BOARD SIZE AND FIRM PERFORMANCE: A COMPARATIVE AND COMPREHENSIVE ANALYSIS BY USING ORGANIZATIONAL THEORIES AND CORRECT PROXIES

Kashif Rashid*, Sardar M. N. Islam**

Abstract

An organization's board is an important governance mechanism to incorporate corporate governance provisions in financial markets. Previous studies on board size and the value of a firm relationship (BVF) are inconclusive and lack a comparative and comprehensive analysis of this relationship which incorporates the role of additional factors present in the developing financial market. This study bridges the gap in the literature by providing some additional empirical evidence about the BVF relationship. This evidence is provided by performing a comparative and comprehensive analysis of the firms in developing and developed financial markets. Based on a sophisticated data set for the selected markets, two separate models are run and their results are compared. The results for this study suggest that in the developing market a bigger board improves the value of a firm, supporting the relevance of stewardship theory. On the contrary, in the developed market a smaller board improves shareholders' value, supporting the agency theory. The study has reflected the differences in the efficiency of institutional framework and the sophistication of financial development in a selection of countries, in the results on the BVF relationship. Furthermore, these results make the applicability of different business theories explaining market operations in these markets different from each other. The results are innovative and valuable to academics, analysts and industry professionals in both developing and developed financial markets.

Keywords: Developing markets, Developed markets, Board size, Value of firm and CEO duality.

/Centre for Strategic Economic Studies and Financial Modeling Program*
Victoria University
PO Box 14428, Melbourne, Victoria 8001, Australia
Email: sardar.islam@vu.edu.au

1. Introduction

Board size plays an important role in affecting the shareholders' value in developing and developed financial markets (Cheng, 2007). The board can discipline the management of a firm, reducing the agency cost in the market. The literature related to the board size and the value of a firm (BVF) relationship suggests either diverging or inconclusive results in developing and developed financial markets (Rashid and Islam, 2008). This necessitates further study in this area to generate conclusive evidence regarding the BVF relationship. Moreover, the process by which the value of a firm is affected by board size in these two markets is also different. Studies analyzing the differences in the BVF relationships in developing and developed countries have not been undertaken yet. Given the difficulties in conceptualizing, quantifying and measuring the variables in the quantitative BVF relationships, some proxies of the value of a firm are used in the empirical analyses of this relationship. There is a need and scope for using improved proxies of the value of a firm to specify an appropriate BVF relationship. In addition to the diverging schools of thought, a comparative and comprehensive study using a correct proxy to value a firm and interpretation of the results in the light of different business and management environments in developing and developed countries lacks in the literature.

The current study contributes to the literature on BVF relationship by filling the above-mentioned gap and extends a recent paper by Linck et al. (2008) by performing a comparative and comprehensive analysis. This analysis is performed by using correct proxies for the value of a firm and a sophisticated data set available on the firms of developing and developed markets.

Two separate models relevant for the selected financial markets are constructed by applying various econometric approaches. The results for the study suggest that a bigger board in the developed market does not create value due to the agency cost among the board members. The result supports agency theory as the board

members (agent) do not look after the interests of the shareholders (principal). On the other hand, the results relevant to the role of board size in affecting the firms' performance in the developing financial market suggests that the bigger board due to functional conflicts among the board members improves the value of a firm. This supports the stewardship theory in the developing market.

These results are robust as there is a lack of endogeneity (two way relationship) among the variables in the models for BVF relationship for developing and developed financial markets.

Following the introduction, the rest of the paper is structured as follows. Section 2 presents the literature review and motivation for the study. Hypothesis development is presented in Section 3. Section 4 discusses the methodology for the research conducted. Similarly, section 5 and Section 6 explain the econometric results. Section 7 describes the robustness tests for the study and finally, Section 8 concludes the paper.

2. Critical Literature Review and Motivation for the Study

Corporate governance is an important mechanism affecting the value of a firm. There are two types of corporate governance mechanisms in financial markets, internal and external corporate (Klapper and Love, 2004; Nam and Nam, 2004). The internal corporate governance mechanisms include the role of board size, the role of independent auditors, qualification of directors, independent directors to total directors' ratio and the role of chief executive officer (CEO) and chairman. External corporate governance instruments are related to external monitors operating in the market (Dallas, 2004). These monitors include the role of government, the role of politicians, the role of judiciary and the role of a regulatory authority in the financial market (Gupta, 2005).

The internal corporate governance mechanism defends the shareholders' rights in financial markets (Gompers et al., 2003). The optimal board size and an appropriate combination of inside and outside directors leads to the implementation of checks and balances on the management of a firm (Nam and Nam, 2004; Rashid and Islam, 2008). The non-duality of CEO and chairman in the financial market also protects the rights of shareholders by controlling detrimental actions of the CEO (Higgs, 2003: 23). Similarly, an optimal use of debt can reduce the free cash flow of a firm in financial markets (Jensen, 1986). Additional cash flow can be used in under and over investment by the management, which deteriorates the value of a firm as agency cost is improved in the market. The use of debt reduces the agency cost between the managers and shareholders, but improves the intensity of conflicts between creditors and managers (Heinrich, 2002). The debt and equity ratio can be fixed by considering the benefits and costs of debt resulting in the value creation for the shareholders.

The external regulatory regime affects the value of a firm by disciplining the internal corporate governance instruments including the influence on the board. The regulatory authorities can discipline the board members, majority shareholders and managers in the market, as managers (agents) and the stakeholders (majority shareholders) can harm the interests of the principal and minority shareholders by drawing private benefits (tunneling) from the assets of the firm. The external corporate governance instruments can also reduce the agency cost of debt and protect the shareholders' rights by making the market informational efficient and encouraging the firms to optimally utilize their assets (Nam and Nam, 2004).

Figures 1a and 1b suggest that a powerful regulatory authority, improved practices of corporate governance and sophistication of financial instruments reduce the agency cost of the board and maintain an efficient composition of directors in the firm. The regulatory authorities and board as monitors can also encourage liquidity, market efficiency and effective utilization of resources in the market. These external and internal corporate governance instruments can also use optimal leadership structure and debt and equity mix in improving shareholders' value. Figure 1b suggests that concentrated shareholding is an important regulatory component in the developing market. Furthermore, this mechanism is also affected by the social, cultural and economic chaos in the developing financial market.

