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This paper contributes to a new literature on the factors that affect firms' corporate governance practices. We find that regulatory factors are highly important, largely because Korean rules impose special governance requirements on large firms (assets > 2 trillion won). Industry factors, firm size, and firm risk are also important. Other firm-specific factors only modestly affect governance even when they are statistically significant. This suggests that many Korean firms do not choose their governance to maximize share price. Among firmspecific factors, the most significant are size (larger firms are better governed) and firm risk (riskier firms are better governed). Long-term averages of profitability and equity finance need are significant, where short-term averages are not. This is consistent with "sticky governance," in which firms alter their governance slowly in response to economic factors.

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Abstract

This paper contributes to a new literature on the factors that affect firms' corporate governance practices. We find that regulatory factors are highly important, largely because Korean rules impose special governance requirements on large firms (assets > 2 trillion won). Industry factors, firm size, and firm risk are also important. Other firm-specific factors only modestly affect governance even when they are statistically significant. This suggests that many Korean firms do not choose their governance to maximize share price. Among firm-specific factors, the most significant are size (larger firms are better governed) and firm risk (riskier firms are better governed). Long-term averages of profitability and equity finance need are significant, where short-term averages are not. This is consistent with "sticky governance," in which firms alter their governance slowly in response to economic factors.

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1. Introduction

This paper contributes to a new line of research that investigates the factors that influence firms' corporate governance practices (*governance prediction* studies). These studies are related to studies that assess whether an overall governance index predicts firm value (*governance-to-value studies*). Recent governance-to-value studies provide evidence that, in emerging markets, overall governance can influence market values. This should give firms an incentive to improve their governance. Yet similar firms often make very different governance choices. Thus, we need to better understand the factors that predict firms' governance choices.

As a governance measure, we rely on the Korean corporate governance index (*KCGI*), constructed, and tested for power to predict Tobin's q, in the Black, Jang and Kim (2006) governance-to-value study. We ask what factors predict Korean firms' governance practices. We study the relative importance of regulatory, industry, and firm-level factors. Regulatory factors are highly important for large firms (assets > 2 trillion won), because Korean rules impose special governance requirements on these firms. For small firms, industry factors are moderately important. However, the only reliably important firm-specific predictors of firm governance are firm size (larger firms are better governed) and firm risk, proxied by standard deviation of share returns (riskier firms are better governed). Overall, our results suggest that many Korean firms do not choose their governance to maximize share price, perhaps because they are not seeking to raise equity capital, because insiders do not understand the link between governance and share prices, or because other factors (such as desire to capture private benefits), outweigh interest in share price.

We also find some evidence of "sticky governance," with firms changing their governance slowly in response to economic conditions. In particular, long-term measures of profitability

(equity finance need) predict worse (better) governance, while short-term averages of these variables are insignificant.

Four contemporaneous governance prediction studies are related to this paper. One, by Gillan, Hartzell and Starks (2004), studies U.S. firms. The other three, by Durnev and Kim (2005), Klapper and Love (2004) and Doidge, Karolyi and Stulz (2004a) are multi-country studies of firms' governance choices, primarily in emerging markets. In contrast, this paper offers a case study of a single important emerging market. The case study and multicountry approaches each have advantages and limits. We believe that both can contribute to our knowledge of how firms make governance choices.

Multicountry approach: The multicountry approach offers access to a wide variation in governance practices, plus access to a larger sample. Generalizability to other countries is not a concern. However, the two available indices cover only the largest firms in each country and, in governance-to-value studies, are fairly weak predictors of firm value. The available firm-level control variables are limited and country dummy variables dominate firm-level variables in importance (Doidge, Karolyi and Stulz, 2004a).

Case study approach: As a case study locus, Korea has important advantages. The *KCGI* index is a strong predictor of firm value; good data availability lets us use a rich set of firm-level control variables; and we are able to study the governance of small firms. On the other hand, some aspects of governance vary little in Korea and hence cannot effectively be studied. Also, any case study raises the issue of generalizability.

This paper proceeds as follows. *Part 2* reviews the related literature, and discusses the value and limits of single-country versus multi-country approaches. *Part 3* discusses our data set, the construction of *KCGI*, and the principal econometric issues we face. *Part 4* provides an

overview of regulatory, industry, and firm-specific factors that predict *KCGI*.   *Part 5* discusses the evidence on sticky governance, *Part 6* discusses industry effects.   *Part 7* concludes.[1]

2.   Related Literature

2.1. Governance-Prediction Studies

Our research is related to multicountry governance prediction studies by Durnev and Kim (2005), Klapper and Love (2004) and Doidge, Karolyi, and Stulz (2004a).   Durnev and Kim (2005) present a model in which firms that need to raise capital improve their governance. They find that firm growth, need for equity finance, and inside ownership predict better governance.   However, Doidge, Karolyi and Stulz (2004a) do not confirm these results. Klapper and Love (2004) report that capital intensity predicts worse governance.   Doidge, Karolyi and Stulz (2004a) present a model in which firms in countries with good overall governance have stronger reason than firms in countries with poor overall governance, and report consistent evidence.   Also related are the study of U.S. firms by Gillan, Hartzell and Starks (2004), the study by Klapper, Laeven and Love (2003) of voting by mail and cumulative voting in four transition countries, and the study by Lang and Lundholm (1993) of the factors that affect analyst ratings of corporate disclosures.

Cross-listing studies are also related.   These investigate the factors that predict cross-listing of shares on major world exchanges by emerging market firms.   An important driver of share price increases from cross-listing appears to be better governance, especially improved disclosure, bonded by the cross-listing rules (e.g., Lang, Lins and Miller, 2003; Doidge, Karolyi and Stulz, 2004b).

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[1] An Appendix, available from the authors on request, provides an overview of Korean corporate governance including the legal rules within which Korean firms make governance choices.

2.2. Comparison of Multicountry and Case Study Approaches

The three related governance prediction studies all use a multicountry approach. In contrast, this paper is an in-depth study of a single important emerging market. These two types of studies have different strengths and limits.

2.2.1.   Multicountry approach

The multicountry approach provides a sample with wider variation in governance than a single country study.   For example, all Korean firms must have at least 25% outside directors, a single class of voting common stock, and comply with reasonably strong disclosure rules.   The multicountry approach offers a large sample size and lets researchers study country-level effects. Generalizability to unstudied countries is not a significant concern.

There are two principal multicountry indices, a governance index created by Credit Lyonnais Securities Asia (*CLSA*) in 2001 and a disclosure index created around the same time by Standard and Poor's (*S&P*).   Both cover a large number of countries, and a limited number of the largest firms in each country.   However, both indices have weaknesses.   The *CLSA* index is partly based on analysts' subjective views, which could be biased by knowledge of stock returns. The *S&P* index is limited to disclosure.   Both indices are fairly weak predictors of firm value. Both have been abandoned by their sponsors, which precludes use in time series analysis.   A second limitation of multicountry studies is that control variables are limited, due to limited availability of financial statement data.   Also, country dummy variables dominate firm-level variables in importance (Doidge, Karolyi and Stulz, 2004a).

2.2.2.   Case study approach

A country case study raises the question of generalizability to other countries.   However, as a case study locus, Korea has important advantages.   The *KCGI* index is comprehensive (unlike the *S&P* index), objective (unlike the *CLSA* index), and a strong predictor of firm value.

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Also, both theory (Doidge, Karolyi and Stulz, 2004a) and our data (*Table 7*) suggest that large firms make different governance choices than smaller firms. We are uniquely able to study small as well as large firms. Our analysis below stresses small firm results, both to make best use of this comparative advantage over the multicountry studies and because the governance of large Korean firms is strongly affected by legal rules, which leaves less room for firm choice

Korea also has good data availability, which lets us study a rich set of firm-level variables. Extensive variables are important to address omitted variable bias. Use of extensive firm-level variables importantly affects our results, compared to the results we would obtain with control variables similar to those used in the multicountry studies.

3. Data, Construction of Governance Index, and Econometric Issues

3.1. Sample and Data Sources

Data sources and construction of the *KCGI* index are described in Black, Jang and Kim (2006). We provide only a summary here. *KCGI* (0~100) is based primarily on responses to a 2001 survey of governance practices by the Korea Stock Exchange (*KSE*). It includes 39 governance elements, divided into five equally weighted subindices (each 0~20): Shareholder Rights (5 elements); Board Structure (4 elements on board composition and the existence of audit and outside director nominating committees); Board Procedure (26 elements on board and audit committee procedure); Disclosure (3 elements); and Ownership Parity (1 element). *KCGI* values are available for 525 firms (virtually all KSE listed firms).[2] We exclude 58 financial firms, 6 former state-owned enterprises, and 8 firms for which we lack data for all control variables, producing a final sample of 453 firms, including 418 small and 35 large firms. *Figure 1* shows histograms of *KCGI* for small and large firms. Each distribution is roughly

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[2]   An English translation of the Korea Stock Exchange survey is available from the authors on request.   Consistent with our agreement with the *KSE*, we do not discuss individual companies in this paper.

normal, but the two subsamples have very different means: 52 for large firms versus 29 for small firms.

The difference between large and small firms is due to a combination of (i) large firms are subject to special corporate governance rules, which we discuss in Part 4; and (ii) larger firms tend to be better governed. *Figure 2* shows both effects. It presents a scatter plot of *KCGI* versus ln(assets), plus two regression lines, which we constrain to have a common slope but allow to have different intercepts. The regression lines show both a general upward slope and a jump at 2 trillion won.

Table 1 lists each governance element, and provides summary statistics for large firms, small firms, and the differences between them. *Table 2* defines the variables we use. *Table 3A* provides descriptive statistics for *KCGI,* each subindex, and our other principal variables.

Table 3A shows summary statistics for the principal variables used in this paper, separately for small and large firms. *Table 3B* shows a correlation matrix for selected variables for small firms. *Table 3C* provides a correlation table for *KCGI* and each subindex, separately for small and large firms. All correlations are positive; almost all are significant.

3.2. Econometric Issues

Governance prediction studies face important econometric issues. One involves *reverse causation*. Governance may predict firm-level economic factors, rather than vice-versa. For example, more profitable firms may choose weaker governance because they have less need for outside capital, but at the same time, better governance could improve profitability. A second is omitted variable bias. In equilibrium, corporate governance likely correlates with various economic variables, which also correlate with each other. A study that omits important variables could conclude that an included variable is significant when it would not be with a

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richer set of other "control" variables; or that a variable is insignificant when it would be significant with a richer set of control variables.

We can make some progress on both issues. Our extensive firm-level variables can reduce, although not eliminate, omitted variable bias. Use of a broad set of firm-level variables, compared to a narrower set, importantly affects our results.

For reverse causation, we lack a convincing instrumental variable that can directly address this concern. Black, Jang and Kim (2006) employ, as an instrument for *KCGI*, an asset size dummy at 2 trillion won, corresponding to the size threshold for corporate governance rules that apply to large firms. They report that *KCGI* predicts Tobin's *q,* while Tobin's *q* does not predict governance. This prior work at least simplifies the nature of any remaining endogeneity.

4. Overview of Regulatory, Industry, and Firm Factors

This part presents our overall results on the factors that predict a firm's corporate governance. Section 4.1 discusses the differences in regulation between large and small firms. Section 4.2 presents results for firm-level variables. Section 4.3 discusses the economic importance of our results. Section 4.4 presents results for subindices and *reduced indices* (*KCGI* minus one subindex). Section 4.5 presents results for subsamples. As will be seen, a central theme in our results is how *little* difference most firm-specific variables make to firms' governance choices.

