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**Does voluntary corporate governance code
adoption increase firm value in emerging
markets?**

Evidence from Thailand

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Does voluntary corporate governance code adoption increase firm value in emerging markets? Evidence from Thailand

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Abstract

In this paper we investigate the impact of a voluntary corporate governance initiative on firm value in an emerging market context. We consider the corporate governance code introduced by the Stock Exchange of Thailand in 2002, applying to all listed firms on a “comply-or-explain” basis. We find that a one standard deviation increase in a firm-level code adoption index is related to a 10% increase in firm value in the period 2003-2005. Our results show that conclusions of empirical studies on voluntary code adoption in developed markets – typically finding no significant impact on firm value – cannot simply be extrapolated to emerging markets.

1. Introduction

The last two decades have witnessed a flurry of initiatives around the world to improve corporate governance. The European Corporate Governance Institute on its website provides texts of official corporate governance codes from 59 different countries, including 29 developing countries. Ideally, the adoption of a corporate governance code should make it easier for a firm to raise funds in debt and equity markets from outside investors, leading to a lower cost of capital and a higher value of the firm. The available empirical evidence on the relation between corporate governance code adoption and firm value is mixed at best. Studies by Alves and Mendes (2004) in Portugal, De Jong *et al.* (2005) in the Netherlands, Gilson and Milhaupt (2005) in Japan and Nowak, Rott and Mahr (2006) in Germany all indicate that voluntary corporate governance initiatives, relying on self-regulation, do not have an effect on firm value or stock prices. On the other hand, there is evidence of a positive relation between code adoption and firm value in the UK (McKnight *et al.*, 2005). In the UK the corporate governance code involves a mandatory annual compliance report for firms listed on the London Stock Exchange and the potential threat of litigation in case of non-compliance. Hence, the empirical literature suggests that corporate governance codes require teeth to have a positive effect on firm value (De Jong *et al.*, 2005).

Empirical studies on the relation between corporate governance code adoption and firm value focus almost exclusively on developed markets. However, it is unlikely that conclusions from studies in developed markets can simply be extrapolated to emerging markets, due to large differences in the institutional setting, such as laws concerning the protection of investor rights and the effective enforcements of these laws (La Porta *et al.*, 1998). In this paper we aim to shed more light on the effect of voluntary corporate governance code adoption and firm value in emerging markets, by considering the case of Thailand. In March 2002 the Stock Exchange of Thailand (SET) introduced a voluntary corporate governance code for Thai listed companies, consisting of 15 principles of good governance. From accounting year 2002 onwards, listed Thai firms were obliged to disclose their implementation of the governance standards annually on a “comply-or-explain” basis. The code closely follows standards of good governance introduced in other countries, such as the UK, and addresses the protection of minority shareholder rights, the importance of independent directors, board structure (accounting and remuneration committees) and disclosure of potential conflicts of interest.

The main research question that we pose is whether the degree of compliance with the good governance principles disclosed by firms is positively related to the value of the firm. Evidence of a positive relation between code adoption and firm value is in itself not sufficient to conclude that the implementation of the corporate governance code leads to a higher market value. Another potential explanation is that firms with higher market values are more likely to adopt stricter governance. To shed more light on the issue of causality, we also investigate whether firms with higher adoption levels of the governance code had higher market values in the period just before the introduction of the code. A second question that we would like to answer is whether or not Thai firms choose their level of governance based on rational factors such as the need for external financing and expected growth opportunities. To address this question we investigate which firm attributes explain the observed variation of code acceptance among Thai firms.

For our empirical study we use a large cross-section of 320 listed firms. In March 2003 the Stock Exchange of Thailand measured the implementation of the 15 principles of good governance in the Thai code by each of the 320 listed firms, based on the mandatory 2002 compliance statements. We find that a one standard deviation increase in the code adoption index is related to a 10% increase in average firm value (Tobin's Q) in the three-year period after introduction of the code, while controlling for firm-specific factors and industry effects. The relation is highly significant and not present prior to the introduction of the code in 2001, suggesting a causal link from code adoption to firm value. Our results confirm the findings of the cross-country studies of Klapper and Love (2004) and Durnev and Kim (2005), namely that in countries with a weak legal system the relation between firm value and corporate governance is positive and strong. La Porta *et al.* (1998) rate the efficiency of the judicial system in Thailand as 3.25 on scale from 0 to 10, far below the ratings typical for developed countries. Our results show that conclusions of empirical studies on voluntary code adoption and firm value in developed markets – typically finding no significant relation – cannot simply be extrapolated to an emerging market context.

With respect to the second research question, we find that differences in the implementation of the governance code among Thai firms are explained very poorly by firm-specific factors suggested by theory, such as the need for external finance, growth opportunities and asset tangibility. Ownership concentration has a significantly negative effect on a sub-index for shareholder rights and the presence of a written corporate governance policy, but the magnitude of the effect is small. Firm size has a small positive effect on code adoption, but most of the variation in code adoption among firms remains unexplained. The results suggest that Thai firms do not choose their governance to maximize

firm value, in line with earlier findings in Korea by Black, Jang and Kim (2006b). Our results support the hypothesis of Doidge, Karolyi and Stulz (2004) that firm characteristics should explain little of the variation in governance ratings in emerging markets. Doidge *et al.* (2004) argue that when financial development is poor, the incentives for firms to improve governance are low because external funds are expensive and the costs of adopting better governance mechanisms are relatively high. Note that if the previous hypothesis is true, the case for good governance initiatives by the government, or the exchange, in emerging markets is stronger than in developed markets.

Section 2 of this paper provides a review of the literature. Within the context of existing country-level studies of corporate governance and firm value in various countries, the contribution of our work is that we are the first to investigate the relation between the adoption of a voluntary corporate governance code and firm value in an emerging market with a relatively ineffective legal system. The conclusions of our study might be of interest for other developing countries considering the introduction of a corporate governance code. A second contribution of the paper is that we apply a parametric robust regression technique to mitigate the influence of the numerous outliers present in cross-sectional firm data.

The paper is organized as follows. Section 2 reviews the literature. Section 3 describes the Thai corporate governance code, measures of code adoption and other firm-level data. Section 4 in we search for firm-level factors that might explain differences in code adoption among firms. Section 5 presents the results of an empirical analysis of the relation between firm value, code adoption and various control variables. Finally, Section 6 concludes and summarizes the paper.

2. Literature Review

2.1. Global Evidence on the Value Relevance of Voluntary Corporate Governance Codes

In the United Kingdom the Cadbury Committee issued *The Code of Best Practices* in 1992, presenting recommendations on the structure and responsibilities of the corporate board of directors. The London Stock Exchange requires each listed company to publish a statement on the company's compliance with the Combined Code, a code based on the recommendations of the Cadbury Committee and others, including details and reasons in case of non-compliance ("comply or explain"). The auditor is required to review the company's statement of compliance before publication of the annual report (Piper and Jones, 1995) and there is a threat of litigation if firms do not comply with the guidelines (Dahya, McConnell

and Travlos, 2002). Dahya *et al.* 2002 report that management turnover at UK firms increased significantly after the issuance of the Cadbury Code, while the sensitivity of management turnover to negative corporate performance also increased. Dahya and McConnell (2005) find a significantly positive stock price reaction when a firm announces moving to three outside directors in conformance with the Cadbury Committee recommendations. Further, McKnight *et al.* (2005) report a positive relation between Cadbury Code adoption and firm value, measured by Tobin's Q.¹

In Spain a voluntary corporate governance code was introduced in 1998. Listed companies had to inform the Spanish Supervisory Agency about the extent of their compliance with the code. Fernández-Rodríguez, Gómez-Ansón and Cuervo-García (2004) show that the Spanish stock market reacted positively to firm announcements of (partial) compliance with the code in the period 1998-2000, based on an event study with a three-day event window. In Portugal a voluntary code of good governance practices was introduced in 1999. Monitoring of compliance is weak, consisting of annual surveys by the Portuguese market regulator with response rates as low as 54% (see Alves and Mendes, 2004). Alves and Mendes (2004) do not find a strong relation between code adoption and stock market returns in Portugal, based on cross-sectional regressions in 1999, 2000 and 2001. De Jong *et al.* (2005) study the good governance initiative launched in the Netherlands in 1999, which is based on voluntary code compliance and monitoring without enforcement. They find that the initiative had no effect on the corporate governance characteristics of Dutch listed firms and their relationship with firm value, measured by Tobin's Q. De Jong *et al.* (2005) argue that the failure of the good governance initiative is related to its voluntary nature and the absence of effective shareholder voting rights in the Netherlands.

In Germany a corporate governance code was introduced in 2002. German companies must disclose their past and planned future compliance with the code annually, without having to provide an explanation in case of non-compliance. Enforcement of the code is left to self-regulation and the capital markets. Nowak, Rott and Mahr (2006) find no significant abnormal return around the first-time declaration of conformity that had to be published by all listed German companies by the end of 2002. Further, abnormal portfolio returns of low and high compliance firms are not significantly different over a three-year period from 2002 through 2005. Changes in compliance levels in 2003 and 2004 do not lead to abnormal returns either. In line with De Jong *et al.* (2005), Nowak, Rott and Mahr (2006) conclude that

¹ Earlier work by Weir, Laing and McKnight (2002) found no relation between governance mechanisms and performance in the UK, but using only data from 1994-1996 and without taking industry effects into account.

corporate governance self-regulation in Germany is rather ineffective.² In Switzerland a voluntary Code of Best Practice was published in 2002 by the Swiss Business Federation. Beiner *et al.* (2006) construct a corporate governance index measuring the implementation of the recommendations of the Swiss code, based on a survey of listed companies on the Swiss Stock Exchange with a response rate of 51%. Beiner *et al.* (2006) find a positive relationship between the governance index and Tobin's Q.

