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The future of growth in Asia

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Refocusing on the long term

As the global financial crisis recedes and recovery gathers momentum, medium- and long-run growth will reassert itself as the overriding concern of the region's policy makers. Understandably, these policy makers were preoccupied with stabilizing short-run output during the depths of the crisis, as exports plummeted and growth decelerated. Aggressive fiscal and monetary expansion, however, limited the adverse effects of the slowdown and enabled the region to mount a V-shaped recovery.

In consequence, developing Asia can now build on these gains and return to its unfinished growth agenda. For, while boosting public spending and cutting interest rates may help counteract the negative impacts of short-run downturns, they cannot sustain growth over a longer time horizon. Indeed, continuing expansionary policies could be harmful for future growth: The buildup of public debt would impair fiscal sustainability, and the overhang of excess liquidity would trigger inflation and asset bubbles.

While short-run output fluctuations are determined primarily by aggregate demand, long-run growth depends largely on supply-side factors, which augment an economy's productive capacity. Long-run growth reflects the combined effects of the accumulation of production factors, such as capital and labor, and productivity improvements (Box 2.1.1), rather than the short-run ups and downs of the business cycle. True, the distinction between long-run growth and short-run business cycles is not always clear-cut, as severe recessions can lower an economy's growth potential. Still, the distinction matters because policies for sustaining growth are different from policies for minimizing

2.1.1 Growth decompositions and total factor productivity

The aggregate output of an economy may be characterized as the product of all employed inputs, usually categorized into capital and labor (Solow 1957). These inputs are posited to be combined and transformed into output, given the state of production technology and the larger institutional framework. Based on this description (and under certain technical assumptions of the relationship between output and inputs and the output shares of the inputs), the growth of aggregate output is decomposable into the relative contributions of the growth of each production factor.

Specifically, the growth accounting procedure breaks down output growth into shares accruing to the growth of capital and of labor and to a portion that is not accounted for by increases in the use of these inputs. This unexplained part of output growth is usually considered as the growth in total factor productivity (TFP), and is taken to represent productivity improvements or to be a measure of broadly defined technological progress that explains the growth in output over time, while holding input levels fixed.

The intangible nature of TFP has provoked long debate on the role that it plays in promoting overall economic growth. After all, it is a residual that drops out of the growth accounting procedure, representing

the difference between overall economic growth and the sum of the contributions of growth of the input factors. Still, empirical evidence indicates that it accounts for an increasingly large share of output growth as countries develop. Moreover, numerous cross-country studies show that it is correlated with many indicators of growth and development.

Efforts to better explain what TFP is and the role that it plays in economic growth have thus become important exercises in growth theory and development economics.

On the one hand, endogenous growth models point to improvements in, say, the quality of physical infrastructure and human capital stocks as well as broader and deeper financial development as possible ways by which the rate of innovations (or TFP growth) can be accelerated.

On the other, accounts in the new institutional economics literature suggest that institutional change that promotes broad-based property rights or solves coordination failures in an economy enhances that economy's overall efficiency and its growth prospects.

From both interpretations of TFP, however, the message is clear: A better understanding of the determinants of TFP growth is important for designing better policies to strengthen and sustain future economic growth.

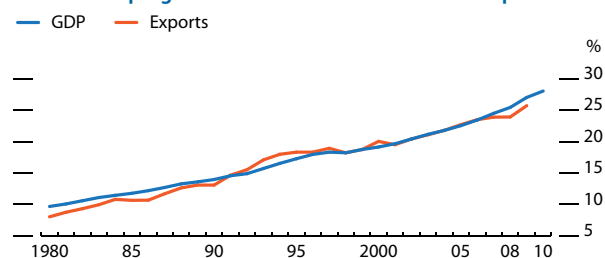
cyclical fluctuations. The former involve structural supply-side strategies that enable individuals, firms, industries, and the entire economy to become more productive on a sustained basis; the latter involve fiscal and monetary actions for temporarily influencing the level of aggregate demand.

For developing Asia, sustaining growth in the medium and long run is important for at least three reasons. First, despite the region's remarkable growth performance during the last half of the 20th century and its resilience during the recent global crisis, living standards remain well below those of the industrial economies. And while the region's shares of world output and trade have been rising fast (Figure 2.1.1), a large chasm still separates the region from those economies in terms of per capita output (Figure 2.1.2).

Despite growth-concomitant massive reductions in poverty, it remains widespread in the region: Two-thirds of the world's poor still call the region home; more than 1.8 billion Asians subsist on less than \$2 a day; and 903 million survive on less than \$1.25 a day. Sustaining the region's growth momentum will thus be key to raising living standards and making further inroads into poverty.

Second, there is no guarantee that the region's excellent growth record will carry over into the postcrisis period. Indeed, the

2.1.1 Developing Asia's share of world GDP and exports



Notes: 2009 and 2010 GDP data are estimates. GDP is based on purchasing-power-parity valuation.

