Institutions and Economies
Vol. 11, No. 1, April 2019, pp. 1-20

Board Gender Diversity, Board Independence and Firm Performance in Malaysia

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Abstract: *This study investigates the influences of board gender diversity and board independence on firm performance. Ordinary least squares, two-stage least squares and generalised method of moments are employed to test the relationships among board gender diversity, board independence, and firm performance in firms listed on Bursa Malaysia between 2010 and 2015. The regression results indicate that female directors and independent directors significantly and negatively affect firm performance, respectively. However, the interaction term of board gender diversity and board independence is statistically insignificant. Overall, managers must consider that board gender diversity and board independence may not have an interactive effect on improving the performance of their firms.*

Keywords: Board gender diversity; board independence; firm performance; Malaysian public listed companies
JEL Classification: G34; L21

Article Received: 20 October 2017; Article Accepted: 20 December 2018

1. Introduction

Sharing experiences and related inputs in a company may result in strong corporate governance (Fondas & Sassalos, 2000), of which board gender diversity is a key indicator. Board gender diversity has been widely debated in research (Campbell & Mínguez-Vera, 2008) because this concept plays not only an important role in firm-level governance but also reflects the participation of women in various economic activities. While board gender

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diversity may bring about expertise and knowledge that can benefit firm performance, this factor may also lead to low efficiency (Maznevski, 1994). Most studies on board gender diversity (Adams & Ferreira, 2009; Bernardi, Bosco & Columb, 2009; Singh & Vinnicombe, 2004) have focused on the presence, percentage or number of female directors in the boardroom.

Board independence may be used as a mechanism of good corporate governance. However, few empirical studies, such as Hsu and Wu (2014) found that the likelihood of corporate failure increases along with board independence. Moreover, Bhagat and Black (2002) challenged the positive effect of board independence and asserted that board independence might indicate poor firm performance. Faleye, Hoitash and Hoitash (2011) and Kim, Mauldin, and Patro (2014) also found that an independent board of directors does not contribute to firm performance in the US unlike those executive directors with better firm-specific knowledge yet exhibit a greater tendency to manipulate financial reporting.

Although board gender diversity improves board communication and the board monitoring process (Joy, 2008), we find that having female directors can mitigate the drawbacks of having independent directors. Female directors engage in independent thinking and diligence in governance more often compared with independent directors (Adams & Ferreira, 2009). Therefore, the impacts of board gender diversity and board independence on the outcome of companies warrant an empirical exploration. To address this gap, this study examines the individual and interactive influences of female directors and independent directors on firm performance.

Malaysia provides an interesting setting for this study because of three reasons. Firstly, Malaysia differs from other emerging markets because of its commitment to promoting the participation of women in business-related activities. The Malaysian government has recently encouraged publicly listed firms to have at least 30% of females to participate in their decision-making processes. Secondly, Malaysia has a deep-rooted culture where women are prevented from progressing in their jobs. Therefore, female directors and their performance are simultaneously influenced by their government policies and social culture, thereby providing an interesting setting to study the interplay between institutional and societal attributes (Abdullah, Ismail & Nachum, 2016). Thirdly, Malaysian firms share corporate governance characteristics similar to firms in emerging markets. Their legal infrastructure can be considered developed because the Malaysia Code of Corporate Governance (MCCG) is regulatory driven, and has been revised and improved for a few times.

This study contributes to the literature by differentiating female directors from independent directors and by examining whether female directors can help mitigate the potential negative effects of independent directors. Although board gender diversity and board independence significantly and

negatively affect firm performance as shown in our regression results, we find that female directors may not interact much with independent directors in influencing the outcomes of their firms.

The remainder of this paper is structured as follows. The second section reviews the related literature. The third section presents the research methodology. The fourth section discusses the empirical results while the fifth section concludes the paper.