Compared to the large number of studies investigating voluntary corporate governance standards and firm performance in Europe, the number of studies covering Asian markets is small. In Japan the Company Law was amended in 2002, allowing companies to voluntarily adopt a UK/US style governance structure, with a Board of Directors and committee structure, instead of the traditional statutory auditor structure. Gilson and Milhaupt (2005) find no significant stock market reaction to the announcement of adopting the UK/US board and committee structure for the 71 Japanese firms that adopted the new governance style as of March 31, 2004.

Overall, the evidence on the effectiveness of voluntary corporate governance codes is mixed. However, the studies by Alves and Mendes (2004) in Portugal, De Jong *et al.* (2005) in the Netherlands, Gilson and Milhaupt (2005) in Japan and Nowak, Rott and Mahr (2006) in Germany seem to point in the same direction: weak corporate governance initiatives, relying on self-regulation, do not have an effect on firm value or stock market performance. Further, the reported positive effects of the Cadbury Code recommendations in the UK could be interpreted as evidence that governance codes require "teeth" to be effective. In the UK the "teeth" consist of a mandatory auditor review of the annual statement of compliance with the code and the potential threat of litigation in case of non-compliance.

Within the context of these existing studies, the contribution of our work is that we are the first to investigate the introduction of a voluntary corporate governance code – on a "comply or explain" basis – in an emerging stock market setting with large controlling shareholders and a relatively ineffective legal system. We are interested to test whether firms implementing the code have higher market values than non-adoptors, both before and after the introduction of the code. The conclusions of our study might be of interest for other emerging markets considering the introduction of a voluntary corporate governance code with a "comply-or-explain" requirement for listed firms.

² Drobetz, Schillhofer and Zimmermann (2004) construct a corporate governance index for 91 German firms, using a survey (as of March 2002) with a non-response rate of 64%. The governance index is mostly based on recommendations from the German code. Drobetz *et al.* find that Tobin's Q measured in 2001 is positively related to the governance rating based on the 2002 survey.

2.1.1. Further evidence on the relation between governance and firm value

We now briefly review a number of relevant papers that study the relation between governance and firm value, but without the context of the introduction of a nationwide good governance code. Two widely cited papers in the literature, Klapper and Love (2004) and Durnev and Kim (2005), conduct a cross-country study of governance and firm value using governance ratings by analysts of Credit Lyonnais Securities Asia for 495 large listed firms in 25 countries. Both studies find that firm value and performance are positively related to corporate governance, and further the relation is stronger in countries with lower standards of investor protection and weaker legal systems. For example, Durnev and Kim (2005) report that a one standard deviation increase in overall governance index is associated with an increase of a firm's market value by 9%, on average, with a stronger impact in weaker legal regimes. Detailed country-level studies in less developed countries with relative poor investor protection standards and weaker legal systems, such as Russia (Black, 2001, and Black, Love and Rachinsky, 2005) and Korea (Black, Kim, Jang and Park, 2005 and Black, Jang, and Kim, 2006a), indeed find a strong positive relation between firm value and measures of firm governance. Further, Black, Love and Rachinsky (2005) and Black, Jang, and Kim (2006a) deal carefully with potential endogeneity problems, with the evidence in both countries supporting a causal link from stricter firm-level governance to higher firm value.

Hence, based on the abovementioned empirical studies we would expect an effective corporate governance initiative in a less developed market to have a positive impact on firm value. We are aware of many other studies on firm value and various aspects of corporate governance conducted in various countries around the world (e.g. Gompers, Ishii and Metrick, 2003, Bauer, Günster and Otten, 2004, amongst many others), but due to space constraints we have tried to focus on papers that are directly related to our research questions, i.e. dealing with voluntary corporate governance codes, or firm value and governance in less developed markets.

2.1.2. Literature on firm-level characteristics and firm governance

A second question that we would like to answer is whether or not Thai firms choose their level of governance based on rational factors such as the need for external financing, expected growth opportunities and the tangibility of assets. In the cross-country study of Klapper and Love (2004) governance is positively related with firm size, sales growth (a proxy for growth opportunities) and the intangibility of assets. Durnev and Kim (2005) find that governance is positively related to growth opportunities, the external financing need of the firm and the

concentration of cash flow rights (ownership concentration). Overall, both cross-country studies find that rational factors drive the governance choice of large firms.³

Anand, Milne and Purda (2006) study the extent to which Canadian firms adopted recommended governance guidelines over the period 1995-2003. Anand *et al.* (2006) find that the presence of a majority shareholder or executive block holder is negatively associated with voluntary adoption. Investment opportunities and research and development expenditures are positively related to an index reflecting board quality. Anand *et al.* (2006) interpret the results as evidence that firms implement voluntary governance standards to appeal to prospective investors.

Black, Jang and Kim (2006b) study factors that predict governance practices in Korea, using a stock market wide cross-section of listed firms. In Korea regulatory factors are an important driver of governance, because Korean rules impose special governance requirements on large firms. Apart from firm size and industry effects, Black *et al.* (2006b) find that firm risk is positively related to governance, while other firm-specific factors do not have a large impact. Black *et al.* (2006b) conclude that many Korean firms do not choose their governance to maximize the share price.

An interesting puzzle is why differences in governance among Korean firms cannot be explained well by firm characteristics, as reported by Black *et al.* (2006b), while the two cross-country studies do find a number of firm-level factors, based on theory, that are related to governance. Doidge, Karolyi and Stulz (2004) argue that when financial development is poor, the incentives to improve firm-level governance are low because outside finance is expensive and the adoption of better governance mechanisms is costly. Doidge *et al.* (2004) show that most of the variation in the CLSA governance scores used by Klapper and Love (2004) and Durnev and Kim (2005) can be explained by country effects, with limited additional explanatory power for firm-level characteristics. Further, Doidge *et al.* (2004) show that firm characteristics explain almost none of the variation in governance ratings in less developed countries. It is therefore interesting to test whether in Thailand corporate governance among a large cross-section of firms, both small and large, is unrelated to firm characteristics as argued by Doidge *et al.* (2004) and in line with the evidence from Korea.

³ Gillan, Hartzell and Stark (2003) analyze firm-level and industry-level governance choice in the US. From a global perspective the US setting is quite unique, due to the active market for corporate control, the high level of financial market development, dispersed ownership and relatively strong investor protection laws (e.g. securities class-action litigation).

2.1.3. Empirical methodology and econometric issues

Empirical studies often run cross-sectional regressions of firm value, e.g. Tobin's Q, on corporate governance measures and control variables. A well-known drawback is that a significant positive relation between firm value and governance might be the result of highly valued firms adopting good governance practices (sometimes called "reverse causation").⁴ To deal with endogeneity, Durnev and Kim (2005) estimate a system of simultaneous equations for governance and firm value (Tobin's Q), using a three-stage least squares method. Based on the estimation results, Durnev and Kim (2005) conclude that companies with better investment opportunities and greater need for external financing choose better governance, leading to higher valuation.

Black, Jang, and Kim (2006a) use firm size as an instrument for the governance of firms in Korea, where large firms are subject to stricter rules than small firms. Black *et al.* (2006a) report evidence consistent with a causal relation between good governance and higher share prices. Following Agrawal and Knoeber (1996), Beiner *et al.* (2006) address the potential problems of endogenous and omitted variables by estimating a simultaneous equations model consisting of seven equations with as endogenous variables governance, firm value, as well as five alternative firm control mechanisms (stock ownership by officers and directors, outside blockholdings, leverage, board size and the fraction of outside directors on the board). After controlling for endogeneity and the alternative control mechanisms, Beiner *et al.* (2006) find that the positive link from corporate governance to firm value becomes stronger.

When firm governance data is available at multiple points in time, panel models can be estimated, greatly reducing potential endogeneity problems. Black, Kim, Jang and Park (2005) use panel data on the governance of Korean companies, measured at seven points in time during the period 1998-2003. Black *et al.* conclude that corporate governance is an important, and likely causal, factor explaining firm value in Korea. Black, Love and Rachinsky (2005) estimate panel models with fixed and random effects for a sample of Russian firms in the period 1999-2005 and find that governance predicts firm value.

In this paper, given that we only have data on the corporate governance code adoption of Thai listed firms from the accounting year 2002, we cannot estimate a panel model with fixed or random effects and we have to rely on cross-sectional regressions. However, we explicitly deal with the causality issue in Section 5 by investigating the relation between the

⁴ More generally, endogenous relations could exist between firm value and various other mechanisms to control agency problems, such insider shareholdings, debt, dividend policy and corporate control activity. See, Agrawal and Knoeber (1996) and Bøhren and Ødegaard (2006), amongst others.

governance index and firm value in the period 2000-2001, just before the introduction of the Thai code. Further, the large amount of evidence in favor of causality from corporate governance to firm value reported in the literature in our opinion diminishes concerns about “reverse causality” raised in earlier papers.