The developing market is different from the developed market due to the variation in the foundations and systems followed by these markets. The developing financial market follows the hybrid system of corporate governance. The characteristics of this system include weak regulatory authority, cross and pyramidal shareholding, concentrated portfolios, imperfect market and lack of market for corporate control (Morin and Jarrell, 2001; Wei, 2003). Similarly, the foundation of the developing market suggests the existence of higher debt, undiversified portfolios, illiquid market, bank as a strong monitor and an appropriately governed agency cost between creditors and managers. Similarly, there are lower or different levels of conflicts between the principal and agent, and majority and minority shareholders in this market. Finally, the bankruptcy law is also tough on borrowers in this hybrid system of corporate governance (Berglof, 1997).

Figure 1a. Conceptual Framework for BVF Relationship in the Developed Financial Market

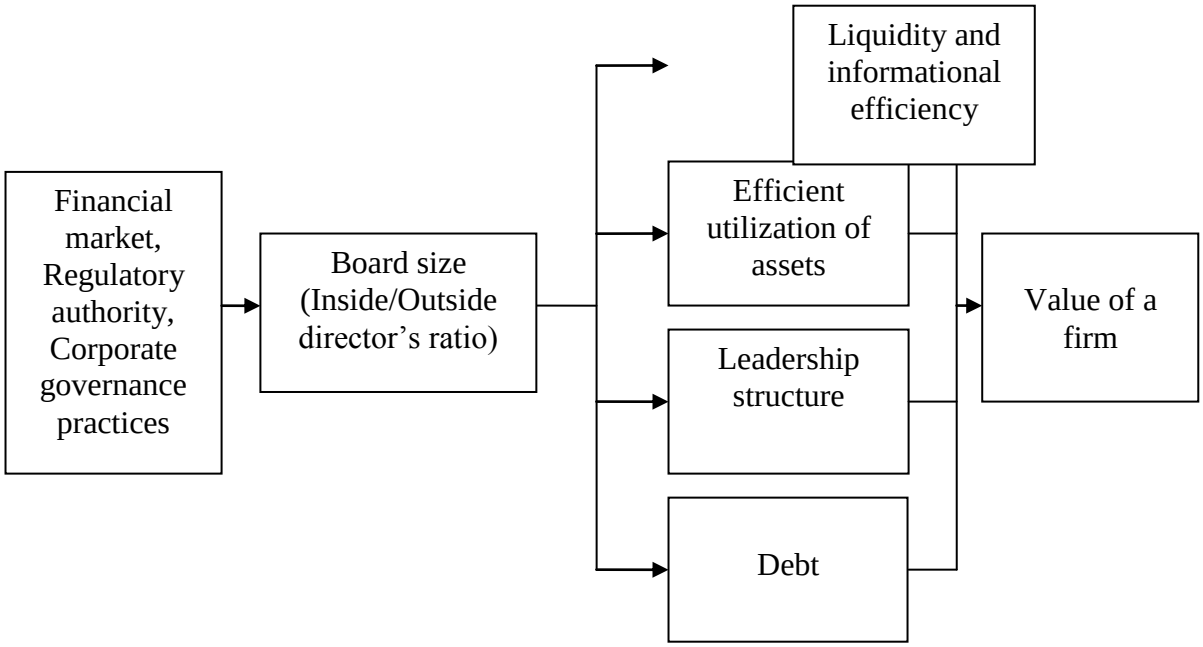
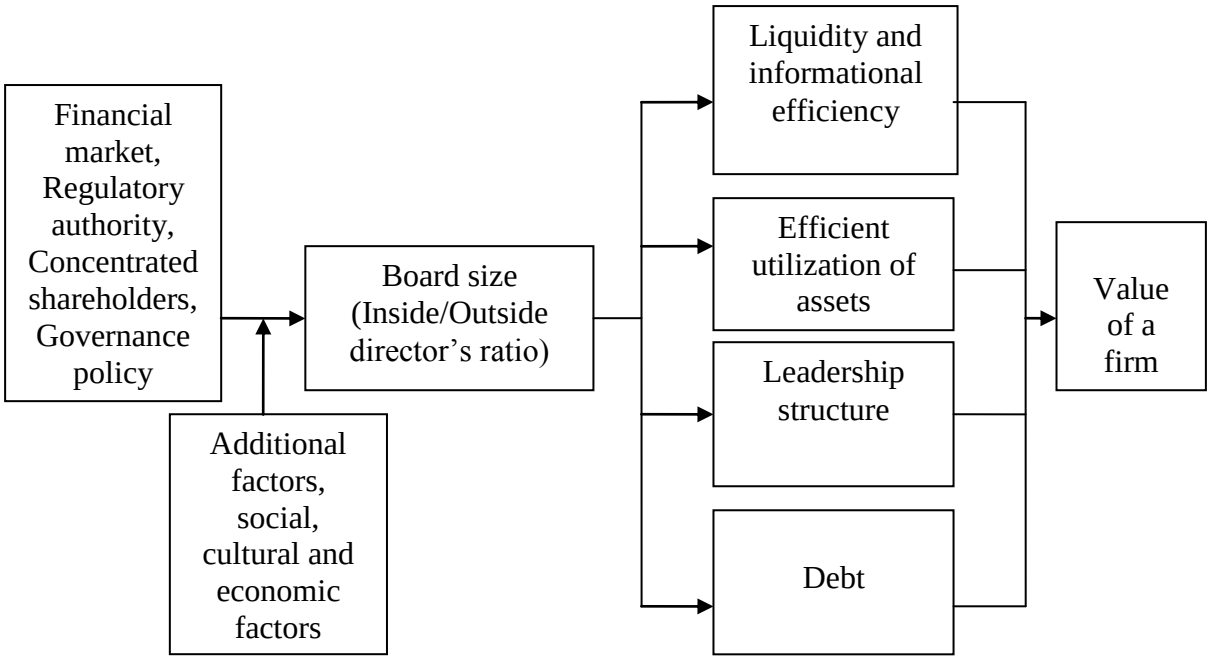


Figure 1b. Conceptual Framework for BVF Relationship in the Developing Financial Market



On the contrary, the developed financial market follows an outsider system of corporate governance. The characteristics of this system include strong regulatory authority, dispersed shareholding, existence of market for corporate control, absence of blockholders and short-term value creation for shareholders (Wei, 2003). Finally, capital is allocated in an efficient manner in the developed financial market. The foundation of the outsider system present in the developed market includes lower debt, dispersed shareholding, transparent and liquid market, informational efficiency, diversified portfolios and powerful board (Berglof, 1997). The agency cost between managers and shareholders is also governed properly in this market (Heinrich, 2002).

