

III. INVESTMENT AND REBALANCING IN ASIA

Ensuring stable growth in the postcrisis world economy will require a rebalancing of economic activity in several different countries. In Asia's export-dependent economies, this entails relying more on private domestic demand as a driver of growth. While some countries need to raise consumption, several countries need to raise investment or reorient it from tradable to nontradable sectors. These changes in investment could be facilitated by financial reforms that enhance domestically oriented firms' access to credit and by improvements in infrastructure that raise the returns to private investment.

A. Introduction

Rebalancing Asia's growth model involves simultaneously reorienting production and spending away from external toward domestic drivers of growth. The domestic drivers include both consumption and investment, although the emphasis differs across countries. The April 2010 Asia and Pacific *Regional Economic Outlook* examined the consumption aspects of rebalancing growth. In this chapter we discuss the investment aspects.

Although individual circumstances differ across economies, one common channel through which these objectives can be met is by promoting investment. In some parts of the region, notably the ASEAN-4, aggregate investment—particularly private fixed investment—appears low. In other parts, including the newly industrialized economies (NIEs) and Japan, although aggregate investment is in line with comparators, the composition is skewed toward exporters and capital-intensive firms, crowding out domestically focused and labor-intensive enterprises. Added to this, rapid growth has stretched existing infrastructure close to the point where it severely constrains activity.

This chapter examines the case for rebalancing in Asia through the route of investment. In contrast with existing work (Guimaraes and Unterbroderster, 2006; and Hori, 2008), it focuses on investment at both the aggregate level and the level of individual sectors across major Asian economies.¹ The analysis is guided by the following questions:

- What factors determine private investment spending at the aggregate level and at the sectoral level in Asia? What structural attributes help explain recent investment trends in the region? How do the patterns differ in Asia compared with other regions?
- Is investment in Asia constrained by limited development of financial sectors and infrastructure in many countries?
- What policies could promote investment to rebalance Asian economies toward domestic demand-led growth and lift potential growth?

The analysis leads to two main findings. First, lower returns, greater uncertainty, and altered perceptions of the ease of doing business have held down investment in many regional economies over the past decade or so. But financial constraints also play a role, as small and medium enterprises (SMEs) and firms operating in the service sector appear to have limited access to external funding, particularly in Japan and NIEs. In these economies, promoting financing on risk-based terms, supporting SMEs' restructuring through more private out-of-court workouts, and streamlining tax policies could help rotate the composition of investment toward nontradable sectors. Second,

Note: The authors of this chapter are Malhar Nabar and Murtaza Syed. Souvik Gupta provided research assistance.

¹ Guimaraes and Unterbroderster (2006) also look at investment trends at the aggregate and firm level, focusing on developments in Malaysia since the Asian crisis.

Figure 3.1. Asia: Gross Fixed Capital Formation (GFCF) and Gross Saving
(In percent of GDP)

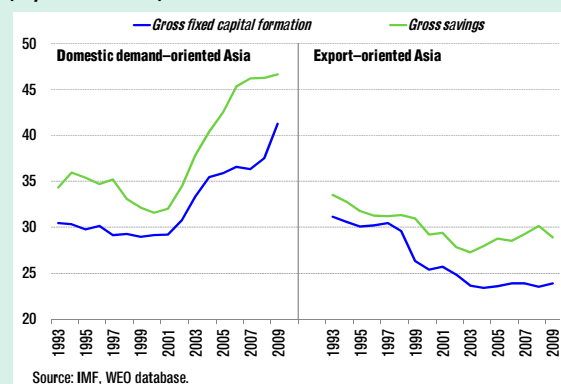


Figure 3.2. Export-Oriented Asia: Contribution to Change in Average Share of GFCF in GDP
(In percentage points; change in average shares between 1990–97 and 2000–07)

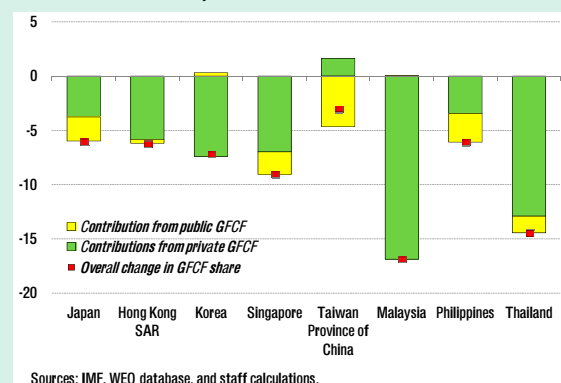
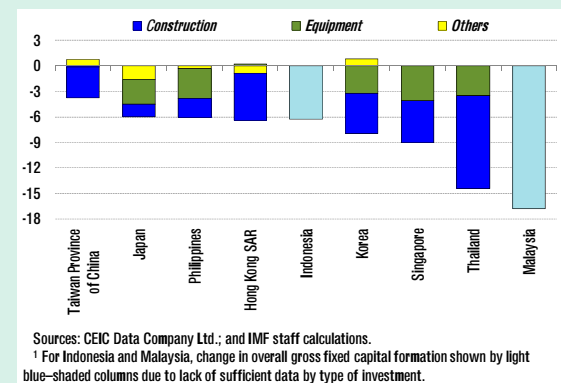


Figure 3.3. Selected Asia: Change in Investment by Type¹
(2000–07 relative to 1990–97; in percent of GDP)



shortfalls in infrastructure also suppress private investment spending, particularly in the ASEAN–4. With most of the infrastructure in the region provided by governments, greater private participation through public-private partnerships and bond funds may help reduce the pressure on government budgets.

B. Investment Trends in Asia

Recent Developments

In the decade between the Asian crisis and the current global crisis, investment spending in Asia diverged across two groups of economies (Figure 3.1). In the economies with relatively large domestic demand bases (China and India), investment decreased slightly during the Asian crisis, but then increased appreciably starting in the early 2000s.² In the group of relatively more export-oriented economies (NIEs, Japan, Malaysia, the Philippines, and Thailand), the average decline in the investment share of GDP following the Asian crisis was about 7 percentage points. Combined with relatively stable saving in this group, the fall in investment as a share of GDP contributed to rising current account surpluses over this period.

A sharp fall in private spending on fixed capital accounts for most of the investment decline in export-oriented Asia (Figure 3.2). Outside of Taiwan Province of China, the bulk of the investment slowdown originated in the private sector. In particular, a sustained slump in fixed investment—in the form of factories and machinery—typically accounted for between half and three-fourths of the overall decline in countries for which a breakdown is available. In addition, excess investment in residential

² Most of the subsequent discussion on private investment focuses on developments outside China and India, and emerging Asia is used to refer to economies excluding these two countries.

construction may have also played some role in the precrisis boom and subsequent slump (Figure 3.3).

Meanwhile, the decline in the public investment share has meant that an “infrastructure gap” persists between emerging Asia and the rest of the world, particularly in a few countries, such as the ASEAN-4 and India (Figures 3.4 and 3.5). The stock of infrastructure has increased since the 1990s along several dimensions, but still lags comparator emerging market regions in important respects. The median electricity-generating capacity in emerging Asia is approximately 90 percent of the median for Latin America (up from 50 percent in 1995). And, despite the rapid spread of telephones, particularly mobile phones, in the region in the past decade, emerging Asia also continues to lag behind Latin America in its stock of telecommunications infrastructure. There is growing recognition among policymakers in the region that these infrastructure deficits impede private investment and growth.³

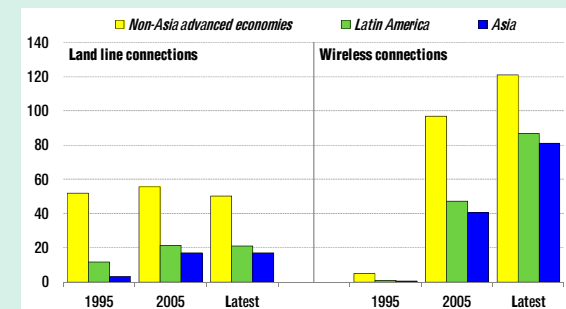
Investment Levels and Composition in Asia

Investment is relatively low in some regional economies, notably the ASEAN-4. Previous research using macrolevel estimates from a standard neoclassical growth model demonstrated that most ASEAN economies have been investing well below the rate implied by their current capital-output ratios (see Chapter III in IMF, 2010b). Firm-level data also support this view. Even as liquidity indicators have improved and leverage has decreased since the Asian crisis, operating margins and investment have fallen markedly over this period.⁴ Investment rates in the ASEAN-4 economies are now lower than in other emerging economies and closer to those in economies with much higher per capita incomes

³ India's National Economic Advisory Council, for example, has called the state of physical infrastructure a “binding constraint” on expansion and a “significant contributor to lower competitiveness” (Rangarajan, 2010).

