"The relationship between corporate governance Index and value of the firm: evidence from Taiwan"

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The relationship between corporate governance index and value of the firm: evidence from Taiwan

Abstract

Accurately evaluating the value of a firm is very important for investors. Also, many factors affect a firm's value. Previous literature confirmed that a company's high transparency and public disclosure is associated with lower market risks and higher value. Therefore, firms have to follow a high standard in information disclosure as well as abide by IFRS and US GAAP in preparing their financial statements in order to respond to the competitiveness of capital market enhancement and protect shareholder rights.

Following Braga-Alves and Shastri (2011), this study modifies and constructs a composite corporate governance index with high correlation to Taiwanese corporate governance criteria. In addition to examining the correlation between market valuation and our corporate governance index, the author also considers another factor − director and officer liability insurance − and studies its correlation with firm valuation in a sample of Taiwan 50 component stocks. The author finds that a corporate governance index that includes an indicator for the presence of an independent director and the director and officer liability insurance factor both are significantly and positively correlated with firm value. A trading strategy based on author's index also generates abnormal returns.

Keywords: corporate governance index, firm valuation, director and officer liability insurance.
JEL Classification: G3, G32, G34.

Introduction

National capital markets are globalizing, and the typical company's multinational financial operations are growing. Since capital markets are fiercely competitive, companies are more often choosing international norms for corporate governance. These norms (e.g., IFRS and US GAAP), and the stronger corporate governance mechanisms they encourage, are an important step towards providing objective information to public investors, reinforcing the operation of the enterprise, and maximizing stockholders' equity.

Stronger corporate governance mechanisms also help solve the problem of information asymmetry, easing flows of long-term international capital to domestic capital markets. Because of this public benefit, theories of corporate governance are gradually becoming an important basis for government policy and for the governance frameworks that serve to promote the economic stability and welfare of entire countries.

Given the increasing importance of corporate governance, there is increasing interest in its proper measurement. Braga-Alves and Shastri (2011) construct a corporate governance index (NM6) comprised of six variables that proxy for corporate governance practices in Brazil. They find that their index is positively correlated with firm value, though not with operating performance. They also find that, during the period 2001-2005, a trading strategy that purchases companies with high index scores and sells companies with low index scores (that is, buying larger than average index scores selling lower than average index scores) produces abnormal returns of 10.68% with respect to Carhart's four-factor model (1997). This result shows that investing in companies with higher corporate governance index scores yields higher returns.

Following Braga-Alves and Shastri (2011), this paper modifies and constructs a corporate governance index (*IGOV*) that corresponds to high standards of corporate governance and uses that index to estimate the relationship between corporate governance and firm valuation. The empirical results of this paper demonstrate that the corporate governance index and director and officer liability insurance are two factors highly correlated with firm valuation. The contribution of this paper is that director and officer liability insurance and a corporate governance index enhanced by independent director factor both display a significant and positive correlation with firm value, which cannot be neglected when predicting the firm value for Taiwan 50 Component Stocks (Listed Companies). We also noticed that when the governance index score is higher, the growth rates of firm stock price increase as well. The first five listed companies with the highest corporate governance index scores obtain comparatively higher stock price growth rates. A firm can improve its valuation by improving its index score. Therefore, investors can choose a company with high governance index scores as a target company, and have the opportunity to obtain abnormal returns. The index provides a much more accurate way of providing information relevant to decisions around investment strategy.

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The remainder of the paper is organized as follows. Section 1 introduces the literature review. Section 2 and 3 describe the empirical model and data source. Section 4 presents the empirical results. The Final Section summarizes the conclusions.

1. Literature review

American researchers started to explore the issue of corporate governance in 1930. In 1999, the World Bank officially defined corporate governance a way of building up mechanisms and legal constraints that help to expand firm value. After the 2007-2008 global financial crisis, the strengthening of corporate governance became an international tendency, with governments all over the world endeavoring to build up the mechanisms of corporate governance. The International Financial Centre and the OECD both point out that low standards of corporate governance are the main reason for economic instability in a country and that countries need high standards to protect company stockholders' equity. Johnson, Boone, Breach and Friedman (2000) show that during the Asian financial crisis, emerging countries with lower standards of corporate governance experienced poorer market performance.

