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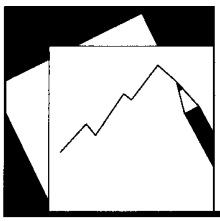

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Corporate Governance Quality: Trends and Real Effects

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Corporate Governance Quality: Trends and Real Effects

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Abstract

This paper constructs a composite index of corporate governance quality, documents its evolution from 1994 through 2003 in selected emerging and developed economies, and assesses its impact on aggregate and corporate growth and productivity. Our investigation yields three main findings. First, corporate governance quality in most countries has overall improved, although to varying degrees and with a few notable exceptions. Second, the data exhibit cross-country convergence in corporate governance quality with countries that score poorly initially catching up with countries with high corporate governance scores. Third, the impact of improvements in corporate governance quality on traditional measures of real economic activity—GDP growth, productivity growth, and the ratio of investment to GDP—is positive, significant, and quantitatively relevant, and the growth effect is particularly pronounced for industries that are most dependent on external finance.

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I. INTRODUCTION

Corporate governance reform has ranked high on policymakers' agendas in many countries since the late 1990s. New laws and regulations aimed at improving corporate governance have been introduced in many countries, and particularly in several Asian countries in the aftermath of the East Asian financial crisis of 1997-98.[2]

Yet, have governance practices *actually* improved? And, do improvements in corporate governance contribute to higher output, investment, and productivity growth in the corporate sector? To date, these key questions have not been addressed in the literature. This paper addresses these questions. We first construct a composite corporate governance quality (CGQ) index and document its evolution for major emerging markets and developed economies during the period 1994-2003. We then assess the impact of measured improvements in corporate governance quality on output growth, productivity, and investment at a country level, and on industry growth.

Our CGQ index is constructed at a country level using accounting and market data of samples of nonfinancial firms listed in the relevant domestic stock markets. Hence, it captures corporate governance quality specific to a universe of firms which are likely to be comparatively more exposed to market discipline. For this reason, the finding of no improvement in governance for these firms would likely signal the lack of improvements for the corporate sector as a whole. On the other hand, the finding of improvements for these firms could signal either that improvements have occurred in the corporate sector as a whole, or that improvements are likely to be found especially among firms subject to market discipline. In either case, the evolution of the index is informative about changes in governance in the corporate sector.

The CGQ index is a simple average of three proxy measures of *outcomes* of corporate governance in the dimensions of *accounting disclosure* and *transparency.* Disclosure and transparency are necessary, albeit not sufficient, conditions of good corporate governance, since the extent of information asymmetries among managers and stakeholders pointed out by the corporate governance literature are likely to be less severe with enhanced transparency and disclosure.[3] By focusing on indicators capturing necessary conditions for good corporate governance, we aim at capturing in a parsimonious, yet informative way, the dynamics of dimensions of corporate governance quality that are likely to be correlated with other determinants of efficient governance arrangements. As detailed below, these indicators are derived from selected studies in the finance and accounting literature.
Considering outcome-based measures of corporate governance, as opposed to de jure measures, is advantageous and informative for at least two reasons. First, tracking changes

[2] See Claessens and Fan (2003), OECD (2003), and Cheung and Jang (2005).

[3] For reviews of the literature on corporate governance, see Shleifer and Vishny (1997), Zingales (1998), Tirole (2001, 2006), Becht and others (2003), and Berglof and Claessens (2006).

in corporate governance with de jure measures is difficult, since improvements may not necessarily occur because of lags in implementation and/or enforcement, as stressed by Berglof and Claessens (2006). Second, firms may indeed choose to improve their corporate governance *prior* to or *independently of* the enactment of new rules whenever the benefits of good corporate governance, especially in terms of easier and less costly access to finance, are critical for their growth prospects.

In essence, corporate governance quality may be viewed partly as an "endogenous" firm's choice, as pointed out by Himmelberg, Hubbard, and Palia (1999) and Coles, Lemmon, and Meschke (2003). Ultimately, shareholders' or stakeholders' values will be maximized when managerial incentives are set in a right direction, and a good corporate governance helps it happen, if not necessary (e.g., Jensen 1986, and Tirole 2001). Thus, it is a broad set of underlying rules and practices that determine corporate governance and influence managerial incentives .Our aim is not to identify and quantify each of these underlying factors and the specific channels through which they operate to affect corporate governance and managerial incentives. Our contribution is to develop an outcome-based corporate-governance measures based on accounting and market data, as those data measure the outcomes of managerial decisions.

We investigate the relationship between corporate governance quality and economic performance at the country level, although most of the literature relates measures of corporate governance to firm-level performance (see, for example, Gompers, Ishii, and Metrick, 2003). Our choice is supported by empirical evidence in Doidge, Karolyi, and Stulz (2004b) who show that most of the variation in firm level governance can be explained by country-level characteristics. Furthermore, Core, Guay, and Rusticus (2006) show that investors discount values of weakly governed firms and that weak governance does not cause poor stock market returns at the firm level.

Our investigation yields three main findings. First, the CGQ index exhibits improvements in corporate governance quality in most countries considered since 1994, with the exception of few countries, where either no significant changes have occurred, or a worsening is recorded. Corporate governance quality has improved especially in the dimension of transparency, while improvements in accounting disclosure have been more limited. Second, the data exhibit cross-country convergence in corporate governance quality with countries that score poorly initially catching up with countries with high corporate governance scores.

Third, improvements in corporate governance quality affect the aggregate economic activities positively and significantly, as shown in regression analysis of per capita GDP growth, Total Factor Productivity (TFP) levels and growth, and the ratio of investment to GDP on the CGQ index. Moreover, when we gauge the impact of changes in corporate governance quality on sales growth and growth opportunities of firms grouped by industry, we find a positive effect of improvements in corporate governance on the growth of financially dependent industries. This result is consistent with the idea that improvements in corporate governance quality benefit most those industries whose growth crucially depends on external finance.

Overall, the answers to the two questions we wished to address are both positive. Actual improvements in corporate governance, as captured by our indicators, have indeed occurred in most countries, although in varying degrees and with some notable exceptions. More importantly, improvements in corporate governance quality yield tangible benefits in terms of enhanced growth, productivity and investment, and these benefits are large for those industries which rely most on external finance. Thus, effective implementation of corporate governance reform appears to be an important contributing factor to countries' well-being.

The remainder of the paper is composed of three sections. Section II details the construction of the CGQ index and its components. Section III depicts the evolution of our measures of corporate governance quality within and across countries and regions. Section IV presents country and industry regressions relating the CGQ index and its components to measures of growth, productivity and investment for the economy and the corporate sector. Section V concludes.

II. THE CGQ INDEX

The CGQ index is a simple average of three indicators, called A*ccounting Standards* (AS)*, Earning Smoothing* (ES), and *Stock Price Synchronicity* (SPS). These indicators are constructed from accounting and market data for samples of non-financial companies listed in stock markets taken from the Worldscope and Datastream databases.

A. Accounting Standards

The first indicator is a simple measure of the amount of accounting information firms disclose, and is constructed similarly to the index reported by the Center for International Financial Analysis and Research (CIFAR) until 1993.

CIFAR uses information based on the top 8 to 40 companies (depending on data availability) and on 90 items selected by professional accountants (CIFAR, 1993). Our indicator is given by the number of reported accounting items as a fraction of 40 accounting items selected from CIFAR's 90 items based on availability in the Worldscope database. We use information for the top ten manufacturing companies in terms of total asset for each year and in each country.[4]

[4] We checked the robustness of the AS indicator by constructing variants in several ways. For example, eliminating the accounting items that are reported by 95% of all firms in 1995, we construct the index using only those 16 items that are reported by less than 95% of all firms. This index has more variation, compared to original index that is based on 40 accounting items, but the correlation with the original index is very high, more than 0.95. We also constructed an alternative index using the percentage of the 10 largest firms in each country (in terms of market capitalization) that reports all of the 24 items that are reported by 95% or more of all firms, but there is very little variation. We calculate these two variants using a threshold of 85 percent instead of 95 percent 85%, but this does not alter our findings. Finally, we constructed an index based on the 100 largest firms (or less when not available) instead of the 10 largest firms, but sample selection bias appears severe, as the number of firms covered by Worldscope typically grows over time in emerging market economies.

B. Earning Smoothing

The second indicator is a measure of "earnings opacity" proposed by Leuz, Nanda, and Wysocki (2003) and Bhattacharya, Daouk, and Welker (2003). It tracks the extent to which managers may conceal the true performance of firms using accruals to smooth fluctuations of annual profits. Specifically, it is the rank correlation between cash flows (before any accounting adjustments) and profits (after accounting adjustments) across a set of firms at each point in time. This indicator is an important complement to the first indicator, since a large number of reported accounting items may be meaningless if accounts are seriously manipulated or misrepresented.

Unlike these authors, who use a pooled cross section data for each country, our measures are calculated for each year and each country. Accruals (AS) are estimated as

$$AS_{ikt} = (\Delta CA_{ikt} - \Delta Cash_{ikt}) - (\Delta CL_{ikt} - \Delta STD_{ikt} - \Delta TP_{ikt}) - Dep_{ikt},$$

where CA denotes current assets, Cash is cash and cash equivalents, CL are current liabilities, STD is short-term debt and the current portion of long-term debt, TP is income tax payable, and Dep denotes depreciation and amortization.

Since cash flow statements are not widely reported in many developing countries, cash flow from operations (ECF) are estimated by subtracting accruals (AS) from operating income (OI) : $ECF_{ikt} = OI_{ikt} - AS_{ikt}$. Cross-sectional earnings smoothing is then measured by a Spearman rank order correlation between changes in accruals and changes in estimated cash flow (both normalized by total asset). It is defined for each year and each country as

$$EarningSmoothing = 1 - \frac{6\sum_{i,t}^{N}\left(Rank\left(\frac{\Delta AS_{ikt}}{TA_{ikt-1}}\right) - Rank\left(\frac{\Delta ECF_{ikt}}{TA_{ikt-1}}\right)\right)^2}{N(N^2-1)}$$

The ES indicator is standardized so that its values fall in the unit interval and increases as earning smoothness declines (i.e. firm performance is less opaque). Thus, an increase of this indicator signals an improvement in transparency.

C. Stock Price Synchronicity

The third indicator is a measure of stock price synchronicity proposed by Morck, Yeung, and Yu (2000), given by the average goodness-of-fit (R^2) of regressions of each company's stock return on country-average return in each year.[5] These authors show that after controlling for other drivers of co-movements in stock prices not necessarily related to

[5] Morck, Yeung, and Yu report a second measure, given by the share of stocks whose prices move in the same direction (either up or down). Our results are invariant to the use of this measure.

corporate governance,[6] more synchronous stock prices are found in countries in which corporate governance is poor and financial systems are less developed. More recently, Jin and Meyers (2006) analyze a larger data set and find a positive relationship between stock price synchronicity and lack of transparency. Intuitively, if the accounting information is opaque, investors find it difficult to distinguish good performers from bad performers. *Ceteris paribus*, in the event of a shock to the market or the arrival of new information, the inability of investors to discriminate among firms would induce them to trade most stocks, prompting movements in stock prices to become more synchronous.

We should note that synchronicity can also occur if there is cross-subsidization among firms belonging to the same group. Cross-subsidization may stem from optimal allocation of funds in internal capital markets. Yet, in a poor governance environment, cross-subsidization is likely to be associated with inefficient connected lending: this governance-specific feature is likely captured by the SPS indicator, but it is not by the AS and ES indicators. In this sense, the SPS indicator complements the two indicators previously described.

For each year, the SPS indicator is computed in five steps. First, we calculate weekly return r_{ikt} for each firm (t = week), dropping firms with less than 30 weeks observation, and dropping an observation if the absolute value of r_{ikt} is greater than 0.25. Second, we calculate market capitalization-weighted weekly returns for each country k, ρ_{kt}, using weekly stock price indexes is from Datastream, and weekly net exchange rate appreciation rates for each country, $e_{kt.}$ Third, for each firm we run the regressions: $r_{ikt} = \alpha_i + \beta_i \rho_{kt} + \gamma_i (\rho_{USt} + e_{kt}) + \varepsilon_{it}$, and retrieve the relevant goodness of fit R^2_{ik}.

Fourth, we calculate the total variation for each firm, given by $SST_{ik} = \sum_{t=1}^{T} \left(r_{ikt} - \frac{1}{T} \sum_{t=1}^{T} r_{ikt} \right)^2$, and compute the country level common variation, given by: $R^2_k = \frac{\sum_i \left(R^2_{ik} \times SST_{ik} \right)}{\sum_i SST_{ik}}$. To avoid sample selection bias, R^2_k is computed for the same sample size over years (but possibly for different companies) based on the rank order of market capitalization. Finally, the SPS indicator is standardized so that its range is the unit interval, it increases as synchronicity *declines* (i.e. transparency improves), and is computed based on an equal number of (but different) firms selected by their market capitalization at each date.[7]

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[6] Synchronicity may be observed if a country specializes in specific industries. In this case, industry specific shocks would drive overall movements of stock prices, in contrast with the case of a highly diversified country. In addition, if aggregate shocks are large (e.g., overall boom and bust, oil shocks, or currency crisis), then stock prices may move more in those countries which are most sensitive to aggregate shocks.