⁴ See Appendix Table 3A.1 for details.

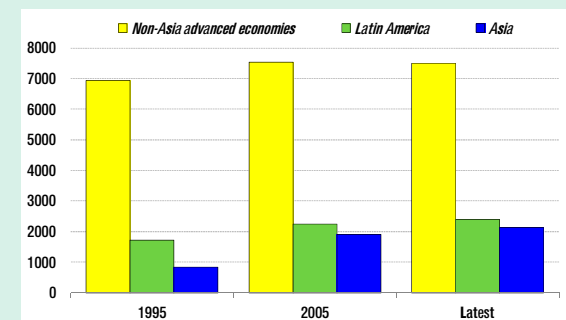
Figure 3.4. Phone Connections¹
(Median; number of connections per 100 people)



Source: World Bank, *World Development Indicators*, 2010.

¹ Asia includes ASEAN-5, China, India, and Korea. Latin America includes Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, and Mexico.

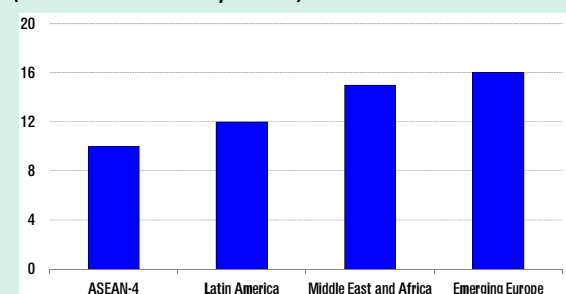
Figure 3.5. Electricity Generation¹
(Median; in kilowatt hours per capita)



Source: World Bank, *World Development Indicators*, 2010.

¹ Asia includes ASEAN-5, China, India, and Korea. Latin America includes Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, and Mexico.

Figure 3.6. Firm-Level Investment Rate, 2000–07¹
(Median investment-to-capital ratio)



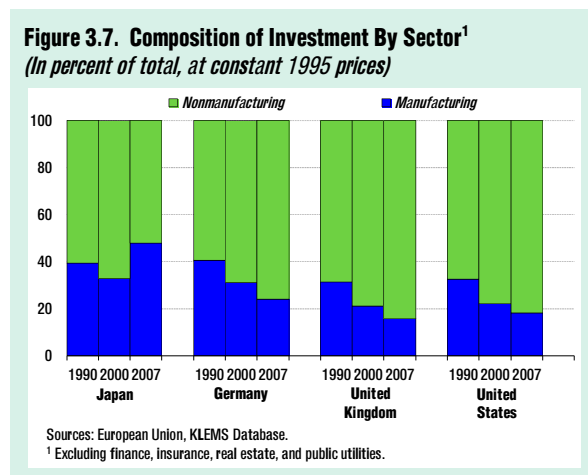
Sources: Worldscope; and IMF staff calculations.

¹ Latin America includes Argentina, Brazil, Chile, Colombia, Mexico, and Peru. Middle East and Africa includes Israel, Egypt, Morocco, Pakistan, and South Africa. Emerging Europe includes Czech Republic, Hungary, Poland, Russia, and Turkey.

and capital intensity, such as Japan, the United States, and the euro area (Figure 3.6).

In contrast, in Japan and the NIEs, the issue is one of composition rather than the overall level of investment. In these economies, investment has shifted over time toward manufacturing and large firms, particularly in the export sector, since the Asian crisis.

- In Japan, for instance, the share of the nonmanufacturing sector in overall investment has fallen from 70 percent in 2000 to just over 50 percent in 2007 (Figure 3.7). Despite broadly similar economic structures, this decline contrasts sharply with developments in comparator economies, such as the United States, the United Kingdom, and Germany, where the starting share was similar but has now risen to about 80 percent. In particular, the share in total investment of the four main exporting sectors—automobiles, machinery, electronics, and steel—rose from 19 percent to 31 percent in Japan.



- At the same time, investment has lagged behind for smaller firms and in the services sector (Figure 3.8). These divergent trends are clearly highlighted in Korea, where rising regional competition has put pressure on labor-intensive SMEs, particularly in low-end

manufacturing.⁵ SMEs also seem to suffer from excess capacity, while low productivity in the services sector, where many of these firms operate, has been a constraint on investment.

- Therefore, even in Japan and the NIEs, where investment levels do not seem obviously low, there may be scope for supporting rebalancing by reorienting capital spending toward firms and sectors more directly linked to the domestic economy.

C. What Drives Investment in Asia?

The two key aspects of investment in Asia—the fall in the share of investment in GDP in some economies and the shift in composition in others—are at the core of the rebalancing debate. This section attempts to explain both features of the data with a view to establishing what specific policies might help on the Asian side of the global rebalancing effort.

Explaining the Fall in Aggregate Investment

Could the fall in the private investment share simply reflect a decline in the relative price of capital goods? Following the Asian crisis, several economies introduced structural and financial market reforms that may have raised their efficiency in producing capital goods in the past decade.⁶ Another question is whether, as the importance of IT capital has increased, the productivity gains in that sector have contributed

⁵ Country-specific experiences vary, but the rise of China has intensified competitive pressures particularly on the SMEs in the region. In the case of Korea for example, SMEs have either scaled down operations or shifted production to China (Kang and Kim, 2006). The sectors most directly affected appear to be textiles and basic manufacturing.

⁶ More generally, Hsieh and Klenow (2007) document an inverse relationship between the relative price of capital goods and the level of development. This implies that as economies grow over time the relative price of capital falls as they become more efficient at producing capital goods.

to a decline in the relative price of capital (DeLong, 2002). In such a case, the decline in the share of nominal investment spending in nominal GDP may simply reflect a fall in the relative price of capital goods.

On balance, however, the evidence suggests that falling relative prices are unlikely to explain the decline in the investment rate. If this explanation were valid, we would expect to see a strong positive correlation between the change in the relative price of capital and the change in the investment share of GDP.⁷ However, the evidence suggests that in Asia the opposite is true (Figure 3.9). In fact, the relative price of capital and the investment rate appear to be negatively correlated. The decline in the investment share was associated with lower relative prices in only half the cases, possibly reflecting the differential pace of structural and financial reforms across regional economies, or compositional differences in the mix of IT and non-IT capital goods employed. Moreover, the economies that have witnessed the largest falls in the investment share of GDP have also seen the largest increases in the relative price of capital goods. And there is considerable variation across the region: Hong Kong SAR, Japan, and Singapore all experienced a similar decline in the investment share, but with differing declines in the relative price of capital goods. Clearly, at the very least, this explanation cannot account for trends across the region as a whole.