Leal (2004), Bhagat and Jefferis (2002), and Denis and McConnell (2003) review the literature on the relationship between corporate governance and valuation. Much of it estimates the impact of corporate governance mechanisms on firm value and operating performance, focusing mainly on the American capital market where ownership is more decentralized and investor protection is stronger. For instance, Gompers, Ishii, and Metrick (2003) use an index monitored by the Investor Responsibility Research Center (IRRC) and find that, in America, corporate governance is strongly correlated with firm evaluation and net profit. Moreover, they confirm that an investing strategy based on purchasing good corporate governance companies and selling inferior corporate governance companies generated abnormal returns of 8.5% in 1990. Aggarwal and Williamson (2006) construct an index comprising six governance practices which represent the objectives of the Sarbanes-Oxley (SOX) Act and the Securities Exchange Commission (SEC), including indicators of the presence of independent directors, an independent appointed commission, and an independent auditing commission. They find a positive correlation between the index and market value, implying that the above-mentioned rules are significantly related to firm valuation[1].

Whether or not good corporate governance creates high firm value is an issue explored by researchers and

practitioners in non-U.S. markets as well. Yeh (2014) proposes the construction and application of a corporate governance index in Taiwan, which not only avoided the financial crisis faced by other capital markets, but also provided investor protection and an improved capital market environment. Bai, Liu, Lu, Song and Zhang (2004) use eight variables to represent a company's internal and external controlling mechanism and find that Chinese investors are willing to pay the premium up to 63% for companies with better corporate governance. Black, Love and Rachinsky (2006a) apply a governance index and find out that, in Russia too, the governance index is positively correlated with firm value.

A focus on the relationship between corporate governance and firm value in emerging markets is also of special interest in previous research. To strengthen investor protection in emerging markets, which represents an important source of high returns and diversification, McKinsey & Company conducted a survey from 1999-2000. They found that institutional investors are willing to pay 28% more to purchase good governance companies in emerging markets.

Black (2001) studies how corporate governance affects the market value of Russian companies. He uses an index score, ranging from 0 to 60, to proxy for governance quality. His results reveal a positive correlation between governance index and market value; that is, in corporate governance practice, company behavior exhibits rather significant influence on the firm's market value, especially in those countries with weaker investor protection.

Some researchers find that in countries with inferior investor protection, i.e. – where there are large problems associated with plunder by controlling stockholders, – corporate governance is even more important. Klapper and Love (2004) estimate the strength of corporate governance in companies from 14 emerging countries, using Credit Lyonnais Securities Asia (CLSA) corporate governance scores. CLSA scores contain 7 governance spheres, each of which consists of 57 questions. The empirical results indicate that companies adhering to a higher corporate governance standard have higher market values and operating performance, with the strongest results occurring in countries with weaker legal systems. Durnev and Kim (2005) also apply CLSA scores to estimate the strength of corporate governance in 27 countries, obtaining similar results.

Black, Kim, Jang and Park (2006) study South Korean companies. To perform their estimation, they use a governance index that includes 30 governance characteristics. They find that when their index improves from bad to good, Tobin's Q, used to represent growth potential, increases by 30%. They also find a strong positive correlation

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[1] In 2002, the U.S. enacted the Sarbanes-Oxley Act (SOX) and the Securities and Exchange Commission (SEC) adopted new governance rules.

between governance quality and market value, an effect that is stronger in emerging markets and in countries with weak investor protection. Leal and Carvalhal-da-Silva (2005) estimate the relationship of corporate governance and market value in Brazil. A 25-point corporate governance index score is established to evaluate a sampling of companies from 1998-2002. The results show a positive, stable, and significant correlation between the governance index and firm value. Moreover, when the index improves from worst to best, Tobin's Q increases by 38% − with each one point increase in the index producing a market value increase of 6.8%.

