

Corporate Financial Structures and Performance in Developing Countries

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THE SUSTAINABILITY OF FINANCIAL FLOWS to developing countries depends heavily on the health of the corporate sector, which has been at the center of several recent crises. Corporate borrowers now account for more than a fifth of cross-border debt flows, compared with less than 5 percent in 1990, and flows of FDI, the dominant form of external financing for developing countries, are ultimately tied to corporate performance.

Despite efforts to pay down debt since the 1997–98 crisis and the broad shift to flexible exchange rates, the corporate sector in developing countries remains subject to considerable risk. Corporate profitability in developing countries has shown a significant decline in recent years. As is painfully evident from the Asian crisis of 1997–98 and the more recent global high-tech collapse, capital flows that do not produce adequate returns are liable to sudden reversal.

Many Asian corporations remain highly leveraged, in part because they substituted domestic for external debt. Those debt loads are more manageable now than they were in 1997–98, however, because interest rates are lower and creditors are more willing to roll over credits. Companies in Latin America and Eastern Europe, also highly leveraged, have increased their dependence on foreign finance.

Dependence on foreign borrowing brings both risks and benefits. An excessive dependence on external finance hurt many Asian corporations in 1997–98. On the other hand, firms (especially Latin American firms) active in international markets during the 1990s appear to have benefited from a lower cost of capital.

There is a need to improve the quality and timeliness of corporate data in developing countries.

Corporate scandals in the major industrial countries have underlined the deficiencies of corporate information in the major markets. As more development finance is channeled through the corporate sector, and with financial markets apt to adjust sharply in response to surprises, it has become important for policy makers and market participants alike to be aware of the scope of the risks that domestic corporates are running. This is not easy to do with the information currently available.

Shifts in corporate-sector debt dependence

It is widely accepted that excess corporate leverage was at the heart of the financial troubles of many East Asian developing countries in 1997–98.¹ Total corporate debt of developing countries of the East Asia and Pacific region grew at a compound annual rate of 16 percent between the end of 1990 and the end of 1997—swelling from \$717 billion to \$2.4 trillion (or from 80 percent to 105 percent of national income). Their debt-equity ratio, valued at the market price of equity, rose from 3.8 at the end of 1990 to 4.2 at the end of 1997. The foreign debt of the corporate sector (mainly debt owed to banks) grew at a compound annual rate of 27 percent during the same period, far more rapidly than overall debt. As a share of total corporate debt, foreign debt rose from 6 percent at the end of 1990 to 10 percent at the end of 1997.

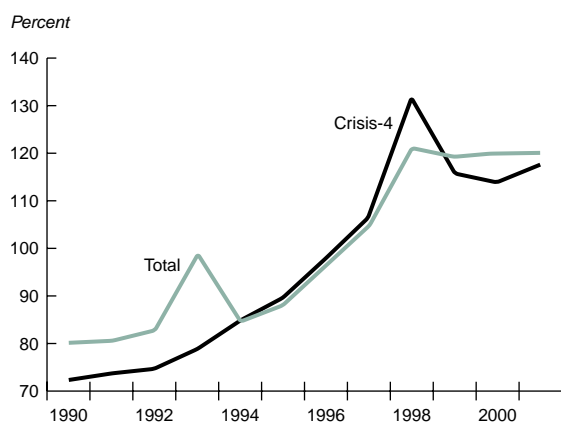
The corporate collapses in East Asia in 1997–98 produced sharp overall declines in GDP and forced severe and wrenching adjustments in corporate balance sheets, with the severity of the adjustments reflecting the need for a sharp and

sustained shift in the private sector's financial balance. That shift has occurred. The aggregate current-account balance of the region shifted from a deficit of 4.8 percent of GDP in 1996 to a surplus of 2.6 percent in 1998. Over the same period, the budget balance of the region moved from a surplus of 0.2 percent of GDP to a deficit of 1.3 percent. The implied swing in the private sector's financial balance—equivalent to 8.9 percentage points of GDP—was carried out largely by a severe compression of spending.

One key result of this shift into financial surplus was that companies in East Asia were able, in the aggregate, to arrest and partly reverse the sustained rise in corporate debt relative to GDP that occurred through the first half of the 1990s (figure 5.1).

The corporate “de-leveraging” process in East Asia had three other important dimensions. First, there was a sharp drop in foreign borrowing. The share of foreign debt in total corporate debt rose steadily between 1990 and 1997 for East Asian economies as a whole, and through 1998 for the four crisis economies, but this ratio has fallen back sharply since then (figure 5.2). Asian companies paid dearly for their brief foray into international borrowing, and the experience has made them far more cautious about foreign-currency borrowing, even as their economies have recovered. Also, the shift to a flexible exchange-rate regime, by reducing implicit guarantees against devaluation risks, has reinforced firms' reluctance to

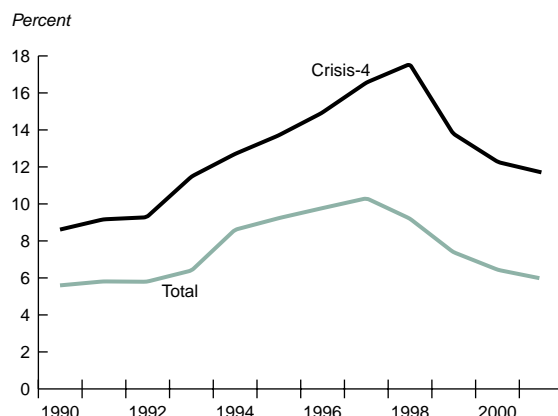
Figure 5.1 Corporate debt relative to GDP in East Asia, 1990–2001



Note: The Crisis-4 countries are Indonesia, the Republic of Korea, Malaysia, and Thailand.

Sources: Bank for International Settlements, International Financial Statistics; World Bank, *World Development Indicators*.