4.1. Large Versus Small Firms

Large Korean firms (assets > 2 trillion won, or roughly $2 billion) are subject to several important corporate governance rules that do not apply to small firms (assets < 2 trillion won). The principal requirements for large firms in 2001 were: 50% outside members of the board of directors (versus 25% outside members for small firms), an audit committee of the board with at least 2/3 outside members, and an outside director nominating committee. These rules set a practical floor on governance for large firms. The scatter plot in *Figure 2* shows this effect.

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For example, the firm that is just below the threshold has assets of 1,926 billion won and *KCGI* of 18.   In contrast, the lowest *KCGI* score for any large firm is 30.   In full sample regressions, we use an asset size dummy variable at 2 trillion won to capture the effect of the large firm governance rules.   In *Table 4*, regression (3), asset size dummy is highly significant and predicts 17 points higher *KCGI*.

4.2. Firm-Level Variables

   Table 4 presents our OLS results for *KCGI*.   Regression (1) presents our *OLS* results for small firms with a limited set of independent variables, comparable to those in the multicountry studies discussed in Part 2.   Regression (2) presents our results with a full set of independent variables.   We use extensive independent variables because in equilibrium, firm value, business strategy, and governance may be determined simultaneously.   Any variable that affects a firm's value or business strategy may affect its governance choices.

   We focus on small firms in *Table 4* for two reasons.   First, we are interested in how economic factors affect firms' governance *choices*.   Important aspects of large firm governance are dictated by law.   Second, multicountry studies already provide some information on the governance of large firms.   We have unique access in Korea to data on governance choices by smaller, non-world-class firms.   *Regression (3)* provides full sample results, with asset size dummy as an additional control variable to capture the effect of legal rules that apply to large firms.   Results are similar to those for small firms.

   Regressions (4-5) are similar to regressions (1-2), except that we replace sales growth and profitability with a combined variable for equity finance need.   Finally, the last column of *Table 4* provides a measure of the economic importance of each variable, by showing the predicted impact of a two-standard-deviation in each variable on *KCGI*.   *Figure 3* shows, for the

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statistically significant variables in regression (2) (*ln*(assets), firm risk, and PPE/sales), the predicted effect of a two standard deviation change in this variable from its median value.

4.2.1. Overview

Most firm-level variables are insignificant and economically small. The two variables that are both reliably significant and reasonably important economically are firm size and firm risk. Capital intensity, proxied by *PPE*/sales, is significant in regression (2) but becomes insignificant with different control variables. Profitability and equity finance need are significant with limited control variables but lose significance with a full set of control variables.

4.2.2. Firm size (predict positive, confirmed)

Larger firms are more complex, and therefore may need more refined corporate governance. *Table 4* supports this hypothesis. *Ln*(assets) is significant in all specifications. We obtain similar results if we substitute *ln*(sales) for *ln*(assets). This contrasts with the mixed results for firm size in the multicountry studies, in which firm size is significant and positive for the *S&P* disclosure index, but insignificant for the *CLSA* index.

4.2.3. Firm risk (predict positive, confirmed)

Riskier firms could need stronger monitoring, and hence develop stronger governance. We measure firm risk using a 4-year average of the weekly standard deviation of stock price returns. We choose a long-term average because short-period averages are noisy measures of underlying risk and because firms may change their governance slowly in response to economic characteristics. Firm risk is highly significant and positive.

In separate regressions (not shown), we separate firm risk into systematic and firm-specific components. Firm specific risk is positive and significant, systematic risk is positive but insignificant, and the difference between the coefficients on systematic and firm-specific risk is insignificant. Firm-specific risk and total firm risk are highly correlated ($r = 0.96$). In

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robustness checks, we get similar results using daily standard deviation to measure firm risk.   A longer averaging period used to estimate firm risk increases the significance of firm risk up to 4 years.   Further increases in the averaging period have little effect.   This could reflect the noisiness of short-term estimates of firm risk.

For all other variables, we get results that are either insignificant or not robust.   In an F-test, these variables are jointly insignificant (F = 1.29, p = 0.22).   We discuss first variables that are significant in some multicountry studies.

4.2.4.   PPE/sales (as a measure of tangible asset intensity); also Capex/sales, R&D/sales, advertising/sales (no sign prediction, mixed results)

Firms with greater reliance on tangible (intangible) assets may be easier (harder) for investors to monitor directly, hence could evolve weaker (stronger) governance.   Asset tangibility and governance would then act as substitutes.   Alternatively, firms with more tangible (intangible) assets could evolve stronger (weaker) governance *because* they are easier (harder) to monitor.   This would involve a complementarity between ease and intensity of monitoring.   We therefore include variables for *PPE*/sales as a measure of tangible asset intensity and Capex/sales as a combined measure of recent capital intensity and growth opportunities.   We also include *R&D*/sales and advertising/sales as combined measures of intangible asset intensity and growth opportunities.

The significant negative coefficient on *PPE*/sales in regression (2) is consistent with the substitution story.   However, this result is not robust.   The coefficient on *PPE*/sales drops from -1.30 (t = -2.09) to -0.59 (t = -0.92) if we simply switch from *ln*(assets) to *ln*(sales) as a size control.   Moreover, capex/sales is insignificant and *positive*, and *PPE*/sales and capex/sales are jointly only marginally significant (F = 2.49, t = 0.085).   The coefficients on *R&D*/sales and

advertising/sales also do not support the substitution story -- they are insignificant and of differing signs.

4.2.5. *Sales Growth (predict positive, not confirmed)*

We use a 2-year geometric average as our measure of sales growth. Other factors equal, a faster growing firm has a greater need to raise outside capital, and may adopt better governance to attract this capital (Durnev and Kim, 2005). However, in *Table 4*, sales growth is insignificant with varying sign. In robustness checks, we obtain similar results for asset growth.

4.2.6. *Profitability (predict likely negative, weakly confirmed)*

If need for outside capital influences firms' governance choices, then more profitable firms should have *worse* governance because they generate more capital internally, and thus have less need to improve governance to attract outside capital. Less profitable firms may also improve their governance because they hope this will improve profitability or because investors pressure them to do so. On the other hand, better-governed firms may be more profitable. We use a two-year arithmetic average of net income/assets as our measure of profitability. This measure corresponds to firms' need for external capital to finance growth.

Higher profitability predicts lower *KCGI* in regression (1) with limited control variables, but the coefficient drops from 9.2 to 4.2 and becomes insignificant in regression (2) with full control variables. Firm risk (which predicts stronger governance) and firm profitability (which predicts weaker governance) correlate negatively ($r = -0.33$). The coefficient on each is stronger if we omit the other as a separate variable. If we remove firm risk from regression (2), the coefficient on profitability becomes significant at -8.29 ($t = -2.19$). However, we have no theoretical basis to prefer one variable over the other, hence we include both in regression (2).

4.2.7.   Equity finance need (predict positive, not confirmed)

Our results for profitability weakly suggest that firms which need capital choose better governance, but our results for sales growth do not confirm this suggestion.   To investigate this relation further, we follow Durnev and Kim (2005) and combine growth and profitability into a measure of equity finance need, adapted from Demirguc-Kunt and Maksimovic (1998).   To develop this measure, we:

- use historical asset growth (g_{asset}) to proxy for the growth that the firm must finance

- assume that the firm maintains a constant ratio of debt/book value of assets

- assume constant profitability (measured by net income/start-of-year book equity, which we call *return on trailing equity (RotrE)*) (we omit 2 firms with negative RotrE)

- assume zero dividends (most Korean firms in fact pay low dividends).

Under these assumptions, a firm will need equity finance if $g_{asset} > RotrE$.   We use 2-year geometric average growth rate to measure asset growth and 2-year arithmetic average *RotrE* to measure profitability.   We then compute a raw measure of equity finance need as:

$$EFN_{raw} = \max \{0, g_{asset} - RotrE\} \tag{1}$$

To compute equity finance need (*EFN*), we suppress large positive values of EFN_{raw} (above 0.5) to 0.5 on the grounds that firms face practical constraints on how rapidly they can raise external capital.   Sixteen of the 23 firms with $EFN_{raw} > 0.5$ have high need for equity finance because they are losing money.

Our results for *EFN* are similar to our results for profitability: *EFN* is positive and significant in regression (4) with limited control variables, insignificant in regression (5) with full controls, but significant at 5.57 ($t = 2.14$) if we omit firm risk from equation (5).   In robustness checks, we obtain similar results if we substitute asset growth for sales growth in

computing *EFN*, include sales growth as a separate variable, or winsorize large positive values of EFN_{raw} at a different level than 0.5.

4.2.8.   Ownership (predict positive, positive and marginally significant but not robust)

A controlling shareholder with a larger stake has less incentive to extract private benefits ("steal") from the firm, and could be more willing to improve governance, which bonds the promise not to steal and can lower the firm's cost of capital.   This could produce a positive correlation between ownership and governance (Durnev and Kim, 2005).   Conversely, insiders' reduced incentives to steal if they hold a larger stake could reduce the need to use governance to limit stealing, leading to a negative relationship between ownership and governance.   However, this story, while theoretically possible, assumes that outsiders control firms' governance choices, which is unlikely.   We therefore include a variable for ownership by the largest shareholder and, to allow for nonlinearity, ownership^2, and predict a positive sign.   The coefficient on ownership is marginally significant in regression (2).   The effect of ownership is apparently nonlinear and weakens as ownership increases, producing a negative coefficient on ownership^2.   However, this result is not robust.   The coefficient on ownership is insignificant with limited control variables in regression (1), it becomes insignificant in regression (2) if we omit ownership^2, and an F-test indicates that ownership and ownership^2 are jointly insignificant ($F = 1.57$, $p = 0.21$).

4.2.9.   Chaebol dummy (no sign prediction, insignificant)

Firms that belong to one of the top-30 *chaebol* groups are required by law to have major conflict-of-interest transactions approved by the board of directors.   This should give them a higher score on Shareholder Rights Subindex, for which one element is whether the board approves related party transactions.   C*haebol* firms may also be subject to greater regulatory pressures to improve their governance.   Conversely, they may have access to financing from other group members and hence face less investor pressure to improve their governance.

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Several *chaebol* groups have reputations for poor governance.   We include a dummy variable for membership in the top-30 *chaebol* with no prediction as to sign.   The coefficient is small and insignificant.

4.2.10.   Leverage (predict likely negative, not confirmed)

Firms with a high proportion of debt in their capital structure are more likely to face creditor monitoring, and may also care less about attracting equity capital, so could evolve weaker governance (a *substitution* story).   In a *reverse causation* story, worse-governed firms could have less access to equity and thus rely more on debt.   Alternatively, creditors could offer better terms to firms with improved governance (an *investor pressure* story; see Bhojraj and Sengupta, 2003).   We measure leverage as *ln*(debt/market value of common equity), winsorized at 1% and 99%．The logarithmic transformation and winsorizing reduce the effect of outliers with high debt and low market equity.   The coefficient on leverage is small and insignificant.   In robustness checks, we consider alternate specifications of a leverage variable, which are insignificant with varying sign.

4.2.11.   Firm age (no sign prediction, insignificant)

If firms change their governance slowly over time, older firms could have worse governance, because they went public at a time when governance standards were lower (a *path dependence* story).   On the other hand, older firms have had more time to improve their governance in response to internal need or investor pressure.   We therefore include *ln*(years listed) as a measure of firm age, with no sign prediction.   This variable is positive but insignificant and economically small.