Recently, many researchers have studied the monitoring mechanisms and transparency standards of firms in less developed markets. For example, they find a positive relationship between corporate governance and firm value in China, Brazil, Russia and Korea, with countries having weaker legal systems showing stronger correlations (Bai et al., 2004; Leal and Carvalhal-da-Silva, 2005).

2. Empirical model

In constructing the corporate governance index in this paper, we focus on data related to independent directors and director and officer liability insurance, which are both considered to be proxies for good corporate governance. Numerous researchers have noted that in setting up a governance index, the existence or non-existence of an independent director is important and cannot be neglected. See, for example, Klapper and Love (2004), Durnev and Kim (2005), and Braga-Alves and Shastri (2011). In addition, we also refer to the models of Da Silveira and Barros (2007) and Leal and Carvalhal-da-Silva (2005). The empirical model used in this paper is given by Equation (1).

$$VALUE_{i,t} = \alpha_1 + \beta_1 IGOV_{i,t} + \beta_2 DINSUR_{i,t} +$$

$$+ \beta_3 ROE_{i,t} + \beta_4 TCRI_{i,t} + \beta_5 FGN_{i,t} +$$

$$+ \beta_6 SALGW_{i,t.} + \varepsilon_{i,t}, \qquad (1)$$

where $VALUE_{i,t}$ represents firm value, as measured by the closing stock price of company i at the end of quarter t; $IGOV_{i,t}$ represents the corporate governance index, a sum of three director-related proxies: Minimum Board Size (1 when board size is larger than 5 directors, 0 otherwise), Independent Director (1 if present, 0 otherwise), and Outside Personal Director (1 if present, 0 otherwise)[1]. $DINSUR_{i,t}$ is an indicator of whether or not the company has director and officer liability insurance (1 if present, 0 otherwise); $ROE_{i,t}$ is the return on the

equity of the firm; $TCRI_{i,t}$ is the credit rating of the firm, which has been divided into nine degrees, with degree 9 indicating the highest credit risk; $FGN_{i,t}$ is the fraction of the firm owned by foreign investors; $SALGW_{i,t}$ is the sales growth rate of the company; $\varepsilon_{i,t}$ is the disturbance term.

3. Methodology and data

In this paper, we employ pooled estimation regression, which combines the cross-sectional and time series data. The methodology includes the Fixed effects model (FEM) and the Random effects model (REM), and further uses the Hausman test to judge the suitability of the models. Pooled estimation has the advantages of providing numerous data observations and blending cross-sectional and time series data to improve the efficiency of econometric estimates (Hsiao, 1985). This methodology yields reliable coefficient estimates when unobservable individual fixed or random effects exist. Two models for fixed and random effects can respectively be written as follows:

Fixed effects model:

$$Y_{it} = \alpha_i + \sum_{k=1}^{K} \beta_k X_{kit} + \varepsilon_{it}. \qquad (2)$$

Random effects model:

$$Y_{it} = (\alpha_0 + \mu_i) + \sum_{k=1}^{K} \beta_k X_{kit} + \varepsilon_{it}, \cdot \qquad (3)$$

where $i = 1,\ldots, N$, and $t = 1,\ldots, T$, and N and T respectively denote the cross-sectional and time dimensions of the panel $Y_{i,t}$ and (X_{kit}) represent the dependent variable and independent variable, respectively. Individual effects are α_i when fixed, and $(a_0 + \mu_i)$ when random and normally distributed $\varepsilon_{i,t}$ is the disturbance term~ $iid (0, \sigma^2)$.

