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## FINANCIAL ECONOMICS | RESEARCH ARTICLE

# Women on boardroom: Does it create risk?

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**Abstract:** This study examines the impact of the women existence on corporate board. It is believed that the existence of women on board adds more value to the company as more women bring different perspectives on the decision-making process and the company's strategic plans. Using Islamic listed-firms in the Indonesian Stock exchange, this study employs 7-year panel data comprising 840 observations from 2009 to 2015 quarterly data of 30 listed-firms that comply with Islamic law. Generalized Least Square is employed in this study and the results revealed that the presence of female CEOs has lowered the firm's risk for all risk proxies. Female CEOs having a higher academic qualification, overseas qualification, and business degree tends to lower the firm's risk. The result also indicates that the younger the age of female CEOs and the longer tenure of the female CEOs, the lower the firm's risk. Furthermore, more female directors on boardroom have a significant impact on firm's risk as the higher the number of female directors the lower the firm's risk (CR and FCF). In addition, female chief financial officer tends to lower the firm's risk as they are believed to be more conservative in dealing with the financial issues.

**Subjects:** Finance; Corporate Finance; Corporate Governance

**Keywords:** female directors; firm risk; firm value; Islamic listed-firms; Indonesian Stock Exchange

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### PUBLIC INTEREST STATEMENT

The inclusion of women on boards is often seen as a good business decision because women directors are hypothesized to bring benefits to the company through their performance as directors. Women directors possess unique attributes that increases financial performance as diversity enhances independence, innovation, and governance. Diversity of thought results in better decision-making, and ultimately, better firm performance. Women are expected to have a conscious commitment to assume their roles and responsibilities in the company. Thus, this study aims to examine the impact of female directors on firm risk. Specifically, this study attempts to break down female directors' characteristics into few parts, such as their education qualification, education background, an education major, and their span of age and tenure. Using their education characteristics is compelling as it can explain whether it reduces firm risk. Further, a female chief financial officer is included in this study as they directly involve in the financial management of the company in which risks could be altered.

## 1. Introduction

In the past, women have been considered as a mere housewife and they are strictly prohibited from working in the formal sector. However, the traditional practice is no longer withstood with the changes of culture and technology in the last few decades. Not only have the changes been caused by the rise of economic needs, they have also been caused by the needs to be recognized in the society. Moreover, women are more educated and competent, and it leads to the wider opportunity for women to be employed. Over the last decade, more women are taking part in the formal sector across all industries. Despite this significant transformation, yet the equality between men and women is implicitly different in terms of opportunity, income, and workplace conditions.

The higher the participation rate of women in the labor force, the faster the economic growth, and apparently, women participation rate on the global labor force counts for 50% (Organization for Economic Cooperation & Development, 2009). If this increase is also accompanied by an increase in the quality of education for women, a higher economic growth is more plausible (Organization for Economic Cooperation & Development, 2012). However, an increase of education quality for women does not always lead to a better labor market outcome (UN Women, 2016). Furthermore, not only has the participation rate become important, the quality of the job has also become paramount. Although more women are working in the formal sector, they still have to be responsible for household chores and raising kids, and this can lead to higher burden and to a higher possibility of stress for women. Moreover, it is also believed that women are inseparable with the kids' issues and they are unable to restrain themselves from this responsibility.

Even though educated women are on the rise over the last two decades, women are still struggling to gain an access to decent work. Often, women face the challenge of having to balance the working life and family life. More effort and time will be needed in the workplace particularly if they want to move up the corporate ladder. Generally, women work longer hours per day at both paid and unpaid works than men. According to ILO (2016), employed women (either in self-employment or paid employment) have longer working days on average than employed men, in both developing and developed countries. The juggling of work and family may result in firm's management, especially the large companies, to consider employing women. Consequently, women tend to prefer to work in the micro and small enterprises that offer flexibility. According to ILO (2016), more than one-third of women are employed in the wholesale and retail trade services (33.9%), while about 12.4% of women are engaged in the manufacturing sector in the upper-middle income countries. The major source of employment for women in the high-income countries is health and education sectors, which count for 30.6% of the labor market. On the other hand, the agricultural sector is the main source of employment for women in the low-income and lower-middle income countries. Ironically, over 60.0% of women remain in the agricultural sector in developing countries, and they are remunerated poorly or not remunerated.

In contrast to developed countries where women constitute 48.1% in the managerial, professionals and technicians sectors (high paid job) of total employment, the women in the developing countries constitute over 60% in the clerical, services, and sales sectors (low paid job) of total employment (ILO, 2016). Moreover, only 5.0% or less of women occupied the chief executive officers position of the world's largest corporations, and only 30.0% of women owned and managed business in the micro and small enterprises (ILO, 2016). Hence, the fact that only a few women occupying leadership position are undeniable.

Although only about 40.0% of women worked in the managerial, professionals and technicians sectors (high paid job) in developing countries, yet very few women were able to occupy top management positions. The fact that most of the women occupying the top management positions were selected based on kinship or collegiality, and only a few women who have progressed to the top positions were based on their professional career ladder is prevalent. Hence, gender diversity in the boardrooms has been a topic of corporate governance discussion, especially since the last decade.

Even in the USA, the percentage of women in the boardrooms is only about 15%, and this low composition has become a major concern as investors have pushed companies to disclose gender diversity.

Having gender diversity on boardrooms provides some benefits to the company. It is believed that diversity affects higher financial performance as diversity provides more independence, innovation, and good governance. Further, diversity of thought, higher competitive advantage, and diversity of skills are some advantages of having women in the boardroom. It is widely believed that diversity of thought results in better decision-making and this leads to a better firm performance. Moreover, women are expected to have a conscious commitment to assume their roles and responsibilities in the company.

There is no particular law in Indonesia regulating the minimum number of women on the company's board. Further, there are no corporate governance guidelines for gender diversity under the Indonesian stock exchange's (IDX) code. However, the Indonesian government in 2012, enacted a regulation regarding the minimum number of women required as representatives for parliamentary seats, and it was stated that a minimum of 30% of all candidates for political parties is required to be filled by women. In spite of having a massive gender awareness and good corporate governance awareness campaign, the number of women on board in Indonesian companies is somewhat lower, accounting for about 11.1% in 2016, (Korn Ferry Diversity Scorecard, 2016). This number is slightly lower compared to the number of women on board which accounted for 11.6% as published by Centre for Governance, Institutions & Organisations Report (2012). The low women representation is likely due to the lack of institutional support. Despite the pressure from various parties to increase the number of women in the boardroom, the gender composition of Indonesian boardrooms is still uncertain, and the risk of having more female directors on boards is yet to be known.

