

How Corporate Governance Affects Firm Value: Evidence on Channels from Korea⁺

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Abstract: If firm level corporate governance affects firm market value (the price of minority shares) or overall firm value, what are the channels through which it does so? Prior work in emerging markets provides evidence of an association between corporate governance and firm market value, more limited evidence of a causal relationship, but very little evidence on the channels through which governance may affect value, and whether the effect is only on share price, or on overall firm value. We first confirm the association between governance and value using panel data on Korean public companies over 1998-2004. Firms with higher scores on an overall Korean corporate governance index (*KCGI*) have higher Tobin's *q*; this result is driven by the board structure component of *KCGI* and, less strongly, by ownership parity and disclosure components. Shareholder rights and board procedure subindices are not significant. We then provide evidence on several possible channels. For firms with higher *KCGI* scores: (i) related party transactions are less adverse to firm value; (ii) firm profitability is more sensitive to shocks to industry profitability; (iii) capital expenditures are lower, but investment is more sensitive to profitability and growth opportunities; (iv) sales growth is lower; (v) profitability is more sensitive to growth opportunities; (vi) lagged board structure is associated with higher firm profitability; and (vii) dividends are higher, controlling for profits, and are more sensitive to profits. Board structure is associated with the first six channels; parity with the third, fourth, and sixth, and disclosure with the fifth. A *2SLS* analysis (using 1999 legal rules which apply to large firms to instrument for board structure) offers evidence that the link between board structure and firm value, and between board structure and these channels, is likely to be causal. The first two channels are consistent with governance reducing wealth transfers to insiders; the remainder are consistent with governance affecting overall firm value.

Key words: Korea, corporate governance, corporate governance index, law and finance, firm valuation, emerging markets

JEL classification: G32, G34

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1. Introduction

If firm level corporate governance affects firm value, through what channels does it operate? Prior work in a number of emerging markets provides evidence of an association between corporate governance and firm value, and more limited evidence that this relationship is likely to be causal. But there is very limited evidence on the channels through which governance affects value.

We contribute to the literature on the link between firm-level governance and firm value in two principal ways. First, we provide additional evidence on the connection in emerging markets between firm-level corporate governance and firm market value (proxied by Tobin's q), using panel data from 1998-2004 with firm fixed and random effects. Most other "governance to value" studies rely only on cross-sectional data. We construct a broad corporate governance index (Korea Corporate Governance Index, or *KCGI*), comprised of five subindices, for Board Structure, Ownership Parity, Disclosure, Shareholder Rights, and Board Procedures. This result is driven by the Board Structure Subindex and, less strongly, by the Disclosure and Ownership Parity subindices. The Shareholder Rights and Board Procedure subindices are not significant.

We have available a good instrument for Board Structure Subindex, based on a 1999 law which required large firms (assets > 2 trillion won, about \$2 billion) to have 50% outside directors, an audit committee, and an outside director nominating committee. The board structure results survive, and indeed strengthen, if we instrument for Board Structure Subindex using "Large Firm *IV* 1999" (=1 if the firm is large and the year is 1999 or later, 0 otherwise) as an instrument for board structure. Other studies lack good instruments.

Second, and most centrally, we provide evidence on possible channels through which governance may affect firm value. For firms with higher *KCGI* scores: (i) related party transactions are less adverse to firm value; (ii) firm profitability is more sensitive to shocks to industry profitability; (iii) capital expenditures are lower, but investment is more sensitive to profitability and growth opportunities; (iv) sales growth is lower; (v) profitability is more sensitive to growth opportunities; (vi) lagged board structure (2-3 year lags) predicts higher profitability; and (vii) dividends are higher, controlling for profits, and are more sensitive to profits. These results are driven principally by Board Structure Subindex, which is associated with all but the last channel. Ownership Parity is associated with the third, fourth, and sixth

channels, and disclosure with the fifth. The board structure results survive if we instrument for Board Structure Subindex, which provides evidence on causality.

We thus provide the first evidence which both links governance to market value and links governance to plausible channels through which governance may affect firm value. Board Structure Subindex is the principal driver of both links. We do so in a strong empirical framework, with both firm fixed effects and, for Board Structure Subindex, a good instrument.

Most Korean companies have a controlling shareholder or family. Share prices, however, are the trading prices for noncontrolling shares. Better firm-level governance could increase share prices either by increasing overall firm value (defined as the present value of the firm's cash flows, before any diversion by the controllers) or by transferring some of this value from controllers to minority shareholders. Our channel results suggest that both effects exist. The first two channels are consistent with reduced value diversion by controllers, but need not imply an increase in overall firm value. The remaining channels are consistent with higher overall firm value. The third, fourth, and fifth are consistent with better investment and growth decisions; the sixth provides a direct link to profitability; and the seventh is associated with greater capital market discipline. The voluntary board structure changes by small firms, which follow the market reaction to the 1999 large firm reforms, are consistent with controllers expecting these changes to increase firm value, not just transfer wealth from insiders to outside shareholders.

Our nonresults for the Board Procedure and Shareholder Rights subindices are consistent with skeptical views about the value of commercial corporate governance indices (Bhagat, Bolton, and Romano, 2007). These indices tend to heavily weight elements of governance, notably procedures, which are easy to count, but may not matter much.

This paper is organized as follows. Section 2 reviews the prior literature on the connection in emerging markets between firm-level governance and firm value or performance. Section 3 describes our data sources and how we construct our governance index. Section 4 covers methodology. Section 5 presents our "governance to value" results on the connection between KCGI and Tobin's q . Section 6 presents our results on channels. Section 7 concludes.

2. Literature Review

To keep this review of manageable length, we focus on emerging markets, and put aside the large literature on whether there is a link between corporate governance and firm value in developed markets (e.g., Aggarwal, Erel, Stulz and Williamson, 2006; Bruno and Claessens, 2007). We focus on studies of firm-level governance, and put aside studies of country-level governance and event studies of changes in corporate governance rules. We emphasize studies which examine an overall measure of corporate governance, rather than a single attribute (such as ownership parity, board independence, or board size). We do not review cross-listing studies (e.g., Doidge, Karolyi and Stulz, 2004), or accounting studies which link governance to earnings management and informativeness.

2.1. Governance to Value Studies

A number of studies report an association between an overall measure of corporate governance and firm market value, usually proxied by Tobin's q . The principal cross-country studies are Klapper and Love (2004) and Durnev and Kim (2005). There are also single-country studies on Hong Kong (Cheung, Connelly, Limpaphayom and Zhou, 2007); Korea (Black, Jang and Kim, 2006a); India (Balasubramaniam, Black and Khanna, 2008); Russia (Black, 2001; Black, Love and Rachinsky, 2006); and Thailand (Limpaphayom and Connelly, 2004).

However, most governance-to-value studies either lack time series data on governance, or have too little time variation to make firm fixed effects feasible and rely on pooled *OLS* regressions. Black, Love and Rachinsky (2006) is an exception. Studies which do not use fixed or at least random effects leave open the possibility that unobserved firm-level factors explain the observed connection between governance and value.

Several papers study share returns during the 1997-1998 Asian financial crisis. Mitton (2002) finds better share price performance for better-disclosing firms in crisis-affected

countries. Lemmon and Lins (2003) find higher returns for firms with low control-ownership disparity. Baek, Kang, and Park (2004) find both effects for Korean firms.

2.2. Channels Through Which Governance Affects Value

Studies of the channels through which governance may affect firms' market values or overall value are more limited. One needs, in effect, to first connect governance to firm value, and then to identify particular aspects of firm behavior which plausibly explain the governance-to-value connection. The studies cited in the previous section undertake the first task, of connecting governance to value. A number of studies undertake the second task, and find an association between aspects of governance and aspects of firm behavior. Very few do both. All rely on cross-sectional data.

Klapper and Love (2004) and Mitton (2004) report an association between the Credit Lyonnais Securities Asia (CLSA) governance index and firm profitability; Klapper and Love also link this index to firm market value. However, the *CLSA* index is based on a 2001 survey of analysts, depends significantly on analysts' subjective views, and includes some questions which relate more to management quality than to governance. Thus, analysts might simply be giving higher scores to firms which have performed better.¹ Joh (2003) finds that Korean *chaebol* firms with high control-ownership disparity have lower profitability during the pre-crisis period. Black, Jang, and Kim (2006) find no contemporaneous connection for Korean firms between governance and profitability; however, Black and Kim (2008) find evidence of higher profitability for large firms several years after board structure reforms at these firms.

There is also evidence of a link between governance and dividend payout. Mitton (2004), using the *CLSA* index, finds this link primarily in countries with strong investor protection. He also finds a stronger negative relationship between dividends and growth opportunities in firms with higher *CLSA* scores. Hwang, Park, and Park (2004) find an association between the governance of Korean firms (measured based on a 2003 Korea

¹ The *CLSA* questions are summarized in an Appendix to Klapper and Love (2004).

Corporate Governance Service (*KCGS*) survey) and dividends, and that higher *KCGS* scores mitigates *chaebol* firms' tendency to pay out lower dividends.

Liu and Lu (2007) find for Chinese firms that better governance is associated with less earnings management, and likely with lower levels of tunneling.

2.3. Related Research

This paper is part of a series on Korean corporate governance. In Black, Jang and Kim (2006a) (*BJK*) we use only cross-sectional data from 2001. We develop the *KCGI* index for 2001, develop and justify the use of large firm dummy (=1 if firm has assets > 2 trillion won, 0 otherwise) as an instrument for either Board Structure Subindex or all of *KCGI* (with only cross-sectional data, it was unclear which was preferable), and report evidence of (i) a governance-to-value association between *KCGI* and firm market value, and (ii) likely causation for large firms, using the large firm dummy instrument. Black and Kim (2008) show that large firm dummy is best understood as an instrument for Board Structure Subindex, rather than all of *KCGI*, and seek to tighten the causal link between the legal shock to Board Structure and an increase in large firms' market values, using a combination of empirical strategies. Black, Jang and Kim (2006b) examine the factors which predict firms' governance choices and find evidence of a large role for idiosyncratic choice.

In this paper, we extend the *KCGI* index back to before the 1999 legal shock to large firm governance, and forward to 2004, develop time-series evidence on the governance-to-value relationship, and examine possible channels. Following Black and Kim (2008), we use large firm dummy to instrument for Board Structure Subindex.

3. Index Construction, Data, and Identification

3.1. Index Construction and Data Sources

We construct a multi-year Korean corporate governance index (*KCGI*) from 1998 to 2004, covering the vast majority of public companies listed on the Korea Stock Exchange. *KCGI* (0 ~ 100) consists of five equally weighted subindices, for Board Structure, Ownership Parity,

Disclosure, Shareholders Rights, and Board Procedure. The index relies in significant part on surveys of public firms conducted by the Korea Corporate Governance Service beginning in mid-2001, and then at year-ends thereafter. We use these surveys to construct *KCGI* at mid-2001, and year-ends 2001-2004. We hand-collect the data needed to carry the index back to year-ends 1998-2000. We thus have governance measured at eight time points over this period.²

We face some important challenges in constructing the multiyear index. We are able to use only elements which are available in each year. However, *KCGS* changed its survey questions each year, and for some questions switched in 2003-2004 from relying on survey responses to reviewing firms' public disclosures, even though disclosure is not required. We reduce loss of governance elements due to changes in the survey in several ways. For some elements, we hand-collect data from annual reports, charters, proxy statements, company websites, and other sources. To reduce the cost of hand-collection, we generally assume that firms which lacked a governance element in year t also lacked this element in previous years. For example, we assume that firms with no audit committee in 2001 also had no audit committee in prior years. For elements for which *KCGS* changed its collection method after 2002, we assume either that a firm which had a governance element in 2002 also had it in 2003 or that a firm which lacked a governance element in 2003 also lacked this element in 2002, as seemed appropriate for the specific element.

For governance elements that became legally required during this period, we assume that firms comply with these requirements. For example, we assume that large firms and *chaebol*-affiliated firms require board approval of related-party transactions when legally required (these requirements came into force for firms within the top 10 *chaebol* in 2000, for large firms and firms within the top-30 *chaebol* in 2001, and for firms in business groups with group assets over

² The first survey did not specify the time on which survey respondents should base their answers. We assume that the answers reflect governance at the time the survey was conducted (roughly mid-2001). English language translations of the surveys are available from the authors on request.