2. Literature Review

2.1 Board Gender Diversity and Firm Performance

The board of directors focuses on protecting and promoting the interests of shareholders, customers, suppliers, employees, society and environment and on addressing financial matters (Finegold, Benson & Hecht, 2007; Williams, 2003). Compared with their male counterparts, female directors show more concern on the sensitivity of their stakeholders (Bear, Rahman & Post, 2010; Huse, 2005) and make better decisions (Hillman, Shropshire & Cannella, 2007; Milliken & Martins, 1996) that can contribute to high firm performance (Conyon & He, 2017). Board gender diversity can also improve corporate governance (Gul, Srinidhi & Ng, 2011). The number of studies on board gender diversity and firm performance from different countries has increased in recent years because of the unique knowledge, information and variety of experiences, skills and networks of gender-diverse boards (Hillman et al., 2007; Miller & del Carmen Triana, 2009). This argument is supported by Low, Roberts and Whiting (2015), who investigated Asian firms in Hong Kong, South Korea, Malaysia and Singapore and found that the appointment of female directors can positively affect the return on investments of these firms. Similarly, Erhardt, Werbel and Shrader (2003) and Finegold et al. (2007) found a positive relationship between female directors and firm performance amongst US companies as measured by Tobin's Q. Liu, Wei, and Xie (2014) also reported that female directors exert a stronger positive effect on firm performance, especially those controlled by legal entities, because female directors in controlling firms devote much effort in monitoring and improving the operations and financial performance of their firms.

Conversely, Strydom, Au Yong, and Rankin (2016) found that board gender diversity may not affect firm performance in terms of earnings quality. They also found that a higher proportion of female directors on the board of Australian firms corresponds to a lower stock price volatility. Rose (2007) showed that board gender diversity does not influence the performance of listed Danish firms from 1998 to 2001 as measured by Tobin's Q. Similarly, Carter, D'Souza, Simkins, and Simpson (2010)

reported an insignificant relationship between female directors and firm performance for S&P 500 index firms from 1998 until 2002. Adams and Ferreira (2009) and Pletzer, Nikolova, Kedzior, and Voelpel (2015) highlighted a negative relationship between female directors and firm performance due to these directors' lack of skills and experiences in monitoring the performance of their firms. They added that female directors might not be employed based on their level of expertise and experiences but rather based on their family relationships (Bianco, Ciavarella, & Signoretti, 2015; Saeed, Yousaf & Alharbi, 2017).

Based on the above arguments, we propose the following non-directional hypothesis:

Hypothesis 1: *Board gender diversity influences firm performance*

2.2 Board Independence and Firm Performance

The MCCG recommends that one-third of the board of directors of a company must comprise independent directors. Many studies have examined the relationship between corporate governance, particularly board independence, and firm performance. However, their findings on the relationship between board independence and firm performance are mostly inconclusive (Terjesen, Couto & Francisco, 2016). Scholars have mostly applied three theories to explain such a relationship.

Firstly, agency theory describes the conflicts of interest between the principal (owner) and agent (management) (Fama & Jensen, 1983). According to this theory, firms can improve their performance if they have a large number of independent directors on their board because these directors are outsiders who have no critical interests in the firm (Terjesen et al., 2016) and can monitor and advise managers who, in turn, can encourage and influence shareholder interests (Brickley & Zimmerman, 2010). However, this view has been challenged. Firstly, those independent directors who usually hold multiple board memberships are very busy leading to poor firm performance (Kumar & Sivaramakrishnan, 2008). Secondly, independent directors may be unable to influence CEOs to perform actions on behalf of them because they do not have the formal authority to do so (Oshry, Hermalin & Weisbach, 2010; Rashid, 2018).

Secondly, resource dependency theory focuses on the external resources (e.g. knowledge, network or social resources, expertise and legitimacy) brought by independent directors to their firms. According to Terjesen et al. (2016), independent directors have unique experiences and knowledge that they gain from other firms, and these resources can help firms increase their profit and achieve success. However, given that independent directors lack

insider information about their firms, they may not be competent enough to perform their assigned tasks (Rashid, 2018).