The latest study conducted by Loukil and Yousfi (2015), which examined the impact of gender diversity on corporate risk-taking using Tunisian listed-firms, found that gender diversity has no significant effect on risk as measured by liquidity and turnover ratio. They employed stock return and trading volume to calculate liquidity and turnover ratio as a proxy for risk. Similar to Loukil and Yousfi (2015) that employed market-based measure as risk proxies, Sila, Gonzalez, and Hagendorff (2016) investigated the relationship between women on board and firm risk. The result reveals that firms with more female directors tend to have lower equity risk as measured by total risk, systematic risk, and idiosyncratic risk which are calculated using the daily stock returns. Using the daily stock return to measure risk can be fruitful, however, it has to be noted that the stock prices varied daily; Subsequently, the timing of female directors' appointment should be maintained well to adjust the timing gap as it will affect the stock price changes. Further, the stock price changes can be affected by many factors which may introduce noises to the results. Using a quarterly data-set of Islamic firms listed on the IDX which spans from 2009 to 2015, this study aims to examine the impact of female directors on the firm risk. Specifically, this study attempts to break down female directors' characteristics into few parts, such as their education qualification, education background, an education major and their span of age and tenure. Using their education characteristics is compelling because the results of analysis can be used to explain whether their characteristics have an impact on firm value or not. Further, a female chief financial officer (CFO) is included in this study as they directly involve in the financial management of the company in which risks could be altered.

We noted that the previous literature used a market-based measure such as stock return movements as a proxy for risk (Loukil & Yousfi, 2015; Sila et al., 2016). This paper contributes to the current literature as we found that the presence of female CEOs has lower the firm's risk proxied by a number of accounting-based measures which include cash ratio, debt ratio, and free cash flow (FCF) ratio. Second, the findings of this study highlight that the director's gender having demographic attributes such as higher academic qualification, overseas qualification, and a business degree do lower the firm risk. Third, this study also documents that younger female directors with long tenures contribute to firm's financial stability as the firm have lower risk measured by cash ratio, debt ratio,

and FCF ratio. In addition, this study supports the notion that female director tends to be conservative toward risk when dealing with the financial issues.

## 2. Literature review

The gender diversity has been extensively studied in recent years (Adams & Ferreira, 2009; Adams & Raganathan, 2013; Berger, Kick, & Schaeck, 2014; Faccio, Marchica, & Mura, 2016; Loukil & Yousfi, 2015; Sapienza, Zingales, & Maestripieri, 2009). Though there is a significant change where the existence of women on boards has been acknowledged, and their appointment can increase firm financial performance and decrease firm risk, yet it is also believed that their appointment on board seats is considered as mere tokenism. Fortune Report (2016) affirmed that women constitute roughly 16% of board seats from S&P 1500 companies in the period of 1997–2014. The report also revealed that female directors on boardroom tend to be younger with an average age of 60 compared to male directors with an average of 63. In addition, 42.1% of female directors tends to have a shorter tenure of fewer than 5 years. Moreover, women are likely to serve on more than two boards which count for 18.9%. Tokenism is considered to be apparent in the boardrooms as if one woman is appointed to a board; it appears there will be a chance finding other women to occupy the directors' positions. According to Fortune Report (2016), 29.0% of companies in the S&P 500 without women on their boards previously had now included a woman; 15.0% of boards with one woman had the additional woman added, and 6% of companies with two women on their boards added an additional woman in the fiscal year 2014.

The appointment of women is considered to be beneficial as women on board increase the diversity of opinions and provide female role model (Catalyst, 1995), influence the leadership styles and the decision-making (Rosener, 1990), improve the firm's image (Mattis, 1997), provide strategic thinking (Bilimoria, 2000), increase the likelihood of firm's survival and growth (Basyith, Idris, & Fitriya, 2014; Weber & Zulehner, 2010), and decrease leverage and earning volatility (Faccio et al., 2016). However, there are two types of directors; executive directors and non-executive directors; and if women are appointed to the executive seat, it may indicate that they have a distinguished capability as their appointment is based on normal career advancement level and, hence only those having greater managerial advancement, longer experience, and higher education levels will be chosen. As female directors having higher academic qualification increase firm performance (Smith, Smith, & Verner, 2006), and qualified and skillful board members can be considered as judicious resource to provide strategic linkage to different external resources (Ingley & van der Walt, 2001), and ultimately, it leads to adding value to the firm (Carpenter & Westphal, 2001). In contrast, non-executive female directors are appointed by invitation of the board chairman or a nominating committee and they are more likely to be employed in higher occupation types, the public sector, or in larger organizations than executive directors were. Their appointment is at the discretion of the chairman or nominating committee (Burgess & Tharenou, 2000), nevertheless, they also bring a different strategic direction (Selby, 2000) and a broader view of thinking (Fondas, 2000) to the company.

Mohan (2014) asserted that communication and interpersonal skills are often seen in female leaders while rationality and domination are generally exhibited by male leaders. Moreover, female directors can fill the gaps of having insufficient competent male directors (Burke & Kurucz, 1998). In addition, it is believed that the behavior of directors depends on the gender in facing several situations (Johnson & Powell, 1994). A woman is considered to have different emotional reactions in responding to risk compared to the male director (Croson & Gneezy, 2009). The risk is often associated with a negative term and, it is human nature that risk tends to be avoided. To the extent on how far human can bear risk has been studied extensively (Byrnes, Miller, & Schafer, 1999; Croson & Gneezy, 2009). It is also believed that there are some traits that distinguish between men and women when it comes to a decision involving risks. Such traits are genetic differences (Saad & Gill, 2000), overconfidence behaviour (Barber & Odean, 2001; Bertrand, 2011; Niederle & Vesterlund, 2007), gender-stereotypic characteristics (Diekmann, Eagly, & Kulesa, 2002), psychological and social considerations (Meier-Pesti & Penz, 2008), and power and compassion (Schwartz & Rubel, 2005).

Some studies found that women are more risk averse than men (Barber & Odean, 2001; Beckmann & Menkhoff, 2008; Croson & Gneezy, 2009; Eckel & Grossman, 2008). A presumption of conceding that women are more risk averse compared to men would only affect to more appointment of positions involved higher risk taking that will be prioritized to men (Croson & Gneezy, 2009). However, Adams and Funk (2012) stated that women occupied higher positions differ from those women among the general population as those women solely concerned about achievement and authority. Furthermore, it is still ambiguous whether or not women are more risk averse than men in particular when they occupied higher positions in the boardroom. Elsaid and Ursel (2011) and Faccio et al. (2016) found that higher female representatives on board generate lower leverage, lower earnings' volatility and a higher chance of firm's survival. Hence, a general inference cannot be derived due to inconclusive results among scholars. However, some studies found no evidence of gender differences in risk taking (Atkinson, Baird, & Frye, 2003; Cosentino, Montalto, Donato, & via, 2012).