The differences in the hybrid and outsider system, variations in the foundation of the developing and developed markets and the role of additional imperfections affecting the BVF relationship makes the process by which the value of a firm is affected by the board in these two markets different from each other. However, the

differences in the BVF relationship in developing and developed markets have not yet been studied in a systematic and integrated framework. The separate details about the differences in the schools of thought pertinent to the BVF relationship in developing and developed markets are as follows.

Lipton and Lorsch (1992), Jensen (1993: 36) and Hermalin and Weisbach (2003) suggest that a bigger board deteriorates the value of a firm in a financial market. Similarly, Yermack (1996), Eisenberg et al. (1998), Barnhart and Rosenstein (1998), Conyon and Peck (1998), Vafeas (2000) and Loderer and Peyer (2002) in their studies related to the firms of the developed market, support a negative relationship between the value of a firm and the bigger board. Mak and Kusnadi (2005) and Sanda et al. (2005) on their studies related to Singaporean and Nigerian markets find similar results relevant to the BVF relationship in these markets.

On the contrary, Zahra and Pearce (1989), Mak and Li (2001), Dalton and Dalton (2005), Aggarwal et al. (2006), Adams and Mehran (2008), Coles et al. (2008) and Linck et al. (2008) find a positive relationship between board size and the value of a firm. They argue that a bigger board due to a higher level of expertise leads to improved firm performance. Similarly, Kyereboah-Coleman and Biekpe (2005) find a similar type of BVF relationship relevant in the firms of the developing market. Finally, Sah and Stiglitz (1991) confirm a positive relationship between the strength of a board and the value of a firm, as members of the bigger board have higher level of skills.

Researchers in the literature have also suggested indecisive results relevant to the board size and the value of a firm (BVF) relationship. Hart (1995) argues that the advantages of a bigger board such as an increased diversity, are offset by its disadvantages, such as the free riding and higher agency cost among the board members. Similarly, Bhagat and Black (2002), Beiner et al. (2004), Bonn et al. (2004) and Bennedsen et al. (2004) find a valid relationship lacking between the board size and the value of a firm in the developed financial market. The above mentioned literature review suggests indecisive evidence regarding the BVF relationship justifying further studies on this topic.

3. Hypothesis Development

The board is an important corporate governance instrument in the firms' hierarchy and can control the value destroying activities of management (Hermalin and Weisbach, 1988). The board can hire and fire the top management of the firm which includes the chief executive officer (CEO) of the organization. The board can also perform a significant role in operational strategic, tactical and financial decisions of an organization. This can reduce the agency cost of the firm and improve shareholders' value.

Board mix is vital in controlling the monitoring cost and defending the shareholders' rights. The board usually consists of outside (independent) and inside directors (Bhagat and Jefferis, 2002). There are two types of views related to the role of outside and inside directors in the market. The first school of thought related to these directors suggests a negative role of both in the financial market. Outside directors are not employees of the firm and act as a referee in deciding the firms' affairs. These directors neither hold an important position nor have a significant stake in the firm (Perry, 1995). This results in a lower financial interest of outside directors making them less inclined to monitor the firm (Klein, 1998). Also, there is a limited pool of outside directors available in the market which challenges the freedom of the CEO in selecting these directors.

On the other hand, inside directors are employees of the firm and are disadvantaged because they can be easily dominated by the CEO. This limits the decision making capacity of these directors altering the underperforming management of an organization. Inside directors cannot reject harmful projects due to lack of information, lower level of professional skills and implicit relationships with the CEO (Anderson and Reeb, 2003).

The second school of thought suggests a positive relationship of outsiders and insiders with the value of a firm. According to Abdullah (2002), the presence of outside (independent) directors gives an impression of an active monitoring and protection of the interests of shareholders. These decisions have a higher level of objectivity, improving investors' confidence in the market. Mace (1986) suggests that outside directors are selected on the basis of their title and reputation in the market. These (independent) directors have neutral views and can make rational decisions related to the profitability of a firm because of their independence from management (Rosenstein and Wyatt, 1990). They also have diversity and knowledge regarding market operations which enables them to display managerial skills and to make value adding decisions in the financial market.

Similarly, inside directors are the employees of a firm and have a greater locus of control on the information related to the firms' affairs due to their maintained relationship with the officials of a firm. Outside directors depend on inside directors to acquire the corporate information, so that they can make value adding decisions for the shareholders. This lack of decision making capacity affects the credibility of these outside directors in a market. The outside directors, with the help of internal information provided by inside directors can lower the entrenchment of the CEO by reducing the information asymmetry in a firm (Stiles and Taylor, 1993).

Board size is an important corporate governance determinant affecting the firm's performance. There are two theories explaining the role of a bigger board in affecting the value of a firm. The first theory is the stewardship theory. The supporters of this theory suggest that the bigger board improves the firms' performance as these members have a higher level of expertise in making rational decisions related to the affairs of the corporation (Sah and Stiglitz, 1991; Coles et al., 2008). These skills include strategic, planning and investment know-how of the board members. The benefits related to the bigger board also suggest that the members of this board represent varied departments of the firm, and due to greater capacity and their diverse backgrounds, they can give professional judgments related to the corporate affairs. The members of the bigger board do not allow the CEO to dominate their vision (Bhagat and Jefferis, 2002). The projects having negative net present value can easily be rejected due to the independence of the board and greater knowledge of the board members.

The second theory related to the role of board size in affecting the value of a firm is the agency theory (Berle and Means, 1968 cited in Demsetz, 1983: 375). The supporters of this school of thought suggest that a bigger board makes less intense decisions and deteriorates the value of a firm due to free riding among the board members. Free riding occurs when the majority of the board members does not monitor and act as an observer in the board. This increases the agency cost in a firm and results in irrational and delayed decisions due to the poor performance of the members of the board.

A larger board is also less cohesive compared to a smaller or optimal board and is involved in unproductive discussions. In this board, there can be intense conflicts among the board members. The lack of cohesiveness leads to mismanagement and an adverse level of coordination among the board members (Jensen, 1993: 36; Yermack, 1996). The members of the bigger board do not get either a proper turn or enough time to give their opinion (Golden and Zajac, 2001). Due to the absence of majority shareholders in the developed market, the board members are not disciplined. This leads to the higher level of conflicts in the board resulting in poor monitoring of the firm and the reduced value for the shareholders. On the contrary, an effective role by the majority shareholders can encourage the creditors' representatives on the board and ensure an optimal combination of inside and outside directors, reducing free riding in the market. The above-mentioned discussion leads to the following set of hypotheses.