Figure 5.2 Foreign debt relative to total corporate debt in East Asia, 1990–2001



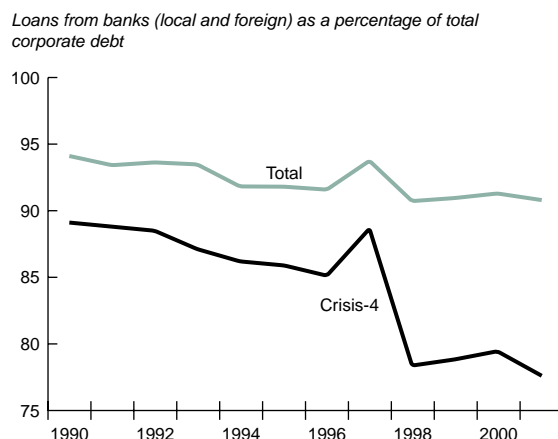
Note: The Crisis-4 countries are Indonesia, the Republic of Korea, Malaysia, and Thailand.

Source: Bank for International Settlements, International Financial Statistics.

take on foreign debt. The result is that the foreign-currency debt of Asian corporations is now in short supply relative to the demand and trading at relatively tight spreads compared to similarly rated paper from borrowers in other regions (see chapter 3).

Second, some effort has been made to diversify sources of domestic funding. In East Asia, for example, important efforts have been made to strengthen bond markets, helping reduce dependence on bank finance (figure 5.3). However, the

Figure 5.3 Dependence on Bank debt in East Asia, 1990–2001



Note: The Crisis-4 countries are Indonesia, the Republic of Korea, Malaysia, and Thailand.

Source: Bank for International Settlements, International Financial Statistics.

range of financing instruments available in emerging markets remains limited when compared with more developed markets such as the United States. One of the strengths of the U.S. financial system is its diversity of funding sources, ranging from commercial banks through a rich array of money and capital markets. Thus when bond-market credit suddenly dried up in the United States in 1998, corporate borrowers were able to turn to banks. Likewise, when the market in short-term commercial paper slumped early in 2002, companies were able to issue longer-term bonds and swap into short-term liabilities.

Third, debt-equity ratios in the region have declined as the result of efforts to pare down debt (especially foreign debt) and raise equity participation in the economy (figure 5.4). FDI in Asia has been relatively high since the crisis years, contributing to a shift in the pattern of foreign liabilities away from debt to equity. The shift has been far from uniform, however. China has been the key beneficiary of stepped-up FDI, while Indonesia has seen a steady exodus of foreign equity capital since 1998 (see chapter 4).

These significant adjustments have helped Asian corporations insulate themselves from global market pressures in recent quarters. In 2001–02, for example, Asian corporations were better insulated from the downturn in the global economy and the deterioration in high-risk debt markets than were their peers in the main industrial

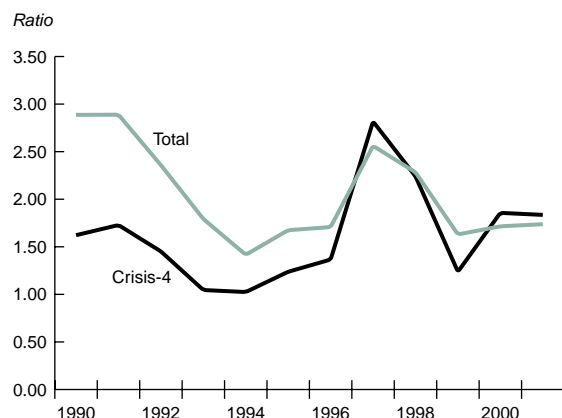
economies. In East Asia, with external financing (especially short-term financing) much reduced, there was no significant flight of foreign capital, and domestic lenders remained comfortable with their exposures.

One important difference between 1997–98 and 2001–02 was the trend in local interest rates. In 1997–98, these rose sharply, contributing to a serious deterioration in corporate credit quality and undermining the willingness of both domestic and external creditors to maintain exposures. By contrast, regional interest rates generally fell in 2001–02, giving companies a cushion that allowed them to ride out the downturn far more easily.

Indeed, the low level of regional interest rates is a key ingredient to the sustainability of what remains, after several years of painful adjustment in the region, a very high ratio of corporate leverage. While corporate debt has been trimmed in some economies, it has risen sharply in others—notably China. As a result, debt levels (as a share of GDP) remain very high in East Asia compared to both Latin America and Eastern Europe (figure 5.5).

Similar regional trends (seen from top-down macro data) are also evident from firm-level data (see the methodological annex at the end of the chapter). The average debt-assets ratio for East Asian firms in the sample reached a peak of 68 percent in 1997—it has since fallen (figure 5.6, see also Mako 2001). By contrast, the leverage ratio of Latin American firms dropped during the

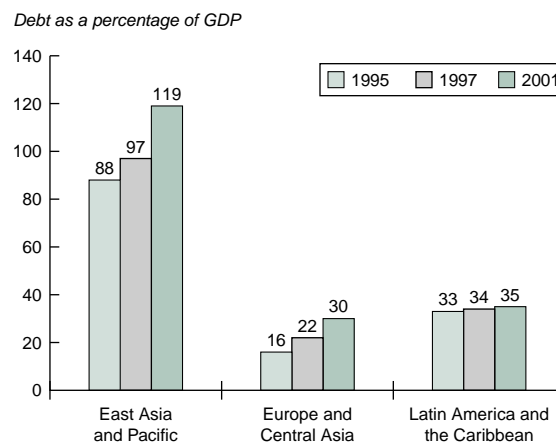
Figure 5.4 Corporate debt-equity ratios in East Asia, 1990–2001



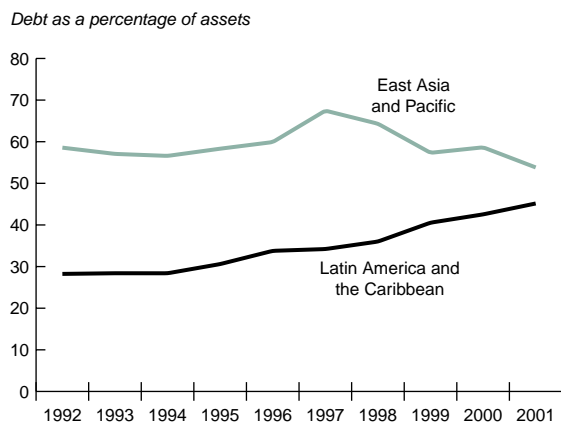
Note: The Crisis-4 countries are Indonesia, the Republic of Korea, Malaysia, and Thailand.

Sources: Bank for International Settlements; S&P Emerging Markets Database.

