

External Financing Needs, Corporate Governance, and Firm Value

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ABSTRACT

Manuscript Type: Empirical

Research Question/Issue: We set out in this study to explore the overall impact of external financing needs on corporate governance and firm value, arguing that external financing needs have extremely important impacts on corporate governance, essentially because external financing can prove to be very costly, largely as a result of asymmetric information. Thus, we suggest that improvements in corporate governance of firms with external financing needs could help to reduce costs of outside equity financing.

Research Findings/Insights: Our results reveal that it is in fact firm valuation that has an effect on governance practices, as opposed to the reverse, and that external financing needs appear to strengthen the influence of the quality of corporate governance practices on firm value.

Theoretical/Academic Implications: The external forces considered in this study are product market competition, investment opportunities, and external financing needs, with particular emphasis being placed upon the impact of external financing needs, since this relates directly to outside shareholders. Given that poor corporate governance practices signal higher asymmetric information costs, and thus, lead to an increase in the costs of raising external capital, it is important to gain a comprehensive understanding of the impact of external financing needs on firm value and corporate governance.

Practitioner/Policy Implications: Our results demonstrate the important implications that corporate governance practices have for those firms with a particularly strong need for external equity, and the fact that external financing needs provide incentives for firms to seek out ways of making improvements to the overall quality of their corporate governance practices.

Keywords: Corporate Governance, Firm Value, Governance-Value Relationship, External Financing Needs

INTRODUCTION

We set out in this study to explore the impact of external financing needs on firm value and corporate governance, arguing that such a need for external financing has extremely important impacts on corporate governance, essentially because external financing can prove to be very costly, largely as a result of asymmetric information. The results suggest that the need for outside equity could provide incentives for firms to seek out improvements in their overall corporate governance practices.

An examination is undertaken in many of the prior empirical studies of the functional relationship that exists between firm performance and corporate governance,

namely, the market for corporate control.¹ Such studies note that higher firm value and/or stronger shareholder rights are readily discernible in those firms with better governance practices (where such firms are wide open to market control measures) than in those firms with relatively poor governance practices.

Masulis, Wang, and Xie (2007) and Dittmar and Mahrt-Smith (2007) argue that in cases where corporate governance practices are qualitatively weaker, this can ultimately lead to the destruction of shareholder value, essentially as a result of the inefficient investment decisions taken by managers, or the devaluation of cash resources through wastage. In other words, it is suggested that firms which consistently pursue good corporate governance practices will be more capable of mitigating the conflicts of interests that arise between shareholders and managers, and thereby, of alleviating shareholder-manager agency costs. However, while the direct correlation between better corporate governance

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practices and firm value has already been well documented, there has seldom been any discussion of the external driving forces leading to the adoption of such governance practices by firms.

We extend the current understanding of this issue by linking governance value with external forces; these forces include the competitiveness of the product market, investment opportunities and external financing needs. The major focus in the present study is placed upon the ways in which governance practices change in response to the needs for external financing and the influence on firm value arising from the interactions between corporate governance and external financing needs. The particular emphasis that is placed upon the impact of external financing needs in the present study is essentially based upon the direct relationship that such needs have with outside shareholders.

When confronted with potentially profitable opportunities for growth, firms will often find themselves faced with the choice of either using their internal resources to finance any proposed ventures, or seeking to raise such funds from external resources. Almeida and Wolfenzon (2005) argue that where there are certain deficiencies in firm performance, essentially as a result of the inefficient use of internal resources, the use of external financing has obvious benefits; thus, the suggestion is that external financing needs can be seen as a mechanism affecting the efficient allocation of capital.

We argue that when dealing with issues of governance and external financing, there are two important aspects that should be considered, as follows. Firstly, good corporate governance provides a signal to investors that firms are likely to have fewer potential problems of information asymmetry, reduced conflict of interest between managers and shareholders, and thus, greater shareholder wealth.² There is therefore a greater likelihood of investors being willing to invest in those firms whose governance practices are qualitatively better; as a result, firms with better governance practices which are presented with good investment opportunities, and which therefore have external financing needs, will find that they can more easily raise capital from the various fund providers.

Secondly, the equities of firms with better corporate governance are likely to have relatively better market liquidity;³ as such, the cost of capital for these firms will be lower. External financing will invariably prove to be costly where a firm is associated with asymmetric information (Myers & Majluf, 1984); thus, in those cases where such firms do have a need for external financing, this can provide them with incentives to improve the quality of their corporate governance. This may well, in turn, lower the costs of such external financing. According to traditional financial theory, the predetermined components of firm valuation are expected cash flows and the cost of capital; we hypothesize that where the need for external financing is strong, by pursuing improvements in the quality of their corporate governance practices, such firms can enhance their overall value.

In the majority of the prior studies investigating the relationship between the quality of corporate governance and firm performance, it is assumed that corporate governance is exogenous, and therefore, not determined by other governance mechanisms or firm characteristics;⁴ however, it is

clear that while firms have only a passive role to play in the governance-value relationship, they will, nevertheless, seek to actively improve their governance practices in order to raise the valuation of the firm. Therefore, the premise in the prior literature, that the influence of governance on corporate performance is exogenous, may well have led to inconsistent or biased results.

In order to ensure that we undertake appropriate examination of the issue of reverse causality between corporate governance and firm value, and to ensure that the potential problem of endogeneity is also taken into consideration, we estimate a system of simultaneous equations using "three-stage least squares" (3SLS) and "generalized method of moments" (GMM) methods, both of which, while allowing corporate governance to affect firm value, will nevertheless provide appropriate controls for these effects.

After providing appropriate controls for both firm characteristics and the instrumental variables, our results reveal that it is in fact firm valuation which has an effect on governance practices, as opposed to the reverse scenario; thus, we argue that the corporate governance practices of firms are affected by the external forces identified in this study (i.e., product market competition, investment opportunities and external financing needs). Furthermore, we find that external financing needs appear to strengthen the effect of the quality of corporate governance practices on firm value.

The results reported here are consistent with our hypothesis of the existence of an association between better corporate governance quality and the higher valuation of a firm, as well as our suggestion that external financing needs provide appropriate incentives for firms to pursue improvements in the overall quality of their corporate governance practices. The findings of the present study – through our much more detailed examination of the relationship between firm performance and corporate governance – also provide support for the results reported in Lehn, Patro, and Zhao (2007).

The remainder of this paper is organized as follows. A review of the related literature is presented in the next section, along with the development of our empirical hypotheses. The subsequent section presents the data and methodology, including a description of the variables, the econometric models and the data sample. The empirical results are reported in the penultimate section, followed by presentation of the conclusions drawn from this study in the final section.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Governance and Firm Value

The relationship between firm performance and corporate governance has already been dealt with in considerable numbers of studies within the extant literature. The present study considers the important index of corporate governance proposed by Gompers, Ishii, and Metrick (2003). In order to investigate the relationship between corporate governance and corporate performance, they constructed their "GIM index" using 24 different provisions as a proxy for the balance of power between shareholders and managers;

these 24 provisions were obtained from the Investor Responsibility Research Center (IRRC).