H1: A bigger board affects the value of firm negatively in the developed market.

H2: A bigger board affects the value of firm positively in the developing financial market.

4. Methodology

The current section consists of data collection methods, construction of the variables, multifactor models and econometric testing relevant for the study. The details of this section are as follows.

4.1 Data collection methods

The corporate governance instruments used in this study are operationalized by different variables. The role of concentrated shareholding in affecting the value of a firm shows the level of agency cost in the market and is operationalized by agency cost (AC) and the role of board size by log of the board size. Similarly, CEO duality is operationalized by duality and the role of debt by gearing (Gr). Finally, market capitalization is operationalized in the current study by MC, return on total assets by ROTA and price to book value ratio by PBVR.

The data for the current study was also improved by using interpolation method for the missing observations. The missing observations in the case of first and last observations were replaced by the second and second to last observations. Similarly, the second and second to last observations were replaced by the first and last observations respectively.

4.2 Methodology for the variables

The secondary method of data collection was used as the study is based on the companies listed in the Kuala Lumpur and Australian securities exchanges. The data was collected for 120 companies for the year 2000 to 2003. The data relevant for this study consists of internal corporate governance instruments and control variables. The internal corporate governance mechanisms consist of the role of board size, the role of leadership structure, the role of debt and the role of majority shareholders. The data for these variables was collected by using an OSIRIS database and was cross-checked against the handbooks of stock exchanges. Similarly, in addition to corporate governance instruments in this study, the variables include return on total assets, price to book value ratio and market capitalization. The data for these variables was collected by using the websites of the selected companies.

The methodology of the construction of independent and dependent variables is discussed below. The first variable used to operationalize the hypothesis relevant to the role of board size in affecting the value of a firm

was the log of board size. The variable was constructed by counting the number of directors on the board as constructed by Kyereboah-Coleman and Biekpe (2005). Board size is expected to have a positive relationship with the firms' performance in the developing market. On the contrary, board size is hypothesized to have a negative relationship in the developed market due to an absence of the majority shareholders.

The second variable used in this study was the shareholders' concentration. The variable measures the ownership concentration and is operationalized by agency cost (AC). Shareholders' concentration was constructed by capturing the actual level of highest shareholding by an individual in the firm. The current proxy is a better measure compared to the previous measures (dummy variable) as used by Klapper and Love (2004) because we used the exact level of shareholding by an individual in the firm. We expect a negative relationship between the shareholders' concentration and the firms' performance as concentrated shareholding leads to a higher agency cost in the market because of the potential divergences of interests between the majority and minority shareholders.

The next variable used in this study was the gearing ratio. The variable was measured by taking into account the debt and equity ratio of the listed firms and was operationalized by gearing (Gr) in the model (Chen et al., 2005). Gr measures the strength of the firm to absorb the financial shocks in the market. The variable is expected to have a negative relationship in the developed financial market as lower debt complements the dispersed shareholding in this market. On the contrary, higher debt is expected to create value in the developing market due to the presence of majority shareholders as monitors (Heinrich, 2002).

The final instrument used in this study was the role of CEO duality (leadership structure) in affecting the firms' performance. The variable was constructed by using the dummy variable. The value of the variable is 1 when a single person holds both the important positions (CEO and chairman). On the contrary, value for the variable is 0 when the roles of the CEO and chairman are performed by two separate persons (Kyereboah-Coleman and Biekpe, 2005). We expect a negative relationship between the dual leadership structure and the firms' performance in financial markets as the independence of board is harmed in this case.

The control variables used in this study included market capitalization, return on total assets and price to book value ratio. Market capitalization (MC) was calculated by multiplying the share price by the number of outstanding shares. The variable was used to analyze the role of liquidity in affecting the firms' performance. MC is expected to have a positive relationship with the value of a firm as liquid market makes buying and selling easier for shareholders, which improves the investors' confidence and the shareholders' value (Black et al., 2006).

The next variable is the return on total assets (ROTA). The variable showed the efficiency of assets in creating returns for the shareholders. ROTA was previously used by Yildrim (2000) and Kyereboah-Coleman and Biekpe (2005) in their studies on the CGVF relationship. We expect a positive relationship of the variable with the value of a firm as the optimal use of assets results in the creation of the returns for shareholders.

The final independent variable used in this study was the price to book value ratio. The variable was operationalized by PBVR and shows the level of information efficiency in the market. The positive relationship of the variable with the value of a firm will imply that information efficiency improves the firms' performance as the public and private information is incorporated in the share prices.

The methodology of construction of the dependent variable (Tobin's Q) used in this study is as follows. The proxy for Tobin's Q was calculated by adding market capitalization and total assets. In the second step, shareholders' fund was subtracted from the added value and lastly the remaining value was divided by the total assets to get the final value of the proxy for Tobin's Q. This proxy measures the Tobin's Q in a better manner as the replacement value for institutional debt is not used in the formula to value a firm. The value of the variable greater than 1 will show that the firms are healthy and create value for shareholders in the financial market. The methodology of construction of the variables is presented in tables 1 and 2 below.

4.3 Multifactor models for the study

As discussed before, two models were constructed to testify the BVF relationship in this study. The model used to test the relationship between the board size and the value of a firm relationship in the developed (Australian) market is presented as follows.

Tobin's Q = f (Log Size, Duality, Gr, Log Mc, Pb, AC) …….....… (1)

The general representation of the equation above is stated below.

$$Y_t = C + \beta_{1t} \log X_{1t} + \beta_{2t} X_{2t} + \beta_{3t} X_{3t} + \beta_{4t} \log X_{4t} + \beta_{5t} X_{5t} + \beta_{6t} X_{6t} + U_t \text{ ……..…… (2)}$$

Where:

Y_t = dependent variable (value of a firm);

C = intercept;
$\beta_{it's}$ = slopes of the independent variables of the BVF relationship model;
$X_{it's}$ = independent variables (board size, CEO duality, gearing ratio, market capitalization, price to book value ratio and shareholders concentration (AC);
t = periods;
U_t = error term of the BVF relationship model;
β_1 = coefficient of board size;
β_2 = coefficient of CEO duality;
β_3 = coefficient of gearing;
β_4 = coefficient of market capitalization;
β_5 = coefficient of price to book value ratio; and
β_6 = coefficient of agency cost (AC).

