that there are no statistically significant abnormal stock market returns following announcement of appointment of a top executive. As a consequence, it seems that there is no (equity) value relevance in this particular news (see Fama 1970). This does not mean that there is absence of information, but that the information is not deemed value relevant by investors.

[Insert Table 2 here]

Next, we turn to the main hypothesis regarding the differential in the response to an announcement of the appointment of a man or woman as CEO/CFO. The results of the differences in *AARs* between female and male appointments are provided in Table 3. The difference is calculated as the *AAR* of the female appointment minus the *AAR* of the matched male appointment. Again, there is a

sign switch at the event day. The test statistics suggest that the *ARs* are not statistically significant, except that the parametric test shows a marginally significant *AAR* at day  $\tau = 2$ . Because of this weak significance level and the fact that the Corrado test suggests insignificance, we conclude that the null hypothesis of no difference between the appointment announcement of female and male top executives cannot be rejected. Thus, in contrast to Lee and James (2007), our study finds that there is no statistically significant difference in stock price reaction after announcement of appointment of a female CEO/CFO compared to that of a male CEO/CFO. As a consequence, investors do not seem to differentiate in the valuation of the company upon appointment of a female CEO/CFO or a male CEO/CFO. This result is consistent with the findings in Post and Byron (2015), which depart from the shareholder perspective, but it contrasts with studies relying on accounting data (i.e., taking the firm perspective) in the case of gender and boards. The difference with Lee and James (2007) might be due to the fact that our study relies on a much larger sample (more than five times) of female top executive announcements. Further, our sample includes a time period for which investors have gained more experience with female CEOs and CFOs.

[Insert Table 3 here]

Next, the performance of firm stock over the event window is investigated. The results for three cumulative event windows are shown in Tables 4 and 5. Table 4 shows the *CAARs* of appointments for the total sample, consisting of 100 female appointments and 100 male appointments. Table 5 shows the difference in *CAARs* between female appointments and their matched male appointments. Again the difference is calculated as *ARs* from a announcement of female appointment minus *ARs* from the matched announcement of male appointment. The *CAAR* for the  $[0;+1]$  window is negative in both the total sample and in the “difference sample.” But these negative returns are not statistically significant. Hence, it can be concluded that there are no statistically significant differences between the announcement of a new female or male CEO or CFO. As a consequence, the null hypothesis of no difference cannot be rejected. Therefore, for the cumulative windows as well, we conclude there are no abnormal stock market returns following announcement of appointment of a female CEO/CFO compared to a male CEO/CFO.

[Insert Tables 4-5 here]

### *Robustness*

We use sensitivity analysis to arrive at a proper notion of the robustness of the main results. More specifically, four aspects are investigated: the role of confounding information, the appointed CEO/CFO being an insider or an outsider, the appointment relating to either the CEO or the CFO, and the international (cultural) dimension.

The first sensitivity analysis focuses on the presence of potentially relevant additional information. Relevant information release relates to the press release accompanying the announcement covering announcement of other executives or board members and to financial issues, such as financial results and dividend declarations. This type of information presented could bias the *ARs* reported in the event window, because it is not clear to what information investors react. Non-relevant press releases do not include such information. It is expected that the stock market reaction is stronger when relevant information is announced during the event window.<sup>1</sup>

The second sensitivity analysis addresses the insider/outsider distinction. Furtado and Rozeff (1987) and Lee and James (2007) find that insiders are valued more positively by investors than outsiders. It is therefore expected that the stock price reaction to appointment of an insider is more positive (less negative) than the reaction to appointment of an outsider.

The third sensitivity analysis focuses on whether the announced executive is going to be either the CEO or the CFO of the company. Lee and James (2007) already make a distinction between CEO and other top management team appointments. Compared to CEO appointments, their results show weaker and even insignificant *CAARs* for top management team appointments. The hypothesis here is that the CEO may be seen as a more important function than the CFO. Therefore, it may be expected

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<sup>1</sup> In addition, as suggested by one of our reviewers, we accounted for the firms' prior performance. To this extent, we compared the abnormal returns in the event window of firms with the 25% highest and those with the 25% lowest performance in the estimation window. This shows that the mean and standard deviation of the abnormal returns in the event window of both groups were about the same (i.e., *CAAR* [-2;2] of firms with the 25% lowest performance in the estimation window at 0.00077 versus that with the 25% highest performance at -0.00041), and that the lowest 25% had slightly lower positive skewness and more kurtosis.

that the stock price reaction after appointment of a CEO is more pronounced than that after appointment of a CFO.

These three analyses were performed for the overall sample of 200 appointments for the [0;+1] cumulative window, and the results for the three pairs of subgroups were compared with an ANOVA to test for differences. The results of the sensitivity analyses are provided in Appendix E, Panels A–C respectively. This appendix shows that there are no statistically significant results for the sensitivity analyses employed in our study. Panel D of Appendix E reports the results of differences tests regarding the two subgroups in all three cases (namely additional relevant news, insider/outsider, and CEO/CFO). This panel shows that there is no significant difference between the subgroups in all three instances and suggests that there seems to be no difference in *CAARs* when relevant information is announced through press releases in the event window, whether the new CEO/CFO is an insider or not, and whether the appointment of a CEO or a CFO is announced. This finding is in line with the main results of this study.

The fourth sensitivity analysis addresses the international dimension of our sample. To this extent, we use the scores from the World Economic Forum regarding the Gender Gap Index (see Appendix C). The index scores represent gender inequality. In this respect, it might be the case that distrust of a female CEO or CFO is greater in countries with greater inequality, as represented by a lower rank and score on the Gender Gap Index. In the sample, gender inequality is smallest in Finland (rank 2; score 0.845) and largest in Greece (rank 92; score 0.680). The weighted average rank of the sample is calculated, where the weights are based on the number of announcements. This yields an average weighted rank of 34, which happens to be the score of Luxembourg on the Gender Gap Index. Therefore, the announcements from Luxembourg are removed from the comparison of countries scoring relatively high or low on the Gender Gap Index. To be specific, the Gender Gap Index shows that Austria, Greece, Italy, and the US have scores below the weighted mean of the index (i.e., these countries are perceived as having relatively more gender inequality). Therefore, these countries are in the subsample labelled HIGH. Announcements from all other countries, except Luxembourg, are labelled LOW. Further, there is a comparison of the responses to US and non-US announcements of

appointment of a female CEO or CFO, as the US makes up more than half the total sample and because Lee and James (2007) rely on US data only.

The results of the international analysis are shown in Appendix F. Panel A compares the responses in the subsamples of countries to all announcements. This panel shows that in countries with relatively high scores on the Gender Gap Index, there is a slightly more pronounced (positive) response from the stock market to turnover announcements than in countries with a low score on the index. For the US, the response is slightly more pronounced than elsewhere (but not on days -2 and -1 in the event window). Next, Panel B presents a comparison of the stock market response to the announcement of male CEOs and CFOs. This panel shows that there are no substantial differences between the subgroups. Panel C compares responses to announcements of female top executives. From this panel, we conclude that the response in countries with a relatively high rank on the gender inequality index, as well as the response in the US, is more positive than the response in countries ranking low on the gender inequality index and outside the US, respectively. However, the responses themselves are not statistically significantly different from zero in each of the subgroups. Therefore, it can be concluded that there is some international heterogeneity regarding the response to female appointment but that relevant subsamples (i.e., performing relatively high or low on the Gender Gap Index and US versus elsewhere) do not show statistically significant *ARs*. This finding contrasts with the findings of Ahern and Dittmar (2012) for boards, but confirms the main findings of our paper. Panel D confirms the overall conclusion inferred from the previous three panels—namely that stock market participants seem to respond more strongly and more positively to announcements of female top executives in countries that rank high on the gender index, as well as in the US, than to those elsewhere, but that there is no statistically significant response to (differences in) gender with such announcements. This conclusion is in line with Post and Byron (2015), who also did not come across significant international differences.

We conclude that there are no statistically significant differences between the stock market responses to female versus male CEO/CFO appointments. We establish that, from an investor perspective, it does not matter whether a man or a woman is appointed to the board of directors as a



CEO or CFO. This result contrasts with studies that find positive effects from female executive tenure and firm financial performance (Deszö et al. 2016; Faccio et al. 2016; Huang and Kisgen 2013; Kahn and Vieito 2013; Wang and Kelan 2013), but is in line with the predictions of Lee and James (2007) and the findings of Campbell and Minguez-Vera (2008) and Francoeur (2008). Our conclusion is reminiscent of the analysis of Hermalin and Weisbach (1998). These authors argue that stock prices reflect not only the present, but also the future, which implies that abnormal stock prices can underestimate the effect of an announced turnover change on firm performance. However, shareholder response is a genuine reflection of shareholder perception about the impact of an (unexpected) announcement regarding the equity value of a firm.

## **Discussion and Conclusion**

This study investigates the impact of the unexpected announcement of appointment of female CEOs and CFOs on the equity value of firms. Most of the literature on gender and performance thus far investigates the impact of female board membership on performance by using accounting information. In contrast, our focus is on the response of shareholders. This study assumes semi-strong market efficiency, which holds that market participants account for all relevant information in pricing financial assets. As such, unexpected news will be followed by significant changes in stock market returns only if it is deemed value-relevant. If the news does not affect stock market returns, it seems to be irrelevant to firm valuation according to shareholders.