2 trillion won in 2002). For board composition, we extract data from annual books published by the Korea Listed Companies Association (*KLCA*), which include the name, age, title, education, and affiliation of each director of a Korean public company.

Where hand-collection for a governance element is too costly or data is not publicly available, we extrapolate forward or backward data on that element in one year to an adjacent year for which that element is missing. This "element extrapolation" is necessary to construct the index for 1998-2000. We believe that element extrapolation is reasonably innocuous because we use firm clusters in all regressions to control for correlated observations of the same firm in different years; and rely on firm fixed and random effects specifications, which control for a time-invariant firm-level effect, so that only governance changes over time matter. Extrapolation, if done with error (compared to the unobserved true state) should add noise to our results, but should not create bias.

If a survey question was asked in, say, 2001 and 2003, but not in 2002, we construct values for that governance element for 2002 by averaging the 2001 and 2003 values ("element interpolation"). If a firm responded to the survey in, say, 2001 and 2003, but not in 2002, we construct this firm's 2002 governance index by averaging the 2001 and 2003 values ("firm interpolation"). In robustness checks, we obtain similar results if we do not interpolate for elements or firms.

Table 1 provides details on our extrapolation and interpolation rules and on how we obtain each element for each year. Board Structure Subindex is composed of Board Independence Subindex (2 equally weighted elements, 0 ~ 10), and Board Committee Subindex (3 equally weighted elements, 0 ~ 10). Ownership Parity Subindex has a single element. The other subindices are equally weighted sums of the elements of each. If data on a subindex element is missing for a particular firm, we compute the subindex for that firm based on the average of the nonmissing elements. Table 2 provides summary statistics for *KCGI* and each subindex.

Data on other variables comes from various sources. We take balance sheet, income, cash flow statement data, foreign ownership data, related-party transactions, and original listing year from the *TS2000* database maintained by the KLCA; a list of companies affiliated with the top-30 *chaebol* from press releases by the Korean Fair Trade Commission (KFTC); adjusted return data from the Korea Securities Research Institute (KSRI) database; other stock market data from the KSE; information on *ADRs* from JP Morgan and Citibank websites; and industry classification from the Korea Statistics Office (KSO).

Share ownership for financial institutions comes from KSE. For non-financial firms, we use a database hand collected by one of us covering non-financial firms listed on the KSE from 1996 to 2001, which breaks down shareholdings into family (including the group controlling shareholder), affiliated firms, non-profit organizations, and company executives. Table 3 defines (Panel A) and gives summary statistics (Panel B) for the principal variables used in this study.

3.2. Methodological Issues

Research on the connection between corporate governance and firm value or performance faces a set of empirical challenges to identification. Several recent articles contend that because of these challenges, we still know little about how corporate governance affects share values or firm performance (e.g., Chidambaran, Palia and Zheng, 2006; Lehn, Patro and Zhao, 2007; Listokin, 2007; Wintoki, Linck and Netter, 2007).

One problem is the potential for reverse causation, in which firm performance predicts board structure, rather than vice versa. A second possible form of endogeneity involves optimal governance varying based on firm characteristics. A third possibility is that firms may use governance to signal good underlying attributes, but governance has no separate effect on value or performance.

A fourth problem is limited data. To firmly establish association, even without good identification, one would want to use panel data and firm fixed effects to control for

unobserved time-invariant firm characteristics. Yet most research relies on cross-sectional regressions, either because time series data is not available or because there is too little time variation in governance to make firm fixed effects feasible. A fifth issue is omitted variable bias. Different aspects of governance are often positively correlated. Moreover, a wide range of firm characteristics could plausibly predict both board structure and firm value or performance. This concern is acute for cross-country studies, due to data limitations in the multicountry databases.

In this paper, we seek to directly confront these issues. Rich data on Korean firms, plus rapid post-crisis evolution in governance, make a panel data approach with firm fixed effects feasible. In our principal regressions, we use firm fixed effects to address unobserved time-invariant firm level factors, year dummies to address variation over time that is common to all firms, and an extensive battery of control variables to address time-varying factors. We use firm clusters to address the potential correlation between observations of the same firm in different years, and White's robust standard errors to address potential heteroskedasticity.

3.3. Instrument Validity

We are able to partly address identification. Before the 1997-1998 East Asian financial crisis, most Korean firms had no outside directors and only a few banks and majority state-owned enterprises (SOEs) had 50% outside directors. Legal reforms in 1998 required all public firms to have at least 25% outside directors. Further reforms in 1999 make it possible for firms to have board committees, including audit committees, and require large firms (assets > 2 trillion won, about \$2 billion) and banks to have at least 50% outside directors, an audit committee, and an outside director nominating committee. The rules for large firms and banks came into force partly in 2000 and fully in 2001.³

³ All but two of the 17 banks in our sample are large. Below, we refer to large firms and banks simply as large firms, and to the 1999 rules as "large firm rules."

This legal shock to board structure allows us to identify the effect of the change in large firms' board structure with changes in Tobin's q and in firm performance. We define large firm dummy =1 if a firm is large, 0 otherwise. In an efficient market, investors should anticipate the effect of governance changes on firm behavior and value, so share prices should change in 1999, when the rules are adopted. Thus, in regressions with Tobin's q as dependent variable, we use "Large Firm *IV 1999*" (=1 if large firm dummy =1 and year is 1999-2004, 0 otherwise) to instrument for Board Structure Subindex. However, firm behavior and performance should change only once the governance changes have taken effect. Thus, in regressions with performance measures, such as dividends or profitability, as the dependent variable, we use "Large Firm *IV 2000*" (=1 if large firm dummy = 1 and year is 2000-2004) to instrument for Board Structure Subindex. For similar reasons, we report in Table 2B correlations between KCGI, its subindices, and Large Firm *IV 2000*.

We discuss the validity of this instrument in Black and Kim (2008), and only summarize here. We focus on Large Firm *IV 1999*; the analysis is similar for Large Firm *IV 2000*. A valid instrument must be exogenous, correlated (ideally strongly) with the instrumented variable (Board Structure Index), and should predict the dependent variable only indirectly through the instrumented variable, and not directly. First, Large Firm *IV 1999* is likely to be exogenous. The large firm rules are mandatory, and do not correspond to large firm behavior prior to the 1999 adoption of the rules. There is also no evidence that firms reduce or limit their size to avoid compliance with the rules. Second, Large Firm *IV 2000* correlates strongly with Board Structure Subindex. The overall correlation is $r = 0.78$; annual correlations from 2000-2004 are at least 0.79

A harder question for instrument validity is whether Large Firm *IV 1999* predicts Tobin's q directly or only indirectly through Board Structure Subindex. Large firm dummy is associated with firm size, which may directly predict firm value. We address this concern through regression discontinuity analysis (e.g., Angrist and Pischke, 1999), in which we control separately for firm size. Tobin's q jumps discontinuously at the 2 trillion won regulatory

threshold. This jump appears during the period in mid-1999 when the rules are adopted; it is absent before then, and stable afterwards. Moreover, the direct association between $\ln(\text{assets})$ and Tobin's q is negative, both below and above the 2 trillion won threshold, while the association with Large Firm *IV 1999* is large and positive. The negative coefficient on $\ln(\text{assets})$ implies that larger firms do worse at turning asset dollars into market value dollars. It is unlikely that this measure of efficiency would decline with size both below and above 2 trillion won; jump at the 2 trillion won point where governance rules kick in, *for reasons other than governance*; and do so beginning in mid-1999 when the governance rules are adopted.

It is a close question whether one does better to understand our instrument as instrumenting for Board Structure Subindex, or for all of *KCGI* (or perhaps for *KCGI - Ownership Parity*). As Table 2, Panel B shows, Large Firm *IV 2000* correlates most strongly with Board Structure, but also correlates positively with Disclosure, Board Procedure, and Shareholder Rights. The 1999 legal reforms directly affect only Board Structure, but firms which change their board could also change their practices in other areas, potentially in value enhancing ways, perhaps with a lag. We return to this issue below.

Some caveats are appropriate for our instrumental variable analysis. First, the coefficients on instrumented Board Structure Subindex should be understood as similar to the "average treatment effect on the treated" in a difference-in-differences (*DiD*) analysis. They provide an estimate of the impact of the 1999 reforms on large firms. The predicted effect might differ for small firms which voluntarily adopt similar reforms.⁴ Second, if we instrument only for Board Structure, but the reforms also cause large firms to change their governance in other ways, the coefficient on Instrumented Board Structure in a two stage least squares (*2SLS*) analysis may partly capture the indirect effect of the legal reforms on other aspects of governance. Third, we have no available instrument for the other subindices which predict Tobin's q .

⁴ Black and Kim (2008) find that board structure reforms predict similar changes in Tobin's q for large and small firms. Thus, the treatment effect on the untreated may be similar to its effect on the treated.

4. Linking Corporate Governance to Firm Market Value

4.1. KCGI and Board Structure Subindex Over Time

Figure 1 shows histograms of *KCGI* at year-end 1998 and 2004. One can readily see the substantial change in governance between these two dates. This large time-variation in governance makes it feasible to obtain results from firm fixed effects regressions. In Figure 2, the left set of charts show the time-trend in the mean values of *KCGI* and its subindices, separately for large firms and small firms. *KCGI* increases for both groups, but the increases is greater for large firms (see also the summary statistics in Table 2). The right set of charts provides an expanded view of the changes in Board Structure Subindex. Board Structure Subindex jumps for large firms in 2000 and 2001, as the 1999 rules take effect. The Disclosure, Board Procedure, and Shareholder Rights subindices also rise over the sample period, while Ownership Parity is nearly time-variant.

4.2. Association between Corporate Governance and Market Value

We begin our analysis in Table 4 by confirming, in a multiyear context with panel data, one of the main findings of BJK: There is a strong positive relationship between *KCGI* and firm market value, proxied by $\ln(\text{Tobin's } q)$. Table 4 includes the full set of control variables we use throughout this paper, most controls are suppressed in later tables.

Regression (1) shows results for *KCGI* with firm fixed effects and an unbalanced panel of firms. Results with a balanced panel (Regression (2)) are similar; the coefficient on *KCGI* is similar, and the *t*-statistic is somewhat lower, likely due to smaller sample size.

Ownership Parity Subindex has limited time variation, partly because we have data for a limited number of years. Thus, its role in governance may be suppressed in a fixed effects framework. Yet, in BJK and in a pooled OLS regression with year dummies, otherwise similar to Regression (1), Ownership Parity is strongly associated with firm market value. So as not to lose this effect, we report firm random effects results in Regression (3), while adding industry fixed effects based on 4-digit Korean Standard Industrial Classification codes. In regression (3),

the "lambda" coefficient, which measures the relative weight of within and between estimates (see Wooldridge, 2008, § 14.2), gives 0.69 weight on the within estimate, so the random effects results should be close to fixed effects results. The coefficient on *KCGI* is somewhat larger, which could reflect the greater role played by Ownership Parity.

The random effects specification involves a compromise. Pooled *OLS* regressions will fully capture the role of Ownership Parity but will produce biased coefficients if there are important unobserved time-invariant firm effects. Fixed effects will correct this source of bias, but may produce a downward biased estimate of the effect of *KCGI* in general, as well as a poor estimate of the effect of Ownership Parity. The random effects specification reduces the bias in pooled *OLS*, especially with a large weight on the within estimate, while letting us partly capture the effect of "between" variation in Ownership Parity. Compare Zhou's (2001) criticism of the fixed effects to assess the effect of managerial share ownership on performance. A Hausman test rejects the null of equal coefficients for fixed and random effects regressions, but this does not tell us which approach is preferable, only that they are different.

In later regressions, we rely primarily on firm fixed effects results with unbalanced panels. Fixed effects results with balanced panels (not reported) and random effects results (mostly not reported) are similar. We report random effects results only: (i) in Table 7 (for these regressions, a Hausman test fails to reject the null of equal coefficients); and (ii) in Table 8 (where the significant results for Ownership Parity would disappear with fixed effects).