The GIM index is formed by adding 1 point if the firm has a specific defensive provision in place (otherwise, 0), leading to values between 0 and 24; larger GIM index values indicate that a firm is more insulated against takeovers. Gompers et al. (2003) demonstrate that firms with better governance practices (fewer anti-takeover provisions) will have higher stock returns than firms with weaker governance practices, arguing that firms with better governance have higher firm value, higher profits, higher sales growth and lower capital, and also engage in fewer corporate acquisitions.

Although we note that the positive relationship between corporate governance practices and firm performance is already widely recognized, questions still remain as to the ways in which governance works and how it can enhance firm value. Masulis et al. (2007) argue that anti-takeover provisions allow managers to make unprofitable decisions without having to face any serious threat of loss of corporate control. It is also noted by Dittmar and Mahrt-Smith (2007) that governance increases firm value by improving the use of cash holdings.

These findings clearly identify an important channel through which takeover defenses can destroy firm value; essentially, firms with weaker corporate governance practices will tend to make inefficient investment decisions which will reduce the value of their excess cash, and which thereby result in the destruction of shareholder value. In contrast, by mitigating the conflict of interests between shareholders and managers, firms with better corporate governance practices can thereby alleviate shareholder-manager agency costs.

Despite the emergence of a growing body of work demonstrating the correlation between firm-level governance and firm valuation, it remains unclear as to whether this relationship is causal. For example, it was suggested by Demsetz and Lehn (1985) that firms may endogenously select different governance practices; therefore, firms may actually play dual roles – both passive and active – in their governance practices. Thus, not only are firm values affected by governance practices, but they will also actively improve their governance practices to achieve higher valuation (Bhagat & Bolton, 2008; Black, Jang, & Kim, 2006; Durnev & Kim, 2005; Himmelberg, Hubbard, & Palia, 1999; Palia, 2001).

The relationship between governance and value may be determined endogenously; and indeed, in examining governance value, consideration of the problem of endogeneity is a prerequisite. Accordingly, the first hypothesis proposed in this study is:

Hypothesis 1. Corporate governance has a direct effect on firm value; furthermore, the simultaneous relationship implies that firm value has a positive effect on corporate governance.

The Effects of External Financing on Corporate Governance

Although Durnev and Kim (2005) argue that firms with profitable investment opportunities will tend to exhibit better corporate governance practices, it is also clear that

profitable firms will usually have more internally-generated funds, and hence will have less reliance on external financing (Demirgüç-Kunt & Maksimovic, 1998). Thus, in order to isolate the impact of external financing from that of the profitability of investment opportunities, we follow Durnev and Kim's assumptions that investment is a given, that external financing is bounded from above by a minimum level of cash flow rights necessary to maintain control, and that new investors will rationally anticipate diversion. Under these assumptions, we can reasonably surmise that if profitable investment opportunities lead to more external financing, firms with greater levels of external financing are likely to display better corporate governance practices.

Myers and Majluf (1984) note that for those firms with positive investment opportunities, which are nevertheless faced with the costs of external financing, financial slack is a valuable asset; they also note that with asymmetric information, there is a corresponding rise in the costs of external financing. Following on from the demonstration by Chen, Chen, and Wei (2003) that both disclosure and non-disclosure mechanisms have significantly negative effects on the cost of equity capital, Chung (2006) notes that information asymmetry (equity liquidity) is reduced (improved) in those firms with good governance quality. Anderson, Mansi, and Reeb (2004) further suggest that both the size and independence of the board have significant associations with lower costs of debt financing. According to their findings, firms with better governance structures are likely to have lower costs of equity and/or debt; thus, governance practices have significant influences on external financing.

The predetermined components of firm valuation are expected cash flows and the costs of financing. Better corporate governance can improve firm value as a result of efficient investment decisions and the resultant effects on expected cash flows. Reducing the costs of financing can also enhance firm value since external financing needs are affected by the overall costs of financing. The costs of external financing can be reduced by good governance quality and the resultant effect of reducing information asymmetry. Thus, firms that have external financing needs may also have incentives to achieve higher-quality governance standards, which will thereby lead to higher firm value as a result of lowering the costs of external financing. Accordingly, the second hypothesis in this study is:

Hypothesis 2. The relationship between governance and firm value will be strengthened by the positive effects of external financing needs on corporate governance quality.

The Effects of the External Environment on Corporate Governance

In much of the related literature, the focus has tended to be placed upon the relationship between firm characteristics and the quality of the firm's corporate governance mechanisms. It is, however, possible that environmental factors may also play an important role in the governance practice decisions taken by firms. Gillan, Hartzell, and Starks (2003) argue that most of the variations in overall governance structure can be explained by industrial factors, which appear to dominate firm factors. They investigate the issue that some

corporate governance mechanisms (product market competition or debt) may substitute for board oversight. Therefore, firms and industry characteristics can influence the use of anti-takeover measures and monitoring by corporate boards.

Focusing on the influences of market competition on corporate governance, Leibenstein (1966) and Hart (1983) both suggested that product market competition has a disciplinary effect on managerial behavior. Shleifer and Vishny (1997) also suggest that product market competition is perhaps the most effective mechanism for eliminating managerial inefficiency, noting that managers of firms which operate within the more competitive industries are less likely to shirk or put valuable corporate resources into inefficient use, essentially because the margin for error is very slight and any mistakes can be quickly exploited by competitors. This provides support for the argument that market competition acts as an important governance mechanism discouraging managers from wasting corporate resources. Gillan et al. (2003) indicate that a competitive environment could raise the marginal cost for shareholders of poor managerial decision. This effect will result in a positive association between competition and internal governance strength. Karuna (2007) further argues that firms in the more competitive industries provide stronger CEO equity incentives than those in the less competitive industries, which suggests that firms in competitive industries have a better quality of corporate governance because of the fact that these firms need to motivate their managers to work harder.

According to Roe (2004), market forces – characterized by stronger competition that can ultimately dampen corporate profits – may provide a signal of a corporate takeover, thereby placing further pressure on managers to perform well. Therefore, the competitive position of firms within the product market is clearly more likely to be very strong in those firms with efficient governance structures. Overall, the prior studies conclude that greater competition leads to the greater marginal value of effort in a firm, while also acting as a disciplinary mechanism. Collectively, these studies suggest that competition is related to monitoring, which ultimately strengthens corporate governance levels.

Turning to the influence of investment opportunities on corporate governance, based upon agency theory, Hutchinson and Gul (2004) argue that the incidence of information asymmetry is found to be higher for high-growth firms;⁵ indeed, the prior studies recognize that high-growth firms have other issues to deal with, such as higher compensation levels and the greater use of stock options. These will tend to lead to higher monitoring costs as well as incentives for the adoption of alternative accounting measures of performance and reporting.⁶ Gillan et al. (2003) argue that managers facing attractive opportunities may have greater discretion in project selection than those facing less attractive investment opportunities, suggesting that the benefits of board monitoring are higher in industries with greater growth or investment opportunities.