We study announcements of 100 female CEO/CFO appointments in 15 countries over the period 2004–2014 and match these with announcements of appointments of male CEOs/CFOs. All new appointments replace males. For the overall response to announcement of a CEO/CFO change, there is no significant abnormal stock price reaction. This finding is in line with other studies on changes in governance (Warner et al. 1988; Wessels et al. 2017). Examination of the differences in stock price reactions regarding announcement of female and male CEO/CFO appointments shows that any differences between women and men are not statistically significant. This result contrasts with Lee and James (2007), who study 17 female top executive appointments in 1999–2000. We conclude that

there is no significant difference in average abnormal returns after announcement of the appointment of a female CEO/CFO versus a male CEO/CFO appointment. This conclusion suggests that there is no gender difference regarding how investors value appointment of CEOs/CFOs.

The finding that gender of these top executives does not seem to be value relevant from the investor perspective contrasts with studies that employ alternative research designs that disregard the investor perspective or that focus on the board rather than CEOs/CFOs. Most studies find that firms with female directors generally somewhat underperform those consisting of only men (Ahern and Dittmar 2012; Chapple and Humphrey 2014 Lee and James 2007). It might be that strict reliance on market efficiency theory and the much larger sample are responsible for our result. Another difference is that our study is based on an international sample, whereas most previous studies focus on the US only. Further, our sample relates to a more recent period (when Sarbanes–Oxley regulation is in place) in which market participants have become more experienced with female CEOs/CFOs. The absence of a significant difference in the response to announcement of male and female CEO/CFO appointment also is in line with the prediction made by Lee and James (2007). These authors expected that, as women executives become less unique, there will be less difference in outcome variables between the announcement of male and female appointments. Finally, although our research design relies on efficient market theory, which has often been criticized as highly biased toward the status quo (Roscoe 2014; Sedláček 2011), it yields results that are in line with those based on other perspectives, such as agency theory (see Carter et al. 2003, 2010). Also, our method is much less plagued by endogeneity than most of the studies reviewed in Post and Byron (2015).

This study cannot be used to make inferences about the causality of news of appointment of top executives and the response (or the lack thereof) from stock market participants. However, several sensitivity checks were performed. These confirm the main findings; nevertheless, it is not possible to be entirely sure (type 1 and type 2 error may be present). Another important caveat to our conclusions is that although the study includes many more female top executives than most previous studies in this area, it faces data limitations. With 100 announcements of female CEO or CFO appointments, the sample is still quite small. Therefore, one cannot be sure that there is no gender effect of CEO/CFO

appointments on shareholder value. It might be that investors do not perceive a value difference or there simply are not enough observations to filter out noise and allow statistical inference to convey the truth. In particular, expanding the analysis to a regression setting and accounting for controlling factors would require many more observations to warrant drawing robust conclusions. Further, our methodology can be applied only to public companies. In addition, our sample is skewed toward companies from industrialized countries. As such, we agree with Adams (2016) and Antonakis et al. (2010, 2014), who call for improved data and theory in this respect.

From a practical perspective, the implications of our study are that it seems that firms need not be afraid they will be punished by shareholders when they appoint women as CEOs or CFOs. However, our findings pertain only to the sample studied; they do not imply that appointment of women or men as such will never become value relevant. We trust that investors first and foremost will have a keen eye on the managerial qualities of the prospective CEO or CFO.

## Appendices

### Appendix A

#### Abbreviations

$N$  = number of firms

$L_i$  = number of observed returns for security  $i$  ( $M_i + W_i$ )

$M_i$  = number of non-missing estimation period returns for security  $i$

$W_i$  = number of non-missing event window returns for security  $i$

$AR_{i,E}$  = abnormal return of security  $i$  on the event day

$AR_{i,\tau}$  = abnormal return of security  $i$  on day  $\tau$

$SR_{i,E}$  = security  $i$ 's standardized residual on the event day

$T_\tau$  = number of days in the estimation period

$\hat{\sigma}_i$  = security  $i$ 's estimated standard deviation abnormal returns in the estimation period

$R_{m,E}$  = market return on the event day

$R_{m,\tau}$  = market return on day  $\tau$

$\bar{R}_m$  = average market return during the estimation period

$CAR_i$  = cumulative abnormal return for security  $i$

$\tau_1, \tau_2$  = beginning and ending day of the cumulative window

$SCAR_{i,[\tau_1,\tau_2]}$  = standardized cumulative abnormal return

$S_{CAR_{i,[\tau_1,\tau_2]}}$  = estimated standard deviation of each  $CAR_{i,[\tau_1,\tau_2]}$

$\bar{R}_{m\_est}$  = mean daily national market-index return in the estimation period

$K_{i,\tau}$  = rank of security  $i$  on day  $\tau$

$\bar{K}$  = expected rank

$S(K)$  = standard deviation of the sample mean abnormal return ranks

### Standardized cross-sectional test

#### *Average Abnormal Return (AAR)*

Test statistic:

$$Z_{\tau} = \frac{1}{N} \sum_{i=1}^N SR_{i,E} / \sqrt{\frac{1}{N(N-1)} \sum_{i=1}^N (SR_{i,E} - \frac{\sum_{i=1}^N SR_{i,E}}{N})^2} \quad (5)$$

with:

$$SR_{i,E} = AR_{i,E} / \hat{\sigma}_i \sqrt{1 + \frac{1}{T\tau} + \frac{(R_{m,E} - \bar{R}_m)^2}{\sum_{t=1}^{T\tau} (R_{m,t} - \bar{R}_m)^2}} \quad (6)$$

#### *Cumulative Average Abnormal Return (CAAR)*

Standardized cumulative abnormal return:

$$SCAR_{i,[\tau_1, \tau_2]} = CAR_{i,[\tau_1, \tau_2]} / S_{CAR_{i,[\tau_1, \tau_2]}} \quad (7)$$

with:

$$S_{CAR_{i,[\tau_1, \tau_2]}} = \left( \frac{1}{M_i - 2} \sum_{k=-160}^{-3} AR_{i^2} \right)^{1/2} \left\{ W_i \left[ 1 + \frac{W_i}{M_i} + \frac{(\sum_{t=\tau_1}^{\tau_2} R_{m,t} - W_i \bar{R}_{m\_est})^2}{\sum_{t=-160}^{-3} R_{m,t} - \bar{R}_{m\_est}^2} \right] \right\}^{1/2} \quad (8)$$

Test statistic:

$$Z_{\tau} = \frac{\sum_{i=1}^N SCAR_{i,[\tau_1, \tau_2]}}{\sqrt{N} S_{SCAR}} \quad (9)$$

where

$$S_{SCAR} = \left[ \frac{1}{N-1} \sum_{i=1}^N (SCAR_{i,[\tau_1, \tau_2]} - \frac{1}{N} \sum_{i=1}^N SCAR_{i,[\tau_1, \tau_2]})^2 \right]^{1/2} \quad (10)$$

Corrado's rank test

$$K_{i,\tau} = \text{rank} (AR_{i,\tau}) \quad (11)$$

Test statistic:

$$t_{\text{rank}} = \frac{1}{N} \sum_{i=1}^N (K_{i,\tau} - \bar{K}) / S(K) \quad (12)$$

where

$$S(K) = \left\{ \frac{1}{Li} \sum_{t=-160}^{+2} \left[ \left( \frac{1}{N} \sum_{i=1}^N K_{i,\tau} - \bar{K} \right)^2 \right]^{1/2} \right\} \quad (13)$$

**Appendix B – Events and Matches** (This appendix gives the key characteristics of all the events used in the analysis)

#	Company	Industry	CEO/CFO Full name	Gender	Announcement date	Position	Total assets (last available year) 1000USD	Country where company is headquartered
1	RHI	Chemicals, rubber, plastics, non-metallic products	Mag. Barbara Potisk-Eibensteiner	F	27-3-2012	CFO	2.441.286	Austria
M1	JAMES HARDIE INDUSTRIES	Chemicals, rubber, plastics, non-metallic products	Mr Matthew Marsh	M	12-6-2013	CFO	2.107.600	Ireland
2	BELGACOM	Post & telecommunications	Mrs Dominique Charlotte Germaine Suzanne Leroy	F	9-1-2014	CEO	10.833.593	Belgium
M2	HELLENIC TELECOMMUNICATIONS ORGANIZATION	Post & telecommunications	Mr Michael Tsamaz	M	22-10-2010	CEO	11.029.920	Greece
3	GREENYARD FOODS	Food, beverages, tobacco	Mrs Valerie Vanhoutte	F	23-10-2013	CFO	1.003.897	Belgium
M3	SENECA FOODS	Food, beverages, tobacco	Mr Timothy Benjamin	M	31-5-2012	CFO	803.149	USA
4	TELENET GROUP HOLDING	Post & telecommunications	Mrs Birgit Maria Conix	F	26-8-2013	CFO	5.411.039	Belgium
M4	HAVAS	Post & telecommunications	Mr Francois Laroze	M	16-12-2013	CFO	6.222.290	France
5	GREENYARD FOODS	Food, beverages, tobacco	Mrs Marleen Vaesen	F	9-10-2012	CEO	1.003.897	Belgium
M5	PHARMERICA CORPORATION	Wholesale & retail trade	Mr David W. Froesel	M	2-8-2013	CEO	886.300	USA
6	BRODRENE HARTMANN	Wholesale & retail trade	Mrs Marianne Rorslev Bock	F	27-2-2012	CFO	201.693	Denmark
M6	PANOSTAJA	Wholesale & retail trade	Mr Simo Mustila	M	29-10-2010	CFO	172.288	Finland
7	TDC	Post & telecommunications	Mrs Pernille Lyngvold Erenbjerg	F	21-3-2011	CFO	11.223.692	Denmark
M7	HELLENIC TELECOMMUNICATIONS ORGANIZATION	Post & telecommunications	Mr Babis Mazarakis	M	28-6-2012	CFO	11.029.920	Greece