[7] This selection criterion takes into account changes in stock price synchronicity due to changes in the number of firms that are listed in the stock exchange at each point in time. This is important especially in the case of countries that experienced a crisis. By construction, a balanced sample would not reflect exits of bankrupt firms

(continued…)

Three measurement issues deserve further discussion. First, while our measures of corporate governance are widely accepted proxies for various aspects of corporate governance, we cannot rule out that they also capture other aspects of firm performance. For example, stock price synchronicity may be affected by abrupt declines in capital inflows, also known as sudden-stops. We try to mitigate this in our empirical work by investigating various sub-samples of our data, such as dropping countries that experienced a crisis or that do not have well-developed stock markets.

Second, by construction, our CGQ index does not capture all aspects of corporate governance but focuses on two important aspects of corporate governance: disclosure and transparency. The choice of our variables has been determined by three criteria: (1) they are based on widely accepted methodologies developed in the finance literature; (2) they are based on widely available financial data and can easily be replicated and updated; and (3) they can be computed annually so we can track changes over time. We have considered a number of other variables considered by the corporate governance literature but these were not included because they did not meet any of the above criteria. These variables include ownership structures,[8] American Depository Receipts (ADR) premiums,[9] and the value of cash holdings.[10]

Finally, as already mentioned, we focus on *de facto* measures of corporate governance and do not include *de jure* measures such as shareholder rights and those based on securities laws (see La Porta et al., 1998, and La Porta et al., 2006). The reason is that we want to capture changes in corporate governance at the firm-level rather than changes in laws that are generally made at the country-level, and most importantly, we aim to capture real rather than legal changes in corporate governance quality. Changes in laws often merely reflect changes

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(possibly characterized by poor corporate governance) and entry of new firms (possibly characterized by good corporate governance).

[8] Although there exists a large literature on the relationship between ownership and firm performance; see, for example, Shleifer and Vishny, 1997, Claessens et al., 2000, and Gompers, Ishii, and Metrick, 2003), we do not consider ownership structures of firms because data on ownership structures is not widely available and because ownership structures do not change much over time, except when dramatic events such as mergers and acquisitions occur.

[9] We do not consider ADR premiums because this measure does not exhibit a consistent pattern across countries. In theory, ADR premiums (i.e., the stock price premium of ADRs over domestically listed shares) for foreign firms cross-listed in the United States should be higher for firms with worse corporate governance (see, for example, Doidge, Karolyi, and Stulz, 2004a and 2005). However, of all the countries included in our study we find that U.K. and Canadian firms display the highest premiums, and that premiums of firms in these countries are significantly higher than for firms in countries that one would expect to have poor corporate governance.

[10] The value of cash holdings measure proposed by Pinkowitz, Stulz, and Williamson (2005) is based on the premise that one dollar in the corporate balance sheet is valued less than one dollar by the stock market in countries where corporate governance is weak. This measure appears highly volatile when estimated over time and therefore does not seem to capture well changes in corporate governance over time.

on the book, because they are not effectively enforced, rather than real changes that affect firm performance.

III. TRENDS IN CORPORATE GOVERNANCE QUALITY

Tables A1 to A4 in the Appendix report the time series of the CGQ index and its components for 10 Asian Countries (China, Hong Kong, India, Indonesia, Korea, Malaysia, Pakistan, Philippines, Singapore and Thailand), seven Latin American countries (Argentina, Chile, Brazil, Colombia, Mexico, Peru and Venezuela), 22 developed countries[11] and two other emerging markets (South Africa and Turkey).

As shown in Figure 1, improvements in corporate governance quality have been recorded in *most* emerging markets economies and developed economies, although with varying intensity. With regard to emerging market economies, it is worth noting that improvements in the CGQ index in Asian countries have been larger on average than those witnessed by Latin American countries, which also exhibit levels of the index generally lower than in Asia. Yet, in both emerging market regions, as well as in some developed economies, the level of the index remains about 15 to 20 percent below that of the first quartile of developed economies.

The case of Asia is of interest with regard to the information content of our CGQ index relative to changes in *de-jure* measures. As shown in Figure 2, the CGQ index exhibits an upward trend in all Asian countries except China, where the index exhibits a decline. However, notable improvements have been recorded in Hong Kong, Malaysia, Philippines, Singapore and Thailand, while improvements in India, Indonesia, Korea and Pakistan have been more muted. These patterns contrast with those exhibited by measures of shareholders' and creditors' rights during a similar period.[12] As shown in Table 1, minority shareholders' rights appear to have been strengthened in some countries, but not in others. By contrast, measures of creditors' rights do not appear to have improved, and they have even worsened in some countries (Table 2). Yet, there appears to be no relationship between the direction of change recorded by de-jure type measures and that recorded by our outcome-based measure. This apparent mismatch suggests the importance of taking into account the endogeneity of firms' governance choices in evaluating trends in corporate governance quality.

In which dimension corporate governance quality has changed most? As noted, each component of the CGQ index captures different, albeit complementary, aspects of corporate governance quality, as witnessed by the fact that their cross-correlation is relatively low,

[11] The developed countries are: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, U.K. and U.S.

[12] Time series of creditors' rights are compiled by Djankov, McLeish and Shleifer (2005). Minority shareholders' rights are first reported by La Porta and others (1998) for period before 1997. For the period after 2000, we collected information on minority shareholders' rights to be comparable to La Porta and others (1998), based on Cheung and Jang (2005) and OECD (2003).

ranging from 0.15 to 0.35. Thus, it is informative to look at the evolution of each component separately.

As shown in Figure 3, improvements in the ES indicator have occurred in Asia, and they have been substantial in developed economies, while progress has been either slow, or non-existent, in the Latin American countries. Thus, in the dimension of transparency captured by the ES indicator, progress has been slower on average in emerging markets. Observe that the value of the ES indicator for the median Asian and Latin American countries remains about one third lower than the median of the developed country group as of 2003. By contrast, progress in the transparency dimension captured by the SPS indicator has been more pronounced in emerging markets than in developed economies (Figure 4). Indeed, Asian countries exhibit levels closer to those exhibited by other developed countries, while for Latin American countries SPS levels remain significantly lower than those of developed countries, despite recent improvements. Lastly, the AS indicator exhibits some improvement, albeit small, in most Asian countries, while the indicator exhibits virtually no change in both Latin American and developed economies (Figure 5).

Despite the noted regional and country differences in the evolution of the index, *convergence* towards higher values of the CGQ index has occurred, as indicated by the negative and relatively large cross-country correlation (-0.53) between the average growth rate of the CGQ index during the 1994-2003 period and the 1995 level. On average, countries with the fastest average rate of increase of the index were indeed those witnessing the lowest levels of the index in 1995. For example, the gap between the CGQ index in Asian countries and that recorded for the United States, which is the highest among all countries in all years, has narrowed since 1994. Notably, convergence has occurred at a relatively faster rate in the transparency dimension, as the correlations between initial levels of the ES and SPS indicators and their average growth rates, equal to -0.74 and -0.67 respectively, are substantially higher in absolute value than the relevant correlation for the CGQ index.

In sum, corporate governance quality of non-financial firms listed in domestic stock markets has overall improved in almost every country considered during the 1994-2003 period, and improvements have been witnessed primarily in the transparency dimension captured by the ES and SPS indicators. Remarkably, convergence in corporate governance quality has indeed occurred within the set of countries considered.

A critical question is whether improvements in corporate governance quality have "real" effects. We address such question next by measuring the impact of our indicators on real economic outcomes.

IV. THE REAL EFFECTS OF CORPORATE GOVERNANCE QUALITY

Corporate governance quality may affect aggregate economic activity through several channels. For example, improvements in corporate governance quality may impact positively on growth by lowering firms' cost of funds and possibly increasing the supply of credit, thereby encouraging investment. Moreover, better governed firms may align managers' and claimholders' interests more closely, providing stronger incentives for managers to achieve high firm's productivity and improve it through the adoption of frontier technologies. As a

result, capital in the corporate sector may be allocated more efficiently, and economy-wide productivity and productivity growth may increase.

More generally, corporate governance arrangements can be viewed as *technologies* that firms may adopt subject to the constraints of the institutional environment in which they operate. Recently, Comin and Mulani (2005) formulate an endogenous growth model which embeds firms' choices of "general innovations", defined as innovations that are available and applicable to several firms and sectors, and whose "rents" or "benefits" are not privately appropriable, as in the case of patentable research and development. Their model rationalizes several empirical facts concerning the dynamics of productivity growth at the aggregate level, as well as at an industry and firm level. Managerial and organizational innovations are prominent examples of "general innovations". If corporate governance arrangements are viewed as "general innovations" in the sense of Comin and Mulani, then they may have a significant impact on macroeconomic activity and productivity growth.

To assess the link between corporate governance quality and macroeconomic activity, we estimate two complementary statistical models that can be viewed as generic empirical counterparts of models of endogenous growth partly driven by "general innovations" such as corporate governance arrangements. The first model is a simple dynamic panel model that exploits both the time and cross sectional dimensions of the data. We use this set-up to explore the impact of our measures of corporate governance quality on GDP growth, on the level and growth of estimates of Total Factor Productivity (TFP), and on the ratio of investment to GDP. The second model exploits only the cross sectional dimension of the data, but expands such dimension by including industry level data. We use it to explore the impact of changes in our corporate governance indicators on the growth of industries most dependent on external finance.

A. Impact on Growth, Productivity and Investment

Our benchmark statistical set-up is given by the following standard autoregressive dynamic panel model:

$$Y_{it} = \alpha_i + CGQ_{it-1}\beta + Ln(X_{it})\gamma + \delta Y_{it-1} + \varepsilon_{it}, \quad t \in [1,..,T],\ i \in \{1,..,N\} \qquad (1)$$

The dependent variable, Y_{it}, denotes either GDP growth, TFP levels, TFP growth[13] and the investment-to-GDP ratio for country $i \in \{1,..,N\}$ (N denotes the number of countries) in year $t \in [1,..,T]$ (T denotes the terminal date of the sample). The constants α_i capture time-invariant, unobserved country specific effects. CGQ_{it-1} denotes the CGQ index or the vector of its components, and it is lagged since we assume it takes time to translate the effects of a change in corporate governance in a given year into macroeconomic outcomes. Of course, such a change will affect values of the dependent variable beyond the subsequent year via its

[13] We estimate TFP growth based on the standard method used by Klenow and Rodriguez-Clare (2005) without correcting for changes in educational attainments. Most of underlying data up to 2000 are from Penn World Table 6.1 and others are from IMF's WEO database and World Bank database.

autoregressive term. X_{it} denotes a vector that includes *all* other variables that affect Y_{it}, and are log-transformed for the reasons detailed below. The errors ε_{it} are assumed to be identically, independently distributed and uncorrelated over time and across countries. Our focus is on estimates of the parameter vector β.[14]

We accomplish this estimation following two steps. First, using the difference operator $\Delta x_t \equiv x_t - x_{t-1}$, equation (1) can be expressed as:

$$\Delta Y_{it} = \Delta CGQ_{it-1}\beta + \Delta Ln(X_{it})\gamma + \delta \Delta Y_{it-1} + \Delta \varepsilon_{it} \qquad (2)$$

Note that if we could control exhaustively for each relevant country component of the vector X_{it}, we would be able to obtain precise unbiased estimates of β using equation (2). However, controlling for all relevant variables is likely to be a daunting task. Even if this could be done, we would rapidly exhaust our degrees of freedoms.

Alternatively, we can approximate, and control for, the effects of these variables by making assumptions on the data generating process of X_{it}. Specifically, we assume that the vector X_{it} satisfies $\Delta Ln(X_{it}) = G_i + \nu_{it}$, where ν_{it} are identically, independently distributed. and uncorrelated over time and across countries. This amounts to assuming that the continuously compounded growth rates of the variables in X_{it} are random. Next, define $A_i \equiv G_i\gamma$ and $\eta_{it} \equiv \nu_{it}\gamma + \Delta\varepsilon_{it}$. We make the further assumption that *all* ν_{it} are uncorrelated with CGQ_{it-1} and $\Delta\varepsilon_{it}$. Under this set of assumptions, we obtain the following fixed (country) effect dynamic panel regression model in differenced variables:

$$\Delta Y_{it} = A_i + \Delta CGQ_{it-1}\beta + \delta \Delta Y_{it-1} + \eta_{it} \qquad (3).$$

Using (3), we effectively control for time-invariant country characteristics by including country-fixed effects. Furthermore, to the extent that any time-varying country characteristic that we have not controlled for is not correlated with changes in our corporate governance index, our inference remains valid.[15]

We estimate β by applying the *difference* GMM estimation procedure developed by Arellano and Bond (1991) to equation (3). Since such estimation is carried out on differenced variables, it is actually implemented through differencing of equation (3), which is equivalent to "double" differencing equation (1). In this way, we are able to introduce an additional layer of country specific effects that are used to control for the deterministic component of all

[14] As stressed by Bond (2002), one advantage of this type of autoregressive-distributed lag model is that it does *not* require modeling the series on the right hand side of the equation to estimate the relevant coefficients.