Thirdly, upper echelons theory explains that the behaviour, experience and values of executives can impact firm performance. Zhu, Ye, Tucker, and Chan (2016) found that empowering independent directors may promote efficient monitoring and increase firm value. However, Hambrick (2007) argued that executives might not use their expertise and skills in the boardroom. In other words, board independence may not be able to improve firm performance (Laux, 2008; Wang, Lu & Tsai, 2011). Therefore, independent directors need to apply their expertise, skill and knowledge when making decisions (Adams & Ferreira, 2007).

Upon combining the above arguments, we propose the following non-directional hypothesis:

Hypothesis 2: *Board independence is related to firm performance*

2.3 *Board Gender Diversity, Board Independence and Firm Performance*

Compared with male leaders, female leaders in firms have stronger communication channels with female customers given the similarities in their life experiences and perspectives. In addition, having a large number of females in the board of directors can increase the opportunities for a firm to improve its performance because such firm can gain a better understanding of its customers' needs and behaviours (Ahmadi, Nakaa & Bouri, 2018). However, Liu et al. (2014) found that female executive directors have a significant positive effect on firm performance yet did not observe the same effect for female independent directors. Based on resources dependence theory, an independent board can benefit the firm through the external resources (i.e. knowledge, network and experience) brought by independent directors to the firm (De Cabo, Gimeno & Nieto, 2012). This finding is surprising because the external resources brought by female independent directors do not significantly affect firm performance (Bianco et al., 2015). This argument is further supported by Terjesen et al. (2016) who found that external independent directors do not contribute to firm performance unless the board is gender diversified. Liu et al. (2014) added that female independent directors have fewer opportunities to observe and influence firm performance given their lack of insider information about the operating activities of their firms. In other words, female executive directors are more effective in performing monitoring duties compared with female independent directors. In this case, we empirically investigate whether the interaction between independent directors and female directors affects firm performance.

Following the above arguments, we test the following hypothesis:

Hypothesis 3: *Female directors interact with independent directors in influencing firm performance*

3. Data and Methodology

3.1 Sample Selection

This study selects the top 200 Malaysian firms (as of 31 December 2015) listed in Bursa Malaysia from 2010 to 2015. To minimise the influence of the 2007–2009 global financial crisis on firm performance, the sample period for this study begins in 2010. Those firms with missing values are removed from the sample. Extremely large or small firms are also excluded from the sample because of their low representativeness. We also exclude banks and financial firms because they are following a different governance system and because interest rates are beyond the scope of this study. All financial data used in this study are available in the Thomson Reuters Eikon database, while the data on CEO characteristics and corporate governance are obtained from the annual reports of the sampled firms. We acknowledge that our panel data for the top 200 companies are unbalanced because these firms are notable for their good corporate governance practices, which allow us to examine the influence of board gender diversity and board independence in a good corporate environment.

3.2 Model Specification

Regression models are built for this study as they can capture more information compared with single cross-section and time series data. The equations are as follows:

$$\text{Performance}_{it} = \beta_1 BIND_{it} + \beta_2 BDIV_{it} + Controls_{it} + INDUSTRY + YEAR + \varepsilon_{it} \quad (1)$$

$$\text{Performance}_{it} = \beta_1 BIND_{it} + \beta_2 BDIV_{it} + \beta_3 BIND_{it} \times BDIV_{it} + Controls_{it} + INDUSTRY + YEAR + \varepsilon_{it} \quad (2)$$

The above models can be estimated to examine the relationship amongst board independence, board gender diversity and firm performance. To address the estimation bias resulting from the omission of variables, several time-invariant variables that may affect firm performance are controlled. This study mainly employs ordinary least square (OLS) with a robust standard error given its wide usage in corporate governance studies when dealing with potential heterogeneity issues.