8	SUOMINEN	Textiles, wearing apparel, leather	Mrs Nina Marietta Kopola	F	22-11-2011	CEO	368.033	Finland
M8	IC COMPANYS	Textiles, wearing apparel, leather	Mr Rud Trabjerg Pedersen	M	21-8-2013	CEO	353.067	Denmark
9	BOURSORAMA	Banks	Mrs Marie Cheval	F	19-3-2013	CEO	6.384.972	France
M9	AFFILIATED MANAGERS GROUP	Banks	Mr Sean M. Healey	M	26-10-2010	CEO	6.187.100	USA
10	PIERRE ET VACANCES PINNACLE	Hotels & restaurants	Mrs Françoise Dominique Raymonde Gri	F	5-11-2012	CEO	2.214.300	France
M10	ENTERTAINMENT	Hotels & restaurants	Mr Anthony Sanfilippo	M	15-3-2010	CEO	2.108.994	USA
11	ACCOR WYNDHAM	Hotels & restaurants	Mrs Sophie Stabile	F	10-5-2010	CFO	9.974.664	France
M11	WORLDWIDE	Hotels & restaurants	Mr Thomas G. Conforti	M	8-9-2009	CFO	9.463.000	USA
12	JCDECAUX	Other services	Mrs Laurence Debroux	F	6-5-2010	CFO	5.734.772	France
M12	BUREAU VERITAS	Other services	Mr Sami Badarani	M	2-11-2011	CFO	5.020.317	France
13	QSC	Post & telecommunications	Mrs Barbara Stolz	F	20-3-2013	CFO	510.777	Germany
M13	BALDA	Post & telecommunications	Mr Dieter Brenken	M	5-9-2013	CFO	470.447	Germany
14	PFEIFFER VACUUM TECHNOLOGY	Machinery, equipment, furniture, recycling	Mrs Nathalie Benedikt	F	6-11-2012	CFO	588.006	Germany
M14	PKC GROUP	Machinery, equipment, furniture, recycling	Mr Juha Torniaainen	M	4-4-2012	CFO	639.987	Finland
15	SMA SOLAR TECHNOLOGY	Machinery, equipment, furniture, recycling	Mrs Lydia Rosina Sommer	F	17-10-2012	CFO	1.753.055	Germany
M15	ELRINGKLINGER	Machinery, equipment, furniture, recycling	Mr Stefan Wolf	M	28-1-2005	CFO	1.673.779	Germany
16	DEUTSCHE LUFTHANSA	Transport	Miss Simone Menne	F	7-5-2012	CFO	37.496.027	Germany
M16	UNITED CONTINENTAL HOLDINGS	Transport	Mr John Rainey	M	16-4-2012	CFO	37.628.000	USA
17	NORDWEST HANDEL	Wholesale & retail trade	Mrs Annegret Franzen	F	14-2-2012	CFO	224.648	Germany
M17	SHW	Wholesale & retail trade	Mr Sascha Rosengart	M	7-5-2013	CFO	237.458	Germany
18	CELESIO	Wholesale & retail trade	Mrs Marion Helmes	F	20-12-2011	CFO	10.461.126	Germany
M18	WOLSELEY	Wholesale & retail trade	Mr John Martin	M	25-1-2010	CFO	10.783.414	<u>UK</u>



19	ALNO AG	Machinery, equipment, furniture, recycling	Mrs Ipek Demirtas	F	13-7-2011	CFO	221.992	Germany
M19	SUSS MICROTEC	Machinery, equipment, furniture, recycling	Mr Michael Knpp	M	10-5-2007	CFO	237.605	Germany
20	NATIONAL BANK OF GREECE SA	Banks	Miss Paula N. Hadjisotiriou	F	10-7-2013	CFO	138.271.532	Greece
M20	ANNALY CAPITAL MANAGEMENT	Banks	Mr Glenn A. Votek	M	19-8-2013	CFO	133.452.300	USA
21	INGERSOLL-RAND	Machinery, equipment, furniture, recycling	Mrs Susan K Carter	F	5-9-2013	CFO	18.492.900	Ireland
M21	PACCAR	Machinery, equipment, furniture, recycling	Mr Robert Christensen	M	30-12-2012	CFO	18.627.800	USA
22	GLOBAL INDEMNITY PLC	Insurance companies	Mrs Cynthia Y Valko	F	15-9-2011	CEO	1.903.703	Ireland
M22	TRIPLE-S MANAGEMENT	Insurance companies	Mr Mr. Amilcar L. Jordan	M	5-6-2012	CEO	2.059.344	USA
23	GRUPPO EDITORIALE L'ESPRESSO	Publishing, printing	Mrs Monica Mondardini	F	29-4-2013	CEO	1.732.933	Italy
M23	PTC.	Publishing, printing	Mr James E Heppelman	M	10-5-2010	CEO	1.828.906	USA
24	IL SOLE 24 ORE	Publishing, printing	Mrs Donatella Treu	F	12-3-2010	CEO	669.362	Italy
M24	INDEPENDENT NEWS & MEDIA PUBLIC LIMITED COMPANY	Publishing, printing	Mr Vincent Crowley	M	19-4-2012	CEO	593.730	Ireland
25	HURTIGRUTEN	Transport	Mrs Asta Sofie Lassesen	F	6-9-2011	CFO	946.174	Norway
M25	ARKANSAS BEST	Transport	Mr Michael Newcity	M	28-5-2010	CFO	1.034.462	USA
26	RTL GROUP	Other services	Mrs Anke Schaeferkordt	F	7-2-2012	CEO	10.420.621	Luxembourg
M26	GAGFAH	Other services	Mr Thomas Zinnocker	M	22-3-2013	CEO	10.702.049	Luxembourg
27	ORDINA N	Post & telecommunications	Mrs Marijke Jolanda Poots Bijl	F	28-3-2013	CFO	418.231	Netherlands
M27	IDT CORP	Post & telecommunications	Mr Marcelo Fisscher	M	6-6-2006	CFO	435.407	USA
28	SENSATA TECHNOLOGIES	Machinery, equipment, furniture, recycling	Ms Martha Newman Sullivan	F	25-4-2012	CEO	3.648.391	Netherlands
M28	TRELLEBORG	Machinery, equipment, furniture, recycling	Mr Peter Nilsson	M	9-6-2005	CEO	4.174.033	Sweden

29	POSTNL	Post & telecommunications	Mrs Hendrica Verhagen	F	19-4-2012	CEO	6.143.126	Netherlands
M29	HAVAS	Post & telecommunications	Mr Yannick Bolloré	M	8-1-2014	CEO	6.222.290	France
30	HAFSLUND	Gas, Water, Electricity	Mrs Heidi Ulmo	F	30-4-2012	CFO	4.451.346	Norway
M30	DYNEGY	Gas, Water, Electricity	Mr Clint C. Freeland	M	23-6-2011	CFO	4.535.000	USA
31	GJENSIDIGE FORSIKRING	Insurance companies	Mrs Catharina Elisabeth Hellerud	F	16-12-2011	CFO	16.792.406	Norway
M31	CINCINNATI FINANCIAL	Insurance companies	Mr Michael J. Sewell	M	25-4-2011	CFO	16.192.000	USA
32	SWEDISH MATCH	Food, beverages, tobacco	Mrs Marlene Forsell	F	9-9-2013	CFO	2.209.394	Sweden
M32	HAIN CELESTIAL GROUP	Food, beverages, tobacco	Mr Stephen J. Smith	M	21-8-2013	CFO	2.258.494	USA
33	KNOWIT	Other services	Mrs Anna Jennehov	F	5-12-2012	CFO	248.125	Sweden
M33	PROACT IT GROUP	Other services	Mr Kristian Shaw	M	13-11-2013	CFO	229.504	Sweden
34	ELECTRA GRUPPEN	Machinery, equipment, furniture, recycling	Mrs Anneli Sjostedt	F	5-9-2012	CEO	72.048	Sweden
M34	VITROLIFE	Machinery, equipment, furniture, recycling	Mr Thomas Axelsson	M	18-4-2012	CEO	71.058	Sweden
35	HEXPOL	Chemicals, rubber, plastics, non-metallic products	Mrs Karin Elisabeth Bachmann Gunnarsson	F	17-8-2012	CFO	908.141	Sweden
M35	STO AKTIENGESELLSCHAFT	Chemicals, rubber, plastics, non-metallic products	Mr Rolf Wohrle	M	31-8-2010	CFO	902.798	Germany
36	CYBERCOM GROUP	Other services	Mrs Camilla Oberg	F	10-4-2012	CFO	208.189	Sweden
M36	TRADEDOUBLER	Other services	Mr Rob Wilson	M	29-6-2012	CFO	182.962	Sweden
37	RATOS	Other services	Mrs Susanna Margareta Campbell	F	26-1-2012	CEO	5.161.042	Sweden
M37	FUGRO	Other services	Mr P. van Riel	M	16-1-2006	CEO	5.501.523	Netherlands
38	REJLERS	Other services	Mrs Eva Katarina Viola Nygren	F	12-1-2012	CEO	107.925	Sweden
M38	VICTORIA PARK A	Other services	Mr Peter Strand	M	21-8-2013	CEO	107.251	Sweden

