Gender Diversity in Boardroom and Firm Financial Performance: Evidence from Hong Kong

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Contents

1. Abstract ................................................................................................................. 3

2. Introduction ............................................................................................................ 3

3. Literature Review .................................................................................................. 6
   3.1 Corporate Governance ...................................................................................... 6
   3.2 Gender Diversity in Boardroom ................................................................. 8
   3.3 Gender Diversity and Firm Value ............................................................. 11

4. Data ....................................................................................................................... 17

5. Methodology ......................................................................................................... 17

6. Results .................................................................................................................... 21

7. Discussion ............................................................................................................. 28
   7.1 Cultural Expectation to Females in Asian Countries ................................. 30
   7.2 Ineffective Decision-making Process ..................................................... 31
   7.3 Limitations on Study .................................................................................... 33
      7.3.1 Unobservable Attributes of Female Directors ................................. 33
      7.3.2 Involvement of Directors .................................................................... 34
      7.3.3 Company Background ....................................................................... 35

8. Conclusion .............................................................................................................. 35

9. Appendices ............................................................................................................ 39
9.1 Appendix I - Additional Information of Variables........................................ 39

9.2 Appendix II - Tables of Model Summary and ANOVA\(^b\) .......................... 41

9.3 Appendix III - References............................................................................. 45
1. Abstract

Gender diversity in boardroom has been associated with corporate governance and firm performance and it has become one of the focuses of the related studies. However, only few empirical evidences investigate the relationship based on Asian data. This study adds to the growing number of literatures and figures out the situation in Hong Kong by examining the association between gender diversity in boardroom and Tobin’s Q as a proxy for firm financial performance for a sample of 138 companies listed on Hong Kong Stock Exchange for the financial year 2009. When obtaining a consistency in the results, four alternative measurements of gender diversity including the presence of female directors (DUMMY), the proportion of female board representation (PWOMAN), Blau (BALU) and Shannon (SHANNON) indices are considered. Contrary to results from a number of empirical studies, a significantly negative relationship and no causal relationship in between are addressed. It also implies that gender diversity on board and firm financial performance are interrelated. The possible reasons and implications for future studies are discussed.

2. Introduction

Corporate governance has long been a popular topic among scholars and numerous studies are done to investigate the relationship between corporate governance and firm financial performance. Particularly, gender diversity in boardroom has attracted attentions from scholars, corporations as well as governments and regulators recently.

Specifically focusing on the influence of presence of female director on firm value, this study aims to find if there is any significant relationship between gender diversity in boardroom and firm financial performance, and if there is any causal relationship in between. In this study, Tobin’s Q is used to value the firm financial performance which
takes the market condition into consideration. Besides, a dummy variable of presence of woman on board and percentage of woman directors, two diversity indices, Blau and Shannon are also included in the models to test the consistency of results. Further, the causal relationship is evaluated by employing the second model which uses gender diversity as dependent variable and firm value as independent variable. As the first study investigating the relationship between gender diversity in boardroom and firm value using the data of Hong Kong listed companies, this study can contribute to the literatures by providing empirical evidence based on Hong Kong situation.

Most of the previous studies are based on U.S. data which also show mixed results by employing various data and methodology.¹ At the same time there is a lack of similar studies focusing on Asia or Hong Kong, hence, the situation in Hong Kong is unclear. This study can show the situation in Hong Kong in which the results and implications of other studies may not be applicable to Hong Kong owing to the difference between Asian and Western cultures.

Moreover, European countries such as Norway even passed the legislation to promote gender equality in boardroom. Passing such legislation evokes a huge controversy over the gender diversity issue in boardroom. Some empirical evidences indicate that gender

₁ See Literature Review for details of the data and methodology of previous studies.
diversity in boardroom enhances the firm value while some literatures draw a totally different conclusion. If there is a positive effect of gender diversity in boardroom on firm value, it is suggested that the government and corporations can promote gender equality in boardroom in different ways to enhance the firm financial performance. Specifically focusing on the situation in Hong Kong, the results of this study can act as a reference for Hong Kong Government and the regulators to consider whether similar rules should be imposed or not.

On the other hand, corporations can consider introducing gender equality practices in boardroom by looking into the implications of this study. Gender can be an important criterion for selection of directors besides the qualifications and experiences of the individuals. If it is found that greater gender diversity on board could lead to a higher firm value, corporations should try to enhance gender diversity in boardroom.

Last but not the least, gender diversity in boardroom can be one of the criteria for investors to evaluate the companies when making investment decisions. If it is believed that a more gender diverse board can lead to a better firm financial performance, probably investors need to consider the proportion of female board representation in firms when making their investment decisions.
3. Literature Review

3.1 Corporate Governance

Corporate governance affects and is affected by different stakeholders at the same time. According to Shleifer and Vishny (1997), corporate governance refers to dealing with the ways which suppliers of finance to corporations assure themselves of getting a return on their investment, which is also in line with Turnbull (1997). From OECD Principles of Corporate Governance (2004), a more thorough definition is found: Corporate governance involves a set of relationships between a company’s management, its board, its shareholders and other stakeholders. Corporate governance also provides the structure through which the objectives of the company are set, and the means of attaining those objectives and monitoring performance are determined.

Corporate governance has long been a popular issue among corporations, governments, investors and scholars, especially after the financial crisis in emerging markets in 1997. Studies about this topic are also found (Johnson et al., 2000; Mitton, 2002). OECD first launched the OECD Principles of Corporate Governance in 1999 (revised in 2004) and this provided a guidance for legislative and regulatory initiatives in both OECD and non-OECD countries. For Hong Kong, the Code on Corporate Governance Practices was introduced in 2004, which sets out The Stock Exchange of Hong Kong Limited’s
views on the principles of good corporate governance, and issuers are expected and encouraged to comply with the Code.