Influential observations are another empirical problem in studies of firm value and corporate governance, i.e. outliers in the data affecting estimation results and statistical inference. However, in contrast to the endogeneity issue, the impact of outliers on estimation results has received limited attention. Commonly used methods to reduce the influence of outliers are taking logarithms of non-negative variables and winsorizing at the 1% and 99% levels (see, e.g., Durnev and Kim, 2005, and Black, Love and Rachinsky, 2005). Even though the firm-level data used in the literature often display strong non-normality, we are not aware of papers applying estimation techniques that are robust to departures from normality.⁵ In this paper we apply a robust regression technique that explicitly deals with the problem, estimating a cross-sectional regression model with a skewed Student-*t* error distribution.

3. The Thai Corporate Governance Code and Firm-Level Data

In this section we describe the Thai corporate governance code, the measure of code adoption and other firm-level data. The collapse of the Thai Baht in July 1997 was the prelude to the Asian financial crisis, a string of violent currency adjustments, stock market crashes and economic meltdowns in the region. Alba, Claessens and Djankov (1998) argue that the deficient corporate governance and financing structure of Thai firms played a significant role, leading to inefficient investment, excessive corporate diversification and declines in profitability in the years prior to the crisis and a severe credit crunch afterwards. In the aftermath of the crisis the Thai government took several initiatives to improve corporate governance and disclosure standards, culminating in a good governance code for listed firms.

3.1. The Thai Corporate Governance Code

In March 2002 the Stock Exchange of Thailand (SET) introduced 15 principles of good corporate governance for listed companies to implement, a corporate governance code with

⁵ Black, Love and Rachinsky (2005) and Black, Kim, Jang and Park (2005) report OLS estimates with heteroscedasticity robust standard errors, but this does not resolve the potential bias problem in the presence of outliers. In a different, but related strand of literature, Chen (2001) applies a robust regression technique to estimate the relation between ownership concentration and corporate performance in China.

strong similarities to existing codes in developed markets (e.g. the UK).⁶ Starting from the accounting period ending in December 2002 onwards, companies listed on the SET are required by the exchange to demonstrate how they apply the fifteen principles in their annual registration statement and annual report. Companies that choose not to implement some of the principles have to provide a justification. Table 1 summarizes the 15 good governance principles of the code. The principles emphasize formal procedures to improve shareholder rights (e.g. voting by proxy), independence of the Board of Directors, the role of the Board in monitoring management, separation of the positions of CEO and Chairman of the Board and improved information disclosure, with a special emphasis on conflicts of interests.

In October 2003 the Corporate Governance Center of the SET conducted a study to measure the implementation of the code by listed firms, based on 2002 annual reports, registration statements, as well as notices and minutes of the annual shareholders' meeting. The study gives listed companies a score for the implementation of each of the 15 principles, as well as an overall score, determined as a weighted average of the 15 sub-scores (see Table 1 for the weights). To distinguish various related principles of the good governance code, we have created sub-indices for shareholder rights (*CG Shareholders*), board structure and independence (*CG Board*), formal corporate governance policy (*CG Policy*) and information disclosure (*CG Disclosure*). The first column of Table 1 indicates which subgroup each of the 15 principles is assigned to.⁷ We calculate the sub-indices as weighted averages on a scale from 0 to 100, using the weights displayed in Table 1.

3.2. Firm-Level Data and Descriptive Statistics

The SET study of 2003 assigns a score, measuring adoption of the 15 governance principles, to 336 listed companies with accounting period ending in December 2002 that held an annual shareholder meeting in 2002.⁸ For these companies we collected yearly balance sheet and

⁶ Prior to the introduction of the 15 principles, in 1998 the Stock Exchange of Thailand (SET) required all listed companies to establish an audit committee. Further, in 1998 the SET also issued a code of best practices for board members of listed companies.

⁷ Please note that we do not assign Principle 13, on the System of Control and Internal Auditing, to any of the subcategories, as this principle concerns the organization of risk management and auditing within the firm. Further, we include Principle 6, Conflicts of Interests, in our *CG Shareholders* sub-index. The principle recommends the Board to provide information on its monitoring of the use of inside information, conflict of interests and connected transactions. In a market where most companies are dominated by large shareholders, often involved in management, in our opinion Principle 6 implicitly addresses the rights of minority shareholders.

⁸ Companies under rehabilitation, i.e. in bankruptcy proceedings, were exempted by the central bankruptcy court from holding shareholders' meetings. A total of 38 listed companies under rehabilitation did not hold an annual shareholder meeting in 2002 and could therefore not be included in the corporate governance study by the SET due to missing data (38 out of 374 listed companies with fiscal year-end as of December 2002 were excluded for this reason, leaving a sample of 336 companies).

income statement data for the years 2000 through 2005 from Worldscope. For 16 companies we could not find information in the Worldscope database, reducing the sample size to 320 listed firms. Table 2 displays descriptive statistics of the code adoption score, while Table 3 shows the definition and descriptive statistics of various firm-level variables used in our empirical analysis. To control for industry effects in governance, we assign companies according to the stock classification system of the SET to eight major industries and two special categories. The eight industries are Agro & Food, Consumer Products, Financial, Industrials, Property & Construction, Resources, Services and Technology. The two special categories are Rehabco and MAI. Companies in the Rehabco group are “under rehabilitation”, i.e. in an ongoing restructuring process.⁹ The group of MAI companies are traded on the Market for Alternative Investment, which has lower listing requirements than the main board. We include firms listed on Rehabco or MAI in our study to cover the broadest sample of stocks possible. Potential differences in governance and firm value between companies in these two special groups and the remaining firms are not a source of concern, as they can be captured by industry dummies in the cross-sectional regression models.

4. Relation between Code Adoption and Firm Characteristics

Why do some firms choose to adopt nearly all good governance principles of the code, while others implement just a few? In this section we analyze firm characteristics that might explain the cross-sectional differences in code adoption among Thai listed firms. Before presenting the empirical results, we first discuss the firm attributes that we expect to affect corporate governance, based on the literature, along with the expected sign of the relation.

4.1. Firm Characteristics Expected to Affect Corporate Governance

The management and control of large firms is usually more complex, and therefore large firms might require more refined corporate governance (Black *et al.*, 2006b). Large companies also tend to be scrutinized more intensely by analysts and institutional investors, which might lead to increased pressure to adopt good governance policies. Hence, we expect

⁹ Firms with negative book value of equity are relegated to the Rehabco sector by the SET. The firms then have to prepare a restructuring plan. Before being considered for a return to the main board by the exchange, the firm has to restructure at least 75% of total debt and show profits from its core business for at least one year. Shares of firms in the Rehabco sector with positive book value of equity, but still in the restructuring process, can be traded.

a positive relation between firm size, e.g. measured by stock market capitalization, and the code adoption index.

Firms with high growth opportunities have an incentive to improve corporate governance to reduce the cost of financing additional investments with external funds (see, e.g., Klapper and Love, 2004). We therefore expect a positive relation between measures of growth opportunities, such as the price-to-book ratio and Tobin's Q, and the code adoption score. Following Klapper and Love (2004) and Durnev and Kim (2005), we use past sales growth as an alternative measure of growth opportunities. Firms in need of external funds, i.e. equity or debt, have an incentive improve governance, as it could reduce the costs of these funds. Following Durnev and Kim (2005), we measure external financing need as the difference between the firm's actual growth rate and the sustainable growth rate using only retained earnings and debt, while maintaining a constant debt-to-assets ratio.

An owner with a large block of cash flow rights usually has fewer incentives to divert company resources and might therefore be more willing to improve corporate governance (see, e.g. Durnev and Kim, 2005 and Black *et al.*, 2006b). In Thailand most companies are dominated by a small number of large shareholders, typically founding families and/or business groups. Further, the controlling owners are also frequently involved in the management of the firm. The corporate governance guidelines that focus on minority shareholder rights, independence of the board, information disclosure and conflicts of interest, reduce the influence and informational advantages of these large controlling shareholders. A negative relation between measures of ownership concentration and code adoption therefore seems plausible as well in an emerging market context with highly concentrated ownership.

When controlling shareholder increase their voting rights beyond their cash flow rights, e.g. through pyramid structures and cross-share holdings, firm performance and corporate governance are expected to deteriorate due to increased entrenchment (see Claessens *et al.* 2002, and Durnev and Kim, 2005). Our data does not include information on the separation of voting and cash flow rights, but based on previous studies we do not expect this variable to be very relevant for Thai firms. Compared to other East Asian countries, the separation between cash flow rights and voting rights is relatively small in Thailand (see Khanthavit, Polsiri and Wiwattanakantang, 2003).¹⁰ Further, Wiwattanakantang (2001) finds that the separation of voting and cash flow rights has no significant effect on the value and financial performance of Thai firms.

¹⁰ Thai firms are not allowed to issue dual-class non-voting shares. Khanthavit e.a. (2003) report an average ratio of cash-flow rights to voting rights of 0.94 for controlling shareholders of Thai listed companies in 2000.