4.2.12.   Market share (no sign prediction, insignificant)

In equilibrium, firms with high market share could evolve weaker governance because they face less market pressure towards efficiency (a substitution effect), or stronger governance to

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compensate for weaker product market constraints. We therefore include a market share variable, with no sign prediction. We find mild support for a substitution effect. Market share is positive but insignificant.[3]

4.2.13. *Exports/sales (no sign prediction, insignificant)*

Korean policy has traditionally favored export-oriented industries, though less so after the 1997-1998 financial crisis. Thus, these firms could face weaker investor pressure for strong governance. These firms may also face stronger product market competition, which could either create pressure for improved governance or substitute for internal governance. We therefore include an exports/sales variable, with no sign prediction. This variable is positive but insignificant and economically small.

4.3. Comparison to Multicountry Studies; Omitted Variable Issues

As noted in Part 4.1, even when we find a significant result for a firm-level factor, the result is often sensitive to which other control variables we include in the regression. Examples include: (i) the difference between the significant coefficient on profitability (*EFN*) in regression (1) (regression (4)) and the insignificant coefficient in regression (2) (regression (5)); (ii) the dependence of the significant result for *PPE*/sales in regression (2) to whether we use ln(assets) or ln(sales) to control for firm size; (iii) the marginally significant coefficient for ownership in regression (2), compared to the insignificant result in regression (1) or in regression (2) if we omit ownership[2]. This sensitivity suggests that results from multicountry studies, which have limited control variables, should be interpreted with caution.

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[3] In separate regressions (not reported), we include the Herfindahl-Hirschman index as a measure of 4-digit market concentration in regressions. This variable is only available with 2-digit industry dummies because it is a linear combination of the 4-digit industry dummies. Market concentration might affect corporate governance for similar reasons as market share (substitution and market pressure effects). This variable is small and insignificant.

We also simply obtain different results than the multicountry studies. This may reflect our use of a different index, our focus on smaller firms, or both. The only firm-level variables that we find to be reliably important are:

- firm size (which predicts higher *S&P* disclosure scores but not higher *CLSA* scores)

- firm risk (not addressed in the multicountry studies)

In contrast, we do not find a reliable effect for:

- sales growth (mixed results in multicountry studies)

- capital intensity (Klapper and Love (2004) report a significant negative coefficient on *PPE*/sales for the CLSA index)

- equity finance need (Durnev and Kim (2005) find a significant positive coefficient on a similar variable for both the *S&P* and *CLSA* indices)

Thus, this paper shows the sensitivity of governance prediction studies to choice of governance index and sample.

4.4. Economic Importance

Doidge, Karolyi and Stulz (2004a) stress the importance of country-level effects, and the relative unimportance of firm-level variables, in predicting firm governance. Our results are broadly consistent, and suggest that much of the variation in firm-level governance is idiosyncratic. We have already seen that all variables except *ln*(assets) and firm risk are jointly insignificant. As a further way to assess variable importance, *Table 5, Panel A* provides adjusted R^2 values for different combinations of variables. Most firm-level variables have little explanatory power. For small firms, *ln*(assets) and firm risk together produce adjusted R^2 of 0.075. Adding all other firm-level variables increases adjusted R^2 only to 0.107.

Table 5, Panel B shows the increase in adjusted R^2 when different sets of independent variables are added last to regressions that are otherwise similar to *Table 4, regression (2)* (for

small and large firm subsamples) or *regression (3)* (for full sample).   We see in a different way the limited predictive value of firm-level variables other than firm size and firm risk.   When all other firm-level variables are added last, adjusted R^2 *decreases* slightly.

Here is yet another way to see the limited importance of firm-level variables.   Multiply each firm's value for each firm-level variable times the coefficient on that variable from *Table 4, regression (2)* (for small firms) or *regression (3)* (for all firms), and sum the results.   This provides, for each firm, an estimate of the predicted effect on *KCGI* of all firm-level variables taken together.   The standard deviation of these values provides a measure of the overall importance of firm-level variables in predicting *KCGI*.   We show results for this approach in *Table 5, Panel C*.   The standard deviation of the predicted effect of all firm-level variables except *ln*(assets) and firm risk is only 1.36 points.

The overall variance of *KCGI* for small firms is $(6.92)^2 = 47.89$ points^2.   Any respectable governance prediction study must control for firm size and industry.   Once this is done, the predictive value of all other firm-level variables is a variance of only 5.06 points^2.   The ratio of variances (analogous to contribution to R^2) is firm-level variance/total variance = 5.06/47.89 = 0.106.   For firm-level variables except ln(assets) and firm risk, this ratio is only 0.039.

4.4.1.   Industry Factors

Industry factors, taken together, are comparable to firm-level variables in importance.   In level of fineness, 4-digit KIC industries are somewhat finer than 2-digit U.S. SIC industries.   Four-digit industry dummies alone produce adjusted R^2 of 0.101 (*Table 5, Panel A*).   Adding them to the regression last (Table 5, Panel B) increases adjusted R^2 by .060.   Both figures are comparable to those for all firm level variables taken together.

4.4.2.   Large Firms

Firm-level variables have greater predictive power for large firms than for small firms. The adjusted R^2 for a regression with only firm-level variables is 0.357, compared to 0.107 for small firms. However, this partly reflects our use of a substantial number of independent variables for a small sample of large firms. As we will see when we study subsamples (*Table 7*) almost all variables are insignificant for large firms.

An important puzzle is why Korean firms seem to pay so little attention to governance, given the evidence from Black, Jang and Kim (2006) that improved governance can pay off in higher share prices. One reason could be ignorance: insiders simply don't know that governance has this payoff. A second could be indifference: perhaps Korean firms, especially small firms, are unlikely to raise equity capital and thus don't pay much attention to governance. We lack data on how many firms, or which firms, issue equity in any given year). A third could be that improved governance benefits minority shareholders at the expense of insiders, who will face new restrictions on their ability to extract private benefits. We suspect that all three of these explanations may be part of why economic factors do so little to predict variation in governance.

4.5. Results for Subindices and Reduced Indices

Table 6 presents results for small firms for each of our five subindices and the corresponding reduced indices (*KCGI* - one subindex). Many of the results are sensible, but a few are puzzling. Below, we highlight selected results.

4.5.1. Results for Independent Variables

4.5.1.1. Ln(assets)

Larger firms have stronger board procedures and stronger disclosure. The coefficients on *ln*(assets) are positive for the other subindices, but are not significant. This is a bit of a surprise. In particular, one might have expected larger firms to have better board structures than smaller firms.

4.5.1.2. Firm risk

Firm risk is positive and significant for Board Structure, Board Procedure, and, especially, for Ownership Parity Subindex. Controllers of riskier firms rely more heavily on direct, rather than indirect ownership. This could be because riskier firms tend to be smaller, and may have less reason to adopt the cross-holding pattern that, for many firms, contribute to low ownership parity.

Profitability and EFN. Profitability (net income/assets) correlates significantly and negatively with Ownership Parity Subindex. This is surprising. Assume, for example, that a firm's largest shareholder wants to retain a voting stake sufficient to ensure control, but can adjust its direct and indirect ownership. One would expect the shareholder to choose higher *direct* ownership (and hence higher ownership parity) for a more profitable firm. A reverse causation story, in which the controlling shareholder uses intra-group transactions to transfer profits to firms in which the shareholder has high direct ownership also implies that higher profitability should predict higher ownership parity. Yet we observe the opposite pattern.

Ownership. Higher direct ownership predicts higher ownership parity. This may be a mathematical effect as much as a governance choice: firms with high ownership by the largest shareholder have fewer shares owned by anyone else, and hence higher ownership parity. Ownership, however, is small and insignificant for all other subindices.

Firm age. Firm age, proxied by *ln*(years listed) is positive and significant for Board Procedure Subindex. This makes sense – older firms have had more time to develop strong board procedures.

Other variables. There are a few other scattered significant coefficients for other variables that are insignificant as predictors of *KCGI*: The *t*-statistics are not large, and these may be false positives.

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4.5.2. Robustness across Reduced Indices

A robustness check for our results for *KCGI* is to see whether these results change if we substitute different reduced indices (*KCGI* minus one subindex) for *KCGI*. *Table 6, regressions (6-10)*, shows results for reduced indices. *Ln*(assets) is significant for four reduced indices and marginally significant for the fifth. Firm risk is significant for all reduced subindices. *PPE*/sales is significant or marginally significant for all reduced indices except (KCGI - Disclosure). Other results are scattered.

In further robustness checks, we include the omitted subindex as an additional control variable in regressions that are otherwise similar to *Table 6, regressions (6-10)*. All subindices take positive coefficients, and each subindex except disclosure is significant. This is consistent with firms that improves governance in one area tending to do so in other areas as well. However, the economic significance of this effect is modest. The strongest subindex is Board Procedure, for which a one point increase predicts an additional 0.62 points on other subindices. Results for other variables are generally similar to those reported in *Table 6*. However, *PPE*/sales remains significant only for two of the five reduced indices.

4.6. Results for Subsamples

In *Table 7*, we consider results for the following subsamples:

- small firms versus large firms

- non-*chaebol* firms versus *chaebol* firms

- financial firms (which we otherwise exclude from our sample)

To preserve degrees of freedom, we use 2-digit *KIC* industry dummies and a limited set of firm-level variables when studying smaller subsamples (large firms, chaebol firms, and financial firms). Two-digit *KIC* industries are between 1-digit and 2-digit SIC codes in level of fineness. In robustness checks, we obtain similar results for these subsamples with 4-digit industries and

full control variables.   For the financial subsamples, which includes both large and small firms, we include asset size dummy and bank dummy.   For large firms, we omit *chaebol* dummy because all large firms are also *chaebol* firms.

Small versus large firms.   We first assess in *Table 7, regressions (1-2)* whether there are differences between large firms, which are subject to special governance rules, and small firms, which are not subject to these rules.   Recall from *Table 5, Panel A* that the overall ability of the regression to predict governance is much higher for large firms than for small firms.   This suggests that large firms do more to tailor their governance to their environment, while small firm governance is driven more by idiosyncratic choices.   Yet, the only firm-level variable that is significant for large firms is leverage (more leveraged firms have worse governance). Idiosyncratic choice thus seems to play a major role in governance for large firms as well.

A story consistent with the negative coefficient on leverage for large firms is that these firms have reasonable access to capital, regardless of governance.   They cannot be terribly governed, due to legal rules.   The worse-governed large firms tilt towards debt rather than equity capital.

Non-chaebol versus chaebol firms.   All of the 35 large firms in our sample are *chaebol* firms, as are 57 of the 418 small firms.   We assess in *Table 7, regressions (3-4)* whether our results differ between small *chaebol* and small non-*chaebol* firms.   They do not.   Significance declines due to smaller sample size, but firm risk and ln(assets) remain important, while other variables are insignificant.

Financial firms.   We exclude financial firms from our overall sample because firm-level variables such as capital expenditures and leverage can be very different for these firms than for non-financial firms.   We examine them separately in *Table 7*, regression (5).   The significant firm-level variables are the same variables – ln(assets) and firm risk – that are important for small firms.   A bank dummy variable is economically large, predicting 16 points higher *KCGI*

score -- banks are better governed than other firms.   Asset size dummy is marginally significant and economically large at 8 points.