Source: ADB calculations based on data from International Monetary Fund, World Economic Outlook database, April 2010; and World Trade Organization Statistics database. <http://www.wto.org> (accessed 31 August 2010).

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postcrisis global economy may prove to be a less benign environment for the region's export-led growth paradigm. Weaker demand from industrial economies, which were disproportionately affected by the crisis and which are now undergoing a period of economic restructuring, implies that export-dependent developing Asia cannot rely on its traditional markets, at least over the medium term. In turn, this means that a key challenge for the region will be to find new growth drivers.

Third, the region's long-term growth potential is not predetermined. It is by no means certain that the rapid historical economic growth will automatically continue in the next 2 decades. Standard growth models predict the "conditional convergence" of income—meaning that a country with a low initial income level relative to its potential level will tend to grow faster than a country that is closer to that potential.

Controlling for the factors that determine the potential income level, this implies that faster-growing Asian economies will tend to grow less fast as they are already likely to have large stocks of factors of production and fairly high technological levels. Developing Asian economies must undertake policy reform measures to prevent the power of convergence from slowing their future growth.

Toward a new Asian growth paradigm?

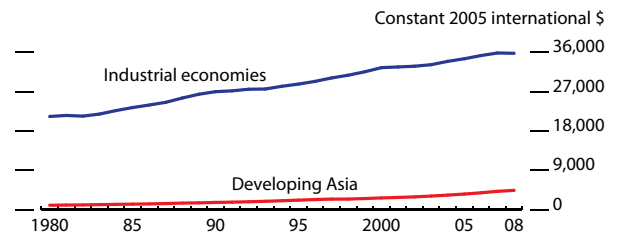
But does developing Asia really need a new growth paradigm? After all, the region has stood out for its remarkable growth performance, which outpaced the rest of the world for decades. Moreover, as a result of strong fundamentals, developing Asia is recovering more quickly and strongly than other regions, essentially leading the world out of recession. Indeed, many core ingredients of the region's precrisis performance will continue to serve it well in the postcrisis period. These include its high saving and investment rates, prudent fiscal and monetary policies, and openness to foreign trade and technology.

The feature of the region's precrisis growth paradigm that proved vulnerable to the global crisis was its export-dependent strategy, which was premised on strong external demand from the industrial countries. This strategy, though, was not without its merits: Exports enabled producers in developing Asia to overcome the limitations of small domestic markets and forced them to become efficient in order to survive, if not thrive, in competitive international markets.

Moreover, the problem that the global crisis exposed was not the risks of openness per se, but the costs of neglecting the potential contributions of domestic demand to growth. Absent structural distortions that impeded domestic demand or production intended for domestic markets, such markets would have been an additional source of growth and dynamism for the region's economies (ADB 2009a). In turn, robust domestic economies would have fostered stronger intraregional trade, thereby further diversifying the sources of growth (ADB 2009b).

Nonetheless, revisiting developing Asia's growth paradigm is important for the following reason: Sustained rapid growth has

2.1.2 GDP per capita (purchasing power parity-adjusted), developing Asia versus industrial economies



Note: Industrial economies comprise eurozone, Japan, and United States.

Source: ADB calculations based on data from World Bank. World Development Indicators online database (accessed 31 August 2010).

[Click here for figure data](#)

transformed—and is still transforming—developing Asia from an agricultural, low-income region to an industrial, increasingly middle-income powerhouse.

Certainly, countries have not all figured uniformly in this transformation, but growth has diffused over ever-wider areas—from the four newly industrialized economies (NIEs) of Hong Kong, China; the Republic of Korea; Singapore; and Taipei, China, to members of the Association of Southeast Asian Nations (ASEAN), to the People's Republic of China (PRC), and to India—in the process lifting hundreds of millions of Asians out of poverty. As may be expected, some elements that were important for the growth performance of the Asia of earlier years may become less relevant for tomorrow's Asia.

A key structural change, for instance, has been that developing Asia has metamorphosed from being a major net importer of capital to being the world's biggest net exporter of capital. This is a consequence of the years of high saving and investment that have transformed the region from a capital-scarce region to a capital-abundant one.

A stylized fact of modern economic growth is that, as countries grow richer and accumulate more capital per worker, the relative importance of productivity rises while that of capital accumulation falls, as diminishing marginal returns to capital set in. Indeed, this has been the general historical experience of the industrial economies.

For developing Asia, a long-running debate concerns whether the region's growth has been driven by factor accumulation or by productivity growth (Box 2.1.1, above). The empirical evidence generally indicates that factor accumulation accounted for much of the region's growth, as confirmed by Lee and Hong (2010) (Box 2.1.2). Furthermore, these authors' simulations suggest that, at least for some countries in the region, productivity improvements are likely to play a larger role in future growth, a point supported by the analysis of Park and Park (forthcoming) (Box 2.1.3).