Klapper and Love (2004) hypothesize that minority shareholders can monitor firms with tangible assets more effectively than firms that rely heavily on intangible assets. Firms with high levels of intangible assets might therefore choose to adopt stricter corporate governance to compensate for the increased difficulty of monitoring by investors (Klapper and Love, 2004). In the literature, tangible asset intensity is typically measured by the ratio of property, plant and equipment to sales (Klapper and Love, 2004) and R&D expenditure to sales (Durnev and Kim, 2005). We use the ratio of property, plant and equipment to sales as a proxy for asset tangibility and expect a negative relation with the code adoption score.¹¹

4.2. Variable Definitions and Regression Model

We estimate a cross-sectional regression model to test the hypotheses regarding firm attributes and corporate governance of listed Thai firms. To reduce potential endogeneity problems, we measure the explanatory variables in 2001, before the corporate governance code was published (March-2002) and before companies were required to disclose their implementation of the code (from accounting year 2002 onwards). It is common in the literature to measure variables such as sales growth and financing need as an average over two or three prior years. However, as the Worldscope data for the Thai market is incomplete in 1999 and 1998, we use one-year growth rates from 2000 to 2001.

We use the logarithm of stock market capitalization as of 31-Dec-2001 as a measure of size, denoted by $\ln(Mcap_{01})$. As a first proxy for growth opportunities we use Tobin's Q, measured as the book value of debt plus the market value of equity, divided by the book value of assets.¹² As Tobin's Q is non-negative by definition and strongly skewed to the right, we use the logarithm of Tobin's Q as an explanatory variable in the regression, denoted by $\ln(Q_{01})$. As a second proxy for growth opportunities we use sales growth from 2001 to 2000, continuously compounded and winsorized at 1% and 99%, denoted by $Growth_{01}$. We measure asset tangibility as the ratio of net property, plant and equipment over sales, denoted by $Tangibility_{01}$. As a measure of ownership concentration we use the percentage of closely-held shares as of 31-Dec-2001 from the Worldscope database¹³, denoted by $Ownership_{01}$. In the literature the square of $Ownership$ is often used to capture non-linearity in the relation

¹¹ Most Thai companies do not report R&D expenditures and intangible assets.

¹² Including the lagged value of Tobin's Q from 2001 as an explanatory variable also allows us to investigate potential reverse causality between firm value and corporate governance, i.e. whether firms with high valuation at the end of 2001 have better governance scores in 2002.

¹³ The percentage of closely held shares provided by Worldscope includes: shares held by officers, directors and their immediate families; shares held by individuals who hold 5% or more of the outstanding shares; shares held in trust; shares of the company held by any other corporation (except shares held in a fiduciary capacity by banks or other financial institutions).

between ownership and governance (see, e.g., Durnev and Kim, 2005). As the sample correlation between $Ownership_{01}$ and its squared value is 0.966, we exclude the squared ownership variable to avoid severe multi-collinearity problems.

Following Durnez and Kim (2005), we measure external financing need as follows: $EFN_{01} = Growth_{01} - (ROE_{01}/(1-ROE_{01}))$, with ROE_{01} defined as return on equity in 2001. We winsorize ROE at the value of 80%, as EFN approaches minus infinity for ROE close to 100% and ERN is not well-defined for firms with $ROE > 100\%$. A second issue is that many companies in sample with positive EFN are in fact reporting accounting losses, frustrating access to capital markets for additional funding. We define an alternative measure of external financing need that only includes profitable firms as follows: $EFN^{Pos}_{01} = \max\{EFN_{01}, 0\} \times \max\{ROE_{01}, 0\}$.

We estimate the following cross-sectional regression to explain variations in code adoption among firms:

$$(1) \quad CG_{02,i}^m = \alpha + \sum_{k=2}^K \delta_k ID_{k,i} + \beta_1 \ln(Mcap_{01,i}) + \beta_2 Ownership_{01,i} + \beta_3 \ln(Q_{01,i}) \\ + \beta_4 Growth_{01,i} + \beta_5 Tangibility_{01,i} + \beta_6 EFN_{01,i} + \beta_7 EFN_{01,i}^{Pos} + \varepsilon_i, \\ \text{for } i = 1, 2, \dots, I.$$

where the subscript i denotes one of the $I = 320$ firms in the cross-section. The governance code adoption index – and its four subindices – are denoted by $CG_{02,i}^m$, for $m = 1, 2, \dots, 5$. $ID_{k,i}$ denotes an industry dummy, one for each of the $K = 10$ industry groups. We test the joint significance of the coefficients of the industry dummies with a Wald-test.

4.2.1. Parametric robust regression

The firm-level data include a substantial number of extreme observations – see the descriptive statistics in Table 3. Ordinary least squares (OLS) estimates can be very sensitive to the inclusion or exclusion of a small number of influential observations. To explicitly deal with the non-normality of the data, we apply a parametric robust regression approach. We start with OLS estimation of (1) and test the normality of the residuals with a Jarque-Bera test. If the null hypothesis of normality can be rejected at the 5% level, we change the distribution of the regression error ε_i to a skewed Student's t -distribution, defined by Fernández and Steel (1998):

$$(2) \quad g_{(v)}(\varepsilon_i | \sigma, \gamma) = \frac{2}{\gamma + \frac{1}{\gamma}} \left\{ f_{(v)}(\varepsilon_i / \gamma | \sigma) I_{[0, \infty)}(\varepsilon_i) + f_{(v)}(\gamma \varepsilon_i | \sigma) I_{(-\infty, 0]}(\varepsilon_i) \right\},$$

$$\text{with } f_{(v)}(x | \sigma) = \frac{\Gamma(\frac{v+1}{2})}{\sqrt{\pi(v-1)}\Gamma(\frac{v}{2})} \left(\frac{1}{\sigma} \right) \left\{ 1 + \frac{1}{v-2} \left(\frac{x}{\sigma} \right)^2 \right\}^{-\frac{(v+1)}{2}}$$

where $g_{(v)}(x | \sigma, \gamma)$ denotes the probability density function (pdf) of a skewed Student's t -distribution with v degrees of freedom and standard deviation σ , while $f_{(v)}(x | \sigma)$ denotes the pdf of a symmetric t -distribution with v degrees of freedom and standard deviation σ . Further, $I_{[a,b]}(\varepsilon_i)$ denotes an indicator function that is equal to 1 if $\varepsilon_i \in [a, b]$, and equal to 0 otherwise.

The skewed t -distribution $g_{(v)}(x | \sigma, \gamma)$ has three parameters: the number of degrees of freedom $v > 2$, the skewness parameter $\gamma > 0$ and the standard deviation $\sigma > 0$. The distribution is negatively skewed for $0 < \gamma < 1$, positively skewed for $\gamma > 1$ and symmetric if $\gamma = 1$. When the number of degrees of freedom v goes to infinity, the tails become thinner and converge to the tails of a normal distribution. As the degrees of freedom v approaches 2, the peakedness of the distribution increases and the tails become thicker. We use a specification of the t -distribution with a lower bound of two on the number of degrees of freedom ($v > 2$) to guarantee the existence of the variance of the regression residuals.

After estimating a regression model with a skewed t error distribution, the “normality” of the tails can be tested with the null hypothesis $H_0: 1/v = 0$ versus $H_a: 1/v > 0$. Further, using $H_0: \gamma = 1$ versus $H_a: \gamma \neq 1$, we can test whether the distribution is symmetric. If the distribution is skewed, but cannot reject normality of the tails, we change the error distribution to a skewed normal distribution and re-estimate the model.¹⁴ If the distribution has fat tails, but cannot reject symmetry, we change the error distribution to a symmetric Student's t -distribution. Hence, after our nested sequence of tests, the regression error distribution is identified as either normal, skewed t , skewed normal or symmetric t .

Ideally, we would like the regression error distribution to take care of any non-normality present in the data. However, we found in a number of extreme cases that the degrees of freedom parameter v converged to the lower bound of two, making further estimation impossible due to the non-existence of the variance of the error distribution (i.e. variance approaching infinity). Winsorizing variables with heavy outliers is a necessary first step, in our experience, to make estimation feasible in such cases. We apply the following

¹⁴ The symmetric normal distribution is defined analogous to the skewed t distribution. We only need to replace the pdf $f_{(v)}(x | \sigma)$ of the symmetric t distribution in (2) by the pdf of a normal distribution with standard deviation σ .

decision rule: if the sample kurtosis of a variable is in excess of 5, we winsorize it at 1% and 99% before including it as a dependent or independent variable in a regression.

4.3. Estimation Results

Table 4 shows the estimation results for the cross-sectional regression of the corporate governance code adoption index on firm attributes and industry dummies. Coefficients in bold font are significant at the 10% level. The results for the overall code adoption score show that firm size is the only significant variable, with a positive effect as expected. The column next to the estimated coefficient shows the impact of a one standard deviation change in the explanatory variable on the dependent variable. For example, we find that a one standard deviation increase in *Size* leads to an expected increase in *CG Total* of 1.5 points (on a scale from 0 to 100). Hence, the economic significance of *Size* is limited. As the industry dummy coefficients are often insignificant and might capture some of the variation in firm-specific attributes, we re-estimate the model without the dummies. The impact of *Size* increases marginally after eliminating industry effects, while the other explanatory variables remain insignificant.

Turning our attention to the sub-index for shareholder rights, we find again that size has a positive and significant effect, but with limited impact. Ownership concentration has a significant negative effect on the shareholder rights sub-index, but with very small impact: changing *Ownership* from 0% to 100% is predicted to reduce the sub-index by only 5 points (on a scale of 100). Tobin's Q appears to be positively related to shareholder rights, however this relation is not robust to the exclusion of industry dummies and the impact is tiny. The coefficients for the external financing need variables are significant with opposite signs. For profitable firms in need of external financing the relation is positive, but for all other firms the relation is negative.