Except as otherwise specified, we report the contemporaneous relationship between the dependent variable and governance. With fixed effects, this means examining the contemporaneous relationship between change in the dependent variable and change in governance. Our IV results involve a partial lag, since we set $Large\ Firm\ IV\ 2000 = 1$ for large firms beginning in 2000, while the 1999 reforms are effective partly in 2000 and partly in 2001. In unreported robustness checks, we find similar, though usually slightly weaker results, if we lag governance by a year to allow for a lagged effect of governance on performance.

We use $\ln(\text{Tobin's } q)$ as our principal measure of firm value. Taking logs reduces the influence of high- q outliers. In this and later regressions, we identify and drop outliers for each year if a studentized residual from a regression of the dependent variable (here $\ln(\text{Tobin's } q)$) on the principal independent variable (here $KCGI$) is greater than ± 1.96 . In unreported robustness checks, we obtain similar results: if we do not take logs, retain outliers; or winsorize outliers instead of excluding them. We also find a strong association between $KCGI$ and two alternate measures of firm value: (market value of equity)/(book value of equity); and (market value of equity)/sales.

In regression (1), the 0.0035 coefficient on $KCGI$ is both statistically highly significant ($t = 5.27$) and economically meaningful. It implies that a worst-to-best change in $KCGI$ (roughly 80 points) predicts a 0.28 increase in $\ln(\text{Tobin's } q)$ (using the sample median of 0.80 for Tobin's q) and a 96% increase in share price (using the sample median of 0.53 for debt/assets).

In regressions (4) and (5), we dig down a level, remove $KCGI$ as an independent variable, and substitute the five subindices, for Board Structure, Ownership Parity, Disclosure, Board Procedure, and Shareholders' Right. Regression (4) uses fixed effects; regression (5) uses random effects. Board Structure is the most important driver of the overall results for $KCGI$. The 0.0093 coefficient on Board Structure Index in Regression 3 implies that a worst-to-best change in the Board Structure Index (roughly 20 points) predicts a 0.19 increase in $\ln(\text{Tobin's } q)$ and a 61% increase in share price (using the sample medians for Tobin's q and debt/assets). Disclosure Subindex is also significant, and Ownership Parity Subindex is significant with random effects. The Board Procedure and Shareholder Rights subindices are not significant. Comparing fixed to random effects, the coefficients are similar for all subindices except Ownership Parity, which suggests that we do not introduce large bias for these subindices by using random effects instead of fixed effects.

The fixed and random effects results in Table 4 are consistent with the prior research on emerging markets discussed in Section 2.1, but are nonetheless an important extension of that

research. With one exception, the Black, Love, and Rachinsky (2006) study of Russia, prior work relies only on cross-sectional results, and thus may not be reliable.

4.3. Instrumental Variable Results

We also use Large Firm *IV 1999* to instrument for Board Structure Index, in a firm fixed effects, two stage least squares (*2SLS*) framework. Regression (6) is the first stage. Large Firm *IV 1999* is a strong predictor of Board Structure Subindex, as expected. Regression (7) is the second-stage. Board Structure Subindex remains a strong predictor of Tobin's *q*, with a higher coefficient than in regression (3). Disclosure subindex weakens slightly, but remains marginally significant. The board structure results are consistent with Black and Kim (2008).

5. Channels through which Governance Affects Firm Value

We turn in this Section 5 to the channels through which governance may affect firm market value or overall firm value. We focus our attention on *KCGI* and on the subindices -- Board Structure, Ownership Parity, and Disclosure -- that predict higher market value. We treat Board Procedure and Shareholder Right subindices, which do not predict firm market value, as control variables.

5.1. Related-Parity Transactions

Related party transactions (RPTs), which benefit insiders but extract value from the firm, are a major risk facing outside investors in many countries, including Korea. For Korea, see Bae, Kang, and Kim (2002) (mergers with related parties); Baek, Kang, and Lee (2006) (equity offerings to insiders), Joh (2003) (low profitability of public firms within *chaebol* groups); see also Bertrand, Mehta, and Mullainathan (2002, India); Cheung, Rao, and Stouraitis (2006, Hong Kong). We investigate whether better governance is associated with reduced levels of RPTs, or with better pricing of these transactions and hence less adverse effect on firm value.

RPTs have unclear efficiency implications. They can be seen as similar to partial vertical integration. They can reduce efficiency, if the firm would do better to transact with an unrelated party, but can increase efficiency by reducing transaction costs and the risk of

opportunism. The wealth transfer implications of RPTs depend on the insiders' relative ownership of the transacting firms. If insiders own a larger (smaller) percentage of Firm B than of Firm A, we might expect transactions between the firms to benefit B (A) at A's (B's) expense.

Korean firms are required to disclose in their annual financial statements amounts owed to the firm by affiliated firms (including receivables), debts owed to affiliated firms (including payables), purchases (sales) of goods and services from (to) affiliates, and purchases (sales) of assets from (to) affiliates. We have data on total volume of RPTs with all affiliates taken together, but do not have data on pricing, or on transactions between particular pairs of related firms. Thus, we cannot assess which RPTs are with other firms in which the insiders own a larger (smaller) percentage stake.⁵

In Table 5, we examine RPTs involving purchases and sales of goods and services. Table 5 uses the same array of control variables as Table 4, including profitability. Perhaps because RPTs do not have clear implications for profitability, we do not find a significant relation between RPTs and profitability (regressions not reported).

In regression (1), there is a significant negative coefficient on Related Party Transactions, defined as (related party purchases + sales)/sales, winsorized at 99% to reduce the impact of high outliers. We obtain similar results in unreported regressions for related party sales and related party purchases considered separately. Thus, investors assign lower value to firms with high levels of *RPTs*, even after controlling for profitability.

Regression (2) shows our first main channel result. The negative relationship between level of *RPTs* and Tobin's *q* is weaker for firms with higher *KCGI*. The coefficient on an

⁵ Preventing or reducing the value impact of large-scale RPTs, such as the mergers studied by Bae, Kang, and Kim (2002) or the equity issuances studied by Baek, Kang and Lee (2006), could be an important channel through which governance affects market value, but it is a channel we cannot measure because these transactions are too infrequent. Bae, Kang and Kim found 107 related-party mergers over 17 years (~6 per year). Baek, Kang and Lee found 60 equity offerings over 12 years (5 per year). They found a larger number of offerings of convertible bonds or bonds with warrants, but Korean legal reforms in 1997 limit the number and dilutive effect of these offerings during our sample period.

interaction between *KCGI* and RPTs/total sales is positive and significant. In unreported regressions, similar interactions are positive and marginally significant for related party sales and related party purchases considered separately. The -0.206 coefficient on Related Party Transactions and the +0.0036 coefficient on its interaction with *KCGI* imply that the predicted effect of Related Party Transactions is neutral for firms with *KCGI* around 57 ($=0.206/0.0036$), related-party transaction on average has a beneficial effect on firm value. This is below the mean large-firm *KCGI* score beginning in 2002. Thus, investors treat the *KCGI* scores achieved by many large firms as fully counteracting the otherwise negative effect of Related Party Transactions on market value.

In unreported regressions, higher *KCGI* does not predict fewer related party purchases and sales. One way to understand these results is to hypothesize that routine RPTs involving purchase and sale of goods and services are not inefficient on average, but some are priced to benefit insiders (or that investors so fear). Good governance may improve pricing (or perceived pricing), while otherwise leaving alone the potentially efficient transactions between related firms. The apparent channel runs from better pricing of routine RPTs to higher share price. This channel implies higher share prices and lower private benefits for insiders, but not necessarily higher firm value.

In Regression (3), we focus on Board Structure Subindex and its interaction with Related Party Transactions, while controlling separately for other subindices and their interactions. The interaction between Related Party Transactions and Board Structure Subindex is positive, but not significant. The interaction terms are also insignificant for other subindices. The positive coefficient on the interaction with *KCGI* in regression (2) appears to reflect a combination of positive coefficients on the interaction terms for Board Structure, Disclosure, and Board Procedure.

In Regression (4), we switch to *2SLS* and use Large Firm *IV 1999* to instrument for Board Structure Subindex. In this and later tables, we report only the second stage of *2SLS*; the table heading gives the coefficient on the instrument from the first stage regression. In

this and later regressions where we instrument for Board Structure Subindex and examine interaction effects, we implement our overall regression discontinuity design by controlling for both $\ln(\text{assets})$ and the interaction between $\ln(\text{assets})$ and the relevant variable (here Related Party Transactions). In regression (4), the interaction between Related Party Transactions and instrumented Board Structure Subindex is positive and significant.

The results for instrumented Board Structure Subindex are consistent with the 1999 reforms generating improved pricing of Related Party Transactions, but not through board structure alone. Instead, the new board structure leads to improved disclosure (as we saw in Figure 2), and perhaps to other governance changes, which have an overall effect on Related Party Transactions. Alternatively, since our *IV* results tell us only the predicted treatment effect on the treated (large firms), there could be differences between large and small firms in how board structure affects Related Party Transactions.

5.2. Tunneling

Bertrand, Mehta, and Mullainathan (2002) report evidence consistent with transfer of profits among firms in Indian business groups. The idea is to measure the responsiveness of firm profitability to shocks to industry profitability. Low responsiveness suggests that insiders extract more (fewer) potential profits as the firm does better (worse). We adapt their approach to our dataset, and assess whether the responsiveness of firm profits to industry shocks depends on governance.

Table 6 presents our results. In regression (1), we confirm that firm profitability, measured by EBITDA/assets, correlates positively with industry profitability, in a firm fixed effects framework. We estimate industry profitability for a particular firm k in 4-digit industry I as $[(\text{EBITDA summed across all other firms in industry } I)/(\text{assets summed across these firms})]$. Note that the coefficient on industry EBITDA/assets is 0.1043. In a similar regression which more precisely tracks the Bertrand et al. specification by using EBITDA not scaled by assets (with industry EBITDA defined as industry EBITDA/assets \times (firm k 's assets)),

the coefficient on industry EBITDA is 0.69. Both values are well below 1 (perfect responsiveness), which suggests that some tunneling is occurring.⁶

In Regression (2), we add *KCGI* and its interaction with industry EBITDA/assets. The coefficient on the interaction term is positive and significant. This is our second main channel finding: Firm profitability is more responsive to industry shocks for better-governed firms, suggesting lower levels of tunneling. The 0.004 coefficient on the interaction term implies that a worst-to-best change in *KCGI* (roughly 80 points) increases the responsiveness of firm profitability to industry profitability by 0.32, which is large relative to the 0.10 responsiveness found in regression (1).

In Regression (3), we replace *KCGI* and its interaction with industry profitability with each subindex, and the interaction of each subindex with industry profitability. The interaction of Board Structure Subindex with industry profitability is positive and significant; while interactions with other subindices are insignificant. The 0.016 coefficient on the interaction term implies that a worst-to-best change in Board Structure (20 points) increases the responsiveness of firm profitability to industry profitability by 0.32. Thus, the apparent reduction in tunneling for better-governed firms is driven entirely by Board Structure Subindex.

In Regression (4), we instrument for Board Structure with Large Firm *IV 2000*. The coefficient on the interaction between instrumented Board Structure Index and industry profitability is again positive and significant. In unreported robustness checks, we obtain similar results in all regressions if we use unscaled EBITDA, unscaled EBIT, or EBIT/assets as dependent variables and industry EBITDA, industry EBIT, and industry EBIT/assets as the corresponding industry measures. We obtain generally stronger results if we drop our extensive control variables and use the minimal controls specification in Bertrand et al.

Like the Related Party Transactions channel, the tunneling channel is consistent with governance reducing wealth transfer from minority shareholders to insiders, but may not imply

⁶ Bertrand et al. (2002) use unscaled EBITD as their principal dependent variable.

inefficient firm operation. We lack the data to directly test whether tunneling moves profits from firms with lower insider ownership to related firms with higher insider ownership.

5.3. Investment

One likely reason why Korea was hit hard by the East Asian financial crisis in 1997-1998 was investment and expansion by Korean firms without due consideration on profitability. Shin and Park (1999) find that *chaebol* firms invest more than non-*chaebol* firms during the pre-crisis period, despite poorer growth opportunities. Hong, Lee, and Lee (2007) also find pre-crisis overinvestment by *chaebol* firms, which disappears after the crisis. There is evidence of overinvestment for our sample as well. The mean (median) Tobin's q for our sample are only 0.86 (0.80), which implies that the mean (median) firm is turning a dollar of invested capital into less than dollar of market value. Tobin's q declines with firm size, suggesting that large firms are especially likely to invest. And investment is not significantly related to profitability (Table 7, regressions (1)-(2)).