In the above model, the sign of β_1 is hypothesized to be negative as we argue a negative relationship between the value of a firm and the larger board. β_2 is expected to have a negative relationship as CEO duality deteriorates the value of a firm. Similarly, β_3 is hypothesized to have a negative sign as the literature suggests that higher debt deteriorates the value for shareholders in the developed market.

Table 1. Variables Used for the Study of a Developing Market (Malaysia)

Variables	Proxied by	Symbol
Dependent Variable		
Value of a Firm Tobin's Q	Mkt Cap + TA – Sh F/TA	TQ
Independent Variables		
Return on Total Assets	Return generated by the assets of a firm	Rota
Size	Number of directors in the board	Log Size
Duality	Dummy variable: Can take values of 0 and 1	Duality
Agency Cost	Majority ownership in a firm	AC
Market Capitalization	Market capitalization of a firm	Log Mc
Price to Book Value Ratio	Price to book value ratio of a firm	Pb

Notes: Mkt Cap = Market capitalization.
TA = Total assets.
Sh F = Shareholders fund.

Table 2. Variables Used for the Study of a Developed Market (Australia)

Variables	Proxied by	Symbol
Dependent Variable		
Value of a Firm Tobin's Q	Mkt Cap + TA – Sh F/TA	TQ
Independent Variables		
Market Capitalization	Market capitalization of a firm	Log Mc
Gearing	Percentage of the debt used to finance the assets of a firm	Gr
Size	Number of directors in a board	Log Size
Duality	Dummy variable Can take values between 0 and 1	Duality
Agency Cost	Majority ownership in a firm	AC
Price to Book Value Ratio	Ratio between the price and book value of assets of a firm	**Pb**

Notes: Mkt Cap = Market capitalization.
TA = Total assets.
Sh F = Shareholders fund.

In contrast, β_4 is expected to be positive as higher market capitalization is expected to have a value adding relationship with the value of a firm. Similarly, β_5 is hypothesized to be positive as the price to book value ratio is expected to have a positive relationship with the value of a firm. Finally, β_6 is argued to be negative as majority shareholding (shareholders' concentration) is expected to deteriorate the value of a firm in the developed financial market.

The second multifactor corporate governance model used to test the BVF relationship model for a developing market (Malaysia) is presented as follows.

Tobin's Q = f (Log Size, AC, Duality, Pb, Rota, Log Mc)...…… …...…….. (3)

The equation represents the relationship between corporate governance instruments, control variables and shareholders' value. The general representation of the model is presented below.

$Y_t = C + \beta_{1t} \log X_{1t} + \beta_{2t} X_{2t} + \beta_{3t} X_{3t} + \beta_{4t} X_{4t} + \beta_{5t} X_{5t} + \beta_{6t} \log X_{6t} + U_t$ …….. (4)

Where:

Y_t (regrassand) = dependent variable (firms' performance);
C = intercept;
$\beta_{it's}$ (β_1 - β_6) = slopes of the independent variables;
$X_{it's}$ = independent variables of the BVF relationship model;
t = periods;
U_t = error term of the model;
β_1 = coefficient of board size;
β_2 = coefficient of agency cost;
β_3 = coefficient of CEO duality;
β_4 = coefficient of price to book value ratio;
β_5 = coefficient of return on total assets; and
β_6 = coefficient of market capitalization.

The sign of β_1 is hypothesized to be positive as we expect a positive relationship between the value of a firm and the bigger board. On the contrary, β_2 is hypothesized to be negative as majority shareholders are expected to harm the value of a firm in the developing financial market. Similarly, β_3 being the coefficient of CEO duality, is also expected to have a negative relationship with the value of a firm.

In contrast, β_4, β_5 and β_6 are hypothesized to be positive as price to book value ratio, return on total assets and market capitalization are expected to have a positive relationship with the value of a firm in the developing financial market.

4.4 Econometric testing

Regression analysis was used to testify the BVF relationship with the firms' performance in the selected markets. The regression will testify the relationship between the value of a firm, board size and other corporate governance variables used in the current study. The general representation of the BVF relationship model is presented below.

$Y_t = C + \beta_{1t} X_{1t} + \beta_{2t} X_{2t} +$ …….. $+ \beta_{nt} X_{nt} + U_t$ ……. (5)

Where:

Y_t = dependent variable (firms' performance);
C = intercept;
$\beta_{it's}$ = slopes of the independent variables (board size and corporate governance variables);
$X_{it's}$ = independent variables; and
U_t = error term of the model.

The ordinary least square (OLS) estimation method was used to reduce the error term of the BVF relationship models for the current study. OLS estimation improves the explanatory power of the sample regression function to explain the highest portion of the population regression function (Cuthbertson, 1996).

The estimated form for the BVF relationship model for selected markets is presented below.

$$Y_t = \hat{C} + \hat{\beta}_{1t} X_{1t} + \hat{\beta}_{2t} X_{2t} + \ldots\ldots\ldots\ldots + \hat{\beta}_{nt} X_{nt} \quad (6)$$

Where:

$\hat{C}$ = intercept of the BVF relationship model;

$\hat{\beta}_{t\text{'s}}$ = coefficients and slopes of the estimators of independent variables (board size and corporate governance variables);

Y_t = estimator of the dependent variable (value of a firm); and

$X_{t\text{'s}}$ = estimators of the independent variables in the BVF relationship model.

The derivation of $\hat{\beta}$ is explained as follows.

For estimation, the BVF relationship model for T observations can be specified as follows.

$$Y = X\beta + e \quad (7)$$

The variables of the model and parameters are defined below.

Y = a vector of the dependent variable (value of a firm);
X = (TxK) matrix of explanatory variables (board size and corporate governance variables);
β = (Kx1) unknown (to be estimated) matrix of parameters; and
e = (1xT) the unobservable random residual vector.