The sub-index for board structure and independence appears to have a positive relation with firm size and a negative relation with *EFN*, but with very limited economic significance. The sub-indices for *CG Disclosure* and *CG Policy* are not significantly related to any firm characteristics. Finally, we investigate whether firm characteristics can predict whether "The Board of Directors identifies and approves written corporate governance statements or policies", i.e. implementation of Principle 15 of the code measured in isolation by a "Yes/No"-type dummy variable. We estimate a probit model for the dummy variable. The estimation results in Table 4 show that closely held firms are less likely to adopt written corporate government statements or policies. We estimate the economic significance of each

explanatory variable in the probit model by multiplying the marginal effect of the variable by its standard deviation. Roughly, a one standard deviation increase in ownership concentration reduces the probability that a firm adopts a written corporate governance policy by 5%.

4.3.1. Discussion of the results

We find that voluntary adoption of the governance code is not driven strongly by firm attributes. Size has a significant positive effect on the overall code adoption score and the index for shareholder rights, as expected, but the impact is small. Ownership concentration has a significantly negative effect on the shareholder rights index and the presence of a written corporate governance policy, but again with small economic relevance. The sign of the *Ownership* coefficient is opposite to expectations based on traditional agency theory (see Jensen and Meckling, 1976), which might indicate that some owners are reluctant to improve the rights of minority shareholders. Overall, the results suggest that most Thai firms do not choose their governance to maximize firm value, in line with findings reported by Black et al. (2006b) in a study of a large sample of Korean firms. Further, our results support the hypothesis of Doidge, Karolyi and Stulz (2004) that firm characteristics should explain little of the variation in governance ratings in emerging markets.

5. Relation between Firm Value and Code Adoption

Do firms that adopt the Thai corporate governance code, introduced in 2002, have higher firm values in the subsequent years 2003 through 2005? In this section we investigate the relation between corporate governance scores, measuring implementation of the code, and firm value.

5.1. Control Variables and Regression Model

Our primary measure for the value of the firm is Tobin's Q. As we would like to test if there is a positive relation between firm value and governance in the period after the introduction of the code (as of fiscal year 2002), we measure Tobin's Q at the end of 2003, 2004 and 2005. We calculate the average of these three annual observations for firms with full data, and the average of the available years for firms with incomplete data. As Tobin's Q is positive by definition, we apply log transformation and denote the variable by $\ln(Q_{03/05})$. To check the

robustness of our results we also used the price-to-book ratio, $\ln(PB_{03/05})$, and the price-to-sales ratio, $\ln(PS_{03/05})$, as alternative measures of firm value.¹⁵

Our aim is to test the relation between Tobin's Q and measures of corporate governance code implementation. Following the literature, as control variables we use industry dummies and the firm attributes size, sales growth, profitability, leverage and ownership concentration (see, e.g., Klapper and Love, 2004, and Durnev and Kim, 2005, amongst others). As a measure of size, we use the logarithm of total assets in 2002, denoted by $\ln(Assets_{02})$. Given prior research we expect a negative relation with Tobin's Q, as large firms usually have less growth opportunities. We use sales growth from 2000 to 2002, denoted by $Growth_{00/02}$ as a proxy for growth opportunities and expect a positive relation with Q. We use return on assets as of 2002, denoted by ROA_{02} , as a measure of profitability and expect a positive relation with firm value. Both $Growth_{00/02}$ and ROA_{02} are winsorized at 1% and 99%. We expect leverage, measured by the debt-to-assets ratio in 2002 and denoted by $Leverage_{02}$, to have a positive effect on firm value, due to the associated tax shields and the potential reduction of agency costs. Finally, we include ownership concentration at the end of 2002 as a control variable ($Ownership_{02}$). The expected sign of the ownership variable is ambiguous, based on the literature.

Overall, the cross-sectional regression model for firm value is:

$$(3) \quad \ln(Q_{03/05,i}) = \alpha + \sum_{k=2}^K \delta_k ID_{k,i} + \beta_1 CG_{02,i}^m + \beta_2 \ln(Assets_{02,i}) + \beta_3 Growth_{00/02,i} \\ + \beta_4 ROA_{02,i} + \beta_5 Leverage_{02,i} + \beta_6 Ownership_{02,i} + \varepsilon_i, \\ \text{for } i = 1, 2, \dots, I.$$

As before, using a nested sequence of tests, the distribution of the regression error ε_i is identified and estimated as either normal, skewed t , skewed normal or symmetric t .

5.2. Estimation Results

Table 5 displays the estimation results. A one standard deviation increase in the index of corporate governance code adoption is associated with a 10.4% increase in Tobin's Q on average. The estimated coefficient is highly significant, with p -value of 0.2%. We replace the overall code adoption score $CG Total$ by the four sub-indices, to test which aspects of

¹⁵ In the price-to-book regression we exclude firms with a non-positive price-to-book ratio, apply log transformation, and winsorize at 1% and 99%. We take the logarithm of the price-to-sales ratio, but we

governance are most relevant for the value of the firm. The results show that *CG Shareholders* (shareholder rights) and *CG Board* (board structure and independence) are both significant, each with a positive impact on Tobin's Q of about 7%. When the sub-indices are considered separately the impact of *CG Shareholders* and *CG Board* increases to 10%, while *CG Policy* is significant with impact on Tobin's Q of 6.7%.

In the cross-sectional regressions with Tobin's Q as the dependent variable, the control variables *Size*, *Leverage* and *ROA* are significant with positive sign as expected, while *Growth* is insignificant. Further, the industry dummies are always significant (based on a Wald test) and therefore included in the regression model. As a robustness check, we have also used *Price-to-Book* and *Price-to-Sales* as measures of firm value (results not reported to save space). In the *Price-to-Book* regression the estimated coefficient of the overall code adoption score is positive and significant, with an impact on firm value of 9.0%. In the *Price-to-Sales* regression, the impact of the governance score on firm value is similar (9.1%), but not statistically significant at the 10% level. We conclude that the results are fairly robust to changes in the definition of firm value, as the estimated impact of governance on firm value is close to 10% for each of the three valuation measures considered.

5.1.1. Timeseries results and reverse causality

To summarize the results so far: we find a positive relation between the code adoption index measured in accounting year 2002 and average firm value in the out-of-sample period 2003-2005, using a set of firm-specific controls measured in 2002. As a robustness check and to investigate potential reverse causality, we now estimate the cross-sectional regression separately for each of the six years in the period 2000-2005. Further, to maximize the explanatory power of the controls, we regress Tobin's Q on firm-level control variables measured in the same year, i.e. in sample. In year Y we estimate the following regression model:

$$(4) \quad \ln(Q_{Y,i}) = \alpha + \sum_{k=2}^K \delta_k ID_{k,i} + \beta_1 CG_{02,i}^m + \beta_2 \ln(Assets_{Y,i}) + \beta_3 Growth_{Y-2/Y,i} + \beta_4 ROA_{Y,i} + \beta_5 Leverage_{Y,i} + \varepsilon_i, \quad \text{for } i = 1, 2, \dots, I.$$

do not to winsorize the series as the kurtosis is less than 5.

where $Y = \{00, 01, 02, 03, 04, 05\}$ denotes the year 2000, 2001, 2002, 2003, 2004 and 2005, respectively.^{16, 17} Please note that we leave out *Ownership* as an explanatory variable in (4), as it is never significant in Table 5 and excluding it increases the number of firms with full data available.

The estimation results for 2000 and 2001 are of particular interest, as they provide useful information on potential reverse causality. The Thai corporate governance code was introduced in March 2002, with first disclosure of compliance required by the exchange in annual reports for the accounting year 2002. If the positive relation between average firm value in 2003-2005 and governance is due to highly valued firms choosing better governance, we would also expect to find a positive relation between firm value as of December 2001 – three months prior to introduction of the code – and the index of code adoption. Equivalently, we would interpret the absence of a relation between firm value and CG score in the years prior to the introduction of the code, i.e. 2001 and 2000, as evidence against reverse causality.

The yearly regression results in Table 6 show no significant relation between firm value and governance in 2000 and 2001. In 2002 the coefficient of *CG Total* becomes significantly positive, with impact of 4.7% and a *p*-value of 6.5%. The relation between *CG Total* and firm value is strongest in 2003 and 2004, with impact of 7.5% and 7.1% and *p*-values of 1.1% and 0.3%, respectively. In 2005 the relation is weaker, with impact of 5.5% and *p*-value of 7.7%, but still significant at the 10% level. Based on these year-by-year results, we rule out reverse causality as a likely explanation. Note that the positive relation between firm value and code adoption in the 2002 regression is not a good indicator of reverse causality, as firm value is measured in December 2002, i.e. *nine months after the introduction of the code*. Hence, firms had nine months to improve their governance after the publication of the code, which could have led to higher firm values as of December 2002. To detect reverse causality we mainly focus on the regression for 2001, where firm value is measured *three months before the introduction of the code*. The relation between the code adoption score and firm value in 2001 is insignificant, with *p*-value of 32.5%.

Our results indicate a causal link from code adoption to firm value in the period 2003-2005. There are a number of potential explanations for such a link, apart from good governance practices directly improving firm value. For example, firms might implement the code as a

¹⁶ A cross-sectional regression is estimated separately for each year. Please note that the code adoption index is only available for the year 2002 and therefore we cannot estimate a panel model.