This evidence of overinvestment suggests that one channel through which governance may affect firm value is by limiting overinvestment. This would show up as a decrease in investment, and likely in growth, for better governed firms. This channel would likely imply increased firm value, not just reduced wealth transfers to insiders.

Table 7 presents results for capital expenditures. We report both firm fixed effects (odd numbered regressions) and random effects results (even-numbered regressions) because, as will be seen in Table 8, Ownership Parity Subindex partially drives the overall results for *KCGI*. We would largely lose the effect of Ownership Parity with fixed effects, due to limited time variation in this subindex. A Hausman test fails to reject the null of no difference in coefficients between the two approaches. This suggests that random effects is an appropriate specification, and perhaps the preferred one due to greater power. In regressions (1)-(2), we regress capital expenditures/assets on *KCGI* and control variables, including controls for EBIT/sales as a measure of profitability and Tobin's q (as a proxy for growth opportunities). The control variables are the same as in Table 4, except we add EBIT/sales and Tobin's q , omit capex/PPE

due to overlap with the dependent variable, and omit the following variables, which are relevant for firm value, but have no obvious connection to capital expenditures: share turnover, foreign ownership, ADR dummies, and MSCI dummy (the dummies drop out in any case with fixed effects). We find a negative coefficient on *KCGI*, consistent with better governance limiting overinvestment. The -0.0002 coefficient implies that a worst-to-best change in *KCGI* (roughly 80 points) predicts a 0.016 drop in Capex/assets, which is substantial compared to the sample median of 0.025.

Do better-governed firms invest *better*, not simply less? If so, then we might expect investment to be more sensitive to profitability or growth opportunity for better-governed firms. We test the first possibility in regressions (3)-(4), and the second in regressions (5)-(6), and both together in regressions (7)-(8). The key variables are the interactions between *KCGI* and EBIT/sales, and between *KCGI* and Tobin's *q*. The positive coefficients on the interaction terms are consistent with better governance predicting greater sensitivity of investment to both profitability and growth opportunities. For example, in regression (7), the -0.02257 coefficient on EBIT/sales and the +0.0005 coefficient on its interaction with *KCGI* in Regression (7) imply that investment responds positively to firm profitability when *KCGI* = 43 or higher, and that this positive responsiveness increases as *KCGI* moves above 43, which is close to the sample mean for 2002 and later years.

Table 8 assesses which subindices of *KCGI* drive these results. We report only the coefficients for Board Structure and Ownership Parity subindices, other subindices are insignificant. We again report both fixed and random effects regressions, but unlike Table 7, a Hausman test now rejects the null of no difference in coefficients between fixed and random effects. In regressions (1)-(2) we replace *KCGI* with each subindex separately. Board Structure Subindex has a negative coefficient in both regressions. Ownership Parity Subindex is insignificant with fixed effects, but has a negative coefficient with random effects. Thus, two of the three subindices which drive the overall relationship between *KCGI* and Tobin's *q* in Table 4 also drive the relationship between capex, on the one hand, and governance and its

interactions with profitability and growth opportunity, on the other hand. In regressions (3) and (4), we instrument for Board Structure Subindex with Large Firm *IV 2000*. The results for instrumented Board Structure Subindex are similar to the non-*IV* results.

In regressions (5)-(8), we present results for interactions between subindices and profitability, and between subindices and Tobin's q . The interactions are generally insignificant (marginally significant for Board Structure*Tobin's q with random effects). Instrumented Board Structure Index is also insignificant (regressions not shown). This suggests that the positive interactions between *KCGI* as a whole and profitability and Tobin's q , in predicting capex, shown in Table 7, derive from the combined effect of several subindices.

The results in Table 7 are our third main channel. Better governed firms appear to invest less, but invest better. This channel plausibly affects overall firm value, not just the division of that value between controlling and minority shareholders.

5.4. Sales Growth

If better governed firms invest less, do they also grow more slowly? This too might be value enhancing, if Korean firms otherwise tend to overexpand. Table 9 addresses that question. We report only fixed effects results because, unlike the capex results in Table 8, we obtain similar results for Ownership Parity Subindex with either fixed or random effects. Control variables are the same as for the capital expenditure regressions, except we add Capex/PPE and omit sales growth (5 year) due to overlap with the dependent variable.

In regression (1), we regress one year sales growth (from year $t-1$ to year t) on *KCGI* and control variables. *KCGI* takes a significant negative coefficient, consistent with better governed firms growing more slowly. In unreported regressions, we obtain similar results with 3-year sales growth, from $t-1$ through $t+2$, as the dependent variable. The -0.0023 coefficient on *KCGI* implies that a worst-to-best change in *KCGI* (roughly 80 points) predicts a 0.184 drop in sales growth, which is large relative to the sample median of 0.06.

In regression (2), we interact *KCGI* with profitability, to assess whether sales growth is more sensitive to profitability for better governed firms, but find no significant effect. In regressions (3) and (4), we assess which subindices predict the direct effect of *KCGI* on sales growth. The regressions are similar except that in regression (4), we instrument for Board Structure Subindex using Large Firm *IV 2000*. Ownership Parity takes a strong negative coefficient in both regressions; Board Structure is negative but not significant, whether instrumented for or not; and other subindices are also not significant.

In regressions (5) and (6), we assess, for the Ownership Parity and Board Structure subindices, whether sales growth is more sensitive to profitability for better governed firms. The regressions are similar except that in regression (6), we instrument for Board Structure Subindex. For Ownership Parity Subindex, the coefficient on the interaction term is positive and significant in both regressions. For Board Structure Subindex, the direct effect on sales growth remains negative and strengthens to roughly 5% significance in both regressions. The interaction between Board Structure Subindex and EBIT/sales is also significant at roughly 5% in both regressions.

Table 9 is our fourth channel result. *KCGI* as a whole predicts slower growth, as does Ownership Parity Subindex and, less robustly, Board Structure Subindex. Revenue growth is more sensitive to profitability for firms with higher scores on Ownership Parity Subindex and, less robustly, Board Structure Subindex, but not for *KCGI* as a whole. This channel, like the capex channel, is consistent with better governance predicting higher firm value, not just reduced diversion of value by controlling shareholders.

5.5. Growth Opportunities and Profitability

Hutchinson and Gul (2004) report, for Australian firms, a negative direct association in cross-section between growth opportunities and profitability, which is ameliorated by better governance. We implement a fixed-effects variation of their approach in Table 10. Control variables are the same as in Table 9, except we include Tobin's *q* and omit EBIT/sales and

EBIT/assets due to overlap with the dependent variable. In regression (1), higher Tobin's q (our proxy for growth opportunities) predicts higher profitability, measured as EBIT/assets.⁷ In regression (2), we add $KCGI$, which is insignificant.

In Regression (3), we add an interaction between Tobin's q and $KCGI$. The interaction term is positive and significant, consistent with Hutchinson and Gul's principal result. The coefficient of -0.021 on Tobin's q implies that for a hypothetical firm with $KCGI = 0$, higher Tobin's q predicts lower profitability. When we combine this with the +0.0010 coefficient on the interaction term, the association turns positive for firms with $KCGI > 21$, which is well below the sample median for $KCGI$ in the later years of our sample.

Regressions (4)-(5) are similar to regressions (2)-(3), except that we replace $KCGI$ with each subindex separately. In regression (5), the interaction between Board Structure Subindex and Tobin's q is positive and significant; interactions for other subindices are insignificant. Thus, Board Structure Subindex drives the positive interaction between $KCGI$ and Tobin's q in predicting profitability. Regressions (6)-(7) are similar to regressions (4)-(5), except that we use Large Firm *IV 2000* to instrument for Board Structure Subindex. The *IV* results are similar to the non-*IV* results, and provide evidence that the positive interaction between Board Structure Subindex and Tobin's q in predicting profitability is likely to be causal.

The results in Table 10 are our fifth channel result. Governance, in particular better board structure, interacts positively with Tobin's q to predict profitability. This channel, like the capex and sales growth channels, is consistent with better governance predicting higher firm value, not just reduced diversion of value by controlling shareholders.

⁷ The positive coefficient on Tobin's q contrasts to the negative relationship between profitability and growth opportunities found by Hutchinson and Gul. This is not due to our use of firm fixed effects, versus their use of cross-sectional data. In a pooled *OLS* regression with year dummies, otherwise similar to regression (1), Tobin's q takes a coefficient of 0.0113 ($t = 2.59$), very close to the fixed effects coefficient of 0.0122 ($t = 2.61$).

5.6. Board Structure Subindex and Lagged Profitability

We saw in Table 10 that there is no contemporaneous relationship between *KCGI* or subindices and profitability. There is also no lagged relationship for *KCGI* as a whole (regressions not reported). However, as Table 11 shows, there is a relationship between lagged Board Structure Subindex and profitability. In regression (1), we regress EBIT/assets for year t on Board Structure Subindex for year $t-2$. Board Structure Subindex takes a significant positive coefficient. We obtain similar results in regression (2), using Large Firm *IV 2000* to instrument for Board Structure Subindex. In unreported regressions, we obtain similar results if we lag Board Structure Subindex by 1 or 3 years, but only marginal significance for instrumented Board Structure Subindex with a 1-year lag. This is consistent with Black and Kim (2008), who find that large firms' profitability rises relative to small firms beginning in 2003, some time after the 1999 reforms become fully effective in 2001. Dahya and McConnell (2007) report a link in the U.K. between a minimum number of nonexecutive directors and profitability.

Board Structure Subindex is comprised of two subsubindices, for Board Independence and Board Committees (audit, compensation, and nominating committees). In regression (3), we show that board independence is associated with profitability. There is no connection between Board Committee Subsubindex and profitability. This is a sensible result, given the principal functions of these committees.

Table 11, together with the *DiD* results for large firm profitability in Black and Kim (2008), provides evidence of a sixth channel, running from lagged board independence to higher profitability. This channel is consistent with board independence predicting higher firm value, not just reduced diversion of value by controlling shareholders. However, the evidence for this channel is limited, since the channel does not appear to exist for *KCGI* as a whole.

5.7. Dividends

In Table 12, we report evidence on whether *KCGI* is associated with dividend payout. We report results for dividends/sales, but in unreported regressions obtain similar results for

dividends/assets. In an unreported regression of dividends/sales on EBIT/sales and other control variables (dropping EBIT/assets as a control variable), the coefficient on EBIT/sales is positive but insignificant (coeff. = 0.00024, $t = 1.06$), indicating little if any overall relationship between dividends and profits. In regression (1), higher *KCGI* predicts higher dividends, controlling for profitability with EBIT/sales and EBIT/assets as separate control variables. The 0.00008 coefficient on *KCGI* implies that a worst-to-best change in *KCGI* (roughly 80 points) predicts a 0.006 increase Dividend/Sales, comparable to the sample median of 0.005.

In Regression (2), we find a positive interaction between *KCGI* and EBIT/sales, in predicting dividends/sales. Thus, dividends are more sensitive to profits for better governed firms.

In regressions (3)-(4), we assess which subindices drive these results. In regression (3), we replace *KCGI* with each subindex separately; in regression (4), we add the interactions between each subindex and EBIT/sales. Disclosure is the only significant subindex in regression (3); Disclosure and Ownership Parity have positive interactions with EBIT/sales in regression (4). Board Structure Subindex and the other subindices are insignificant. Results for instrumented board structure are similar to the non-IV results we report.

These results are our seventh channel: Higher *KCGI* predicts both higher dividends on average, controlling for profits, and greater sensitivity of dividends to profits, with Disclosure Subindex as the principal subindex that generates these results. Dividend payout could be associated with higher firm value, not just higher value of minority shares, to the extent it results in increased capital market discipline on the managers of more profitable firms.

6. Conclusion

We develop a broad Korean corporate governance index (*KCGI*) index, and extend the cross-sectional results in Black, Jang and Kim (2006), to a multiyear, firm fixed effects framework: Higher *KCGI* predicts higher firm market value. This result is driven principally by Board Structure Subindex and, to a lesser extent, by Ownership Parity and

Disclosure subindices. The board structure results become stronger if we instrument for Board Structure Subindex using as an instrument a 1999 legal shock to the board structures of large firms, suggesting that the board structure results are likely to be causal for large firms.