In the classical least squared method, it is assumed that the random residuals have zero mean.

$$E(e) = 0 \quad (8)$$

and a constant variance.

$$E(e'e) = \sigma^2 I_T \quad (9)$$

The estimation by the BVF relationship model involves the estimation of β by reducing the following squared errors.

$$M = (Y - X\beta)`(Y - X\beta) \quad (10)$$

When X has K rank and X`X is non-singular, the reduction method generates the vector of estimated β which is presented below.

$$\hat{\beta} = (X'X)^{-1} XY \quad (11)$$

5. Results of the Study

5.1 Descriptive statistics

The descriptive statistics were calculated to analyze and compare the corporate governance characteristics in the firms of developing and developed financial markets. These descriptive statistics are presented in tables 3 and 4 and show that the mean values for return on total assets (8.80), price to book value ratio (2.48), market capitalization (2207.34), gearing ratio (59.82) and Tobin's Q (1.81), are higher in the developed financial

market compared to the respective values for the variables, return on total assets (4.79), price to book value ratio (1.15), market capitalization (439.19), gearing ratio (35.47) and Tobin's Q (1.03) in the developing market. On the other hand, the mean values for board size and shareholders' concentration are lower (7.08) and (22.80) in the developed market compared to the respective values of the variables (8.05) and (34.61) in the developing financial market.

Table 3. Descriptive Statistics for the Developing Market (Malaysia)

Variables	No.	Minimum	Maximum	Mean	Std. Deviation
PM	240	-209.93	98.30	7.99	25.41
ROTA	240	-57.56	54.99	4.79	9.05
PB	240	0.29	8.32	1.15	0.90
CF	240	-0.83	1.71	0.18	0.25
MC	240	12.00	11692.00	439.19	1248.99
CR	240	0.21	17.97	2.57	2.08
GR	240	-2.57	733.17	35.47	63.77
CEO Duality	240	0.00	1.00	0.26	0.44
Board Size	240	5.00	12.00	8.05	1.71
AC	240	4.90	62.40	34.61	13.86
TQ	240	0.37	3.96	1.03	0.46

The results for the descriptive statistics suggest that the firms of the developed market utilize their assets efficiently, have higher liquidity and share prices are not inflated or deflated compared to their face value. These characteristics show that the health of firms in the developed market is better compared to firms in the developing market. Similarly, the board size for the firms of the developing market is greater compared to the firms of the developed market. This shows an intense level of free riding and passive monitoring in the firms of the developing market. On the contrary, firms of the developed market have a higher level of debt, which contradicts the foundation of the outsider system of corporate governance (Heinrich, 2002).

Table 4. Descriptive Statistics for the Developed Market (Australia**)**

Variables	No.	Minimum	Maximum	Mean	Std. Deviation
PM	240	-76.56	598.04	18.48	53.0
ROTA	240	-35.43	85.67	8.80	9.91
PB	240	0.27	36.90	2.48	4.12
CF	240	-1.32	7.20	0.55	0.72
MC	240	10.00	43532.00	2207.34	5317.42
CR	240	0.03	17.69	1.68	1.44
GR	240	0.95	434.31	59.82	57.64
CEO Duality	240	0.00	1.00	0.06	0.24
Board Size	240	2.00	15.00	7.08	2.53
AC	240	0.10	75.70	22.80	18.07
TQ	240	0.40	21.03	1.81	2.38

5.2 Econometric results

As discussed in the previous section, there are two models related to the BVF relationship constructed in this study. The first model is related to the firms of the developed (Australian) financial market. The results relevant to the initial model for BVF relationship relevant to the developed (Australian) market are presented in Appendix 1 and are explained as follows.

$$Y_t = C + \beta_{1t} \log X_{1t} + \beta_{2t} X_{2t} + \beta_{3t} X_{3t} + \beta_{4t} \log X_{4t} + \beta_{5t} X_{5t} + \beta_{6t} X_{6t} + U_t \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (12)$$

TQ = 0.22 + 0.38 Size + 0.46 Duality - 0.04 Gr - 0.04 Mc + 50.34 Pb - 0.40 Ac

(0.64) (0.91) (2.08)** (-0.48) (-0.80) (12.59)** (-0.89)

$R^2 = 0.76$

In the equations above, the values of coefficients are in the first row. Below are the values for the t statistics in parenthesis. The single asterisk (*) and double asterisk (**) show the significance of the variable at 10% and 5% respectively.

As we have found the lack of a significant relationship between the current corporate governance practices and the firms' performance in the initial model for developed market, we have also tested the relationship of the past corporate governance practices and the value of a firm. The mathematical form of the next estimated model relevant for the developed market (Australia) presented in Table 5 is stated as follows:

$$Y_t = C + \beta_{1t} \log X_{1t-1} + \beta_{2t} X_{2t-1} + \beta_{3t} X_{3t-1} + \beta_{4t} \log X_{4t-1} + \beta_{5t} X_{5t-1} + \beta_{6t} X_{6t-1} + U_t \ldots\ldots\ldots\ldots (13)$$

TQ = 0.78 - 0.16 Size + 0.05 Duality - 0.08 Gr + 0.02 Mc + 43.79 Pb + 0.06 Ac
(9.70)** (-3.28)** (0.48) (-3.26)** (2.69)** (27.22)** (1.03)
R^2 = 0. 87

In the equations above, the values of coefficients are in the first row. Below are the values for the t statistics in parenthesis. The single asterisk (*) and double asterisk (**) show the significance of the variable at 10% and 5% respectively.

Table 5. Results for BVF Relationship Model for Developed and Developing Financial Markets

Variables	Australian Model	Malaysian Model
Constant	0.78 (9.70)**	-0.01 (-0.09)
Log Board Size	-0.16 (-3.28)**	0.18 (3.51)**
Log Market Capitalisation	0.02 (2.69)**	0.03 (2.44)**
CEO Duality	0.05 (0.48)	0.05 (1.59)
Gearing	-0.08 (-3.26)**	
Price to Book Value Ratio	43.79 (27.22)**	43.44 (5.43)**
Return on Total Assets		1.09 (1.76)*
Agency Cost	0.06 (1.03)	-0.19 (-2.15)**
R-squared	0.87	0.75
Adjusted R-squared	0.87	0.74
Mean Dependent Variable	1.94	1.03
F-statistic	(176.46)**	(116.68)**

Notes:

Values of the coefficients are in the first row.

Values for T statistics in parenthesis.

Total number of observation for models for developing and developed market = 240.
* Represents the significance of a variable at 10% significance level.
** Represents the significance of a variable at 5% significance level.

This model is selected on the basis of strong diagnostics and the best functional form of the variables. The lagged treatment (AR) was given, which removed the potential disturbance of the OLS assumptions. Similarly, the variable variance of the error term was corrected by giving the white diagonal treatment to the model for the study. This also made the results of the hypothesis testing valid. Finally, the tests to detect multicollinearity in the model for the BVF relationship were also performed. The values for the variance inflation factors for the variables used vary from 1.06 to 1.75 in the model. The value was smaller than 10, which confirmed the absence of collinearity among the independent variables of the model.