For example, Smith and Watts (1992) suggest that both industrial factors and the investment opportunity set have significant roles to play in determining governance and financial policies, thereby indicating that different aspects of governance, notably the market for corporate control, appear

to be influenced by environmental factors. Further support for this notion is provided by the results of an investigation by Hutchinson and Gul (2004) into the negative association between growth and firm performance and whether corporate governance variables moderate this negative relationship; they thereby demonstrate the importance of corporate governance for firms with greater growth opportunities. They argue that this negative relationship is weaker for firms with lower agency costs because firms with more growth opportunities (high information asymmetry) are more difficult to monitor and corporate governance mechanisms play a more important role. Accordingly, the third and final hypothesis in this study is:

Hypothesis 3. The governance mechanism of monitoring on management provided by the openness to the takeover market is positively related to investment opportunities and product market competition.

DATA AND RESEARCH METHODOLOGY

Data Description

The dataset adopted for this study includes all firms for which complete information was available from the Investor Responsibility Research Center (IRRC) volumes for the years 1990, 1993, 1995, 1998, 2000, and 2003.⁷ The IRRC tracks 22 charter provisions, bylaw provisions, and other firm-level rules plus coverage under six state takeover laws; duplication between firm-level provisions and state laws yields 24 unique provisions. We incorporate the firm-specific defense mechanisms in place by using the index compiled by Gompers et al. (2003) from the IRRC publications. The governance index (GIM index) is formed by adding one point if the firm has a specific defensive provision in place and zero otherwise, leading to values between 0 and 24. GIM index can be viewed as a measure of anti-takeover protection. In addition to the IRRC volumes, other data on firm characteristics, such as expenditure on R&D, total assets, and capital expenditure, were obtained from COMPUSTAT. We exclude all firm-year observations with missing data for the computation of our main financial statement variables, and also follow the usual practice of excluding all financial firms (SIC codes 6000–6999) and all utilities firms (SIC codes 4900–4999), essentially because of their special financial structure, regulatory requirements and accounting standards. Our final sample ultimately comprises of 2024 firms covering the years 1990–2005.

Research Methodology

The problem of corporate governance potentially being an endogenous variable has been addressed in many of the prior studies.⁸ In this study, we apply the simultaneous equation approach, essentially because we are interested not only in the effects of corporate governance on firm value, but also in those factors affecting the corporate governance practices of our sample firms. Given that the corporate governance quality variables may actually be endogenous, such an approach can help us to make better statistical inferences.

Endogeneity is therefore a concern of potentially major importance, largely because firms not only tend to play a relatively passive role in the governance-value relationship, but will also actively improve their governance practices in order to achieve a higher valuation. Thus, as noted earlier, the premise in the prior literature that the influence of governance on corporate performance is exogenous may well have produced biased and inconsistent results. In order to take the problem of endogeneity in the governance-value relationship into account, we estimate a system of simultaneous equations using 3SLS and GMM methods, within which anti-takeover provisions are allowed to affect firm value, while providing appropriate controls for the effects of firm value on such anti-takeover provisions.

GMM methodology is found to be robust in the presence of both heteroskedasticity across firms as well as the correlation between disturbance terms within firms over time. Furthermore, the GMM approach places no restrictions on either the conditional or unconditional variance matrix of the disturbance term. Under the GMM framework, we can obtain an asymptotically efficient estimator without making any additional assumptions; this will clearly enable us to obtain the most robust results. We also use the ordinary least squares (OLS) approach to compare the results estimated by the distinct econometric approaches. In all cases, the use of instrumental variables should ensure that each variable is (1) exogenous; and (2) correlated with corporate governance with no correlation with the error term in the original equation. In other words, the instruments should affect only the value variable through corporate governance and other observable and controllable variables. From an econometric standpoint, the instrumental variables used in this study are exogenous to the dependent variable. The first of our regressions is as follows:

$$Q_{i,t} = \beta_0 + \beta_1 CG_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 (EBIT/Sales)_{i,t} + \beta_4 LEVERAGE_{i,t} + \beta_5 S\&P500_{i,t} + \beta_6 DELAWARE_{i,t} + \beta_7 EFN_{i,t} + \beta_8 (CG_{i,t} \times EFN_{i,t}) + \varepsilon_{1i,t} \quad (1)$$

where $Q_{i,t}$ is Tobin's Q for firm i in year t ; $CG_{i,t}$ is the corporate governance (GIM) index; $SIZE_{i,t}$ is the natural logarithm of total assets; $(EBIT/Sales)_{i,t}$ is a proxy for the profitability of the firms; and $LEVERAGE_{i,t}$ is the ratio of long-term debt to total assets.

$S\&P500_{i,t}$ is a dummy variable which is equal to 1 if firm i is included in the S&P 500 index; $DELAWARE_{i,t}$ is a dummy variable which is equal to 1 if firm i was incorporated in Delaware; $EFN_{i,t}$ refers to external financing needs, with the interaction term $CG_{i,t} \times EFN_{i,t}$ referring to the needs for external financing with corporate governance; and $\varepsilon_{1i,t}$ is the error term. Equation 1 suggests that with a reduction in the governance index, $CG_{i,t}$, there will be a corresponding increase in firm value, $Q_{i,t}$. Our second regression is as follows:

$$CG_{i,t} = \theta_0 + \theta_1 Q_{i,t} + \theta_2 EFN_{i,t} + \theta_3 (CAPX/Sales)_{i,t} + \theta_4 M_COMP_{i,t} + \theta_5 M_UNIQUE_{i,t} + \theta_6 SIZE_{i,t} + \theta_7 LEVERAGE_{i,t} + \varepsilon_{2i,t} \quad (2)$$

where $CG_{i,t}$ is an endogenous variable; $EFN_{i,t}$ ($CAPX/Sales)_{i,t}$, $M_COMP_{i,t}$, and $M_UNIQUE_{i,t}$ are exogenous instrumental variables; $(CAPX/Sales)_{i,t}$ proxies for the firm's investment

opportunities; $M_COMP_{i,t}$ is an indicator of a competitive market; and $M_UNIQUE_{i,t}$ is an indicator of product market uniqueness. Equation 2 also includes $SIZE$ and $LEVERAGE$ as control variables.

Variable Definitions

Corporate Governance (GIM) Index. We use the Gompers et al. (2003) GIM index, constructed from the IRRC publications, as our primary measure of corporate governance; this index considers 24 different provisions under five categories. The index is formed by adding 1 point if the firm has a specific defensive provision in place; otherwise 0. This leads to values between 0 and 24, with a larger value indicating that the firm is more insulated against takeovers. Since the IRRC does not publish volumes annually, following Gompers et al. (2003), we assume that the governance provisions of each firm, as reported in a given IRRC volume, are in place during the period immediately following the publication of the IRRC volume until the publication of the subsequent volume.⁹

Firm Value (Tobin's Q). Following the approaches of La Porta, Lopez-de-Silanes, Shleifer, and Vishny (2002) and Doidge, Karolyi, and Stulz (2004) we measure firm value by using Tobin's Q , which is defined as the ratio of the market value of assets to the book value of assets, where the market value of the firm's assets is computed as the book value of its assets minus the book value of common equity plus the market value of the common equity of the firm. The Tobin's Q values are then winsorized at the 1st and 99th percentile to reduce the impact of outliers.