We then investigate the channels through which governance might produce either (i) higher firm *market* value without higher overall firm value, through reduced private benefits flowing to insiders; or (ii) more efficient operation, and hence an increase in overall firm value. We find evidence of both effects. We find evidence for a number of potential channels. For firms with higher *KCGI*: (i) related party transactions are less adverse to firm value; (ii) firm profitability is more sensitive to shocks to industry profitability, suggesting reduced tunneling by insiders; (iii) capital expenditures are lower (against background evidence that many Korean firms overinvest), but investment is more sensitive to profitability and growth opportunities; (iv) sales growth is lower; (v) profitability is more sensitive to growth opportunities; (vi) lagged board structure (but not *KCGI* as a whole) predicts higher profitability; and (vii) dividends are higher, controlling for profits, and are more sensitive to profits. The first two channels are consistent with governance producing reduced insider tunneling of profits; the remainder are consistent with governance producing higher overall firm value.

Board Structure Subindex is associated with all except the last channel. The board structure results survive if we instrument for Board Structure Subindex, which provides evidence on causality. Ownership Parity is associated with the third, fourth, and sixth channels, and disclosure with the sixth. The Shareholder Rights and Board Procedure subindices of *KCGI* are not associated with overall firm market value, nor with these channels. The connection between which subindices which predict firm market value, and which predict specific channels, is consistent with these channels underlying at least part of the overall relationship between governance and firm market value.

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Figure 1: Distribution of Korean Corporate Governance Index, *KCGI*

Histogram of distribution of *KCGI* scores in 1998 and in 2004 for firms in our balanced panel. Normal curves are superimposed. Summary statistics for *KCGI* in 1998 and in 2004 are shown in *Table 3*.

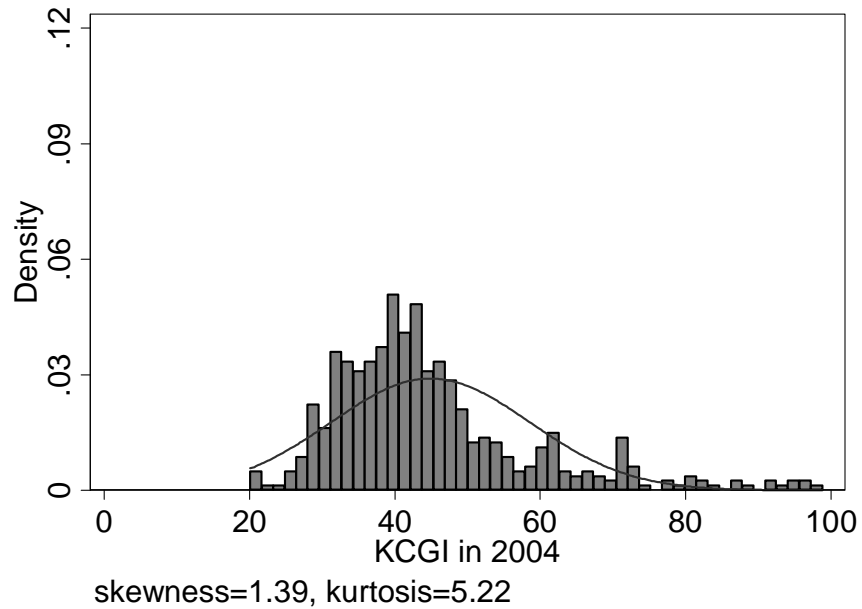
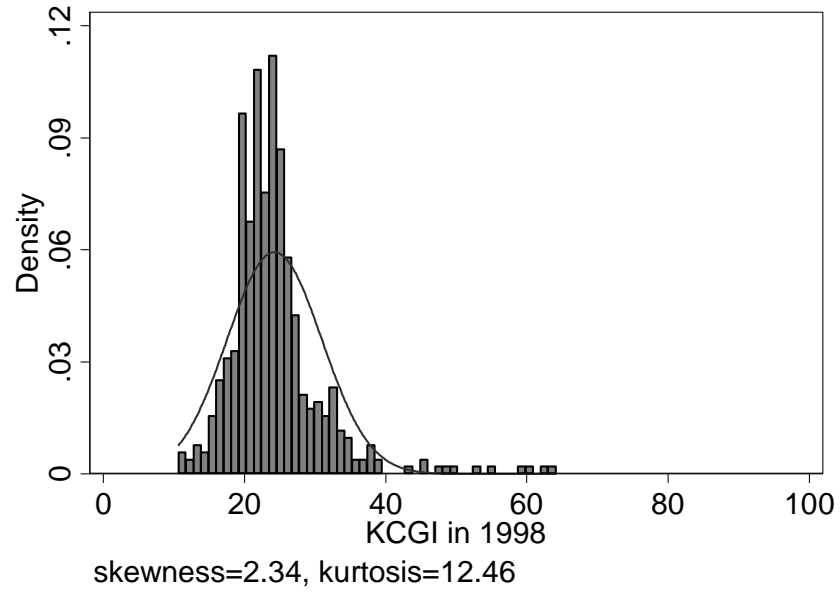
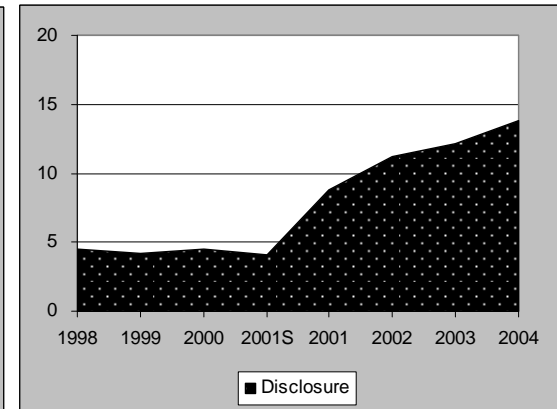
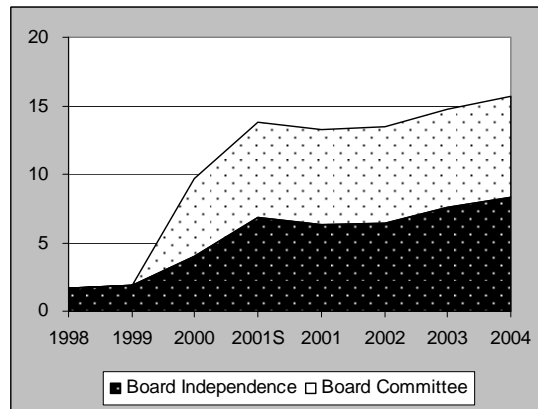
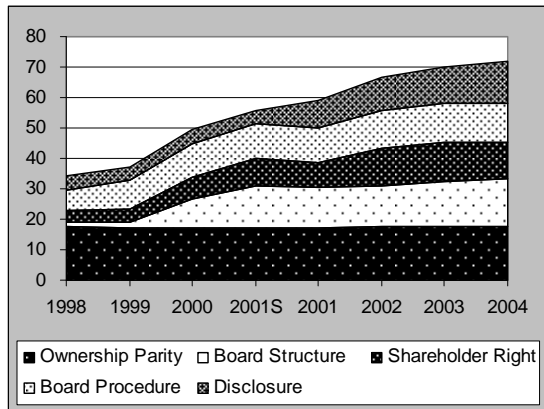


Figure 2: Change in *KCGI* and its Subindices over Time

The left set of charts show mean values of *KCGI* and each component index from 1998 to 2004, separately for large firms (book asset value above 2 trillion won) and small firms. The middle set provides an expanded view of Board Structure Subindex, and its component sub-subindices, for Board Independence and Board Committees.. The right set provides an expanded view of Disclosure Index.

Large Firms



Small Firms

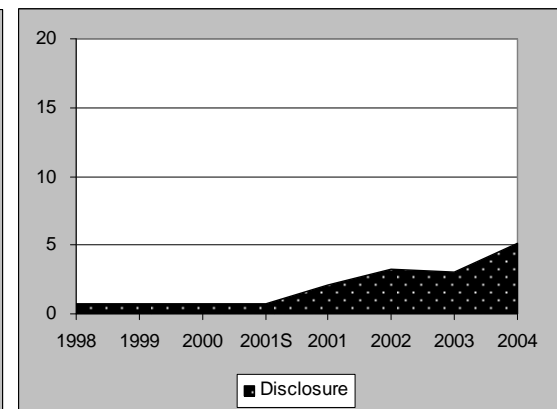
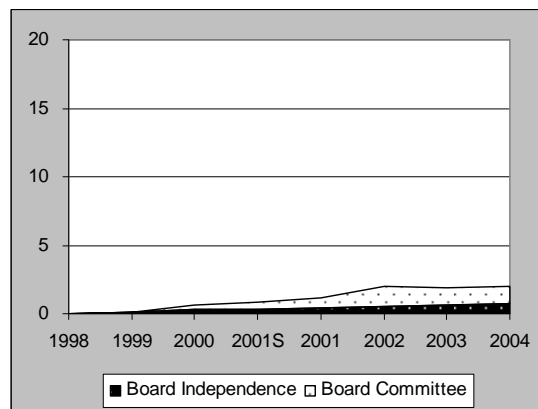
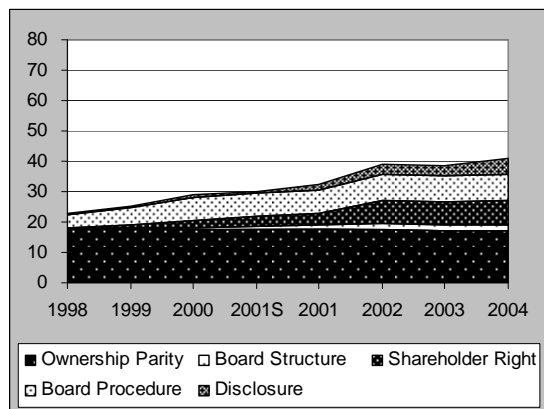


Table 1: Construction of KCGI, 1998-2004

This table shows (i) the governance elements used to construct *KCGI*. (ii) data sources; and (iii) the rules we use to fill in missing information. Element labels are consistent with Black, Jang, and Kim (2006) (shown in mid-2001 Regression). Data sources are: director database, ownership database, annual surveys by the Korea Corporate Governance Service (KCGS) beginning spring 2001, and hand-collection. KCGS surveys are in spring of each year and provide end-of-prior-year information, except as shown. We *extrapolate for missing elements* as follows: (i) if an element is available in year X, but not in year X+1 (X-1), we extrapolate year X value to year X+1 (X-1). We *interpolate for missing firms and missing elements* using the following rules applied sequentially: (i) if a firm answers the KCGS survey in years X and X+2, but not year X+1, we use in year X+1 the average of the X and X+2 values; and (ii) if an element is available in years X and X+2, but not year X+1, we use in year X+1 the average of the X and X+2 values. We assume elements are present if they are legally required. *Italics* indicate legally required elements.

For hand-collection, we generally collect values in year X only for firms which had this governance element in year X+1. Thus, for compensation committee, we have KCGS data starting in 2002. We hand collect data for 2001 for firms which had this committee in 2002, collect data for 2000 for firms which had this committee in 2001, etc. For some elements, a change in KCGS methodology led to inconsistency between responses for different years. For these questions, we either replace a 1 value in year X with 0 if the X+1 value is 0, or replace a 0 value in year X with 1 if the X+1 value was 1, as seemed appropriate given the nature of the element. Details on these and other adjustments to the KCGS raw data are available from the authors on request.