Instead, estimates from a standard regression approach suggest that at the aggregate level, the decline in the investment rate may have been caused by structural changes following the Asian crisis (Table 3.1). The regression framework used is an Arellano-Bond GMM estimation, which allows for the inclusion of lagged values of investment spending and a set of controls—GDP

Figure 3.8. NIEs: Firm-Level Investment Rate, by Size and by Sector
(Median investment-to-capital ratio)

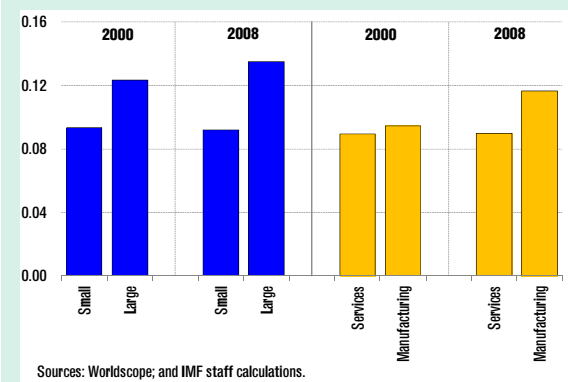


Figure 3.9. Export-Oriented Asia: GFCF—Change in Share versus Change in Relative Price
(Comparison between 1990–97 and 2000–07)

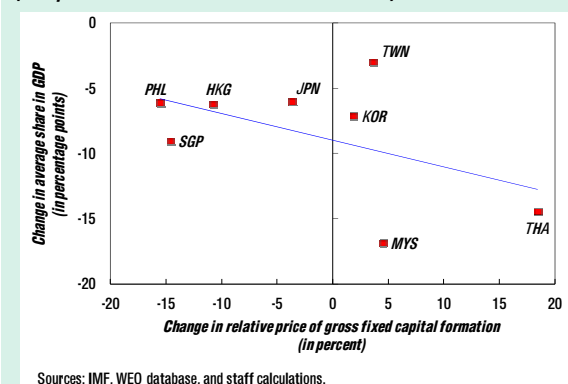


Table 3.1. Determinants of Private Investment Spending¹

	0.772 *** (0.039)	0.742 *** (0.040)	0.748 *** (0.040)	0.745 *** (0.045)	0.710 *** (0.036)
Lagged private investment					
Real interest rate	0.0319 * (0.017)	0.030 * (0.018)	0.0328 * (0.017)	0.014 (0.011)	0.006 (0.011)
GDP growth	0.360 *** (0.046)	0.328 *** (0.040)	0.340 *** (0.039)	0.331 *** (0.040)	0.299 *** (0.041)
Volatility		-0.224 *** (0.060)	-0.241 *** (0.060)	-0.250 *** (0.064)	-0.310 *** (0.077)
Manufacturing share of value added			0.091 (0.072)	0.054 (0.063)	0.089 (0.062)
Ease of doing business				0.244 (0.157)	0.343 ** (0.174)
Financial development					21.270 * (12.210)
Financial development (squared)					-15.210 * (9.228)
Observations	412	412	369	338	260
Number of countries	44	44	42	39	37
Autocorrelation in first-differenced errors (p-value) ²	0.8779	0.926	0.938	0.671	0.339

Source: IMF staff estimates.

¹ Dependent variable: private investment-to-GDP ratio. Arellano-Bond estimation technique used.

Robust standard errors in parentheses. ***, **, and * indicate significance at 1, 5, and 10 percent levels, respectively.

² Arellano-Bond test of no second-order autocorrelation in first-differenced errors.

growth as a proxy for the aggregate return on investment, the standard deviation of GDP growth over rolling four-year windows to capture macroeconomic uncertainty, the real interest rate, the manufacturing share of value added, an index of financial market development, and a measure of the ease of doing business (or the perceived investment climate)—along with country-specific, time-invariant fixed effects.⁸ Across a large cross-country panel of emerging and advanced economies, the approach identifies the following key determinants:

- The aggregate return on investment (average growth) is positively associated with investment spending. Following the Asian crisis, average real GDP growth in emerging Asia (excluding China and India) slowed appreciably. The slowdown in real GDP growth relative to the precrisis period reduced investment spending by 2½ percentage points of GDP on average.
- Macroeconomic uncertainty (volatility) is negatively correlated with investment spending. As uncertainty rises, firms hold back on costly and potentially irreversible investment since they prefer the option value of waiting until the uncertainty clears. Growth in emerging Asia has been relatively more volatile as the recovery from the 1997–98 downturn gave way to the tech boom and bust cycle that was then followed by a period of solid growth, which ended sharply with the current crisis. This higher volatility over the past decade has depressed investment spending in the region by approximately 1 percentage point of GDP relative to the early 1990s.

⁸ The index of financial development (Abiad, Detragiache, and Tressel, 2008) is a normalized average across seven indicators (banking supervision, privatization, entry barriers, directed credit, credit ceilings, interest rate controls, and securities market reform). The measure of ease of doing business is based on an index compiled by the International Country Risk Guide (www.prsgroup.com/ICRG.aspx) and largely reflects perceptions of corruption in the private and public sectors.

- A surprising deterioration in investors' perceptions of the business climate has also dampened investment. The altered perceptions are associated with a further decline in investment spending of three-quarters of a percentage point of GDP compared with the early 1990s.

In addition, infrastructure weaknesses may be constraining investment in emerging Asia. Increases in the stock of infrastructure can boost investment through several channels. Improved connectivity (better roads, bridges, and telecommunications) will reduce transport and communication costs, facilitate internal specialization, and allow for an improved division of labor within the country. Furthermore, the decline in transportation costs can support clustering of industries, with attendant gains in productivity that raise the return on investment through knowledge spillovers and agglomeration effects (Krugman, 1991 and Venables, 2006). This is particularly important for countries such as India, Indonesia, and China (where vast distances separate potential producers and end users). Power and energy infrastructure that minimizes work stoppages and disruptions in production and distribution can also augment returns on investment by raising productivity. Better roads, electricity, and water supply will enhance health and education investments, reducing inequality and raising the human capital of the work force.⁹

Empirically, improvements in infrastructure appear to have a powerful impact on private investment spending in the region. Across four commonly used indicators of infrastructure (electricity generation, telephone lines, cell phone subscribers, and road length), there is strong evidence of a positive association with private

⁹ Calderon and Servén (2004a, 2004b) point out that improvements in infrastructure are associated with reduced inequality and higher growth. But there may still be an equity-efficiency trade-off in the short term when current needs in the education and health sectors must be weighed against the requirements for infrastructure.

investment spending.¹⁰ Estimates from a simple regression framework as outlined above suggest that electricity and roads have the strongest impact on private investment, while increases in the number of telephone lines and cell phone subscribers are also positively associated with higher private investment (Table 3.2).¹¹

Why Has the Composition of Investment Changed?

What explains the shift in investment away from services and small firms in more developed parts of the region since the Asian crisis? Firm-level panel data is used to estimate the standard neoclassical investment model, which relates current investment to expectations of future profitability through the Tobin's Q ratio, defined as the ratio of the stock market valuation of the firm to the replacement cost of its capital stock.¹² The model is estimated using a first-differenced GMM approach and augmented by additional regressors, including (i) cash flow, which measures the internal funds available to finance investment projects and is typically used in the literature as a proxy for financing constraints; (ii) leverage, measured by the debt-to-assets ratio, as a proxy for the effect of financial restructuring on investment; and (iii) the standard deviation of returns on the weekly stock price index to capture the potential negative impact of uncertainty on investment.

In recent years, several factors appear to be inhibiting investment by domestically

¹⁰ These physical stocks of infrastructure do not adjust for quality differences across countries, but are preferable as indicators of infrastructure services to expenditure-based measures, which often capture other categories of spending (Pritchett, 1996).