[15] Standard control variables used in the growth literature, such as schooling and population growth, tend not to vary much over short periods of time, and are unlikely to be highly correlated with our corporate governance index. However, a large aggregate shock, for example one resulting in a currency crisis, may be correlated with the CGQ index and below we conduct robustness checks to account for this possibility.

variables X_{it}. Only in the regressions of the ratio of investment to GDP as the dependent variable, we have added the lagged value of GDP growth to control for business cycle effects.

Estimations are carried out using an unbalanced panel composed of annual data of country-year observations for all countries listed previously for which data could be constructed or were available (about 40 countries) during the period 1993-2004. We first present the results for the benchmark model, and subsequently we assess whether, and in what way, these results change under some modifications of the benchmark model. In all the benchmark estimates, as well as in virtually all subsequent ones, standard tests indicate that the specification of the model is by and large satisfactory.[16]

Benchmark results

As shown in Table 3, estimates of the benchmark model yield three main results. First, GDP growth, TFP levels, TFP growth and the ratio of investment to GDP vary positively and significantly with lagged values of the CGQ index. Second, changes in corporate governance quality have a significant economic impact on GDP, TFP growth and the ratio of investment to GDP. Namely, a one-standard deviation increase in the CGQ index in the current year results in an increase in GDP growth of about one percent (0.0093 = 0.098*0.0947), an increase in TFP growth of about half percent (0.0059 = 0.182*0.0324), and a change in the ratio of investment to GDP almost equal to the sample average (16.058 = 3.421*4.6941), in the following year. By contrast, the quantitative impact on productivity levels is more muted. Third, the positive dynamic relationship between all measures of macroeconomic outcomes and corporate governance quality appears importantly driven by improvements in transparency, since the coefficients associated with the SPS indicator are positive and significant in all regressions. Note, however, that the ratio of investment to GDP is also driven by improvements in the AS indicator in this benchmark specification..

Accounting for financial crises

We wish to establish whether the benchmark results are primarily driven by observations sampled during "crisis" years, defined as years characterized by either output drops, sharp currency devaluations, stock market crashes, systemic bank failures, or combinations of all these occurrences. If this were the case, the impact of corporate governance quality on macroeconomic outcomes (parameter β) would likely be estimated imprecisely, since even shocks that are "temporary" relative to a long time span would necessarily appear as "long-lasting" in the short time dimension of our data. Moreover, and related to some of the components of our CGQ index, our estimates could capture effects not necessarily related to corporate governance. For example, the high synchronicity of individual stock returns occurring during stock market crashes may coincide with sharp declines in GDP per capita,

[16] For all estimates, we report Sargan two-step statistics testing the validity of the overidentifying restrictions introduced with instrumental variable estimation and Arellano and Bond statistics for testing first and second order autocorrelation of differenced errors.

generating a temporarily high co-movement between GDP growth and synchronicity in stock returns.[17] In addition, during crisis periods firms may try even harder not to disclose information and overstate firm performance, resulting in an unusually high reporting of accounting accruals. Again, this could generate a temporarily high co-movement between ES and macroeconomic outcomes, which would be reflected as a relatively "long-lasting" shock in our estimation.

To cope with this issue, we first defined "crises" country-years if there was *either* a negative value of GDP growth (an output drop), *or* a negative change in stock market capitalization (a stock market drop), *or* a banking crisis, identified as the initial year and the year subsequent to a banking crisis date as classified by Laeven and Honohan (2005). Then, we estimated the benchmark model on a sample where all "crisis" country-years were dropped, that is, on a sample of "non-crisis" country-years. As shown in Table 4, all our parameter estimates remain virtually unchanged. Thus, our results do not appear to be driven by crisis periods.

Accounting for complex dynamics

In the benchmark model a change in corporate governance quality affects macroeconomic outcomes with a one-year lag, and impacts on their future values through the persistence parameter δ. In reality, changes in corporate governance may take a longer time to exert their effects on macroeconomic outcomes and could be highly persistent. In addition, crisis and recovery from crisis may well create complicated dynamic paths which might not be effectively captured by the simple lag structure of the benchmark model. For example, if improving governance is costly to the firm, but its cost varies according to whether or not a crisis is unfolding, then a firm dynamic decision to improve governance could create a complex interaction with the level of macroeconomic activity. Statistically, in these cases the assumption of independent distribution of the errors over time in equation (3) may be inappropriate.

To assess whether the benchmark model is a reasonable approximation of the data generating process in this dimension, we augmented the lags structure of the model subject to the constraints imposed by the time span of our data. Specifically, we estimated equation (1) with two additional lagged values of the corporate governance indicator, and one additional autoregressive term, both for the whole sample and the "non-crisis" sample defined previously.

As shown in Table 5, the qualitative results obtained previously remain unchanged. In addition, these estimates provide some useful insights. First, higher lagged values of the CGQ index have a positive effect, but the coefficients are not significant, indicating that the benchmark lags specification for this variable is not off the mark. Second, the size of the

[17] The data on stock price synchronicity and GDP growth for the East Asian crisis countries during the crisis years 1998-99 are consistent with this: the stock market crash in late 1998 coincided with high synchronicity in stock returns, and a sharp decline in GDP was recorded with one year lag in 1999, generating an exceptionally high co-movement between stock price synchronicity and GDP per capita growth during the crisis period.

coefficients associated with the corporate governance quality index increases significantly compared to the benchmark model, while the second lag of the dependent variable is significant, indicating a high persistence of the impact of improvements in corporate governance especially on GDP and TFP growth. Third, the size of the coefficients for the "non-crisis" sample are notably larger than those of the whole sample, suggesting that during crisis periods the effects of improvements in corporate governance may not be as large as during "non-crisis" periods.

Accounting for financial development

Identifying the impact of corporate governance quality *per se* on aggregate economic activity is complicated since other interrelated factors may be at play. Among these, financial development is of particular importance, since such development may be both a function, and a potentially important determinant, of corporate governance quality. For example, if firms cannot achieve the potential reduction in borrowing costs arising from improvements in corporate governance because the capacity of the financial sector to price risk is underdeveloped, then their incentives to improve corporate governance may be limited. In addition, financial development *per se* may be an important determinant of macroeconomic outcomes. In terms of the benchmark model, variables related to financial development may be dynamically correlated with our corporate governance indicators, making necessary to take them explicitly into account to mitigate the potential biases in the estimates.

To account for financial development and its potential interaction with corporate governance, we consider the following extension of the benchmark model:

$$Y_{it} = \alpha_i + \beta_1 CGQ_{it-1} + \beta_2 FD_{it-1} + \beta_3 (CGQ_{it-1} FD_{it-1}) + Ln(X_{jt})\gamma + \delta Y_{it-1} + \varepsilon_{it} \quad (4),$$

where FD_{it-1} is the lagged value of a proxy measure of financial development, given by the sum of private credit and stock market capitalization to GDP. As before, we estimate parameters β_1, β_2 and β_3 by applying the difference GMM estimator to the regression:

$$\Delta Y_{it} = A_i + \beta_1 \Delta CGQ_{it-1} + \beta_2 \Delta FD_{it-1} + \beta_3 \Delta (CGQ_{it-1} FD_{it-1}) + \delta \Delta Y_{it-1} + \eta_{it} \quad (5).$$

As shown in Table 6, while the qualitative results are essentially the same as those obtained with the benchmark model, they provide evidence of the complementarities between corporate governance and financial development we have emphasized. In fact, the interaction terms between these variables are positive and significant in all regressions except the ones with the ratio of investment to GDP as the dependent variable. That is, the economic impact of improvements in corporate governance on macroeconomic outcomes is overall the larger the more developed is the financial sector. Furthermore, while the "autonomous" impact of the SPS indicator continues to be positive and significant in all regressions, now the ES and AS measures too exhibit positive and significant effects on TFP levels and TFP growth respectively when interacted with the financial development proxy. This result is consistent with the role of a developed financial sector in enhancing the impact of improvements in corporate governance.

Long-run effects

The "steady state" version of our model provides a gauge of the "long-run" effects of corporate governance quality on macroeconomic outcomes. In such a version of the model all variables are assumed to growth at a constant deterministic rate forever, and the implied impact of corporate governance is given by estimates of the parameter $\beta/1-\delta$. While we have established that such parameter is positive and significant, the time span of our data is too short to allow us to measure these long-run effects with precision. Moreover, pinning down such effects with country cross-sectional regressions is difficult, since one would need to identify through theory, and control explicitly for, a host of country specific, possibly endogenous, variables. Besides, with only about 40 observations in the sample, the country cross sectional dimension is rather small to obtain estimates with a satisfactory degree of precision. Rather than pursuing this avenue, we complement the foregoing analysis by expanding the cross sectional dimension of the data in order to focus on the differential effect of improvements of corporate governance on long-run industry growth.

B. Impact on Growth of Financial Dependent Industries

As noted, the returns of good corporate governance are likely to be the largest when firms are able to attain easier and less costly access to finance, and such access is critical for their growth prospects. Therefore, we would expect that the benefits of improvements in corporate governance quality would be the largest for financially dependent industries.

To assess this conjecture, consider the following industry level counterpart of model (1):

$$Y_{ijt} = \hat{\alpha}_i + \hat{\alpha}_j + X_{it-1}\beta_1 + Z_{jt-1}\beta_2 + W_{ijt-1}\beta_3 + \delta Y_{ijt-1} + \eta_{ijt}, \quad (6)$$

with $t \in [1,..,T]$, $i \in \{1,..,N\}$, $j \in \{1,..,M\}$, where M is the number of industries, Y_{ijt} is the continuously compounded real growth rate of industry j in country i, $\hat{\alpha}_i$ and $\hat{\alpha}_j$ are fixed country and industry effects respectively, X_{it} are firm-specific variables, Z_{jt} are country specific variables, W_{ijt} are firm-country specific variables, and η_{ijt} is the error term

Under the assumption that *all* right-hand side variables grow at a constant deterministic rate during the period $[1,..,T]$, in a steady state we obtain the following regression model:

$$Y_{ij} = \alpha_i + \alpha_j + W_{ij}\hat{\beta} + \varepsilon_{ij}. \quad (7),$$

where $\alpha_i = (1-\delta)^{-1}(\hat{\alpha}_i + X_i\beta_1)$, $\alpha_j = (1-\delta)^{-1}(\hat{\alpha}_j + Z_j\beta_1)$, $\hat{\beta} = (1-\delta)^{-1}\beta_3$ and $\varepsilon_{ij} = T^{-1}\sum_{t=1}^{T}\eta_{ijt}$,and all variables without time subscript denote their relevant constant growth rates.

As noted previously, precise and unbiased estimates of $\hat{\beta}$ would be obtained if we could control exhaustively for each relevant component of the vector W_{ij},. Yet, this is a task even more difficult than that we faced before, since it would require identification of a host of country *and* industry specific variables. For these reasons, we employ an approach similar to the one developed by Rajan and Zingales (1998), and estimate the following benchmark industry level regression:

$$Growth_{ij} = \alpha_i + \alpha_j + \gamma * Share_{ij} + \beta * \Delta CGQ_i * ED_j + \varepsilon_{ij} \qquad (8).$$

where $Growth_{ij}$ is real sales growth over the period 1995 to 2003, calculated at the ISIC industry level and weighted by the lagged value of market capitalization of individual firms, $Share_{ij}$ is the share of the industry in total real sales of the country in 1995, ΔCGQ_i is the *change* in our country-level index of corporate governance over the period 1995 to 2003, and ED_j is the Rajan and Zingales (1998) measure of external financial dependence, calculated at the 2-or 3-digit ISIC industry level over the period 1980 to 1989. We include the industry share in total sales to capture a potential convergence effect, since industries that are large relatively to other industries in the country are expected to grow at lower rates.

This specification has the advantage over a pure cross-country regression in that it controls for country and industry fixed effects. However, it rests on the assumption that the vector W_{ij} is only composed of two elements, the variable $Share_{ij}$ and the interaction term $\Delta CGQ_i * ED_j$, that is, $W_{ij}\hat{\beta} = \gamma * Share_{ij} + \beta * \Delta CGQ_i * ED_j$. In what follows, we also consider a richer specification of the vector W_{ij} which includes Rajan and Zingales' specification as a special case.

It is also worth stressing that this specification only allows us to measure the differential effect of improvements of corporate governance on outcome measures of economic performance, but not level effects. That is, we can measure whether improvements in corporate governance disproportionately affect the growth of industries that are most likely to benefit from such improvements, but we cannot measure whether improvements in corporate governance directly affect the growth of all industries.

The industry characteristic of interest is the degree of external financial dependence, measured as the share of investment not financed by operating cash-flow (see Rajan and Zingales, 1998), because we expect industries that rely more on outside finance to benefit most from improvements in corporate governance because it should help them to attract external financing for investment.

Table 7 reports the regressions results of our basic specification in model (16). In addition to using our overall index of corporate governance, we also run regressions for improvements in each component of the governance index. We include the change in AS, ES and SPS indicators over the period 1995-2003 in the regressions. To reduce outliers, we restrict growth rates in real sales to -1 and +2.