39	ASSA ABLOY	Metals & metal products	Mrs Carolina Dybeck Happe	F	12-12-2011	CFO	9.202.245	Sweden
M39	SSAB	Metals & metal products	Mr Hakan Folin	M	27-2-2013	CFO	9.012.069	Sweden
40	ACANDO	Publishing, printing	Mrs Anneli Elisabeth Lindblom	F	9-11-2011	CFO	162.432	Sweden
M40	MARTHA STEWART LIVING OMNIMEDIA	Publishing, printing	Mr Ken West	M	6-9-2011	CFO	154.260	USA
41	BEIJER ELECTRONICS	Machinery, equipment, furniture, recycling	Mrs Anna Kristina Belfrage	F	29-8-2011	CFO	217.856	Sweden
M41	LAGERCRANTZ GROUP	Machinery, equipment, furniture, recycling	Mr Bengt Lejdström	M	28-9-2011	CFO	245.670	Sweden
42	BILLERUDKORSNAS AB	Wood, cork, paper	Miss Susanne Karin Lithander	F	11-7-2011	CFO	3.800.907	Sweden
M42	METSA BOARD	Wood, cork, paper	Mr Markus Holm	M	13-9-2013	CFO	3.403.392	Finland
43	INVESTOR	Other services	Ms Susanne Maria Elisabeth Ekblom	F	29-4-2011	CFO	35.305.558	Sweden
M43	AUTOMATIC DATA PROCESSING	Other services	Mr Jan Siegmund	M	1-11-2012	CFO	32.268.100	USA
44	ATRIUM LJUNGBERG	Other services	Ingalill Berglund	F	14-3-2011	CEO	3.915.274	Sweden
M44	MOODY'S CORPORATION	Other services	Mr Raymond W. McDaniel	M	26-4-2005	CEO	3.960.900	USA
45	ADDTECH	Other services	Mrs Kristina Willgard	F	9-7-2010	CFO	469.272	Sweden
M45	CDI	Other services	Mr Robert M Larney	M	25-8-2011	CFO	400.705	USA
46	DECHRA PHARMACEUTICALS	Chemicals, rubber, plastics, non-metallic products	Mrs Anne-Francoise Michele Nesmes	F	31-1-2013	CFO	637.551	UK
M46	MCBRIDE	Chemicals, rubber, plastics, non-metallic products	Mr Richard Armitage	M	3-8-2009	CFO	692.185	UK
47	IMPELLAM GROUP	Other services	Ms Julia Robertson	F	8-4-2013	CEO	590.961	UK
M47	MICHAEL PAGE INTERNATIONAL	Other services	Mr Steve Ingham	M	16-12-2005	CEO	545.606	UK
48	SMITH & NEPHEW	Machinery, equipment, furniture, recycling	Mrs Julie Belita Brown	F	19-11-2012	CFO	5.642.000	UK
M48	MEGGITT	Machinery, equipment, furniture, recycling	Mr Doug Webb	M	6-6-2013	CFO	6.130.056	UK

49	RECKITT BENCKISER	Chemicals, rubber, plastics, non-metallic products	Ms Mary Elizabeth Doherty	F	23-11-2010	CFO	23.796.239	UK
M49	MONSANTO	Chemicals, rubber, plastics, non-metallic products	Mr Pierre Courduroux	M	22-12-2010	CFO	20.664.000	USA
50	DIAGEO	Food, beverages, tobacco	Mrs Deirdre Ann Mahlan	F	11-5-2010	CFO	38.513.256	UK
M50	BRITISH AMERICAN TOBACCO	Food, beverages, tobacco	Mr Ben Stevens	M	28-2-2008	CFO	43.122.005	UK
51	EASYJET	Transport	Ms Carolyn Julia McCall	F	23-3-2010	CEO	7.126.704	UK
M51	IRON MOUNTAIN	Transport	Mr William Meaney	M	3-12-2012	CEO	6.358.339	USA
52	LACLEDE GROUP	Gas, Water, Electricity	Mrs Suzanne Sitherwood	F	21-6-2011	CEO	3.125.386	USA
M52	DAYTON POWER AND LIGHT COMPANY	Gas, Water, Electricity	Mr Phil Herrington	M	5-3-2012	CEO	3.464.200	USA
53	AMBAC FINANCIAL GROUP	Insurance companies	Mrs Diana Newman Adams	F	13-6-2011	CEO	26.165	USA
M53	SPARK NETWORKS	Other services	Mr Greg Liberman	M	11-4-2011	CEO	28.364	USA
54	HEWLETT-PACKARD COMPAN	Machinery, equipment, furniture, recycling	Mrs Meg Whitman	F	22-9-2011	CEO	105.676.000	USA
M54	INTEL	Machinery, equipment, furniture, recycling	Mr Brian Krzanich	M	2-5-2013	CEO	92.358.000	USA
55	JPMORGAN CHASE & CO	Banks	Miss Marianne Lake	F	19-11-2012	CFO	2.415.689.000	USA
M55	BANK OF AMERICA	Banks	Mr Bruce Thompson	M	15-4-2011	CFO	2.102.273.000	USA
56	EXPRESS SCRIPTS HOLDING	Wholesale & retail trade	Mrs Catherine R Smith	F	14-1-2014	CFO	58.111.200	USA
M56	CARREFOUR	Wholesale & retail trade	Mr Pierre-Jean Sivignon	M	26-9-2013	CFO	60.486.571	France
57	MICROSOFT	Publishing, printing	Mrs Amy E Hood	F	8-5-2013	CFO	142.431.000	USA
M57	INTERNATIONAL BUSINESS MACHINES	Other services	Mr Martin J. Schroeter	M	7-11-2013	CFO	126.223.000	USA

58	BEST BUY CO	Wholesale & retail trade	Mrs Sharon L McCollam	F	12-11-2012	CFO	16.787.000	USA
M58	LIBERTY INTERACTIVE INTERACTIVE GROUP	Wholesale & retail trade	Mr Christopher W. Shean	M	25-10-2011	CFO	15.115.000	USA
59	INTERNATIONAL PAPER	Wood, cork, paper	Mrs Carol Louise Roberts	F	25-10-2011	CFO	31.528.000	USA
M59	NATIONAL OILWELL VARCO.	Wholesale & retail trade	Mr Jeremy Thigpen	M	6-12-2012	CFO	31.484.000	USA
60	STAPLES	Wholesale & retail trade	Mrs Christine T Komola	F	27-9-2011	CFO	12.280.005	USA
M60	SYSCO	Wholesale & retail trade	Mr R. Chris Kreidler	M	10-9-2009	CFO	12.663.947	USA
61	OCCIDENTAL PETROLEUM	Primary sector	Mrs Cynthia L Walker	F	20-7-2012	CFO	64.210.000	USA
M61	APACHE	Primary sector	Mr Alfonso Leon	M	14-2-2014	CFO	60.737.000	USA
62	XEROX	Other services	Mrs Kathryn A Mikells	F	28-3-2013	CFO	30.015.000	USA
M62	CAESARS ENTERTAINMENT CORPORATION	Other services	Mr Donald Colvin	M	15-11-2012	CFO	27.998.100	USA
63	SOUTHWEST AIRLINES	Transport	Ms Tammy Romo	F	30-8-2012	CFO	19.345.000	USA
M63	PLAINS ALL AMERICAN PIPELINE	Transport	Mr Al Swanson	M	21-8-2007	CFO	19.235.000	USA
64	GLOBAL PARTNERS	Wholesale & retail trade	Mrs Daphne H Foster	F	24-4-2013	CFO	2.329.752	USA
M64	NGL ENERGY PARTNERS	Wholesale & retail trade	Mr Atanas H. Atanasov	M	8-5-2013	CFO	2.291.347	USA
65	NORFOLK SOUTHERN	Transport	Ms Marta R Stewart	F	20-9-2013	CFO	30.342.000	USA
M65	CSX CORP	Transport	Mr Fredrik J. Eliasson	M	23-1-2012	CFO	31.782.000	USA
66	AVON PRODUCTS	Chemicals, rubber, plastics, non-metallic products	Mrs Sherilyn S. (Sheri) McCoy	F	9-4-2012	CEO	7.382.500	USA
M66	ENDO HEALTH SOLUTIONS.	Chemicals, rubber, plastics, non-metallic products	Mr Rajiv De Silva	M	25-2-2013	CEO	6.568.559	USA