On the other hand, numerous researches have been done to investigate the relationship between corporate governance and firm value. Though there are some exceptions which report an insignificant relationship (Klein, 1998; Bhagat & Black, 2001; Bhagat et al., 2004), most of the studies shows the positive influence of corporate governance. Gompers et al. (2003) document the strong correlation between corporate governance and stock returns, and they find that firms with better governance had higher firm values, profits and sales growths. Also, firms with more accountable board of directors had better financial performances (Stanwick and Stanwick, 2010). Similarly, Perez-de Toledo (2010) and Silveira and Barros (2007) find a positive impact of corporate governance quality on firm value. The above studies employ data from foreign countries, but consistent results are also found in studies based on Hong Kong data (Cheung, Stouraitis and Tan, 2010; Lei and Song, 2008; Cheung et al., 2007).

It is known that corporate governance is a very important issue for both corporations and investors and has aroused awareness globally. Corporate governance is a great concern for institutional investors, and the majority of the investors are prepared to pay
a premium for companies with higher corporate governance standards (McKinsey & Company, 2002). The corporate governance rankings of companies are also one of the considerations of investors when evaluating stock prices (Berthelot et al., 2010). All these show the positive impact of corporate governance on firm value.

3.2 Gender Diversity in Boardroom

It is believed that good corporate governance is positively associated with board diversity (Carter et al., 2003). With well-managed diversity on board of directors, it enhances the firm performance in terms of decision-making process and corporate image with equality (Rhode et al., 2010). A diverse group creates competitive advantages to the firm with promoted creativity, improved problem solving and better decision-making (Cox et al., 1991). On the other hand, some argue that there are disadvantages such as increasing potential conflicts among board members, limiting effectiveness in decision-making (Goodstein et al., 1994), increasing difficulties in reaching consensus (Knight et al., 1999) and potentially bringing higher costs to the firm (Cox et al., 1991).

For the definition of board diversity, Milliken and Martins (1996) summarize the types of diversity into observable and non-observable attributes. Observable attributes, which
are readily detectable, refer to gender, age, race and ethnic background while non-observable attributes, which are less visible, are defined as personal value, personality characteristic and education. An increasing number of empirical studies investigate the link between board diversity and firm financial performance across different countries such as the United States (Erhardt et al., 2003), Indonesia (Darmadi, 2011) and Denmark, Norway and Sweden (Randøy et al., 2006). Accordingly, gender diversity becomes one of the focuses of the studies.

Specifically addressed by some scholars, Adams and Ferreira (2009) indicate that a gender diverse board tends to devote more monitoring efforts on the firm performance by using a measure of attendance behaviour. Accordingly, there is a greater likelihood that male directors have attendance problems than that of females. In addition, a higher proportion of female representation improves the attendance problem of male directors. Carter et al. (2010) further address that a more gender diverse board enhances corporate governance and thus improves the firm financial performance.

From the results of different reports, the participation of females on boards varies from country to country and actually almost all the companies’ boards are dominated by males. The percentage of women directors on major public company boards in Australia,
France, Europe, Sweden, Norway is 8.3%, 7.6%, 9.7%, 26.9% and 44.2% respectively.

Further, 49% of the ASX200 companies are found to include females on boards. Similar studies of FTSE200 companies in the United Kingdom, FP500 companies in Canada and S&P500 companies in the United States of America show 77%, 52.8% and 91% of them with a female director respectively (Equal Opportunity for Women in the Workplace Agency–EOWA, 2008). Despite the discrepancies in different countries, Adams and Ferreir (2009) highlight an upward trend of female participation on boards owing to the proposals of governance reform. With the legislation enacted in Norway, gender equality on boards is promoted. The percentage of female board representation is raised to at least 40 percent in publicly appointed boards and committees (Ministry of Foreign Affairs, Norwegian Government, 2004). Following Norway, Spain also enacted the legislation in 2007 to promote the gender equality in boardroom.

According to a report focusing on Asian women of Community Business (2009), there is a very few participation at senior level by women indicated by 13% in China, 8.2% in India, 8.9% in Japan and 17.3% in Singapore. Due to the rapid economic developments of those Asian countries, particular China and India, there is a greater demand of work force. More opportunities are given to females to be included in the labor force. However, Asian women face some challenges, for example, there is a greater degree of
gender discrimination against females because of traditional bias and the legislation of equal opportunity not kept pace with foreign regions.

Attention about female participation in top management in Hong Kong is also drawn. Another report using the sample of Hang Seng Index companies in Hong Kong published by Community Business (2009), 8.9% of board positions are held by females, 66.7% of companies have women on boards and 35.7% of them consist of more than one female directorships. Comparing to the percentage of female representation on boards in foreign countries, the 8.9% female held directorships of Hong Kong is a low percentage. The imbalance of board positions is commonly attributed to the male dominant society, traditional attitudes and the narrow talent pool. More efforts are suggested to be dedicated to improve the situation. Despite the addressed imbalance, women are found to be optimistic towards the change in proportion of female holding board seats over next five years through predicting from 9% to 20%.

3.3 Gender Diversity and Firm Value

With respect to the increasing trend of the female participation on boards, the gender diversity-firm value relationship has aroused the interests of scholars. A total twelve empirical evidences (excluding working papers) which specifically examined the link
between gender diversity in boardroom and the firm value are found. However, the results of the studies vary.

Six out of the twelve empirical evidences addressed a positive association between the proportion of female directors in the boardroom and firm financial performance in the United States (Carter et al., 2003; Erhardt et al., 2003; Carter et al., 2010; Hussein et al., 2009), Spain (Campbell et al., 2008) and Denmark (Smith et al., 2006). Carter et al. (2003) report a significant positive relation of board representation by minorities and females and the organizational value which is measured by the approximation of Tobin’s Q on Fortune 1000 companies. The finding also concludes the negative relation of the board diversity and the number of insiders. A similar study was conducted by Erhardt et al. (2003) with the measurements of ROA and ROI. The analyses point out a positive link between the board diversity and financial performance for a sample of large firms in Fortune magazine. Nevertheless, the study mentioned a limitation of using only large corporations as the sample and ignoring the data from small firms. Carter et al. (2010) document a positive association of the number of women and minorities in boardroom with the ROA. Hussein et al. (2009) also provide the similar conclusion with Shannon index as a proxy for gender diversity.
Outside the United States, Campbell and Minguez-Vera (2008) investigate specifically the impact of the gender diversity, as proxies for the percentage of female directors, Blau index and Shannon index, on the financial performance. It indicates that gender diversity gives a positive effect on firm performance and an insignificant opposite causality is resulted on non-financial companies in Spain. Smith et al. (2006) examine a sample of 2,500 Danish companies and indicate a positive result with firm accounting-based performance. The finding also highlights the importance of the qualifications of female board members.