Figure 5.5 Corporate debt in select regions, 1995, 1997, 2001



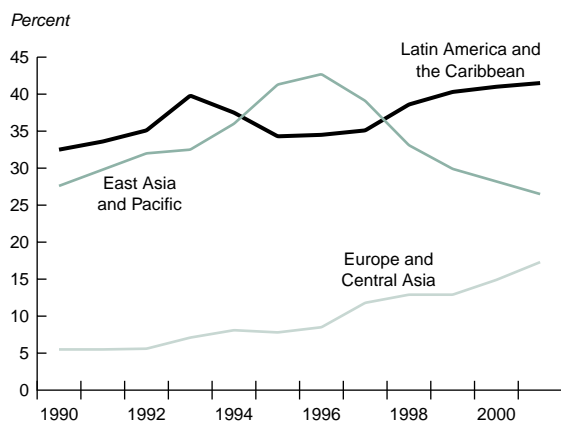
Sources: Bank for International Settlements, International Financial Statistics; World Bank, *World Development Indicators*.

Figure 5.6 Leverage ratios in East Asia and Pacific and Latin America and the Caribbean, 1992–2001

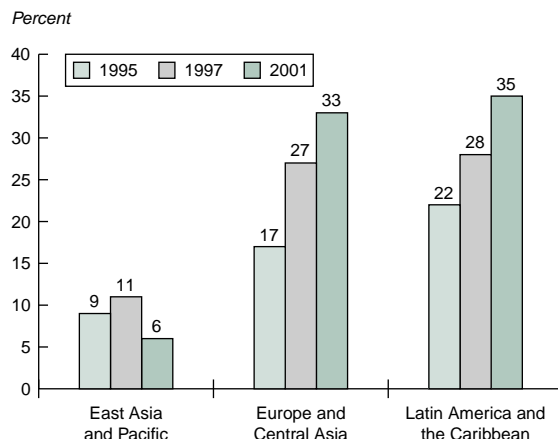
Source: World Bank Staff estimates based on Worldscape data.

Mexican crisis in 1995 but has risen steadily ever since. By 2001 the leverage ratios of East Asia (54 percent) and Latin America (45 percent) had become similar.

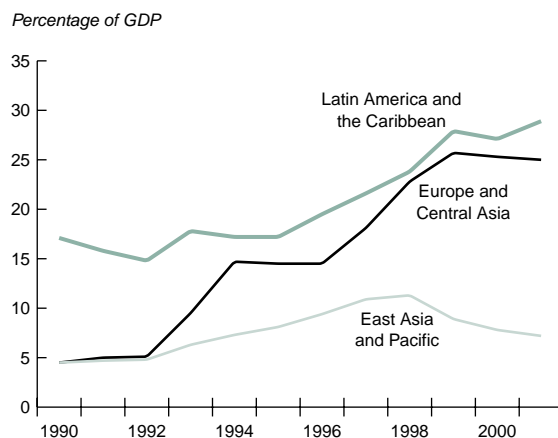
While East Asia has been reducing its dependence on foreign-currency debt, however, companies in Latin America and Eastern Europe have been raising their dependence. The share of foreign lending to firms in East Asia has fallen steadily from its peak in 1996, whereas the share of Latin America and Eastern Europe has risen (figure 5.7). The result? As of 2000, the share of total corporate

Figure 5.7 Foreign lending to emerging-market corporations, select regions, 1990–2001

Source: Bank for International Settlements.

Figure 5.8 External borrowing as a share of corporate sector debt in select regions

Source: Bank for International Settlements, International Financial Statistics.

Figure 5.9 Corporate foreign debt in select regions, 1990–2001

Source: Bank for International Settlements, World Development Indicators.

debt accounted for by borrowing from abroad had risen to almost one-third in both Latin America and Eastern Europe (figure 5.8). Expressed as a share of GDP, the foreign debt of the corporate sectors in the two regions was at or above the peak seen in East Asia in 1997 (figure 5.9).

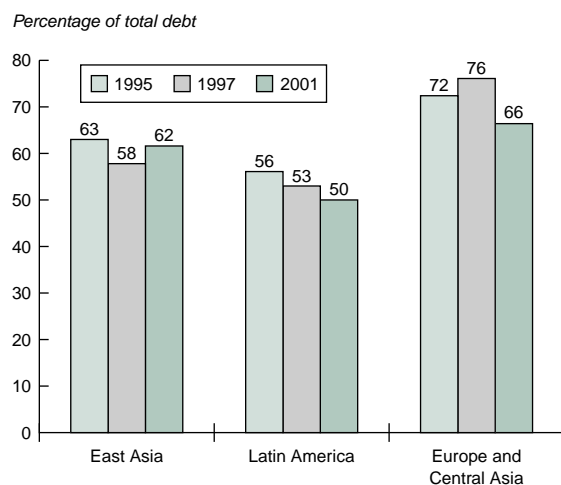
In conclusion, the overall level of corporate leverage remains the main risk facing East Asia; heavy dependence on external debt is the main risk for firms in Eastern Europe and Latin America.

Short-term corporate debt vulnerability

Companies in developing countries face the challenge of transforming, in a sustainable way, the typically short-term capital they raise from sources outside the firm into fixed, long-term capital suitable for financing the illiquid real assets that make up the physical capital of the firm. For companies in mature economies with deep, well-developed equity markets, this transformation is usually not an insuperable challenge, although the evaporation of market access for several previously high-flying firms in the United States and Europe in 2001–02 illustrates that sudden corporate collapses can occur in even the most sophisticated capital markets.

Firms operating in developing countries, however, often have little choice but to finance fixed-asset accumulation with short-term liabilities. For companies operating in East Asia, such liabilities made up about 62 percent of total corporate debt in 2001. In Eastern Europe, the share was even higher—66 percent (figure 5.10). Latin America had the lowest ratio of short-term debt to total debt: just 50 percent. The dependence on short-term finance in East Asia and Eastern Europe indicates that their primary source of funds remains banks—longer-term markets being either nonexistent or just beginning to reemerge after a period of dormancy.

Figure 5.10 Short-term debt and current liabilities, 1995, 1997, and 2001



Sources: World Bank Staff estimates; Worldscope.

The low dependence of Latin American firms on short-term finance does not reflect the availability of local long-term financing but rather the *overall* lack of local financing from outside the firm. That lack is a legacy of local instability. While more acute in some countries (Argentina) than others (Chile), the low level for the region as a whole is a sign of poor financial intermediation. Firms in Latin America must depend on internal financing and, as previously noted, funds from abroad.