¹¹ Greater use of telephones (particularly mobile phones) is increasingly seen as an important facilitator of business activities. For an example of how the spread of mobile telephones has enhanced price discovery, eliminated waste, and enhanced efficiency in a specific industry, see Jensen (2007) on the impact of cell phones on the fisheries industry in Kerala, India.

¹² See chapter Appendix 3.1 for details.

Table 3.2. Effect of Infrastructure on Private Investment Spending¹

Lagged private investment	0.701 *** (0.050)	0.741 *** (0.054)	0.673 *** (0.046)	0.422 *** (0.081)
Real interest rate	-0.026 (0.024)	0.006 (0.026)	0.018 (0.021)	-0.038 (0.027)
Growth rate of GDP	0.244 *** (0.049)	0.285 *** (0.050)	0.228 *** (0.042)	0.153 ** (0.077)
Volatility	-0.104 * (0.057)	-0.164 *** (0.048)	-0.032 (0.044)	-0.345 *** (0.108)
Electricity	2.204 ** (1.122)			
Telephones		1.420 ** (0.592)		
Cell phones			0.689 *** (0.186)	
Roads				4.015 *** (1.236)
Observations	316	325	325	120
Number of countries	41	42	42	32
Autocorrelation in first-differenced errors (p-value) ²	0.347	0.758	0.72	0.267

Source: IMF staff estimates.

¹ Dependent variable: private investment-to-GDP ratio. Arellano–Bond estimation technique used. Robust standard errors in parentheses. ***, **, and * indicate significance at 1, 5, and 10 percent levels, respectively.

² Arellano–Bond test of no second-order autocorrelation in first-differenced errors.

oriented firms. In the period after the Asian crisis the firm-level relationship between investment and fundamentals was relatively weak, lending support to the hypothesis of over-investment. In the postcrisis period, however, a much stronger link has emerged, with the relative importance of different factors varying based on firm characteristics (Table 3.3):

- Expectations of future profitability are significant drivers of investment spending for most firms in the NIEs and, to a lesser extent, Japan. In these economies, relatively lower returns on investment by small firms and in the service sector may be contributing to the unbalanced composition of investment.

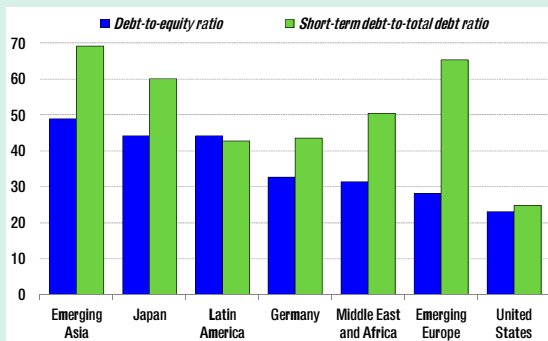
In the NIEs and in Japan, inadequate access to external finance is a binding constraint on investment for small and domestically oriented firms. Despite significant progress in financial restructuring since the Asian crisis, a legacy of excess leverage and dependence on debt financing continues to hold back investment for some firms (Figure 3.10). By necessitating repayments regardless of

Table 3.3. How Would an Improvement in Fundamentals Affect Investment in Asia?

Drivers	Region	Type of firm	Effect on investment
10 percent increase in profitability	NIEs ASEAN-4	Small firms Large firms	3 percent 2 percent
10 percent increase in external finance	NIEs Japan, ASEAN-4	Domestically oriented; labor-intensive Small firms; domestically oriented; service sector	2 percent 2 percent
10 percent decrease in leverage	NIEs Japan ASEAN-4	Service sector Small firms; domestically oriented; labor-intensive; service sector Large firms; export oriented; manufacturing sector	3 percent 2–5 percent 4–6 percent
10 percent decrease in risk	NIEs Japan ASEAN-4	Service sector Labor-intensive firms Export oriented; manufacturing sector; capital-intensive firms	4 percent 3 percent 3–5 percent

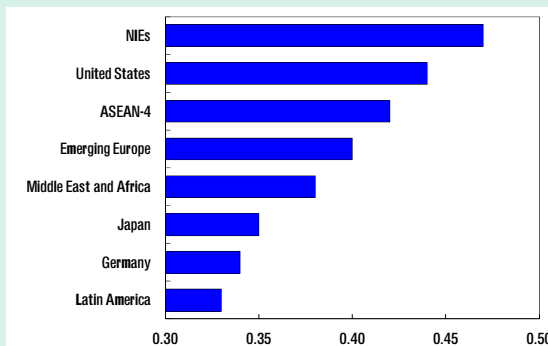
Source: IMF staff estimates.

Figure 3.10. Corporate Sector Leverage: 2000–08
(In percent)



Source: IMF, Corporate Vulnerability Utility Database.

Figure 3.11. Uncertainty: 2000–08
(Standard deviation of weekly stock price index)



Source: IMF staff calculation.

profitability, excessive debt financing can retard investment, particularly in longer-term and more risky projects. In the NIEs, such effects seem to be evident in the services sector. In Japan, they inhibit investment by smaller firms, nonexporters, and those using labor-intensive technology. The results suggest that greater reliance on equity could promote investment by such firms.

- Uncertainty also has powerful dampening effects on investment in the services sector in the NIEs and labor-intensive firms in Japan. In part, the effect of uncertainty may reflect the close integration of these economies with global markets and their associated susceptibility to global shocks (Figure 3.11). In addition, with greater competition at each step of the supply chain, firms are possibly less able to adjust markups procyclically and use them as buffers against external shocks. This may have made them more cautious in their investment decisions than would have been the case previously.¹³

Overall, smaller, more domestically oriented, labor-intensive, and service sector firms in the NIEs and in Japan have faced stronger headwinds to their investment compared with larger, exporting, capital-intensive, and manufacturing firms. These headwinds are reflected in the greater sensitivity of their investment to profitability, internal funding, leverage and risk, as well as the generally lower improvement in these indicators relative to larger, exporting, capital-intensive, and manufacturing firms since the Asian crisis (Table 3.4).¹⁴

¹³ Linden, Kraemer, and Dedrick (2009) illustrate the supply chain of the iPod and demonstrate how Asian firms capture very little of the value added at each stage compared with the share garnered by the U.S.-based providers of the intellectual capital behind the product, suggesting limited profit margins in the Asian segments of the chain.

¹⁴ In the case of the ASEAN-4, financing constraints are found to be even more binding and applied across a broader range of firms, while detrimental effects of leverage and risk

(continued)

Moreover, these headwinds appear to be specific to the region and do not affect firms in other emerging and advanced economies to the same extent.

- In other emerging economies, investment is less affected by risk or capital structure. The detrimental effects of uncertainty and the overhang of debt were less pronounced than in Asia reflecting, respectively, the relatively more open nature of Asian economies, and the relatively heavier reliance of Asian firms on short-term funding.
- Outside the region, financing constraints and leverage do not have as dominant a role in advanced economies with well-developed capital markets. German firms operating in a similar bank-oriented financing environment as firms in the NIEs and Japan display much the same cross-sectional pattern in financing constraints. However, there is less evidence in recent years of financing constraints or detrimental effects of debt financing in the case of firms in the United States and United Kingdom, partly reflecting more diverse sources of funding for small companies, including bond markets, equity funding, and venture capital.

D. Policy Implications: How Can Asia Facilitate Rebalancing Through Investment?

To help rebalance Asia's economies, private investment needs to be raised in some cases, such as the ASEAN-4, while in other economies, such as Japan and the NIEs, it needs to be reconfigured toward domestically oriented sectors. At the same time, the region's pressing infrastructure needs are a constraint on private investment and growth and will have to be addressed urgently. This section

were mostly concentrated in larger firms and the export sector.