In the model, i represents the firm unit, t denotes the point of time and ε is the error term. ROA and ROE are two dependent variables representing firm performance and are measured by net income over total assets and net income over total equities, respectively, as shown in previous studies (Liu et al., 2014; Marwa & Aziakpono, 2015; Omran, Bolbol & Fatheldin, 2008). The key independent variables that are analysed in this study include board independence (BIND) and board gender diversity (BDIV). Following Kang, Cheng, and Gray (2007) and Liu et al. (2014), BIND is measured as the percentage of independent directors in a corporate board. Meanwhile, following Carter et al. (2010), BDIV is calculated as the percentage of female directors on a corporate board.

This study also controls some important corporate governance variables that may influence firm performance. The control variables selected represent CEO character variables and ownership structure variables; these variables are selected since they may endogenously determine BDIV and BIND, and affect firm performance at the same time. Board size (BSIZE) and board meeting (BMEET) are measured by the natural logarithm of the number of directors and number of meetings, respectively (Liu et al., 2014; Saeed et al., 2017; Strydom et al., 2016; Vafeas, 1999). This study also controls CEO characteristics, including CEO tenure (CTEN), CEO age (CAGE), CEO compensation (CCOMP), CEO ownership (COWN), CEO gender (CGEN) and CEO race (CRACE). Government ownership (GOWN), foreign ownership (FOWN) and ownership concentration are used to represent ownership structure characteristics.

Table 1: Definition of variables

Abbreviation	Variable	Measurement
ROA	Firm performance	Net income/beginning total assets (Marwa & Aziakpono, 2015)
ROE		Net income/beginning total equity (Omran et al., 2008)
BDIV	Board gender diversity	Female directors/total directors (Carter et al., 2010)
BIND	Board independence	Independent directors/total directors (Kang et al., 2007; Liu et al., 2014)
BSIZE	Board size	Natural logarithm of the number of directors (Omran et al., 2008; Saeed et al., 2017)
BMEET	Board meeting	Natural logarithm of the number of meetings (Vafeas, 1999)
CTEN	CEO tenure	Number of years that a manager has been serving at a CEO position until the year of entry (Coles, Daniel, & Naveen, 2006)

Table 1: (Continue)

Abbreviation	Variable	Measurement
CAGE	CEO age	Age of the CEO (Coles et al., 2006)
CCOMP	CEO compensation	Natural logarithm of the total of compensation of the CEO during the year (Fahlenbrach & Stulz, 2011)
COWN	CEO ownership	Percentage of shares held by a CEO (Agrawal & Knoeber, 1996)
CGEN	CEO gender	Dummy variable that is equal to 1 if the CEO is female and equal to 0 otherwise (Abor, 2007)
CRACE	CEO race	Dummy variable that is equal to 1, 2, 3 or 4 if the CEO is Malay, Chinese, Indian or other, respectively
GOWN	Government ownership	Measured as the percentages of shares held by a government (Liu et al., 2014; Ting & Lean, 2011)
FOWN	Foreign ownership	Measured as the percentages of shares held by foreigners (Liu et al., 2014)
Top3	Ownership concentration	Percentage of shares owned by the top 3 largest shareholders (Omran et al., 2008)
FSIZE	Firm size	Natural logarithm of total assets (Ting & Lean, 2011)

4. Empirical Findings and Discussion

4.1 Descriptive Statistics

Table 2 reports the descriptive statistics of the variables used in this study. To reduce the impact of extreme observations, this study winsorised all the variables at 1% of each tail of the distribution. Firstly, we find that the sample companies utilised approximately 19% and 39.7% of their liabilities and debts to finance their assets, respectively. The mean values of ROA (0.079) and ROE (0.142) indicate that the firms are profitable at around 7.9% and 14.2% of their total assets and invested capital, respectively. The percentages of board gender diversity and board independence are approximately 12.6% and 45.1%, respectively. Meanwhile, the mean logged value of 2.115 on board size suggests that the sampled companies have approximately eight persons at the board level. The average number of board meetings is 6 (logged value of 1.713). For CEO personal characteristics, Malaysian CEOs serve as CEOs of their companies for 8 to 9 years on average and are mostly aged 55 years and above. The CCOMP value of 14.473 indicates that the CEO remuneration in the sampled companies is approximately RM1.930 million on average. CEOs hold around 3.36% of these companies' shareholdings. Most Malaysian CEOs are males while only 4.1% are