Drivers of developing Asia's future growth

In the context of developing Asia's transition to a new pattern of growth, in which factor accumulation and productivity growth are expected to play more equal parts, four elements in particular are likely to come to the fore—trade, human capital, infrastructure, and financial development. Trade features because the sector had such a central role in developing Asia's precrisis growth model, and the rest because they represent the important supply-side factors for further growth. These four elements—individually or together—can potentially open pathways to growth through both factor accumulation and productivity improvements.

Trade not only has a positive impact on investment—for example, much of the region's capital flows into export-oriented industries—it also forces domestic firms and industries to improve their efficiency. Human capital is at once a factor of production, which directly raises the level of output, and a positive influence on the productivity of physical capital and other inputs. Infrastructure such as roads, ports, and power plants are forms of capital, which raise the productivity of

2.1.2 How fast can developing Asia grow in the next 20 years?

Over nearly 3 decades, developing Asian economies recorded impressive growth.¹ The region's income grew from about \$3.3 trillion in 1980—in 2005 purchasing power parity (PPP) terms—to an estimated \$24.5 trillion in 2009—an expansion of 7.5 times. During the same period, the world economy managed to record an expansion of less than three times, while the incomes of the industrial economies increased just about two times.

Per capita income in developing Asia is still lower than the global average, but it is also rising fast. From just over a quarter of the world average in 1980, it had increased to nearly two-thirds in 2009.

The Asian growth “miracle” was widely discussed in the 1990s (for example, World Bank 1993), but is one that can be explained. Empirical studies have highlighted the role of investment, human resources, fertility, and institutional and policy variables in this “miracle”.

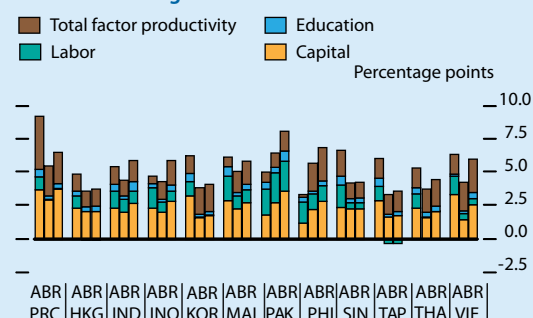
Between 1980 and 2007, rates of per capita income growth across developing Asia varied. Hong Kong, China; the Republic of Korea; Malaysia; Singapore; and Taipei, China, which started off with relatively high per capita incomes in 1980, recorded slower average growth rates through 2007, compared with the People's Republic of China (PRC), which had the lowest initial level of per capita income.

Using a growth accounting framework, the sources of developing Asia's GDP growth in 1981–2007 are decomposed into growth in the different factors of production—labor, human capital, and physical capital—as well as in total factor productivity (TFP).² The box figure shows that Asia's rapid economic growth in nearly 3 decades has been mainly due to robust growth in physical capital accumulation. In 10 out of the 12 Asian economies studied, average growth in physical capital stock was more than 5.8% per year between 1981 and 2007, which contributed more than 2.3 percentage points to average GDP growth.

The contributions of human capital and TFP growth to GDP growth during the same period were relatively limited. Specifically, the maximum recorded growth in human capital was 1.3% per year, which contributed about 0.8 percentage points of GDP growth. Except for the PRC, TFP growth in 1981–2007 did not exceed 2.0% per year in developing Asia.

A system of equations was set up to estimate the parameters of the growth model described above (see Lee and Hong 2010 for details). The results were

Sources of GDP growth



PRC = People's Rep. of China; HKG = Hong Kong, China; IND = India; INO = Indonesia; KOR = Rep. of Korea; MAL = Malaysia; PAK = Pakistan; PHI = Philippines; SIN = Singapore; TAP = Taipei, China; THA = Thailand; VIE = Viet Nam.

A: 1981–2007 actual; B: 2011–2030 baseline projection; R: 2011–2030 reform scenario projection.

Source: Lee and Hong (2010).

[Click here for figure data](#)

then used to generate projections of GDP growth for 2011–2030 for each of the 12 economies, which are shown in the “baseline” column of the box table. In general, the resulting baseline forecasts of annual GDP growth are lower than the historical averages in 1981–2007 (5.5% vs 9.3% for the PRC, and 4.5% vs 5.5% for India, for example). Only the projections for Pakistan and the Philippines are higher than the historical averages (by 1.4 and 2.3 percentage points, respectively). These results are largely driven by the cross-country catch-up

Average annual growth rates (%), 1981–2030

Economy	Projections		
	Actual 1981–2007	Baseline 2011–2030	Reform scenario 2011–2030
China, People's Rep. of	9.3	5.5	6.6
Hong Kong, China	4.9	3.6	3.8
India	5.5	4.5	6.0
Indonesia	4.8	4.4	6.0
Korea, Rep. of	6.3	3.9	4.2
Malaysia	6.2	5.2	5.9
Pakistan	5.1	6.5	8.2
Philippines	3.4	5.7	7.0
Singapore	6.8	4.3	4.3
Taipei, China	6.1	3.1	3.3
Thailand	5.4	3.8	4.5
Viet Nam	6.4	4.3	6.1

Source: Lee and Hong (2010).