Table 3.4. NIEs and Japan: Changes in Fundamentals, 1990–97 versus 2000–07 by Firm (Median)

	NIEs			Japan		
	1990–97	2000–07	Percent change	1990–97	2000–07	Percent change
Small						
Tobin's <i>Q</i>	2.9	2.1	–28.0	3.2	1.5	–52.7
Cash flow-to-capital stock	0.2	0.2	11.9	0.1	0.1	2.9
Debt-to-assets	18.4	18.8	2.2	28.6	19.9	–30.1
Uncertainty	0.3	0.5	42.1	0.3	0.4	8.3
Large						
Tobin's <i>Q</i>	2.5	1.9	–24.6	2.5	1.7	–30.7
Cash flow-to-capital stock	0.1	0.2	94.0	0.1	0.1	4.1
Debt-to-assets	41.8	26.4	–36.9	36.1	22.4	–37.8
Uncertainty	0.4	0.4	22.5	0.3	0.3	13.3
Services						
Tobin's <i>Q</i>	2.8	1.9	–30.1	4.5	1.7	–62.7
Cash flow-to-capital stock	0.1	0.2	36.0	0.1	0.1	4.3
Debt-to-assets	24.8	21.4	–13.8	30.8	20.3	–34.0
Uncertainty	0.3	0.5	36.7	0.3	0.3	10.7
Manufacturing						
Tobin's <i>Q</i>	2.6	1.9	–27.9	2.6	1.6	–39.4
Cash flow-to-capital stock	0.1	0.2	34.7	0.1	0.1	4.2
Debt-to-assets	32.7	23.9	–26.9	35.0	22.0	–37.1
Uncertainty	0.4	0.4	25.6	0.3	0.3	3.7
Domestic						
Tobin's <i>Q</i>	3.1	1.9	–39.2	3.4	1.5	–56.0
Cash flow-to-capital stock	0.2	0.2	–18.4	0.1	0.1	2.1
Debt-to-assets	19.8	23.6	19.4	30.2	20.4	–32.4
Uncertainty	0.3	0.5	48.0	0.3	0.3	7.8
Exporters						
Tobin's <i>Q</i>	2.6	2.1	–19.5	2.7	1.8	–36.1
Cash flow-to-capital stock	0.1	0.2	46.6	0.1	0.2	3.9
Debt-to-assets	31.3	22.2	–29.0	34.4	22.4	–34.9
Uncertainty	0.4	0.5	30.7	0.3	0.3	10.6
Labor-intensive						
Tobin's <i>Q</i>	3.4	2.5	–27.2	3.5	1.8	–48.6
Cash flow-to-capital stock	0.2	0.2	9.2	0.2	0.2	10.4
Debt-to-assets	22.2	18.5	–16.9	27.9	19.3	–30.9
Uncertainty	0.3	0.5	39.3	0.3	0.3	15.2
Capital-intensive						
Tobin's <i>Q</i>	2.4	1.7	–27.1	2.5	1.5	–40.9
Cash flow-to-capital stock	0.1	0.2	51.0	0.1	0.1	3.3
Debt-to-assets	32.5	26.5	–18.6	38.6	24.1	–37.7
Uncertainty	0.4	0.5	30.8	0.3	0.3	2.3

Source: IMF staff estimates.

discusses potential policy responses to meet these challenges suggested by the econometric results and best practices for funding infrastructure investments based on cross-country evidence.

Policies Suggested by Empirical Results

The empirical results presented in this chapter suggest that policies to boost private investment could focus on four broad areas: (i) increasing the returns on investment; (ii) improving access to external financing to reduce the cost of capital,

especially for smaller and domestically oriented firms; (iii) reducing excess leverage and promoting SME restructuring to create space for new investment; and (iv) strengthening risk management and bolstering the business climate to reduce uncertainty.

First, raising the rate of return on investment will be important.

- *In some parts of the region, the tax code is an obvious candidate*, since taxes raise the bar for investment to be profitable and fall especially hard on capital-intensive industries. Japan, for instance, has among the highest average and marginal effective corporate tax rates (AER and MER) in the Organisation for Economic Co-operation and Development (OECD) (Figure 3.12).¹⁵ Lowering the corporate tax rate may be an effective strategy for reducing distortions and boosting domestic and foreign investment. Accelerating depreciation allowances for industrial buildings, which are the lowest among the G-7, and extending corporate tax-loss carry forwards to allow firms to recoup some of the losses incurred in the early years of large investments may also help (IMF, 2010a).¹⁶ Elsewhere, such as in Korea where effective tax rates are already low by OECD standards due to generous tax exemptions, changes in taxation are likely to have a relatively more modest impact.¹⁷

¹⁵ The average effective rate (AER) is the proportion of lifetime pretax profit that is taken in tax and is an important determinant of the location of investment. The marginal effective tax rate (MER) is the difference between the before- and after-tax returns on a project that an investor finds just worthwhile, and affects the desired level of investment.

¹⁶ Buildings are subject to straight line depreciation only, with a much longer useful tax life than elsewhere (50 years against, for example, 39 years in the United States). Japan currently allows for a seven-year carry forward period, compared with 20 years in the United States.

¹⁷ A wide range of incentives are currently provided under the special tax treatment and control law of 1999. Moreover, the literature suggests that tax effects on investment may be secondary if other factors, such as the quality of governance, regulatory framework, infrastructure, macropolitical stability, (continued)

- *On the other hand, tax incentives are unlikely to be cost-effective.*¹⁸ Their key weaknesses include costliness, scope for abuse by taxpayers, lack of transparency, introducing distortions into business decisions, and ineffectiveness, relative to other measures, in reaching intended goals. Instead, international evidence suggests that establishing a simple, credible, broad-based and transparent corporate tax regime may be a better strategy for creating an environment conducive for investment (Botman, Klemm, and Baqir, 2008).

Second, improving access to external financing would lower the cost of capital for smaller businesses and firms in the nontradable sectors. Problems faced by SMEs in accessing financing typically reflect an incomplete range of financial products, regulatory rigidities, gaps in the legal framework, and information asymmetries between financiers and firms. Possible strategies to mitigate these effects include:

- *Deepening and broadening financial systems.* Only Korea and Malaysia have sizable corporate bond markets among emerging economies in the region, while the rest rely on relationship-based financing through banks (Figure 3.13). Encouraging corporate bond market development would help open up additional channels for funding (IMF, 2007).
- *Improving the financial infrastructure for smaller and more service-oriented firms* by encouraging more lending on risk-based terms; reforming collateral laws to allow a wider range of securitization (beyond real estate and other fixed assets), as is being done in Japan through a program accepting inventories and accounts receivables as collateral; and deepening credit information and extending the coverage of credit registries. The latter was

and labor market conditions, are problematic. See Norregaard and Khan (2007) for a review.

¹⁸ Among others, see Zee, Stotsky, and Ley (2002) for a survey of the evidence.

initiated in the Philippines through the establishment of the Credit Information Corporation in 2008.

- *Widening the pool of venture capital funding available for start-ups in new emerging sectors.* Targeted tax breaks or allocating a larger share of the public pension funds to venture capital investments could support the industry, which is relatively underdeveloped, even in advanced parts of Asia (Figure 3.14).¹⁹ More funding could also be drawn in by providing information on venture capital investment performance and developing performance benchmarks on emerging equity exchanges (such as JASDAQ in Japan).²⁰

Third, reducing leverage and improving incentives for corporate restructuring will help create space for new investment.

- *As the global recovery firms up, restructuring could be promoted by phasing out credit guarantees.* Significant progress has been made on corporate and financial restructuring over the last decade, but smaller companies have tended to fall behind (IMF, 2006a, 2006b). This partly reflects the still-sizeable credit guarantees for SMEs, which can limit their incentives for restructuring and create an entry barrier by making it difficult for many newer firms to access bank credit (McKinsey, 2000).²¹ In Korea, for instance, banks tend to direct loans to existing and well-established

¹⁹ In Japan, for instance, the Government Pension Investment Fund does not undertake any alternative investments such as venture capital, real estate, and private equity. By contrast, a number of OECD countries allocate some share of their assets to such investments, including California Public Employees' Retirement System (14 percent) and New Zealand Superannuation Fund (11 percent). See also IMF (2010c).