67	AVON PRODUCTS	Chemicals, rubber, plastics, non-metallic products	Mrs Kimberly A Ross	F	23-5-2011	CFO	7.382.500	USA
M67	ENDO HEALTH SOLUTIONS	Chemicals, rubber, plastics, non-metallic products	Mr Suketu Upadhyay	M	9-9-2013	CFO	6.568.559	USA
68	FAMILY DOLLAR STORES	Wholesale & retail trade	Mrs Mary A Winston	F	10-4-2012	CFO	3.709.861	USA
M68	IAC/INTERACTIVE GROUP	Wholesale & retail trade	Mr Jeff Kip	M	6-2-2012	CFO	3.805.828	USA
69	ESTEE LAUDER COMPANIES	Chemicals, rubber, plastics, non-metallic products	Miss Tracey Thomas Travis	F	19-7-2012	CFO	7.145.200	USA
M69	OWENS CORNING	Chemicals, rubber, plastics, non-metallic products	Mr Michael C. McMurray	M	16-8-2012	CFO	7.568.000	USA
70	XCEL ENERGY	Gas, Water, Electricity	Mrs Teresa S Madden	F	19-9-2011	CFO	31.140.686	USA
M70	NRG ENERGY	Gas, Water, Electricity	Mr Kirkland Andrews	M	17-8-2011	CFO	35.128.000	USA
71	PUBLIC SERVICE ENTERPRISE GROUP	Gas, Water, Electricity	Mrs Caroline Dolores Dorsa	F	17-3-2011	CFO	31.725.000	USA
M71	GEORGIA POWER COMPANY	Gas, Water, Electricity	Mr W. Ron Hinson	M	4-1-2013	CFO	28.803.000	USA
72	HORMEL FOODS	Primary sector	Mrs Jody H Feragen	F	29-9-2010	CFO	4.915.880	USA
M72	TARGA RESOURCES PARTNERS LP	Primary sector	Mr Matthew J. Meloy	M	20-12-2010	CFO	5.025.700	USA
73	SEALED AIR	Wood, cork, paper	Mrs Carol P Lowe	F	24-5-2012	CFO	9.331.700	USA
M73	MEADWESTVACO	Wood, cork, paper	Mr E. Mark Rajkowski	M	19-7-2004	CFO	10.283.000	USA
74	COGNIZANT TECHNOLOGY SOLUTIONS	Other services	Mrs Karen McLoughlin	F	8-2-2012	CFO	6.521.571	USA
M74	EHOSTAR	Other services	Mr David Rayner	M	4-12-2012	CFO	6.600.233	USA
75	FMC TECHNOLOGIES	Machinery, equipment, furniture, recycling	Mrs Maryann T. Seaman	F	4-11-2011	CFO	5.902.900	USA
M75	FIRST SOLAR	Machinery, equipment, furniture, recycling	Mr Mark Widmar	M	15-3-2011	CFO	6.348.692	USA

76	CELGENE CORP	Other services	Mrs Jacquelyn A Fouse	F	26-8-2010	CFO	11.734.306	USA
M76	ADT CORPORATION	Other services	Mr Michael Geltzeiler	M	14-10-2013	CFO	9.913.000	USA
77	COACH	Wholesale & retail trade	Mrs Jane H Nielsen	F	27-7-2011	CFO	3.531.897	USA
M77	MRC GLOBAL	Wholesale & retail trade	Mr James Braun	M	17-10-2011	CFO	3.369.727	USA
78	CVR ENERGY	Primary sector	Mrs Susan M Ball	F	27-7-2012	CFO	4.023.400	USA
M78	TIDEWATER	Primary sector	Mr Quinn P. Fanning	M	31-7-2008	CFO	4.168.055	USA
79	KRAFT FOODS GROUP	Food, beverages, tobacco	Mrs Teri L. List-Stoll	F	3-9-2013	CFO	23.267.000	USA
M79	CONAGRA FOODS	Food, beverages, tobacco	Mr John F. Gehring	M	16-1-2009	CFO	20.405.300	USA
80	RESOLUTE FOREST PRODUCTS	Wood, cork, paper	Mrs Jo-Ann Longworth	F	20-7-2011	CFO	6.333.000	USA
M80	DS SMITH	Wood, cork, paper	Mr Adrian Marsh	M	20-6-2013	CFO	5.597.699	USA
81	NVIDIA	Machinery, equipment, furniture, recycling	Mrs Colette Kress	F	16-9-2013	CFO	6.412.245	USA
M81	TEREX COP	Machinery, equipment, furniture, recycling	Mr Kevin Bradley	M	14-1-2013	CFO	6.746.200	USA
82	JONES LANG LASALLE	Other services	Mrs Christie B Kelly	F	16-5-2013	CFO	4.351.499	USA
M82	H&R BLOCK	Other services	Mr Gregory J. Macfarlane	M	23-5-2012	CFO	4.537.779	USA
83	AMERICAN EAGLE OUTFITTERS	Wholesale & retail trade	Mrs Mary M Boland	F	31-5-2012	CFO	1.756.053	USA
M83	BIG LOTS	Wholesale & retail trade	Mr Timothy A. Johnson	M	23-8-2012	CFO	1.753.626	USA
84	CARLYLE GROUP L.P.	Other services	Mrs Adena T Friedman	F	13-2-2011	CFO	31.566.600	USA
M84	GENERAL GROWHTH PROPERTIE	Other services	Mr Michael B. Berman	M	28-11-2011	CFO	27.282.405	USA
85	AMERICAN WATER WORKS COMPANY	Gas, Water, Electricity	Mrs Susan N Story	F	20-2-2013	CFO	14.718.976	USA
M85	PEPCO HOLDINGS	Gas, Water, Electricity	Mr Frederick Boyle	M	26-3-2012	CFO	15.794.000	USA
86	COVANCE	Other services	Ms Alison Ann Cornell	F	2-5-2012	CFO	2.556.588	USA
M86	STARZ	Other services	Mr Scott Macdonald	M	9-7-2012	CFO	2.176.050	USA

87	CHICOS FAS	Wholesale & retail trade	Mrs Pamela K Knous	F	23-6-2011	CFO	1.580.628	USA
M87	TITAN MACHINERY	Wholesale & retail trade	Mr Mark Kalvoda	M	11-4-2011	CFO	1.444.074	USA
88	MARKEL CORPORATION	Insurance companies	Mrs Anne G Waleski	F	10-5-2010	CFO	11.777.814	USA
M88	HANOVER INSURANCE GROUP	Insurance companies	Mr David Greenfield	M	15-12-2010	CFO	11.410.600	USA
89	COMERICA	Banks	Mrs Karen L Parkhill	F	27-7-2011	CFO	65.227.000	USA
M89	DISCOVER FINANCIAL SERVICES	Banks	Mr Mark Graf	M	4-4-2011	CFO	73.491.315	USA
90	AOL	Other services	Mrs Karen E Dykstra	F	19-9-2012	CFO	2.983.400	USA
M90	AKAMAI TECHNOLOGIES	Other services	Mr James Benson	M	8-2-2012	CFO	2.600.627	USA
91	VISHAY INTERTECHNOLOGY IC	Machinery, equipment, furniture, recycling	Mrs Lori Lipcaman	F	17-8-2011	CFO	3.016.277	USA
M91	BABCOCK & WILCOX	Machinery, equipment, furniture, recycling	Mr Anthony Colatrella	M	14-11-2011	CFO	2.840.355	USA
92	GRANITE CONSTRUCTION	Construction	Mrs Laurel J Krzeminski	F	9-11-2010	CFO	1.729.487	USA
M92	M.D.C. HOLDINGS	Construction	Mr John M. Stephens	M	30-1-2012	CFO	1.945.441	USA
93	TORO	Machinery, equipment, furniture, recycling	Mrs Renee J Peterson	F	29-7-2011	CFO	1.002.748	USA
M93	IDEXX LABORATORIES	Machinery, equipment, furniture, recycling	Mr Brian McKeon	M	15-10-2013	CFO	1.103.602	USA
94	LOUISIANA PACIFIC	Wood, cork, paper	Ms Sallie B Bailey	F	11-7-2011	CFO	2.331.000	USA
M94	MAYR-MELNHOF KARTON	Wood, cork, paper	Mr Oliver Schumy	M	7-5-2008	CFO	2.147.219	USA
95	MCCLATCHY	Publishing, printing	Mrs Elaine Lintecum	F	16-5-2012	CFO	3.005.131	USA
M95	JOHN WILEY & SONS	Publishing, printing	Mr John Kritzmacher	M	3-6-2013	CFO	2.806.375	USA
96	MINE SAFETY APPLIANCES	Machinery, equipment, furniture, recycling	Mrs Stacy McMahan	F	5-9-2013	CFO	1.111.746	USA
M96	KAMAN	Machinery, equipment, furniture, recycling	Mr Robert D. Starr	M	18-4-2013	CFO	1.096.993	USA