1 Developing Asia here comprises the 12 economies shown in the box table. Since they account for about 95% of the region's GDP, they are representative of regional trends.

2 It is assumed that the share of physical capital is 0.4 and the labor share is 0.6. Growth in physical capital must thus be multiplied by 0.4 to get its contribution to GDP growth. The contribution of labor and human capital is similarly calculated, multiplying their growth rates by the 0.6 labor share. TFP is calculated by subtracting the contributions of capital, labor, and human capital from GDP growth.

2.1.2 How fast can developing Asia grow in the next 20 years? *(continued)*

phenomenon, where the lower-income economies of the region are expected to grow faster than the higher-income economies.

The box figure also shows the contributions of growth in capital, labor, education, and TFP to GDP growth in 1981–2007 and 2011–2030. The first bar confirms that capital was generally the most significant source of GDP growth. While labor was also a consistently large contributor, the role of education was more modest. TFP growth was also a reliable source of growth across the region, but its contribution was very varied.

The second bar shows that in the next 2 decades, the contribution of labor growth in projected GDP growth is set to fall largely as a result of fertility decline and population aging. Exceptions are those economies which have not yet fully reaped the demographic dividend, such as India, Indonesia, Malaysia, Pakistan, and the Philippines. The contribution of education is also forecast to decline as economies move closer to best practice enrollment and completion rates.

Growth in capital stock is projected to contribute less to GDP growth in 2011–2030 than it did in 1981–2007. This is because capital was the major source of growth in the past, and as the marginal productivity of capital declines, the contribution of growth in capital stock to GDP growth tends to fall. Pakistan and the Philippines are the exceptions, since they started off with lower growth in capital stock. TFP growth is projected to contribute more to GDP growth in the coming 20 years as developing Asian economies progressively increase their efficiency.

These results generally support the conditional convergence theory. Faster rates of factor accumulation and technology diffusion narrow the gap with potential income, leaving little room to grow further. But, does

convergence imply that as Asia becomes more prosperous, it cannot keep growing fast in the future? Not so.

Institutional and policy variables can expand the potential income of a country, widening the gap with the initial income level, and allowing for the achievement of a higher growth path.

The potential impacts of policy reforms on GDP growth are thus tested here. Improvements in years of schooling (which will affect human capital and TFP), expanded research and development activities (which will affect TFP), and property rights (which will affect physical capital) are considered simultaneously. GDP growth projections under the reform scenario are reported in the last column of the box table, and the decomposition of the GDP growth projections is shown in the third bar of the box figure.

The results confirm that policy improvements in education, research and development, and property rights can significantly increase GDP growth relative to the baseline specification. Considerable gains can be achieved especially by those economies with low initial levels of these three policy variables.

For instance, GDP growth is projected to increase by at least 1 percentage point in the PRC, India, Indonesia, Pakistan, the Philippines, and Viet Nam. A decomposition of the increase in average annual GDP growth shows that improvements in TFP, education, and capital can add 0.02–0.49 percentage points, 0.02–0.50 percentage points, and 0.01–1.14 percentage points, respectively.

These figures suggest that if developing Asia adopts growth-friendly policies, the region can continue to expand at robust rates in the next 2 decades.

Source

Lee and Hong (2010).

all firms and industries. Financial development mobilizes saving for investment, while channeling capital to its most productive uses and greasing the gears of innovation.

Trade

International trade has the potential to increase a country's income as a result of better resource allocation through specialization according to comparative advantage and the exploitation of economies of scale. The static gains from trade—that is, the welfare benefits accrued when relative-price distortions are removed—rarely exceed 2 or 3 percentage points of GDP (Bhagwati 1993). By contrast, the dynamic gains from trade can be substantial. These gains accrue indirectly through the effect of international trade on an economy's growth capacity, both from factor accumulation and innovation.

2.1.3 The recent evolution of the sources of developing Asia's growth

How much of developing Asia's recent growth can be accounted for by increases in productivity? To address this issue, 12 economies in a sample for three subperiods—1992–1997, 1997–2002, and 2002–2007—are analyzed in three groups. These are the four newly industrialized economies (NIEs) of Hong Kong, China; Republic of Korea; Singapore; and Taipei, China; the People's Republic of China (PRC); and seven Asian developing economies—India, Indonesia, Malaysia, Pakistan, Philippines, Thailand, and Viet Nam (“Others” in the box table).

The calculation of total factor productivity (TFP) growth assumes a two-input neoclassical production function with constant returns to scale. Two separate cases are analyzed—with and without adjustment of labor for human capital.

The box table reports the estimated TFP growth and its relative importance in GDP growth for the three subperiods for the case when labor is adjusted for human capital. For example, for the NIEs, since the contribution of TFP growth to output growth is 1.93% and output growth is 6.99% in 1992–1997, the relative contribution of TFP growth is 27.6% ($=1.93/6.99$). The results of the identical growth accounting exercise for the case when labor is not adjusted for human capital are broadly similar.