Instrumental Variables. The findings of many of the prior studies suggest that industrial forces and economic factors play important roles with regard to the choices of the governance practices adopted by firms (Durnev & Kim, 2005; Gillan et al., 2003; Smith & Watts, 1992); we therefore use these factors as the instruments in the present study. A good instrument should have a correlation with the endogenous variable, but should not be correlated with the error term of the original equation; that is, it must be exogenous. Investment opportunities and product market factors meet these requirements essentially because they are associated with corporate governance but not entirely endogenous to firm value.

Firms' external financing needs are dependent upon their internal cash flows relative to their investment opportunities. Although both cash flow and the optimal investment level are endogenous, they are not completely endogenous, since cash flows and investment levels are determined by many factors, including economic conditions, industrial environment, the strategies of other firms, governance regulations and other factors, none of which are solely determined by the firms themselves. Furthermore, product market competition is also determined by many factors. Although firms may have opportunities to influence their external financing needs, investment opportunities and market power, they do not have total control over environmental shifts.

In terms of the measurement of investment opportunities, we follow Berger and Ofek (1995) and Gillan, Hartzell, and Starks (2006) to use capital expenditure to sales as a proxy for investment opportunities; this is then winsorized at the 1st and 99th percentile. Since it has already been argued that firms which have profitable investment opportunities also have better corporate governance structures (Durnev & Kim, 2005), we expect to find a positive relationship between *CAPX/Sales* and governance quality.

In terms of the measurement of production market competition, we follow Masulis et al. (2007) to use two different measures as the means of capturing the competitive structure of an industry. The first of these is the Herfindahl index, calculated as the sum of the squared market shares of all COMPUSTAT firms in a total of 48 industries based upon the industry classification of Fama and French (1997). The second measure is each industry's median ratio of sales expenditure to actual sales, which, as argued by Titman and Wessels (1988), acts as a proxy for product uniqueness.

Industries with lower Herfindahl indices, and those within which there are many firms producing similar products, are generally located in the more competitive product markets. For each year, *M_COMP* is equal to 1 if the industry's Herfindahl index is in the bottom quartile of all industries; *M_UNIQUE* is also equal to 1 if the industry's median ratio of sales expenditure to sales is in the top quartile of all industries. Since there is a reduced likelihood of the managers of firms operating in the more competitive industries shirking or putting valuable corporate resources to inefficient use, we would expect to find a positive relationship between *M_COMP* and governance quality, and a negative relationship between *M_UNIQUE* and governance quality.

Control Variables. The estimation of external financing needs (*EFN*) in this study follows Demirgüç-Kunt and Maksimovic (1998) and Durnev and Kim (2005), both of which defined external financing needs as the difference between a firm's actual growth rate and its sustainable growth rate, using both retained earnings and short- and long-term debt financing to maintain a constant debt-to-assets ratio. The actual growth rate of a firm is calculated in this study as its annual growth rate in total assets and its sustainable growth rate, as $ROE/(1 - ROE)$, where *ROE* is net income over book equity. In conditions where external financing needs exist, if the difference between the actual growth rate in total assets and the sustainable growth rate is positive, then *EFN* is equal to 1; otherwise, *EFN* is equal to zero.

Since firms with external financing needs may have incentives to pursue higher quality governance practices, we expect to find a positive relationship between such governance practices and external financing needs. We also control for the interactive relationship between governance and external financing. Given that firms with external financing needs have incentives to pursue high-quality governance in order to achieve lower financing costs, and thereby increase firm valuation, the interaction variable should be positive.

We use standard financial controls as the independent variables throughout Equation 1 (the Tobin's *Q* equation); these include *SIZE* (firm size), and the *S&P500* and *DELA-*

WARE dummy variables used by Gompers et al. (2003), as well as additional controls for leverage and profitability. *SIZE* is defined here as the natural logarithm of total assets; however, we also use a firm size proxy for firm age since older and larger firms tend to have a higher book-to-market value (Durnev & Kim, 2005).

Mørck and Yang (2001) demonstrate that inclusion within the S&P 500 has a positive impact on the value of a firm, and that this impact was greatly increased during the 1990s; thus, *S&P 500* is an indicator variable which is equal to 1 if the firm was included in the S&P 500 at the end of the previous year. A positive association is also noted between firms established in Delaware and firm value (Daines, 2001); thus, *DELAWARE* is adopted in this study as an indicator variable which is equal to 1 if the firm was incorporated in Delaware. *EBIT/Sales* is used as a proxy for profitability; therefore, taking profitability into account in the firm value function, we follow Berger and Ofek (1995) to measure profitability by *EBIT* to sales (winsorized at the 1st and 99th percentile).

Much of the prior literature has shown debt to be beneficial to firm value, with leverage providing incentives for managers to improve the performance of their firms, since they have to cede significant control to creditors and can quite conceivably lose their jobs in times of financial distress (Masulis et al., 2007; Stulz, 1990). We therefore provide an additional control for *LEVERAGE* in Equation 1, defined as the ratio of the book value of total debt to the book value of assets, which is then winsorized at the 1st and 99th percentile in order to reduce the impact of outliers.

It is also suggested by Garvey and Hanka (1999) that leverage is related to a firm's level of protection against takeovers, while Cremers and Nair (2005) suggest that firm size and debt would have strong influences on corporate governance choices. Thus, both *SIZE* and *LEVERAGE* are included as control variables in Equation 2.

EMPIRICAL RESULTS AND ANALYSIS

Summary Statistics and Correlations

Table 1 presents the descriptive statistics of the corporate governance index and firm characteristics covering the years from 1990 to 2005. The mean of the GIM index is 9.12, with a minimum of 1, and a maximum of 19; the sample average mean for Tobin's *Q* is 1.92 with a standard deviation of 1.24; the mean of total assets for our sample firms is 5291.19 million dollars; and the mean *LEVERAGE* is .23. Our sample of firms is not complicated by larger firms or firms with higher leverage.

Table 2 provides the correlation coefficients between the corporate governance measures and firm characteristics from 1990 to 2005, with a strong negative correlation being discernible between the GIM index and firm value ($p < .01$). A significantly negative correlation is found between external financing needs and the GIM index ($p < .01$); however, the correlation between external financing needs and Tobin's *Q* is positive, although relatively weaker in significance ($p = .06$). Overall, these relationships suggest that, qualitatively, the measurement does capture the desired effect. The negative relationship between the GIM index and firm value

TABLE 1
Summary Statistics

Variables	Mean	Median	Std. Dev.	Minimum	Maximum
GIM	9.12	9.00	2.79	1.00	19.00
Tobin's Q	1.92	1.55	1.24	.45	32.38
Total Assets	5,291.19	1,167.67	21,679.74	2.52	750,507
EBIT/Sales	.11	.09	.08	.00	.76
CAPX/Sales	.07	.04	.08	.00	.99
Leverage	.23	.22	.16	.00	.84

Notes:

The descriptive statistics are presented on the characteristics of a total of 14,443 observations obtained from a sample of 2,024 firms. The data, which covers the period from 1990 to 2005, was obtained from the IRRC anti-takeover provision database. Firms within the financial and utilities sectors (SIC codes 6000–6999 and 4900–4999) are excluded from the sample. Variable definitions are provided in Table A1. Total assets refers to the book value of assets in the fiscal year (in US\$ millions).

implies that higher external financing needs encourage firms to improve their overall corporate governance structure.