	CBL & ASSOCIATES							
97	PROPERTIES	Other services	Mrs Farzana K Mitchell	F	10-9-2012	CFO	7.089.736	USA
M97	EXPEDIA	Other services	Mr Mark Okerstrom	M	1-9-2011	CFO	7.085.195	USA
98	SELECT COMFORT	Machinery, equipment, furniture, recycling	Ms Wendy Lee Schoppert	F	9-5-2011	CFO	342.021	USA
	SMITH & WESSON							
M98	HOLDING	Wholesale & retail trade	Mr Jeffrey D. Buchanan	M	21-12-2010	CFO	326.989	USA
99	TECUMSEH PRODUCTS	Machinery, equipment, furniture, recycling	Mrs Janice E Stipp	F	18-10-2011	CFO	527.900	USA
M99	LINDSAY CORPORATION	Machinery, equipment, furniture, recycling	Mr James Raabe	M	9-5-2011	CFO	512.296	USA
100	NAVIGANT CONSULTING	Other services	Mrs Lucinda M Baier	F	25-2-2013	CFO	954.450	USA
	WINTHROP REALTY							
M100	TRUST	Other services	Mr John Garilli	M	25-5-2012	CFO	923.163	USA
101	WAUSAU PAPER.	Wood, cork, paper	Mrs Sherri L Lemmer	F	30-4-2012	CFO	700.715	USA
M101	POTLATCH	Wood, cork, paper	Mr Jerald W. Richards	M	5-8-2013	CFO	680.530	USA
102	STRATEGIC HOTELS & RESORTS	Other services	Mrs Diane M Morefield	F	9-3-2010	CFO	2.406.417	USA
	QUINTILES							
M102	TRANSNATIONAL HOLDINGS	Other services	Mr Kevin Gordon	M	2-8-2010	CFO	2.499.153	USA
103	MULTI COLOR	Publishing, printing	Ms Sharon Eileen Birkett	F	9-7-2010	CFO	839.550	USA
M103	MEDIA GENERAL	Publishing, printing	Mr James F. Woodward	M	26-5-2011	CFO	773.421	USA
104	QUANTUM CORPORATION	Machinery, equipment, furniture, recycling	Mrs Linda M. Breard	F	11-1-2011	CFO	369.593	USA
M104	SILICON GRAPHICS INTERNATIONAL	Machinery, equipment, furniture, recycling	Mr Robert J. Nikl	M	30-4-2012	CFO	407.853	USA
105	BEBE STORES	Wholesale & retail trade	Mrs Liyuan Woo	F	30-4-2013	CFO	344.816	USA
M105	PCM	Wholesale & retail trade	Mr Steve Geiser	M	19-11-2012	CFO	365.735	USA

Notes with Appendix B:

M## is the matched announcement regarding CEO/CFO turnover

CEO is for Chief Executive Officer, CFO is for Chief Financial Officer, F is for Female, M is for Male

## Appendix C – Global Gender Gap – Global Index

(source: World Economic Forum, 2016)

Country	Index	Rank	HIGH – LOW
Austria	.716	52	HIGH
Belgium	.745	24	LOW
Denmark	.754	19	LOW
Finland	.845	2	LOW
France	.755	17	LOW
Germany	.766	13	LOW
Greece	.680	92	HIGH
Ireland	.797	6	LOW
Italy	.719	50	HIGH
The Netherlands	.756	16	LOW
Norway	.842	3	LOW
Luxembourg*	.734	34	-
Sweden	.815	4	LOW
United Kingdom	.752	20	LOW
United States	.722	45	HIGH
<i>Average</i>	<i>.760</i>	<i>27</i>	
<i>Weighted average</i>	<i>.743</i>	<b>34</b>	

Index is the score on the Gender Gap Index; rank is the rank on the Gender Gap Index. HIGH or LOW is decided on the basis of being above or below the weighted average rank (i.e, 34).

\* Luxembourg is excluded from the HIGH-LOW classification as it exactly has the (weighted average rank), as a result, when comparing along this classification, we miss out on two announcements and total sample size is 198 (in the case of all announcements) and 98 (in the cases of the matches).

## Appendix D

### Summary statistics for the average abnormal returns in the estimation window

	<i>Total sample</i>			<i>Female sample</i>			<i>Male sample</i>		
	alfa	beta	Market and risk adjusted returns (%)	alfa	beta	Market and risk adjusted returns (%)	alfa	beta	Market and risk adjusted returns (%)
Mean return	-0.0001	0.9462	0.0000	-0.0001	0.8695	0.0000	-0.0001	1.0230	0.0000
Median	0.0001	0.9113	0.0000	0.0001	0.8770	0.0000	0.0002	0.9316	0.0000
Standard deviation	0.0018	0.5175	0.0000	0.0020	0.4954	0.0000	0.0016	0.5300	0.0000
Minimum	-0.0127	-0.4363	0.0000	-0.0127	-0.4363	0.0000	-0.0066	-0.2712	0.0000
Maximum	0.0039	3.2888	0.0000	0.0039	2.0714	0.0000	0.0029	3.2888	0.0000
Skewness	-2.6584	0.6968	-0.3011	-3.1535	0.3020	-0.4202	-1.5904	1.0143	-0.2256
Kurtosis	14.0185	1.7431	1.3648	17.2153	-0.0007	1.8978	4.4714	2.8494	1.0294
N	200	200	200	100	100	100	100	100	100

## Appendix E – Sensitivity analyses

### *Panel A – Sensitivity Analysis for Relevant Press Releases in Event Window*

*This panel shows the (cumulative) average abnormal returns regarding the announcement of a CEO and in the case of relevant and non-relevant releases from the press respectively*

	Relevant Press Releases	No-relevant Press Releases
N	69	131
AAR t=-2	0.0026	0.0018
AAR t=-1	-0.0012	0.0020
AAR t=0	-0.0029	0.0011
AAR t=+1	0.0004	-0.0009
AAR t=+2	0.0008	0.0003
CAAR [-2;+2]	-0.0003	0.0042
CAAR [0;+1]	-0.0025	0.0002
CAAR [-1;+1]	-0.0038	0.0022

AAR is average abnormal return, CAAR is average abnormal returns; returns are estimated according to (1)-(4) in the main body of the paper. t relates to the day in the event window; in brackets is the time window in days. Relevant press releases relate to press releases covering the announcement of other executives or board members and to press releases related to financial issues, such as financial results and dividend declarations. Non-relevant press releases do not include such information.

Appendix E – continued

*Panel B - Sensitivity Analysis for Insider/Outsider Status of Announced CEO/CFO*

*This panel shows the (cumulative) average abnormal returns regarding the announcement of the CEO or CFO being an insider or an outsider respectively.*

	Insider	Outsider
N	106	94
AAR t=-2	0.0026	0.0014
AAR t=-1	0.0015	0.0002
AAR t=0	-0.0014	0.0010
AAR t=+1	0.0013	-0.0024
AAR t=+2	0.0009	0.0000
CAAR [-2;+2]	0.0049	0.0002
CAAR [0;+1]	-0.0001	-0.0015
CAAR [-1;+1]	0.0013	-0.0012

AAR is average abnormal return, CAAR is average abnormal returns; returns are estimated according to (1)-(4) in the main body of the paper. t relates to the day in the event window; in brackets is the time window in days. An insider is defined as a person that has been working at the firm at which she is appointment. With an outsider, this has not been the case for the last five years.

Appendix E - continued

*Panel C - Sensitivity Analysis for CEO or CFO Function of Announced Executive*

*This panel shows the (cumulative) average abnormal returns regarding the announcement of a CEO and CFO respectively.*

	CEO	CFO
N	42	158
AAR t=-2	0.0010	0.0023
AAR t=-1	0.0023	0.0005
AAR t=0	0.0018	-0.0008
AAR t=+1	-0.0001	-0.0006
AAR t=+2	0.0067	-0.0012
CAAR [-2;+2]	0.0117	0.0003
CAAR [0;+1]	0.0017	-0.0014
CAAR [-1;+1]	0.0040	-0.0009

AAR is average abnormal return, CAAR is average abnormal returns; returns are estimated according to (1)-(4) in the main body of the paper. t relates to the day in the event window; in brackets is the time window in days. CEO relates to the newly announced top-executive being the chief executive officer; CFO relates to this person being the chief financial officer.

Appendix E – continued

*Panel D - ANOVA-tests for Sensitivity Analysis of Total Sample of 200 firms at CAAR [0;+1]*

	Relevant versus Not relevant press releases (1)	Insider versus Outsider (2)	CEO versus CFO (3)
F-value	0.2600	0.0663	0.2523
P-value	0.6107	0.7971	0.6160

This table shows the test results of on ANOVA for three different subgroups. Source: Appendix D

The first analysis (1) goes into the role of additional information where we distinct between relevant and non-relevant press releases. A relevant press release is defined as a press release covering the announcement of other executives or board members and press releases related to financial issues, such as financial results and dividend declarations (69 events relate to relevant, 131 to not relevant press releases).

The second analysis (2) compares the impact of the news about whether the appointed CEO / CFO is an insider or an outsider. An insider is defined as a person that has been working at the firm at which she is appointment. With an outsider, this has not been the case for the last five years (106 events relate to insiders, 94 to outsiders).

The third analysis (3) compares the impact of the appointment of a CEO vis-à-vis a CFO (42 events relate to CEOs, 158 to CFOs).



## Appendix F – International perspective

These for panels report the (cumulative) average abnormal returns in countries which score higher (HIGH) or lower (LOW) than the weighted average rank on the Gender Gap Index (see Appendix C) and the differential between the two groups and the (cumulative) average abnormal returns in the US and elsewhere for all turnover announcements regarding CEOs and CFOs (Panel A), for the turnover announcement regarding male CEOs and CFOs (Panel B), for the turnover announcement regarding female CEOs and CFOs (Panel C), and for the differential of the (cumulative) average abnormal returns (female minus male CEOs and CFOs) (Panel D) respectively.