²⁰ In the United States and Europe, VentureOne and Thomson Financial store information on start-ups—including profitability and investment flows—regularly used by venture capitalists and institutional investors.

²¹ Uesugi, Sakai, and Yamashiro, 2006 suggest that credit guarantees can lead to a significant increase in leverage and
(continued)

Figure 3.12. Effective Corporate Tax Rates in OECD
(In percent)

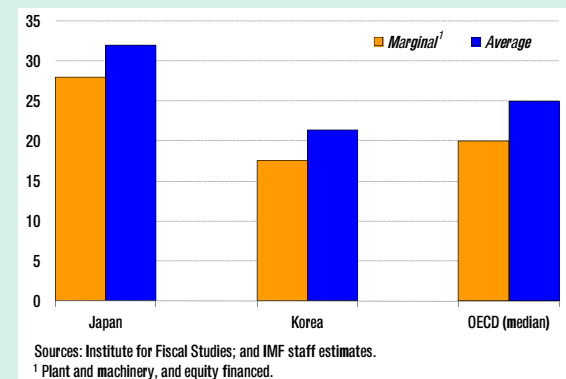


Figure 3.13. Selected Asia: Size of the Corporate Bond Market, 2009
(In percent of GDP)

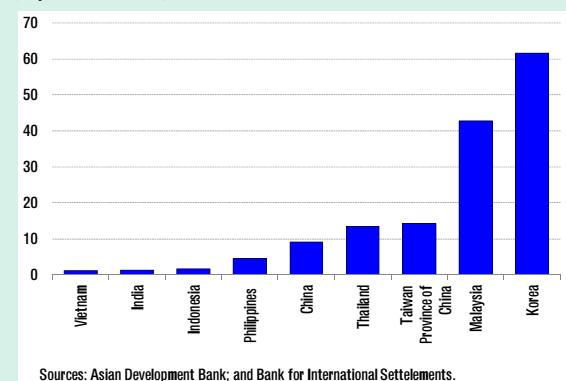
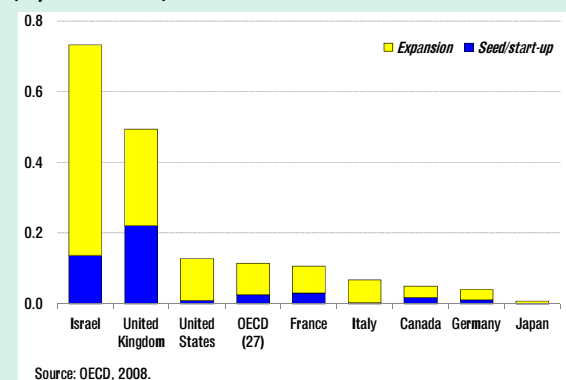


Figure 3.14. Selected Advanced Economies: Venture Capital Investment
(In percent of GDP)



do not translate into efficiency gains in the case of high-risk firms.

SMEs that have secured credit guarantees, since most of the associated default risk is borne by the government. While these guarantees declined from 8 percent of GDP in 2001 to about 6 percent in 2005, they remained almost thirty times larger than in the United States.²² Over the longer term, attention should shift away from relying on guarantees to addressing the root cause of SMEs' limited access to credit. Improvements in the financial infrastructure can improve credit availability, including by expanding credit information sharing, allowing the securitization of movable assets, and developing venture capital markets for SMEs (Beck and Demirgüç-Kunt, 2006).

- *Assisting the exit of nonviable companies would also help*, including through out-of-court workouts and further reforms to streamline bankruptcy procedures. Combined with reforms to the public support system, these measures could jumpstart a market for private-led restructuring of distressed SMEs, similar to what took place for large enterprises after the Japanese banking crisis in the 1990s. In the same vein, after the Asian crisis, the Korea Asset Management Corporation successfully created a market for distressed Korean corporate debt by purchasing NPLs from banks and repackaging them for eventual sale to investors.²³ A similar restructuring and consolidation of the SME sector might be accomplished by promoting asset management companies that specialize in repackaging distressed debt of small firms.

Fourth, reducing uncertainty would help lower the risks associated with long-term investment decisions. The empirical results suggest that investment decisions can be affected by uncertainty about many aspects of the operating environment, such as demand, prices, costs, and

exchange rates. In addition, risk related to policies, notably the tax code and other business regulations, could deter private investment. Options to address this include:

- *Promoting the use of financial instruments to manage risks.* Even in relatively advanced parts of the region, international comparisons suggest that large exporters tend to underinsure against credit, commodity, and marketable security price risk. SMEs undertake much less hedging in general (Heaney and others, 1999).
- *Further improvements to the perceptions of the ease of doing business.* While the structural reforms implemented since the Asian crisis have potentially made a substantive difference in the region's investment climate, it appears that perceptions have not yet caught up with the new reality. Surveys suggest that a streamlined process for business creation, greater labor market flexibility, an improved legal and regulatory framework for entrepreneurs and bankruptcy, and a more transparent tax system could help reduce investor perceptions of risk in many parts of the region (Guimaraes and Unteroberdoerster, 2006; and IMF, 2008b). Ongoing efforts in these areas—the adoption of a competition law in Hong Kong SAR, the lowering of restrictions on foreign investment in the services sector in Malaysia, the establishment of one-stop shops to reduce administrative delays in Indonesia and Malaysia—could make it more attractive for companies to expand operations domestically rather than overseas.

Meeting Infrastructure Needs

Government financing and provision of infrastructure may not be sufficient to meet the growing needs of the region. Over the next decade, emerging Asia's total infrastructure needs are estimated to be in the vicinity of US\$7.5 trillion (AsDB, 2009). While several governments across the region have stepped up their allocation to infrastructure as part of crisis-

²² More recently, credit guarantees have increased significantly across the region as part of the policy response to the crisis (see Box 1.7 in IMF, 2009a).

²³ See Kang and Kim (2006).

induced stimulus packages, their ability to sustain elevated levels of investment in roads, telecommunications, and electricity in the years ahead may be limited by other demands on their budgets, shrinkages in fiscal space, and diminishing tolerance of bond investors for rising sovereign expenditure.²⁴

Public-private partnerships offer an alternative provision mechanism, but effective design of these vehicles calls for coordinated action on many fronts. Historically, the provision of infrastructure has been almost entirely in the public domain in Asia and elsewhere, including in advanced economies. As pressures on government budgets have intensified worldwide, more attention has been paid to hybrid public-private forms of provision. The projects initiated under this organizational form offer some important lessons for the design of future public-private partnerships:

- The Theun Hinboun hydropower project implemented jointly by Thailand and Lao PDR between 1994 and 1998 has turned out to be highly profitable (AsDB, 2009). Potential time inconsistency and hold-up problems (which may arise in instances where firms are asked to sink capital into a multiyear project, but then are subsequently exposed to midcourse changes in tariff or tax policies) were solved by the Lao PDR government committing to meet its obligations under a 30-year license, backed up by the establishment of an offshore escrow account pledged to the investors in the project.
- The new international airport terminals at Delhi and Mumbai have been financed through a joint venture with 74 percent

private consortium equity. Construction began in 2006 and is nearing completion in both cities. Regulatory uncertainty has been mitigated by having a dedicated regulator with sole legal jurisdiction over the projects. The new Airports Economic Regulatory Authority is focused entirely on monitoring services at the airports and has laid out clear ex ante guidelines on pricing and cost pass-through and the quality of services.