Another six studies do not find gender diversity as a significant determinant to firm financial performance in Denmark (Rose, 2007) and the United States (Shrader et al., 1997; Farrell et al., 2005; Zahra et al., 1988; Carter et al., 2010; Hussein et al., 2009). Using the data of all listed Danish companies from 1998 to 2001, Rose (2007) tests whether there is a link between fraction of woman board members and the financial performance with an indicator of Tobin’s Q and no significant relation is addressed. Though no link was shown, the finding reveals the circumstance that women are under-represented in the boardrooms in accordance with the Danish evidence. Shrader et al. (1997) employ the data of 200 companies with the highest market value in the United States and find that there is no significant influence of the percentage of women
representation on board in relation to financial performance which is measured by the profitability ratio. Farrell et al. (2005) indicate that there is no persuasive evidence proving the likelihood of improving firm performance after adding a women director in the boardroom. Zahra et al. (1988) conclude the similar result and Carter et al. (2010) document a neither positive nor negative relationship between gender diversity and Tobin’s Q as a proxy for firm value on firms in S&P 500 index from 1998 to 2002. Another study comes up with a consistent result by using ROA and Tobin’s Q as the measurement of financial performance. In addition, it finds that large corporations tend to appoint a greater number of female directors. (Hussein et al., 2009)

In contrast, Adams et al. (2009) and Darmadi (2011) come out with a different result compared with other studies. Adams et al. (2009) analyze that the correlation between gender diversity and firm performance with Tobin’s Q as an indicator. It suggests that imposing gender quota on board is not conducive to good corporate governance. For a sample of companies listed on the Indonesia Stock Exchange for the financial year of 2007, Darmadi (2011) document the negative effect of the level of female board representation on the financial performance. A significantly negative impact of gender diversity is found on accounting-based performance of ROA.
In summary, twelve specific studies investigated the correlation between gender diversity in boardroom and the firm financial performance. Financial performance is measured by accounting-based and marketing-based performances, which refer to profitability ratios and the approximation of Tobin’s Q respectively. However, the results of these researches vary. Positive, negative and no significant relationships in between are indicated by scholars.

In accordance with Campbell et al. (2008), the mixed results are attributed to several reasons. First, employing data from different countries results in different conclusions in the studies. The situation in developed countries may differ from the ones in developing countries. Second, time is another factor affecting the analysis. Further, various estimation methods are used by scholars. Some researchers employ the measurements of the control variables in the analysis while some exclude the control variables. Owing to the difference in estimations, the outcomes definitely are different or even conflicting to each others. In addition, non-observable attributes of board diversity is not included in the analyses, nevertheless, may affect the firm value. Thus, the conclusions drawn in the studies may be influenced.

For the studies above, more than half of them use Tobin’s Q as an estimation of firm
financial performance. Demsetz et al. (2001) indicate that accounting-based performance accounts for the expectation of future financial performance to a limited extent. On the other hand, Tobin’s Q includes the investors’ expectations and values towards the company. Investors, who have the expectations for firm performance in the future, have the views based on the past events. Therefore, Tobin’s Q is considered as a better measurement of firm financial performance.

A total of seven working papers which examine the association between gender diversity and firm financial performance are found. Lückerath-Rovers (2010) indicates a positive relationship between female representation on board and firm financial performance by using a sample of 99 Dutch listed firms. Ararat et al. (2010) address a positive result of board diversity, which includes gender as one of the observable attributes, and firm performance based on ISE-100 index companies listed in the Istanbul Stock Exchange.

Nevertheless, a negative correlation is addressed by some studies. No convincing evidence is shown that the female representation in top management level enhances the firm performance in terms of ROA and Tobin’s Q using Indonesian data (Darmadi, 2010). Bøhren and Strøm (2007) also point out that gender diversity and firm
performance are in a negative relationship. Another three out of seven working papers found neither positively nor negatively significant associations based on 186 listed companies from Netherlands and Denmark (Marinova et al., 2010), 105 Swedish firms (Eklund et al., 2009) and 500 largest firms in Denmark, Norway and Sweden (Randøy et al., 2006).

4. Data

138 listed companies in Hong Kong are randomly selected from different industries for the year 2009 (160 samples are drawn and 22 of them are found with incomplete data). Financial institutions are excluded from the sample as these companies are further regulated by Hong Kong Monetary Authority and may have different board structures (Ho, 2003), and different capital structures and performance characteristics from other listed companies (Cheung et al., 2007). Furthermore, companies that are found to have missing data are also excluded. Data is sourced from the annual reports from Hong Kong Exchanges and Clearing Limited (HKEx), and stock prices of listed companies are sourced from Yahoo! Finance.

5. Methodology

This study adopts the models used by Campbell and Minguez-Vera (2008) to investigate
the relationship between gender diversity and firm value by using multiple linear regression analysis. The first model\(^2\) is presented as follows:

\[ Q_{it} = \beta_0 + \beta_1 \text{WOMAN}_{it} + \beta_2 \text{LEVER}_{it} + \beta_3 \text{ROA}_{it} + \beta_4 \text{SIZE}_{it} + \varepsilon_{it} \]

where \(Q\), the dependent variable, represents Tobin’s Q as a proxy for firm financial performance; \(\text{WOMAN}\) refers to four alternative independent variables consist of (1) a dummy variable of female board representation (\(\text{DWOMAN}\)) that a value of one is taken when at least one woman is present in boardroom, and zero otherwise, (2) the percentage of female director on board (\(\text{PWOMAN}\)), (3) Blau index which is a diversity index (\(\text{BLAU}\)), and (4) Shannon index which is another diversity index (\(\text{SHANNON}\)); Three control variables are also included. \(\text{LEVER}\) represents leverage which shows firm’s debt level, \(\text{ROA}\) represents return on assets, and \(\text{SIZE}\) represents firm size which is measured by firm’s total asset; \(\varepsilon\) represents the error term.