The most striking result from the box table is that the estimated size of TFP growth and its relative contribution to developing Asia's growth rose markedly after 2002. This implies a shift in the sources of the region's growth from capital accumulation to TFP growth. This shift is evident for all three groups.

Prior to 2002, expansion of the capital stock was the main source of output growth in the region; after 2002, TFP growth accounted for a larger share. However, the sharp drop in GDP during the Asian crisis period of 1997–2002 and the strong pickup in growth in the recovery that followed may be distorting the results. Essentially, because TFP is measured as a residual, business cycle effects (that is, the economy's move below potential growth during the recession and back to the production frontier during the recovery) may be mixed with productivity growth effects.

Still, the results are consistent with the Lee and Hong (2010) result of the rising relative importance of the contribution of productivity growth to output expansion. This, in turn, lends some support to the notion that, in the future, productivity growth will become an increasingly influential driver of developing Asia's growth.

Source

Park and Park (forthcoming).

Contribution of total factor productivity to output growth, 1992–2007 (labor quality adjusted for human capital)

	NIEs (%)	China, People's Rep. of (%)	Others (%)
1992–1997			
Growth in output	6.99	9.79	5.64
Contribution of TFP to output growth	1.93	3.91	0.65
(Relative contribution of TFP)	27.60	39.96	11.46
1997–2002			
Growth in output	2.57	7.69	3.16
Contribution of TFP to output growth	-0.71	3.09	-0.31
(Relative contribution of TFP)	-27.41	40.19	-9.78
2002–2007			
Growth in output	5.48	12.20	6.58
Contribution of TFP to output growth	2.60	7.01	2.74
(Relative contribution of TFP)	47.47	57.45	41.62

Note: Growth in capital and labor, contribution of capital to output growth, and contribution of labor to output growth are reported in the source.

Source: Park and Park (forthcoming).

International trade integration and openness facilitate factor accumulation because the larger scale of demand from international markets allows export-oriented firms to exploit scale economies in production, delaying the onset of diminishing returns to factor inputs. For example, diminishing returns to capital during the investment-driven “growth miracle” of Asia's NIEs in the 1970s and 1980s were largely

averted through international trade and the concomitant reallocation of resources from sectors that were labor intensive and domestic oriented to those that were capital intensive and trade oriented, which raised the demand for capital and kept its marginal product from falling significantly over an extended period (Ventura 1997).

An economy, however, is still subject to diminishing returns to capital. The growth-enhancing role of international trade in the long run depends on the rate at which it improves a country's productivity through technological progress or institutional change. The World Trade Organization points to five main channels along which trade can support the process of technological and institutional innovation (Box 2.1.4).

Human capital

There are multiple avenues by which human capital—the ability and efficiency of people to transform raw materials and capital into goods and services—affects economic growth. The accumulation of human capital improves labor productivity and increases the returns to capital. A well-educated workforce also facilitates the adoption and diffusion of technology.

Less often noted is that a critical threshold for human capital stock may be a precondition for growth because low education levels may act as a barrier to imitation, which may prevent the diffusion of technology. Larger and deeper stocks of human capital may also have spillover benefits. A prime example is that more educated mothers tend to have children with better health and education outcomes.

Education increases an individual's probability of being employed in the labor market and improves earnings capacity. Since human capital encompasses skills that can be acquired through the educational system, at the micro level it is considered the component of education that contributes to an individual's labor productivity and earnings while being an important component of firm production. That said, human capital development is welfare enhancing and important for its intrinsic value, not only for its instrumental value.

Infrastructure

Infrastructure has a major role to play in development outcomes because it provides both final consumption services to households and key intermediate inputs for production.

From a demand perspective, infrastructure provides people with services they need and want, such as water and sanitation, power, telephone and computer access, and transport. For this reason, the unavailability or lack of access to basic infrastructure services is an important dimension of poverty. Increasing the level of infrastructure stock thus has a direct impact on poverty reduction.

On the supply side, there is both a direct channel, in which infrastructure capital stock serves as a production factor, and an indirect channel, by which improved infrastructure affects output through technological progress. An increase in the stock of infrastructure capital increases the marginal productivity of other production factors—a positive externality. These indirect effects operate through various channels, such as labor productivity gains resulting from enhanced

2.1.4 How trade promotes innovation

Five channels are as follows. First, there is a scale effect from expanded market size through trade liberalization. Increased opportunities and profitability raise the incentives of firms to invest in research and development. More innovation then translates into higher long-term growth.

Second, trade liberalization increases competition and, in turn, the pressure on domestic firms to either innovate or perish. Theory and the empirical evidence show, however, that the effect of international competition on innovation is not clear cut. Rather, there are nonlinear and sector-specific effects, depending on how far industries are from the world technology frontier.