Date	1998-2000	mid-2001	2001	2002	2003	2004
Shareholder Rights Index (A)						
Firm permits cumulative voting for election of directors.	hand-collect	A1	I-3-①	1-(16)	1-A-(4)	1-A-(4)
Firm permits voting by mail.	hand-collect	A2	I-3-②	1-(17)	1-A-(5)	1-A-(5)
Firm discloses director candidates to shareholders in advance of shareholder meeting.	hand-collect	A4	I-9-③	<i>required</i>	<i>required</i>	<i>required</i>
Board approval required for related party transactions (<i>required 2000 for top 10 chaebol, mid-2001 for all chaebol, 2001 on for large and chaebol firms</i>)	hand-collect	A5	II-2-6-①	same as 2001	same as 2001	same as 2001
Board Structure Index (B)						
Firm has at least 50% outside directors (<i>rule adopted 1999 required beginning mid-2001 for large firms</i>)	director database	B1	I-2-③, II-2-1	<i>director database</i>	2-A-(1)	2-A-(1)
Firm has more than 50% outside directors (director database except as indicated)	director database	B2	I-2-③, II-2-1	1 for large firms if 1 in 2003 or 2-A-(1) ≥ 2	2-A-(1) for large firms	2-A-(1) for large firms
Firm has outside director nominating committee (<i>rule adopted 1999, required from mid-2001 for large firms</i>).	hand-collect	B3	II-3-4	2-B-(12), 2-B-(13)	2-A-(9)	2-A-(9)
Audit committee of the board of directors exists (<i>rule adopted 1999, required from mid-2001 for large firm</i>)	hand-collect	B4	I-6-①	4-(1)	4-(1)	4-(1)
firm has compensation committee	hand-collect	hand-collect	hand-collect	hand-collect	2-A-(10)	2-A-(10)
Board Procedure Index (C)						
Directors' positions on board meeting agenda items are recorded in board minutes.	hand-collect	C2	II-2-6-②	2-B-(4)	2-B-(21)	same as 2003
Board chairman is an outside director or (from 2003) firm has	0 firms	C3 (0 firms)	hand collect	hand collect	2-A-(5)	2-A-(5)

Date	1998-2000	mid-2001	2001	2002	2003	2004
outside director as lead director.						
A system for evaluating directors exists.	hand-collect	C4	II-2-6-④	same as 2001	2-B-(39)	2-B-(34)
A bylaw to govern board meetings exists.	hand-collect	C5	average of mid-2001 and 2003	2-B-(18)	2-B-(16)	same as 2003
Firm holds four or more regular board meetings per year.	hand-collect	C6	I-4-②, II-2-3-①	2-B-(1)	2-B-(19)	2-B-(20)
Firm has one or more foreign outside directors.	hand-collect	C7	director database	2-A-(10)	2-A-(6)	2-A-(6)
Shareholders approve outside directors' aggregate pay (separate from all directors' pay).	hand-collect	C11	same as mid-2001	same as 2003	2-B-(30)	same as 2003
Outside directors attend at least 70% of meetings, on average	same as mid-2001 [missing if 0 outside directors]	C12	I-1	2-A-(2)	2-B-34	2-B-(30)
Board meeting solely for outside directors exists.	hand-collect	C15	II-3-15-③	2-A-(3)	2-B-(35)	2-B-(31)
100% outside directors on audit committee	same as mid-2001 [if committee exists]	D1	II-4-1	4-(2)	4-(2)	4-(2)
Bylaws governing audit committee (or internal auditor) exist.	hand-collect	D2	average of mid-2001 and 2002	4-(3)	4-(3)	4-(3)
Audit committee includes person with expertise in accounting	hand-collect	D3	II-4-2	average of 2001 and 2003	4-(10)	4-(11)
Audit committee (or internal auditor) approves the appointment of the internal audit head.	hand-collect	D5	average of mid-2001 and 2002	4-(4)	4-(4)	4-(5)
Audit committee meets ≥ 4 times per year	hand-collect	D10	I-6-②, II-4-7-①	4-(7)	4-(7)	4-(7)
Disclosure Index (E)						
Firm conducted investor relations activity in year 2000	same as mid-2001	E1	II-1-5	3-(1)	3-(1)	3-A-(1)
Firm website includes resumes of board members	same as mid-2001	E2	average of mid-2001 and 2002	3-(9)	3-(9)	3-B-(21)
English disclosure exists	same as mid-2001	E3	average of mid-2001 and 2002	3-(15)	3-(14)	3-A-(13)
Ownership Parity (P)						
Ownership Parity = (1 - ownership disparity); disparity = ownership by all affiliated shareholders - ownership by controlling shareholder and family members	ownership database (same as mid-2001 for financial firms)	P (ownership database)	ownership database (same as mid-2001 for financial firms)	ownership database (same as mid-2001 for financial firms)	same as 2002	same as 2002

Table 2: Summary Statistics for *KCGI* and its Subindices

Panel A

This table presents number of observations, sample mean, and other statistics for *KCGI*, its subindices, and *IV*, by year, for the unbalanced panel.

Index	Year	Obs.	Mean			Median	Std. Dev.	Min	Max
			All	Large	Small				
<i>KCGI</i>	1998	484	24.23	33.17	23.05	23.33	6.72	10.62	64.10
	2000	535	31.54	49.55	28.82	29.18	10.47	7.76	84.80
	2002	466	43.05	58.56	32.51	39.73	13.64	14.00	97.14
	2004	512	44.89	72.07	40.80	42.03	13.74	20.10	98.82
Board Structure	1998	511	0.25	1.69	0.03	0.00	1.54	0.00	10.00
	2004	513	3.81	15.75	2.01	0.00	5.83	0.00	20.00
Ownership Parity	1998	516	17.63	17.51	17.64	18.89	2.97	3.63	20.00
	2004	520	17.03	17.41	16.98	18.69	3.60	4.20	20.00
Disclosure	1998	523	1.17	4.48	0.71	0.00	3.15	0.00	20.00
	2004	521	6.30	13.82	5.17	6.67	5.87	0.00	20.00
Board Procedure	1998	535	4.56	6.65	4.22	4.44	2.82	0.00	17.50
	2004	521	9.10	12.78	8.55	9.09	2.99	1.43	18.82
Shareholder Rights	1998	516	0.82	3.74	0.36	0.00	2.89	0.00	20.00
	2004	521	8.65	12.03	8.14	6.67	3.23	5.00	20.00

Panel B

This table presents Pearson correlation coefficients for *KCGI*, its subindices, and *IV*. *, **, and *** indicate significance at 10%, 5%, and 1% levels

	<i>KCGI</i>	Board Structure	Ownership Parity	Disclosure	Board Procedure	Shareholder Rights	Large Firm <i>IV</i> 2000
<i>KCGI</i>	1.00						
Board Structure	0.78***	1.00					
Ownership Parity	0.20***	0.01	1.00				
Disclosure	0.74***	0.44***	-0.03**	1.00			
Board Procedure	0.70***	0.50***	-0.07***	0.40***	1.00		
Shareholder Rights	0.75***	0.45***	-0.02	0.43***	0.46***	1.00	
Large Firm <i>IV</i> 2000	0.65***	0.78***	-0.01	0.43***	0.43***	0.37***	1.00

Table 3: Other Variables

Definition and summary statistics for the principal dependent and independent variables used in this paper. *Panel A* defines each variable and *Panel B* provides summary statistics. Book asset values are in billion won. Book and market values are measured at year end, except that market values for mid-2001 are measured on the last day of June.

Panel A: Variable Definitions

Variables	Descriptions
Tobin's q	Estimated as [(book value of debt + preferred stock) + market value of common stock]/[book value of assets]. Book values are measured at year-end.
Years Listed	Number of years since original listing on Korea Stock Exchange
Leverage	(Book value of debt)/ (Market value of common stock), winsorized at 99%
Sales Growth (5 yrs)	Geometric average growth rate of sales during the past 5 fiscal years (or the available period if less). If fiscal year changes, we keep only years which cover a full 12 months winsorized at 1%/99%
Sales Growth (1 yr)	Fractional growth in sales during the past year, winsorized at 1%/99%
R&D/Sales	Ratio of research and development (R&D) expense to sales. Firms with missing data for R&D expense are assumed to have 0 values.
Advertising/Sales	Ratio of advertising expense to sales. Firms with missing data for advertising expense are assumed to have 0 values.
Exports/Sales	Ratio of export revenue to sales. Firms with missing data for export revenue are assumed to have 0 values.
PPE/Sales	Ratio of property, plant, and equipment to sales.
Capex/assets	Ratio of capital expenditures to assets
Capex/PPE	Ratio of capital expenditures to PPE
EBIT/Sales (Assets)	Ratio of earnings before interest and taxes to sales (assets), winsorized at 1%/99%.
Market Share	Firm's share of total sales by all firms in the same 4-digit industry listed on KSE.
Share Turnover	[Common shares traded during the year / publicly held shares, winsorized at 99%. The denominator is defined as [common shares outstanding x (1 – total affiliated ownership)]
Foreign Ownership	[common shares held by foreign investors / common shares outstanding]
Sole Ownership	[Number of common shares held by group controlling shareholder and family members / Number of common shares outstanding]
Related-Party Transactions	Sum of sales to and purchases from related-parties divided by total sales; winsorized at 99%
Industry EBITDA/assets	(EBITDA summed across all other firms in the same 4-digit industry)/(assets summed across all other firms in the same 4-digit industry).
Dividends/assets	Dividends during the current fiscal year divided by year-end assets. Missing values are treated as zero.
Dividend/Sales	Dividends during the current year/ same year sales. Missing values treated as zero.
Large Firm IV 1999 (2000)	Large firm IV 1999 (2000) equals 1 firm's book value of assets > 2 trillion won and year is 1999 (2000) or later, 0 otherwise.
Chaebol Dummy	1 if a member of one of the top-30 business groups (based on total group assets) as of April of each year as identified by Korea Fair Trade Commission; 0 otherwise. We treat former state-owned enterprises as non-chaebol firms.
Level 1 (2/3) ADR Dummy	1 if firm has level 1 (level 2 or 3) American Depository Receipts (ADRs); 0 otherwise.
MSCI Index Dummy	1 if firm is in Morgan Stanley Capital International Index; 0 otherwise.
SOE Dummy	1 if firm is or was a State Owned Enterprise subject to early adoption of governance reform; 0 otherwise
Bank Dummy	1 if firm is a commercial bank or a merchant bank; 0 otherwise

Panel B: Summary Statistics for Selected Variables

	No. of Obs.	No. of "1" values	Mean	Median	Standard Deviation	Minimum	Maximum
Tobin's q	4231	-	0.86	0.80	0.39	0.21	6.05
$\ln(\text{Tobin's } q)$	4231	-	-0.21	-0.22	0.35	-1.55	1.80
Book value of assets	4234	-	1803	216	8323	2.02	184000
Years Listed	4234	-	15.34	13.00	9.61	0.00	48.00
Leverage	4231	-	33.43	2.40	1773.84	0.01	115000
Sales Growth (5 yrs)	4204	-	0.271	0.077	8.52	-0.65	541.25
Sales Growth (1 yr)	4204	-	0.32	0.06	9.16	-0.98	541.25
R&D/Sales	4259	-	0.013	0.002	0.13	0.00	7.69
Advertising/Sales	4259	-	0.008	0.001	0.019	0.00	0.21
Exports/Sales	4259	-	0.265	0.122	0.304	0.00	1.00
PPE/Sales	4259	-	0.512	0.387	0.774	0.00	32.21
Capex/assets	4234	-	0.041	0.025	0.05	0.00	0.53
Capex/PPE	4234	-	0.140	0.087	0.20	0.00	7.73
EBIT/Sales	4232	-	0.038	0.057	0.517	-30.78	0.97
EBIT/assets	4234	-	0.045	0.048	0.080	-1.03	0.55
Market Share	4234	-	0.065	0.011	0.157	0.00	1.00
Share Turnover	4251	-	14.53	4.49	326.41	0.00	17332
For Ownership	4142	-	8.16	1.00	14.40	0.00	94.11
Sole Ownership	4259	-	19.39	19.29	16.61	0.00	78.81
Related-Party Transactions	3509	-	0.185	0.08	0.25	0.00	1.11
Industry EBITDA/assets	4246	-	0.054	0.055	0.05	-0.31	1.00
Dividends/assets	4234	-	0.007	0.004	0.011	0.00	0.16
Dividends/Sales	4232	-	0.011	0.005	0.029	0.00	0.81
Large Firm <i>IV</i> 1999	4259	478	0.112	0.00	0.316	0.00	1.00
Large Firm <i>IV</i> 2000	4259	413	0.097	0.00	0.296	0.00	1.00
<i>Chaebol</i> Dummy	4259	837	0.197	0.00	0.397	0.00	1.00
Level 1 ADR Dummy	4259	128	0.03	0.00	0.171	0.00	1.00
Level 2/3 ADR Dummy	4259	39	0.009	0.00	0.095	0.00	1.00
MSCI Index Dummy	4259	491	0.115	0.00	0.319	0.00	1.00
SOE Dummy	4259	42	0.01	0.00	0.099	0.00	1.00
Bank Dummy	4259	107	0.025	0.00	0.157	0.00	1.00