Tobin’s Q is measured as the market value over book value of a firm (Tobin and Brainard, 1977), and it is used to value the firm financial performance in this study. It is a better measurement as it incorporates market’s expectations and it shows a better picture than accounting ratios (Wernerfelt and Montgomery, 1988). Tobin’s Q is also used to measure firm financial performance in similar studies such as Darmadi (2011), Carter et al. (2003) and Rose (2007).

\(^2\) See Appendix I for detail of each variable.
A dummy variable is used to evaluate whether a firm merely having at least one female present on board would outperform the others, and the percentage of females on board is used to observe the effect of number of woman directors on firm financial performance. Two diversity indices, Blau and Shannon are also used to see if a more gender diverse board would give rise to the increase in a firm’s value. Furthermore, the four alternative independent variables can examine if consistent results could be found by using different independent variables.

Three control variables, return on assets, leverage and firm size which are also commonly used in related studies (Carter et al., 2003; Hussein and Kiwia, 2009; Erhardt et al., 2003; Shrader et al., 1997) are included in the first model.

Based on the first model, the following hypotheses are proposed:

H$_1$: Presence of woman on board does not lead to higher firm value.

H$_2$: Higher proportion of female director in boardroom leads to higher firm value.

H$_3$: Higher gender diversity in boardroom leads to higher firm value.

H$_4$: Leverage, return on assets and firm size would affect firm value.

The first model is adjusted to form the second model in order to find the possibility that
whether there is any causal relationship between females on board and firm financial performance. The second model\(^3\) is presented as follows:

\[
WOMAN_{it} = \beta_0 + \beta_1 Q_{it} + \beta_2 \text{LNDIR}_{it} + \beta_3 \text{SIZE}_{it} + \epsilon_{it}
\]

where WOMAN (dependent variable), Q (independent variable), SIZE (control variable) and \(\epsilon\) are defined as the same in the first model; LNDIR (control variable) represents the board size.

When revealing the causality relationship, two control variables, firm size and board size are incorporated, as these variables are proved to have influence on female board representation in some studies. As mentioned by Hussein and Kiwia (2009), firm size has a negative effect on gender diversity on board. And according to Campbell and Minguez-Vera (2007) and Carter et al. (2003), it is likely that larger firms and larger boards would have more female directors.

Another four hypotheses are proposed based on the second model:

\(H_5\): Higher firm value has no influence on presence of woman on board.

\(H_6\): Higher firm value does not lead to higher percentage of woman directors.

\(H_7\): Higher firm value does not lead to higher gender diversity level in boardroom.

\(H_8\): Board size and firm size would affect the presence and percentage of woman

\(^3\) See Appendix I for detail of each variable.
directors and the gender diversity level in boardroom.

6. Results

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Median</th>
<th>Standard deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q</td>
<td>6.6056</td>
<td>1.2592</td>
<td>28.9967</td>
<td>0.3494</td>
<td>316.1867</td>
</tr>
<tr>
<td>DWOMAN</td>
<td>0.7826</td>
<td>1.0000</td>
<td>0.4125</td>
<td>0.0000</td>
<td>1.0000</td>
</tr>
<tr>
<td>PWOMAN</td>
<td>0.1721</td>
<td>0.1429</td>
<td>0.1371</td>
<td>0.0000</td>
<td>0.6000</td>
</tr>
<tr>
<td>BLAU</td>
<td>0.2474</td>
<td>0.2449</td>
<td>0.1608</td>
<td>0.0000</td>
<td>0.5000</td>
</tr>
<tr>
<td>SHANNON</td>
<td>0.3828</td>
<td>0.4101</td>
<td>0.2298</td>
<td>0.0000</td>
<td>0.6931</td>
</tr>
<tr>
<td>LEVER</td>
<td>0.3868</td>
<td>0.3260</td>
<td>0.3469</td>
<td>0.0176</td>
<td>3.0182</td>
</tr>
<tr>
<td>ROA</td>
<td>-0.0193</td>
<td>0.0450</td>
<td>0.4067</td>
<td>-3.6988</td>
<td>0.3011</td>
</tr>
<tr>
<td>SIZE</td>
<td>9.2195</td>
<td>9.2320</td>
<td>0.8451</td>
<td>7.2353</td>
<td>11.8759</td>
</tr>
<tr>
<td>LNDR</td>
<td>0.9537</td>
<td>0.9542</td>
<td>0.1156</td>
<td>0.6990</td>
<td>1.3010</td>
</tr>
</tbody>
</table>

Table I: Descriptive Statistics

In Table I, the descriptive statistics of all variables are presented. The mean of Tobin’s Q (Q) is 6.6 which is higher than those values stated in U.S. (Hussein et al., 2009; Carter et al., 2010), European (Rose, 2007; Campbell et al., 2008) and Indonesian markets (Darmadi, 2011). Furthermore, it has a standard deviation of 28.9 which shows a high variability of the data as it is widely distributed. The mean of dummy variable of female board representation (DWOMAN) shows that nearly 80% of the companies in the data have at least one female on board. The percentage of woman directors (PWOMAN) has a mean value of 0.17 which is close to the number obtained in Indonesian market (0.12), by Darmadi (2011) but it is far lower than the value obtained for U.S. market (3.28), by Campbell and Minguez-Vera (2008). The reason may be attributable to the culture of
Asian countries in which there is a greater degree of gender discrimination against females in the workplace owing to the traditional bias.