5.   Sticky Governance

In this part, we investigate the speed with which firms change their governance in response to economic factors.   We assess in *Table 8* whether long-term measures of financial variables are stronger predictors of governance than shorter-term averages.   We consider averages from 1 to 10 years for the firm-level variables that depend on income statement information, such as sales growth and profitability.   We continue to rely on current measures for balance sheet such as ln(assets), which have less year-to-year variation, and other slowly-varying variables, such as ownership.

5.1   Sales Growth, Profitability and Equity Finance Need

In *Table 4*, we did not confirm the hypothesis that firms adopt better governance to enhance their access to capital.   Two-year sales growth took a small negative coefficient.   Two-year profitability and equity finance need took the predicted coefficients (negative and positive, respectively), and were significant with 2-digit industries and limited control variables, but lost significance with 4-digit industries and full control variables.   This picture changes as we lengthen the averaging period.   The coefficients and *t*-statistics on all three variables strengthen as the averaging period increases, up to roughly 8-years.   Profitability becomes significant for averaging periods of 3 years or more and equity finance need (which combines sales growth and profitability) is significant for periods of 5 years or more.   Sales growth remains insignificant, but the coefficient becomes positive and increases steadily up to 8 years.   Thus, sustained need for outside capital predicts governance more strongly than shorter term need for capital.

These results are consistent with sticky governance, in which firms change their governance slowly in response to a change in their economic environment – in this case, a need for capital.

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At the same time, the economic effects of longer-term averages of profitability and equity finance need remain modest. A two standard deviation change in 8-year profitability (equity finance need) predicts a 1.6 (2.2) point change in *KCGI*.

Explanations for these results other than sticky governance are possible. First, the longer period may simply reduce noise in variable estimation. Second, periods of 3 years and up include the "down" years, especially 1998, for the 1997-1998 East Asian financial crisis as well as the post-crisis recovery years, and thus cover more of the economic cycle.

We conduct a variety of robustness checks. Taken as a whole, these results are reasonably but not perfectly robust. We get generally similar results if we also use multiyear averages for other variables, including *ln*(assets), leverage, and market share. Eight-year *EFN* remains significant, 8-year sales growth becomes significant, and 8-year profitability is only marginally significant. If we omit the financial crisis year of 1998 from longer term averages, the coefficients on profitability and *EFN* drop slightly and profitability becomes only marginally significant, while the coefficient on sales growth drops substantially and is insignificant.

For growth, we get similar results using asset growth instead of sales growth. For profitability, we get similar results if we use 2-year net income/sales or 2-year ordinary income (basically income before taxes and extraordinary items, but after interest payments)/assets as a measure of profitability. However, *EBIT* (earnings before interest and taxes)/assets and EBIT/sales take small and insignificant coefficients regardless of averaging period.

Sales growth and profitability both affect a firm's need for outside capital, in opposite ways, yet correlate fairly strongly ($r = 0.26$). To explore interaction between these variables, we rerun Table 8 omitting sales growth (profitability). Removing sales growth has little effect on the coefficient on profitability. Removing profitability weakens the already insignificant coefficient on 8-year sales growth, from 7.99 ($t = 1.49$) to 5.93 ($t = 1.11$).

We obtain similar results for *EFN* if we substitute asset growth for sales growth in computing *EFN*, add sales growth as a separate independent variable, or winsorize large positive values of EFN_{raw} at a different level than 0.5. However, the coefficient on *EFN* becomes small and insignificant if we let *EFN* take negative values (as in Durnev and Kim, 2005).

Rajan and Zingales (1998), develop an alternative outcome-based measure of finance need that focuses on actual capital raised relative to capital needed. They estimate outcome-based external finance need as (capex-*EBIT*)/capex. By analogy, we estimate outcome-based *equity* finance need as:

$$EFN_{outcome} = \max \{0, (\text{equity capital raised})/\text{capex}\} \qquad (2)$$

We estimate equity capital raised as change in (book value of equity - retained earnings).

The correlation between *EFN* and $EFN_{outcome}$ is surprisingly modest at $r = 0.11$. $EFN_{outcome}$ is consistently negative but is insignificant for most averaging periods. We have no reason to prefer the Rajan-Zingales-derived $EFN_{outcome}$ measure to the Demirguc-Kunt derived *EFN* measure. However, the negative coefficient on $EFN_{outcome}$ raises some doubts about whether equity finance need is a robust predictor of improved corporate governance.

We also investigate whether total *external* finance need (not just *equity* finance need) predicts better corporate governance. By analogy to our definition of equity finance need, we define *external* finance need as:

$$EXFN = \max \{0, (g_{asset} - \text{return on trailing assets})\} \qquad (3)$$

EXFN is insignificant for all time periods, both when substituted for *EFN* and when included with *EFN* in the same regression, with and without winsorizing. In a regression that includes both variables, *EXFN* can be understood as the need for debt finance.

In sum, there is evidence that firm governance responds slowly to need for equity finance. Sustained need for outside equity predicts improved governance more strongly than shorter-term

measures.   At the same time, this effect is economically modest and not entirely robust to variation in how we measure need for equity finance.

5.2   Other Variables

In *Table 8*, when we use 8-year averages of sales growth and profitability, PPE/sales loses significance.   This is further evidence of the nonrobustness of the significant coefficient on this variable in *Table 4.*   Ownership strengthens and becomes significant, albeit barely so (t = 2.02), but remains insignificant with limited control variables (in a regression analogous to Table 4, regression (1)) or without ownership[2].

6.   Industry Factors

Table 9 reproduces the coefficients on each 4-digit industry dummy variable, omitting industries that include only one firm, for which we cannot separate industry and firm effects. All industry coefficients are insignificant.   However, the numerical size of the coefficients is often substantial, ranging from +6 to -4 points, relative to the median industry.

Many (thought not all) of the high-scoring industries are relatively new.   In contrast, while older, likely mature industries cluster near the bottom of *Table 9*, including manufacture of wood and wood products, fishing, manufacture of food products, and the like.   At the same time, our firm-level measure of age, ln(years listed) is small and insignificant.   Here is one explanation of these results: Industry age could drive both firm age and firm growth prospects, leading to insignificant coefficients on *ln*(years listed) and sales growth once we control for industry.   At the same time, insiders of older, slower-growing firms are reluctant to improve governance, which could limit their private benefits of control, while insiders of newer, faster-growing firms are more willing to improve governance in order to raise capital.

Although the individual industry dummies are insignificant, the dummies collectively are highly significant ($F = 61.35$, $p = .0000$).   Moreover, the coefficients are substantial relative to

the aggregate effect of firm-level variables. In *Table 5, Panel A*, the adjusted R^2 for 4-digit industries is 0.10, which is comparable to that for all firm-level variables (0.11). Also, from *Table 5, Panel C*, the standard deviation for all firm-level variables taken together is 2.55 points, and drops to 1.36 points for variables except ln(assets) and firm risk. In contrast, the standard deviation of the coefficients on the industry dummies (equally weighted) is 2.80.

7. Conclusion; Avenues for Future Research

In this paper, we investigate the factors that affect the governance choices of firms in emerging markets, using a country case study approach. Korea is an ideal country for the case study approach, given its unique combination of a large base of public firms and availability of good financial data and a strong governance index. We focus here on smaller firms (assets < 2 trillion won). The governance choices of these firms have not previously been studied.

For small Korean firms, industry factors (in the aggregate), firm size (larger firms are better governed), and firm risk (riskier firms are better governed) are important predictors of governance. Other firm-level factors are insignificant and even the significant factors only modestly affect governance.

Long-term profitability (more profitable firms are *worse* governed); and long-term equity finance need (firms with higher equity finance need are better governed) also predict governance. In contrast, shorter-term averages of profitability and equity finance need are insignificant. This is consistent with sticky governance, in which firms alter governance slowly in response to economic factors.

Firm growth and ownership by the largest shareholder are not reliably significant, in contrast to the principal results in Durnev and Kim (2005) and Klapper and Love (2004). The limited importance of firm-level variables is consistent with Doidge, Karolyi and Stulz (2004a). At the same time, the greater importance of equity finance need for small firms (this variable is

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positive and significant for small firms, but negative and insignificant for large firms) contrasts with their theoretical prediction and cross country evidence that large firm, with greater access to world capital markets, should adjust their governance more in response to economic factors.

Why most firm-level variables matter so little is an important puzzle, that our data raise but do not resolve. One reason could be ignorance: insiders of Korean firms don't yet understand that governance can pay off in higher share prices. A second could be indifference: perhaps most Korean firms are unlikely to raise equity capital and thus don't pay much attention to governance. A third could be that insiders' desire to preserve private benefits outweighs their interest in share price. Ignorance is an out-of-equilibrium story, indifference and private benefits are equilibrium stories. We are in the process of collecting data on actual equity issuances by firms, which could help to address the indifference explanation, and data on the incidence of related party transactions, which could help to address the private benefits explanation.

A natural question for future work is what we might learn from a time-series approach. We plan in future work to use the responses to the ongoing KSE-sponsored annual corporate governance surveys from 2001-2004, plus hand collected data for 1998-2000, to build a multiyear governance index that will let us address this question.

A further question is to what extent are our results specific to Korea. One way to address this question, within the country case-study approach, is through similar "narrow but deep" studies in other major emerging markets. Toward this end, one of us is working on case studies in Brazil, India, and Russia. Ideally, a set of country studies can complement multicountry studies and shed light on the difficult question of what economic factors prompt firms to make governance changes -- or not to do so despite an apparent payoff in higher share prices.

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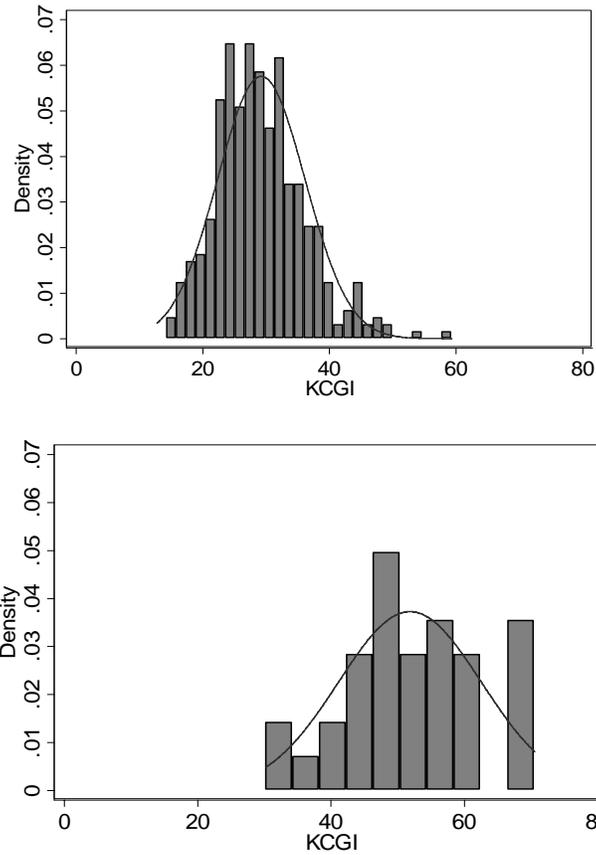
Figure 1. Top: Histogram of the distribution of *KCGI* for small firms (assets < 2 trillion won*; n* = 418). Bottom: Histogram of the distribution of KCGI for large firms (assets > 2 trillion won; *n* = 35). Normal distribution curves are superimposed. For small firms: mean =29.21; standard deviation = 6.93; skewness = 0.66. For large firms, mean =51.82; standard deviation = 10.70; skewness = -0.18

Figure 2
Scatter plot of KCGI versus *ln*(assets).