We now examine the difference between the mean of the anti-takeover provisions in the different sub-samples classified according to the level of external financing needs, market competitiveness or product uniqueness, with Table 3 presenting the *t*-test results for the independent sample. According to the “equality of variances” test, the null hypothesis of the independent sample *t*-tests is $H_0: \mu_1 = \mu_0$ or $\mu_1 \neq \mu_0$ where μ is the mean of the GIM governance index. The variables, which include external financing needs, an indicator of a competitive market and an indicator of product market uniqueness, are defined as dummy variables in our study.

For those firms which have no external financing needs (*EFN*), and which are not located within the competitive industries (*M_COMP*) or within the unique product market industries (*M_UNIQUE*), μ_0 is the GIM index mean; conversely, in those cases where the firms are characterized by external factors, including external financing needs, a competitive market or unique product industry, then μ_1 is the GIM index mean. The null hypothesis, $H_0: \mu_1 = \mu_0$, indicates that there are no significant differences between the means of the two groups, while the alternate hypothesis is that there are significant differences between the means of the two groups.¹⁰

As we can see from the results reported in Table 3, the use of the GIM index as the corporate governance measure reveals statistical differences between the three groups comprising of: (1) firms with or without external financing needs ($p < .01$); (2) firms within or outside of the unique product market industries ($p < .01$); and (3) firms within or outside of the competitive industries ($p < .01$). These findings provide overall support for our argument that corporate governance quality is associated with both environmental factors and external financing needs.

OLS, 3SLS, and GMM Estimation Results

This section presents the results of the relationships between external financing needs, corporate governance, and firm

value. We adopt the years 1990–2005 as our sample period in order to test whether there are any significant differences between the external financing needs of the firms that may influence the relationship between corporate governance and firm value. An additional aim of this study is to investigate whether the potential problem of endogeneity exists between corporate governance and firm value; therefore, we examine the relationship between governance and firm value using both 3SLS and GMM approaches.

The results of the OLS, 3SLS, and GMM regression analyses examining the relationship between external financing needs, the governance index and firm value are presented in Table 4; Column 2, which presents the results of the OLS estimation, reveals that between 1990 and 2005, *GIM* had a significantly negative relationship with *Tobin's Q* ($p^{OLS} < .01$). This result is in line with the evidence showing that firms with better governance practices tend to have a higher market valuation (Bebchuk, Cohen, & Ferrell, 2009; Core, Guay, & Rusticus, 2006; Gompers et al., 2003), and also demonstrates a significantly negative relationship between *Tobin's Q* and *GIM*.

The estimation results of Equations 1 and 2 are presented in Columns 3 and 5 of Table 4 as a series of simultaneous 3SLS and GMM equations. As expected, the coefficients of *GIM* and *Tobin's Q* are both found to be negative, although *GIM* is not significantly negative in its relationship with firm value. OLS is the only estimation method that reveals reverse causality between governance and firm value. After taking into account the potential problem of endogeneity, we find that the prior finding, that firms with better governance quality have higher firm value, does not hold. This is consistent with Lehn et al. (2007) who argue that, as opposed to the adoption of governance provisions depressing firm valuation, firms with lower valuation are actually more likely to adopt such provisions. Therefore, this result does not support our first hypothesis, that there is no a direct simultaneous relationship between corporate governance and firm value. In other words, corporate governance does not have a direct effect on firm value.

The interaction terms ($GIM_{i,t} \times EFN_{i,t}$) between the GIM index and external financing needs reveal negatively

TABLE 2
Pearson Correlation Matrix

Variables	GIM	Tobin's Q	EFN	EBIT/Sales	CAPX/Sales	LEVERAGE	S&P500	DELAWARE	SIZE	M_COMP	M_UNIQUE
GIM	1										
Tobin's Q	-.09*** (.01)	1									
EFN	-.07*** (.06)	.02† (.06)	1								
EBIT/Sales	-.06*** (.01)	.48*** (.01)	-.06*** (.01)	1							
CAPX/Sales	-.05*** (.01)	.00 (.75)	.10*** (.01)	.34*** (.01)	1						
LEVERAGE	.09*** (.01)	-.31*** (.01)	.09*** (.01)	-.08*** (.01)	.13*** (.01)	1					
S&P500	.21*** (.01)	.16*** (.01)	-.12*** (.01)	.15*** (.01)	.02* (.02)	.02** (.01)	1				
DELAWARE	-.13*** (.01)	.05*** (.01)	.04*** (.01)	.05*** (.01)	.05*** (.01)	.03*** (.01)	.00 (.78)	1			
SIZE	.16*** (.01)	.01 (.22)	-.07*** (.01)	.16*** (.01)	.14*** (.01)	.25*** (.01)	.65*** (.01)	.08*** (.01)	1		
M_COMP	-.02** (.02)	.01 (.26)	.03*** (.01)	-.02** (.01)	.00 (.86)	-.07*** (.01)	-.03*** (.01)	-.00 (.70)	.01 (.17)	1	
M_UNIQUE	-.10*** (.01)	.27*** (.01)	.08*** (.01)	.25*** (.01)	-.01 (.14)	-.20*** (.01)	.03*** (.01)	.05 (.04)	-.02* (.04)	.06*** (.01)	1

Notes:

The correlations between corporate governance and firm characteristics are presented on a total of 14,443 observations on a sample of 2,024 firms. The data, covering the period from 1990 to 2005, was obtained from the IRRC anti-takeover provision database. Firms within the financial and utilities sectors (SIC codes 6000–6999 and 4900–4999) are excluded from the sample. Figures in parentheses are p-values.

† < .1.

* < .05.

** < .01.

*** < .001.

TABLE 3
Tests of Corporate Governance Indices between Groups

Variables	GIM Index		t-statistic	p-value
	μ_0	μ_1		
EFN	9.46	9.06	4.80***	<.01
M_COMP	9.42	9.19	2.85**	<.01
M_UNIQUE	9.58	8.83	9.20***	<.01

Notes:

This table presents the results of the null hypothesis tests, $H_0: \mu_0 = \mu_1$ and $H_0: \mu_0 \neq \mu_1$, where μ is the mean of the Gompers, Ishii, and Metrick (GIM) governance index (the reason for the two different null hypotheses is that the "equality of variance" is either rejected or not rejected); the null hypothesis of "equality of variance" is a situation in which the variances of the two groups are the same. For firms with no external financing needs (EFN), which are not located in the competitive industries (M_COMP) or the unique product market industries (M_UNIQUE), μ_0 is the governance index mean; conversely, when the characteristics of the firms include factors such as external financing needs, a competitive market or unique product industry μ_1 is the governance index mean. The sample comprises of data on a total of 2,024 firms obtained from the IRRC anti-takeover provision database, covering the period from 1990 to 2005. Firms within the financial and utilities sectors (SIC codes 6000–6999 and 4900–4999) are excluded from the sample. Variable definitions are provided in Table A1. We test whether the mean of the governance index of firms with external financing needs is statistically different from firms without external financing needs; the p -value of the test for the "equality of variance" for GIM is .6145; M_COMP presents the results for firms in the competitive industries, where the p -value for GIM is .1376; and M_UNIQUE presents the results for firms in the unique product market industries, where the p -value for GIM is .1289.