In respect of the two indices (BLAU and SHANNON) measuring gender diversity, the mean values are 0.24 and 0.38 respectively. Though these two values are much higher than those obtained by Campbell and Minguez-Vera (2008), they still have a large gap to reach the values for a perfectly gender-diverse board (0.5 for Blau and 0.69 for Shannon indices). The means of leverage (LEVER), return on assets (ROA), firm size (SIZE) and the logarithm of total number of directors (LNDIR) are 0.38, -0.019, 9.22 and 0.95 respectively.

To specifically examine the relationship between gender diversity in boardroom and firm financial performance and its causal relationship, the data of 138 listed companies in Hong Kong are used. The results of multiple linear regressions of the two models are obtained and presented in the following tables.

The results of the relationship between gender diversity in boardroom and firm financial performance with four alternative independent variables in the first model are presented in Table II to Table V while the results of the second model are presented in Table VI to
Table IX. 

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>38.438</td>
<td>28.649</td>
<td>1.342</td>
</tr>
<tr>
<td></td>
<td>DWOMAN</td>
<td>-14.763</td>
<td>6.080</td>
<td>-.210</td>
</tr>
<tr>
<td></td>
<td>LEVER</td>
<td>-1.724</td>
<td>8.352</td>
<td>-.021</td>
</tr>
<tr>
<td></td>
<td>ROA</td>
<td>4.848</td>
<td>7.519</td>
<td>.068</td>
</tr>
<tr>
<td></td>
<td>SIZE</td>
<td>-2.117</td>
<td>3.172</td>
<td>-.062</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Q

Table II: Regression of Q and DWOMAN

In Table II, the effect of at least one female representation in boardroom (DWOMAN) on firm financial performance (Q) is indicated. A significantly negative effect is found. In other words, the presence of females on boards jeopardizes the financial performance of the firm.

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>43.292</td>
<td>28.962</td>
<td>1.495</td>
</tr>
<tr>
<td></td>
<td>PWOMAN</td>
<td>-38.574</td>
<td>18.599</td>
<td>-.182</td>
</tr>
<tr>
<td></td>
<td>LEVER</td>
<td>-3.878</td>
<td>8.632</td>
<td>-.046</td>
</tr>
<tr>
<td></td>
<td>ROA</td>
<td>2.658</td>
<td>7.651</td>
<td>.037</td>
</tr>
<tr>
<td></td>
<td>SIZE</td>
<td>-3.091</td>
<td>3.153</td>
<td>-.090</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Q

Table III: Regression of Q and PWOMAN

In Table III, the association of the percentage of female board representation

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4 See Appendix II for the tables of Model Summary and ANOVA.
(PWOMAN) and firm value (Q) is shown. The result points out a significantly negative association that the more the woman directors, the lower the firm value.

In Table IV, the relationship between Blau index (BLAU) as a proxy for gender diversity in boardroom and firm value (Q) is examined. In line with the previous two results, a significant and negative relation is addressed. Blau index is a diversity index which indicates that a greater heterogeneity in gender of the directors poses a significant and adverse effect on the firm financial performance. A homogenous gender in boardroom is conducive to a higher firm value. With respect to the board structures of the companies in the data, as almost all the boards are dominated by males, in this study, greater gender diversity refers to a greater number of female board representation. Thus, the result indicates that a greater number of woman directors on board leads to a lower firm value and vice versa.

Table IV: Regression of Q and BLAU

In Table IV, the relationship between Blau index (BLAU) as a proxy for gender diversity in boardroom and firm value (Q) is examined. In line with the previous two results, a significant and negative relation is addressed. Blau index is a diversity index which indicates that a greater heterogeneity in gender of the directors poses a significant and adverse effect on the firm financial performance. A homogenous gender in boardroom is conducive to a higher firm value. With respect to the board structures of the companies in the data, as almost all the boards are dominated by males, in this study, greater gender diversity refers to a greater number of female board representation. Thus, the result indicates that a greater number of woman directors on board leads to a lower firm value and vice versa.
In Table V, a significantly adverse association between gender diversity which is measured by Shannon index (SHANNON) and firm value (Q) is addressed. Similar to the interpretation for Table IV, Shannon index is also a diversity index but it gives a higher sensitivity in small differences. Consistent to the result of using Blau index as a proxy for gender diversity, a greater female board representation gives a significantly negative effect on the firm value.

The second model is adopted to examine the causal relationship and the results of the second model are presented in Table VI to Table IX.

Table V: Regression of Q and SHANNON

Table VI: Regression of DWOMAN and Q
In Table VI, by using the presence of at least one woman director (DWOMAN) as the dependent variable, a significantly negative relationship between the presence of female on board and firm financial performance (Q) is addressed. In other words, a firm with a higher firm value tends to include a smaller number of female directors on boards.

In Table VII, the correlation between the percentage of the woman directors (PWOMAN) and the firm financial performance (Q) is examined. It seems that Q has no significant impact on PWOMAN as shown in Table VII; however, as shown in Table III, Q is negatively affected by PWOMAN. In other words, this implies that there is a causal relationship between Q and PWOMAN, where the percentage of female directors (PWOMAN) is the cause, and firm value (Q) is the result.

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>.263</td>
<td>.133</td>
<td>1.976</td>
</tr>
<tr>
<td></td>
<td>Q</td>
<td>-.001</td>
<td>.000</td>
<td>-.158</td>
</tr>
<tr>
<td></td>
<td>LNDIR</td>
<td>-.134</td>
<td>.117</td>
<td>-.113</td>
</tr>
<tr>
<td></td>
<td>SIZE</td>
<td>.005</td>
<td>.016</td>
<td>.028</td>
</tr>
</tbody>
</table>

*a. Dependent Variable: PWOMAN*

*Table VII: Regression of PWOMAN and Q*
Table VIII: Regression of BLAU and Q

A significantly negative relation is indicated in Table VIII by using Blau index (BLAU) as the measurement of female board representation. A firm with a higher firm value is prone to include a greater homogenous gender in boardroom. In respect of the male dominance in boardrooms in the data, the higher homogeneity in gender implies the greater number of male directors. Thus, the higher the firm value, the more the male directors.