Third, trade liberalization may increase returns to research and development spending when there are international spillovers from innovation.

Fourth, international trade gives rise to an “international product cycle” involving the transfer of technology by imitation, from the advanced to the developing countries. Optimal intellectual property rights regulation embedded in World Trade Organization and preferential agreements needs to strike a balance between the incentives to innovate and the speed of technology diffusion and rent dispersion.

Fifth, international trade can have a positive role in promoting growth by improving the quality of a country's institutional framework and economic policy.

Source

WTO (2008).

information and communications technology (ICT), reductions in stress and in time wasted commuting to work, betterment of health and education, and improvements in economies of scale and scope of production throughout the economy.

The corollary is that there are many ways in which shortfalls in infrastructure translate into losses in productive efficiency. For example, access to markets and interactions with potential clients depend crucially on reliable transport and telecommunications networks. When these are faulty or nonexistent, firms face fewer market opportunities, incur higher logistical costs, carry larger inventories, and suffer information losses. Similarly, investment and technological choices may be affected by the efficiency of electricity networks, in that frequent power outages and voltage fluctuations raise the maintenance costs and risks of machinery breakdowns of capital-intensive technologies.

Hence, having critical levels of quality infrastructure that are consistent with a country's level of development may be an important precondition for further growth. Failing to achieve these levels may result in infrastructure services having no significant impact on long-term growth and productivity.

Financial development

Financial development promotes economic growth by improving the efficiency, stability, and accessibility of the financial system. An efficient financial system reduces information and transaction costs by performing the following five core functions well: producing ex ante information about possible investment and allocating capital; helping to monitor investment and provide corporate governance after providing finance; facilitating the trading, diversification, and management of risk; mobilizing and pooling saving; and easing the exchange of goods and services.

In turn, an efficient financial system enhances a country's growth prospects by channeling resources to their most productive uses, thereby fostering a more efficient allocation of resources. It also helps boost aggregate saving and investment rates, thus speeding up the accumulation of physical capital. Finally, it enhances growth by strengthening competition and stimulating innovative activities, so promoting dynamic efficiency.

Financially sound firms and efficient markets jointly provide strength and resilience to the financial system, allowing it to weather adverse shocks. A stable financial system is characterized by an effective prudential regulatory and supervisory framework, judicious risk management capacities in banks, and sound market infrastructure in bond and equity markets. It also facilitates the smooth and efficient functioning of the economy.

A financial system is accessible when financial services are available to a wide range of clients, including investors, entrepreneurs, and consumers. Lack of access to finance can be a serious barrier to investment and business activity. In particular, lack of financing often impedes setting up new businesses. This entrepreneurial activity is essential for a vibrant private sector that constantly renews itself and creates new firms, industries, and jobs.

A strategy for future growth

The four elements—trade, human capital, infrastructure investment, and financial development—will augment the region's growth through their effects on increasing the available factors of production and supporting more efficient use of all factors. But what is the current state of these elements in developing Asia and how has each affected growth in the region thus far? And how can they be used to promote future growth?

Trade and growth

Prospects for trade and growth in developing Asia

International trade has been the engine of growth of developing Asia. Its significance in raising living standards across the region has been widely substantiated. (Box 2.2.1 explores the impact of trade on incomes in developing Asia.) Through integration with the global economy, many countries in the region achieved prolonged periods of rapid growth, lifting millions of their citizens out of poverty.

Still, as seen in Table 2.2.1, such growth was far from uniform among subregions. East Asia and Southeast Asia stand out as being very open to trade. Their shares of exports to GDP increased significantly from late-1990 levels, and were instrumental in raising the average for developing Asia as a whole. Jointly, East Asia and Southeast Asia accounted for almost the entire region's share of world exports. In addition, their export products were the most diversified, and they scored well on the World Bank's Logistics Performance Index (LPI), which gauges the costs of poor logistics to country competitiveness.¹ Furthermore, East Asia had the lowest tariffs in developing Asia.

By contrast, South Asia's trade share contracted and its export share is still far below the regional average, despite the leaven in the form of a fast-rising Indian economy. Moreover, its tariff barriers remained the highest in the region,² and it ranked poorly on the LPI.

2.2.1 Trade indicators

	Openness		Global market share		Export concentration		Tariff barriers		Logistics performance	Economic growth
	(Exports as share of GDP, %) ^a		(Share to world exports, %)		(Export diversification index) ^b		(Applied tariffs) ^c		(Logistics Performance Index) ^d	(Average GDP growth rate, %) ^a
	1999	2008	1999	2008	1999	2008	1999	2008	2009	1999–2008
Developing Asia	35.6	46.4	16.9	21.4	66	67	13.9	6.9	2.7	6.7
Central Asia	32.3	54.4	0.2	0.8	74	75	5.1	3.5	2.6	9.6
East Asia	38.8	49.2	8.6	12.9	54	58	7.5	3.1	2.9	7.3
China, People's Rep. of	20.4	38.1	3.4	8.8	46	45	15.0	4.1	3.5	9.6
Pacific Asia	58.2	66.1	0.0	0.0	70	77	15.6	9.3	2.3	2.4
Southeast Asia	50.5	62.7	7.1	6.3	63	63	9.5	5.5	3.0	5.2
South Asia	13.2	21.5	1.0	1.4	65	65	25.8	11.9	2.5	6.8
India	11.4	21.9	0.6	1.1	60	53	28.6	6.1	3.1	7.1
Vulnerable economies^e	21.9	20.9	0.2	0.2	68	73	17.8	10.6	2.4	3.9

^a Weighted by GNI, Atlas method (current US dollars).