**<.01.

***<.001.

significant coefficients ($p^{OLS} < .01$, $p^{3SLS} < .01$, $p^{GMM} < .01$), indicating that external financing needs are associated with higher valuations, and that the GIM index has a negative association with firm value. A negative interaction term ($GIM_{it} \times EFN_{it}$) indicates that external financing needs compound the negative statistical effect of the GIM index on valuation, insofar as external financing enhances the quality of corporate governance, and consequently, has a positive effect on firm value. Furthermore, the interaction between GIM and EFN seems more likely to indicate that, when holding the firms' EFN constant, GIM has a negative effect on firm value, thus EFN is a factor which is clearly of importance when examining the effect of GIM on firm value.

Hence, this result provides support for our second hypothesis, that external financing enhances the relationship between corporate governance and firm value. We also find from Equation 1 that SIZE has a negative relationship with firm value ($p^{OLS} < .01$), which is consistent with Mørck, Shleifer, and Vishny (1988), McConnell and Servaes (1990), and Smith and Watts (1992). However, the 3SLS and GMM estimations reveal a significantly positive relationship between firm size and governance ($p^{3SLS} < .01$, $p^{GMM} < .01$). The profit-

ability of firms is found to be associated with higher valuation ($p^{OLS} < .01$, $p^{3SLS} < .01$, $p^{GMM} < .01$), and leverage has a significantly negative association with firm performance ($p^{OLS} < .01$, $p^{3SLS} < .01$, $p^{GMM} < .01$). Consistent with Daines (2001), who found that incorporation in Delaware was positively related to firm value, the DELAWARE coefficient in this study is positive and statistically significant ($p^{OLS} < .01$, $p^{3SLS} < .01$, $p^{GMM} = .09$). The association between governance practices and profitability, LEVERAGE and DELAWARE are similar under the two other econometric methods (3SLS and GMM).

Equation 2 in Table 4 reveals that under all three econometric methods (OLS, 3SLS and GMM), each of the instrumental variables, investment opportunities (CAPX/Sales) ($p^{OLS} < .01$, $p^{3SLS} = .05$, $p^{GMM} < .01$), and product market uniqueness (M_UNIQUE) ($p^{OLS} < .01$, $p^{3SLS} < .01$, $p^{GMM} < .01$), have significantly negative associations with anti-takeover provisions. Despite product market competitiveness (M_COMP) also having a negative association with governance practices ($p^{OLS} = .09$), the only coefficient that is significantly negative is that obtained from the OLS estimation. These results provide support for our third hypothesis, that firms' governance practices are associated with external environment factors.

As expected, external financing needs, investment opportunities and the competitive industry indicator each have significantly negative coefficients. However, to our surprise, a negative relationship is also found between the anti-takeover provisions and product market uniqueness (M_UNIQUE) ($p^{OLS} < .01$, $p^{3SLS} < .01$, $p^{GMM} < .01$); this implies that industries with unique products are more likely to have better governance practices. Nevertheless, despite our finding of an unexpected relationship between corporate governance quality and product market uniqueness, we still show that external forces, including industrial competitiveness and investment opportunities, are associated with corporate practices. In other words, this finding is also explained by the fact that managers of weaker firms (or firms with fewer unique products, less investment opportunities, and less growth potentials) are more likely to adopt entrenchment provisions as a means of protecting themselves. Since our primary aim is to determine the extent to which external forces can explain the observed variation in governance structures, the direction of the associations between the GIM index and external factors are of secondary importance to the existence of a significant association.

The OLS, 3SLS, and GMM estimation coefficients of SIZE in Equation 2 are found to be positively related to the GIM index ($p^{OLS} < .01$, $p^{3SLS} < .01$, $p^{GMM} < .01$), a finding which supports the proposition that firm size acts as an effective takeover deterrent (Cremers & Nair, 2005; Masulis et al., 2007), while the OLS estimation coefficient of LEVERAGE has a significantly positive correlation with anti-takeover provisions ($p^{OLS} < .01$), which is consistent with the hypothesis that higher debt reduces the probability of a takeover (Cremers & Nair, 2005; Novaes, 2003; Zweibel, 1996). However, the 3SLS and GMM estimation coefficients of LEVERAGE are found to have no significant association with the GIM index, indicating that firm value and leverage have no significant effects on takeover defenses when taking into account the potential endogeneity between corporate governance and firm value.

TABLE 4
OLS, 3SLS and GMM Regression Results on Tobin's Q and the GIM Index

Variables	OLS		3SLS		GMM	
	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
Panel A: Equation (1), Tobin's Q						
Intercept	2.13***	<.01	-5.97	.23	1.26	.66
GIM	-.02***	<.01	.69	.22	-.03	.92
SIZE	-.09***	<.01	.19***	<.01	.08***	<.01
EBIT/Sales	6.76***	<.01	6.05***	<.01	5.27***	<.01
LEVERAGE	-2.02***	<.01	-2.89***	<.01	-1.92***	<.01
S&P500	.48***	<.01	-1.09*	.01	-.01	.98
DELAWARE	.07***	<.01	.75**	<.01	.24†	.09
EFN	.38***	<.01	14.93**	<.01	8.74**	<.01
GIM×EFN	-.02**	<.01	-1.65**	<.01	-.98**	<.01
Panel B: Equation (2), GIM index						
Intercept	7.57***	<.01	8.05***	<.01	7.73***	<.01
Tobin's Q	-.14***	<.01	-.42***	<.01	-.39***	<.01
EFN	-.30***	<.01	-.31***	<.01	-.38***	<.01
CAPX/Sales	-2.28***	<.01	-.37*	.05	-.66**	<.01
M_COMP	-.08†	.09	-.03	.25	-.06	.19
M_UNIQUE	-.39***	<.01	-.30***	<.01	-.30***	<.01
SIZE	.29***	<.01	.30***	<.01	.34***	<.01
LEVERAGE	.55***	<.01	-.23	.20	.01	.97
No. of Obs.			14,443			
No. of Firms			2,024			

Notes:

The sample comprises of data on 2,024 firms obtained from the IRRC anti-takeover provision database covering the period from 1990 to 2005. Firms within the financial and utilities sectors (SIC codes 6000–6999 and 4900–4999) are excluded from the sample. We do not report the R^2 for our estimated equations, since, as noted by Goldberger (1991), there is no guarantee that any R^2 reported in system estimation techniques will lie between zero and one; thus, they have no statistical meaning in 3SLS and GMM methods. The definitions of the variable are provided in Table A1.

†<.1.

*<.05.

** <.01.

*** <.001.

Our empirical results provide overall support for our primary hypothesis that when taking the potential problem of endogeneity into account, external financing needs have positive effects on firms' governance practices and strengthen the influence of corporate governance on firm value. We also show that external forces are associated with corporate governance practices; thus, firms can adopt or discard anti-takeover provisions in response to different industrial or financial environments.