females. An estimated 5.5% and 7.6% of the Malaysian listed companies' shareholdings are owned by government and foreign investors, respectively. The three largest shareholders own 56 percent of the shareholdings on average. The mean value of logged firm size (14.402) indicates that these companies have approximately RM1,797 billion of total assets on average (logged value of 14.402).

Table 2: Descriptive statistics of variables

Variables	N	Mean	Minimum	Maximum	Standard Deviation	25%	50%	75%
ROA	1,177	0.079	-0.561	0.774	0.086	0.034	0.066	0.108
ROE	1,177	0.142	-3.661	1.721	0.219	0.067	0.118	0.175
BDIV	1,177	0.126	0	1	0.126	0	0.125	0.182
BIND	1,177	0.451	0.222	0.875	0.117	0.380	0.430	0.500
BSIZE	1,177	2.115	1.609	2.773	0.232	1.950	2.080	2.303
BMEET	1,177	1.713	0.693	2.565	0.312	1.390	1.610	1.946
CTEN	1,177	8.878	0	43.000	7.117	3.000	8.000	12.000
CCOMP	1,177	14.473	11.175	17.304	0.810	14.036	14.443	14.894
COWN	1,177	0.0336	0	0.605	0.071	0	0.0002	0.003
CGEN	1,177	0.041	0	1	0.198	0	0	0
GOWN	1,177	0.055	0	0.900	0.092	0	0.012	0.090
FOWN	1,177	0.076	0	0.850	0.131	0	0.016	0.102
Top3	1,177	0.560	0.014	0.884	0.164	0.444	0.572	0.672
FSIZE	1,177	14.402	7.984	18.305	1.441	13.508	14.325	15.174

As can be seen in the correlation matrix in Table 3, the highest correlation is observed between CAGE and CTEN (0.400), thereby suggesting no multicollinearity problem. We also checked the variance inflation factor values to ensure the absence of any serious multicollinearity problem.

4.1 Board Gender Diversity, Board Independence and Firm Performance

This section reports the findings of the relationship between board gender diversity and firm performance as well as that between board independence and firm performance. The interaction effect of board gender diversity and board independence on firm performance is also highlighted. A Pearson correlation test is conducted to check for the correlations amongst the explanatory variables. The unreported results show that the degree of associations is generally weak as indicated by the low values of the coefficients. In other words, the correlation coefficients are insufficiently large to create any collinearity issue in the regression analyses.

Table 3: Correlation analysis

	ROA	BDIV	BIND	BDIV_BIND	BSIZE	BMEET	CTEN	CAGE	CCOMP	COWN	CGEN	GOWN	FOWN	Top3
ROA	1													
BDIV	-0.041	1												
BIND	-0.059	0.108*	1											
BDIV_BIND	0.020	0.145*	0.083	1										
BSIZE	-0.037	0.082	-0.205*	-0.097	1									
BMEET	-0.075	0.105*	0.174*	-0.007	0.219*	1								
CTEN	-0.010	-0.065	-0.177*	-0.040	-0.012	-0.268*	1							
CAGE	-0.064	-0.137*	-0.069	-0.114*	-0.033	-0.006	0.400*	1						
CCOMP	-0.002	-0.066	-0.069	-0.030	0.167*	-0.083	0.226*	0.097	1					
COWN	0.020	-0.084	-0.053	-0.005	-0.049	-0.133*	0.226*	0.129*	0.083	1				
CGEN	-0.016	0.070	-0.024	-0.051	-0.007	-0.004	-0.059	-0.043	-0.004	-0.089	1			
GOWN	-0.079	0.083	0.058	0.047	0.193*	0.207*	-0.069	-0.069	0.001	-0.072	0.094	1		
FOWN	-0.026	-0.087	-0.082	-0.008	0.028	-0.077	0.084	0.079	0.160*	0.336*	-0.088	-0.123*	1	
Top3	-0.001	-0.043	-0.021	-0.008	-0.020	0.003	-0.003	-0.015	0.019	-0.046	0.034	-0.021	-0.027	1
FSIZE	-0.296*	-0.019	0.064	0.010	0.053	0.110*	-0.084	-0.032	0.082	-0.006	0.057	0.139*	-0.025	0.231*