Table IX: Regression of SHANNON and Q

Consistent to the result obtained in Table VIII, a significantly negative relation is found in Table IX by using Shannon index (SHANNON) as a proxy for the female board representation, it implies that a greater number of male board representation is in a
company with a higher firm value.

On the other hand, return on assets (ROA), leverage (LEVER) and firm size (SIZE) do not have any significant influence on firm value (Q) as shown in Table II to Table V. For the second model, the board size (LNDIR) and firm size (SIZE) also do not have significant influence on female board representation as measured by DWOMAN, PWOMAN, BLAU and SHANNON.

From the results above, a consistency in the results is drawn. It indicates a significantly negative relationship between the firm financial performance and the female board representation by using different proxies for gender diversity in boardroom. In addition, no causal relationship (except PWOMAN) is addressed by comparing results obtained from the two models. Therefore, it is shown that the firm value and gender diversity in boardroom are actually influencing each other.

7. Discussion

Contrary to the expectations, a significantly negative relationship between gender diversity and firm financial performance and no causal relationship (except for using PWOMAN as the proxy) are obtained from the empirical evidences above. In general,
the conclusion that gender diversity and the financial performance of the firm are interrelated is drawn and all hypotheses (except $H_1$), which is $H_2$-$H_8$, are not established. Based on Table VII, Regression of PWOMAN and Q, the significance of Q is greater than 0.05, this means firm value does not influence percentage of woman. Hence, $H_6$ is supported.

With respect to the impact of gender diversity in boardroom on firm value, that means $H_1$-$H_3$, the finding contradicts to most of previous empirical studies which indicate a positive association (Carter et al., 2003; Campbell et al., 2008; Lückerath-Rovers, 2010) and no significant relation (Farrell et al., 2005; Rose, 2007; Carter et al., 2010). Though the results of previous studies are ambiguous, the finding of this study is in line with some researches which address a significantly negative correlation (Bøhren et al., 2007; Darmadi, 2011).

More gender mix on board associated with a lower level in firm value may be attributed to several possible reasons. These possible reasons are presented in terms of cultural expectation to females and ineffective decision-making process.
7.1 Cultural Expectation to Females in Asian Countries

The result is probably triggered by the cultural expectation and social status of Asian women. Supported by Community Business (2009), there is a traditional bias against females in the workplace in Asia. As most of societies in the Asian countries such as China, Japan and Korea, are male-oriented, it may be more difficult for females to gain equal opportunities and acceptances in the workplace. The role of the breadwinner may be expected to be taken by men. Thus, women are expected to devote more efforts to family such as raising children and doing housework rather than to the work. This is a norm in the thoughts of most of the public: men should go out to work; and women should stay at home to do housework. Owing to the male-oriented culture, Asian women may have a heavier burden to take up the family work while working in the society at the same time. In other words, they are plausibly less able to spend efforts on the business. Therefore, it may be one of the possible reasons to explain the reason why the firms with high percentage of woman board representations tend to have lower levels in firm financial performance.

In addition to the cultural expectation of females, public perceptions towards females may become one of the possible reasons attributable to the negative result. Previously stated in this study, the report by Community Business (2009) states that Asian women
face a certain degree of gender discrimination in the workplace due to traditional bias and males may even have a prejudice that females do not have the ability to hold a position in the company. According to Lee and James (2003), the investors are likely to have a bias against female top executives. With the announcement of a newly appointed female top executive, investors are inclined to respond adversely in a greater degree than the male one as they consider a greater risk of holding of the top management position by females. Thus, all these adverse responses may lead to a decrease in market price and finally a drop in firm value as measured by Tobin’s Q.

7.2 Ineffective Decision-making Process

In terms of the characteristics of gender, female directors are found with spending more efforts to monitor the operation of the firm. Moreover, they are discovered to have lesser tendency to absent the board meetings compared with the males (Adams et al., 2009). These characteristics are assumed to give positive impacts on the firm. However, when there is an increase in the number of woman directors, over-monitoring may occur. More importantly, when the intensity of monitoring increases, the mangers are discovered that they are possibly more reluctant to disclose information to the board. Because of lesser information known by the board, ineffective monitoring may be resulted. Over-monitoring may eventually jeopardize the firm value (Adams et al.,
Gender mix brings a higher diversity in the group as well as more diverse values and perspectives. While potential interpersonal conflicts are likely to be raised, it reduces the use of agreement-seeking behaviours within the group and imposes a difficulty on reaching the consensus (Knight et al., 1999). Further, the potential conflicts between board members become a constraint on decision-making process. This may result in a higher likelihood of failure in responding the strategic changes promptly and taking timely actions (Goodstein et al., 1994). Owing to the potential conflicts, the efficiency in decision-making process may be lower (Lau et al., 1998). Supported by Earley and Mosakowski (2000), it is common to find communication barriers existed in the heterogeneous team. Furthermore, a moderate heterogeneity in the group is found with a low level in the sense of team spirit, compared with a highly homogenous group in which the members are more likely to have frequent communications and share the same expectations among all members’ behaviours. Due to a higher possibility of the occurrence of potential conflicts and a severer communication problem within a diverse group, the decision-making process may be impeded. Therefore, the ineffective management may trigger a lower level in firm financial performance.
In the second model, no causal relationship between the firm value and gender diversity is addressed. In other words, the firm value is significantly influential on gender diversity on board and vice versa. Further supported by some prior empirical evidences, no causal relationship is also investigated. Low-performing companies are very likely to include a greater proportion of female directors (Darmadi, 2010, 2011).

7.3 Limitations on Study

This study is subject to some limitations in examining the association between gender diversity in boardroom and the firm financial performance and this may pose some variances in the study.