^b Ranked 0–100, with 100 = most concentrated export basket.

^c Weighted mean of all product lines; no data for Pacific Asia and Vulnerable economies in 1999 but assumed equal to 1998.

^d 1 = lowest, 5 = highest.

^e Afghanistan; Bangladesh; Bhutan; Cambodia; Cook Islands; Fiji Islands; Kiribati; Lao PDR; Maldives; Marshall Islands; Micronesia, Federated States of; Myanmar; Nauru; Nepal; Palau; Papua New Guinea; Samoa; Solomon Islands; Timor-Leste; Tonga; Tuvalu; and Vanuatu.

Sources: ADB calculations based on data from UNCTAD Handbook of Statistics online, <http://stats.unctad.org>; World Bank. World Development Indicators online database, <http://data.worldbank.org/indicator> (both online databases accessed 21 August 2010); and *Asian Development Outlook* database.

2.2.1 Trade and income in Asia: Evidence from instrumental variable regressions

Has international trade raised living standards in developing Asia? This box explores this issue using panel data analysis for the period 1990–2007.

The dataset covers 157 economies, 29 of which are in developing Asia. To identify the direction of causation between trade and income, geographic characteristics (such as size, distance, and common borders) involving nearly 30,000 country pairs are used to derive an instrument that correlates with economies' trade share but not with other determinants of income (Frankel and Romer 1999).¹

The instrument is then used for instrumental variable (IV) regression to estimate the effect of international trade on income, controlling for the size of the domestic market. The results are compared with those of ordinary least squares (OLS) regressions, which are based on actual rather than instrumented trade shares (Trade/GDP), and hence do not address the simultaneity between trade and income.

The analysis confirms the exceptionally strong role that international trade has had in raising incomes in Asia, on the one hand, and the region's underreliance on production for domestic markets to spur growth, on the other.

Put differently, there is much scope for developing Asia to exploit the growth potential of domestic and regional markets, if necessary to compensate for a slowdown in growth deriving from international trade.

The box table summarizes the regression results.² Column 1 presents the IV regression estimates of log of income per person on log of instrumented trade shares using the entire sample. It indicates that, on average, a 1% rise in the international trade share raises a country's per capita income by almost 1.4%. In comparison, the effect of domestic market size is smaller, at about 0.2%.

Column 2 reports the estimation results with a sample

that is restricted to developing Asia. It suggests that international trade has a much stronger role in lifting income in these economies (by a factor of more than 1.6), but that the impact of domestic market size is negligible.

These findings are confirmed by the results of a regression specification that interacts an Asia dummy variable with the international trade variable and with the domestic trade variable.

As shown in columns 3 and 4, the OLS results mirror the IV findings qualitatively. By failing to account for the endogeneity of actual trade shares, however, OLS regressions are fraught with a severe downward bias in measuring the impact that international trade has had on incomes, compared to domestic market size. This confirms the findings of Frankel and Romer (1999) and their argument in favor of the IV approach.

Income and trade regressions, 1990–2007

Dependent Variable	(1)	(2)	(3)	(4)
ln (Income per person)	IV-All	IV-Asia	OLS-All	OLS-Asia
International Trade	1.384	1.647	0.336	0.541
ln(Trade/GDP)	<i>0.07***</i>	<i>0.29***</i>	<i>0.02***</i>	<i>0.07***</i>
Domestic trade	0.232	0.068	0.737	0.109
(ln Population)	<i>0.05***</i>	<i>0.07</i>	<i>0.04***</i>	<i>0.05**</i>
Observations	2,513	393	2,513	393
Number of countries	157	29	157	29

Standard errors in italics; ***significant at 1%, **significant at 5%.

Notes: All variables are in logarithmic form. Trade is trade share, actual (OLS) or derived (IV).

Source: Ferrarini (forthcoming).

Source

Ferrarini (forthcoming).

¹ The first stage of analysis involved the regression of the log actual trade share on log distance between country pairs, their populations, the existence of a common border, interaction terms between the border dummy and the other explanatory variables, as well as a constant term. All the coefficient estimates are statistically significant and take their expected signs—the only exceptions being the coefficient estimates of the interaction terms involving the common border dummy variable, which reflect the low prevalence of country pairs that share a common border in the regression sample. The correlation between the instrumented and actual trade share is high, at about 0.57.