coef= 3.5055 t-value=12.18 corr=.4977 obs=453
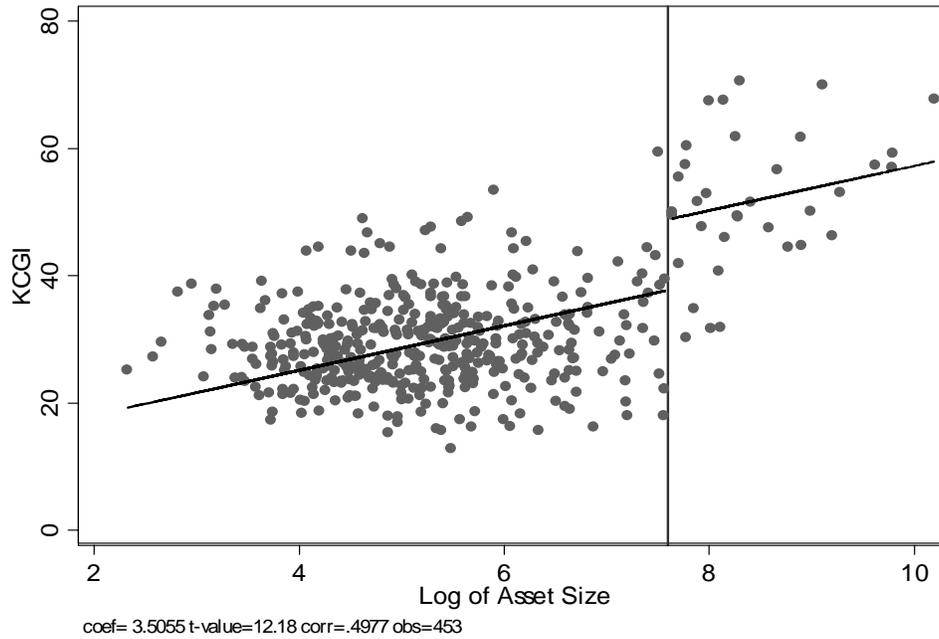
A scatter plot of KCGI versus ln(assets) is provided, together with two fitted lines.   The fitted lines are constrained to have a common slope, but can have different intercepts.   The slope is estimated using all 453 firms.   The intercepts are separately estimated for large firms ($n = 35$, assets > 2 trillion won) and small firms ($n = 418$, assets < 2 trillion won).   The vertical line indicates 2 trillion won in assets.

Figure 3
Variation of *KCGI* with variation in significant explanatory variables
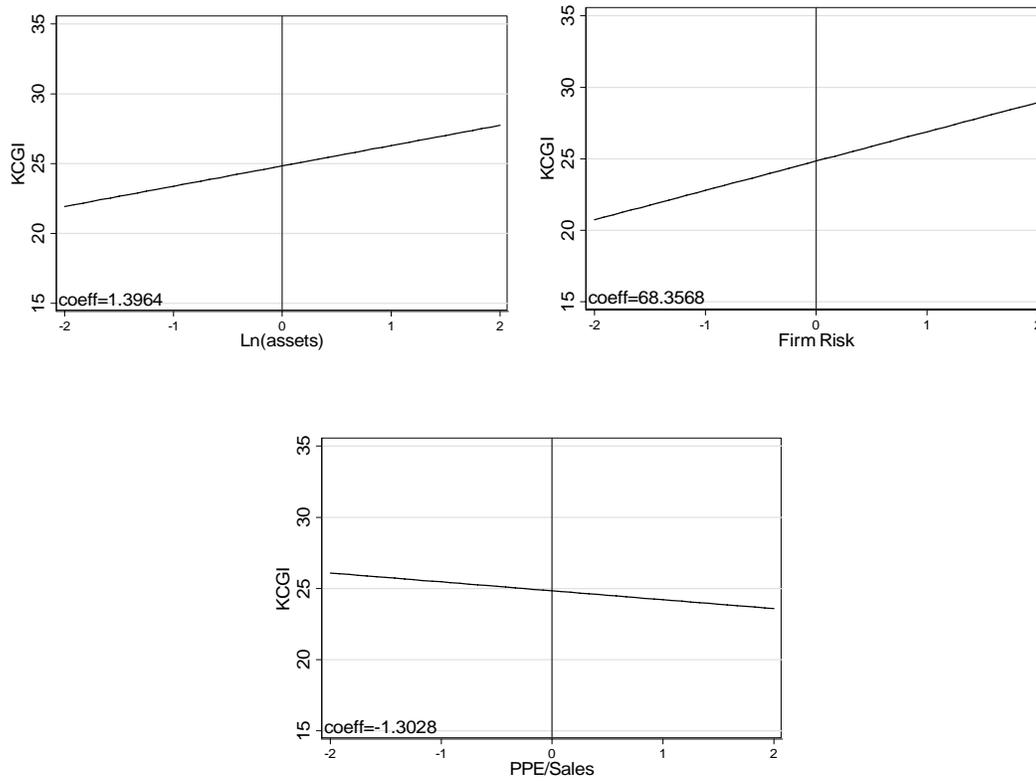
Line plots of Korean Corporate Governance Index (*KCGI*) versus each explanatory variable that is statistically significant in *Table 4, regression (2)*.   The explanatory variable, on the x-axis, is standardized to median of zero and standard deviation of 1.   The value of *KCGI* at the median value for the explanatory variable is obtained using the regression coefficients from *Table 4* and the median value for each explanatory variable.

Table 1
KCGI: elements and summary statistics

Label	Summary of the Variable	Small Firms		Large Firms		Difference	
		Resp.	Mean	Resp.	Mean	large-small	t-value
Shareholder Rights Subindex		**418**	**2.99**	**35**	**5.60**	**2.61*****	**4.45**
A.1	Firm uses cumulative voting for election of directors.	*418*	*0.04*	*35*	*0.00*	*-0.04*	*-1.22*
A.2	Firm permits voting by mail.	*418*	*0.12*	*35*	0.11	*-0.01*	*-0.09*
A.3	Firm chooses shareholder meeting date to not overlap with other firms in industry, or chooses location to encourage attendance.	395	0.15	35	0.20	0.05	0.80
A.4	Firm discloses director candidates to shareholders in advance of shareholder meeting.	418	0.15	35	0.49	**0.33*****	**5.06**
A.5	Board approval is required for related party transactions.	418	0.29	35	0.60	**0.31*****	**3.82**
Board Structure Subindex		**418**	**0.85**	**35**	**14.71**	**13.87*****	**34.74**
B.1	Firm has at least 50% outside directors.	418	0.03	35	1.00	**0.97*****	**34.24**
B.2	Firm has more than 50% outside directors.	418	0.005	35	0.06	**0.05*****	**3.21**
B.3	Firm has outside director nominating committee.	418	0.07	35	0.94	**0.87*****	**19.28**
B.4	Firm has audit committee.	418	0.06	35	0.94	**0.88*****	**20.25**
Board Procedure Subindex		**418**	**8.16**	**35**	**11.87**	**3.71*****	**8.65**
C.1	Directors attend at least 75% of meetings, on average.	383	0.52	28	0.54	0.02	0.16
C.2	Directors' positions on agenda items are recorded in board minutes.	418	0.37	35	0.66	**0.29*****	**3.43**
C.3	CEO and board chairman are different people.	*418*	*0.03*	*35*	*0.03*	*-0.005*	*0.16*
C.4	A system for evaluating directors exists.	418	0.04	35	0.06	0.02	0.47
C.5	A bylaw to govern board meetings exists.	418	0.64	35	0.94	**0.30*****	**3.70**
C.6	Firm holds four or more regular board meetings per year.	266	0.68	28	0.93	**0.24*****	**2.73**
C.7	Firm has one or more foreign outside directors.	418	0.04	35	0.20	**0.16*****	**4.11**
C.8	Outside directors do not receive retirement pay.	227	0.85	30	1.00	**0.15****	**2.29**
C.9	Outside directors can obtain outside advice at company expense.	227	0.23	30	0.40	**0.17****	**2.04**
C.10	Firm has or plans to have a system for evaluating outside directors.	398	0.27	33	0.45	**0.19****	**2.32**
C.11	Shareholders approve outside directors' aggregate pay	*376*	*0.10*	*31*	*0.00*	*-0.10**	*1.89*
C.12	Outside directors attend at least 75% of meetings, on average.	359	0.38	30	0.60	0.22	2.36
C.13	Firm has code of conduct for outside directors.	418	0.07	35	0.11	0.04	0.98
C.14	Firm designates a contact person to support outside directors.	418	0.47	35	0.80	**0.33*****	**3.76**
C.15	Board meeting solely for outside directors exists.	418	0.01	35	0.17	**0.16*****	**5.75**
C.16	Firm has not lent outside directors funds to buy company shares.	*418*	*0.99*	*35*	*0.91*	*-0.08****	*3.55*
D.1	Outside directors comprise more than 2/3 of audit committee.	27	0.63	32	0.91	**0.28*****	**2.66**
D.2	Bylaws governing audit committee (or internal auditor) exist.	377	0.58	33	0.91	**0.33*****	**3.78**
D.3	Audit committee includes accounting expert	25	0.64	30	0.83	0.19	1.65
D.4	Audit committee (internal auditor) recommends external auditor at shareholder meeting.	384	0.71	33	0.88	**0.17**	**2.08**
D.5	Audit committee (internal auditor) approves the appointment of the internal audit head.	*299*	*0.45*	*28*	*0.29*	*-0.17**	*1.73*
D.6	Written minutes for audit committee meetings.	187	0.48	31	1.00	**0.52*****	**5.82**
D.7	Report on audit committee's (internal auditor's) activities at annual shareholder meeting.	364	0.88	32	0.97	0.09	1.53

D.8	Audit committee members attend 75% of meetings, on average.	12	0.92	28	0.96	0.05	0.62
D.9	Audit committee (internal auditor) meets with external auditor to review financial statements.	381	0.65	32	0.72	0.07	0.83
D.10	Audit committee meets two or more times per year.	13	0.69	31	0.71	0.02	0.11
Disclosure Subindex		**418**	**0.69**	**35**	**3.24**	**2.55*****	**5.63**
E.1	Firm conducted investor relations activity in 2000	418	0.02	35	0.11	**0.09*****	**2.99**
E.2	Firm website includes director resumes	418	0.05	35	0.23	**0.18*****	**4.21**
E.3	English disclosure exists	393	0.03	29	0.17	**0.14*****	**3.80**
Ownership Parity Subindex		*418*	*16.53*	*35*	*16.40*	*-0.13*	*0.27*
P	Ownership parity (see definition in Table 2)						
Korean Corporate Governance Index (*KCGI*)		**418**	**29.21**	**35**	**51.82**	**22.61*****	**17.64**

Summary statistics for Korean Corporate Governance Index (*KCGI*), subindices of *KCGI*, and individual governance elements for the 418 small firms (asset size < 2 trillion won) and 35 large firms (asset size > 2 trillion won) included in our sample. All variables except Ownership Parity are coded as yes=1, no=0. Last two columns show difference in means between large and small firms and associated t-statistic. *, **, and *** respectively indicate significance at 10%, 5%, and 1% levels. *Italics* indicate higher scores for small firms. Significant correlations (at 5% level or better) are shown in **boldface.**