The primary difference between the FEM and REM relates to whether the disturbance term $\varepsilon_{i,t}$ is identical and independent (iid). FEM has fixed constants to illustrate data characteristics, so $\varepsilon_{i,t}$ is iid. However, the REM constants are random, so it is unnecessary for $\varepsilon_{i,t}$ to be iid[2]. Hausman (1978) proposed a method for judging the applicability of the FEM or REM. More specifically, the Hausman test is to be used to examine whether the constant (μ_i) and explanatory variables (X_{kit}) are correlated. If the constant (μ_i) significantly correlates with explanatory variables (X_{kit}), then the estimation results of FEM would be valid, and the FEM provides the best-fitting model. If (μ_i) is not significantly correlated with (X_{kit}), the best-fitting model is provided by REM.

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[1] An independent director is not an employee or stockholder of the company; while an outside personal director may have some indirect relationship with the company.

[2] See Hsiao (1985).

We sampled Taiwan 50 Component Stocks-Large Listed companies frequently transacted in the Taiwan Security Exchange Corporation (TSEC) as subjects in this research. The research period ranges from 2002 Q1 to 2013 Q3, providing 218 total quarterly observations. All data are from the Taiwan Economic Journal (TEJ) databank. Data source and measurement information are showed in Table 1.

Table 1. Data definition and measurement − Taiwan 50 component stocks

Notation	Variable	Measurement	Source
$VALUE_{i,t}$	Stock price	Quarterly stock closing price	TEJ
$ROE_{i,t}$	Return on equity	The ratio of earnings to equity	TEJ
$TCRI_{i,t}$	Credit rating index	Credit rating index (degree 1-9)	TEJ
$F_{i,t}$	Foreign investor stock holding rate	Foreign investor stock holding rate	TEJ
$DINSUR_{i,t}$	Director and officer liability insurance	Director and officer liability insurance (1 if present, 0 otherwise)	TEJ
$IGOV_{i,t}$	Corporate governance index	A composite index calculated by adding the following: a binary variable equal to 1 if board size is larger than 5 directors, and 0 otherwise; a binary variable equal to 1 if an independent director is present, and 0 otherwise; a binary variable equal to 1 if an outside personal director is present, and 0 otherwise.	TEJ
$SALGW_{i,t}$	Sales growth rates	Quarterly sales growth rates	TEJ

4. Empirical results

We begin our analysis by testing the association of our corporate governance index *(IGOV)* with firm valuation. The estimation methods used in this paper include fixed effects and random effects estimations. In this section, we present the panel regression results for Equation (1). See Tables 2 and 3 for a summary of these findings. Table 2 has the estimation results for the Taiwan 50 component stocks without the factor of director and officer liability insurance (*DINSUR*), while Table 3 shows the results of adding the factor of director and officer liability insurance (*DINSUR*). Results of the Hausman test show that the Random effects model (REM) provides the greatest explanatory power for Tables 2 and 3.

Table 2. Estimation results of panel regression without "Director and Officer Liability Insurance $DINSUR_{i,t}$" − Taiwan 50 Component Stocks

Dependent variable - $VALUE_{i,t}$		
	Fixed effects model	Random effects model
Explanatory variable	Coefficient	Coefficient
Constant t	34.035*** (4.97)	36.145** (2.17)
$IGOV_{i,t}$	14.530*** (7.78)	14.448*** (7.76)
$TCRI_{i,t}$	-10.415*** (-3.66)	-10.682*** (-3.80)
$ROE_{i,t}$	0.566* (1.86)	0.556* (1.82)
$F_{i,t}$	-11.225 (-1.84)	-10.963 (-1.80)
$SALGW_{i,t}$	0.1982* (1.754)	0.1983* (1.755)
Observations	218	218
Adjusted R²	0.877	0.246
F-statistic	120.59***(0.000)	15.20***(0.000)
Hausman test x² (5)	5.85 (0.320)	

Notes: Dependent variable is stock closing price of Taiwanese Listed Companies. The testing results show that Random effects model (REM) has the largest explanatory power. The figures in parentheses are *t*-statistics. * significant at 10% level; ** significant at 5% level; *** significant at 1% level.