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Interestingly, Model 1 in Table 4 indicates that the coefficients (-0.0461) on board gender diversity are negatively associated with firm performance. Similarly, the generalised method of moments (GMM) results presented in Model 2 show that the percentage of female directors has a significantly negative impact on firm performance. These results are consistent with those of previous studies (Carter et al., 2010; Rose, 2007; Strydom et al., 2016). They argue that board gender diversity does not influence the performance of the companies; female directors might not have sufficient expertise and experience. In this situation, the performance of the firm will drop due to having directors who lack skill and competence to perform their assigned tasks.

Table 4: Regression analysis–OLS (DV = ROA)

Variable	Model 1	Model 2	Model 3
LEV	-0.110*** (0.017)	-0.109*** (0.016)	-0.110*** (0.017)
BDIV	-0.046* (0.020)	-0.042* (0.020)	-0.041* (0.019)
BIND		-0.042* (0.021)	-0.042* (0.021)
BDIV×BIND			-0.127 (0.236)
BSIZE	-0.006 (0.011)	-0.0120 (0.011)	-0.0127 (0.011)
BMEET	-0.009 (0.009)	-0.007 (0.009)	-0.0066 (0.009)
CTEN	-0.000 (0.000)	-0.001 (0.000)	-0.001 (0.000)
CAGE	-0.001* (0.000)	-0.001* (0.000)	-0.001* (0.000)
CCOMP	0.005 (0.003)	0.005 (0.003)	0.006 (0.003)
COWN	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)
CGEN	0.006 (0.009)	0.005 (0.009)	0.004 (0.009)
GOWN	-0.044* (0.021)	-0.042* (0.021)	-0.043* (0.021)
FOWN	-0.027 (0.016)	-0.027 (0.016)	-0.027 (0.016)
Top3	-0.018 (0.012)	-0.019 (0.012)	-0.019 (0.012)
CRACE	Yes	Yes	Yes
INDUSTRY	Yes	Yes	Yes
YEAR	Yes	Yes	Yes
_cons	0.128* (0.054)	0.154** (0.056)	0.156** (0.056)
N	1,128	1,128	1,128
adj. R^2	0.123	0.125	0.125

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Values in parentheses are standard errors.

The findings in Model 2 also show that board independence negatively influences firm performance; similar results are found in Model 3 when board independence and board gender diversity are simultaneously included. The results are in line with those of Oshry et al. (2010) and Rashid (2018), all of which find that board independence may not be able to improve firm performance. Even though, agency theory describes firms can improve their

performance if they have a large number of independent directors (Terjesen et al., 2016) but when independent directors are from outsiders, they do not have the formal authority to influence CEOs to perform actions on behalf of them.

We also test the interaction effect of board gender diversity and board independence on firm performance. The insignificant coefficient on board gender diversity × board independence in Model 3 indicates that female directors and independent directors may not work together towards influencing firm performance. The results indicate that the negative association between board gender diversity and firm performance is more pronounced with the presence of independent directors. Our findings corroborate with those concluded by Liu et al. (2014), Bianco et al. (2015), and Terjesen et al. (2016).

Previous studies have highlighted a significant relationship between board independence and firm performance (Oshry et al., 2010; Terjesen et al., 2016) as well as between board gender diversity and firm performance (Gul et al., 2011; Hillman et al., 2007). However, based on our sample and analysis, board independence and board gender diversity negatively affect firm performance with some marginal effects. These findings also indicate that the effect of board gender diversity on firm performance does not vary by board independence.