We find a strong and positive effect of improvements in corporate governance, as measured by stock price synchronicity, on the growth of financially dependent industries. The effect is statistically significant at the 5% level (column 5 of Table 7). The economic effect of the result is also significant. Take regression 5 in column (5) of Table 7. The coefficient of this regression suggests that an industry at the 75th percentile of financial dependence in a country at the 75th percentile of change in stock price synchronicity has a growth rate that is 0.13 (= 2.216*(0.126*0.452-(-0.018)*0.070)) higher than an industry at the 25th percentile of financial dependence in a country at the 25th percentile of change in stock price synchronicity (see Table A.5 for the summary statistics of the main regression variables). This is a substantial effect compared to the average growth rate of 0.41 (i.e., about one-third of average growth).

In columns (2) to (4), we include one of the sub-components of the corporate governance index. While again we find a positive disproportionate effect of corporate governance on the growth of financial dependent industries, the effects are not measured precisely and are not statistically significant from zero. In column (5), we include all three sub-components of the corporate governance index and find similar results.

In Table 8, we wish to assess whether the effect depends on whether countries where affected by a banking crisis or not. In other worlds, we wish to check the results are not driven by the crisis countries (because all sorts of things may have occurred in these countries during our sample period that we are not effectively controlling for and because their growth are very volatile). We use data from Laeven and Honohan (2005) to identify banking crises. The 12 crisis countries in the sample are: Argentina, Brazil, China, Indonesia, Japan, Republic of Korea, Malaysia, Mexico, the Philippines, Thailand, Turkey, and Venezuela. In columns (1) to (5), we re-run the regressions for the subset of countries without banking crises during the sample period 1995-2003. We confirm our main result, suggesting that the effect we find is not driven by crisis countries.

In Table 9, we test whether the governance effect we identify is independent of the financial development effect identified by Rajan and Zingales (1998). They show that the growth of financially dependent industries is disproportionally higher in countries with more financial development. So if financial development and corporate governance quality are highly correlated, it could be that we are simply capturing their effect. To test whether corporate governance has an effect beyond the effect of financial development identified by Rajan and Zingales, we include an additional interaction term that is the interaction between financial dependence and changes in financial development, as well as a triple interaction term between financial dependence, changes in corporate governance quality, and changes in financial development. As measures of financial development we use private credit to GDP or the sum of private credit and stock market capitalization to GDP. We find that our main result is not affected.[18]

[18] We have also analyzed whether the effect is different for the subset of East Asian countries in our sample. The reason for focusing on the East Asian countries is that growth and changes in corporate governance quality may have followed different paths in these countries in response to governance problems arising from the East

(continued…)

V. CONCLUSION

The paper has constructed new measures of corporate governance quality for a broad set of developed and emerging market countries based on recent advances in the finance literature. Contrary to existing indicators of corporate governance based on tracking changes de jure governance laws and regulations, our index reflects the actual outcome of governance in the marketplace. This is important, because legal changes may not necessarily reflect actual outcomes owing to implementation lags, and because corporate governance quality may be an important firm's *decision,* which can change relatively independently of the institutional environment in which firms operate. For a large set of countries during the period 1994 to 2003, our measures indicate that corporate governance quality has improved in almost all countries, and there is evidence of convergence.

We have gauged the "real" effects of corporate governance quality through estimation of a set of dynamic panel regression models for GDP growth, TFP levels, TFP growth, and the ratio of investment to GDP, and cross sectional regressions of growth at the industry level.

Overall, our evidence suggests that improvements in corporate governance quality have a positive and significant effect on all measures of macroeconomic outcomes considered. This is true especially in the transparency dimension, as shown by the positive and significant impact of the SPS indicator, as well as by a similar impact of ES and AS indicators in countries with more developed financial sectors. In addition, we found that improvements in corporate governance appear to positively affect the performance of industries that depend on external finance.

These results are consistent with the notion that well-governed firms incorporate better managerial incentives that are likely to spur corporate sector growth and improve its productivity independently of the level of financial development. However, we also find that a higher level of financial development boosts the positive effects of improvements of corporate governance on macroeconomic outcomes, consistent with the notion that well-governed firms are better able to attract outside financing.

In sum, these findings suggest that it is actual, not necessarily legal, changes in corporate governance that really matter. Thus, our findings call for additional work to collect new data and compare a broad set of de-jure and outcome-based measures of corporate governance rules and practices. We believe that such comparisons would enhance our understanding of the drivers of improvements in the quality of corporate governance and their real effects.

Asian financial crisis in 1997-98. However, we do not find a significant difference in the results for East Asian countries compared to the rest of the world.

Figure 1: CGQ Index, Sub-Period Averages

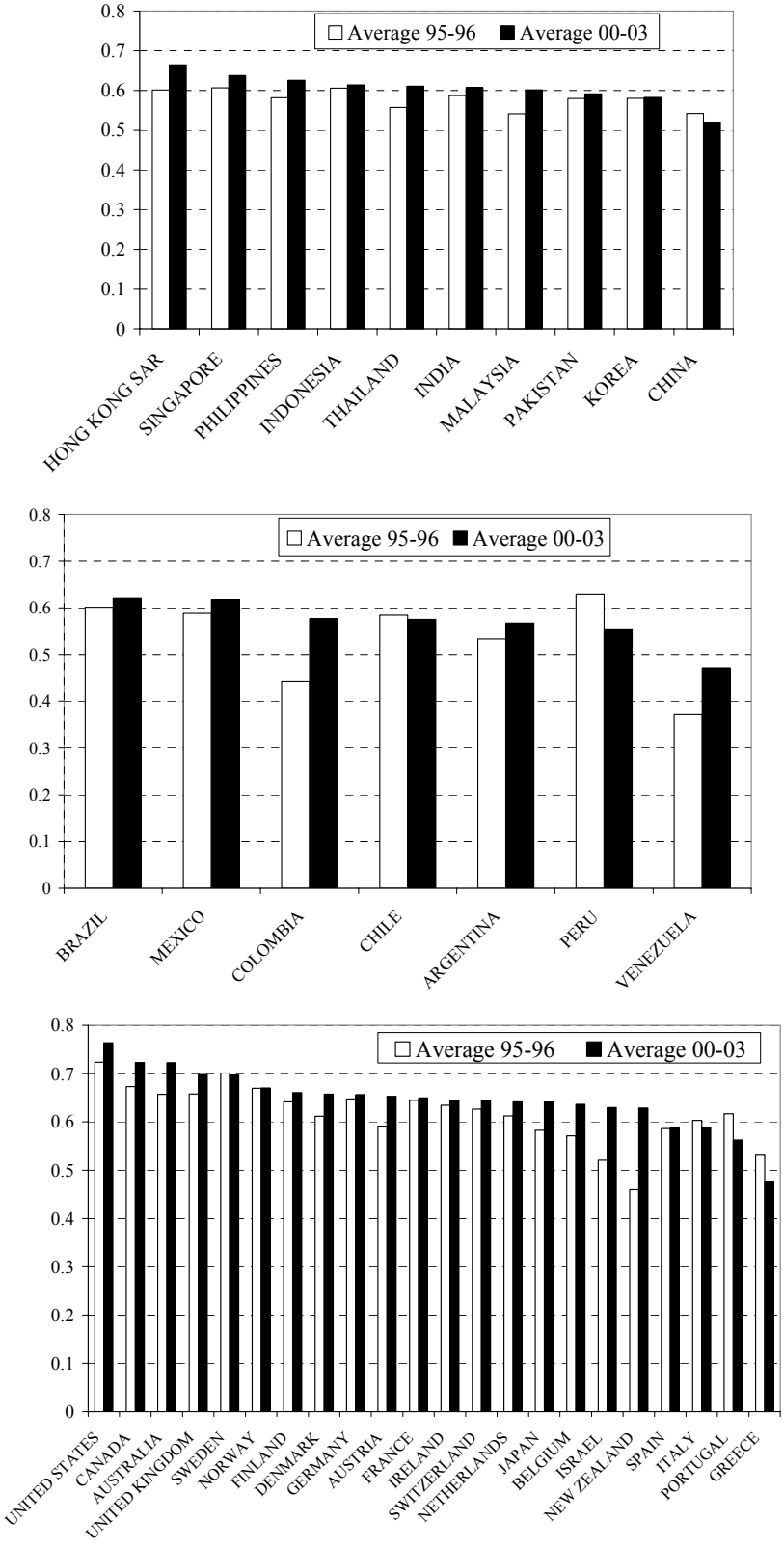
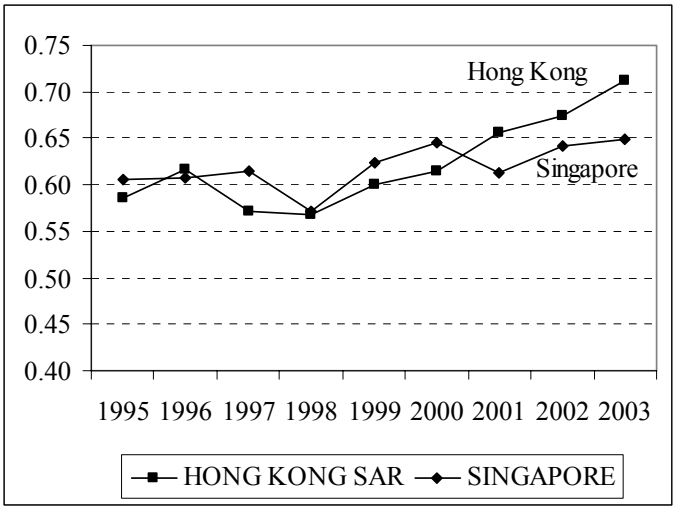
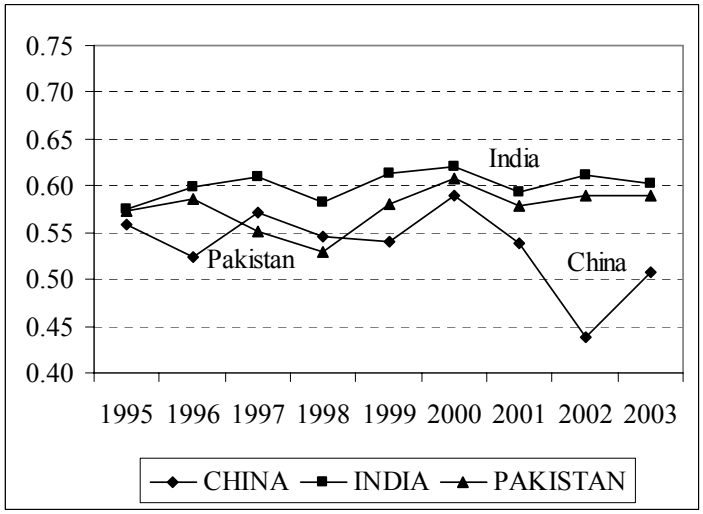


Figure 2: CGQ Index in Asia





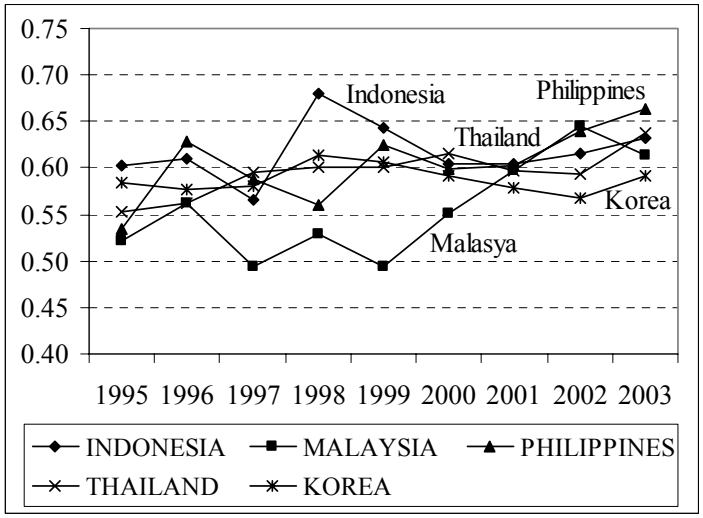
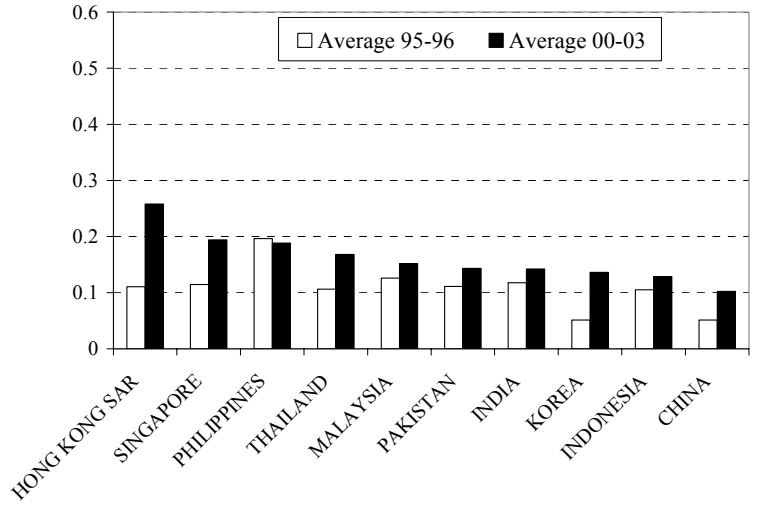
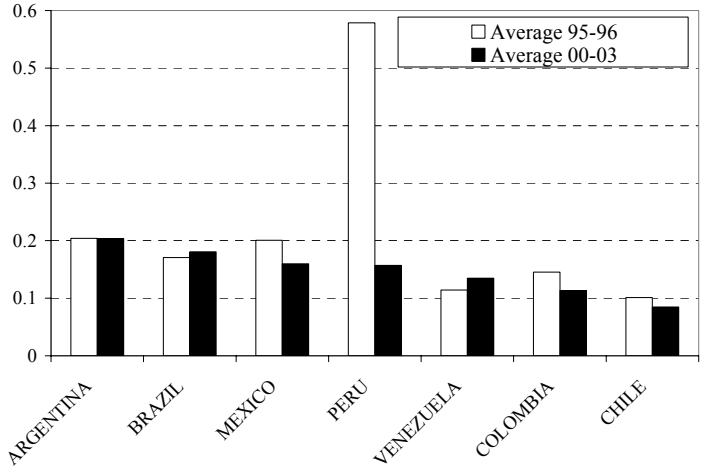