There are also some studies distinguish between female directors in the financial industry (Adams & Ragunathan, 2013; Berger et al., 2014; Sapienza et al., 2009) and in the non-financial industry (Faccio et al., 2016). In terms of financial and investment decision, some studies affirmed that women tend to be risk averse (Ertac & Gurdal, 2012; Halko, Kaustia, & Alanko, 2012; Jianakoplos & Bernasek, 1998; Vandegrift & Brown, 2005). Sapienza et al. (2009) affirmed that female director in non-financial industries is more risk-averse than female directors in the financial service industry. Moreover, if CFO is female, then it is believed that they will be more conservative in dealing with the accounting policies (Francis, Hasan, Park, & Wu, 2010), less likely to manipulate earnings' statement (Chava & Purnanandam, 2010), and less likely to issue long-term debt and make significant acquisitions (Huang & Kisgen, 2013). Furthermore, female CFOs are more risk-averse than male CFOs when making their financial decisions (Huang & Kisgen, 2013). Female directors prefer to take less risk compared to male directors (Elsaid & Ursel, 2011; Martin, Nishikawa, & Williams, 2009; Muldrow & Bayton, 1979; Schmidt & Traub, 2002). An appointment of new female CEO leads to a reduction in the firm's stock return volatility (Martin et al., 2009) and a reduction in the firm's risk profile (Elsaid & Ursel, 2011). In contrast, Adams and Ragunathan (2013) asserted that women in finance have the same risk preferences as men in finance. They found that during the previous financial crisis (2007–2009) most firms in their sample have the same risk exposure though those firms have higher representatives of the female, and further having more female directors lower firm performance (Fauzi & Locke, 2012). It can be concluded that all men are identical when they are exposed to risks while women perceived it differently.

Younger female directors compared to male directors are believed to bring some benefits to the company, such as new ideas and strategies (Burke, 1994; Ibrahim & Angelidis, 1994). They are associated with long-term company success and competitive advantage (Cassell, 1997), higher value-added through distinctive skills (Green & Cassell, 1996), greater sensitivity of corporate social responsibility (Ibrahim & Angelidis, 1994), increased profitability (Catalyst, 1995), and higher intellectual capital (Daily, Certo, & Dalton, 1999). However, Berger et al. (2014) who examined the directors' characteristics in terms of gender, age and education found that younger and higher proportion of female executives increase firm's risk, while the higher academic degree of female executives decreases firm's risk. They argued that the result may be caused by the fact that female directors were less experienced than male directors in their sample.

In the latest studies by Lenard, Yu, and York (2014), Loukil and Yousfi (2015) and Sila et al. (2016) that measured the effect of gender diversity on corporate performance in terms of firm risk using the variability of stock market return, and they found that gender diversity on the board of directors impacts firm risk by contributing to lower variability of stock market return. Their result is similar to the result found by Adams and Ferreira (2004) and Hillman, Shropshire, and Cannella (2007) in that firm with higher stock return variability and compensation structure complexity tend to have less female directors. As we discussed earlier that using the daily stock returns to measure risk can also cause a misleading conclusion as there will be timing constraints during the study period that we should consider, hence using an accounting based-measured to measure risk, this study attempts to

examine the impact of women directors on firm's risk as mentioned before that female directors prefer to take less risk compared to male directors (Berger et al., 2014; Elsaid & Ursel, 2011; Martin et al., 2009; Schmidt & Traub, 2002). Furthermore, Fauzi and Locke (2012) found that female directors lower firm performance. Moreover, Basyith (2016) found that education qualification of the director has a significant impact on improving firm performance. Based on the aforementioned theories and empirical evidence, the following hypotheses are formulated:

H1: Female participation in the boardroom has a significant effect on risk-taking.

H2: Female directors' characteristics (academic qualification, academic institution, academic major, age, and tenure) have a significant effect on risk-taking.

Further, this study compares if female CFOs has more influence on firm risk attitude than female CEOs, and the hypothesis is as follows:

H3: Comparing to female CEOs, female CFOs represent more influence on firm risk attitude.

### 3. Methodology

#### 3.1. Data

The data for this study were obtained from the IDX database archive. This study employs quarterly data due to the drawback of using annual financial data which lies in the interpretation of data over time involving the uncertainty in the timing of events that many data series may exhibit activities or movements that recur every year in the same quarter. For example, the appointment of directors differs for each company as one company can appoint the new directors in the beginning of the financial accounting date report and other company can appoint them in the mid or the end of financial accounting date report. Hence, to capture specific changes in the board directors' composition over time, a quarterly data is more appropriate to be employed. Further, the cash ratio and FCF may change significantly every month and the changes may be caused by the seasons as sales usually are at its peak in December. As many industries experience seasonal demand patterns, using quarterly data can capture these dynamic changes in the data series over time. Further, though the quarterly data is not verified by the professional accountant, this quarterly data is audited by the internal auditor and is approved by the board of directors, and hence the reliability of quarterly data ensues.

Using 30 Indonesian listed-firms categorized as Sharia-based firms compliance which is referred as Jakarta Islamic Index (JII) firms and seven years sampling period which starts from 2009 to 2015, therefore, 840 observations of panel data are employed in this study. The JII index is an index created in July 2000, in the IDX to accommodate the market needs. This index only includes all listed-firms (1) complying with Islamic Laws, (2) having obligation asset ratio of no more than 90%, (3) having highest liquidity, and (4) having highest market capitalization. Therefore, it can be concluded that the majority of these firms included in this index could also be listed on the blue-chip index which is referred to as an LQ45 index. The JII index is announced every six months per year, and thus 14 announcement lists are available during the period of this study. Therefore, there are more than 30 firms which are included in the JII index in the sampling period. Non-random sampling technique is employed using purposive sampling and, this study used only 30 firms in the analysis which are selected based on the following criteria: (1) the selected firms should be listed by the JII index for at least six times out of 14 announcements; and (2) the selected firms should have all the information required for the analysis. Moreover, to mitigate the problem of missing values, this study uses multiple imputations by including the weighted value to compensate the missing value excluded in the model (Raghunathan, 2004).