¹⁷ As the *Worldscope* firm-level data is incomplete prior to 2000, we cannot calculate the growth rate of sales in 2000 and we exclude this variable from the 2000 regression. For the 2001 regression we measure the growth rate of sales over the one-year period from 2000 to 2001. We do not expect these small adjustments to the model to have a serious impact on the results, as the two-year growth variable is never significant in any of the regressions in Table 5 (with complete data).

signal to investors that the firm's insiders will not expropriate assets and this signal affects share prices, not the stricter governance itself. As a final caveat, omitted variables, affecting both governance and firm value, might also be at work.

6. Conclusions

In this paper we investigate the impact of a voluntary corporate governance initiative on firm value in an emerging market context with a relatively weak legal system. We consider the corporate governance code introduced by the Stock Exchange of Thailand in 2002, based on OECD recommendations and codes from developed countries. The code applies to all firms listed on the exchange, on a "comply-or-explain" basis. In June-2003 the Stock Exchange of Thailand measured the implementation of the good governance principles by listed firms, using the mandatory compliance statements filed for 2002. We find that a one standard deviation increase in the firm-level code adoption index is related to a 10% increase in firm value in the three-year period 2003-2005. Among the good governance principles, sub-indices for *Shareholder Rights* and *Board Structure & Independence* appear most relevant for firm value. Prior to the introduction of the code, i.e. in 2000 and 2001, we do not find a significant relation between firm value and the code adoption index. Hence, reverse causality, highly valued firms choosing to adopt better governance than firms with low valuation, seems an unlikely explanation for the findings.

A contribution to existing knowledge of this paper is that it provides strong evidence of a positive relation between the adoption of a voluntary corporate governance code and firm value in an emerging market with a relatively ineffective legal system, based on a large cross-section of publicly traded companies. Previous studies on the adoption of voluntary corporate governance codes in a number of developed countries, e.g. Germany, Spain, the Netherlands and Japan, found no impact on firm value. We conclude that experience with corporate governance initiatives in developed markets cannot simply be extrapolated to emerging markets. Our results confirm the findings of cross-country studies by Klapper and Love (2004) and Durnev and Kim (2005), namely that in countries with a weak legal system the relation between firm value and governance is positive.

A second research question that we address is whether the governance index is related to firm-level characteristics that are expected to drive code adoption, such as the need for external funds, firm size and growth opportunities. Apart from a weak positive impact of firm size, we find that differences in governance cannot be explained by these rational firm-level

factors. The results suggest that Thai firms do not choose their governance to maximize firm value, in line with the hypothesis of Doidge, Karolyi and Stulz (2004) that firm characteristics should explain little of the variation in governance ratings in less developed countries. Similar results have been reported for the governance choice of Korean firms by Black, Jang and Kim (2006b). Doidge et al. (2004) argue that in countries with relatively low financial development, the incentives to improve firm-level governance are weak because outside finance is expensive and the adoption of better governance mechanisms is costly.

The results of our study could be of interest for other emerging markets considering the introduction of a corporate governance code. In contrast to developed markets, existing evidence suggests that firms in emerging markets do not have strong internal incentives to adopt good governance, such as securing external financing for growth opportunities. This seems to make the case for good governance initiatives by the government, or the exchange, in developing countries stronger than in developed countries. Laws that directly impose good governance standards on firms are one way to improve corporate governance. Our results suggest that introduction of a voluntary corporate governance code – with mandatory annual disclosure of compliance on a “comply-or-explain” basis – could provide firms in emerging markets with a market-based incentive to improve governance.

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Table 1 The 15 Principles of Good Governance of the Thai Code

Principle <i>Sub-index</i> (weight)	Description of the Principle
1. Policy on Corporate Governance <i>CG Policy</i> (5%)	— The Board of Directors identifies and approves written corporate governance statements or policies.
2. Shareholders: Rights and Equitable Treatment <i>CG Shareholders</i> (5%)	— The Board of Directors facilitates shareholders' meetings in such a way that encourages equal treatment for all shareholders. — There should not be any difficulty for shareholders to attend the meetings. Companies should facilitate voting by proxy and appoint an independent director as a proxy. — Thorough and complete information for shareholders is provided for them to consider before making decisions.
3. Rights of Various Groups of Stakeholders <i>CG Policy</i> (2%)	— The Board of Directors recognizes and ensures that the legal rights of stakeholders are protected and treated with care. Stakeholders include employees, suppliers, communities, competitors and creditors, etc.
4. Shareholders' Meeting <i>CG Shareholders</i> (10%)	— Directors attend the meeting. — The Chairman of the meeting encourages shareholders to express their opinion and ask questions. — The minutes of the meeting are submitted to the SET on time.
5. Leadership and Vision <i>CG Disclosure</i> (10%)	— The Board of Directors performs its roles in determining the company's policies, goals, and budgets. — The responsibilities of the Board and management are clearly separated. — Vision statements, plans, and future projects are disclosed.
6. Conflict of Interests <i>CG Shareholders</i> (3%)	— Information on how the Board of Directors supervises the use of inside information, conflict of interests and connected transactions are completely disclosed.
7. Business Ethics <i>CG Policy</i> (10%)	— There is a written code of ethics or a written statement of business conduct.
8. Balance of Power in the Board <i>CG Board</i> (10%)	— At least one-third of the directors on the Board are independent and in any event there must be at least three independent directors on the board.
9. Segregation of Positions <i>CG Board</i> (10%)	— The titles and authority of the Board's Chairman and head of the management team are clearly separated. — The Chairman of the Board is independent.
10. Directors and Management Remuneration <i>CG Disclosure</i> (5%)	— Directors and management remuneration are disclosed according to the requirements of the Securities Exchange and Commission (SEC).

11. Board of Directors' Meetings <i>CG Disclosure</i> (5%)	— Each director's attendance record is disclosed in the company's annual report.
12. Committees <i>CG Board</i> (5%)	— An Audit Committee and a Remuneration Committee are established. — Most members of the Remuneration Committee are non-executive directors and the committee's chairman is independent.
13. System of Control and Internal Auditing --- (10%)	— Systems of control and risk management are in place. — Financial, operation and compliance internal audits exist. — Reporting line of the internal audit units or staff is considered independent.
14. Directors' Reporting <i>Board</i> (5%)	— The board provides a report indicating its responsibilities on financial information. — The report is exhibited alongside the auditor's report in the annual report.
15. Investor Relations <i>CG Disclosure</i> (5%)	— Information disclosure complies with the rules and regulations. — There is an investor relations unit or staff.

Table 2 Descriptive Statistics of the Corporate Governance Code Adoption Indices

Index	Name	Mean	Median	Max	Min	Standard deviation	Number of firms
Corporate governance index	<i>CG Total</i>	70.9	73.6	95.2	30.6	13.4	320
<i>By industry</i>							
<i>Agriculture and food</i>		66.6	69.1	85.9	35.3	13.5	42
<i>Consumer products</i>		69.7	74.0	85.9	34.6	14.4	30
<i>Financial</i>		76.5	77.3	95.2	41.0	11.2	56
<i>Industrials</i>		67.9	72.2	92.4	31.9	15.4	38
<i>Property and Construction</i>		70.1	71.4	91.6	44.9	12.4	38
<i>Resources</i>		84.8	84.7	94.7	70.7	7.4	10
<i>Services</i>		71.4	73.7	88.6	30.6	11.2	65
<i>Technology</i>		72.2	75.8	89.0	43.3	12.5	22
<i>Under rehabilitation (Rehabco)</i>		57.8	58.8	82.4	36.2	15.1	13
<i>Market for alternative investments (MAI)</i>		70.4	73.4	83.2	52.9	10.9	6
Shareholder rights subindex	<i>CG Shareholders</i>	74.6	75.3	96.2	22.4	9.9	320
Board structure and independence subindex	<i>CG Board</i>	77.7	78.5	100.0	36.1	11.4	320
Disclosure subindex	<i>CG Disclosure</i>	56.0	55.0	97.5	11.7	24.1	320
Good governance policy subindex	<i>CG Policy</i>	73.2	89.7	100.0	0.0	28.9	320

The table shows descriptive statistics of the corporate governance code index (*CG Total*) constructed by the Stock Exchange of Thailand for 320 listed companies. The governance rating for each company is on a scale from 0 to 100, based on information from the registration statements and annual reports filed by firms for the accounting year 2002, as well as shareholder meetings held in 2002. The overall index (*CG Total*) is a weighted average of 15 scores for the implementation of the 15 Principles of Good Governance in the Thai code, as displayed in Table 1. We have created four sub-indices (*CG Shareholders*, *CG Board*, *CG Disclosure* and *CG Policy*) by taking a weighted average of scores for related principles: we refer to Table 1 for the principles included in each sub-index and the weights. The four sub-indices are all on a scale from 0 to 100, after rescaling.