Table 4: Corporate Governance and Firm Value

Firm fixed effects and random effects regressions of $\ln(\text{Tobin's } q)$ on *KCGI*, its subindices, and other control variables. Regressions (6)-(7) use large firm *IV 1999* (= 1 if firm is large and year is 1999 or later, 0 otherwise) to instrument for Board Structure Subindex. Outliers are identified each year and dropped if the studentized residual from a regression of firm value on *KCGI* is greater than ± 1.96 . All regressions use unbalanced panels (except as shown), year fixed effects, firm clusters, and White's heteroskedasticity-consistent standard errors. Random effects regressions use 4-digit industry fixed effects. Pseudo R^2 refers to within R^2 for fixed effects model and overall R^2 for random effects model. *t*- or *z*-values are reported in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1% levels. Significant results (at 5% level or better) are shown in **boldface**.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable	<i>ln(Tobin's q)</i>					Board Structure	<i>ln(Tobin's q)</i>
Stage (for 2SLS)						1st stage	2nd stage
Fixed or random effects	Fixed	Fixed (balanced)	Random	Fixed	Random	Fixed	Fixed
<i>KCGI</i>	0.0035*** (5.27)	0.0032*** (3.74)	0.0044*** (7.23)				
<i>Board Structure</i>				0.0093*** (6.63)	0.0099*** (7.50)		
<i>Instrumented Board Structure</i>							0.0143*** (3.31)
<i>Ownership Parity</i>				0.0008 (0.27)	0.0053** (2.29)	0.0485 (1.14)	0.0005 (0.17)
<i>Disclosure</i>				0.0033** (2.23)	0.0039*** (2.87)	0.0680*** (2.62)	0.0028* (1.86)
<i>Board Procedure</i>				0.0014 (0.63)	0.0021 (1.08)	0.0484 (1.34)	0.0011 (0.47)
<i>Shareholder Rights</i>				-0.0007 (0.57)	-0.0003 (0.23)	0.0563** (2.46)	-0.0011 (0.80)
<i>Large Firm IV 1999</i>						5.4527*** (8.80)	
<i>ln(assets)</i>	-0.0511** (2.57)	-0.0263 (0.74)	-0.0353*** (4.67)	-0.0512*** (2.67)	-0.0379*** (4.94)	-0.2607 (0.66)	-0.0522*** (2.65)
<i>ln(years listed)</i>	-0.0901*** (2.91)	-0.1837*** (3.02)	-0.0574*** (6.28)	-0.0836*** (2.74)	-0.0572*** (6.20)	-0.4172 (0.86)	-0.0791** (2.47)
Leverage	-0.0000*** (3.95)	-0.0000*** (2.74)	-0.0000*** (4.46)	-0.0000* (1.85)	-0.0000*** (2.87)	-0.0001*** (18.75)	-0.0000 (0.56)
Sales Growth	-0.0002 (1.49)	0.0022 (0.05)	-0.0001 (1.02)	-0.0001 (0.50)	-0.0001 (0.53)	-0.0160*** (11.61)	0.0000 (0.03)
R&D/Sales	0.0132* (1.82)	0.0144** (2.47)	0.0201*** (3.45)	0.0136* (1.87)	0.0208*** (3.60)	-0.0542 (0.46)	0.0142** (2.21)
Advertising/Sales	0.7579 (1.25)	0.7234 (1.15)	0.9127** (2.06)	0.7394 (1.22)	0.9172** (2.06)	-1.3691 (0.25)	0.7501 (1.23)
Exports/Sales	-0.0862** (2.39)	-0.0260 (0.56)	-0.0241 (1.03)	-0.0849** (2.40)	-0.0251 (1.08)	0.2349 (0.54)	-0.0851** (2.35)
PPE/Sales	-0.0178 (0.99)	-0.0863*** (2.76)	-0.0312** (2.01)	-0.0151 (0.84)	-0.0285* (1.84)	-0.3912* (1.68)	-0.0129 (0.71)
PPE/Sales ²	0.0002 (0.25)	0.0055*** (2.62)	0.0006 (1.30)	0.0001 (0.13)	0.0006 (1.13)	0.0131* (1.65)	0.0000 (0.00)
Capex/PPE	0.0443* (1.69)	0.0622* (1.71)	0.0634** (2.48)	0.0501* (1.92)	0.0710*** (2.76)	-0.5984 (1.62)	0.0555** (2.05)
EBIT/Sales	-0.0131** (2.20)	-0.0169 (0.27)	-0.0162** (2.52)	-0.0134** (2.15)	-0.0163** (2.49)	0.0682 (0.98)	-0.0136** (2.39)
EBIT/assets	0.1666** (1.97)	0.3803* (1.81)	0.0847 (1.07)	0.1645* (1.95)	0.0896 (1.14)	-0.0090 (0.01)	0.1639* (1.95)
Market Share	0.2437*** (3.13)	0.1495 (1.13)	0.1646*** (2.91)	0.2398*** (3.17)	0.1694*** (3.09)	0.8570 (0.66)	0.2337*** (2.98)

Share Turnover	0.0000** (2.49)	0.0000*** (2.73)	0.0000*** (2.62)	0.0000 (1.14)	0.0000 (1.31)	0.0005*** (28.25)	0.0000 (0.09)
Foreign Ownership	0.0027*** (4.18)	0.0036*** (3.94)	0.0024*** (4.08)	0.0026*** (4.03)	0.0023*** (4.00)	0.0187** (2.10)	0.0024*** (3.67)
Sole Ownership	-0.0019 (1.05)	-0.0010 (0.39)	-0.0030** (2.15)	-0.0013 (0.74)	-0.0029** (2.09)	-0.0317 (1.48)	-0.0012 (0.63)
Sole Ownership ²	0.0000 (0.02)	0.0000 (0.05)	0.0000 (0.07)	-0.0000 (0.14)	-0.0000 (0.00)	0.0005 (1.44)	-0.0000 (0.21)
<i>Chaebol</i> Dummy			0.0343** (2.03)		0.0454*** (2.58)		
ADR (1) Dummy			0.0545 (1.48)		0.0259 (0.76)		
ADR (2,3) Dummy			0.0794 (0.88)		0.0612 (0.73)		
<i>MSCI</i> Index Dummy			0.0192 (1.08)		0.0203 (1.18)		
Bank Dummy			0.0150 (0.35)		0.0097 (0.23)		
SOE Dummy			-0.0893 (1.24)		-0.0985 (1.36)		
Constant	yes	yes	yes	yes	yes	yes	yes
4-digit Industry Dummies	no	No	yes	no	yes	no	no
Observations	3845	1957	3845	3845	3845	3845	3845
No. of Firms	685	265	685	685	685	685	685
Pseudo R ²	0.2035	0.2606	0.2404	0.2139	0.2452	0.3517	0.2006
Weight on within estimator			0.6936		0.6953		
Hausman Test <i>p</i> -value			0.0000		0.0000		

Table 5: Corporate Governance, Related-Party Transactions, and Firm Value

Firm fixed effects regressions of $\ln(\text{Tobin's } q)$ on $KCGI$, its subindices, (related-party (RP) purchases + sales)/total sales, interaction terms, and control variables. Observations are identified as outliers and excluded if a studentized residual from yearly regressions of the dependent variable on $KCGI$ is greater than ± 1.96 . Other control variables are the same as in Table 4, regression (1). Regression (4) uses large firm IV 1999 to instrument for Board Structure Subindex. In the first stage regression, large firm IV 1999 takes a coefficient of 7.43 ($t = 9.40$). *, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels. All regressions use unbalanced panels, year dummies, and firm clusters. t -values, based on White's heteroskedasticity-consistent standard errors, are in parentheses. Significant results (at 5% level or better) are shown in **boldface**.

Dependent var.: $\ln(\text{Tobin's } q)$	(1)	(2)	(3)	(4)
2SLS regression	no	no	no	yes
<i>KCGI</i>		0.0017* (1.89)		
x RP Transactions/sales		0.0036** (2.28)		
Board Structure Subindex			0.0061** (2.27)	
x RP Transactions/sales			0.0067 (0.95)	
Instrumented Board Structure Subindex				0.0076 (1.60)
x RP Transactions/sales				0.0271*** (2.71)
RP Transactions/sales	-0.074*** (2.54)	-0.206** (3.22)	-0.160 (1.23)	0.005 (0.03)
x $\ln(\text{assets})$				-0.0159 (0.75)
Ownership Parity Subindex	N	N	Y	Y
Ownership Parity x RP Transactions/sales	N	N	Y	Y
Other subindices of <i>KCGI</i>	N	N	Y	Y
Other subindices x RP Transactions/sales	N	N	Y	Y
Constant, other control variables	Y	Y	Y	Y
No. of Observations	3157	3157	3157	3157
No. of firms	571	571	571	571
Within R ²	0.2334	0.2413	0.2484	0.2510

Table 6: Corporate Governance and Tunneling

Firm fixed effects regressions of EBITDA/assets on industry EBITDA/assets, *KCGI* (it subindices), $\ln(\text{assets})$, and interaction terms. Regression design is adapted from Bertrand, Mehta and Mullainathan (2002). Industry EBITDA/assets = (EBITDA summed across all other firms in the same 4-digit industry)/(assets summed across all other firms in the same 4-digit industry). Regression (4) uses large firm *IV* 2000 (= 1 if firm is large and year is 2000 or later, 0 otherwise) to instrument for Board Structure Subindex. In the first stage for this regression, large firm *IV* 2000 takes a coefficient of 11.79 ($t = 15.59$). Observations are identified as outliers if a studentized residual from regressing the dependent variable on *KCGI* is greater than ± 1.96 . All regressions use unbalanced panels, year dummies, and firm clusters. t -values, based on White's heteroskedasticity-consistent standard errors, are reported in parentheses. Significant results (at 5% level or better) are shown in **boldface**.

Dependent var.: EBITDA/Assets	(1)	(2)	(3)	(4)
2SLS regression	no	no	no	yes
<i>KCGI</i>		-0.0002 (1.27)		
x Industry EBITDA/assets		0.0042*** (3.59)		
Board Structure Subindex			-0.0004 (1.14)	
x Industry EBITDA/assets			0.0121** (2.33)	
Instrumented Board Structure Subindex				-0.0006 (1.02)
x Industry EBITDA/assets				0.0206*** (3.29)
Industry EBITDA/assets	0.0972*** (3.70)	-0.0495 (0.99)	0.0068 (0.04)	-0.1365 (0.70)
Other subindices of <i>KCGI</i>	N	N	Y	Y
Other subindices x Industry EBITDA/assets	N	N	Y	Y
$\ln(\text{assets})$	Y	Y	Y	Y
$\ln(\text{assets})$ x Industry EBITDA/assets	N	N	N	Y
Constant, other control variables	Y	Y	Y	Y
No. of Observations	4050	4050	4050	4050
No. of firms	692	692	692	692
Within R ²	0.0153	0.0197	0.0279	0.0321

Table 7: *KCGI* and Investment

Firm fixed effects and random effects regressions of capital expenditures(Capex)/assets on *KCGI*, profitability, Tobin's *q*, interaction terms, and control variables. Observations are identified as outliers and excluded if a studentized residual from yearly regressions of Capex/Assets on *KCGI* is greater than ± 1.96 . Control variables are the same as in the basic random effects regression (Table 4, equation 2), except we add Tobin's *q*, omit Capex/PPE due to overlap with the dependent variable, and omit the following variables, which are relevant for firm value, but not necessarily for capital expenditure: share turnover, foreign ownership, ADR dummies, and MSCI dummy. All regressions use unbalanced panels, year dummies, and firm clusters. *, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels. *t*-values, based on White's heteroskedasticity-consistent standard errors, are in parentheses. Significant results (at 5% level or better) are shown in **boldface**.