### 3.2. Variables

Most studies of gender diversity in relation with risk employed stock return variability as a measure of risk proxy (Adams & Ferreira, 2009; Hillman et al., 2007). Stock price and trading volume were commonly employed to calculate total risk, systematic risk, and idiosyncratic risk. The use of stock return variability as risk proxy is categorized as a market-based measure indicator. However, there are some studies employed liquidity measures (cash ratio and leverage ratio) as risk proxies. This risk proxy is categorized as an accounting-based measure indicator. This study employs accounting-based measures as risk proxies for the dependent variable, which include cash ratio, debt ratio, and FCF. The measurement scale of these variables is a ratio. Cash ratio is measured as the ratio of cash available over the total of current liabilities; debt ratio is measured as the ratio of total debt to total assets, and FCF is measured as the ratio of total FCF available over the total assets.

CEO's characteristics including gender, academic qualification, type of academic degree, age and years of experience, the percentage of female directors on board, and the gender of CFO are employed as explanatory variables. The measurement scale for CEO's gender, type of academic degree, and the CFO's gender, a dummy variable is employed; If the CEO's gender is female, it is set as "1", otherwise it is set equal to "0"; if the female CEO's academic attained is awarded from domestic university, it is set as "1", otherwise it is set equal to "0"; if the female CEO's academic major is business major, it is set as "0", otherwise it is set equal to "1". For CEO's academic qualification, the academic qualification is only be used if the CEO is female, and there are four group of academic qualification; high school graduate qualification, undergraduate qualification, graduate qualification, and postgraduate qualification. The measurement scale of this variable is nominal, and this is coded as follows: The high school graduate is coded as 1 if the CEO's having graduate from high school, the undergraduate is coded as 2 if the CEO's having graduate from undergraduate degree, the graduate is coded as 3 if the CEO' having graduated from graduate degree, and the postgraduate is coded as 4 if the CEO's having graduate from postgraduate degree. If the CFO's gender is female, it is set as "1", otherwise it is set equal to "0".

For CEO's age and years of experience, an absolute number of CEO's age and years of experience is employed. The measurement scale of these variables is a ratio. Percentage of female directors is measured as the ratio of total female directors over a total number of directors on the board. The control variables are the firm size and ownership type (state-owned enterprises, domestic private firms, and foreign private firms).

### 3.3. Model specification

This study attempts to examine the impact of independent variables on dependent variables using observable data (numerical data) and, thus a quantitative method of analysis is employed. Furthermore, this study uses the panel data method which offers more advantages in moderating some issues in the regression model. Apart from eliminating unobservable heterogeneity for each observation in the sample, panel data allows multicollinearity among variables to be alleviated as those two issues yield bias estimates resulting from spurious correlation with the dependent variable (Baltagi, 2005). A model for the regression of women on board is then:

$$y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + \beta_6 X_{6it} + \beta_7 X_{7it} + \beta_8 X_{8it} + u_{it}, \quad (1)$$

$$u_{it} = \mu_i + \lambda_t + v_{it}, \quad (2)$$

$$i = 1, \dots, N; \quad t = 1, \dots, T,$$

where  $y_{it}$  is firm's risk/value represented by cash ratio, debt ratio, and FCF.  $X_{1it}$  is CEO's gender,  $X_{2it}$  is CEO's academic qualification,  $X_{3it}$  is CEO's academic qualification attained,  $X_{4it}$  is CEO's academic major,  $X_{5it}$  is CEO's age,  $X_{6it}$  is CEO's years of experience,  $X_{7it}$  is percentage of female directors, and  $X_{8it}$  is CFO's gender.  $\mu_i$  denotes the unobservable individual effect,  $\lambda_t$  denotes the unobservable time effect, and  $v_{it}$  is the remainder stochastic disturbance term. This model describes three parallel

regression planes, which can differ in their intercepts. Hereafter, the  $X_{1it} \dots X_{nit}$  will be referred as  $X_{it}$  (set of regressors):

$$y_{it} = \alpha_i + \beta'x_{it} + u_{it}, \quad i = 1, \dots, N \text{ and } t = 1, \dots, T, \tag{3}$$

where  $x_{it}$  is a  $K \times 1$  vector of regressors,  $\beta$  is a  $K \times 1$  vector of parameters to be estimated, and  $\alpha_i$  represents time-invariant individual nuisance parameters. Under the null hypothesis,  $u_{it}$  is assumed to be independent and identically distributed (IID) over periods and across cross-sectional units.

#### 4. Analysis

The sample for the study consists of 30 listed firms selected for the periods from 2009 to 2015. Quarterly data is collected from over this 7-year period; hence, it translates to 840 observations. Table 1 provides the descriptive statistics used in this study. The table depicts the number of observations, mean, standard deviation, and minimum and the maximum value of each variable. The dependent variables are CEO's gender, CEO's academic qualification, CEO's academic attained, CEO's academic major, CEO's age, CEO's years of experience, the percentage of female directors, and CFO's gender, and each of these dependent variables is regressed toward its explanatory variables.

The mean value of cash ratio is 0.3461 with a range of 0.1666–3.5636, suggesting that most of the firms experienced low liquidity of their short-term financial liabilities. The cash ratio is the most conservative measure compare to another liquidity ratio as only cash can be used to pay short-term liabilities in due. This is one of the reasons that many creditors rely on the cash ratio when deciding the debtors' creditworthiness. However, a large number of cash retained in the company may also indicate that the company has poor asset utilization as this large idle amount of capacity can be utilized in the profitable investment.

The mean value for debt ratio is 0.4105 with a range of 0.0567–5.8410, suggesting that most of the firms under the observation are having a moderate leverage. Though higher debt indicates that the company has higher opportunities to grow in future yet it also indicates that the firms are exposed of insolvency and/or bankruptcy. Most of the firms in the sample are asset-intensive firms; hence, it is reflected in the higher debt ratio. Further, a debt ratio of 0.4105 or over is considered as moderate as these firms tend to have stable cash flow.