Table 2
Definition of other principal variables

Variable	Description
Assets	Book value of total assets
Asset Size Dummy	1 if book value of assets > 2 trillion won; 0 otherwise.
Chaebol Dummy	1 if a member of one of the top-30 business groups as of April 2000 as identified by Korea Fair Trade Commission; 0 otherwise, except that we treat Pohang Iron and Steel, a former state-owned enterprise, as a non-*chaebol* firm.
Sales Growth (g_{sales})	2-year geometric average sales growth, computed as $(sales_{2000}/sales_{1998})^{1/2}$, and similarly for other periods
Asset Growth (g_{asset})	2-year geometric average asset growth, computed as $(assets_{2000}/assets_{1998})^{1/2}$, and similarly for other periods.
Profitability (net income/assets)	2-year arithmetic average of net income divided by book value of total assets, and similarly for other periods
Return on Equity (*ROE*)	2-year arithmetic average of net income divided by book value of total equity., and similarly for other periods
Return on Trailing Equity (*RotrE*)	2-year arithmetic average of net income divided by start-of-year book value of total equity, computed as $ROE/(1 - ROE)$, and similarly for other periods. We exclude 2 firms with negative book value of total equity.
Equity Finance Need (*EFN*), and *EFN*$_{raw}$	2-year $EFN_{raw} = \max\{0, g_{asset} - RotrE\}$. We obtain *EFN* by winsorizing large positive values of EFN_{raw} at 0.5.
Sole Ownership	Percentage ownership by the largest shareholder (the shareholder that, together with its related parties, holds the largest number of shares).
Ownership Parity	1 - ownership disparity, where ownership disparity = total affiliated ownership - sole ownership (both measured as fractions)
Firm Risk	Standard deviation of firm's weekly share prices for 1998-2001
Leverage	Ln (debt/market value of common equity), winsorized at the 1% and 99% levels.
Market Share	Firm sales divided by total sales of all firms in the same 4-digit industry that are listed on *KSE* or registered on *KOSDAQ*
Capex/Sales	Ratio of capital expenditure to sales
Exports/Sales	Ratio of export revenue to sales; assume zero for 66 firms with missing export data.
Years Listed	Number of years since original listing on the Korea Stock Exchange.
R&D/Sales	Ratio of research and development (*R&D*) expense to sales. We assume this ratio is zero for the 137 firms in our sample with missing data for *R&D* expense.
Advertising/Sales	Ratio of advertising expense to sales. We assume this ratio is zero for the 65 firms in our sample with missing data for advertising expense.
PPE/Sales	Ratio of property, plant and equipment to sales
Industry Dummy Variables	Dummy variables for membership in one of 12 2-digit or 41 4-digit industries with at least one firm in our sample, based on KIC codes.
Market Value of Common Equity	Market value of common stock at June 29, 2001.
Outcome-based Equity Finance Need	Estimated as $\max\{0, [\text{change in (book value of equity - retained earnings})]/capex\}$, winsorized at 99%. We drop 3 firms with zero capital expenditures.

This table describes the principal dependent and independent variables used in this paper.   Share values and related variables are measured at June 29, 2001.   Share ownership is measured at year-end 2000.   Book values, sales, and other accounting data are measured for the fiscal year (for balance sheet data, at the end of the fiscal year, ending between July 2000 and June 2001, most often Dec. 26, 2000).   If more than one fiscal year ends during the period, we use the most recent fiscal year for balance sheet data and the most recent full fiscal year for income statement data.   Book and market values are in billion won.   For multiyear averages: (i) we use arithmetic averages except as otherwise stated; and (ii) if data is not available for the full period, we compute the average for the period for which data is available.

Table 3, Panel A
Descriptive statistics

KCGI and Subindices	Small Firms (n = 418)				Large Firms (n = 35)				Difference in Means	
	Mean	Std Dev	Min	Max	Mean	Std Dev	Min	Max	large-small	t-value
KCGI	29.21	6.93	12.73	59.33	51.82	10.70	30.22	70.55	**22.61*****	**17.64**
Shareholder Rights Subindex	2.99	3.31	0.00	16.00	5.60	3.66	0.00	12.00	**2.61*****	**4.45**
Board Structure Subindex	0.85	2.23	0.00	15.00	14.71	2.70	5.00	20.00	**13.86*****	**34.74**
Board Procedure Subindex	8.16	2.41	1.11	14.29	11.87	2.70	2.22	15.38	**3.71*****	**8.65**
Disclosure Subindex	0.69	2.28	0.00	13.33	3.24	4.95	0.00	13.33	**2.55*****	**5.63**
Ownership Parity Subindex	16.53	2.81	7.60	20.00	16.40	2.57	8.20	20.00	*-0.13*	*-0.27*
Other Variables										
Book Value of Assets	304.54	376.94	10.26	19482	6136	5594	2091	26,895	**5831*****	**21.00**
Market Value of Common Stock	70.65	107.53	2.01	831	2263	5538	32	29,038	**2192*****	**8.17**
ln (assets)	5.17	1.04	2.33	7.57	8.45	0.69	7.65	10.20	**3.28*****	**18.33**
Chaebol Dummy	0.14	0.34	0.00	1.00	1.00	0.00	1.00	1.00	**0.86*****	**14.86**
Sales Growth	0.13	0.26	-0.50	2.09	0.18	0.20	-0.15	0.71	0.05	1.01
Profitability (net income/assets)	0.02	0.09	-0.77	0.28	0.01	0.04	-0.08	0.18	*-0.01*	*-0.22*
Equity Finance Need (*EFN*)	0.10	0.15	0.00	0.50	0.12	0.16	0.00	0.50	0.02	1.01
Sole Ownership (%)	19.20	13.68	0.14	89.76	18.27	12.79	1.57	49.06	*-0.93*	*-0.39*
Leverage	0.76	1.12	-1.71	4.22	1.57	1.35	-1.71	4.22	**0.81*****	**3.99**
Firm Risk	0.11	0.03	0.05	0.19	0.11	0.01	0.08	0.15	*0*	*-1.58*
Market Share	0.04	0.11	0.00	1.00	0.21	0.18	0.04	0.73	**0.17*****	**7.94**
Capex/Sales	0.06	0.09	0.00	1.02	0.08	0.09	0.00	0.36	0.02	1.12
Export/Sales	0.29	0.30	0.00	1.00	0.44	0.30	0.00	1.00	**0.15*****	**2.93**
ln (years listed)	2.52	0.71	0.00	3.81	2.83	0.68	0.69	3.81	**0.31****	**2.44**
R&D/Sales	0.01	0.07	0.00	1.32	0.01	0.02	0.00	0.09	*0*	*-0.09*
Advertising/Sales	0.01	0.02	0.00	0.13	0.01	0.01	0.00	0.04	*0*	*-0.33*
PPE/Sales	0.53	0.48	0.01	5.73	0.64	0.35	0.03	1.44	0.11	1.35
Tobin's *q*	0.83	0.29	0.32	3.04	0.93	0.31	0.67	2.23	0.10	1.85

Descriptive statistics for *KCGI*, subindices, and other selected variables. Monetary amounts are in billion won. For differences in means, *, **, and *** respectively indicate significance at 10%, 5%, and 1% levels. *Italics* indicate .that smaller firms have a higher mean. Significant differences (at 5% level or better) are shown in **boldface.**

Table 3, Panel B
Correlation coefficients for selected variables

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	*KCGI*	1.00																	
2	*Ln*(assets)	**0.12**	1.00																
3	*Chaebol*30 Dummy	**0.10**	**0.40**	1.00															
4	Sales Growth	**0.12**	**-0.10**	-0.03	1.00														
5	Profitability	**-0.12**	**0.10**	0.03	-0.08	1.00													
6	*EFN*	**0.19**	-0.07	-0.03	**0.36**	**-0.51**	1.00												
7	Sole Ownership	-0.01	-0.01	**0.11**	0.08	**0.12**	-0.05	1.00											
8	Ownership Parity	**0.51**	**-0.10**	0.00	**0.12**	**-0.19**	**0.19**	**0.25**	1.00										
9	Leverage	0.04	**0.42**	**0.14**	**-0.24**	**-0.28**	0.02	-0.07	-0.01	1.00									
10	Firm Risk	**0.21**	**-0.28**	-0.07	0.04	**-0.33**	0.29	-0.08	**0.34**	**0.16**	1.00								
11	Market Share	**0.17**	**0.29**	**0.23**	0.07	-0.03	0.04	-0.06	0.07	0.09	0.02	1.00							
12	Capex/Sales	0.05	0.04	0.03	0.09	0.06	0.24	-0.02	-0.07	-0.10	-0.03	-0.03	1.00						
13	Exports/Sales	**0.10**	0.01	0.01	-0.05	0.02	**0.15**	-0.02	0.05	-0.08	0.01	-0.03	**0.15**	1.00					
14	*R&D*/Sales	0.02	-0.07	-0.03	0.05	-0.03	0.04	-0.01	0.06	-0.03	0.10	-0.03	0.04	0.06	1.00				
15	Advertising/Sales	0.01	0.02	-0.07	-0.06	0.05	**-0.10**	-0.06	-0.03	**-0.12**	-0.06	0.01	-0.05	**-0.29**	0.01	1.00			
16	PPE/Sales	-0.08	**0.13**	0.03	**-0.22**	**-0.13**	**0.11**	0.00	-0.09	**0.17**	0.01	-0.04	**0.29**	-0.06	-0.01	0.00	1.00		
17	*Ln*(years listed)	0.00	**0.26**	0.06	**-0.21**	**-0.13**	-0.04	**-0.26**	-0.08	**0.31**	-0.05	0.03	-0.03	**-0.12**	-0.02	**0.17**	**0.27**	1.00	
18	Tobin's *q*	**0.17**	**-0.24**	-0.04	**0.18**	**-0.17**	0.20	0.02	**0.28**	**-0.32**	**0.38**	0.05	0.09	0.05	0.05	**0.10**	**-0.17**	**-0.20**	1.00

Correlation coefficient matrix for selected variables for small firms ($n = 418$, assets < 2 trillion won).   Significant correlations (at 5% level or better) are shown in **boldface**.

Table 3, Panel C
Correlation coefficients for *KCGI* and subindices

Small Firms (n = 418)

	KCGI	Shareholder Rights	Board Structure	Board Procedure	Disclosure	Ownership Parity
KCGI	1.000					
Shareholder Rights Subindex	**0.607***	1.000				
Board Structure Subindex	**0.479***	0.013	1.000			
Board Procedure Subindex	**0.600***	**0.233***	**0.248***	1.000		
Disclosure Subindex	**0.407***	0.076	0.011	0.063	1.000	
Ownership Parity Subindex	**0.525***	0.049	**0.149***	**0.099**	0.042	1.000

Large Firms (n = 35)

	KCGI	Shareholder Rights	Board Structure	Board Procedure	Disclosure	Ownership Parity
KCGI	1.000					
Shareholder Rights Subindex	**0.722***	1.000				
Board Structure Subindex	**0.471***	0.227	1.000			
Board Procedure Subindex	**0.667***	**0.451***	0.321*	1.000		
Disclosure Subindex	**0.745***	**0.355**	0.145	0.224	1.000	
Ownership Parity Subindex	**0.509***	0.188	-0.025	0.379*	0.283*	1.000

Correlation coefficient matrices for KCGI and subindices for small firms ($n = 418$, assets < 2 trillion won) and large firms ($n = 35$, assets > 2 trillion won). *, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels. Significant correlations (at 5% level or better) are shown in **boldface**.