Figure 3: Earnings Smoothing Indicator, Sub-Period Averages





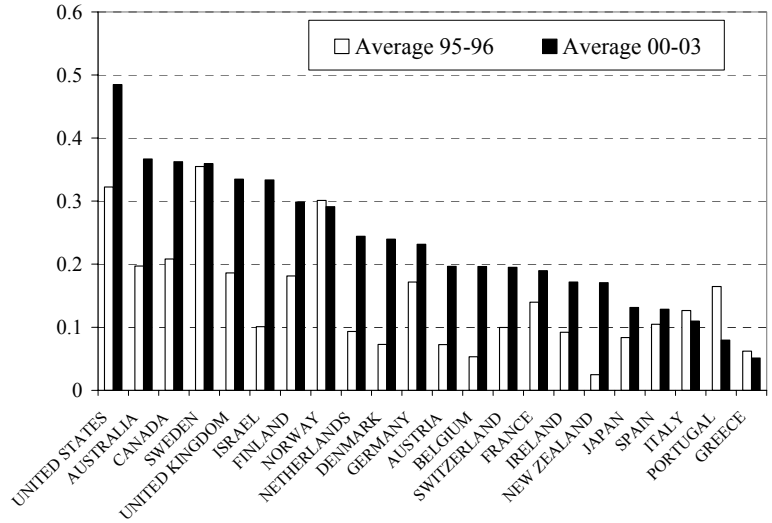
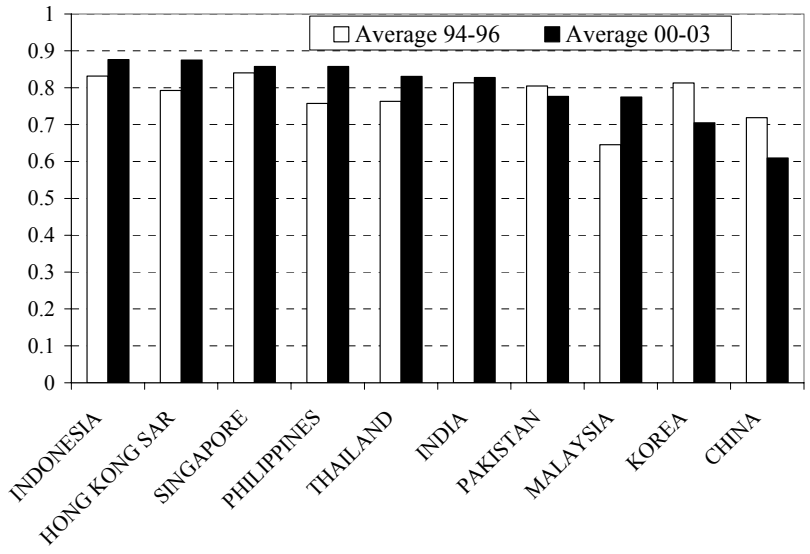
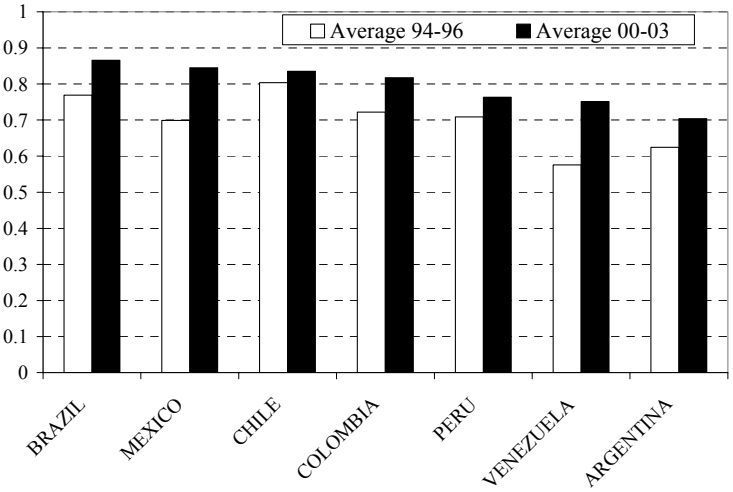


Figure 4: **Stock Price Synchronicity Indicator, Sub-Periods Averages**





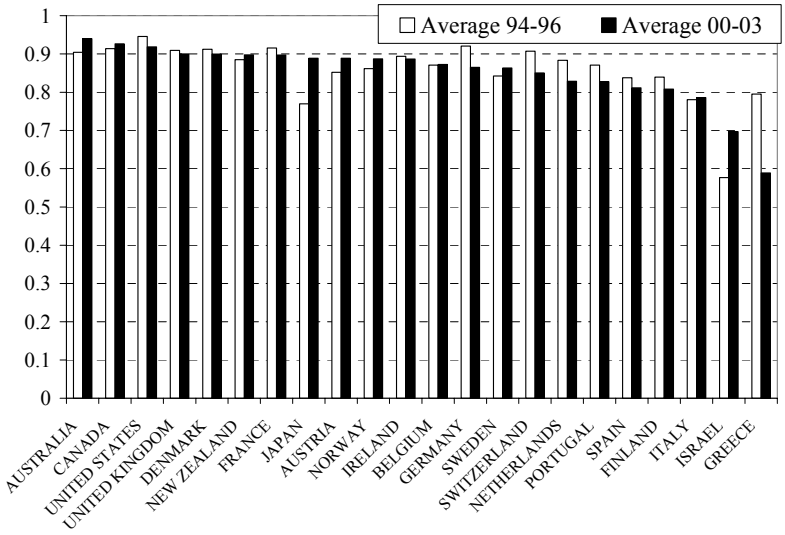


Figure 5: Accounting Standards Indicator, Sub-Period Averages

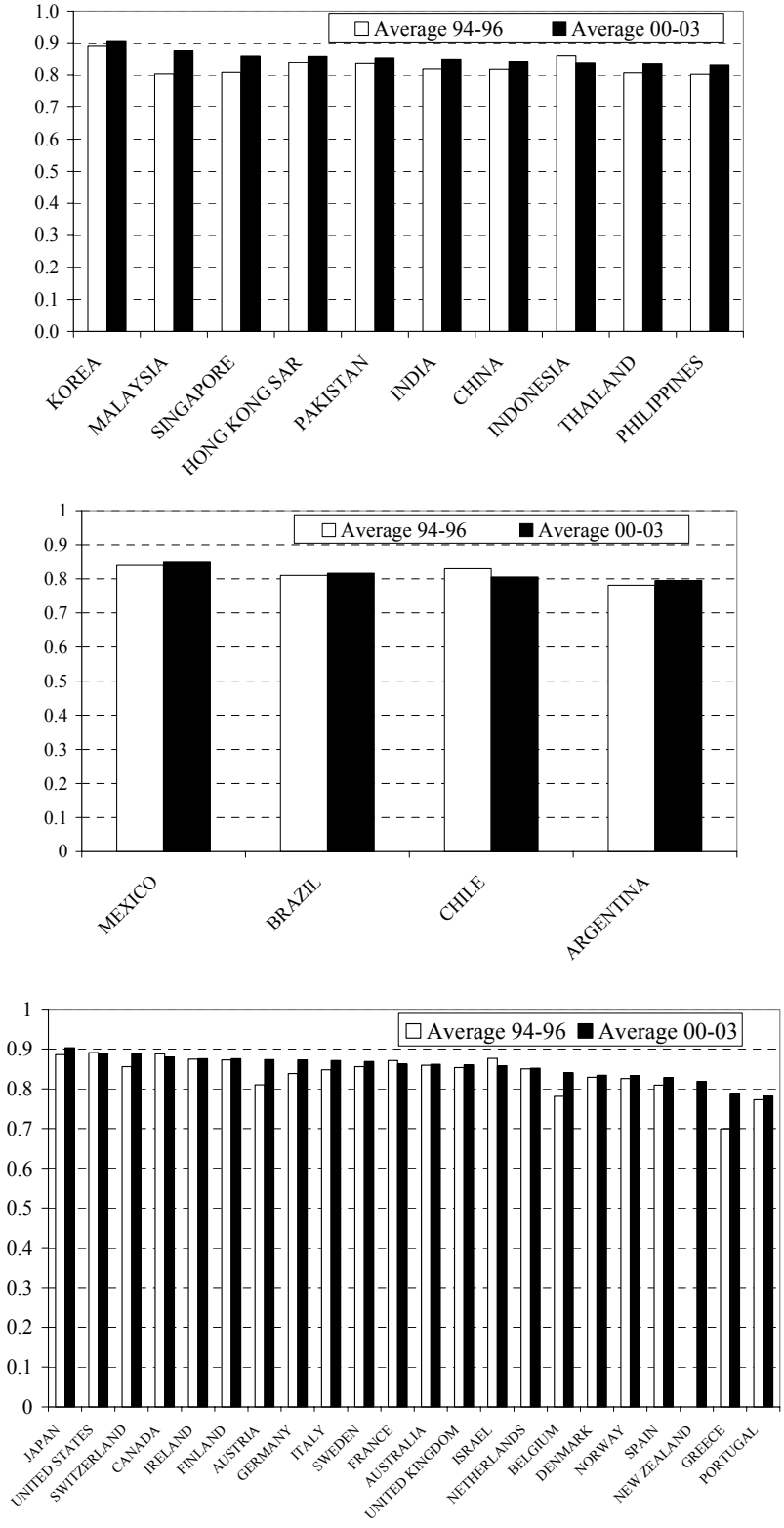


Table 1. Changes in Shareholder's Rights in Asia before and after the Asian Crisis 1/

Country	One Share-One Vote	Proxy by Mail Allowed	Shares Not Blocked before Meeting	Cumulative Voting/ Proportional Representation 2/	Oppressed Minority Mechanism	Preemptive Right to New Issues	Percentage of Sahre Capital to Call and Extraordinary Shareholder Meeting 3/	Antidirector Rights 4/
	(1 = Investor Protection Is in the law)							
China	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Hong Kong SAR	1	0	n/a	0	0	0	0	0
India	1	1	n/a	-1	0	0	0	0
Indonesia	1	1	n/a	1	1	1	0	4
Korea	0	1	n/a	1	0	0	0	2
Malaysia	0	0	n/a	0	0	0	0	0
Phillipines	1	0	n/a	0	0	1	0	1
Singapore	0	0	n/a	0	0	0	0	0
Taiwan POC	1	0	n/a	0	0	0	0	0
Thailand	1	0	n/a	0	1	0	0	1

1/ Scores before the Asian Crisis are from La Porta and others (1998). Scores after the Asian Crisis are authors' calculation based on Cheung and Jang (2005), OECD (2003), and World Bank ROSC for India (2000).
2/ Only Cumulative Voting is recorded for scores after the Asian Crisis.
3/ The score is 1 if less than 10%.
4/ Sum of all columns except for one share-one vote and blocking shares.

Table 2. Changes in Creditors Rights in Asian before and after the Asian Crisis 1/

Country	No Automatic Stay on Assets	Secured Creditors First Paid	Restrictions for Going into Reorganization	Management Does Not Stay in Reorganization	Creditors' Rights 2/	Alternative Creditors' Rights 3/
	(1 = Creditor Protection Is in the law)					
China	n/a	n/a	n/a	n/a	n/a	0
Hong Kong SAR	0	0	0	0	0	0
India	-1	0	0	-1	-2	0
Indonesia	-1	0	-1	0	-2	-1
Korea	0	0	0	0	0	0
Malaysia	0	0	0	-1	-1	0
Phillipines	0	1	0	0	1	0
Singapore	0	0	-1	0	-1	0
Taiwan POC	-1	0	0	1	0	0
Thailand	-1	0	0	0	-1	-1

1/ Scores before the Asian Crisis are from La Porta and others (1998). Scores after the Asian Crisis are from Djankov, McLieash, and Shleifer (2005).
2/ Sum of all columns.
3/ Both scores are from Djankov, McLiesh, and Shleifer (2005).