4.3 *Endogeneity – Robustness Test*

OLS regression can be considered as an ideal model because this process assumes that all explanatory variables are strictly exogenous and that the error term is independently and identically distributed. However, previous studies (Shaukat, Qiu, & Trojanowski, 2016) show that board-related characteristics are endogenously related to firm performance. Therefore, we re-estimate the above models by adopting instrumental variable estimation approaches, namely, GMM and two-stage least squares (2SLS), which have become standard approach nowadays (Baltagi, Fingleton, & Pirotte, 2014). In the first stage of 2SLS, we estimate the endogenous variable by using the instrumental variables. Since board-related characteristics are endogenously related to firm performance, this study assumes that other board characteristics determine BDIV. Specifically, in the first stage, BDIV is instrumented by BSIZE and diversity dummy variables, which equal to 1 if BDIV is more than its median value. The post-estimation test performed also suggests that the instruments are valid and free from overidentifying restrictions. We then apply the estimated value of BDIV instead of the original value for our main regression. The GMM estimation procedure developed by (Arellano & Bond, 1991) has been proven to be highly

efficient. The key argument of this procedure is that the essential instruments are within the model equation. The endogenous variables can be instrumented by their past values and by the external instruments.

The results in Table 5 suggest that the coefficients of board gender diversity and board independence become insignificant and may not affect firm performance. These results are obtained after controlling for other board characteristics, CEO characteristics, ownership concentration and firm characteristics.

Table 5: Regression Analysis–GMM and 2SLS (DV =ROA)

	(DV =ROA)	**(DV =ROA)**	**(DV =ROE)**	**(DV =ROE)**
Variable	**GMM**	**2SLS**	**GMM**	**2SLS**
LEV	-0.078* (0.037)	-0.128*** (0.017)	-0.145 (0.150)	-0.011 (0.046)
BDIV	-0.023 (0.019)	-0.047* (0.019)	-0.120 (0.083)	-0.121* (0.051)
BIND	-0.006 (0.018)	-0.034 (0.021)	-0.044 (0.055)	-0.123* (0.058)
BSIZE	0.004 (0.0091)	-0.012 (0.011)	0.0251 (0.024)	-0.002 (0.031)
BMEET	-0.006 (0.006)	-0.004 (0.009)	-0.025 (0.027)	-0.002 (0.023)
CTEN	-0.001 (0.000)	-0.001 (0.000)	-0.001 (0.001)	-0.002* (0.001)
CAGE	-0.000 (0.000)	-0.001* (0.000)	-0.001 (0.001)	-0.002* (0.009)
CCOMP	-0.001 (0.003)	0.008* (0.003)	-0.003 (0.008)	0.026** (0.008)
COWN	-0.000 (0.000)	0.001 (0.000)	0.000 (0.001)	0.001 (0.001)
CGEN	-0.007 (0.012)	0.008 (0.012)	0.036 (0.053)	0.067* (0.032)
GOWN	0.036 (0.033)	-0.024 (0.027)	0.040 (0.078)	-0.086 (0.073)
FOWN	-0.014 (0.017)	-0.028 (0.020)	-0.092 (0.077)	-0.118* (0.053)
Top3	-0.009 (0.025)	0.006 (0.015)	-0.050 (0.082)	-0.035 (0.041)
FSIZE	-0.000 (0.005)	-0.011*** (0.002)	0.020 (0.018)	-0.014** (0.005)
CRACE	Yes	Yes	Yes	Yes
INDUS	Yes	Yes	Yes	Yes
YEAR	Yes	Yes	Yes	Yes
Lagged ROA	0.542***(0.122)			
Lagged ROE			0.358 (0.189)	
_cons	0.103 (0.097)	0.272*** (0.056)	0.004 (0.020)	0.158 (0.152)
N	940	1,128	940	1,128
adj. R^2		0.152		0.100
hansenp	0.915		0.794	
ar2p	0.454		0.553	

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Values in parentheses are standard errors.