- A general principle in public-private partnerships is that optimal risk sharing involves allocating the burden of a particular risk to the entity best placed to bear it. Construction and operating risks are best borne by the private concessionary while the government entity bears the political and regulatory risks (Akitoby, Hemming, and Schwartz, 2007). A transparent sharing of risks along these lines can minimize delays, cost overruns, and funding disruptions. At the same time, the delineation of risks may be blurred if, for example, the government guarantees the debt raised by the private entity. In such instances, a clear accounting of the contingent fiscal risk will help anchor expectations and align sovereign borrowing costs more closely with fundamentals.

Measures to unlock savings and channel them into targeted infrastructure investment funds may help meet some of the funding shortfall. An innovation under consideration in India is the establishment of dedicated funding intermediaries with well-defined capital adequacy norms that can issue tax-free infrastructure bonds and tap into pension and insurance fund holdings. This will help overcome the problems of a bank-heavy funding structure where banks typically encounter an asset-liability mismatch when they lend long term to infrastructure projects, but rely largely on short-term wholesale funding and retail deposits.

²⁴ The disconnect between infrastructure finance needs and government ability to raise funding through general tax revenue is already acute in developing and emerging market contexts. Because the tax base tends to be narrower than in advanced economies, the marginal cost of generating additional revenue is likely to be relatively high (Swaroop, 1994).

E. Summary

Looking ahead, a strategy for rebalancing growth in Asia will have many dimensions. One such dimension is the level and composition of investment. In some economies, such as the ASEAN-4, investment appears to be low relative to the level of development. In other parts of the region, such as Japan and the NIEs, the composition of investment is skewed toward export-oriented, capital-intensive firms in the manufacturing sector to the detriment of domestically oriented, labor-intensive firms in the services sector.

The pattern of investment could be influenced by financial reforms and improvements in infrastructure. In Japan and the NIEs, increasing investment by smaller, domestically oriented firms would help rotate the composition of investment toward nontradable sectors and promote rebalancing. Policies likely to advance this objective include promoting risk-based financing, SME restructuring through the reform of bankruptcy laws, and streamlining tax codes and regulations. In the ASEAN-4 economies, where the main concern is the overall level of investment, improvements in infrastructure could also help crowd in private investment and lift potential growth. How Asia adjusts to the postcrisis world of reduced external demand depends crucially on whether the region's economies create conditions conducive to investment-led rebalancing.

APPENDIX 3.1. FIRM-LEVEL ANALYSIS

The data used in the empirical analysis include all listed nonfinancial firms in our selected jurisdictions covered in the Worldscope database during the period 1989–2008. The Worldscope database is well known for its standardized presentation of global investment portfolios and its good coverage of historical data. The database covers more than 96 percent of the world's market value represented by it. One important advantage of using the database is that it provides

standardized data for countries with different reporting practices, yielding relatively more reliable cross-country comparisons. Several firms entered the data set after 1995, implying somewhat shorter series for them. Outliers were excluded from the analysis based on standard criteria.

The company-specific variables included are those that potentially affect firm-level investment decisions, as suggested by the standard model of investment outlined in Chapter I. These variables are obtained primarily from cash flow statements and include expected future profitability (Tobin's Q), cash flow, sales growth, leverage (defined as total debt to total assets) and uncertainty (measured as the standard deviation of returns on the weekly stock price index for the firm). The capital stock measure was estimated using the standard perpetual inventory method, with the net book value of plant, property, and equipment was treated as the starting value, and subsequent values determined using data on investment, disposals, and acquisitions.

Incorporating the standard adjustments for debt, Tobin's Q is defined as:

$$Q_{it} = \left[\frac{V_{it} + B_{it} - C_{it}}{p_t(1 - \delta)K_{i,t-1}} \right] \quad (1)$$

where V is the firm's fundamental value or the expected present discounted value of future payments to shareholders; B is the book value of its outstanding debt; C is current assets; p is the price of the investment good; δ is the capital depreciation rate (assumed to equal 8 percent); and K is the replacement value of the firm's capital stock.

Model

The firm-level panel data were used to estimate the standard neoclassical investment model, which relates current investment to expectations of future profitability through Tobin's Q ratio, augmented by additional factors. The model estimated can be expressed as follows:

$$\Delta\left(\frac{I}{K}\right)_{it} = c_t + b\Delta Q_{it} + c\Delta Z_{i,t} + \Delta\varepsilon_{it} \quad (2)$$

where I/K is the investment rate, Q is Tobin's Q ,²⁵ and Z is a vector of additional variables.

The models were estimated using a GMM approach to allow for endogeneity and measurement error in the dependent variables. Estimation was in first-differences and included year dummies, to control for firm-and time-specific effects. This approach yields consistent estimates provided there is no higher-order serial correlation in the residuals and the instruments are valid.²⁶ Diagnostic tests were used to verify these conditions.²⁷

Table 3A.1. Selected Financial Indicators for Firms (Median)

	Selected Asia			Nonregional comparators ¹					
	ASEAN-4	NIEs	Japan	United States	United Kingdom	Germany	Emerging Europe	Middle East and Africa	Latin America
Investment Rate									
1990-97	0.19	0.17	0.14	0.15	0.14	0.18	...	...	...
2000-07	0.10	0.11	0.09	0.12	0.11	0.11	0.16	0.15	0.12
Profitability (in percent)									
Operating margins ²									
1990-97	11.14	7.14	4.16	7.17	6.56	0.33	...	...	...
2000-07	6.23	5.05	4.42	5.63	5.29	1.95	5.07	7.66	10.54
Valuation									
Tobin's Q									
1990-97	3.35	2.76	2.98	3.11	2.38	2.06	...	...	...
2000-07	2.00	2.07	1.73	3.35	2.39	1.82	2.67	2.39	1.94
Liquidity									
Current ratio ³									
1990-97	1.25	1.27	1.36	1.93	1.35	1.75	...	...	...
2000-07	1.55	1.54	1.44	1.86	1.27	1.59	1.42	1.37	1.40
Capital intensity									
Capital-labor ratio									
1990-97	43.63	94.52	163.09	38.23	20.55	42.23	...	...	...
2000-07	31.66	68.16	113.38	57.88	32.46	58.53	46.23	24.98	76.48
Leverage (in percent)									
Debt to equity									
1990-97	66.63	63.13	88.57	49.49	38.46	55.60	...	...	...
2000-07	43.59	41.13	42.49	41.02	39.85	51.14	29.67	42.08	50.72
Short-term debt to total debt									
1990-97	68.48	56.73	47.52	14.96	48.41	48.33	...	...	...
2000-07	65.05	68.00	59.02	13.88	35.21	41.07	63.58	45.85	38.59

Sources: Workscope; and IMF staff calculations.

¹ Emerging Europe includes Czech Republic, Hungary, Poland, Russia, and Turkey. Middle East and Africa includes Israel, Egypt, Morocco, Pakistan, and South Africa. Latin America includes Argentina, Brazil, Chile, Colombia, Mexico, and Peru.

² Operating earnings (EBIT) in percent of sales.

³ Current assets to current liabilities.

²⁵ Defined as the ratio of the stock market valuation of the firm to the replacement cost of its capital stock.

²⁶ The instruments reported are lagged values of the dependent variable and our regressors, but results were robust to using alternative instrument sets.

²⁷ The models were assessed based on tests for serial correlation (m1 and m2) and instrument validity (Hansen).