7.3.1 Unobservable Attributes of Female Directors

First, there is an insufficiency in measuring the diversity in the models. In accordance with the models used in the present study, only observable attribute, which specifically refers to the gender of the directors, is evaluated. The non-observable attributes are not included in the consideration. However, the unobservable ones may have a great influence on the firm financial performance as well. For instance, better educational levels and experiences of the directors are very likely to have a positive impact to the firm value. Stated by Campbell and Minguez-Vera (2008), a pool of qualified female
directors can continuously foster the improved performance of the firm. Smith et al. (2006) even show that the influence of the qualification of the top management on firm financial performance is strong and positive. Therefore, non-observable attributes such as qualifications and experiences of the directors are suggested to be considered in the future studies when information is available.

7.3.2 Involvement of Directors

In a bid to measure the gender diversity in boardroom, four different measurements such as the percentage of female directors, Blau and Shannon indices are evaluated. That means only the quantity of female directors considered in the models. The involvement of the directors in the firm is not considered. For instance, the executive directors may have a greater influence on the firm financial performance as their involvements in the business should be more frequent than that of an independent non-executive director. Therefore, there may be a difference in the degree of the influence on the firm value given by a female executive director and a non-executive one. However, the types of directorships are not included by most of the scholars and it is suggested that future studies on this topic may include this variable and investigate its importance.
7.3.3 Company Background

The present study does not consider company’s background which may have influences on the selection for female directors. The family-controlled firms are very likely to appoint family ties to be the members of the board. Stated by Smith et al. (2006), it is usual to see that family members occupy places in boardrooms in the family-owned corporations. Darmadi (2011) also points out that the family relationship may be one of the concerns for the selection of board positions. It shows that there may be a preference for selecting family ties to be the board members in family-controlled company. The unfairness in the selection of board compositions may affect the conclusion drawn. Furthermore, as mentioned above, the traditional bias against female directors due to cultural differences may lead to the unfairness to women, thus, the nationality of major shareholders and directors may have impacts on the selection of directors. Therefore, it is recommended that the background of companies may be taken into consideration in future studies on relevant topic.

8. Conclusion

Board diversity is proven to have influence on firm performance in previous literatures (Erhardt et al., 2003; Darmadi, 2011). A number of studies specifically examine the relationship between gender diversity on board and firm performance in different
countries (Shrader et al., 1997; Campbell et al., 2008; Hussein et al., 2009). Nevertheless, few studies are found to investigate the relationship based on Asian data and none of them are based on Hong Kong data. Therefore, the situation in Hong Kong is unclear. This study aims at investigating the association between gender diversity on board and firm financial performance based on Hong Kong data.

By adopting the models used by Campbell and Minguez-Vera (2008), a significantly negative association between gender diversity in boardroom and Tobin’s Q as a proxy for firm financial performance and no causality in between are addressed. It also implies that gender diversity on board and firm financial performance are interrelated. A consistency in the results is obtained with four different measurements including the presence of female directors (DUMMY), the percentage of female board representation (PWOMAN), and two diversity indices which are Blau (BLAU) and Shannon (SHANNON). Regarding the board structures of the companies in the data, almost all the boards are dominated by males. Thus, greater gender diversity in boardroom refers to a greater number of female board representations in the study. The results obtained in the models indicate that a greater number of female board representations leads to a lower firm value, and at the same time, low-performing firms tend to include a greater number of female directors and vice versa.
The finding contradicts to most of the previous empirical evidences which address a strongly positive association (Carter et al., 2003; Campbell et al., 2008; Lückerath-Rovers, 2010) and no significant relation (Farrell et al., 2005; Rose, 2007; Carter et al., 2010). Nevertheless, the finding is in line with some empirical studies which indicate a strongly negative correlation (Bøhren et al., 2007; Darmadi, 2011). The possible reasons may be attributed to cultural expectation of females in Asian countries and ineffective decision-making process.

Owing to the mixed results of previous empirical evidences and a lack of studies based on Hong Kong data, the situation in Hong Kong cannot be clearly stated. As the first study specifically examined gender diversity on board and firm value based on Hong Kong data, it contributes to female executives, investors, corporations and the government in different aspects.

According to the finding, low-performing firms tend to employ a greater number of female directors and vice versa. Females possibly have greater opportunities to hold directorships in firms with lower values. If a female wants to hold a directorship, it may be easier for her to approach corporations with lower firm values first.
Gender diversity in boardroom may be one of the crucial criteria for investors and shareholders to evaluate the companies in making their investment choices. In accordance with the finding, a greater number of female board representations in the company leads to a lower firm value and the company with a high value tends to employ a smaller number of female directors. Investors may take the number of female directors in firms into consideration when making investment decisions. If there is a high proportion of female board representation in a firm, it possibly implies that the firm value is negatively affected and vice versa. Shareholders are likely to choose a company with a smaller number of female directors in order to maximize their interests. The finding may act as a reference for the investors and shareholders to make the investment decisions.

Though the results of this study indicate that lower gender diversity leads to a higher firm value, it is not recommended for corporations and the government to impose gender diversity rules, such as regulating the number of female directors immediately as there is an insufficiency in relevant empirical studies based on Hong Kong data. Gender may not be a sole determinant for the selection of board members. It is more conclusive for corporations to consider gender, qualifications, abilities and experiences of the individuals for selection of board members rather than gender only. When there are
adequate empirical studies specifically investigating the situation in Hong Kong and a consistent result is obtained, corporations and the government may take following actions by looking into the implications of the future studies.

The finding is subject to some limitations such as ignoring the unobservable attributes, involvements of directors and backgrounds of the companies in the data. It is recommended that these factors may be taken into consideration in measuring the relationship between gender diversity in boardroom and firm value in the future studies on this topic as these variables may give rise to other results and implications.