**Table 1. Descriptive statistics**

| Variables                            | Obs. | Mean    | Std. dev. | Kurtosis | Skewness | Min     | Max     |
|--------------------------------------|------|---------|-----------|----------|----------|---------|---------|
| Cash ratio                           | 840  | 0.3461  | 0.2538    | 33.1744  | 3.2778   | 0.1666  | 3.5636  |
| Debt ratio                           | 840  | 0.4105  | 0.3058    | 157.6956 | 10.2698  | 0.0567  | 5.8410  |
| Free cash flow                       | 840  | 0.0195  | 0.2778    | 39.5834  | -0.3155  | -3.1892 | 2.6124  |
| CEO's gender (f)                     | 840  | 0.0714  | 0.2577    | 9.1428   | -3.3346  | 0.0000  | 1.0000  |
| CEO's academic qualification         | 840  | 1.9333  | 0.6580    | 11.2916  | 3.5684   | 1.0000  | 4.0000  |
| CEO's academic attained              | 840  | 0.4694  | 0.4994    | -1.9900  | 0.1229   | 0.0000  | 1.0000  |
| CEO's academic major                 | 840  | 0.0714  | 0.2577    | 9.1428   | 3.3346   | 0.0000  | 1.0000  |
| CEO's age                            | 840  | 38.5459 | 5.3549    | -0.1150  | -0.0766  | 29.0000 | 51.0000 |
| CEO's years of experience            | 840  | 5.6416  | 4.5032    | 1.9983   | 1.2770   | 5.0000  | 23.0000 |
| Percentage of female directors       | 840  | 0.1075  | 0.1433    | 6.7067   | 1.8602   | 0.0000  | 1.0000  |
| Chief financial officer's gender (f) | 840  | 0.2857  | 0.4520    | -1.0994  | -0.9505  | 0.0000  | 1.0000  |
| Firm size                            | 840  | 7.1435  | 0.4401    | 0.4943   | 0.4514   | 6.1346  | 8.4078  |
| Ownership type                       | 840  | 1.7143  | 0.7959    | -1.2071  | 0.5573   | 1.0000  | 3.0000  |

The mean value of FCF is 0.0195 with a range of -3.1892 to 2.6124, suggesting that most of the firms in the observation are having a moderate FCF. A positive FCF indicates that the company ability in generating cash to be distributed to the shareholders or re-investment purposes and this firm may be categorized as a healthy firm. However, a negative FCF does not always mean that the company is in a worse state, as it can be a sign of large re-investment made and the return generated may be higher for distribution to the shareholders. Though the sample in this study exhibits a lower FCF, it does not mean that the firms in the sample are not profitable.

The mean value of CEO's gender is 0.0714 with a range of 0-1, suggesting that only 7.14% of the CEO is female in the sample used. The lower number of female CEO may be due to the fact that: (1) most firms only fill the minimum number of female directors required by the Stock Exchange Commission (SEC); (2) most firms are owned by family or family group and large institutions; and (3) women empowerment is still uncommon in the Asian culture. Therefore, most firms tend to merely comply with the corporate governance rule.

The mean value of CEO's female of academic qualification is 1.9333 with a range of 1-4, suggesting that most CEO's female academic qualification is at the level of undergraduate degree. The mean value of CEO's female of academic attained is 0.4694 with a range of 0-1, suggesting that 53.06% of CEO's female is graduated from foreign university. The mean value of CEO's female of an academic major is 0.0714 with a range of 0-1, suggesting that 92.86% of CEO's female is graduated from a business major. The mean value of CEO's female age is 38.5459 with a range of 28-51, suggesting that most CEO's female is in their productive stage. The mean value of CEO's female years of experience is 5.6416 with a range of 5-23, suggesting that most CEO's female is in their initial stage of their management career. The mean value of the percentage of female directors on board is 0.1075 with a range of 0-1, suggesting that only 10.75% directors on the board are female. The mean value of CFO's gender is 0.2857 with a range of 0-1, suggesting that 28.57% of CFO's gender is female.

Table 2 provides the summary of regression results for all risk proxies (cash ratio, debt ratio, and FCF). The CEO gender coefficient for Debt Ratio is negatively and statistically significant, suggesting that the presence of female CEOs have lowered the firm's risk in terms of debt ratio. Similar to Debt Ratio, the CEO gender coefficient for Cash Ratio and FCF Ratio is a positive and statistically significant, suggesting that the presence of female CEOs has a positive impact on the firm's risk in terms of cash ratio and FCF ratio. This result is in line with Muldrow and Bayton (1979), Martin et al. (2009), Elsaid and Ursel (2011), Schmidt and Traub (2002) that female directors prefer to take less risk compared to male directors.

The CEOs academic qualification coefficient for Debt Ratio, Cash Ratio, and FCF Ratio is positively and statistically significant, suggesting that the higher the academic qualification of female CEOs the lower the firm's risk. As the risks are proxied by the debt ratio (DR), cash ratio (CR), and FCF ratio, therefore, the positive sign of the coefficient indicates that having higher DR, CR, and FCF reduces the firm's risk. Though, the higher debt ratio may indicate higher risk, however, most of the firms used in this study are relatively large firms, hence higher debt ratio may not be an indication of higher risk. The higher debt ratio may indicate that the firm has high likelihood of future earnings stability as the more prospective investment from the debt issued. The result is consistent with Smith et al. (2006) that female directors having higher academic qualification increase firm performance. This may be due to the pool of talent on the boardroom as it is required to govern the company and to add firm value (Carpenter & Westphal, 2001). The academic qualification can support the decision-making made by the board as qualified and skillful board members can be considered as a resource to provide a strategic linkage to different external resources (Ingley & van der Walt, 2001).

The CEOs academic attained coefficient for Debt Ratio and FCF Ratio is a negative and significant, suggesting that CEOs graduated from domestic university have a negative impact on firm's risk if compared with CEOs with an overseas graduate. Meanwhile, the CEOs academic attained coefficient

**Table 2. Summary of the regression results for all risk proxies**

| Variables                            | DR        |           |           | CR        |           |           | FCF       |           |           |
|--------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                                      | Coeff.    | Std. err. | p >  z    | Coeff.    | Std. err. | p >  z    | Coeff.    | Std. err. | p >  z    |
| Cons                                 | 0.8549    | 0.4082    | 0.0360    | 1.0469    | 0.3226    | 0.0010    | 1.1450    | 0.3849    | 0.0030    |
| CEO gender (f)                       | -0.9319   | 0.2651    | 0.0000    | 0.6966    | 0.2095    | 0.0010    | 0.6553    | 0.2480    | 0.0080    |
| CEO's academic qualification         | 0.3883    | 0.1029    | 0.0000    | 0.2433    | 0.0813    | 0.0030    | 0.2761    | 0.0963    | 0.0190    |
| CEO's academic attained              | -0.0611   | 0.0297    | 0.0400    | -0.0206   | 0.0235    | 0.3790    | -0.0497   | 0.0278    | 0.0740    |
| CEO's academic major                 | (Omitted) |
| CEO's age                            | 0.0017    | 0.0023    | 0.4670    | 0.0037    | 0.0018    | 0.0430    | -0.0019   | 0.0022    | 0.3910    |
| CEO's years of experience            | -0.0050   | 0.0027    | 0.0610    | 0.0108    | 0.0021    | 0.0000    | 0.0028    | 0.0025    | 0.2670    |
| Percentage of female directors       | -0.0484   | 0.0973    | 0.6190    | 0.3053    | 0.0769    | 0.0000    | 0.2782    | 0.0910    | 0.0020    |
| Chief financial officer's gender (f) | -0.1106   | 0.0301    | 0.0000    | 0.0312    | 0.0238    | 0.1900    | 0.0283    | 0.0282    | 0.3160    |
| Firm size                            | 0.0533    | 0.0264    | 0.0430    | 0.0706    | 0.0208    | 0.0010    | 0.0776    | 0.0247    | 0.0020    |
| Ownership type                       | 0.0544    | 0.0145    | 0.0000    | 0.0480    | 0.0114    | 0.0000    | 0.0017    | 0.0135    | 0.0000    |