	HIGH	LOW	HIGH- LOW	US	non-US	US- nonUS
<i>Panel A – All</i>						
N	123	75		100	100	
AAR t=-2	0.0026	0.0010	0.0016	0.0020	0.0023	-0.0004
AAR t=-1	0.0019	-0.0006	0.0024	0.0005	0.0012	-0.0007
AAR t=0	0.0005	-0.0024	0.0028	0.0009	-0.0067	0.0025
AAR t=1	0.0020	-0.0043	0.0063	0.0002	-0.0010	0.0013
AAR t=2	0.0020	-0.0022	0.0043	0.0020	-0.0009	0.0028
CAAR [-2;+2]	0.0089	-0.0085	0.0174	0.0056	0.0000	0.0055
CAAR [0;+1]	0.0024	-0.0067	0.0091	0.0012	-0.0026	0.0038
CAAR [-1;+1]	0.0043	-0.0073	0.0115	0.0017	-0.0014	0.0031
<i>Panel B – Male</i>						
N	54	44		50	50	
AAR t=-2	0.0013	0.0028	-0.0015	0.0016	0.0022	-0.0007
AAR t=-1	-0.0011	0.0005	-0.0016	-0.0007	-0.0003	-0.0004
AAR t=0	0.0022	-0.0026	0.0048	0.0021	-0.0004	0.0025
AAR t=1	0.0021	0.0016	0.0005	0.0000	0.0032	-0.0032
AAR t=2	0.0028	0.0058	-0.0029	0.0033	0.0051	-0.0018
CAAR [-2;+2]	0.0074	0.0082	-0.0008	0.0063	0.0098	-0.0036
CAAR [0;+1]	0.0043	-0.0009	0.0052	0.0021	0.0028	-0.0007
CAAR [-1;+1]	0.0032	-0.0004	0.0036	0.0014	0.0025	-0.0011

Appendix F - continued

	HIGH	LOW	HIGH- LOW	US	non-US	US- nonUS
<i>Panel C – Female</i>						
N	54	44		50	50	
AAR t= -2	0.0035	0.0011	0.0024	0.0021	0.0023	-0.0002
AAR t=-1	0.0045	-0.0002	0.0047	0.0018	0.0027	-0.0009
AAR t=0	-0.0004	-0.0022	0.0024	-0.0001	-0.0026	0.0025
AAR t=1	0.0017	-0.0078	0.0095	0.0003	-0.0054	0.0057
AAR t=2	0.0009	-0.0087	0.0096	0.0005	-0.0067	0.0072
CAAR [-2;+2]	0.0102	-0.0184	0.0286	0.0046	-0.0098	0.0143
CAAR [0;+1]	0.0013	-0.0106	0.0119	0.0002	-0.0080	0.0082
CAAR [-1;+1]	0.0058	-0.0108	0.0166	0.0020	-0.0053	0.0073

*Panel D Difference (Female - Male)*

N	54	44		50	50	
AAR t= -2	0.0020	-0.0016	0.0036	0.0004	0.0002	0.0002
AAR t=-1	0.0056	-0.0009	0.0065	0.0026	0.0029	-0.0003
AAR t=0	-0.0024	-0.0006	-0.0019	-0.0021	-0.0024	0.0003
AAR t=1	-0.0007	-0.0090	0.0083	0.0003	-0.0084	0.0085
AAR t=2	-0.0020	-0.0144	0.0124	-0.0029	-0.0119	0.0089
CAAR [-2;+2]	0.0024	-0.0265	0.0289	-0.0020	-0.0196	0.0175
CAAR [0;+1]	-0.0031	-0.0096	0.0064	-0.0021	-0.0108	0.0087
CAAR [-1;+1]	0.0025	-0.0105	0.0130	0.0005	-0.0079	0.0084

AAR is average abnormal return, CAAR is average abnormal returns; returns are estimated according to (1)-(4) in the main body of the paper. t relates to the day in the event window; in brackets is the time window in days.

## References

- Abdullah, S. N., Ismail, K. N. I. K. and Nachum, L. (2016). Does having women on boards create value? The impact of societal perceptions and corporate governance in emerging markets. *Strategic Management Journal*, 37, 466-476.
- Adams, R. B. (2016). Women on boards: The superheroes of tomorrow? *The Leadership Quarterly*, 27, 371-386.
- Adams, R. B. and Ferreira, D. (2009). Women in the boardroom and their impact on governance and performance. *Journal of Financial Economics*, 94, 291-309.
- Adams, R. B. and Funk, P. (2012). Beyond the glass ceiling: Does gender matter? *Management Science*, 58, 219-235.
- Ahern, K. R. and Dittmar, A. K. (2012). The changing of the boards: The impact on firm valuation of mandated female board representation. *Quarterly Journal of Economics*, 127, 137-197.
- Anderson, R. C., Reeb, D. M., Upadhyay, A. and Zhao, W. (2011). The economics of director heterogeneity. *Financial Management*, 40, 5-38.
- Antonakis, J., Bendahan, S., Jacquart, P. and Lalive, R. (2010). On making causal claims: A review and recommendations. *The Leadership Quarterly*, 21, 1086-1120.
- Antonakis, J., Bendahan, S., Jacquart, P. and Lalive, R. (2014). Causality and endogeneity: Problems and solutions. In: D.V. Day (ed.), *Oxford Handbook of Leadership and Organizations*. New York: Oxford University Press, 93-117.
- Athey, S. and Imbens, G. W. (2017). The state of applied econometrics: Causality and policy evaluation. *Journal of Economic Perspectives*, 31, 3-32.
- Beatty, R. P. and Zajac, E. J. (1987). CEO change and firm performance in large corporations: succession effects and manager effect. *Strategic Management Journal*, 8, 305-317.
- Bernardi, R. A., Bosco, S. M. and Vassill, K. M. (2006) Does female representation on boards of directors associate with Fortune's "100 Best Companies to Work For" list? *Business & Society*, 45, 235-248.

- Binder, J. J. (1998). The event study methodology since 1969. *Review of Quantitative Finance and Accounting*, 11, 111-137.
- Boehmer, E., Musumeci, J. and Poulsen, A. B. (1991). Event-study methodology under conditions of event-induced variance. *Journal of Financial Economics*, 30, 253-272.
- Bohnet, I., Geen, A. van and Bazerman, M. (2016). When performance trumps gender bias: Joint vs. separate evaluation. *Management Science*, 62, 1225-1234.
- Bonnier, K.-A. and Bruner, R. F. (1989). An analysis of stock price reaction to management change in distressed firms. *Journal of Accounting and Economics*, 11, 95-106.
- Brown, S. J. and Warner, J. B. (1985). Using daily stock returns: The case of event studies. *Journal of Financial Economics*, 14, 3-31.
- Campbell, C. J., Cowan, A. R. and Salotti, V. (2010). Multi-country event-study methods. *Journal of Banking and Finance*, 34, 3078-3090.
- Campbell, K. and Mínguez-Vera, A. (2008). Gender diversity in the boardroom and firm financial performance. *Journal of Business Ethics*, 83, 435-451.
- Carpenter, M. A. and Sanders, W. M. G. (2002). Top management team compensation: the missing link between CEO pay and firm performance. *Strategic Management Journal* 23(4): 367–375.
- Carter, D. A., Simkins, B. J. and Simpson, W. G. (2003). Corporate governance, board diversity, and firm value. *Financial Review*, 38, 33-53.
- Carter, D. A., D'Souza, F., Simkins, B. J. and Simpson, W. G. (2010). The gender and ethnic diversity of US boards and board committees and firm financial performance. *Corporate Governance: An International Review*, 18, 396-414.
- Chapple, L. and Humphrey, J. E. (2014). Does board gender diversity have a financial impact? Evidence using stock portfolio performance. *Journal of Business Ethics*, 122, 709-723.
- Chava S. and Purnanandam A. (2010). CEOs versus CFOs: incentives and corporate policies. *Journal of Financial Economics*, 97, 263–278.
- Cook, T. D. (2008). "Waiting for life to arrive": A history of the regression-discontinuity design in psychology, statistics and economics. *Journal of Econometrics*, 142, 636-654.

- Cornelli, F., Kominek, Z., and Ljungqvist, A. (2013). Monitoring managers: Does it matter? *Journal of Finance*, 68, 431–481.
- Corrado, C. J. (1989). A nonparametric test for abnormal security-price performance in event studies. *Journal of Financial Economics*, 23, 385-395.
- Crosen, R. and Gneezy, U. (2009). Gender differences in preferences. *Journal of Economic Literature*, 57, 225-245.
- Dedman, E. and Lin, S. W. J. (2002). Shareholder wealth effects of CEO departures: Evidence from the UK. *Journal of Corporate Finance*, 8, 81-104.
- Demsetz, H. (1983). The structure of ownership and the theory of the firm. *Journal of Law and Economics*, 26, 375–390.
- Denis, D. J. and Denis, D. K. (1995). Performance changes following top management dismissal. *The Journal of Finance*, 50, 1029-1057.
- Dezsö, C. L., Ross, D. G. and Uribe, J. (2016). Is there an implicit quota on women in top management? A large-scale sample statistical analysis. *Strategic Management Journal*, 37, 98-115.
- Faccio, M., Marchica, M.-T. and Mura, R. (2016). CEO gender, corporate risk-taking, and the efficiency of capital allocation. *Journal of Corporate Finance*, 39, 193-209.
- Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *Journal of Finance*, 25, 383-417.
- Fama, E. F. (1991). Efficient capital markets: II. *Journal of Finance*, 46, 1575-1617.
- Fama, E. F. (1995). Random walks in stock market prices. *Financial Analysts Journal*, 51, 75-80.
- Fama, E. F., Fisher, L., Jensen, M. C. and Roll, R. (1969). The adjustment of stock prices to new information. *International Economic Review*, 10, 1-21.
- Francoeur, C., Labelle, R. and Sinclair-Desgagné, B. (2008). Gender diversity in corporate governance and top management. *Journal of Business Ethics*, 81, 83-95.
- Furtado, E. P. and Rozeff, M. S. (1987). The wealth effects of company initiated management changes. *Journal of Financial Economics*, 18, 147-160.