In Eastern Europe and Central Asia, persistent instability since the collapse of the former Soviet Union, coupled with high and variable inflation, has kept corporate financial structures short. As convergence with the European Union proceeds, however, a lengthening of the maturities of corporate debt should be expected and encouraged.

The downward trend in corporate profits

Profitability is at the heart of corporate health. If the capital employed in an enterprise is not generating an adequate return, the flow of new capital to the firm will dry up. Eventually the holders of the existing stock of capital will seek to exit. The past five years have seen examples of such reversals in large parts of East Asia and in the telecom sectors of the G-7 economies.

To complicate the picture, recent accounting scandals in the United States have reminded us not only that the measurement of profits can be somewhat ambiguous, but also that the quality of corporate accounting sometimes leaves much to be desired.

An examination of the trends in net earnings of the countries in our data sample for the period 1992–2001 (table 5.1 and figure 5.11) yields several important conclusions.²

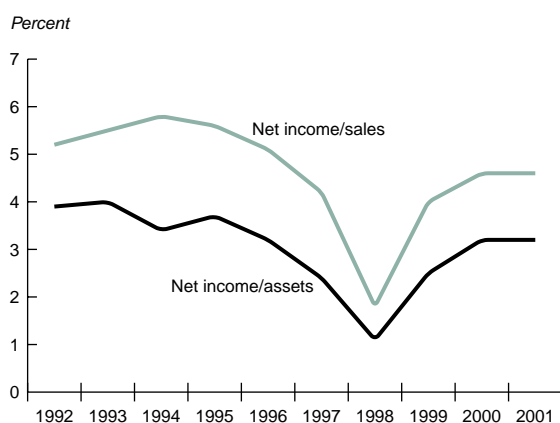
- Profits are low. In 1999–2001, profit margins were about 4.4 percent of sales and 3.0 percent of assets. By way of comparison, the return on assets achieved by the U.S. non-financial corporate sector in 1999–2001 was 4.9 percent.
- Profits do not appear to be rising. The low point in 1998 is understandable in view of the recession that year in many developing countries, but average returns for 1999–2001, the last three years of data, were significantly worse than earlier in the decade. This evidence

Table 5.1 Profitability of nonfinancial firms in emerging markets, 1992–2001
(percent)

	1992-2001		1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	Average	Standard deviation										
Net income/Assets												
All countries	3.1	0.9	3.9	4.0	3.4	3.7	3.2	2.4	1.1	2.5	3.2	3.2
Emerging Europe and Africa (ex-Russian Federation)	5.9	2.3	6.1	7.1	7.1	7.7	5.8	4.5	-0.1	6.0	8.3	6.2
Asia (ex-China)	6.2	1.2	6.1	7.1	7.1	7.7	7.0	6.4	4.9	6.1	6.3	3.6
Latin America	2.2	1.3	2.7	2.9	3.8	3.9	2.5	0.5	-0.3	1.9	1.5	2.2
	1.9	1.4	2.7	2.8	3.8	3.8	2.5	0.4	-0.4	1.6	0.6	1.6
	3.5	1.0	4.9	4.8	2.6	2.6	3.3	4.3	3.1	2.0	3.8	3.4
Net income/sales												
All countries	4.6	1.2	5.2	5.5	5.8	5.6	5.1	4.2	1.8	4.0	4.6	4.6
Emerging Europe and Africa (ex-Russian Federation)	6.7	2.8	5.5	6.3	6.6	6.9	7.5	7.5	-0.1	7.6	10.3	9.1
Asia (ex-China)	6.0	0.9	5.5	6.3	6.6	6.9	6.7	6.3	5.2	6.1	6.7	3.9
Latin America	2.9	1.7	3.6	3.7	5.1	5.1	3.6	0.8	-0.4	2.8	1.9	2.8
	2.6	1.9	3.5	3.6	5.0	4.9	3.5	0.5	-0.5	2.3	0.8	2.0
	7.5	2.1	10.3	10.2	6.7	6.3	7.8	10.0	6.4	4.2	7.0	6.0

Sources: World Bank staff estimates; Worldslope.

Figure 5.11 Corporate profitability in developing countries, 1992–2001



Sources: World Bank staff estimates; Worldslope.

is consistent with the pattern of returns on FDI (see page 95) and on emerging-market equities (see page 100).

- Profit margins and returns on assets are lowest in Asia. Both were negative in 1998; neither has recovered well. In part, the results reflect the higher leverage ratios of the firms in the region; returns on equity are probably not as low as they appear.
- In the past two years, margins and returns have been higher in Europe and Central Asia than elsewhere in the developing world. The Russian Federation has bounced back strongly from collapse in 1998. Elsewhere in the region, profit