The value for the R squared shows that 87% variation in the dependent variable is explained by the independent variables (CEO duality, board size, gearing, ownership concentration, market capitalization, and price to book value ratio) of the model. On the contrary, 13% of the variation remains unexplained by these

independent variables. The mean value for the dependent variable (Tobin's Q) is 1.94 which shows that firms of the developed market create shareholders' value. The value for the F statistic is 176.46. This value is significant endorsing the stability of the model.

The next model explaining the BVF relationship is relevant for the firms of the developing financial market. The econometric model with different functional forms and alternate specifications was tried. The model with an appropriate functional form and acceptable diagnostics was selected for the study. The general form of the model relevant for the developing financial market is presented as follows.

$$Y_t = C + \beta_{1t} \log X_{1t} + \beta_{2t} X_{2t} + \beta_{3t} X_{3t} + \beta_{4t} X_{4t} + \beta_{5t} X_{5t} + \beta_{6t} \log X_{6t} + U_t \ldots\ldots\ldots\ldots\ldots\ldots (14)$$

The model mentioned above explains the relationship between the value of a firm and corporate governance instruments in the developing financial market. The econometric results are presented in Table 5 and the estimated form of the model is as follows.

$$TQ = -0.01 + 0.18\ Size - 0.19\ Ac + 0.05\ Duality + 43.44\ Pb + 1.09\ Rota + 0.03\ Mc$$
$$(-0.09)\quad (3.51)^{**}\quad (-2.15)^{**}\quad (1.59)\quad (5.43)^{**}\quad (1.76)^{*}\quad (2.44)^{**}$$
$$R^2 = 0.75$$

In the equations above, the values of coefficients are in the first row. Below are the values for the t statistics in parenthesis. The single asterisk (*) and double asterisk (**) show the significance of the variable at 10% and 5% level of significance respectively.

The diagnostics of the model show that independent variables explain a 75% change in the value of a firm (dependent variable). The independent variables of the model do not explain the remaining 25% variation in the model. The mean value for the dependent variable (Tobin's Q) is 1.03. The value is greater than 1 which shows that firms of the developing market perform well. Finally, the value for the F statistic is 116.68 and is significant confirming the reliability of the model (Gujarati, 2003).

Tests to endorse the OLS assumptions in the model for BVF relationship were also conducted. These include tests for variance inflation factors to detect the level of collinearity among the independent variables (multicollinearity) in the model. The variance inflation factor was calculated by making all the independent variables as the dependent variable on the individual basis and calculating the value for the R-squared. This value for the R-squared is subtracted from 1 and is lastly divided by 1 to get the value for the variance inflation factor. The result of the variance inflation factors for the variables in the BVF relationship model ranges from 1.02 to 1.13, confirming the robustness of results for the study.

6. Implications of the Results

The results of the individual variables in the BVF relationship model relevant for the developed financial market are presented as follows. The role of board size in affecting the value of firm shows a negative relationship between the bigger board and the value of a firm in the developed financial market with the value of coefficient as -0.16. The result shows that the board members are involved in free riding, weak monitoring and irrational decision making. The members of the bigger board are also busy in unhealthy conflicts and there is an observer role played by the majority of the board members. Furthermore, the cost of keeping the larger board is also higher in the firms of the developed market.

The result further implies that the combination of inside and outside directors is not optimal. Outside (independent) directors are not provided with the correct financial information by inside directors, limiting them (outsiders) in making robust financial decisions in the market. Finally, the result suggests that due to an absence of majority shareholders in the market, the coordination and communication problem in the board is not reduced. The result supports the hypothesis (H1) and the agency theory in the developed market. The result is also consistent with the findings of Lipton and Lorsch (1992), Jensen (1993: 36), Vafeas (2000), Loderer and Peyer (2002), and Mak and Kusnadi (2005) in the developed financial market.

The next result shows that the higher debt to equity ratio deteriorates the value of a firm in the developed market. The free cash flow problem is not reduced in this market. The result is inconsistent with the foundation of the developed market (Heinrich, 2002). Similarly, higher market capitalization leads to higher liquidity, resulting in an improved value of a firm in the developed market. This result supports the foundation of the developed market as dispersed shareholding is complementary to liquid market in the outsider system of corporate governance. Finally, there is a positive relationship between the price to book value (informational efficiency) and the value of a firm endorsing the corporate governance principles in the developed market. The summary of results is presented in Table 6 below.

Table 6. Results of Hypotheses for Developed Market (Australia) and Consistency with the Literature

Hypotheses	Results	Significance level	Arguments
Board Size	Significant (-)	0.05	Consistent with literature
Market Capitalization	Significant (+)	0.05	Consistent with literature
CEO Duality	Insignificant	0.10	Inconsistent with literature
Gearing	Significant (-)	0.05	Consistent with literature
Price to Book Value Ratio	Significant (+)	0.05	Consistent with literature
Agency Cost	Insignificant	0.10	Inconsistent with literature

The results relevant to the role of board size in affecting the value of a firm show a positive relationship between a bigger board and shareholders' value in the developing market. This supports our second hypothesis (H2) and shows that the members of the bigger board are involved in functional (healthy) conflicts among each other. The members of the larger board due to their diverse backgrounds and higher level of intellectual skills make rational and value adding decisions in this market. Inside (executive) and outside (non-executive) directors observe an optimal combination in the board. Furthermore, inside directors do not dominate the vision of outside directors and the CEO. This results in value enhancing decisions for the shareholders in the developing market.

The result is consistent with the findings of Kyereboah-Coleman and Biekpe (2005), Aggarwal et al. (2006) and Linck et al. (2008), as greater number of directors improve the value of a firm. Finally, the external regulatory regime such as majority shareholders disciplines the board members by reducing the agency cost from the board and deal with the market imperfections in a better manner. The result supports the stewardship theory in the developing market.

The result related to the role of concentrated shareholding in affecting the value of a firm shows that the blockholders are involved in expropriation of the rights of minority shareholders. The negative relationship of the variable with the value of a firm also shows poor maintenance of agency cost between majority and minority shareholders (La Porta et al., 1998).

Finally there is a positive relationship between the control variables (price to book value ratio, return on total assets and market capitalization) with the value of a firm. These results show that informational efficiency, efficient utilization of resources and market liquidity are important determinants in affecting the value of a firm in the developing market. The summary of the results is presented in Table 7.