Table 4
Factors that predict *KCGI*

dependent variable	KCGI					effect on *KCGI* of 2 std. dev. change in variable
sample firms	small (1)	small (2)	all firms (3)	small (4)	small (5)	small
Ln(assets)	**1.1754*** (3.07)**	**1.3964*** (2.87)**	**1.7439*** (3.75)**	**1.0314*** (2.75)**	**1.2995*** (2.67)**	2.90
Sales Growth	0.1635 (0.09)	-0.0836 (0.05)	-1.6004 (0.97)			-0.04
Profitability	**-9.2105** (2.42)**	-4.2038 (1.19)	-5.7237 (1.63)			-0.76
Equity Finance Need				**5.7727** (2.22)**	2.6634 (1.00)	0.80
Sole Ownership	0.0588 (0.93)	0.1145* (1.75)	0.1046 (1.65)	0.0639 (1.00)	0.1162* (1.78)	3.13
Sole Ownership^2	-0.0006 (0.71)	-0.0013 (1.54)	-0.0013 (1.51)	-0.0008 (0.96)	-0.0014* (1.65)	(combined effect of ownership and ownership^2)
Chaebol Dummy	0.1452 (0.12)	-0.3366 (0.29)	0.0064 (0.01)	0.3446 (0.29)	-0.1970 (0.17)	-0.34 (0 to 1 change)
Firm Risk		**68.3568*** (4.08)**	**64.0382*** (3.83)**		**65.2437*** (3.85)**	4.10
Leverage		0.1254 (0.31)	-0.6262 (1.59)		0.1488 (0.38)	0.28
Market Share		7.1751 (1.03)	10.1375* (1.74)		7.0897 (1.01)	1.58
Ln (years listed)		0.6168 (0.99)	0.6132 (1.02)		0.6121 (1.00)	0.88
Exports/Sales		0.3262 (0.21)	-0.0677 (0.04)		0.1092 (0.07)	0.20
Capex/Sales		9.6342 (1.23)	7.9844 (1.51)		8.9538 (1.14)	1.73
R&D/Sales		-3.0941 (1.26)	-2.7656 (1.17)		-2.8590 (1.16)	-0.43
Advertising/Sales		15.7574 (0.75)	15.3354 (0.73)		15.9983 (0.76)	0.63
PPE/Sales		**-1.3028** (2.09)**	**-1.3356** (2.14)**		**-1.3107** (2.14)**	-1.25
Asset Size Dummy			**16.8588*** (6.69)**			--
Industry Dummies	2-digit	4-digit	4-digit	2-digit	4-digit	--
Intercept Term	Yes	Yes	Yes	Yes	Yes	--
Sample Size	418	418	453	416	416	418
Adjusted R^2	0.1283	0.1664	0.5083	0.1292	0.1633	--

Ordinary least squares regressions of *KCGI* on indicated independent variables, for indicated samples. Last column shows predicted effect on *KCGI* of a two standard deviation change in the variable, based on coefficient from regression (2). For equity finance need, predicted effect is based on regression (4); for ownership, predicted effect is combined effect of ownership and ownership^2, based on change from median value. Sample consists of 453 nonfinancial firms. *, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels. *t*-values, based on robust standard errors, are reported in parentheses. Significant results (at 5% level or better) are shown in **boldface**.

Table 5, Panel A
Adjusted R^2 for different sets of independent variables

Independent Variables	Small firms	Large firms	All firms
2-digit industry dummies	0.01	0.04	0.05
4-digit industry dummies	0.10	0.06	0.13
ln(assets)	0.01	0.10	[0.25]
ln(assets) plus firm risk	0.08	0.09	[0.29]
ln(assets) plus 4-digit industry dummies	0.12	0.04	[0.35]
all firm-level variables	0.11	0.36	[0.36]
asset size dummy	---	---	0.41
asset size dummy plus 4-digit industry dummies	---	---	0.47
all independent variables (with 4 digit industry dummies)	0.17	0.29	0.51
Sample size	418	35	453

Adjusted R^2 values are shown separately for small firms (assets < 2 trillion won), large firms (assets > 2 trillion won), and all firms, for regressions of *KCGI* as dependent variable on constant term plus indicated combinations of independent variables. Firm-level variables are the same as in *Table 4*, *regression (2)*. In full-sample regressions which exclude asset size dummy, which proxies for regulation of large firms, other variables, especially *ln*(assets) will capture some of this effect. Thus, adjusted R^2 for these regressions will be misleadingly high. We indicate this by bracketing R^2 values for regressions that include *ln*(assets) but exclude asset size dummy. Industry dummies will also capture some of the effect of asset size dummy. These effects help to explain why adjusted R^2 values are higher for the full-sample than for either the small or large firm subsamples.

Table 5, Panel B
Increase in adjusted R^2 when variables are added last

Independent Variables	Small firms	Large firms	All firms
All firm-level variables	0.066	0.231	0.036
All firm-level variables other than ln(assets) and firm risk	-0.004	0.192	0.002
4-digit industry dummies	0.060	-0.070	0.035
2-digit industry dummies	0.015	-0.114	0.008

Increase in adjusted R^2 values for regressions with *KCGI* as dependent variable on a constant term plus combinations of other independent variables, when the indicated variables are added *last* to a regression that includes all other independent variables in *Table 4*, *regression (2)*, plus asset size dummy for full sample regressions.

Table 5, Panel C
Standard deviation of predicted effect on *KCGI*

Firm-Level Variables	standard deviation of predicted effect on *KCGI*	
	Small firms	**All firms**
all firm-level variables	2.55	3.17
all except *ln*(assets)	2.25	2.26
all except *ln*(assets) and firm risk	1.36	1.70
total standard deviation of *KCGI*	**6.92**	**9.46**

Standard deviation of predicted effect on KCGI of indicated combinations of variables, based on coefficients from *Table 4, regression (2)* for small firms, and *Table 4, regression (3)* for all firms.

Table 6
Factors that Predict Subindices and Reduced Indices

sample firms	small	small	small	small	small	small	small	small	small	small
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
			Subindex					Reduced Index		
S	Shareholder Rights	Board Structure	Board Procedure	Disclosure	Ownership Parity	KCGI-Sh. Rights	KCGI-Structure	KCGI-Procedure	KCGI-Disclosure	KCGI-Parity
Ln(assets)	0.1061	0.2623	**0.6093*****	**0.3554****	0.0633	**1.2903*****	**1.1341****	0.7871*	**1.0410****	**1.3331*****
	(0.42)	(1.54)	**(3.27)**	**(2.04)**	(0.33)	**(3.49)**	**(2.54)**	(1.95)	**(2.25)**	**(3.09)**
Sales Growth	0.5997	0.0469	-0.6614	0.1353	-0.2040	-0.6833	-0.1304	0.5778	-0.2189	0.1204
	(0.79)	(0.07)	(1.06)	(0.30)	(0.42)	(0.54)	(0.09)	(0.42)	(0.14)	(0.08)
Profitability	-0.1453	-2.3418	2.2416	0.0876	**-4.0458*****	-4.0585	-1.8620	**-6.4453****	-4.2913	-0.1579
	(0.08)	(1.26)	(1.43)	(0.08)	**(3.33)**	(1.24)	(0.63)	**(2.21)**	(1.27)	(0.05)
EFN	1.5215	0.8602	-1.1666	-0.1692	1.6174	1.1419	1.8032	3.8299*	2.8325	1.0459
	(1.23)	(0.79)	(1.06)	(0.20)	(1.58)	(0.52)	(0.75)	(1.70)	(1.12)	(0.48)
Sole Ownership	-0.0178	0.0159	0.0221	0.0026	**0.0917*****	**0.1323****	0.0986	0.0924*	0.1119*	0.0227
	(0.60)	(0.73)	(0.86)	(0.12)	**(3.52)**	**(2.56)**	(1.64)	(1.69)	(1.89)	(0.40)
Sole Ownership^2	-0.0002	-0.0002	-0.0005	-0.0002	-0.0002	-0.0011*	-0.0011	-0.0008	-0.0011	-0.0010
	(0.46)	(0.70)	(1.29)	(0.72)	(0.70)	(1.67)	(1.43)	(1.14)	(1.40)	(1.45)
$Chaebol$ Dummy	0.1441	-0.3279	-0.3616	0.8684*	-0.6596	-0.4807	-0.0087	0.0250	-1.2050	0.3230
	(0.26)	(0.94)	(0.94)	(1.87)	(1.29)	(0.50)	(0.01)	(0.03)	(1.19)	(0.33)
Firm Risk	-4.8731	**13.6890****	**13.0913****	7.0331	**39.4165*****	**73.2298*****	**54.6678*****	**55.2655*****	**61.3237*****	**28.9402****
	(0.68)	**(2.07)**	**(2.24)**	(1.48)	**(6.43)**	**(5.21)**	**(3.91)**	**(3.99)**	**(3.96)**	**(2.02)**
Leverage	0.2546	0.0038	0.1160	-0.1018	-0.1471	-0.1292	0.1216	0.0094	0.2273	0.2725
	(1.30)	(0.03)	(0.75)	(0.82)	(0.98)	(0.40)	(0.35)	(0.03)	(0.60)	(0.76)
Market Share	4.9950	0.4530	-0.4405	-1.4134	**3.5810****	2.1801	6.7221	7.6156	8.5884	3.5941
	(1.23)	(0.28)	(0.22)	(0.50)	**(2.20)**	(0.44)	(1.04)	(1.25)	(1.43)	(0.57)
Ln (years listed)	-0.2780	0.1201	**0.4144****	-0.0165	0.3767*	0.8947*	0.4967	0.2024	0.6332	0.2401
	(0.89)	(0.68)	**(2.01)**	(0.07)	(1.70)	(1.92)	(0.85)	(0.37)	(1.14)	(0.44)
Exports/Sales	0.9459	0.4566	-0.6289	-0.8181	0.3707	-0.6197	-0.1304	0.9551	1.1443	-0.0445
	(1.18)	(0.80)	(1.16)	(1.50)	(0.63)	(0.49)	(0.10)	(0.70)	(0.81)	(0.03)
Capex/Sales	3.8694	4.5567	3.4087	-0.1792	-2.0214	5.7648	5.0775	6.2256	9.8134	11.6557*
	(1.16)	(1.56)	(1.45)	(0.09)	(0.94)	(1.02)	(0.80)	(0.96)	(1.33)	(1.68)
$R\&D$/Sales	**-1.8860****	-1.2018*	0.6594	-0.4156	-0.2501	-1.2081	-1.8923	**-3.7535****	-2.6785	-2.8440
	(1.97)	(1.69)	(0.48)	(0.82)	(0.41)	(0.57)	(0.93)	**(2.01)**	(1.22)	(1.25)
Advertising/Sales	8.8716	11.0443	2.7333	-7.4605	0.5687	6.8857	4.7131	13.0241	23.2179	15.1887
	(1.04)	(1.33)	(0.29)	(1.47)	(0.09)	(0.38)	(0.26)	(0.87)	(1.13)	(0.81)
PPE/Sales	-0.1439	-0.0137	-0.3193	**-0.4164****	-0.4095	**-1.1589****	**-1.2891****	-0.9835*	-0.8864	-0.8933*
	(0.44)	(0.05)	(1.46)	**(2.04)**	(1.40)	**(2.30)**	**(2.24)**	(1.88)	(1.45)	(1.66)
Industry Dummies	4-digit	4-digit	4-digit	4-digit	4-digit	4-digit	4-digit	4-digit	4-digit	4-digit
Intercept Term	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample Size	418	418	418	418	418	418	418	418	418	418
Adjusted R^2	0.1035	0.0584	0.0640	0.0274	0.2490	0.1587	0.1335	0.1746	0.1715	0.1416

Ordinary least squares regressions of subindices of *KCGI* and corresponding reduced indices (*KCGI* - indicated subindex) on indicated independent variables, for 418 small firms (assets < 2 trillion won). Last column shows predicted effect on *KCGI* of a two standard deviation change in the variable, based on coefficient from regression (2). For equity finance need, predicted effect is based on regression (4); for ownership, predicted effect is combined effect of ownership and ownership^2, based on change from median value. Sample consists of 453 nonfinancial firms. *, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels. *t*-values, based on robust standard errors, are reported in parentheses. Significant results (at 5% level or better) are shown in **boldface**.. Sample (small firms, n = 418) and independent variables are the as in *Table 4, regression (2).* The coefficients on EFN are from separate regressions that omits sales growth and profitability (n = 416). *, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels. *t*-values, based on robust standard errors, are reported in parentheses. Significant results (at 5% level or better) are shown in **boldface**.