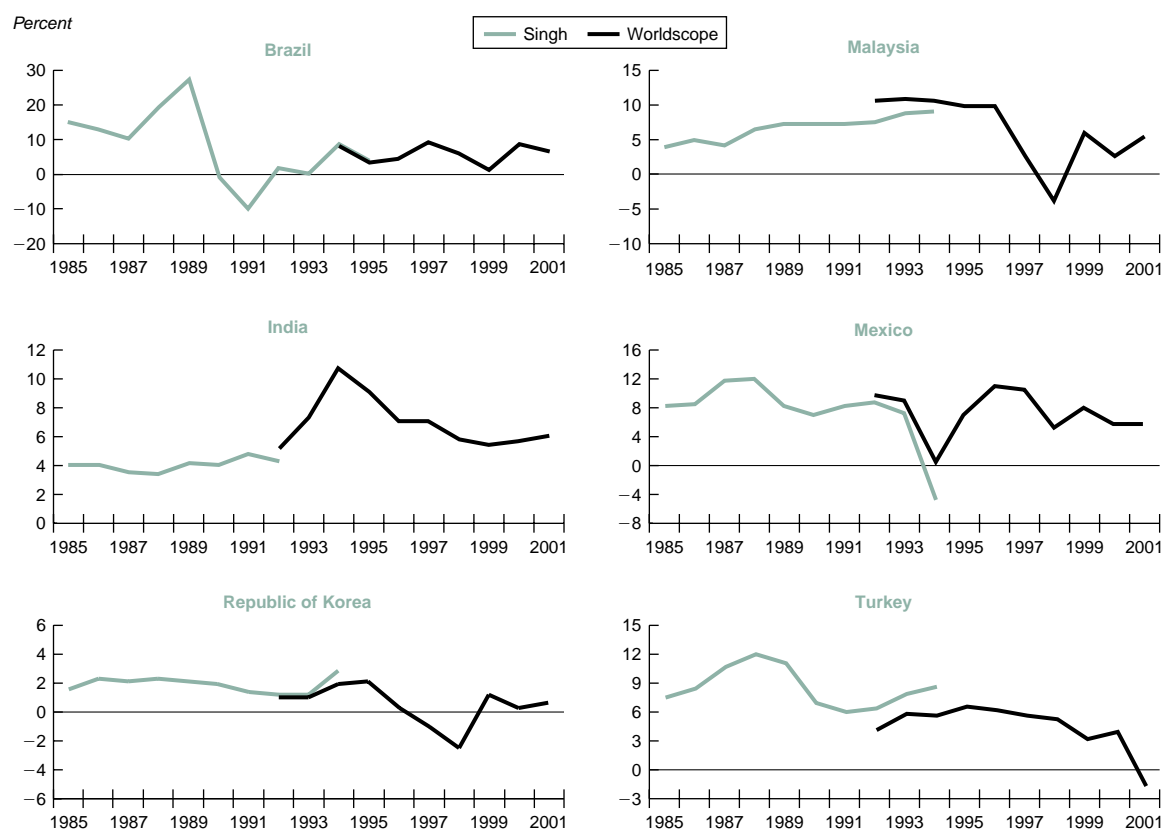
rates have been relatively more stable than in the Russian Federation, consistent with the pattern of structural improvement in the region after the corporate collapses of the early 1990s.

To get a longer view of the evolution of profits, the data from our sample of 21 countries from 1992 to 2000 have been combined with similar data available for the 1980s (Singh 1995; Glen, Singh, and Matthias 1999). Although there is some discontinuity between the two data sets, their general patterns are similar, allowing a comparison of trends in profit margins since the mid 1980s (figure 5.12). Two trends stand out:

- Margins were generally lower in the 1990s than in the 1980s. Of the six countries pictured in figure 5.12, India is the exception.
- Margins were more volatile in the 1990s. Again, there is one important exception (Brazil), where the relative stability offered by the successful currency program after 1994 stands in contrast with the earlier period of volatility and hyperinflation (1985–93).

Why were profits in many developing countries lower and more volatile in the 1990s, especially as the decade progressed? Because underlying nominal growth of GDP is the key driver of profits, the shocks to GDP brought on by the numerous crises of the 1990s are the main cause of the weakness in profits.

Figure 5.12 Ratios of net income to sales in nonfinancial firms in select countries, 1985–2001



Sources: Worldscope; World Bank Staff estimates; Singh 1995.

Other developments contributed as well. The trend toward lower inflation across the developing world added further downward pressure on nominal GDP growth—and on profits. An otherwise welcome trend toward more open, integrated markets reduced the prices—and profits—of what had been local monopolies. In Brazil, for example, the liberalization of the trade regime in the early 1990s, which helped bring greater competition to domestic-goods industries, also restrained domestic producers' margins (Glen, Lee, and Singh 2001). Similarly, the emphasis on privatization of state-run monopolies, especially in utilities sectors, helped restrain inflation—but also profits.

Finally, the rise in debt costs resulting from significant devaluations—and other events surrounding currency crises, such as sharp drops in real GDP—hit profit margins very hard in Mexico in 1994 and in Malaysia and the Republic of Korea in 1998 (Forbes 2002).

Are profits in developing countries so low as to constitute a problem? Not necessarily. As nominal GDP grows in developing countries, so will profits. But policymakers and analysts would be well advised to pay attention to trends in these variables if, as expected, the primary flow of foreign capital (both debt and equity) to developing countries remains largely oriented to the private business sector. For if profit performance continues to lag as the economy improves, then the sustainability of the current pattern of financing flows dominated by FDI will be very much in question.

Borrowing from abroad and corporate performance

Financing from abroad brings with it both risks and advantages. A firm can reduce its cost of capital by accessing international markets, which

have a larger base of investors and are more liquid. And because international markets have better trading and clearance systems, more competition among traders and investment bankers, and better listing and monitoring standards, they are more efficient than local markets. International market access, when successful, may also make a firm more attractive to domestic investors by signaling that the firm is willing to commit to higher standards of corporate governance and disclosure and protection of minority rights.³

But international finance also entails risks. A currency devaluation may increase the debt burden of borrowing firms, especially those that have only local currency earnings (Forbes 2002). Unanticipated changes in global interest rates can hurt profitability. And abrupt changes in investor sentiment may make it difficult to roll over debt. The various emerging-market crises of the last decade brought all these risks into sharp focus.

Indeed, an assessment of the relationship between external (international) financing and corporate performance reveals that among nonfinancial firms, market participants (firms that had outstanding foreign debt) tended to show lower profitability than nonparticipants.⁴ However, it would be wrong to conclude that borrowing abroad is excessively risky for all firms in developing countries. Indeed, it appears that many companies that participated in the international markets in the 1990s fared better than others that did not. For example, firms that had foreign sales, and firms that were able to roll over debt, were on average more profitable than others that did not (see below).

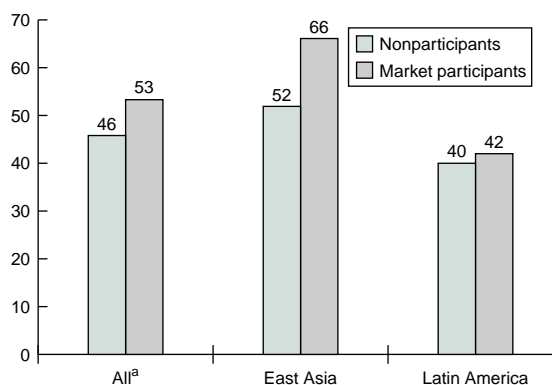
Not surprisingly, market access over the period 1992–2001 was positively associated with firm size. The average assets of firms that participated in international markets were \$2.4 billion during 1998–2001, more than five times the average size (\$470 million) of firms that did not have outstanding foreign debt. Within the category of international-market participants, firms that were able to roll over debt (that is, to continue market access) during 1998–2001 were even larger—having average assets of \$4.9 billion. Firms that had outstanding debt but did not undertake new borrowing in 1998–2001 were much smaller with assets averaging around \$1.8 billion. The association between market access and size is to be expected, given that large firms are less vulnerable

than small firms to adverse shocks and are more creditworthy in the eyes of investors.⁵

Firms that borrowed abroad were more highly leveraged than firms that did not. Debt, foreign and domestic, as a share of assets was 53.3 percent during 1998–2001 for market participants—higher than the share of debt to assets (45.8 percent) for firms that did not borrow abroad (figure 5.13).