Table 3. Aggregate Economic Activity and Corporate Governance: Benchmark Model

Estimates are obtained by the (difference) GMM estimator of Arellano and Bond (1991) applied to equation (3). Robust t-statistics are reported in brackets; * denotes significant at 10%; ** significant at 5%; *** significant at 1%; R-squared is the goodness of fit statistics applied to equation (3) estimated with fixed effects. M2 is the p-value of the Arellano Bond statistics for second order correlation of residuals; Sargan test is the p-value obtained by estimates of the two-step version of the model

	DEPENDENT VARIABLES							
	GDP growth$_{(t)}$		TFP level$_{(t)}$		TFP growth$_{(t)}$		INV to GDP $_{(t)}$	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CGQ index$_{(t-1)}$	0.098**		0.070**		0.182***		3.421**	
	(2.37)		(2.32)		(2.67)		(2.35)	
Earnings smoothing$_{(t-1)}$		0.031		0.013		0.029		0.338
		(1.36)		(0.54)		(0.91)		(0.36)
Price synchronicity$_{(t-1)}$		0.108**		0.087***		0.101***		5.394***
		(2.56)		(3.46)		(3.13)		(3.22)
Accounting standards$_{(t-1)}$		0.019		0.057		0.088		4.159**
		(0.33)		(1.35)		(1.48)		(2.26)
GDP growth$_{(t-1)}$							10.275***	11.303***
							(3.51)	(3.39)
Dependent variable$_{(t-1)}$	-0.345***	-0.333***	0.092	0.156**	-0.302***	-0.316***	0.133	0.151
	(-7.19)	(-5.18)	(1.46)	(2.21)	(-5.62)	(-5.89)	(1.47)	(1.50)
Number of countries/obs.	41/328	41/287	41/328	41/287	41/287	41/287	41/328	41/287
R-squared	0.1488	0.1634	0.0065	0.0404	0.1508	0.1589	0.1279	0.192
M1 (p-value)	0.0001	0.0001	0.0021	0.0002	0.0007	0.0005	0.0085	0.0101
M2 (p-value)	0.0081	0.0133	0.0090	0.0609	0.0041	0.0068	0.0376	0.2191
Sargan test (p-value)	0.9873	0.9568	0.3525	0.2928	0.2893	0.2443	0.9979	0.9908

Summary Statistics

Variable	Obs	Mean	Median	Std. Dev.	25th percentile	75th percentile
GDP growth$_{(t)}$	328	0.0206	0.0210	0.0347	0.0068	0.0376
TFP level$_{(t)}$	328	1.0856	1.0700	0.1156	1.0180	1.1329
INV to GDP $_{(t)}$	328	21.4931	20.7134	4.6941	18.7691	23.5042
CGQ index$_{(t-1)}$	328	0.5534	0.5640	0.0947	0.4926	0.6180
TFP growth$_{(t)}$	287	0.0086	0.0116	0.0324	-0.0001	0.0233
CGQ index$_{(t-1)}$	287	0.5598	0.5694	0.0928	0.5018	0.6210

Table 4. Aggregate Economic Activity and Corporate Governance: Excluding "Crisis" Country-Years Observations

Estimates are obtained by the (difference) GMM estimator of Arellano and Bond (1991) applied to equation (3). Robust t-statistics are reported in brackets; * denotes significant at 10%; ** significant at 5%; *** significant at 1%; R-squared is the goodness of fit statistics applied to equation (3) estimated with fixed effects. M2 is the p-value of the Arellano Bond statistics for second order correlation of residuals; Sargan test is the p-value obtained by estimates of the two-step version of the model

	DEPENDENT VARIABLES							
	GDP growth$_{(t)}$		TFP level$_{(t)}$		TFP growth$_{(t)}$		INV to GDP $_{(t)}$	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CGQ index$_{(t-1)}$	0.095**		0.084**		0.153*		1.819	
	(2.16)		(2.16)		(1.79)		(1.47)	
Earnings smoothing$_{(t-1)}$		0.017		-0.005		0.009		0.058
		(0.66)		(-0.21)		(0.28)		(0.06)
Price synchronicity$_{(t-1)}$		0.110**		0.082***		0.099***		3.668***
		(2.55)		(2.94)		(2.79)		(2.82)
Accounting standards$_{(t-1)}$		0.022		0.066		0.099		2.532
		(0.37)		(1.30)		(1.37)		(1.20)
GDP growth$_{(t-1)}$							13.381***	14.234***
							(4.25)	(4.15)
Dependent variable$_{(t-1)}$	-0.345***	-0.341***	0.109	0.168**	-0.230***	-0.252***	0.021	0.073
	(-5.88)	(-4.47)	(1.19)	(2.03)	(-4.29)	(-4.71)	(0.18)	(0.63)
Number of countries/obs.	41/266	41/232	41/266	41/232	41/232	41/232	41/266	41/232
R-squared	0.3162	0.3053	0.0199	0.0189	0.2092	0.2112	0.1916	0.2353
M1 (p-value)	0.0099	0.0112	0.038	0.0126	0.0036	0.0033	0.6024	0.304
M2 (p-value)	0.2026	0.2732	0.0336	0.0909	0.0247	0.0218	0.6363	0.6639
Sargan test (p-value)	0.9972	0.9747	0.2584	0.3149	0.3971	0.307	0.9972	0.9964

Table 5. Aggregate Economic Activity and Corporate Governance: Accounting for Complex Dynamics

Estimates are obtained by the (difference) GMM estimator of Arellano and Bond (1991) applied to equation (3). Robust t-statistics are reported in brackets; * denotes significant at 10%; ** significant at 5%; *** significant at 1%; R-squared is the goodness of fit statistics applied to equation (3) estimated with fixed effects. M2 is the p-value of the Arellano Bond statistics for second order correlation of residuals; Sargan test is the p-value obtained by estimates of the two-step version of the model

	DEPENDENT VARIABLES							
	GDP growth$_{(t)}$	TFP level$_{(t)}$	TFP growth$_{(t)}$	INV to GDP $_{(t)}$	GDP growth$_{(t)}$	TFP level$_{(t)}$	TFP growth$_{(t)}$	INV to GDP $_{(t)}$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Whole Sample				"Non-Crisis" Sample			
CGQ index$_{(t-1)}$	0.149*	0.112**	0.163*	5.813	0.176*	0.146**	0.210**	4.378
	(1.67)	(2.04)	(1.95)	(1.49)	(1.83)	(2.11)	(2.04)	(1.42)
CGQ index$_{(t-2)}$	0.028	0.019	0.042	-0.145	0.068	0.074	0.125	-0.949
	(0.37)	(0.28)	(0.41)	(-0.054)	(0.84)	(1.23)	(1.22)	(-0.32)
CGQ index$_{(t-3)}$	0.074	0.061	0.085	0.82	0.095	0.083	0.111	0.963
	(1.14)	(1.16)	(1.08)	(0.40)	(1.30)	(1.54)	(1.28)	(0.47)
GDP Growth$_{(t-1)}$				9.188***				10.120***
				(3.09)				(3.59)
Dependent variable$_{(t-1)}$	-0.527***	0.117	-0.476***	0.155	-0.508***	0.112	-0.394***	0.078
	(-7.56)	(1.53)	(-7.68)	(1.50)	(-7.71)	(1.22)	(-6.43)	(0.56)
Dependent variable$_{(t-2)}$	-0.431***	-0.191***	-0.379***	-0.159***	-0.368***	-0.268***	-0.306***	-0.240***
	(-4.75)	(-2.96)	(-8.76)	(-3.45)	(-5.25)	(-3.51)	(-6.08)	(-4.08)
Number of countries/obs.	41/246	41/246	41/246	41/246	41/205	41/205	41/205	41/205
R-squared	0.3148	0.1166	0.3148	0.2434	0.4712	0.0751	0.3890	0.3902
M1 (p-value)	0.0002	0.0012	0.0015	0.0054	0.0022	0.0004	0.0029	0.1093
M2 (p-value)	0.0291	0.0349	0.0309	0.2897	0.0197	0.2527	0.9962	0.1067
Sargan test (p-value)	0.8319	0.2563	0.5205	0.9716	0.8877	0.3909	0.2065	0.9572

Table 6. Aggregate Economic Activity and Corporate Governance: Accounting for Financial Development

Estimates are obtained by the (difference) GMM estimator of Arellano and Bond (1991) applied to equation (3). Robust t-statistics are reported in brackets; * denotes significant at 10%; ** significant at 5%; *** significant at 1%; R-squared is the goodness of fit statistics applied to equation (3) estimated with fixed effects. M2 is the p-value of the Arellano Bond statistics for second order correlation of residuals; Sargan test is the p-value obtained by estimates of the two-step version of the model

	DEPENDENT VARIABLES							
	GDP growth$_{(t)}$		TFP level$_{(t)}$		TFP growth$_{(t)}$		INV to GDP $_{(t)}$	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CGQ index$_{(t-1)}$	0.134		0.077		0.137*		6.794*	
	(1.60)		(1.39)		(1.86)		(1.90)	
Financial deepening$_{(t-1)}$	0.027**	0.024**	0.029***	0.025**	0.021**	0.013	1.219*	1.450**
	(2.00)	(1.98)	(3.05)	(2.59)	(2.08)	(1.24)	(1.70)	(2.26)
CGQ index$_{(t-1)}$*Financial deepening$_{(t-1)}$	0.517*		0.436***		0.336**		-12.844	
	(1.86)		(4.12)		(2.35)		(-0.49)	
Earnings smoothing$_{(t-1)}$		0.007		-0.002		0.023		-0.278
		(0.28)		(-0.06)		(0.57)		(-0.32)
Price synchronicity$_{(t-1)}$		0.095**		0.064**		0.075**		5.786***
		(2.16)		(2.56)		(2.26)		(2.76)
Accounting standards$_{(t-1)}$		-0.272		-0.293		-0.495*		5.421
		(-1.64)		(-1.62)		(-1.92)		(1.12)
Earnings smoothing$_{(t-1)}$*Financial deepening$_{(t-1)}$		0.163		0.093**		0.054		-2.225
		(1.40)		(2.06)		(0.66)		(-0.30)
Price synchronicity$_{(t-1)}$*Financial deepening$_{(t-1)}$		0.255		0.260***		0.261**		-5.913
		(1.45)		(2.82)		(2.08)		(-0.43)
Accounting standards$_{(t-1)}$*Financial deepening$_{(t-1)}$		0.476		0.584*		1.028**		-31.548
		(0.66)		(1.84)		(2.40)		(-1.42)
GDP growth$_{(t-1)}$							13.023***	12.382***
							(3.79)	(3.93)
Dependent variable$_{(t-1)}$	-0.391***	-0.397***	0.089	0.108*	-0.333***	-0.338***	0.158*	0.144
	(-6.15)	(-6.52)	(1.46)	(1.85)	(-6.97)	(-7.32)	(1.70)	(1.36)
Number of countries/obs.	39/251	39/251	39/251	39/251	39/251	39/251	39/251	39/251
R-squared	0.2268	0.2546	0.0779	0.1213	0.1813	0.2275	0.1967	0.2497
M1 (p-value)	0.0004	0.0003	0.0015	0.0013	0.0027	0.0013	0.0073	0.0049
M2 (p-value)	0.0175	0.0264	0.0836	0.1649	0.0101	0.0143	0.3510	0.3329
Sargan test (p-value)	0.9838	0.9951	0.3496	0.5249	0.2071	0.1871	0.9987	0.9986

Table 7. Industry growth, Financial Dependence, and Corporate Governance

The dependent variable is real sales growth over the period 1995 to 2003, calculated at the ISIC industry level and weighted by the lagged value of market capitalization of individual firms. Share in industry sales is the share of the industry in total real sales of the country in 1995. Financial dependence is the Rajan and Zingales (1998) measure of external financial dependence, calculated at the 2- or 3-digit ISIC industry level. CG index is our country-level index of corporate governance, and is the average of the ES, SPS and AS indicators. We include the change in these corporate governance (sub)indexes over the period 1995-2003 in the regressions. All regressions include country and industry fixed effects. We report White's heteroskedasticity-consistent standard errors between brackets. Standard errors are corrected for clustering at the country level. * denotes significant at 10%; ** significant at 5%; and *** significant at 1%.

	(1)	(2)	(3)	(4)	(5)
Share in industry sales	-0.786**	-0.776**	-0.778**	-0.767**	-0.791**
	(0.311)	(0.311)	(0.317)	(0.318)	(0.312)
Change in CG index * Financial dependence	0.770				
	(1.175)				
Change in Earnings smoothing * Financial dependence		0.039			0.042
		(0.069)			(0.049)
Change in Price synchronicity * Financial dependence			**0.958****		**1.034****
			(0.402)		(0.389)
Change in Accounting standards * Financial dependence				-0.297	0.802
				(1.358)	(1.473)
Number of countries	36	36	36	36	36
Number of industries	36	36	36	36	36
Number of country-industry observations	610	610	610	610	610
R-squared	0.55	0.55	0.56	0.55	0.56

Table 8. Industry growth, Financial Dependence, and Corporate Governance: Excluding Crisis Countries

The dependent variable is real sales growth over the period 1995 to 2003, calculated at the ISIC industry level and weighted by the lagged value of market capitalization of individual firms. Share in industry sales is the share of the industry in total real sales of the country in 1995. Financial dependence is the Rajan and Zingales (1998) measure of external financial dependence, calculated at the 2- or 3-digit ISIC industry level. CG index is our country-level index of corporate governance, and is the average of the ES, SPS and AS indicators. We include the change in these corporate governance (sub)indexes over the period 1995-2003 in the regressions. We report results for the sub-set of countries that did not experience a banking crisis during the period 1995-2003. We use data from Laeven and Honohan (2005) to identify banking crises. The 11 crisis countries in the sample are: Argentina, Brazil, China, Indonesia, Japan, Republic of Korea, Malaysia, Mexico, the Philippines, Thailand, and Turkey. All regressions include country and industry fixed effects. We report White's heteroskedasticity-consistent standard errors between brackets. Standard errors are corrected for clustering at the country level. * denotes significant at 10%; ** significant at 5%; and *** significant at 1%.