Dependent var.: Capex/Assets	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Fixed or random effects	fixed	random	fixed	random	fixed	random	fixed	random
<i>KCGI</i>	-0.0002** (2.00)	-0.0002** (2.58)	-0.0002** (2.31)	-0.0002*** (2.94)	-0.0005*** (2.74)	-0.0005*** (3.23)	-0.0005*** (2.88)	-0.0005*** (3.40)
x EBIT/Sales			0.0005* (1.95)	0.0005** (2.25)			0.0005** (2.03)	0.0005** (2.39)
x Tobin's <i>q</i>					0.0003** (2.00)	0.0003** (2.28)	0.0003** (1.99)	0.0003** (2.31)
EBIT/Sales	-0.0002 (0.49)	0.0004 (1.25)	-0.0216* (1.96)	-0.0191** (2.19)	-0.0002 (0.37)	0.0005 (1.31)	-0.0217** (2.03)	-0.0200** (2.33)
Tobin's <i>q</i>	0.0033 (1.36)	0.0043** (2.15)	0.0030 (1.24)	0.0041** (2.05)	-0.0073 (1.18)	-0.0064 (1.19)	-0.0076 (1.22)	-0.0069 (1.26)
Constant, other control variables	Y	Y	Y	Y	Y	Y	Y	Y
No. of observations	3986	3986	3986	3986	3986	3986	3986	3986
No. of firms	695	695	695	695	695	695	695	695
Pseudo R ²	0.0367	0.2986	0.0381	0.2996	0.0387	0.3008	0.0402	0.3019
Hausman test <i>p</i> -value		0.9631		0.9805		0.7988		0.8312

Table 8: KCGI Subindices and Investment

Firm fixed effects and random effects regressions of capital expenditures(Capex)/assets on *KCGI* subindices and control variables. Regressions (3)-(4) are similar to regressions (1)-(2), except we use large firm *IV* 2000 to instrument for Board Structure Subindex. In the first stage for regression (3), large firm *IV* 2000 takes a coefficient of 8.80 ($t = 17.88$). Regressions (5)-(6) are similar to regressions (1)-(2), but add interaction between governance and EBIT/sales; regressions (7)-(8) add interactions between governance and Tobin's q . Observations are identified as outliers if a studentized residual from yearly regressions of Capex/Assets on *KCGI* is greater than ± 1.96 . Control variables are the same as in the previous table. All regressions use unbalanced panels, year dummies, and firm clusters. *, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels. t -values, based on White's heteroskedasticity-consistent standard errors, are in parentheses. Significant results (at 5% level or better) are shown in **boldface**.

Dependent var.: Capex/assets	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2SLS regression	no	no	yes	yes	no	no	no	no
Fixed or random effects	fixed	random	fixed	random	fixed	random	fixed	random
Board Structure Subindex	-0.0007*** (4.73)	-0.0007*** (5.24)			-0.0007*** (4.68)	-0.0007*** (5.22)	-0.0010* (1.86)	-0.0016*** (3.09)
x EBIT/ Sales					0.0002 (0.35)	0.0000 (0.09)		
x Tobin's q							0.0002 (0.45)	0.0009* (1.65)
Instrumented Board Structure Subindex			-0.0010*** (3.39)	-0.0008*** (3.10)				
<i>Ownership Parity</i>	-0.0003 (0.71)	-0.0009*** (3.24)	-0.0002 (0.52)	-0.0007*** (2.82)	-0.0002 (0.63)	-0.0009*** (3.12)	0.0002 (0.23)	-0.0007 (1.33)
x EBIT/ Sales					0.0006 (0.91)	0.0006 (0.85)		
x Tobin's q							-0.0001 (0.13)	0.0001 (0.13)
Other subindices of <i>KCGI</i>	Y	Y	Y	Y	Y	Y	Y	Y
Other subindices and interactions					Y	Y	Y	Y
$\ln(\text{assets})$	Y	Y	Y	Y	Y	Y	Y	Y
Constant, other control vars.	Y	Y	Y	Y	Y	Y	Y	Y
No. of Observations	3986	3986	3986	3986	3986	3986	3986	3986
No. of firms	695	695	695	695	695	695	695	695
Pseudo R ²	0.0414	0.1188	0.0404	0.1122	0.0428	0.1187	0.0441	0.1231
Weight on within estimator		0.6315		0.6293		0.6321		0.6314
Hausman Test p -value		0.0000		0.0000		0.0000		0.0000

Table 9: Corporate Governance and Sales Growth

Firm fixed effects regressions of sales growth (fractional increase in sales in year t , relative to prior year) on governance, profitability, interaction terms, and control variables. Control variables are the same as in the capital expenditure table (Table 7 and 8), except include Capex/PPE and omit sales growth due to overlap with the dependent variable. Regressions (4) and (6) use large firm *IV* 2000 to instrument for Board Structure Subindex. In the respective first stage regressions, large firm *IV* 2000 takes coefficients of 8.64 ($t = 18.99$) and 8.73 ($t = 19.20$). Observations are identified as outliers if a studentized residual from yearly regressions of sales growth on *KCGI* is greater than ± 1.96 . All regressions use unbalanced panels, year dummies, and firm clusters. *, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels. t -values, based on White's heteroskedasticity-consistent standard errors, are in parentheses. Significant results (at 5% level or better) are shown in **boldface**.

Dependent var.: Sales Growth	(1)	(2)	(3)	(4)	(5)	(6)
2SLS regression	no	no	no	yes	no	yes
<i>KCGI</i>	-0.0023** (2.41)	-0.0024** (2.45)				
x EBIT/Sales		0.0032 (0.42)				
Board Structure Subindex			-0.0029 (1.36)		-0.0047** (2.00)	
x EBIT/ Sales					0.0329* (1.95)	
Instrumented <i>Board Structure</i>				-0.0049 (1.30)		-0.0105* (1.94)
x EBIT/ Sales						0.1052** (1.98)
<i>Ownership Parity</i>			-0.0091*** (2.63)	-0.0090*** (2.61)	-0.0081** (2.44)	-0.0086** (2.57)
x EBIT/ Sales					0.0188*** (3.06)	0.0201** (2.06)
Other subindices of <i>KCGI</i>	N	N	Y	Y	Y	Y
Other subindices x EBIT/Sales	N	N	N	N	Y	Y
$\ln(\text{assets})$	Y	Y	Y	Y	Y	Y
$\ln(\text{assets}) \times \text{EBIT/sales}$	N	N	N	N	N	Y
Constant, other control variables	Y	Y	Y	Y	Y	Y
No. of Observations	4110	4110	4110	4110	4110	4103
No. of firms	693	693	693	693	693	693
Within R^2	0.1223	0.1226	0.1237	0.1236	0.1326	0.1426

Table 10: Corporate Governance, Growth Opportunity, and Profitability

Firm fixed effects regressions of EBIT/Assets on *KCGI*, its subindices, Tobin's *q*, interaction terms, and control variables. Regression design is adapted from Hutchinson and Gul (2004). Regressions (5)-(6) use large firm *IV* 2000 to instrument for board structure index. In the first stage regression for regression (5) (not shown), large firm *IV* 2000 takes a coefficient of 8.97 ($t = 19.20$). Observations are identified as outliers and excluded if a studentized residual from yearly regressions of the dependent variable on *KCGI* is greater than ± 1.96 . Control variables are the same as in the sales growth table (Table 9), except we include Tobin's *q* and omit EBIT/sales and EBIT/assets due to overlap with the dependent variable. All regressions use unbalanced panels, year dummies, and firm clusters. *, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels. *t*-values, based on White's heteroskedasticity-consistent standard errors, are in parentheses. Significant results (at 5% level or better) are shown in **boldface**.

Dependent var.: EBIT/assets	(1)	(2)	(3)	(4)	(5)	(6)	(7)
2SLS regression	no	no	no	no	no	yes	yes
<i>KCGI</i>		-0.0001 (0.53)	-0.0010*** (2.91)				
x Tobin's <i>q</i>			0.0010*** (3.06)				
Board Structure Subindex				0.0001 (0.38)	-0.0036*** (3.13)		
x Tobin's <i>q</i>					0.0038*** (3.15)		
Instrumented Board Structure Subindex						0.0004 (0.85)	-0.0044*** (2.78)
x Tobin's <i>q</i>							0.0049*** (2.97)
Tobin's <i>q</i>	0.0122*** (2.61)	0.0122*** (2.60)	-0.0213** (2.34)	0.0121*** (2.60)	0.0049 (0.24)	0.0120** (2.58)	0.0245 (0.83)
Other subindices of <i>KCGI</i>	N	N	N	Y	Y	Y	Y
Other subindices x Tobin's <i>q</i>	N	N	N	N	Y	N	Y
<i>ln</i> (assets)	Y	Y	Y	Y	Y	Y	Y
<i>ln</i> (assets) x Tobin's <i>q</i>	N	N	N	N	N	N	Y
Constant, other control variables	Y	Y	Y	Y	Y	Y	Y
No. of observations	4022	4022	4022	4022	4022	4022	4022
No. of firms	689	689	689	689	689	689	689
Within R ²	0.0999	0.1000	0.1077	0.1005	0.1136	0.1007	0.1123

Table 11: Board Structure and Lagged Profitability

Firm fixed effects regressions of EBIT/assets on lagged Board Structure Subindex (or Board Independence Subindex), remainder of *KCGI*, and control variables. Regression (2) uses Large Firm *IV 2000* to instrument for Board Structure Subindex. In the first stage regression, Large Firm *IV 2000* takes a coefficient of 9.29 ($t = 19.03$). Observations are identified as outliers and excluded if a studentized residual from yearly regressions of EBIT/assets on lagged Board Structure Subindex (regressions (1)-(2)) or lagged Board Independence Subindex (regression (3)) is greater than ± 1.96 . All control variables are lagged, and are the same as in Table 10, except include Tobin's q . 2004 sole ownership data is extrapolated to later years. All regressions use unbalanced panels, year dummies, and firm clusters. *, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels. t -values, based on White's heteroskedasticity-consistent standard errors, are in parentheses. Significant results (at 5% level or better) are shown in **boldface**.

Dependent variable: EBIT/assets	(1)	(2)	(3)
Board Structure Subindex (t-2)	0.0010*** (2.94)		
Instrumented Board Structure Subindex (t-2)		0.0012** (2.15)	
(<i>KCGI</i> – Board Structure Subindex) (t-2)	-0.0002 (1.23)	-0.0003 (1.32)	
Board Independence Subindex (t-2)			0.0018*** (3.30)
(<i>KCGI</i> – Board Independence Subindex) (t-2)			-0.0001 (0.77)
<i>ln</i> (assets)	Y	Y	Y
Constant, other control variables	Y	Y	Y
Observations	3698	3698	3694
Number of firms	667	667	667
within R ²	0.0862	0.0842	0.0854

Table 12: Corporate Governance and Dividend Policy

Firm fixed effects regressions of dividends/sales on *KCGI*, its subindices, profitability, interaction terms, and control variables. Observations are identified as outliers and excluded if a studentized residual from yearly regressions of the dependent variable on *KCGI* is greater than ± 1.96 . Control variables are the same as in Table 8 except include *Capex/PPE*. *, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels. All regressions use unbalanced panels, year dummies, and firm clusters. *t*-values, based on White's heteroskedasticity-consistent standard errors, are in parentheses. Significant results (at 5% level or better) are shown in **boldface**.

Dependent var.: Dividends/Sales	(1)	(2)	(3)	(4)	(5)
<i>KCGI</i>		0.00008** (2.21)	0.0000 (1.20)		
x EBIT/sales			0.0007*** (4.98)		
Board Structure Subindex				-0.0000 (0.20)	-0.0000 (0.26)
x EBIT/sales					-0.0001 (0.34)
Ownership Parity Subindex				0.0001 (0.99)	0.0001 (0.75)
x EBIT/sales					0.0005** (2.06)
Disclosure Subindex				0.0003*** (3.24)	0.0002** (2.36)
x EBIT/sales					0.0012*** (4.50)
Other subindices of <i>KCGI</i>	N	N	N	Y	Y
Other subindices x <i>EBIT/sales</i>	N	N	N	N	Y
<i>ln</i> (assets)	Y	Y	Y	Y	Y
Constant, other control variables	Y	Y	Y	Y	Y
No. of observations	4083	4083	4083	4083	4083
No. of firms	692	692	692	692	692
Within R ²		0.0755	0.0964	0.0835	0.1113