Empirical Results for Strong Growth Firms

The findings of this study provide evidence of a potential relationship between corporate governance practices and

external forces, such as the industrial environment. The evidence suggests that clustering in governance practices may be discernible within various industries; for example, as suggested by Smith and Watts (1992), the investment opportunity set industry factors play significant roles in determining financial and governance policies, while it is also noted by Welch (2004) that when firms change their capital structure, they generally move towards the industry average.

Having shown that external financing needs are associated with the investment environment, in this section, we provide the results of our test to determine whether the impact of external financing needs (in terms of the relationship between governance and firm performance) is universal within different industries. In order to test the

difference in the economic environments and investment opportunities relating to our main results, we select 1998–2003 as our test period, since this covers a period of prosperity (1998–2000) as well as a period of economic change (2001–03).

The development of information and communication technologies (ICT) in the late 1990s contributed to more efficient products and services and changed the overall nature of the workplace. During that time, technology firms faced both significant growth opportunities and the need to raise external equity or debt. Technology stock prices rose to unprecedented levels until March 2000. In order to avoid our findings being period-specific, we extend the study period to 2003 to examine whether the relationship between governance and firm value was affected by the “governance crisis” in the early twentieth century (Core et al., 2006).

We use the industry definitions proposed by Fama and French (1997) for our industry classifications; they used “standard industrial classification” (SIC) codes to form eight industry classifications, the 5, 10, 12, 17, 30, 38, 48, and 49 industry specifications. Given that the more detailed industry classifications may be very precise, and therefore rather unsuitable for capturing general industry features, our sample is categorized under only the 5-industry classification to examine the impact of external financing needs on the relationship between governance and firm value in specific industries.¹¹

The results provide support for our hypotheses, demonstrating particular support for our primary proposition that external financing has positive effects on a firm’s governance practices ($p^{OLS} < .01$, $p^{3SLS} < .01$, $p^{GMM} < .01$) and thereby strengthens the influence of corporate governance on firm value. These results are, however, only discernible for the high-tech industries,¹² with the interaction terms between the governance index and external financing needs in all of the other industries revealing insignificant coefficients.

In order to further test and verify our empirical results for specific industries, we also follow Anderson and Reeb (2003), using their definition of technology firms with the two-digit SIC codes of 35 (industrial machinery and equipment), 36 (electronics and other electrical equipment), 38 (instruments and related products), and 73 (business services). The results for the two different high-tech industry classifications are presented in Table 5.

The results once again reveal that in the interactions between governance index and external financing needs, positive and significant coefficients on firm value are found only within the high-tech firms ($p^{OLS} = .03$, $p^{3SLS} = .06$, $p^{GMM} < .01$). It is, however, quite surprising to find that our hypotheses hold only for the high-tech industry where firms are more likely to seek out qualitative improvements in their governance practice since they have strong growth opportunities and therefore have external financing needs; such phenomena may not apply to other industries.¹³ We suggest that, unlike other industries, when high-tech firms have financial slack, they may use external funds in preference to using their own internal funds. Our results therefore have important implications for the corporate governance practices of firms with strong growth opportunities.

CONCLUSIONS

Despite the lengthy discussion on the importance of corporate governance on firm value within the recent literature, the external forces driving the adoption of corporate governance practices are seldom discussed; we extend the current literature by linking governance value with specific external forces, with particular emphasis being placed on the impact of external financing needs since this relates directly to outside shareholders. Our results reveal that external financing needs are associated with corporate governance practices and that such needs strengthen the influence of governance practices on firm value. The finding of external financing needs developing indirect reverse causality between corporate governance and firm value complements the results of Lehn et al. (2007), who argue that it is firm value which affects corporate governance, and not the reverse. Since our results have important implications for corporate governance practices in those firms with strong growth opportunities, we re-examine the results for samples of firms in different industries; these results reveal that the effects of external financing needs on the sensitivity of firm value to governance practices seem to be stronger for high-tech firms than for firms in other industries.

The external forces considered in this study are product market competition, investment opportunities and external financing needs, with particular emphasis being placed upon the impact of the latter since this relates directly to outside shareholders. Since poor corporate governance practices signal higher asymmetric information costs, and thus, an increase in the costs of raising external capital, it is important to gain a comprehensive understanding of the impact of external financing needs on firm value and corporate governance. The results presented here demonstrate the very important implications which corporate governance practices have for those firms with a particularly strong need for external equity. We conclude that external financing needs provide incentives for firms to make improvements in the quality of their corporate governance practices.

Our results demonstrate the important implications of corporate governance practices for firms with a particularly strong need for external equity. In this case, good corporate governance provides a signal to investors that firms are likely to have fewer potential problems of information asymmetry and conflict of interest between managers and shareholders, and thus, creates greater shareholder wealth and firm value.

There are some limitations in this study. The first limitation concerns the single country nature used in the current study. Thus the generalization of the results to other country with different market characteristics may need further investigation. Since the governance index implied by openness to takeovers is available to the US market, the results of this study might only be applied to countries with prevalent takeover activities, such as UK, Australia, Canada, and EU. In addition, this study relies completely on archival data and infers governance practices that may or may not occur. In spite of these minor limitations, this study may have a contribution to make to unravel the relationship between corporate governance and firm value.

Future studies can be extended in the following directions. Firstly, since outside equity financing is important for

TABLE 5
OLS, 3SLS, and GMM Regression Results for the High-tech Industry, 1998–2003

Variables	OLS		3SLS		GMM	
	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
Panel A: Fama and French Five-industry Classification (373 firms, 1,215 observations)						
Equation (1), Tobin's Q						
Intercept	3.60***	<.01	.61	.78	.14	.95
GIM	-.08**	<.01	.26	.32	.30	.23
SIZE	-.27***	<.01	-.27***	<.01	-.25***	<.01
EBIT/Sales	9.85***	<.01	1.21***	<.01	1.76***	<.01
LEVERAGE	-2.34***	<.01	-2.60***	<.01	-2.81***	<.01
S&P500	1.28***	<.01	.99***	<.01	.88***	<.01
Delaware	.11	.30	.28†	.08	.34*	.02
EFN	.87**	<.01	4.06†	.06	5.31**	.01
GIM×EFN	-.04	.28	-.42†	.09	-.56*	.02
Equation (2), GIM Index						
Intercept	8.54***	<.01	8.95***	<.01	9.91***	<.01
Tobin's Q	-.20***	<.01	-.47***	<.01	-.42***	<.01
EFN	-.48***	<.01	-.39**	<.01	-.44**	<.01
CAPX/Sales	-2.46**	<.01	-2.23*	.01	-2.13**	<.01
M_COMP	-.54**	<.01	-.51**	<.01	-.75***	<.01
M_UNIQUE	-1.23†	.08	-1.00	.16	-2.03***	<.01
SIZE	.32***	<.01	.34***	<.01	.35***	<.01
LEVERAGE	-.06	.90	-.93†	.06	-1.32**	<.01
Panel B: Anderson and Reeb (2003) Technology Firms (516 firms, 1,788 observations)						
Equation (1), Tobin's Q						
Intercept	2.49***	<.01	2.12	.32	2.30	.12
GIM	-.05**	<.01	-.12	.63	-.15	.37
SIZE	-.15***	<.01	.02	.78	.02	.62
EBIT/Sales	1.75***	<.01	8.72***	<.01	9.38***	<.01
LEVERAGE	-2.03***	<.01	-1.71***	<.01	-1.82***	<.01
S&P500	.96***	<.01	.57***	<.01	.55***	<.01
Delaware	.11	.16	.32†	.06	.30*	.02
EFN	.94***	<.01	4.03†	.06	4.44**	<.01
GIM×EFN	-.06*	.03	-.44†	.06	-.49**	<.01
Equation (2), GIM Index						
Intercept	7.71***	<.01	8.00***	<.01	7.57***	<.01
Tobin's Q	-.19***	<.01	-.42***	<.01	-.34***	<.01
EFN	-.53***	<.01	-.48***	<.01	-.57***	<.01
CAPX/Sales	-3.84***	<.01	-2.25**	<.01	-2.09**	<.01
M_COMP	-.06	.63	-.07	.46	-.20†	.06
M_UNIQUE	-.87***	<.01	-.77***	<.01	-.73***	<.01
SIZE	.35***	<.01	.39***	<.01	.42***	<.01
LEVERAGE	1.32**	<.01	.51	.25	.88*	.04