Even though market participants were more highly indebted, their average cost of credit—or average interest rate, defined as interest expenses as a percentage of debt—was lower than that of nonparticipants through much of the 1990s (figure 5.14).

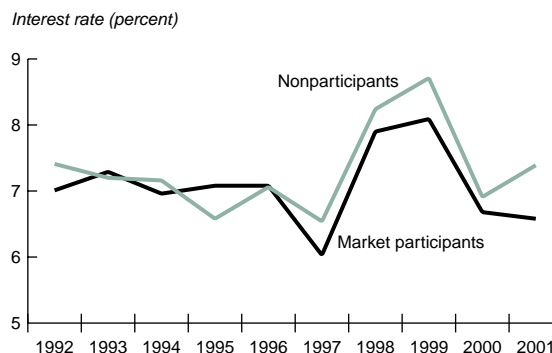
Figure 5.13 Debt as a percentage of total assets of market participants and nonparticipants, 1998–2001



a. All firms in sample described in methodological annex to this chapter.

Sources: World Bank staff estimates; Worldscape; Dealogic.

Figure 5.14 Interest paid relative to debt by market participants and nonparticipants, 1992–2001



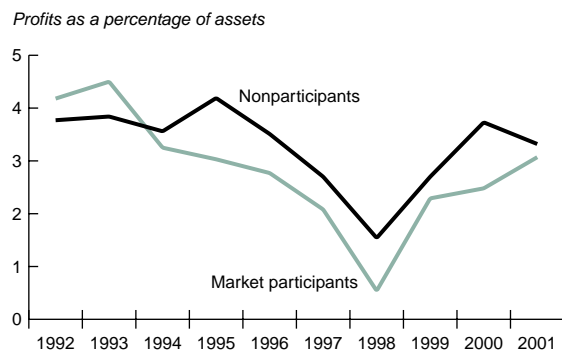
Sources: World Bank Staff estimates; Worldscape; Dealogic.

Prior to the Asian crisis in 1997, average interest costs paid by firms declined as industrial countries cut interest rates during the mid-1990s and emerging market spreads tightened. Following the Asian crisis, interest costs rose for all firms, but firms that had access to the wider international debt markets were able to obtain cheaper credit than those that did not, although they may also have suffered valuation losses as a result of denominating their debt in foreign currency prior to a sharp depreciation. Such mark-to-market debt losses are, however, reflected in the overall profit data analyzed below.⁶

Except for the early 1990s (1992–1994), firms that participated in international debt markets reported lower profits as a share of assets than did nonparticipating firms (figure 5.15). The average profit rate during 1998–2001 for market participants was 2.1 percent, compared to 2.9 percent for nonparticipants (figure 5.16). Evidently, the lower interest costs available from market participation was not sufficient to generate a higher rate of profit for the participating firms, even though many of them were larger in asset size compared to nonparticipating firms.⁷ The profit rates between market participants and nonparticipants reached a low in 1998, the year interest rates spiked up and currency-related losses were at their peak.

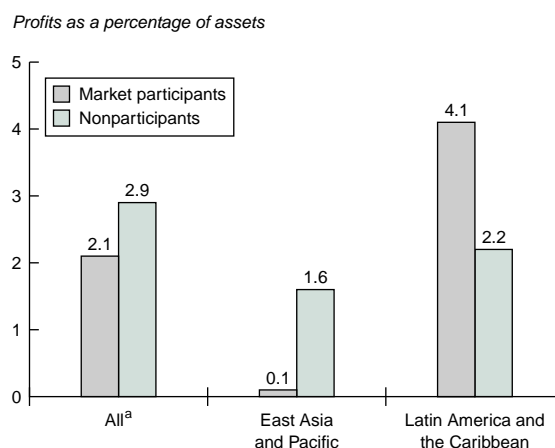
While this finding does highlight the risks associated with foreign borrowing, it does not necessarily imply that these risks outweigh the benefits (such as low interest rates) that market participation brings. In fact, this finding does not hold true in Latin America where, unlike in East Asia and Europe and Central Asia, market participating

Figure 5.15 Corporate profit rates in major emerging markets, 1992–2001



Sources: World Bank Staff estimates; Worldscape; Dealogic.

Figure 5.16 Profit rates by region, 1998–2001

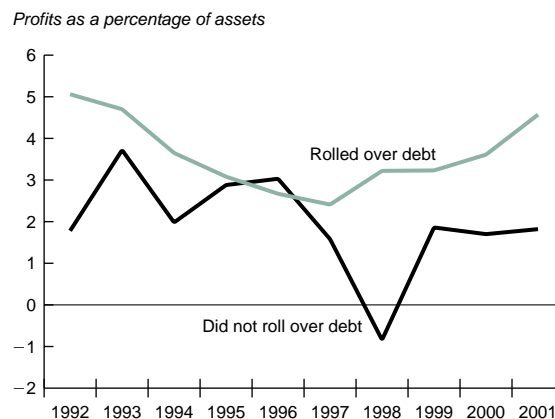


a. All firms in sample described in methodological annex to this chapter.