Table 3. Estimation results of panel regression with "Director and Officer Liability Insurance $DINSUR_{i,t}$" − Taiwan 50 Component Stocks

Dependent variable − $VALUE_{i,t}$		
	Fixed effects model	Random effects model
Explanatory variable	Coefficient	Coefficient
Constant t	43.290*** (5.52)	45.158** (2.22)

Table 3 (cont.). Estimation results of panel regression with "Director and Officer Liability Insurance $DINSUR_{i,t}$" − Taiwan 50 Component Stocks

Dependent variable − $VALUE_{i,t}$		
	Fixed effects model	Random effects model
Explanatory variable	Coefficient	Coefficient
$IGOV_{i,t}$	12.793*** (6.42)	12.689*** (6.38)
$TCRI_{i,t}$	-13.802*** (-4.37)	-14.014*** (-4.47)
$ROE_{i,t}$	0.649** (2.14)	0.646** (2.13)
$F_{i,t}$	-17.046 (-2.61)	-17.003 (-2.61)
$SALGW_{i,t}$	0.236** (2.09)	0.237** (2.10)
$DINSUR_{i,t}$	9.403** (2.34)	9.625** (2.40)
Observations	218	218
Adjusted R^2	0.880	0.265
F-statistic	114.84***(0.000)	14.08***(0.000)
Hausman test x^2 (6)	4.87 (0.240)	

Notes: Dependent variable is stock closing price of Taiwanese Listed Companies. The testing results show that Random effects model (REM) has the largest explanatory power. The figures in parentheses are *t*-statistics. * significant at 10% level; ** significant at 5% level; *** significant at 1% level.

From the estimation results revealed in Table 2 and Table 3, we observe that adding the factor of director and officer liability insurance, increases the statistical significance of the entire model. Director and officer liability insurance (*DINSUR*) is significantly and positively correlated with firm value, showing that it cannot be neglected as a value-predicting factor in corporate governance models.

Tables 2 and 3 also show that the coefficient on the corporate governance index (*IGOV*) is significantly and positively related to stock price, indicating that the estimation of the corporate governance index (*IGOV*) is another important determinant of the firm value for large Taiwanese companies. In addition, the coefficient on *ROE* also has a significant and positive impact on stock value. The *TCRI*, which is indicative of a firm's credit rating (good or bad), was found to be significantly and negatively related to firm value. Since a lower *TCRI* indicates lower credit risk, this implies that firms with better ratings are associated with higher firm value. The *TCRI* is an external control that may promote the governance quality for a company. The use of credit ratings as an indicator of corporate governance has not been discussed very much in past literature, so in this paper, we explore the relationship between a company's credit rating and firm valuation. Additionally, sales growth rate (*SALGW*) was found to be significantly and positively related to firm value. This indicates that higher sales growth rates accompany higher stock prices. Foreign institutional investors' stock holdings (*F*) are not significant in this empirical evidence. This is probably because the sampled Taiwan 50 component stocks are from industries with varying degrees of foreign institutional ownership, thus the whole impact is mixed and revealed insignificant.

Another finding we want to emphasize is that, after calculating the governance index scores and companies' stock growth rates, the five companies with the highest *IGOV* index scores − Taiwan Semiconductor Manufacture Corp. (*IGOV* Score 2.91), NAN-YA (*IGOV* Score 2.55), HON HAI (*IGOV* Score 2.34), FORMOSA Plastic Corp. (*IGOV* Score 2.12), CHINA STEEL (*IGOV* Score 2.10) − all exhibit higher stock growth rates. This indicates that in an emerging country like Taiwan, the strengthening of corporate governance mechanisms can bring comparatively higher stock price growth rates and firm valuation. These findings are seldom discussed in the literature and could be important as an investment strategy reference for public investors.