for Cash Ratio is a negative and not significant, suggesting that CEOs graduated from domestic university have no impact on firm's risk. Further, the CEOs academic major coefficient for all risk proxies (DR, CR, and FCF) is a positive and significant, suggesting that CEO's with a business degree have a significant and positive impact on firm's risk.

The CEOs age coefficient for Debt Ratio and FCF Ratio is a negative and not significant, suggesting that CEOs age have no impact of firm's risk (DR and FCF). Meanwhile, the CEOs age coefficient for Cash Ratio is a positive and significant, suggesting that CEOs age have a significant impact on firm's risk as it indicates that the younger the CEOs the better the firm's risk. Further, the CEO's year of experience coefficient for Debt Ratio and Cash Ratio is a negative and significant, suggesting that the CEOs having long tenure lower the firm's risk. Meanwhile, the CEO's year of experience coefficient for FCF Ratio is a positive and not significant, suggesting that a number of tenures have no impact on firm's risk (FCF).

The percentage of female directors' coefficient for Debt Ratio is negative and not significant; suggesting that the higher number of female directors on boardroom have no impact on firm's risk (Debt Ratio). Meanwhile, the percentage of female directors' coefficient for Cash Ratio and FCF Ratio is a positive and significant, suggesting that the higher number of female directors on boardroom have a significant impact on firm's risk as the higher the number of female directors the lower the firm's risk (CR and FCF). As explained previously that having higher CR and FCF reduces the firm's risk due to a higher level of liquidity and the availability of money for firm's daily operation.

The CFO's gender coefficient for Debt Ratio is a negative and significant, suggesting that female CFO lowers the firm's risk in terms of debt ratio. Similar to Debt Ratio, the CFOs gender coefficient for Cash Ratio and FCF Ratio is a positive, but not significant, suggesting that female CFOs have no impact on the firm's risk in terms of cash ratio and FCF ratio. The result is consistent with the notion that female CFOs are believed to be more conservative in dealing with the accounting policies (Francis et al., 2010), less likely to manipulate earnings' statement (Chava & Purnanandam, 2010), less likely to issue long-term debt and make significant acquisitions (Huang & Kisgen, 2013). The finding is consistent with Huang and Kisgen (2013) that female CFOs are more risk-averse than male CFOs when making their financial decisions. The firm size coefficient for all proxies is a positive and significant, suggesting that bigger firms with the presence of female directors have lower firm's risk.

Comparing firm-risk attitude between female CEOs and female CFOs, Table 2 shows that the coefficient for female CEOs is higher than the coefficient for female CFOs, hence we should reject the hypothesis that *female CFOs represent more influence on firm risk attitude*. It can be concluded that female CEOs represent more influence on firm risk attitude for all three firm risk proxies (debt ratio, cash ratio, and FCF ratio). Based on the debt ratio proxy, both coefficients for female CEOs and female CFOs is negative and significant, therefore, the existence of female CEOs and female CFOs can minimize the risk in long term. For short term period (cash ratio and FCF ratio), the existence of female CEOs and female CFOs can increase the firm's liquidity, and hence, it can lower the firm risk in short-term. Moreover, the higher the firm's liquidity indicating the better the firm in managing daily operational finances activity.

## 5. Conclusion

In sum, the findings for all three categories of explanatory variables along with their control variables for all risk metrics (DR, CR, and FCF) are only slight differences in the coefficient value. Almost all the coefficient signs and significance values reveal the same direction and similar significance value. The results reveal that the presence of female CEOs has lowered the firm's risk for all risk proxies. Female CEOs having higher the academic qualification, overseas qualification, and business degree tend to lower the firm's risk. The result also indicates that the younger and the longer tenure of the CEOs tend to lower firm's risk. A higher number of female directors on boardroom has a significant impact on firm's risk as the higher the number of female directors the lower the firm's risk (CR and FCF). In addition, the female CFO tends to lower the firm's risk as female CFOs are believed to be

more conservative in dealing with the financial issues. Female CEOs represent more influence on firm risk attitude for all three firm risk proxies (debt ratio, cash ratio, and FCF ratio), and the existence of female CEOs and female CFOs can minimize the risk in long term and increase the firm's liquidity and hence it can lower the firm risk in short-term.