Table 3 Definition and Descriptive Statistics of Firm-Level Variables

Variables in regression on CG index		Year	Name	Mean	Median	Max	Min	Std. Dev.
Variable / definition								
Size	Market value of common stocks	2001	$Mcap_{01}$	4,640	844	119,601	49	14,027
			$\ln(Mcap_{01})$	6.84	6.74	11.69	3.89	1.63
Tobin's Q	Book value of debt plus the market value of equity, divided by the book value of assets.	2001	Q_{01}	0.77	0.71	5.09	0.07	0.49
			$\ln(Q_{01})$	-0.42	-0.34	1.63	-2.70	0.59
Ownership concentration	Percentage of closely-held shares from <i>Worldscope</i> .	2001	$Ownership_{01}$	56.46	56.83	100.00	0.09	22.87
Sales growth, 1 year	Continuously compounded	2000-2001	$Growth_{01}$	6.18	5.14	251.93	-164.00	30.09
Asset Tangibility	Net plant, property and equipment over sales	2001	$Tangibility_{01}$	0.93	0.45	28.42	0.01	2.18
			$\ln(Tangibility_{01})$	-0.79	-0.80	3.35	-5.19	1.12
Return on equity	Net income divided by book value of equity	2001	ROE_{01}	-16.56	9.11	221.54	-7038.22	433.38
External financing need	$EFN_{01} = Growth_{01} - (ROE_{01}/(1-ROE_{01}))$	2001	EFN_{01}	-18.95	-7.78	164.48	-413.28	68.12
Positive external financing need	$EFN_{01}^{pos} = \max\{EFN_{01}, 0\} \times \max\{ROE_{01}, 0\}$	2001	EFN_{01}^{pos}	2.30	0.00	124.52	0.00	10.85

The table shows the definition and descriptive statistics of the explanatory variables used in the regression of code adoption on firm-level characteristics, i.e. cross-sectional regression model (1).

Table 3 (continued)

Variables in regression on firm value						
Variable / definition	Year	Name	Mean	Median	Max	Min Std. Dev.
Tobin's Q, 3-year average <i>Book value of debt plus the market value of equity, divided by the book value of assets</i>	2003-2005	$Q_{03/05}$	1.09	0.93	7.10	0.11 0.78
		$\ln(Q_{03/05})$	-0.13	-0.11	1.86	-2.18 0.62
Price-to-book ratio, 3-year average <i>Market value of common stocks / book value of equity. Excluding firms with negative book value</i>	2003-2005	$PB_{03/05}$	1.94	1.30	62.96	0.19 3.81
		$\ln(PB_{03/05})$	0.31	0.26	4.14	-1.68 0.71
Price-to-sales ratio, 3-year average <i>Market value of common stocks divided by total sales (revenue)</i>	2003-2005	$PS_{03/05}$	1.70	1.01	45.87	0.06 3.35
		$\ln(PS_{03/05})$	-0.07	0.01	3.83	-2.75 1.06
Ownership concentration <i>Percentage of closely-held shares from Worldscope</i>	2002	<i>Ownership</i> ₀₂	56.68	57.62	100.00	0.10 23.00
Total assets <i>Total book value of assets</i>	2002	<i>Assets</i> ₀₂	26,427	2,133	1,250,956	34 118,576
		$\ln(Assets_{02})$	8.01	7.67	14.04	3.54 1.64
Sales growth, last 2 years <i>Continuously compounded and annualized</i>	2000-2002	<i>Growth</i> _{00/02}	6.90	6.18	134.53	-213.80 25.33
Leverage <i>Total book value of debt divided by total assets</i>	2002	<i>Leverage</i> ₀₂	28.03	22.60	124.63	0.00 26.22
Return on assets <i>Net income divided by total book value of assets</i>	2002	<i>ROA</i> ₀₂	9.86	6.38	839.58	-83.95 49.00

The table shows the definition and descriptive statistics of the variables used in the regression of firm-value on the code adoption index and firm-level characteristics, i.e. cross-sectional regression model (3).

Table 4 Code Adoption and Firm-Level Characteristics – Estimation Results

	<u>CG Total</u>		<u>CG Shareholders</u>		<u>CG Total</u>		<u>CG Shareholders</u>		<u>CG Board</u>		<u>CG Board</u>	
	Coef.	Impact	Coef.	Impact	Coef.	Impact	Coef.	Impact	Coef.	Impact	Coef.	Impact
<i>ln(Mcap)</i>	0.952 (0.555)	1.496 (0.474)	1.615 (0.474)	2.538 (0.353)	0.903 (0.353)	1.419 (0.331)	1.172 (0.331)	1.842 (0.616)	0.455 (0.616)	0.715 (0.604)	1.010 (0.604)	1.587 (0.604)
<i>Ownership</i>	-0.057 (0.038)	-1.288 (0.848)	-0.048 (0.033)	-1.082 (0.140)	-0.049 (0.021)	-1.115 (0.973)	-0.051 (0.021)	-1.167 (1.836)	-0.030 (1.836)	-0.675 (1.715)	-0.041 (0.032)	-0.934 (0.691)
<i>Q</i>	1.579 (1.582)	0.848 (0.582)	0.260 (1.737)	0.140 (0.520)	1.845 (0.480)	0.990 (0.422)	0.543 (0.422)	0.292 (0.608)	2.229 (0.773)	1.196 (0.608)	1.287 (0.182)	0.691 (1.180)
<i>Growth</i>	-0.002 (0.029)	-0.055 (0.744)	-0.010 (0.025)	-0.255 (0.807)	0.010 (0.021)	0.253 (0.021)	-0.003 (0.021)	-0.074 (0.027)	-0.004 (0.028)	-0.115 (0.027)	-0.010 (0.027)	-0.252 (0.029)
<i>Tangibility</i>	-0.841 (0.744)	-0.933 (0.744)	-0.728 (0.520)	-0.807 (0.520)	0.049 (0.480)	0.054 (0.480)	-0.387 (0.422)	-0.429 (0.608)	0.169 (0.773)	0.188 (0.608)	0.026 (0.608)	0.029 (0.608)
<i>EFN^{Pos}</i>	-0.117 (0.281)	-0.760 (0.281)	-0.015 (0.195)	-0.097 (0.195)	0.202 (0.084)	1.312 (0.084)	0.201 (0.087)	1.301 (0.134)	0.130 (0.151)	0.840 (0.134)	0.182 (0.134)	1.180 (0.134)
<i>EFN</i>	-0.009 (0.010)	-0.559 (0.010)	-0.006 (0.012)	-0.393 (0.012)	-0.032 (0.007)	-2.023 (0.007)	-0.030 (0.007)	-1.891 (0.009)	-0.023 (0.010)	-1.478 (0.010)	-0.021 (0.009)	-1.349 (0.009)
$\gamma - 1$	-0.521 (0.092)		-0.456 (0.083)		---	---	---	-0.297 (0.084)			-0.251 (0.090)	
$1 / \nu$	---		---		0.277 (0.061)		0.262 (0.059)		---		---	
Industry / Wald	Yes	12.121	No	---	Yes	24.216	No	---	Yes	8.212	No	---
R ² / observations	0.109	247	0.082	247	0.200	247	0.135	247	0.092	247	0.070	247
Error distribution	Skewed normal	Skewed normal	Skewed normal	Skewed normal	Symmetric <i>t</i>	Symmetric <i>t</i>	Symmetric <i>t</i>	Symmetric <i>t</i>	Skewed normal	Skewed normal	Skewed normal	Skewed normal

This table shows the estimation results of the cross-sectional regression of code adoption indices on firm-level characteristics, i.e. model (1). The column “Coef.” shows the estimated coefficient (ML estimates, *z*-statistics in brackets). Coefficients in bold font are significant at the 10% level. The column “Impact” shows the expected change in the governance index (on a scale from 0 to 100) in response to a one standard deviation increase of the explanatory variable. The parameter γ is the estimated skewness parameter of a skewed *t* or skewed normal distribution. The parameter ν is the estimated number of degrees of freedom of a Student’s *t*-distribution, either skewed or symmetric. The type of error distribution used for the regression – based on a nested sequence of tests – is indicated in the last column. The row “Industry / Wald” indicates whether industry dummies were included as explanatory variables (Yes/No), and if included, it displays the Wald test statistic for the joint significance of the dummies. R² denotes the variance of fitted values over the variance of the dependent variable (displayed for descriptive purposes only) and “observations” denotes the number of firms with complete data included in the regression.

Table 4 (continued)

	<u>CG Disclosure</u>		<u>CG Disclosure</u>		<u>CG Policy</u>		<u>CG Policy</u>		<u>CG Policy Y/N</u>		<u>CG Policy Y/N</u>	
	Coef.	Impact	Coef.	Impact	Coef.	Impact	Coef.	Impact	Coef.	Impact	Coef.	Impact
<i>ln(Mcap)</i>	1.332 (1.495)	2.093	1.511 (1.068)	2.374	1.012 (0.996)	1.591	0.317 (1.004)	0.499	0.081 (0.080)	2.4%	0.071 (0.070)	2.8%
<i>Ownership</i>	-0.057 (0.073)	-1.305	-0.074 (0.051)	-1.679	-0.001 (0.072)	-0.014	0.012 (0.085)	0.267	-0.012 (0.005)	-5.1%	-0.011 (0.005)	-6.1%
<i>Q</i>	-2.695 (3.636)	-1.447	-1.890 (2.696)	-1.015	-1.991 (3.644)	-1.069	-0.751 (3.182)	-0.403	0.188 (0.242)	1.9%	-0.033 (0.205)	-0.4%
<i>Growth</i>	-0.003 (0.050)	-0.091	0.011 (0.056)	0.293	-0.018 (0.073)	-0.457	-0.010 (0.054)	-0.265	-0.001 (0.004)	-0.7%	-0.002 (0.004)	-1.6%
<i>Tangibility</i>	-1.530 (2.475)	-1.697	-0.709 (1.515)	-0.787	-0.374 (1.496)	-0.414	-0.125 (1.505)	-0.139	0.087 (0.108)	1.8%	0.037 (0.091)	1.0%
<i>EFN^{Pos}</i>	0.174 (0.397)	1.129	0.112 (0.333)	0.729	-0.023 (0.266)	-0.147	-0.028 (0.289)	-0.184	0.038 (0.028)	4.7%	0.040 (0.027)	6.5%
<i>EFN</i>	-0.003 (0.035)	-0.201	-0.005 (0.032)	-0.340	-0.005 (0.031)	-0.338	0.001 (0.030)	0.034	0.000 (0.002)	-0.4%	0.000 (0.002)	-0.5%
$\gamma - 1$	2.372 (1.232)		1.967 (0.593)		-0.861 (0.466)		-0.890 (0.531)		---		---	
$1 / \nu$	---		---		0.484 (0.172)		0.485 (0.180)		---		---	
Industry / Wald	Yes	10.39	No	---	Yes	10.85	No	---	Yes	12.08	No	---
R ² / observations	0.038	247	0.032	247	0.028	247	0.000	247	0.111	247	0.045	247
Error distribution	Skewed normal	Skewed normal	Skewed normal	Skewed normal	Skewed <i>t</i>	Skewed <i>t</i>	Skewed <i>t</i>	Skewed <i>t</i>	Probit model	Probit model	Probit model	Probit model