Sources: World Bank Staff estimates; Worldscape; Dealogic.

firms did report higher profit rates than nonparticipating firms (figure 5.16).⁸ Even in East Asia, the lower profit rates reported by market participating firms may be explained in part by the fact that only firms with low profitability (and high investment) may have needed external financing (Lang, Djankov and Claessens 1998). Also the profit performance of firms that were able to maintain access to external credit markets—and so to roll over some of their foreign debt—was better and less affected by cycles than the profit rates of firms that had outstanding foreign debt but could not (or did not) roll it over (figure 5.17). Moreover, the most

Figure 5.17 Profit rates by type of market participant, 1992–2001

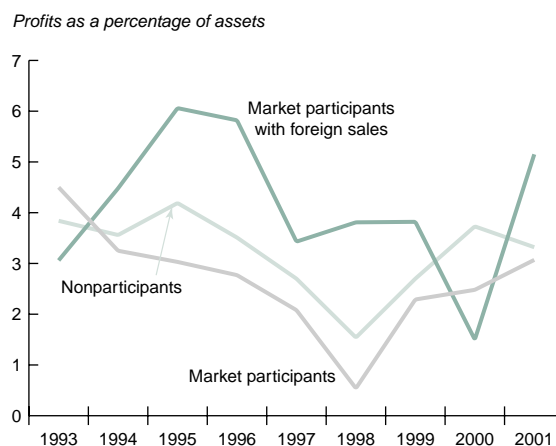


Sources: World Bank staff estimates; Worldscape; Dealogic.

profitable firms in this sample were those that not only participated as borrowers in international markets but also had foreign sales (figure 5.18).⁹ For this group, however, profit margins slipped significantly after 1997. This is somewhat surprising, as the more competitive real exchange rate enjoyed by many developing countries since then should have *raised* profit margins in the tradable sector. The exchange-rate benefits must have been eroded by (a) deflationary pressures in global goods markets in recent years and (b) losses resulting from foreign-currency debt, which the existence of foreign-exchange earnings allowed some companies to take on.

A more formal regression analysis of the effect of leverage on corporate profitability (controlling for other factors that also affect profitability) yield two interesting results (see box 5.1). First, both

Figure 5.18 Profit rates of market participants and nonparticipants, 1993–2001



Sources: World Bank Staff estimates; Worldscopec; Dealogic.

Box 5.1 The effect of leverage on firm profit rates

We studied the relationship between corporate performance (as measured by its profit rate or earnings before interest and taxes) and corporate finance (debt/assets ratio) using the following model:

$$\begin{aligned} \text{Profit rate} = & a + b \cdot \text{leverage} \\ & + c \cdot (\text{leverage}) \cdot (\text{dummy for market participation}) \\ & + d \cdot (\text{control variables}) + \text{error term} \end{aligned}$$

where leverage is instrumented by lagged leverage; the dummy for market participation takes the value of 1 for market participants and 0 for others; and control variables are log(sales), square of log(sales), growth of per capita GDP, capital intensity (proxied by capital stock as a ratio of assets), and capital intensity squared, 2-year moving average of profitability (lagged), and 5-year rolling standard deviation of profit rates (these last two variables indicate expected returns and risks). Dummies to account for fixed effects relating to country and sector were added to the regressions. The above specification does not explicitly include variables representing institutions which may affect profit rates and leverage (IMF 2002; p. 99; Klapper and Love 2002); these effects are only indirectly captured through the inclusion of country fixed effects.

This model is estimated using two-stage least squares (instead of ordinary least squares, to control for reverse causality from profitability to leverage). Similar regressions were run using earnings (EBITDA as a percentage of assets) as the dependent variable. The results are summarized in the following table.

Regression results: Effect of leverage on profit rate, 1990–2001

	Profit as a percentage of assets	EBITDA as a percentage of assets
Leverage (debt/assets %)	−0.08** (−16.4)	−0.01 (−1.1)
(Leverage) * (dummy for market participation)	−0.02** (−3.9)	−0.03** (−6.3)
Log(sales)	1.37** (9.8)	1.94** (11.3)
Log(sales), squared	−0.04** (−3.1)	−0.09** (−5.6)
Per capita GDP growth	0.15** (8.8)	0.04** (2.1)
Capital intensity	−0.25 (−0.2)	14.76** (9.0)
Capital intensity, squared	−2.58* (−1.7)	−16.31** (−9.2)
Average profitability, 2-year moving average (lagged)	0.43** (38.6)	0.46** (35.4)
Volatility of earnings (5-year rolling standard deviation)	0.01 (0.6)	0.09** (4.6)
Adjusted R-squared	0.30	0.31
Number of observations	11,216	10,717

Note: Figures in parentheses indicate t-statistics. ** indicates significance at 5-percent level, and * indicates significance at 10-percent level. All regressions use country and industry fixed-effects using 2-digit SIC codes (not shown in the table). EBITDA is earnings before interest, taxes, depreciation, and amortization.

Source: World Bank staff estimates.

profits and earnings before interest, taxes, depreciation, and amortization decline as a percentage of assets as firms take on more debt relative to their assets. This is similar to the finding of Harvey, Lins, and Roper (2001) that while some debt may improve market discipline in firms, the effect may be overcome by increasing financial risks. Second, the marginal (negative) effect of an increase in leverage on earnings is larger for firms that participate in international debt markets than for other firms.

Why do earnings decline as leverage increases? One reason may be diminishing returns. A

firm may take on debt with a view to expanding its operations, but revenue growth is likely to slow as it scales up. Moreover, revenue growth may slow faster in larger firms. This would explain the larger negative effect of leverage on returns for market participants, which are usually significantly larger than nonparticipants. Another reason is that at lower leverage ratios the benefit of the lower cost of foreign borrowing may sufficiently offset losses due to currency depreciation and sudden collapses in investor confidence. As debt levels rise, however, these latter costs become predominant.

Methodological annex

TWO TYPES OF DATA ARE ESPECIALLY USEFUL in tracking trends in corporate finance in developing countries:

- Macroeconomic data, or “top-down” data, from surveys carried out by national and international data collectors.
- Microeconomic data, or “bottom-up” data, compiled from corporate reports.

Each source has strengths and weaknesses. The macro data are, in principle, the most comprehensive and generally quite timely. But they often provide little detail. If too highly aggregated, may make it impossible to distinguish the nonfinancial corporate sector from other parts of the private sector.

The flow-of-funds data compiled for the United States by the Federal Reserve are a model of top-down data. Few developing countries, however, produce such complete accounts.

Firm-level data provide far more detail but suffer from the risk of sample bias. Often only the largest, most sophisticated enterprises are covered, because they are the ones that produce detailed reports. They may also have a time lag arising from the compilers’ effort to gather comprehensive, cross-country data.