9. Appendices

9.1 Appendix I - Additional Information of Variables

Tobin’s q =

\[
\frac{Market\ Value\ of\ Stock + Book\ Value\ of\ Debt}{Book\ Value\ of\ Total\ Assets}
\]

Dummy Variable of Female Directors =

1 (when there is at least one female director) \( OR \)

0 (when there is no female director)
Blau Index =

\[ 1 - \sum_{i=1}^{n} p_i^2 \]

\( (p_i = \text{percentage of board members in each category, } n = \text{number of categories}) \)

Blau index is a commonly used diversity index to measure evenness and heterogeneity. The range of the Blau index for gender diversity is 0 to 0.5 which means the closer to 0, the less diverse; and the closer to 0.5, the more diverse. For example, in this study, Blau index of 0.5 means that the board has the equal number of male and female directors.\(^5\)

Shannon Index =

\[ - \sum_{i=1}^{n} p_i \ln p_i \]

\( (p_i = \text{percentage of board members in each category, } n = \text{number of categories}) \)

Shannon index is another commonly used diversity index, but it is more sensitive to small changes. The minimum and maximum values of Shannon index for gender diversity are 0 and 0.69 respectively. For example, zero male directors or zero female directors on board would yield a value of 0 and 0.69 would be resulted when both male

\(^5\) For detail about Blau index, see Blau (1977).
\(^6\) Since \( \ln 0 \) is not defined, value of 0 is taken when \( p_i = 0 \).
and female directors have the same proportion on board.\textsuperscript{7}

Leverage =

$$\frac{\text{Book Value of Total Debt}}{\text{Book Value of Total Assets}}$$

Return on Assets (ROA) =

$$\frac{\text{Net Income}}{\text{Book Value of Total Assets}}$$

Firm Size =

$$\log(\text{Book Value of Total Assets})$$

Board Size =

$$\log(\text{Total Number of Directors})$$

9.2 Appendix II - Tables of Model Summary and ANOVA\textsuperscript{b}

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.227\textsuperscript{a}</td>
<td>.051</td>
<td>.023</td>
<td>28.76884</td>
</tr>
</tbody>
</table>

\textsuperscript{a} Predictors: (Constant), SIZE, LEVER, DWOMAN, ROA

\textit{Table II-a}

\textsuperscript{7} For detail about Shannon index, see Shannon (1948).
Table II-b

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
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<td>4</td>
<td>1488.641</td>
<td>1.799</td>
<td>.133</td>
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<td>Residual</td>
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<td>827.646</td>
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<td>137</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), SIZE, LEVER, DWOMAN, ROA

Table II-b

Model Summary

<table>
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<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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</table>

a. Predictors: (Constant), SIZE, PWOMAN, LEVER, ROA

Table III-a

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
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<tr>
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<tr>
<td>Total</td>
<td>116031.5</td>
<td>137</td>
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<td></td>
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</table>

a. Predictors: (Constant), SIZE, PWOMAN, LEVER, ROA

Table III-b

Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.222</td>
<td>.049</td>
<td>.021</td>
<td>28.79751</td>
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</table>

a. Predictors: (Constant), SIZE, LEVER, BLAU, ROA

Table IV-a
**ANOVAb**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
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<tr>
<td>1</td>
<td>Regression</td>
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a. Predictors: (Constant), SIZE, LEVER, BLAU, ROA

b. Dependent Variable: Q

*Table IV-b*

**Model Summary**

<table>
<thead>
<tr>
<th>Model</th>
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<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
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<td>.024</td>
<td>28.75342</td>
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</table>

a. Predictors: (Constant), SIZE, LEVER, SHANNON, ROA

*Table V-a*

**ANOVAb**

<table>
<thead>
<tr>
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<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
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</thead>
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<td>1</td>
<td>Regression</td>
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<td></td>
<td>Residual</td>
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<td>137</td>
<td></td>
<td></td>
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</tbody>
</table>

a. Predictors: (Constant), SIZE, LEVER, SHANNON, ROA

b. Dependent Variable: Q

*Table V-b*

**Model Summary**

<table>
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<tr>
<th>Model</th>
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</thead>
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<tr>
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<td>.081</td>
<td>.061</td>
<td>.40122</td>
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</tbody>
</table>

a. Predictors: (Constant), SIZE, Q, LNDIR

*Table VI-a*
### ANOVA

<table>
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<th>Model</th>
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<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
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</thead>
<tbody>
<tr>
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<td>.636</td>
<td>3.949</td>
<td>.010</td>
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<tr>
<td>Residual</td>
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</tr>
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<td>Total</td>
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</table>

- a. Predictors: (Constant), SIZE, Q, LNDIR
- b. Dependent Variable: DWOMAN

### Table VI-b

<table>
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<th>Model</th>
<th>R</th>
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<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
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<tbody>
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- a. Predictors: (Constant), SIZE, Q, LNDIR

### Table VII-a

<table>
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<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
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<tbody>
<tr>
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</table>

- a. Predictors: (Constant), SIZE, Q, LNDIR
- b. Dependent Variable: PWOMAN

### Table VII-b

<table>
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<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
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<tbody>
<tr>
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<td>.200</td>
<td>.040</td>
<td>.018</td>
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</tr>
</tbody>
</table>

- a. Predictors: (Constant), SIZE, Q, LNDIR

### Table VIII-a
Table VIII-b

ANOVA

<table>
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<tr>
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<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>.142</td>
<td>3</td>
<td>.047</td>
<td>1.853</td>
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<tr>
<td></td>
<td>Residual</td>
<td>3.426</td>
<td>134</td>
<td>.026</td>
<td></td>
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<tr>
<td></td>
<td>Total</td>
<td>3.569</td>
<td>137</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), SIZE, Q, LNDIR  
b. Dependent Variable: BLAU

Table IX-a

Model Summary

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<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.214a</td>
<td>.046</td>
<td>.024</td>
<td>.22779</td>
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</table>

a. Predictors: (Constant), SIZE, Q, LNDIR

Table IX-b

ANOVA

<table>
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<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
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<td>Residual</td>
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<td>.052</td>
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<td></td>
<td>Total</td>
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<td>137</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), SIZE, Q, LNDIR  
b. Dependent Variable: SHANNON

9.3 Appendix III - References


Rose, C. (2007). Does Female Board Representation Influence Firm Performance? The