To further verify the validity of our results, we regress another corporate outcome on the same set of explanatory variables. Specifically, we replace ROA with ROE. Interestingly, the results in Table 6 remain the same, that is, board independence, instead of board gender diversity, produces significant effects and demonstrates interaction effects on ROE. Overall, board gender

diversity and board independence may have individual and marginal effects on firm performance.

Table 6: Regression Analysis–OLS (DV = ROE)

Variable	Coefficient (SE)	Coefficient (SE)	Coefficient (SE)
LEV	0.064 (0.073)	0.066 (0.072)	0.063 (0.074)
BDIV	-0.121 (0.09)	-0.109 (0.088)	-0.097 (0.078)
BIND		-0.135** (0.051)	-0.132** (0.049)
BDIV_BIND			-0.931 (0.924)
BSIZE	0.022 (0.043)	0.002 (0.041)	-0.003 (0.038)
BMEET	-0.015 (0.021)	-0.007 (0.022)	-0.007 (0.022)
CGEN	0.064 (0.037)	0.059 (0.037)	0.055 (0.036)
CTEN	-0.002 (0.001)	-0.002 (0.001)	-0.002 (0.001)
CAGE	-0.002* (0.000)	-0.002* (0.001)	-0.002* (0.001)
CCOMP	0.020** (0.007)	0.021** (0.007)	0.021** (0.007)
COWN	0.001 (0.000)	0.001 (0.000)	0.001 (0.001)
GOWN	-0.117 (0.062)	-0.113 (0.061)	-0.121 (0.064)
FOWN	-0.116 (0.066)	-0.118 (0.066)	-0.116 (0.065)
Top3	-0.065 (0.041)	-0.067 (0.041)	-0.067 (0.041)
CRACE	Yes	Yes	Yes
INDUS	Yes	Yes	Yes
YEAR	Yes	Yes	Yes
_cons	-0.077 (0.138)	0.005 (0.138)	0.023 (0.142)
N	1,128	1,128	1,128
adj. R^2	0.063	0.067	0.069

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Values in parentheses are standard errors.

Overall, we find similar results with the different proxies of firm performance and also used different analysis methods. Thus, the results, which are consistent with those of Liu et al. (2014), Bianco et al. (2015) and Terjesen et al. (2016), suggest that female and independent directors in the boardroom do not necessarily contribute to better firm performance. Several crucial findings emerge in this study. First, from the perspective of agency theory, independent directors may be unable to monitor management because they are outsiders who are busy and less familiar with the companies or a lack of insider information about the operating activities of their firms.

5. Conclusion

This study highlights the issues of board gender diversity and board independence in a fast-emerging market by taking Malaysia as an example given its reputation for being the first Asian government that pushed its

companies to have at least 30% of females working at their decision-making levels. However, each of the top 200 listed firms in Malaysia only has around 12.6 female directors on average, while some of these firms do not have any female directors serving in their corporate boards. After examining its relationship with firm performance by applying various regression methods, board gender diversity is revealed to significantly reduce firm performance, which can be ascribed to the fact that female directors are unable to apply their expertise, knowledge, skills or influences in maximising the wealth of their company shareholders. Furthermore, independent directors may not positively affect the outcomes of their firms. Interestingly, the interaction term of board gender diversity and board independence is insignificant at the conventional statistical level, thereby suggesting that female directors and independent directors may not complement each other.

This study provides some insights into the Malaysian corporate governance system that can also help governments from other emerging markets. Firstly, the ineffectiveness of independent directors may be attributed to the imperfect code of corporate governance. Policymakers must be aware of the actual state of board independence in companies. Secondly, given the deep-rooted culture of Malaysia, the government may need to wait for some time before companies allow females to participate in their decision-making processes. Having a small number of female directors may also mean companies are unable to detect the positive effects of these leaders on firm performance.

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