- Golding, C. (2014). A grand gender convergence: Its last chapter. *American Economic Review*, 104, 1091-1119.
- Gore, A. K., Matsunaga S. and Yeung, P.E. (2011). The role of technical expertise in firm governance structure: evidence from chief financial officer contractual incentives. *Strategic Management Journal*, 32, 771–786.
- Hambrick, D. (1995). Fragmentation and the other problems CEOs have with their top management teams. *California Management Review*, 37, 110–127.
- Haslam, S. A. and Ryan, M. K. (2008). The road to the glass cliff: Differences in the perceived suitability of men and women for leadership positions in succeeding and failing organizations. *The Leadership Quarterly*, 19, 530-546.
- Hermalin, B. E. and Weisbach, M. (1998). Endogenously chosen boards of directors and their monitoring of the CEO. *American Economic Review*, 88, 96–118.
- Hermalin, B. E. and Weisbach, M. (2003). Board of directors an endogenously determined institution: a survey of the economic literature. *Economic Policy Review of the Federal Reserve Bank of New York*, 9, 7–26.
- Hillman, A. J., Canella Jr., A. A. and Harris, I. C. (2002). Women and racial minorities in the boardroom: How do directors differ? *Journal of Management*, 28, 747-763.
- Huang, J. and Kisgen, D. J. (2013). Gender and corporate finance: Are male executives overconfident relative to female executives? *Journal of Financial Economics*, 198, 822-839.
- Huson, M. R., Malatesta, P. H. and Parrino, R. (2004). Managerial succession and firm performance. *Journal of Financial Economics*, 74, 237-275.
- Ioannou, I. and Serafeim, G. (2012). What drives corporate social performance? The role of nation-level institutions, *Journal of International Business Studies*, 34, 834-864.
- Jensen, M. C. (1978). Some anomalous evidence regarding market efficiency. *Journal of Financial Economics*, 6, 95-101.
- Johnson, J. L. (1996). Boards of directors: A review and research agenda, *Journal of Management*, 22, 409-438.

- Khan, W. A. and Vieito, J. P. (2013). CEO gender and firm performance. *Journal of Economics and Business*, 67, 55-66.
- Lee, P. M. and James, E. H. (2007). She'-E-Os: Gender effects and investor reactions to the announcements of top executive appointments. *Strategic Management Journal*, 28, 227-241
- MacKinlay, A. C. (1997). Event studies in economics and finance. *Journal of Economic Literature*, 35, 3-39.
- Niederle, M., Segal, C. and Vesterlund, L. (2013). How costly is diversity? Affirmative action in light of gender differences in competitiveness. *Management Science*, 59, 1-16.
- Niño, J. and Romero, P. J. (2007). How the change of CEO affects Chilean companies' stock returns. *Latin American Business Review*, 8, 37-64.
- Pessarossi, P. and Weill, L. (2012). *Does CEO Turnover Matter in China? Evidence from the Stock Market*. BOFIT Discussion Papers, 21.
- Post, C. and Byron, K. (2015). Women on boards and firm financial performance: A meta-analysis. *Academy of Management Journal*, 58, 1546-1571.
- Reinganum, M. R. (1985). The effect of executive succession on stockholder wealth. *Administrative Science Quarterly*, 30, 46-60.
- Roscoe, P. (2014). *I Spend Therefore I Am. How Economics Has Changed the Way We Think and Feel*. Toronto, Random House Canada.
- Sedláček, T. (2011). *Economics of Good and Evil*. New York and Oxford, Oxford University Press.
- Simpson, W. G., Carter, D. A. and D'Souza, F. (2010). What we know about women on boards. *Journal of Applied Finance*, 20, 27-39.
- Terjesen, S., Sealy, R. and Singh, V. (2009). Women directors on corporate boards: A review and research agenda. *Corporate Governance: An International Review*, 17, 320-337.
- Wang, M. and Kelan, E. (2013). The gender quota and female leadership: Effects of the Norwegian gender quota on board chairs and CEOs. *Journal of Business Ethics*, 117, 449-466.
- Warner, J. B., Watts, R. L. and Wruck K. H. (1988). Stock prices and top management changes. *Journal of Financial Economics*, 20, 461-492.

Weisbach, M. S. (1988). Outside directors and CEO turnover. *Journal of Financial Economics*, 20, 431-460.

Wessels, R. E., Wansbeek, T. and Dam, L. (2017). What is the relation (if any) between a firm's corporate governance arrangements and its financial performance? *Multinational Finance Journal*, forthcoming.

World Economic Forum (2016). *Gender Gap Report 2016*. Cologne and Geneva, World Economic Forum.



**Table 1****Descriptive statistics of the sample**

<i>Panel A – Firm characteristics (200 firms)</i>					
	Total assets (USD million, 2013)		Operating revenue (USD million, 2013)		Number of employees (2013)
Average	33,700		8,773		24,417
Median	3,992		2,561		6,000
Standard deviation	220,512		18,528		55,567
Minimum	12		38		18
Maximum	2,415,689		112,298		434,246

  

<i>Panel B – Composition (distribution of the sample of 200 firms over industries, years, countries)</i>					
Industry	%	Year	%	Country	%
Banks	3.8	2004	0.5	Austria	1.0
Chemicals	6.7	2005	1.9	Belgium	1.9
Construction	1.0	2006	1.0	Denmark	1.4
Food	4.3	2007	1.0	Finland	1.9
Hotels	1.9	2008	1.4	France	3.8
Insurance	3.3	2009	1.9	Germany	5.7
Machinery	15.7	2010	12.4	Greece	1.4
Metals	1.0	2011	24.8	Ireland	1.9
Other	20.0	2012	29.5	Italy	1.0
Primary products	2.9	2013	23.8	Luxembourg	1.0
Publishing	5.2	2014	1.9	Netherlands	1.9
Telecom	5.7			Norway	1.4
Textiles	1.0			Sweden	10.0
Transport	4.8			UK	5.2
Utilities	4.8			US	60.0
Consumer goods	12.9				
Woods	5.2				

**Table 2**

**Average abnormal returns (AARs) of the announcement of CEO/CFO appointments for the total sample (N = 200; 100 female appointments and 100 male appointments)**

Day	AAR (%)	Standardized cross-sectional test (p-value)	Corrado's rank test (p-value)
-2	0.2058	0.3214	0.3523
-1	0.0870	0.4938	0.6380
0	-0.0278	0.9370	0.7858
+1	-0.0483	0.3824	0.4659
+2	0.0494	0.9004	0.8750

AAR is average abnormal return; the tests are explained in Appendix A of the paper. Day relates to the day in the event window.

**Table 3**

**Difference in average abnormal returns (AARs) between the announcement of female and male CEO/CFO appointments (calculated as female minus male) (N = 100 pairs)**

Day	difference in AARs (%)	Standardized cross- sectional test (p-value)	Corrado's rank test (p-value)
-2	0.0309	0.8291	0.8924
-1	0.2731	0.1606	0.2000
0	-0.2238	0.2390	0.1940
+1	-0.4201	0.4700	0.7823
+2	-0.7386	0.0763	0.1621

AAR is average abnormal return; the tests are explained in Appendix A of the paper. Day relates to the day in the event window.

**Table 4**

**Cumulative average abnormal returns (CAARs) of top-executive appointments in the total sample**

**(N = 200; 100 female and 100 male)**

CAAR window	CAAR (%)	Standardized cross-sectional test (p-value)	Corrado's rank test (p-value)
[-2; +2]	0.2662	0.8366	0.8031
[0;1]	-0.0761	0.4777	0.4791
[-1;+1]	0.0109	0.7991	0.7592

CAAR is average abnormal returns; returns are estimated according to (1)-(4) in the main body of the paper and test statistics according to Appendix A. In brackets is the time windows in days.

**Table 5**

**Difference in cumulative average abnormal returns (CAARs) between female and male CEO/CFO appointments (calculated as female minus male) (N = 100 pairs)**

CAAR window	Difference in CAAR (%)	Standardized cross-sectional test (p-value)	Corrado's rank test (p-value)
[-2; +2]	-1.0784	0.2314	0.4129
[0;1]	-0.6438	0.1575	0.2652
[-1;+1]	-0.3707	0.6770	0.8654

CAAR is average abnormal returns; returns are estimated according to (1)-(4) in the main body of the paper and test statistics according to Appendix A. In brackets is the time windows in days.