This table shows the estimation results of the cross-sectional regression of code adoption indices on firm-level characteristics, i.e. model (1). The column "Coef." shows the estimated coefficient (ML estimates, z-statistics in brackets). Coefficients in bold font are significant at the 10% level. The column "Impact" shows the expected change in the governance index (on a scale from 0 to 100) in response to a one standard deviation increase of the explanatory variable. The parameter γ is the estimated skewness parameter of a skewed t or skewed normal distribution. The parameter ν is the estimated number of degrees of freedom of a Student's t -distribution, either skewed or symmetric. The type of error distribution used for the regression – based on a nested sequence of tests – is indicated in the last column. The row "Industry / Wald" indicates whether industry dummies were included as explanatory variables (Yes/No), and if included, it displays the Wald test statistic for the joint significance of the dummies. R² denotes the variance of fitted values over the variance of the dependent variable (displayed for descriptive purposes only) and "observations" denotes the number of firms with complete data included in the regression. "CG Policy Y/N" denotes a 0/1-dummy variable indicating whether the firm has a formal written corporate governance policy (in 2002), modeled by a probit model.

Table 5 Average Firm Value in 2003/2005 and Code Adoption – Estimation Results

	Tobin's Q		Tobin's Q		Tobin's Q		Tobin's Q		Tobin's Q			
	Coef.	Impact	Coef.	Impact	Coef.	Impact	Coef.	Impact	Coef.	Impact		
<i>ln(Assets)</i>	-3.632 (1.557)	-5.7%	-4.396 (1.611)	-6.8%	-4.005 (1.657)	-6.2%	-3.338 (1.554)	-5.2%	-2.611 (1.603)	-2.563 (1.599)	-4.1%	-4.0%
<i>Growth</i>	-0.122 (0.147)	-2.5%	-0.125 (0.154)	-2.6%	-0.153 (0.158)	-3.2%	-0.100 (0.155)	-2.1%	-0.150 (0.153)	-0.097 (0.155)	-3.1%	-2.0%
<i>Leverage</i>	0.612 (0.136)	17.4%	0.582 (0.139)	16.5%	0.540 (0.134)	15.2%	0.661 (0.139)	18.9%	0.581 (0.138)	0.603 (0.136)	16.4%	17.1%
<i>ROA</i>	2.705 (0.406)	25.0%	2.550 (0.409)	23.4%	2.535 (0.394)	23.2%	2.668 (0.414)	24.6%	2.686 (0.399)	2.659 (0.409)	24.8%	24.5%
<i>Ownership</i>	0.064 (0.111)	1.5%	0.053 (0.113)	1.2%	0.050 (0.116)	1.2%	0.049 (0.109)	1.1%	0.049 (0.116)	0.028 (0.116)	1.1%	0.6%
<i>CG Total</i>	0.734 (0.235)	10.4%										
<i>CG Shareholders</i>			0.701 (0.412)	7.2%	0.983 (0.344)	10.3%						
<i>CG Board</i>			0.579 (0.331)	7.0%			0.802 (0.267)	9.8%				
<i>CG Disclosure</i>			-0.010 (0.136)	-0.2%					0.157 (0.118)		3.9%	
<i>CG Policy</i>			-0.001 (0.111)	0.0%						0.226 (0.099)		6.7%
$\gamma - 1$	0.623 (0.200)		0.531 (0.190)		0.438 (0.173)		0.661 (0.212)		0.447 (0.178)	0.600 (0.193)		
$1 / \nu$	---	---	---	---	---	---	---	---	---	---	---	---
R^2 / observations	0.422	266	0.448	266	0.447	266	0.422	266	0.423	0.410	266	266
Error distribution	Skewed normal	Skewed normal	Skewed normal	Skewed normal	Skewed normal	Skewed normal	Skewed normal	Skewed normal	Skewed normal	Skewed normal	Skewed normal	Skewed normal

This table shows the estimation results of the cross-sectional regression of firm value on various code adoption indices, firm-level characteristics and industry dummies, i.e. model (3). The dependent variable is average firm value in the 3-year period 2003-2005, measured by the logarithm of Tobin's Q, while the explanatory variables are measured in 2002. The column "Coef." shows the estimated coefficient (ML-estimates, z-statistics in brackets). Coefficients in bold font are significant at the 10% level. The column "Impact" shows the expected change in the governance index (on a scale from 0 to 100) in response to a one standard deviation increase of the explanatory variable. The parameter γ is the estimated skewness parameter of a skewed t or skewed normal distribution. The parameter ν is the estimated number of degrees of freedom of a Student's t -distribution, either skewed or symmetric. The type of error distribution used for the regression – based on a nested sequence of tests – is indicated in the last row. R^2 denotes the variance of fitted values over the variance of the dependent variable (displayed for descriptive purposes only) and "observations" denotes the number of firms with complete data included in the regression. Each regression includes industry dummies (jointly significant at the 10% level).

Table 6 Firm Value and Code Adoption – Year by Year Estimation Results

	Tobin's Q, 2000		Tobin's Q, 2001		Tobin's Q, 2002		Tobin's Q, 2003		Tobin's Q, 2004		Tobin's Q, 2005	
	Coef.	Impact	Coef.	Impact	Coef.	Impact	Coef.	Impact	Coef.	Impact	Coef.	Impact
<i>ln(Assets)</i>	-0.456 (1.247)	-0.7%	2.170 (1.771)	3.4%	-5.901 (1.315)	-9.1%	-4.279 (1.582)	-6.9%	-6.484 (1.409)	-10.2%	-2.563 (1.536)	-4.2%
<i>Growth</i>	---	---	0.091 (0.081)	2.3%	-0.020 (0.127)	-0.4%	-0.149 (0.131)	-3.0%	-0.048 (0.128)	-0.8%	-0.238 (0.172)	-4.0%
<i>Leverage</i>	1.326 (0.105)	45.1%	0.868 (0.086)	28.3%	0.940 (0.099)	27.7%	0.823 (0.105)	22.6%	0.978 (0.091)	27.7%	0.827 (0.133)	20.4%
<i>ROA</i>	0.868 (0.270)	8.2%	1.986 (0.227)	18.4%	3.612 (0.331)	34.5%	3.823 (0.300)	40.6%	4.688 (0.300)	49.0%	2.715 (0.321)	27.6%
<i>Ownership</i>	---	---	---	---	---	---	---	---	---	---	---	---
<i>CG Total</i>	-0.074 (0.197)	-1.0%	0.162 (0.165)	2.2%	0.343 (0.186)	4.7%	0.547 (0.214)	7.5%	0.522 (0.177)	7.1%	0.415 (0.235)	5.5%
$\gamma - 1$	1.212 (0.333)	---	---	---	0.430 (0.137)	---	0.454 (0.170)	---	0.598 (0.155)	---	0.316 (0.127)	---
$1 / \nu$	0.392 (0.129)	---	0.407 (0.124)	---	0.203 (0.088)	---	0.157 (0.057)	---	0.212 (0.078)	---	0.266 (0.083)	---
R^2 / observations	0.407	196	0.362	272	0.456	274	0.507	289	0.368	303	0.358	285
Error distribution	Skewed t		Symmetric t		Skewed t		Skewed t		Skewed t		Skewed t	

This table shows the estimation results of the cross-sectional regression of firm value on the code adoption index, firm-level characteristics and industry dummies for each year in the period from 2000 through 2005, i.e. model (4). Firm value (the logarithm of Tobin's Q) and the firm-level explanatory variables are measured in the same year, except for *CG Total* (as of accounting year 2002). The column "Coef." shows the estimated coefficient (ML-estimates, z-statistics in brackets). Coefficients in bold font are significant at the 10% level. The column "Impact" shows the expected change in the governance index (on a scale from 0 to 100) in response to a one standard deviation increase of the explanatory variable. The parameter γ is the estimated skewness parameter of a skewed t or skewed normal distribution. The parameter ν is the estimated number of degrees of freedom of a Student's t -distribution, either skewed or symmetric. The type of error distribution used for the regression – based on a nested sequence of tests – is indicated in the last row. R^2 denotes the variance of fitted values over the variance of the dependent variable (displayed for descriptive purposes only) and "observations" denotes the number of firms with complete data included in the regression. Each regression includes industry dummies (jointly significant at the 10% level).