Table 7
Subsample Results

Dependent variable	KCGI				
	(1)	(2)	(3)	(4)	(5)
Subsample	small	large	non-chaebol (all small)	small chaebol	financial
Ln(assets)	**1.3964*****	2.2628	**1.2541****	1.9454	**5.6044*****
	(2.87)	(0.91)	**(2.32)**	(1.65)	**(3.69)**
Sales Growth	-0.0836	-5.8208	0.5427	-1.5222	-10.5931
	(0.05)	(0.75)	(0.31)	(0.30)	(1.28)
Profitability	-4.2038	-20.2498	-4.6329	-3.7270	-6.2280
	(1.19)	(0.54)	(1.14)	(0.54)	(0.42)
EFN	2.1189	-5.9503	3.9038	-6.6111	1.2547
	(0.80)	(0.65)	(1.39)	(1.00)	(0.15)
Sole Ownership	0.1145*	-0.4990	0.1157	0.1675	0.0810
	(1.75)	(0.83)	(1.43)	(1.10)	(0.40)
Sole Ownership^2	-0.0013	0.0107	-0.0014	-0.0018	-0.0018
	(1.54)	(0.89)	(1.16)	(1.09)	(0.68)
Chaebol Dummy	-0.3366				-0.3224
	(0.29)				(0.11)
Firm Risk	**68.3568*****	34.8341	**66.0038*****	**114.9040****	**162.7829*****
	(4.08)	(0.24)	**(3.66)**	**(2.16)**	**(3.71)**
Leverage	0.1254	**-6.3791*****	0.1182	0.1510	-2.5703*
	(0.31)	**(3.78)**	(0.26)	(0.15)	(1.97)
Market Share	7.1751		2.8245		
	(1.03)		(0.46)		
Ln (years listed)	0.6168		0.6532		
	(0.99)		(0.98)		
Exports/Sales	0.3262		1.3327		
	(0.21)		(0.82)		
Capex/Sales	9.6342		11.0741		
	(1.23)		(1.26)		
R&D/Sales	-3.0941		-3.1800		
	(1.26)		(1.36)		
Advertising/Sales	15.7574		19.7645		
	(0.75)		(0.89)		
PPE/Sales	**-1.3028****		-1.1520*		
	(2.09)		(1.84)		
Asset Size Dummy					7.7310*
					(1.82)
bank dummy					**16.1887*****
					(3.70)
Intercept term	yes	yes	yes	Yes	yes
Industry dummies	4-digit	2-digit	4-digit	2-digit	2-digit
Sample Size	418	35	361	57	58
Adjusted R^2	0.1664	0.3082	0.1388	0.1489	0.8111

Ordinary least squares regressions of *KCGI* for indicated subsamples. We use 2-digit industry dummies and fewer control variables for smaller subsamples to conserve degrees of freedom. The coefficients on EFN are from separate regressions that omits sales growth and profitability. *, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels. *t*-values, based on robust standard errors, are reported in parentheses. Significant results (at 5% level or better) are shown in **boldface**.

Table 8

Sticky Governance: Effect of Averaging Periods for Selected Financial Variables

Dependent variable	KCGI									
Averaging Period	1 year	2-years	3-years	4-years	5-years	6-years	7-years	8-years	9 years	10 years
Time averaged variables										
Sales Growth	0.0171	-0.1156	2.3138	2.1558	1.3860	2.3950	6.1403	7.9943	7.5523	5.2018
	(0.02)	(0.07)	(0.74)	(0.76)	(0.40)	(0.52)	(1.24)	(1.49)	(1.33)	(0.68)
Profitability	-5.1477*	-4.4639	**-7.7496****	**-11.2083*****	**-12.0009****	**-13.4343****	**-17.2450****	**-20.3036*****	**-22.1016*****	**-22.3470****
	(1.72)	(1.24)	**(2.47)**	**(2.69)**	**(2.46)**	**(2.28)**	**(2.58)**	**(2.80)**	**(2.83)**	**(2.53)**
EFN (regression omits sales growth and	1.4723	2.5105	3.5881	5.1683*	**6.2392****	**7.2509****	**9.1436*****	**10.9439*****	**11.3769*****	**12.2916*****
profitability)	(0.54)	(0.94)	(1.15)	(1.68)	**(2.01)**	**(2.25)**	**(2.83)**	**(3.34)**	**(3.41)**	**(3.67)**
Capex/Sales	9.5845	**16.4845****	12.6407	16.8878*	16.0875*	14.4106	15.5876	16.6875	17.8040	11.2501
	(1.22)	**(2.04)**	(1.30)	(1.75)	(1.72)	(1.46)	(1.48)	(1.53)	(1.61)	(0.99)
Advertising/Sales	14.8633	32.7327	35.8549	29.5925	26.3889	27.5837	29.4947	32.5696	33.4092	32.6854
	(0.71)	(1.45)	(1.45)	(1.25)	(1.17)	(1.27)	(1.39)	(1.53)	(1.61)	(1.64)
PPE/Sales	**-1.3751****	**-1.9558****	-1.7603*	-2.2617*	-2.3837*	-2.0544	-2.1535	-2.2314	-2.3995	-1.8869
	(2.23)	**(2.36)**	(1.86)	(1.84)	(1.71)	(1.34)	(1.29)	(1.27)	(1.30)	(0.96)
Exports/Sales	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
R&D/Sales	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Other variables										
Ln(assets)	**1.3993*****	**1.4053*****	**1.4376*****	**1.4098*****	**1.4135*****	**1.3748*****	**1.2811*****	**1.2344****	**1.2143****	**1.3309*****
	(2.87)	**(2.93)**	**(2.95)**	**(2.89)**	**(2.91)**	**(2.80)**	**(2.61)**	**(2.52)**	**(2.47)**	**(2.68)**
Firm Risk	**68.4399*****	**69.5935*****	**64.3683*****	**59.6857*****	**58.7787*****	**58.0655*****	**56.1466*****	**54.2458*****	**53.8417*****	**53.1176*****
	(4.13)	**(4.16)**	**(3.85)**	**(3.55)**	**(3.50)**	**(3.42)**	**(3.32)**	**(3.22)**	**(3.19)**	**(3.12)**
Sole Ownership	0.1117*	0.1099*	0.1226*	0.1201*	**0.1274****	**0.1278****	**0.1293****	**0.1303****	**0.1325****	**0.1350****
	(1.71)	(1.68)	(1.88)	(1.86)	**(1.98)**	**(1.98)**	**(2.01)**	**(2.02)**	**(2.04)**	**(2.07)**
Sole Ownership^2	-0.0012	-0.0012	-0.0015*	-0.0015*	-0.0015*	-0.0016*	-0.0016*	-0.0016*	-0.0016*	**-0.0016****
	(1.44)	(1.48)	(1.77)	(1.79)	(1.88)	(1.90)	(1.93)	(1.93)	(1.95)	**(1.98)**
Leverage	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Market share	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Chaebol dummy	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Ln(years listed)	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Intercept term	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Industry dummies	4-digit	4-digit	4-digit	4-digit	4-digit	4-digit	4-digit	4-digit	4-digit	4-digit
Number of Observations	418	418	418	418	418	418	418	418	418	418
Adjusted R^2	0.1690	0.1774	0.1757	0.1777	0.1745	0.1716	0.1770	0.1808	0.1812	0.1754

Coefficients from ordinary least squares regressions of *KCGI* similar to *Table 4*, *regression (2)*, except using different averaging periods for the variables indicated as "time averaged."   *, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.   *t*-values, based on robust standard errors, are reported in parentheses.   Significant results (at 5% level or better) are shown in **boldface**.

Table 9
Industry Effects (4-digit KIC Industry Dummies)

KIC Code	No. of firms	Description	Coefficient	t-value
1374	3	Professional, Scientific and Technical Services	6.4119	1.30
433	8	Manufacture of Medical, Precision and Optical Instruments, Watches and Clocks	5.2687	1.57
436	4	Manufacture of Furniture; Manufacturing of Articles, etc.	4.2463	0.99
428	7	Manufacture of Fabricated Metal Products, Except Machinery and Furniture	3.6791	1.40
432	39	Manufacture of Electronic Components, Radio, TV and Communication Equipment and Apparatuses	3.5717	1.57
1372	2	Computer and Related Activities	3.1408	0.55
419	5	Tanning and Dressing of Leather, Manufacture of Luggage and Footwear	2.7098	1.01
429	18	Manufacture of Other Machinery and Equipment	2.2658	0.89
751	20	Wholesale Trade and Commission Trade, Except of Motor Vehicles and Motorcycles	1.9696	0.72
424	77	Manufacture of Chemicals and Chemical Products	0.8384	0.38
421	16	Manufacturing of Pulp, Paper, and Paper Products	0.4124	0.16
963	2	Supporting and Auxiliary Transport Activities; Activities of Travel Agencies	0.3064	0.07
430	4	Manufacture of Computers and Office Machinery	0.0412	0.01
418	11	Manufacture of Sewn Wearing Apparel and Fur Articles	0.0325	0.01
431	15	Manufacture of Electrical Machinery and Apparatuses	Omitted	
540	8	Electricity, Gas, Steam and Hot Water Supply	-0.2804	-0.09
427	23	Manufacture of Basic Metals	-0.4205	-0.18
423	3	Manufacture of Coke, Refined Petroleum Products and Nuclear Fuel	-0.6656	-0.24
960	7	Land Transport; Transport Via Pipelines	-1.1876	-0.48
434	21	Manufacture of Motor Vehicles, Trailers and Semi-trailers	-1.2921	-0.54
417	26	Manufacture of Textiles, Except Sewn Wearing apparel	-2.0352	-0.74
425	17	Manufacture of Rubber and Plastic Products	-2.1338	-0.91
426	19	Manufacture of Other Non-metallic Mineral Products	-2.2197	-0.99
752	5	Retail Trade, Except Motor Vehicles and Motorcycles	-2.3326	-0.86
645	22	General Construction	-3.0493	-1.19
415	27	Manufacture of Food Products and Beverages	-3.4573	-1.38
205	4	Fishing	-3.7163	-0.89
420	3	Manufacture of Wood and Wood Products	-4.0501	-1.19
standard deviation of industry coefficients			**2.80**	

Coefficients and t-values for 4-digit KIC industry dummies for small firms ($n = 418$) from *Table 4, regression (2)*. Industry 431 (Manufacture of Electrical Machinery and Apparatuses) is chosen as the omitted dummy because it has the median coefficient. We omit from the table eight industries with only one firm, for which we cannot separate industry from firm effects. t-values are based on robust standard errors.

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