The absence of comprehensive, timely data is more than a hindrance for researchers; it also is a concern for market participants and policymakers. With financial markets prone to sharp adjustments, and given the easy availability of derivatives and other structuring products that allow corporates to both hedge and increase their risk exposures, it is increasingly important for market

participants to be aware of the extent of exposure of the corporate sector as a whole. If the entire sector is overexposed, individual companies are likely to have trouble rolling over their debt in times of market stress.

Four sources of macroeconomic data were used in this study to paint a picture of the liabilities on the aggregate balance sheet of the nonfinancial corporate sector:

(1) Domestic bank credit data from the IMF were used to estimate bank credit, the primary source of credit for most corporate entities in the developing world. The IMF’s *International Financial Statistics* (line 32d) includes all credit to the private sector (including households), but the publication does not disaggregate bank credit to consumers. Although this is small in most developing countries, it does bias the debt numbers up.

(2) The *BIS Quarterly Review* provided data on cross-border bank claims, foreign bond issuance, and local bond market issuance.

(3) Domestic equity was estimated based on the market capitalization figures reported in Standard and Poors’ Emerging Market Data Base. This source has two drawbacks. First, the use of market values rather than book values makes the equity component (and thus debt-equity ratios) more volatile. Second, the source does not include privately held equity.

(4) Foreign-held equity is estimated using the FDI stock data from chapter 4.

The firm-level data used in this study are from the Worldscope database. We selected only firms for which all the relevant balance sheet items are available. The regional breakdown of the sample is given below.

Table 5A.1 Number of firms in sample

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
All	1122	1288	1538	1928	2242	2559	2998	3565	3629	3073
EAP	582	691	774	1032	1181	1245	1347	1618	1840	1695
ECA	17	19	20	68	132	155	177	185	165	117
LAC	141	162	264	308	354	390	533	862	834	706
Others	382	416	480	520	575	769	941	900	790	555

Note: EAP = East Asia and Pacific, ECA = Europe and Central Asia, LAC = Latin America and the Caribbean.

We built a database by matching firm-level balance sheets from *Worldscope* (December 2002 edition) with issuance data on bonds and syndicated loans from *Dealogic Bondware* and *Loanware*. On average about half of annual bond issuance and about 35 percent of annual loan issuance was accounted for by firms matched with *Worldscope* balance-sheet data.

The resulting database covered firms in 21 emerging markets: Argentina, Brazil, Chile, China, Colombia, the Czech Republic, Hungary, India, Indonesia, Republic of Korea, Malaysia, Mexico, Pakistan, Peru, the Philippines, Poland, the Russian Federation, South Africa, Thailand, Turkey, and República Bolivariana de Venezuela. Because *Worldscope* data appear quite comprehensive for the period 1992–2001, the analysis in the main text focuses on this period. (Depending on the variable, the number of firms covered in the regression analysis ranged from 1,122 in 1992 to 3,629 in 2000 and 3,073 in 2001.)

The summary statistics presented in the analysis, unless otherwise mentioned, are weighted averages of the financial ratios (with firm assets used as weights). For example, debt-asset ratio is computed as the ratio (expressed as a percentage) of the sum of debt for all firms to that of assets of all firms.

The findings related to foreign market access were derived as follows.

First, firms that had outstanding foreign debt in a given period (called “market participants”) were compared with those that had no outstanding foreign debt (“nonparticipants” in the international debt markets, at least for that year). Outstanding foreign debt was calculated by summing all debt issues in international markets (syndicated loans and bonds) during 1990–2001, and subtracting debt that matured during the period. This method ignores outstanding debt issued before 1990, but because private debt flows to emerging markets (and

stocks in those markets) were small in the aftermath of the debt crisis of the 1980s, this omission is unlikely to affect the results presented here.

Second, considering all firms with outstanding foreign debt, firms that borrowed from international markets in the current period (that is, firms with rollover) were compared with those that did not (firms without rollover).

Notes

1. See Radelet and Sachs (1998); Dadush, Dasgupta and Rath (2000); Dasgupta and others (2000).

2. Note that the earnings concept is total earnings, not the narrower and (more arbitrary) concept of operating earnings. In addition to uncertainty over how to measure earnings for a given company, the shifting sample size of our corporate database makes it difficult to compute measures of aggregate profitability that can be compared across time and countries. For example, it does not make sense to add profits, as the number of firms in our sample size varies each year. The alternative—to add together just the earnings of companies for which data are available for the full sample period—involves a huge loss of information, and a considerable risk of bias, as it would reflect (by definition) the selection of firms that were survivors through the whole period. As survivors, these firms might well be expected to have a higher-than-average rate of profitability. Given these constraints, the most meaningful measures of profitability that are available across regions and across time are net earnings of the sample companies as a percentage of sales (profit margins) and net earnings as a percentage of total assets.

3. The growth of international market access in the 1990s was driven by improvements in the macroeconomic environment in emerging-market economies, lifting of capital controls allowing firms to raise financing abroad, and establishment or improvement of legal systems that protected minority shareholder rights. See Levine (1997) for a review.

4. International market participants among banks and other financial companies showed much higher profit rates than nonparticipants. When financial and nonfinancial companies are combined together, again market participants reported higher profit rates.

5. Besides, large firms tend to attract government support, especially during cyclical downturns (“too big to fail”), which further improves their ability to raise debt. Also, larger firms can negotiate better terms with creditors.

6. For firms in developing countries, these valuation losses are one of the biggest components of the difference between operating earnings and overall earnings. We use the latter in this study.

7. This is similar to the view that smaller firms generate higher returns, a well-known result from small capitalized firms in the United States from Fama and French (1992). Some studies, however, have found evidence to the

contrary, that larger emerging-market firms tended to have larger returns on assets (see IMF 2002).

8. The profit rates computed for nonparticipating firms may be underestimated due to the sample selection bias, as firms that underperform drop out of the sample and only relatively better-performing survivors are included in the calculation. Another factor that may affect the comparison of market participants and nonparticipants (especially in East Asia) is that commercial banks were borrowing internationally and on-lending the proceeds in local currency terms to domestic corporations (Dasgupta and others 2000, p. 332). As a result, foreign currency borrowing by nonbank financial corporations would be underreported, reducing the number of market participating firms. When both financial and nonfinancial firms are included, market participants are found to report higher profits than nonparticipants.

9. Firms are not required to report foreign sales in their balance sheets. Thus, the database used here underestimates the number of firms with foreign sales.

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