Notes:

Variable definitions are provided in Table A1.

†<.1.

*<.05.

**<.01.

***<.001.

companies in fast growing emerging markets, future research can be extended to investigate such issues in emerging markets, particularly for those undergoing takeover deregulations. Secondly, the question of whether the effects of governance on external financing needs are significant for firms in economies with lower capital liquidity remains controversial. Thirdly, the fact that internal and external governance mechanisms are complements highlights the potential moderating effect of internal governance mechanisms on the association between external takeover monitoring power and external financing needs. Finally, since the weaker effects on external financing needs under the within industry criteria suggest that they have stronger inter-industry effects, future research could also investigate the moderating effects of inter-industry.¹⁴

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NOTES

1. See for example, Gompers et al. (2003), Bebchuk and Cohen (2005), Core et al. (2006), and Bebchuk et al. (2009).
2. Strong evidence in support of this argument is provided by both Brockman and Chung (2003) and Chung (2006).
3. See for example, Heflin, Shaw, and Wild (2005), Brown and Hillegeist (2006), and Chen, Chung, Lee, and Liao (2007).
4. Examples include Gompers et al. (2003), Bebchuk and Cohen (2005), Klein, Shapiro, and Young (2005), Core et al. (2006), Khanchel El Mehdi (2007), Garay and González (2008), and Bebchuk et al. (2009).
5. Given that managers in high-growth firms possess private information on the value of future projects, Hutchinson and

Gul (2004) point out that their actions are not readily observable to shareholders; higher agency costs and a greater need for corporate controls may therefore be associated with high-growth firms.

6. See Bradbury (1992), Smith and Watts (1992), Anderson, Francis, and Stokes (1993), Gaver and Gaver (1993), Skinner (1993), Collins, Blackwell, and Sinkey (1995), and Bushman, Indjejikian, and Smith (1996).
7. The IRRC produced a total of eight volumes, in 1990, 1993, 1995, 1998, 2000, 2002, 2004, and 2006, each of which contains detailed information on the corporate governance practices of between 1,400 and 1,800 firms, with some variation in the list of firms included between the different volumes. All S&P 500 firms are covered in each of the IRRC volumes; a number of firms which not included in the S&P 500, but nevertheless considered important by the IRRC, are also covered. In any given year of publication, the firms in the IRRC volume accounted for more than 90 per cent of the total US stock market capitalization.
8. For example, Durnev and Kim (2005).
9. Using a filling method does not change our results (Gompers et al., 2003).
10. If the F -statistic tests in the statement of variances are equal, we use $H_0: \mu_1 \neq \mu_0$ to test the groups of independent firms; otherwise, the null hypothesis is $H_0: \mu_1 = \mu_0$. The mean of the governance index is μ_1 if firms are characterized by external financing needs, if they are operating within a competitive market or if they are included in unique product industries. Conversely, the mean of the governance index is μ_0 if the firms have no requirement for external financing, are not operating within a competitive market and are not included in unique product industries.
11. Fama and French assigned each NYSE, AMEX, and NASDAQ stock to an industry portfolio at the end of June of year t based upon its four-digit SIC code at that time. They provided seven industry classifications, comprising of 5, 10, 12, 17, 30, 48, and 49 industry specifications. Details are available from the Ken French website: <http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/index.html>.
12. The high-tech industries are the third classification of the five-industry specification of Fama and French (1997).
13. Based upon space saving consideration, the regression results for other industries are not reported here.
14. We thank two anonymous referees for their constructive suggestions.

APPENDIX

TABLE A1
Variable Definitions

Variables	Definition
Panel A: Corporate governance index and firm value	
GIM	GIM refers to the Gompers et al. (2003) index; a smaller GIM value signifies better governance or higher vulnerability to a takeover.
Tobin's Q	Tobin's Q is the market value of assets over the book value of assets. A firm's Tobin's Q = [Book value of assets (COMPUSTAT Item 6) – book value of equity (COMPUSTAT Item 60) + market value of equity (COMPUSTAT Item 25×199)] ÷ book value of assets.

TABLE A1
Continued

Variables	Definition
Panel B: Control Variables	
<i>EFN</i>	If the annual growth rate in total assets minus the sustainable growth rate is positive, [where the latter is equal to $ROE/(1 - ROE)$], then external financing needs (<i>EFN</i>) is equal to 1; otherwise, <i>EFN</i> is equal to zero ("return on equity" <i>ROE</i> is net income over book of equity).
<i>SIZE</i>	The natural logarithm of total assets (COMPUSTAT item 6)
<i>LEVERAGE</i>	Log [total debt (COMPUSTAT Item 9 + Item 34) ÷ total assets]
<i>EBIT/Sales</i>	EBIT (COMPUSTAT Item 178) ÷ sales
<i>S&P500</i>	An indicator variable that is equal 1 if the firm was included in the S&P 500 at the end of the previous year.
<i>DELAWARE</i>	An indicator variable that is equal to 1 if the firm is incorporated in Delaware.
Panel C: Instrumental Variables of Corporate Governance	
<i>CAPX/Sales</i>	Capital expenditure (COMPUSTAT Item 128) ÷ sales (COMPUSTAT Item 12)
<i>M_COMP</i>	If the industry's Herfindahl index, which is the sum of squared market shares of all COMPUSTAT firms in each Fama and French (1997) industry, is in the bottom quartile of all 48 Fama-French industries, then <i>M_COMP</i> is equal to 1.
<i>M_UNIQUE</i>	If an industry's median ratio of sales expenditure (COMPUSTAT Item 189) to sales (COMPUSTAT Item 12) is in the top quartile of all 48 Fama-French industries, then <i>M_UNIQUE</i> is equal to 1.

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