Table 7. Results of Hypotheses for Developing Market (Malaysia) and Consistency with the Literature

Hypotheses	Results	Significance level	Arguments
Board Size	Significant (+)	0.05	Consistent with literature
Duality	Insignificant	0.10	Inconsistent with literature
Price to Book Value Ratio	Significant (+)	0.05	Consistent with literature
Return on Total Assets	Significant (+)	0.10	Consistent with literature
Agency Cost	Significant (-)	0.05	Consistent with literature
Market Capitalization	Significant (+)	0.05	Consistent with literature

7. Robustness Tests for the Study

The tests to confirm the robustness of the results for the study were also performed. These include endogeneity tests and tests for incremental regression.

7.1 Endogeneity tests

Endogeneity tests were performed to check the robustness of the econometric results of the model. Bhagat and Jefferis (2002) suggest that ownership structure can be endogenous as an increase in stock performance leads to a higher shareholder concentration. They further argue that concentrated shareholding results in better monitoring due to higher financial interests of the blockholders with the firms' value. This leads to a two-way relationship among the variables (shareholders' concentration and the Tobin's Q) affecting the validity of the econometric results of the study.

The test to detect endogeneity in the models for developing and developed markets is performed by conducting a two step process. In the first step, the relationship of shareholders' concentration (agency cost)

with independent variables of the individual model was tested to calculate the error term. In the second step, the relationship of the Tobin's Q (dependent variable) with independent variables and the error term (residual) of the previous model was tested. The error term had no relationship with the firms' performance in both the models for developing and developed financial markets. This confirmed the validity of the results of the hypotheses relevant for the selected financial markets. The results are presented in Table 8.

7.2 Incremental regression

The second robustness test used in this study is the test for incremental regression. This test was performed to highlight the importance of the individual independent variables in affecting the value of a firm. Among all the variables removed from both the models, price to book value ratio has altered the explanatory power of the independent variables to explain the variation in the dependent variable to a highest degree. The results presented in Table 9 show that after the removal of price to book value ratio from the model for the developing market, the value for R squared is reduced from 75% to 6%.

Table 8. Endogeneity Tests for Developing (Malaysia) and Developed (Australia) Models

Variables	Australian Model	Malaysian Model
Constant	0.69 (5.68)**	-0.01 (-0.11)
Log Board Size	0.16 (0.46)	0.19 (3.61)**
Log Market Capitalisation	-0.19 (-0.39)	0.03 (2.43)**
CEO Duality	0.24 (1.15)	0.05 (1.75)*
Gearing	0.05 (0.35)	
Price to Book Value Ratio	43.7 (27.1)**	43.14 (5.35)**
Return on Total Assets		1.10 (1.76)*
Agency Cost	-1.49 (-0.89)	-0.22 (-2.44)**
Residuals	1.55 (0.93)	-0.11 (-1.53)
R-squared	0.87	0.75
Adjusted R-squared	0.87	0.74
Durbin-Watson	1.42	1.50
Mean Dependent Variable	1.94	1.03
F-statistic	(153.76)**	(100.34)**

Notes:

The values of the coefficients are in the first row.

Below are the values for T statistics in parenthesis.
Total number of observation for individual models = 240.
* Represents the significance of a variable at 10% significance level.
** Represents the significance of a variable at 5% significance level.

Table 9. Results of the Incremental Regression

Models	Australia	Malaysia
R-squared (original)	0.87	0.75
R-squared (after the removal)	0.72	0.06

Similarly, after the removal of the variable (price to book value ratio), the value for R squared for the firms of the developed market is reduced from 87% to 72%. These tests show that correct valuation of securities is an important corporate governance provision in affecting the shareholders' wealth in developing and developed financial markets.

7.3 Nature of the relationship among the variables

It is imperative to discuss the functional forms of the variables used in the models for BVF relationships. The variables such as the price to book value ratio, shareholders' concentration (agency cost), gearing ratio and return on total assets are used in the percentage form in the selected models, endorsing that these variables bring a proportionate change in the value of a firm. On the other hand, the variables such as market capitalization and board size are used in logarithmic form which shows that the changes in these variables do not affect the value of a firm proportionately.

8. Conclusion

This study critically examines the role of board size in affecting the value of a firm in a comparative market setting (Australia and Malaysia) and has interpreted the results in the light of different business and management theories. The results of the study differ in the developing market compared to the developed market/country due to differences in the structures and foundations of the systems followed by each country. The board size in the developed financial market has a negative relationship with the firms' performance supporting the agency theory. The firms of the developed financial market should use a smaller board to create value for the shareholders, as the incremental addition in a board deteriorates the value of a firm.

On the contrary, the role of board size in affecting the value of a firm in the developing financial market is positive. Independent (outside) directors in the board comfortably derive the firms' specific information from their insider counter-parts making robust financial decisions and reducing information asymmetry from the market. The result supports the stewardship theory and implies that firms of the developing market should use a bigger board for value creation due to the higher level of expertise of these board members.

The results of the study relevant to BVF relationships are of value to academics, policy advisors and researchers in developed and developing financial markets. This comparative analysis has provided some new insights into the role of corporate governance practices in developing and developed markets showing that the country's level of economic development, market structures, institutions and regulations have differential impact on corporate governance instruments and the value of a firm relationship. Finally, the applicability of management theories in explaining business operations is also different in these markets.

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Appendix 1. Original Model for the Developed Market (Australia)

Dependent Variable: TQ
Method: Panel Least Squares
Date: 12/21/06 Time: 19:48
Sample: 2000 2003
Cross-sections included: 60
Total panel (balanced) observations: 240
White diagonal standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.226869	0.352250	0.644057	0.5202
LOGSIZE	0.383026	0.416841	0.918878	0.3591
LOGMC	-0.048661	0.060743	-0.801106	0.4239
DUALITY	0.462969	0.222273	2.082885	0.0384
GR	-0.040165	0.082779	-0.485209	0.6280
PB	50.34205	3.995628	12.59929	0.0000
AC	-0.409505	0.460001	-0.890227	0.3743

R-squared	0.769736	Mean dependent var	1.813766
Adjusted R-squared	0.763807	S.D. dependent var	2.384098
S.E. of regression	1.158665	Akaike info criterion	3.161147
Sum squared resid	312.8037	Schwarz criterion	3.262666
Log likelihood	-372.3377	F-statistic	129.8138
Durbin-Watson stat	1.074871	Prob(F-statistic)	0.000000