Conclusion

Enterprises should strengthen law obedience. Constructing a corporate governance index for listed companies should be the short-term objective of the governmental policy. From the view of short-term effectiveness, enterprises with higher corporate governance index scores will attract more government funds as well as foreign/domestic institution investors, thus boosting stock price performance. From the long-term viewpoint, governmental institutions should enact different mechanisms to reward good companies and monitor inferior firms. Therefore, the corporate governance mechanism suggests that enterprises should emphasize risk control and fulfill social responsibility to build up a strong brand reputation and capitalize on growing performance.

Rouf (2011) notes that corporate governance factors such as – independent directors and board size have a significantly positive relationship with firm value in listed companies in Bangladesh. In this paper, we build a corporate governance index comprising independent directors, board size, and outside personal directors based on the "independent directors" criteria to estimate the correlation of corporate governance index with firm valuation for the Taiwan 50 component stocks. Further, we consider the "director and officer liability insurance" factor and study its correlation with firm valuation. This corporate governance model, comprising the corporate governance index, and director and officer liability insurance, is found to exhibit a high explanatory power. Consistent with the results of Gompers, Ishii and Metrick (2003) and Braga-Alves and Shastri (2011), the corporate governance index is found to be significantly and positively related to firm value. In other words, larger board size and independent directors indicate that the company obeys the rules and enjoys a higher stock price. Besides, the presence of the director and officer liability insurance indicates that the company has a robust corporate governance mechanism, accompanied with a rising stock price. We also noticed that when the governance index score is higher, the growth rate of firm stock price increases as well. In fact, the companies with the highest governance index scores obtain comparatively higher stock price growth rates. That is, the construction of good governance index helps to raise stock price growth rates. Therefore, the construction of an appropriate corporate governance index model can lead to higher stock profits. The index provides a much more accurate way of providing information relevant to decisions around investment strategy.

This research provides evidence to explain the crucial importance of corporate governance, not only in developed countries but also in emerging countries with weaker legal systems. It also has important policy implications. In addition to providing valuable information to market practitioners and to institutional investors both foreign and domestic, it provides policy makers with assistance in constructing the most effective corporate governance models for the capital markets in their particular country.

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Appendix

Table 4. Taiwan 50 component stocks

No.	Company name	Main product	Investibility weighting factor	Weight in Taiwan 50 index
1	Advanced Semiconductor Engineering, Inc.	Electronics	75%	1.14%
2	Cheng Shin Rubber Ind. Co., Ltd.	Rubber	50%	0.43%
3	China Motor Corporation	Automobiles	40%	0.59%
4	China Steel Corporation	Steel	50%	2.48%
5	CMC Magnetics Corporation	Electronics	100%	1.36%
6	Compal Electronics, Inc.	Electronics	100%	2.54%
7	DELTA Electronics, Inc.	Electronics	75%	1.06%
8	Far Eastern Textile, LTD.	Textile	75%	0.79%
9	Formosa Chemicals & Fibre Corporation	Chemicals	75%	2.74%
10	Formosa Plastics Corporation	Plastics	100%	4.71%
11	HON HAI PRECISION Ind. Co., Ltd.	Electronics	75%	4.31%
12	LITE-ON Technology Corp.	Electronics	100%	1.63%
13	NAN-YA PLASTICS Corporation	Plastics	75%	3.92%
14	POU CHEN Corporation	Sports Shoes	100%	1.30%
15	Uni-President Enterprises Corp.	Foods	100%	0.83%
16	SILICONWARE PRECISION Ind. Co., Ltd.	Electronics	75%	0.65%
17	Taiwan Semiconductor Manufacturing Co. Ltd.	Electronics	75%	17.29%
18	United Microelectronics Corp.	Electronics	75%	5.90%
19	YULON MOTOR Co., Ltd.	Automobiles	50%	0.85%
20	Macronix International Co., Ltd.	Electronics	100%	0.67%
21	WINBOND Electronics Corporation	Electronics	75%	5.90%

Source: Taiwan Stock Exchange Corporation.