Table 3A.2. Investment Equations, Full Sample (1991–2008)^{1,2}

	ASEAN-4	NIEs	China	India	Emerging Europe	Middle East and Africa	Latin America	Japan
Tobin's <i>Q</i>	0.010 (0.01)	0.012 ** (0.00)	−0.011 (0.01)	−0.000 (0.01)	0.010 (0.01)	0.015 ** (0.01)	0.004 (0.01)	0.007 ** (0.00)
Liquidity ³	0.150 ** (0.07)	0.006 (0.03)	−0.009 (0.10)	0.205 ** (0.08)	0.119 ** (0.05)	0.051 * (0.03)	0.247 ** (0.06)	0.012 (0.04)
Leverage ⁴	0.000 (0.00)	−0.001 (0.00)	0.001 (0.00)	0.001 (0.00)	−0.000 (0.00)	0.000 (0.00)	−0.001 (0.00)	−0.002 ** (0.00)
Uncertainty ⁵	−0.127 ** (0.06)	−0.119 ** (0.05)	−0.044 (0.15)	−0.065 (0.14)	0.111 (0.11)	−0.048 (0.07)	−0.050 (0.06)	−0.062 ** (0.03)
p-value of specification tests								
m1	0.000	0.000	0.071	0.000	0.001	0.000	0.000	0.000
m2	0.283	0.407	0.329	0.804	0.488	0.186	0.156	0.196
Hansen-test	0.280	0.291	0.256	0.787	0.814	0.278	0.196	0.189
Number of firms	1505	3223	1066	513	410	451	566	2695
Number of observations	7481	14784	3527	2375	1610	2404	3528	10649

Sources: Worldscope; and IMF staff estimates.

¹ Dependent variable is investment rate. First-differenced GMM specifications, with lagged dependent variable and year dummies. Instruments are lagged values of regressors.² Robust standard errors in parentheses, with * indicating significance at 10 percent and ** at 5 percent level.³ Cash flow-to-capital ratio.⁴ Debt-to-assets ratio.⁵ Standard deviation of return on weekly price index (annualized).

Table 3A.3. Asia: Investment Equations, Sub-Sample Analysis^{1,2}

ASEAN-4	Time period		Size		Market exposure		Capital intensity		Sector	
	Precrisis	Postcrisis	Big	Small	Foreign	Domestic	High	Low	Manufacturing	Services
Tobin's <i>Q</i>	0.027 ** (0.01)	0.004 (0.01)	0.011 ** (0.01)	0.002 (0.02)	0.006 (0.01)	0.015 (0.01)	0.013 ** (0.01)	0.019 ** (0.01)	0.006 (0.01)	0.010 (0.01)
Liquidity ³	-0.093 (0.09)	0.161 ** (0.08)	-0.003 (0.05)	0.169 ** (0.08)	-0.019 (0.03)	0.103 * (0.06)	0.077 ** (0.04)	-0.033 (0.09)	-0.052 (0.05)	0.115 ** (0.05)
Leverage ⁴	0.002 (0.00)	-0.000 (0.00)	-0.003 ** (0.00)	0.001 (0.00)	-0.002 ** (0.00)	-0.001 (0.00)	-0.000 (0.00)	-0.000 (0.00)	-0.002 ** (0.00)	0.000 (0.00)
Uncertainty ⁵	0.203 (0.13)	-0.139 ** (0.07)	-0.034 (0.07)	0.065 (0.08)	-0.119 ** (0.04)	-0.050 (0.07)	-0.138 ** (0.06)	0.081 (0.06)	-0.083 * (0.05)	0.022 (0.07)
p-value of specification tests										
m1	0.032	0.000	0.000	0.001	0.000	0.000	0.000	0.005	0.000	0.000
m2	0.269	0.199	0.836	0.454	0.839	0.995	0.708	0.895	0.548	0.633
Hansen-test	0.116	0.735	0.112	0.409	0.077	0.120	0.297	0.540	0.201	0.385
Number of firms	389	1375	753	809	654	851	1129	556	901	604
Number of observations	1040	6441	3572	3447	3884	3597	3838	1740	4590	2891
NIEs	Time period		Size		Market exposure		Capital intensity		Sector	
	Precrisis	Postcrisis	Big	Small	Foreign	Domestic	High	Low	Manufacturing	Services
Tobin's <i>Q</i>	0.005 (0.01)	0.010 ** (0.01)	0.018 ** (0.01)	0.010 ** (0.00)	0.015 ** (0.00)	0.007 (0.01)	0.017 ** (0.01)	0.008 * (0.01)	0.019 ** (0.00)	0.010 (0.00)
Liquidity ³	0.171 (0.14)	-0.008 (0.04)	0.029 (0.05)	-0.000 (0.03)	0.039 (0.05)	0.140 ** (0.05)	0.054 (0.04)	0.097 ** (0.03)	0.046 (0.03)	-0.012 (0.03)
Leverage ⁴	0.009 (0.01)	-0.002 (0.00)	0.000 (0.00)	-0.000 (0.00)	-0.003 ** (0.00)	0.000 (0.00)	-0.001 (0.00)	0.002 (0.00)	-0.002 (0.00)	-0.002 * (0.00)
Uncertainty ⁵	-0.049 (0.11)	-0.108 * (0.06)	-0.129 * (0.07)	-0.055 (0.05)	-0.156 ** (0.07)	-0.013 (0.04)	-0.038 (0.05)	-0.072 (0.08)	-0.085 * (0.05)	-0.103 * (0.05)
p-value of specification tests										
m1	0.074	0.000	0.001	0.000	0.000	0.000	0.005	0.015	0.000	0.001
m2	0.526	0.757	0.376	0.187	0.083	0.694	0.087	0.200	0.088	0.558
Hansen-test	0.505	0.512	0.161	0.259	0.173	0.550	0.272	0.396	0.275	0.873
Number of firms	607	3085	1622	1703	1695	1528	2182	1445	2137	1086
Number of observations	1634	13150	7110	6685	9531	5253	7657	4461	9966	4818
Japan	Time period		Size		Market exposure		Capital intensity		Sector	
	Precrisis	Postcrisis	Big	Small	Foreign	Domestic	High	Low	Manufacturing	Services
Tobin's <i>Q</i>	0.017 ** (0.01)	0.005 * (0.00)	0.005 * (0.00)	0.004 (0.00)	0.008 ** (0.00)	0.005 (0.00)	0.010 ** (0.00)	0.004 (0.00)	0.012 ** (0.00)	0.002 (0.00)
Liquidity ³	-0.179 (0.13)	0.045 (0.04)	0.012 (0.05)	0.089 * (0.06)	-0.012 (0.04)	0.103 * (0.06)	-0.019 (0.06)	0.103 ** (0.05)	0.038 (0.05)	0.092 * (0.06)
Leverage ⁴	0.000 (0.00)	-0.002 ** (0.00)	-0.002 ** (0.00)	-0.002 ** (0.00)	-0.002 ** (0.00)	-0.001 * (0.00)	-0.002 ** (0.00)	-0.002 ** (0.00)	-0.002 ** (0.00)	-0.002 ** (0.00)
Uncertainty ⁵	-0.033 (0.09)	-0.063 ** (0.03)	-0.072 ** (0.03)	-0.057 (0.04)	-0.054 * (0.03)	-0.011 (0.03)	-0.088 ** (0.03)	-0.064 ** (0.03)	-0.042 (0.03)	-0.024 (0.04)
p-value of specification tests										
m1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
m2	0.52	0.150	0.211	0.220	0.120	0.165	0.734	0.207	0.856	0.201
Hansen-test	0.344	0.267	0.185	0.625	0.131	0.852	0.322	0.271	0.253	0.916
Number of firms	356	2529	1244	1553	1014	1681	1371	1395	1635	1060
Number of observations	1256	9393	5298	4590	5102	5547	4869	4465	7029	3620

Sources: Worldscope; and IMF staff estimates.

¹ First-differenced GMM specifications, with lagged dependent variable and year dummies. Instruments are lagged values of regressors.² Robust standard errors in parentheses, with * indicating significance at 10 percent and ** at 5 percent level.³ Cash flow-to-capital ratio.⁴ Debt-to-assets ratio.⁵ Standard deviation of return on weekly price index (annualized).

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