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#### References

- Adams, R. B., & Ferreira, D. (2004). *Gender diversity in the boardroom* (ECGI Finance Working Paper 57). Retrieved from <https://pdfs.semanticscholar.org/bfc1/02d254103620d1d24d59c86f465c1398800f.pdf>
- Adams, R. B., & Ferreira, D. (2009). Women in the boardroom and their impact on governance and performance. *Journal of Financial Economics*, 94, 291–309. <https://doi.org/10.1016/j.jfineco.2008.10.007>
- Adams, R. B., & Funk, P. (2012). Beyond the glass ceiling: Does gender matter? *Management Science*, 58, 219–235. <https://doi.org/10.1287/mnsc.1110.1452>
- Adams, R. B., & Raganathan, V. (2013). *Lehman sisters*. Unpublished Working Paper.
- Atkinson, S., Baird, S., & Frye, M. (2003). Do female mutual fund managers manage differently? *Journal of Financial Research*, 26(1), 1–18. <https://doi.org/10.1111/jfir.2003.26.issue-1>
- Baltagi, B. H. (2005). *Econometric analysis of panel data* (4th ed.). Hoboken, NJ: John Wiley & Sons.
- Barber, B., & Odean, T. (2001). Boys will be boys: Gender, overconfidence, and common stock investment. *The Quarterly Journal of Economics*, 116, 261–292. <https://doi.org/10.1162/003355301556400>
- Basyith, A. (2016). Corporate governance, intellectual capital and firm performance. *Research in Applied Economics*, 8, 17–41. Retrieved from <http://macrothink.org/journal/index.php/rae/article/viewFile/8675/7454> <https://doi.org/10.5296/rae.v8i1>
- Basyith, A., Idris, M., & Fitriya, F. (2014). The gender effect on small business enterprises' firm performance: Evidence from Indonesia. *Indian Journal of Economics and Business*, 13.
- Beckmann, D., & Menkhoff, L. (2008). Will women be women? Analyzing the gender difference among financial experts. *Kyklos*, 61, 364–384. <https://doi.org/10.1111/kykl.2008.61.issue-3>
- Berger, A. N., Kick, T., & Schaeck, K. (2014). Executive board composition and bank risk taking. *Journal of Corporate Finance*, 28, 48–65. <https://doi.org/10.1016/j.jcorpfin.2013.11.006>
- Bertrand, M. (2011). New perspectives on gender. In O. Ashenfelter & D. Card (Eds.), *Handbook of labor economics* (pp. 1543–1590). Amsterdam: Elsevier.
- Bilimoria, D. (2000). Building the business case for women corporate directors'. In R. J. Burke & M. C. Mattis (Eds.), *Women on corporate boards of directors* (pp. 25–40). Dordrecht: Kluwer Academic. <https://doi.org/10.1007/978-90-481-3401-4>
- Burgess, Z., & Tharenou, P. (2000). What distinguishes women non-executive directors from executive directors? Individual, interpersonal and organizational factors related to women's appointments to boards'. In R. J. Burke & M. C. Mattis (Eds.), *Women on corporate boards of directors* (pp. 75–96). Dordrecht: Kluwer Academic.
- Burke, R. J. (1994). Women on corporate boards of directors: Views of Canadian chief executive officers. *Women in Management Review*, 9, 3–10. <https://doi.org/10.1108/09649429410066974>
- Burke, R. J., & Kurucz, E. (1998). Demographic characteristics of Canadian women corporate directors. *Psychological Reports*, 83, 461–462. <https://doi.org/10.2466/pr0.1998.83.2.461>
- Byrnes, J. P., Miller, D. C., & Schafer, W. D. (1999). Gender differences in risk taking: A meta-analysis. *Psychological Bulletin*, 125, 367. <https://doi.org/10.1037/0033-2909.125.3.367>
- Carpenter, M. A., & Westphal, J. D. (2001). The strategic context of external network ties: Examining the impact of director appointments on board involvement in strategic decision making. *Academy of Management Journal*, 44, 639–660. <https://doi.org/10.2307/3069408>
- Cassell, C. (1997). The business case for equal opportunities: Implications for women in management. *Women in Management Review*, 12, 11–16. <https://doi.org/10.1108/09649429710162893>
- Catalyst. (1995). *The CEO view: Women on corporate boards*. New York, NY: Author.
- Centre for Governance, Institutions & Organisations Report (2012). *Annual Report 2011/2012*. NUS Business School: National University of Singapore.
- Chava, S., & Purnanandam, A. (2010). CEOs versus CFOs: Incentives and corporate policies. *Journal of Financial Economics*, 97, 263–278. <https://doi.org/10.1016/j.jfineco.2010.03.018>
- Cosentino, N., Montalto, F., Donato, C., & via, A. (2012). Gender diversity in the corporate boardroom: Do women affect risk? *Rivista di Politica Economica*, 2, 73–95.
- Croson, R., & Gneezy, U. (2009). Gender differences in preferences. *Journal of Economic Literature*, 47, 448–474. <https://doi.org/10.1257/jel.47.2.448>
- Daily, C. M., Certo, S. T., & Dalton, D. R. (1999). A decade of corporate women: Some progress in the boardroom, none in the executive suite. *Strategic Management Journal*, 20, 93–100. [https://doi.org/10.1002/\(ISSN\)1097-0266](https://doi.org/10.1002/(ISSN)1097-0266)
- Diekmann, A. B., Eagly, A. H., & Kulesa, P. (2002). Accuracy and bias in stereotypes about the social and political attitudes of women and men. *Journal of Experimental Social Psychology*, 38, 268–282. <https://doi.org/10.1006/jesp.2001.1511>
- Eckel, C. C., & Grossman, P. J. (2008). Men, women, and risk aversion: Experimental evidence. *Handbook of Experimental Economics Results*, 1, 1061–1073. [https://doi.org/10.1016/S1574-0722\(07\)00113-8](https://doi.org/10.1016/S1574-0722(07)00113-8)
- Elsaid, E., & Ursel, N. D. (2011). CEO succession, gender, and risk-taking. *Gender in Management: An International*