	(1)	(2)	(3)	(4)	(5)
Share in industry sales	-0.987***	-0.958***	-0.954**	-0.948***	-0.973***
	(0.320)	(0.324)	(0.343)	(0.319)	(0.345)
Change in CG index * Financial dependence	1.831				
	(1.070)				
Change in Earnings smoothing * Financial dependence		0.055			0.006
		(0.074)			(0.044)
Change in Price synchronicity * Financial dependence			**1.732****		**2.216****
			(0.770)		(0.866)
Change in Accounting standards * Financial dependence				-0.337	2.558
				(1.511)	(1.888)
Number of countries	25	25	25	25	25
Number of industries	36	36	36	36	36
Number of country-industry observations	428	428	428	428	428
R-squared	0.45	0.45	0.46	0.44	0.46

Table 9. Controlling for Financial Development

The dependent variable is real sales growth over the period 1995 to 2003, calculated at the ISIC industry level and weighted by the lagged value of market capitalization of individual firms. Share in industry sales is the share of the industry in total real sales of the country in 1995. Financial dependence is the Rajan and Zingales (1998) measure of external financial dependence, calculated at the 2- or 3-digit ISIC industry level. CG index is our country-level index of corporate governance, and is the average of the ES, SPS and AS indicators. We include the change in CG index over the period 1995-2003 in the regressions. Private credit is the ratio of credit to the private sector over GDP. Total capitalization is private credit plus stock market capitalization to GDP. We include the change over the period 1995-2003 of the financial development variables. We do not have data on private credit for China. All regressions include country and industry fixed effects. We report White's heteroskedasticity-consistent standard errors between brackets. Standard errors are corrected for clustering at the country level. * denotes significant at 10%; ** significant at 5%; and *** significant at 1%.

	(1)	(2)	(3)	(4)
Share in industry sales	-0.784**	-0.679**	-0.787**	-0.684**
	(0.317)	(0.308)	(0.317)	(0.308)
Change in Earnings smoothing * Financial dependence	0.048	0.039	0.045	0.056
	(0.050)	(0.049)	(0.057)	(0.057)
Change in Price synchronicity * Financial dependence	**1.006****	**1.126*****	**0.984****	**1.257*****
	(0.404)	(0.403)	(0.413)	(0.357)
Change in Accounting standards * Financial dependence	0.785	1.087	0.844	1.234
	(1.479)	(1.472)	(1.668)	(1.367)
Change in Private Credit * Financial dependence	-0.034		-0.054	
	(0.062)		(0.210)	
Change in Total Capitalization * Financial dependence		0.001		0.025
		(0.107)		(0.096)
Change in CG index * Change in Private Credit * Financial dependence			0.201	
			(1.917)	
Change in CG index * Change in Total Capitalization * Financial dependence				-0.233
				(0.243)
Number of countries	35	34	35	34
Number of industries	36	36	36	36
Number of country-industry observations	605	595	605	595
R-squared	0.56	0.55	0.56	0.55

Table A1.Corporate Governance Quality Index

Country	1995	1996	1997	1998	1999	2000	2001	2002	2003	Average Growth Rate
Asia										
CHINA	0.559	0.525	0.571	0.547	0.541	0.590	0.539	0.438	0.507	-0.012
HONG KONG SAR	0.586	0.616	0.572	0.568	0.601	0.616	0.655	0.675	0.712	0.024
INDIA	0.575	0.599	0.610	0.583	0.613	0.621	0.593	0.612	0.603	0.006
INDONESIA	0.602	0.610	0.566	0.680	0.642	0.604	0.605	0.615	0.632	0.006
KOREA	0.584	0.577	0.581	0.615	0.607	0.592	0.578	0.568	0.592	0.002
MALAYSIA	0.521	0.561	0.493	0.529	0.494	0.552	0.597	0.644	0.613	0.020
PAKISTAN	0.574	0.585	0.552	0.529	0.580	0.608	0.579	0.589	0.590	0.003
PHILIPPINES	0.535	0.628	0.588	0.561	0.624	0.598	0.602	0.639	0.663	0.027
SINGAPORE	0.605	0.608	0.615	0.571	0.623	0.646	0.614	0.642	0.648	0.009
THAILAND	0.552	0.562	0.596	0.601	0.600	0.616	0.596	0.594	0.638	0.018
Average	0.568	0.590	0.570	0.584	0.596	0.602	0.596	0.613	0.625	
Latin America										
ARGENTINA	0.523	0.542	0.546	0.510	0.537	0.533	0.511	0.688	0.536	0.003
BRAZIL	0.560	0.643	0.558	0.584	0.634	0.614	0.622	0.624	0.624	0.014
CHILE	0.584	0.585	0.573	0.536	0.600	0.569	0.555	0.600	0.577	-0.001
COLOMBIA	0.487	0.398	0.472	0.571	0.613	0.530	0.569	0.577	0.630	0.032
MEXICO	0.606	0.570	0.613	0.651	0.575	0.617	0.595	0.630	0.629	0.005
PERU	0.531	0.726	0.449	0.549	0.594	0.583	0.528	0.550	0.557	0.006
VENEZUELA	0.380	0.366	0.286	0.323	0.323	0.521	0.418	0.457	0.487	0.031
Average	0.525	0.547	0.500	0.532	0.554	0.567	0.543	0.590	0.577	
Developed										
AUSTRALIA	0.661	0.653	0.675	0.680	0.666	0.675	0.729	0.759	0.727	0.012
AUSTRIA	0.575	0.608	0.607	0.617	0.584	0.600	0.627	0.666	0.719	0.028
BELGIUM	0.570	0.572	0.594	0.605	0.619	0.613	0.623	0.688	0.622	0.011
CANADA	0.677	0.670	0.668	0.663	0.694	0.728	0.724	0.716	0.724	0.008
DENMARK	0.606	0.617	0.604	0.622	0.664	0.695	0.623	0.637	0.676	0.014
FINLAND	0.649	0.635	0.647	0.653	0.640	0.612	0.643	0.644	0.743	0.017
FRANCE	0.639	0.651	0.637	0.616	0.650	0.653	0.627	0.664	0.655	0.003
GERMANY	0.633	0.662	0.634	0.620	0.639	0.663	0.640	0.656	0.666	0.006
GREECE	0.524	0.537	0.503	0.517	0.448	0.444	0.453	0.526	0.481	-0.011
IRELAND	0.618	0.651	0.663	0.591	0.686	0.616	0.623	0.700	0.639	0.004
ISRAEL	0.491	0.550	0.491	0.540	0.512	0.485	0.673	0.659	0.701	0.044
ITALY	0.587	0.619	0.594	0.543	0.620	0.593	0.549	0.594	0.619	0.007
JAPAN	0.572	0.593	0.598	0.620	0.642	0.638	0.629	0.657	0.640	0.014
NETHERLANDS	0.606	0.619	0.608	0.577	0.639	0.618	0.631	0.655	0.663	0.011
NEW ZEALAND	0.470	0.449	0.487	0.562	0.613	0.602	0.646	0.616	0.651	0.041
NORWAY	0.698	0.641	0.589	0.691	0.645	0.628	0.670	0.703	0.681	-0.003
PORTUGAL	0.602	0.632	0.555	0.553	0.573	0.553	0.549	0.544	0.605	0.001
SPAIN	0.581	0.592	0.583	0.565	0.589	0.649	0.547	0.571	0.590	0.002
SWEDEN	0.709	0.694	0.637	0.618	0.678	0.712	0.693	0.700	0.683	-0.005
SWITZERLAND	0.617	0.636	0.612	0.611	0.659	0.647	0.624	0.660	0.647	0.006
UNITED KINGDOM	0.652	0.663	0.630	0.660	0.681	0.702	0.673	0.716	0.701	0.009
UNITED STATES	0.722	0.726	0.723	0.719	0.748	0.777	0.765	0.767	0.746	0.004
Average	0.612	0.621	0.606	0.611	0.631	0.632	0.635	0.659	0.663	
Other										
SOUTH AFRICA	0.634	0.618	0.603	0.640	0.617	0.654	0.694	0.708	0.709	0.014
TURKEY	0.603	0.682	0.615	0.553	0.581	0.503	0.583	0.548	0.584	-0.004
Average	0.618	0.650	0.609	0.597	0.599	0.578	0.638	0.628	0.646	

Table A2.Accounting Standards Indicator

Country	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Average Growth Rate
Asia											
CHINA		0.810	0.825	0.808	0.798	0.813	0.835	0.850	0.840	0.850	0.006
HONG KONG SAR	0.835	0.840	0.840	0.843	0.840	0.850	0.853	0.858	0.870	0.860	0.003
INDIA	0.798	0.810	0.848	0.850	0.848	0.853	0.860	0.840	0.840	0.863	0.009
INDONESIA	0.858	0.868	0.860	0.853	0.845	0.865	0.843	0.830	0.838	0.838	-0.003
KOREA	0.845	0.918	0.913	0.913	0.903	0.850	0.880	0.910	0.915	0.920	0.009
MALAYSIA	0.800	0.808	0.802	0.813	0.810	0.833	0.873	0.885	0.880	0.873	0.010
PAKISTAN	0.863	0.823	0.823	0.798	0.825	0.802	0.845	0.858	0.855	0.863	0.000
PHILIPPINES		0.800	0.805	0.845	0.863	0.858	0.818	0.835	0.840	0.830	0.005
SINGAPORE	0.808	0.810	0.808	0.828	0.835	0.845	0.853	0.858	0.865	0.868	0.008
THAILAND	0.808	0.813	0.800	0.815	0.810	0.808	0.838	0.823	0.843	0.835	0.004
Average	0.830	0.834	0.830	0.837	0.841	0.837	0.850	0.857	0.862	0.861	
Latin America											
ARGENTINA		0.788	0.775	0.805	0.802	0.805	0.785	0.793	0.790	0.810	0.004
BRAZIL	0.810	0.800	0.820	0.798	0.805	0.773	0.835	0.820	0.813	0.800	-0.001
CHILE	0.840	0.843	0.808	0.808	0.818	0.815	0.825	0.815	0.805	0.778	-0.009
COLOMBIA					0.808	0.765	0.773	0.798	0.813	0.810	0.001
MEXICO	0.835	0.845	0.838	0.815	0.845	0.858	0.845	0.845	0.850	0.855	0.003
PERU					0.740	0.683	0.695	0.748	0.760	0.770	0.008
VENEZUELA							0.743				
Average	0.828	0.819	0.810	0.806	0.803	0.783	0.786	0.803	0.805	0.804	
Developed											
AUSTRALIA	0.858	0.863	0.858	0.860	0.858	0.860	0.843	0.868	0.865	0.870	0.002
AUSTRIA	0.788	0.815	0.828	0.835	0.853	0.855	0.865	0.865	0.883	0.880	0.012
BELGIUM	0.770	0.785	0.788	0.820	0.808	0.798	0.838	0.843	0.835	0.845	0.010
CANADA	0.883	0.898	0.883	0.885	0.888	0.875	0.883	0.875	0.880	0.880	0.000
DENMARK	0.830	0.830	0.828	0.820	0.828	0.833	0.843	0.828	0.830	0.835	0.001
FINLAND	0.868	0.875	0.875	0.877	0.875	0.883	0.870	0.875	0.875	0.883	0.002
FRANCE	0.868	0.875	0.870	0.875	0.868	0.868	0.860	0.860	0.865	0.863	-0.001
GERMANY	0.835	0.838	0.843	0.853	0.863	0.863	0.868	0.870	0.877	0.875	0.005
GREECE	0.695	0.695	0.708	0.700	0.688	0.663	0.773	0.795	0.802	0.783	0.013
IRELAND	0.873	0.870	0.880	0.873	0.868	0.877	0.880	0.875	0.873	0.875	0.000
ISRAEL		0.877	0.875	0.870	0.863	0.810	0.865	0.855	0.858	0.855	-0.003
ITALY	0.835	0.853	0.855	0.858	0.868	0.865	0.870	0.870	0.870	0.873	0.005
JAPAN	0.883	0.885	0.890	0.893	0.893	0.885	0.913	0.890	0.900	0.910	0.003
NETHERLANDS	0.853	0.850	0.848	0.853	0.848	0.845	0.843	0.840	0.858	0.868	0.002
NEW ZEALAND					0.815	0.823	0.793	0.828	0.823	0.830	0.004
NORWAY	0.825	0.823	0.830	0.813	0.823	0.835	0.815	0.833	0.840	0.843	0.002
PORTUGAL	0.778	0.773	0.768	0.748	0.758	0.758	0.783	0.778	0.778	0.788	0.001
SPAIN	0.805	0.818	0.805	0.823	0.830	0.820	0.840	0.835	0.835	0.800	-0.001
SWEDEN	0.845	0.858	0.865	0.868	0.875	0.875	0.870	0.868	0.868	0.870	0.003
SWITZERLAND	0.843	0.853	0.873	0.863	0.868	0.870	0.883	0.888	0.885	0.895	0.007
UNITED KINGDOM	0.848	0.855	0.858	0.818	0.853	0.855	0.863	0.855	0.863	0.860	0.002
UNITED STATES	0.885	0.890	0.898	0.888	0.888	0.888	0.893	0.888	0.885	0.888	0.000
Average	0.833	0.842	0.844	0.842	0.844	0.841	0.852	0.854	0.857	0.858	
Other											
SOUTH AFRICA	0.845	0.843	0.843	0.848	0.855	0.823	0.825	0.875	0.883	0.890	0.006
TURKEY	0.793	0.813	0.845	0.850	0.825	0.815	0.815	0.823	0.802	0.815	0.003
Average	0.819	0.828	0.844	0.849	0.840	0.819	0.820	0.849	0.842	0.852	