- Journal*, 26, 499–512.  
<https://doi.org/10.1108/17542411111175478>
- Ertac, S., & Gurdal, M. Y. (2012). Deciding to decide: Gender, leadership, and risk-taking in groups. *Journal of Economic Behavior & Organization*, 83, 24–30.  
<https://doi.org/10.1016/j.jebo.2011.06.009>
- Faccio, M., Marchica, M. T., & Mura, R. (2016). CEO gender and corporate risk-taking, and the efficiency of capital allocation. *Journal of Corporate Finance*, 39, 193–209.  
<https://doi.org/10.1016/j.jcorpfin.2016.02.008>
- Fauzi, F., & Locke, S. (2012). Board structure, ownership structure and firm performance: A study of New Zealand listed-firms. *Asian Academy of Management Journal of Accounting and Finance*, 8, 43–67. Retrieved from [http://web.usm.my/journal/aamjaf/vol%208-2-2012/AAMJAF8-2-2012\(43-67\).pdf](http://web.usm.my/journal/aamjaf/vol%208-2-2012/AAMJAF8-2-2012(43-67).pdf)
- Fondas, N. (2000). Women on corporate boards of directors: Gender bias or power threat. In R. J. Burke & M. C. Mattis (Eds.), *Women on corporate boards of directors* (pp. 171–177). Dordrecht: Kluwer Academic.  
<https://doi.org/10.1007/978-90-481-3401-4>
- Fortune Report. (2016). Retrieved from <http://fortune.com/2016/01/05/women-boards-equality-report/>
- Francis, B., Hasan, I., Park, J. C., & Wu, Q. (2010). *Gender differences in financial reporting decision-making: Evidence from accounting conservatism* (Working Paper). Troy, NY: Rensselaer Polytechnic Institute.
- Green, E., & Cassell, C. M. (1996). Women managers gendered cultural processes and organizational change. *Gender, Work and Organizational*, 3, 3.
- Halko, M. L., Kaustia, M., & Alanko, E. (2012). The gender effect in risky asset holdings. *Journal of Economic Behavior & Organization*, 83, 66–81.  
<https://doi.org/10.1016/j.jebo.2011.06.011>
- Hillman, A. J., Shropshire, C., & Cannella, A. A. (2007). Organizational predictors of women on corporate boards. *Academy of Management Journal*, 50, 941–952.  
<https://doi.org/10.5465/AMJ.2007.26279222>
- Huang, J., & Kisgen, D. J. (2013). Gender and corporate finance: Are male executives overconfident relative to female executives? *Journal of Financial Economics*, 108, 822–839.  
<https://doi.org/10.1016/j.jfineco.2012.12.005>
- Ibrahim, N. A., & Angelidis, J. P. (1994). Effect of board members' gender on corporate social responsiveness orientation. *Journal of Applied Business Research*, 10, 35–40.
- ILO. (2016). *Women at work: Trends 2016*. Geneva: Author.
- Ingley, C. B., & van der Walt, N. T. (2001). Board configuration: Building better boards. *Corporate Governance: The International Journal of Business in Society*, 3, 5–17.
- Jianakoplos, N. A., & Bernasek, A. (1998). Are women more risk averse? *Economic Inquiry*, 36, 620–630.  
<https://doi.org/10.1111/ecin.1998.36.issue-4>
- Johnson, J. E. V., & Powell, P. L. (1994). Decision making, risk, and gender: Are executives different? *British Journal of Management*, 5, 123–138.  
<https://doi.org/10.1111/bjom.1994.5.issue-2>
- Korn Ferry Diversity Scorecard. (2016). *Building diversity in Asia Pacific Boardrooms*. Korn Ferry-Centre for Governance, Institutions & Organisations, NUS Business School.
- Lenard, M. J., Yu, B., & York, E. A. (2014). Impact of board gender diversity on firm risk. *Managerial Finance*, 40, 787–803.  
doi:10.1108/MF-06-2013-0164
- Loukil, N., & Yousfi, O. (2015). Does gender diversity on corporate boards increase risk-taking? *Canadian Journal of Administrative Sciences*, 33, 66–81.
- Martin, A. D., Nishikawa, T., & Williams, M. A. (2009). CEO gender: Effects on valuation and risk. *Quarterly Journal of Finance and Accounting*, 48, 23–40.
- Mattis, M. C. (1997). Women on corporate boards: Two decades of research. *International Review of Women and Leadership*, 3, 11–25.
- Meier-Pesti, K., & Penz, E. (2008). Sex or gender? Expanding the sex-based view by introducing masculinity and femininity as predictors of financial risk taking. *Journal of Economic Psychology*, 29, 180–196. doi:10.1016/j.joep.2007.05.002
- Mohan, N. (2014). A review of the gender effect on pay, corporate performance and entry into top management. *International Review of Economics & Finance*, 34, 41–51. doi:10.1016/j.iref.2014.06.005
- Muldraw, T. W., & Bayton, J. A. (1979). Men and women executives and processes related to decision accuracy. *Journal of Applied Psychology*, 64, 99–106.  
<https://doi.org/10.1037/0021-9010.64.2.99>
- Niederle, M., & Vesterlund, L. (2007). Do women shy away from competition? Do men compete too much? *The Quarterly Journal of Economics*, 122, 1067–1101.  
<https://doi.org/10.1162/qjec.122.3.1067>
- Organization for Economic Cooperation and Development. (2009). *Labour market and social policy reviews: Chile*. Paris: Author.
- Organization for Economic Cooperation and Development. (2012). *Gender equality in education, employment and entrepreneurship: Final Report to the MCM*. Retrieved from <http://www.oecd.org/employment/50423364.pdf>
- Ragunathan, T. E. (2004). What do we do with missing data? Some options for analysis of incomplete data. *Annual Review of Public Health*, 25, 99–117. <https://doi.org/10.1146/annurev.publhealth.25.102802.124410>
- Rosener, J. B. (1990). Way women lead. *Harvard Business Review*, 68, 119–125.
- Saad, G., & Gill, T. (2000). Applications of evolutionary psychology in marketing. *Psychology and Marketing*, 17, 1005–1034. [https://doi.org/10.1002/\(ISSN\)1520-6793](https://doi.org/10.1002/(ISSN)1520-6793)
- Sapienza, P., Zingales, L., & Maestripieri, D. (2009). Gender differences in financial risk aversion and career choices are affected by testosterone. *Proceedings of the National Academy of Sciences*, 106, 15268–15273. Retrieved from <http://www.pnas.org/content/106/36/15268.full.pdf>  
<https://doi.org/10.1073/pnas.0907352106>
- Schmidt, U., & Traub, S. (2002). An experimental test of loss aversion. *Journal of Risk and Uncertainty*, 25, 233–249.  
<https://doi.org/10.1023/A:1020923921649>
- Schwartz, S. H., & Rubel, T. (2005). Sex differences in value priorities: Cross-cultural and multimethod studies. *Journal of Personality and Social Psychology*, 89, 1010.  
<https://doi.org/10.1037/0022-3514.89.6.1010>
- Selby, C. C. (2000). From the male locker room to co-executive director boardroom: A twenty-five year perspective. In R. J. Burke & M. C. Mattis (Eds.), *Women on corporate boards of directors* (pp. 97–109). Dordrecht: Kluwer Academic.
- Sila, V., Gonzalez, A., & Hagendorff, J. (2016). Women on board: Does boardroom gender diversity affect firm risk? *Journal of Corporate Finance*, 36, 26–53.  
<https://doi.org/10.1016/j.jcorpfin.2015.10.003>
- Smith, N., Smith, V., & Verner, M. (2006). Do women in top management affect firm performance? A panel study of 2,500 Danish firms. *International Journal of Productivity and Performance Management*, 55, 569–593.  
<https://doi.org/10.1108/17410400610702160>
- Vandegrift, D., & Brown, P. (2005). Gender differences in the use of high-variance strategies in tournament competition. *The Journal of Socio-Economics*, 34, 834–849. <https://doi.org/10.1016/j.socsec.2005.07.028>
- Women, U. N. (2016). The progress of the World's Women 2015–2016 (Chapter 2, p. 69).
- Weber, A., & Zulehner, C. (2010). Female hires and the success of start-up firms. *American Economic Review*, 100, 358–361. <https://doi.org/10.1257/aer.100.2.358>



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