Table A3.Earnings Smoothing Indicator

Country	1995	1996	1997	1998	1999	2000	2001	2002	2003	Average Growth Rate
Asia										
CHINA	0.073	0.030	0.099	0.048	0.097	0.167	0.057	0.088	0.097	0.037
HONG KONG SAR	0.099	0.121	0.108	0.115	0.110	0.186	0.225	0.261	0.360	0.161
INDIA	0.088	0.147	0.116	0.142	0.152	0.137	0.156	0.147	0.129	0.048
INDONESIA	0.124	0.086	0.119	0.353	0.275	0.139	0.109	0.128	0.138	0.013
KOREA	0.041	0.061	0.096	0.125	0.127	0.132	0.142	0.153	0.118	0.132
MALAYSIA	0.127	0.124	0.106	0.189	0.126	0.121	0.135	0.176	0.175	0.040
PAKISTAN	0.095	0.127	0.065	0.062	0.137	0.172	0.137	0.094	0.171	0.074
PHILIPPINES	0.127	0.266	0.109	0.104	0.144	0.121	0.167	0.184	0.281	0.099
SINGAPORE	0.125	0.104	0.129	0.093	0.250	0.200	0.152	0.203	0.220	0.070
THAILAND	0.097	0.115	0.172	0.184	0.163	0.199	0.134	0.130	0.209	0.095
Average	0.100	0.118	0.112	0.142	0.158	0.157	0.141	0.156	0.190	
Latin America										
ARGENTINA	0.223	0.185	0.163	0.099	0.110	0.054	0.096	0.488	0.175	-0.030
BRAZIL	0.101	0.240	0.086	0.234	0.250	0.147	0.206	0.196	0.173	0.068
CHILE	0.124	0.078	0.064	0.112	0.168	0.082	0.045	0.113	0.100	-0.027
COLOMBIA	0.242	0.048	0.182	0.161	0.329	0.091	0.022	0.135	0.206	-0.020
MEXICO	0.284	0.118	0.273	0.469	0.104	0.204	0.090	0.210	0.135	-0.093
PERU	0.524	0.633	0.071	0.173	0.267	0.323	0.116	0.089	0.100	-0.207
VENEZUELA	0.171	0.057	0.000	0.167	0.024	0.091	0.121	0.109	0.218	-0.138
Average	0.239	0.194	0.120	0.202	0.179	0.142	0.100	0.191	0.158	
Developed										
AUSTRALIA	0.201	0.193	0.276	0.271	0.186	0.247	0.386	0.463	0.372	0.077
AUSTRIA	0.035	0.110	0.166	0.169	0.046	0.052	0.156	0.216	0.362	0.294
BELGIUM	0.058	0.048	0.147	0.244	0.208	0.118	0.153	0.331	0.183	0.143
CANADA	0.216	0.200	0.225	0.232	0.260	0.391	0.379	0.331	0.349	0.060
DENMARK	0.074	0.072	0.077	0.119	0.217	0.325	0.178	0.176	0.280	0.167
FINLAND	0.223	0.140	0.223	0.305	0.182	0.220	0.281	0.241	0.452	0.088
FRANCE	0.135	0.145	0.128	0.118	0.147	0.200	0.154	0.213	0.192	0.045
GERMANY	0.146	0.198	0.147	0.127	0.140	0.248	0.243	0.221	0.214	0.048
GREECE	0.056	0.068	0.058	0.092	0.039	0.040	0.026	0.058	0.081	0.047
IRELAND	0.044	0.140	0.261	0.147	0.281	0.077	0.169	0.329	0.112	0.118
ISRAEL	0.057	0.145	0.182	0.253	0.189	0.138	0.443	0.316	0.437	0.254
ITALY	0.118	0.135	0.115	0.082	0.114	0.104	0.110	0.104	0.120	0.003
JAPAN	0.089	0.078	0.063	0.097	0.136	0.103	0.117	0.177	0.129	0.046
NETHERLANDS	0.069	0.117	0.193	0.163	0.186	0.181	0.257	0.239	0.300	0.183
NEW ZEALAND	0.022	0.027	0.118	0.045	0.082	0.167	0.198	0.099	0.219	0.287
NORWAY	0.394	0.209	0.105	0.449	0.224	0.196	0.291	0.373	0.304	-0.032
PORTUGAL	0.123	0.206	0.095	0.165	0.065	0.057	0.053	0.041	0.168	0.038
SPAIN	0.103	0.106	0.146	0.144	0.078	0.232	0.093	0.068	0.122	0.021
SWEDEN	0.399	0.311	0.179	0.230	0.232	0.419	0.356	0.373	0.289	-0.040
SWITZERLAND	0.086	0.113	0.095	0.157	0.191	0.178	0.206	0.213	0.184	0.095
UNITED KINGDOM	0.174	0.198	0.152	0.255	0.255	0.340	0.330	0.356	0.313	0.073
UNITED STATES	0.317	0.328	0.346	0.370	0.395	0.528	0.498	0.485	0.429	0.038
Average	0.143	0.149	0.159	0.193	0.175	0.207	0.231	0.246	0.255	
Other										
SOUTH AFRICA	0.199	0.115	0.092	0.209	0.126	0.226	0.308	0.304	0.308	0.055
TURKEY	0.521	0.499	0.404	0.273	0.201	0.103	0.373	0.196	0.200	-0.120
Average	0.360	0.307	0.248	0.241	0.164	0.165	0.341	0.250	0.254	

Table A4. Stock Price Synchronicity Indicator

Country	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Average Growth Rate
Asia											
CHINA	0.643	0.795	0.719	0.805	0.794	0.713	0.767	0.711	0.385	0.575	-0.012
HONG KONG SAR	0.675	0.818	0.886	0.765	0.750	0.842	0.808	0.884	0.893	0.916	0.034
INDIA	0.811	0.826	0.804	0.865	0.760	0.835	0.865	0.782	0.848	0.817	0.001
INDONESIA	0.798	0.813	0.884	0.727	0.843	0.788	0.830	0.875	0.881	0.920	0.016
KOREA	0.889	0.792	0.757	0.733	0.816	0.843	0.764	0.684	0.636	0.738	-0.021
MALAYSIA	0.550	0.629	0.758	0.561	0.589	0.524	0.662	0.769	0.877	0.792	0.041
PAKISTAN	0.803	0.805	0.806	0.793	0.699	0.801	0.808	0.743	0.819	0.737	-0.010
PHILIPPINES	0.782	0.679	0.812	0.810	0.716	0.870	0.856	0.803	0.893	0.879	0.013
SINGAPORE	0.729	0.880	0.912	0.890	0.785	0.774	0.884	0.832	0.859	0.857	0.018
THAILAND	0.771	0.746	0.772	0.800	0.810	0.830	0.811	0.832	0.810	0.870	0.013
Average	0.745	0.778	0.811	0.775	0.756	0.782	0.806	0.791	0.790	0.810	
Latin America											
ARGENTINA	0.647	0.560	0.667	0.670	0.629	0.696	0.760	0.644	0.787	0.624	-0.004
BRAZIL	0.659	0.778	0.869	0.790	0.712	0.880	0.860	0.841	0.864	0.898	0.034
CHILE	0.756	0.785	0.869	0.847	0.680	0.818	0.799	0.805	0.882	0.854	0.014
COLOMBIA	0.685	0.732	0.748	0.763	0.746	0.745	0.726	0.887	0.783	0.873	0.027
MEXICO	0.651	0.691	0.755	0.752	0.639	0.764	0.801	0.850	0.832	0.896	0.036
PERU	0.768	0.539	0.819	0.826	0.733	0.834	0.732	0.720	0.801	0.800	0.005
VENEZUELA	0.464	0.588	0.675	0.572	0.480	0.623	0.728	0.716	0.805	0.756	0.054
Average	0.661	0.668	0.772	0.746	0.660	0.766	0.772	0.780	0.822	0.814	
Developed											
AUSTRALIA	0.884	0.921	0.908	0.891	0.911	0.951	0.934	0.935	0.950	0.940	0.007
AUSTRIA	0.796	0.875	0.886	0.820	0.830	0.850	0.882	0.861	0.899	0.914	0.015
BELGIUM	0.865	0.867	0.880	0.816	0.764	0.851	0.882	0.873	0.898	0.837	-0.004
CANADA	0.899	0.917	0.926	0.894	0.871	0.947	0.909	0.918	0.936	0.943	0.005
DENMARK	0.871	0.916	0.951	0.915	0.919	0.942	0.916	0.863	0.906	0.913	0.005
FINLAND	0.781	0.848	0.889	0.840	0.780	0.856	0.748	0.774	0.814	0.896	0.015
FRANCE	0.902	0.907	0.938	0.907	0.863	0.936	0.898	0.867	0.913	0.912	0.001
GERMANY	0.901	0.915	0.946	0.902	0.870	0.914	0.874	0.807	0.870	0.908	0.001
GREECE	0.727	0.823	0.836	0.752	0.770	0.644	0.520	0.538	0.718	0.580	-0.025
IRELAND	0.809	0.940	0.932	0.855	0.758	0.900	0.890	0.825	0.899	0.932	0.016
ISRAEL	0.561	0.539	0.630	0.423	0.504	0.537	0.453	0.722	0.802	0.811	0.041
ITALY	0.683	0.792	0.866	0.809	0.678	0.881	0.805	0.665	0.809	0.864	0.026
JAPAN	0.755	0.742	0.812	0.839	0.871	0.906	0.899	0.881	0.894	0.882	0.017
NETHERLANDS	0.861	0.898	0.891	0.779	0.719	0.887	0.830	0.796	0.868	0.821	-0.005
NEW ZEALAND	0.866	0.918	0.871	0.856	0.824	0.936	0.846	0.913	0.927	0.905	0.005
NORWAY	0.822	0.878	0.885	0.851	0.801	0.877	0.871	0.885	0.895	0.896	0.010
PORTUGAL	0.781	0.910	0.922	0.821	0.735	0.897	0.820	0.817	0.814	0.859	0.011
SPAIN	0.829	0.821	0.864	0.779	0.721	0.868	0.874	0.713	0.812	0.847	0.002
SWEDEN	0.751	0.871	0.905	0.863	0.749	0.928	0.847	0.856	0.860	0.889	0.019
SWITZERLAND	0.888	0.914	0.921	0.880	0.809	0.917	0.881	0.777	0.882	0.861	-0.003
UNITED KINGDOM	0.865	0.927	0.935	0.921	0.873	0.933	0.904	0.835	0.929	0.931	0.008
UNITED STATES	0.927	0.958	0.951	0.936	0.899	0.960	0.911	0.909	0.931	0.922	-0.001
Average	0.819	0.868	0.888	0.834	0.796	0.878	0.836	0.820	0.874	0.876	
Other											
SOUTH AFRICA	0.837	0.860	0.897	0.868	0.857	0.902	0.909	0.899	0.937	0.928	0.011
TURKEY	0.619	0.474	0.701	0.590	0.561	0.726	0.591	0.554	0.645	0.736	0.019
Average	0.728	0.667	0.799	0.729	0.709	0.814	0.750	0.726	0.791		

Table A.5. Summary Statistics of Main Variables in Industry Panel Regressions

Variable	Obs	Mean	Median	Std. Dev.	25th percentile	75th percentile
Real sales growth	610	0.397	0.259	0.672	0.069	0.623
Change in CG index	36	0.076	0.053	0.100	0.020	0.117
Change in Earnings smoothing	36	1.157	0.582	1.951	0.262	1.179
Change in Price synchronicity	36	0.063	0.024	0.170	-0.018	0.126
Change in Accounting standards	36	0.024	0.022	0.038	0.004	0.049
Financial dependence	36	0.319	0.231	0.406	0.070	0.452

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