² The results refer to fixed-effects panel regressions. The endogeneity of the actual trade share was tested with the Durbin-Wu-Hausman procedure. For both the full and Asia regressions, the test results confirm endogeneity. See the source for detailed regression results.

In the case of Central Asia and the Pacific, the two subregions managed to increase their export-to-GDP ratios, but only marginally (the nominally large increase in Central Asia's ratio was buoyed up by high commodity prices). The global market shares of their exports also remained negligible. Perhaps of greater concern because of the implications on vulnerability to trade shocks, the export products of these subregions, already of limited range in the 1990s, became even more concentrated, while logistics costs remained high.

An analysis of the recent trade performance of developing Asia is not complete without any mention of the region's two emerging giants. As may be expected, the indexes in Table 2.2.1 (above) register the very impressive strides made by India and the PRC in trade. In little more than a decade, India almost doubled its exports' share in GDP and in global markets (although both came from very low bases and are still far below regional averages).

Moreover, India outperformed South Asia in all dimensions of trade. For example, the state of India's export diversification is closer to that of the average East Asian rather than South Asian country. It has cut average tariff rates to levels that are far below the averages in South Asia (although tariff protection remains high relative to the rest of developing Asia). India also scores much higher in the LPI and it is more open than South Asia as a whole.³

Strong as India's trade performance is, it pales when juxtaposed with that of its East Asian neighbor. The PRC recorded higher shares of exports in both GDP and global markets, almost doubling the former and more than doubling the latter in the last decade. Its exports were also more diversified, its average tariff rates were lower, and it had a higher LPI score. (Box 2.2.2 also suggests that India's broader trade costs fell by less and remain significantly higher than those of the PRC.) By all measures, the PRC's economy is thus more integrated with world markets than India's, and not coincidentally, its growth performance has been the highest in developing Asia.

The foregoing findings on trade performance are consistent with trends that suggest that the subregions of developing Asia can be grouped into three subsets, depending on the key challenges they face in international trade.

First, there is the cluster of highly interdependent, open, and vibrant economies in East Asia and Southeast Asia that include the NIEs, the PRC, and the more advanced countries of ASEAN. With the PRC at the center of the assembly process and with exports going mainly to the US and Europe, production in and trade among these economies have been increasingly organized through vertical specialization in networks, with intense trade in parts and components, particularly in the ICT and electrical machinery industries. Against the prospects of an extended postcrisis period of reduced demand from developed-country markets, the key challenge for these countries is to adjust their production structures to be more responsive to domestic and intraregional demands.

Second, there is South Asia, which has remained relatively isolated trade-wise from the rest of the region. Limited participation in Asia's production networks, exacerbated by high protection and elevated trade costs, has hampered South Asia's integration with the vibrant economies of developing Asia. Even for India, deeper regional integration and further efforts at trade facilitation are crucial to fully leverage the potential of closer economic ties and network trade with East Asia and Southeast Asia. To pave the way for broad regional integration across developing Asia, the key challenge for South Asia is to integrate more strongly as a subregion, by removing the remaining trade barriers and substantially lowering the cross-border costs of trade.

2.2.2 Trade costs of the People's Republic of China and India

Trade costs comprise the whole range of regulatory, transportation, and distribution costs involved in the transfer of goods both from foreign producers to domestic consumers and from domestic producers to foreign consumers.

Most trade cost components are difficult to quantify, which limits the scope for direct measurement and for making international comparisons. A comprehensive measure of trade costs, however, can be derived from a theory-based gravity model of international trade, which is implemented on the basis of observed bilateral trade flows and GDP data (Jacks, Meissner, and Novy 2008).

Based on this approach, the analysis of trade costs involving merchandise trade between the People's Republic of China (PRC) and India during 1980–2008 leads to five main findings.

First, there has been a substantial reduction in trade costs between the PRC and India, particularly since the early 1990s. In tariff equivalent terms, trade costs fell from 117.0% in 1990 to 44.3% in 2008 (Box figure).

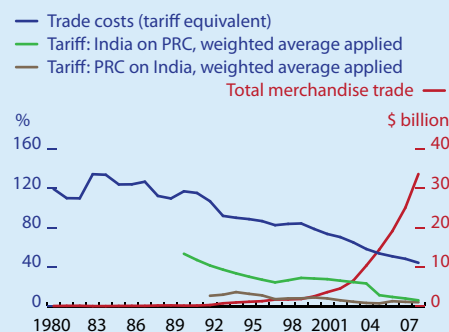
Second, falling trade costs were accompanied by a substantial increase in trade volume between the PRC and India. From virtually no trade until the late 1980s, trade between the two countries really took off only in the late 1990s, as trade costs declined steeply (Box figure). Total trade flows accelerated throughout the 2000s, from \$2.6 billion in 2000 to \$33.6 billion in 2008.

Third, the decomposition of factors accounting for growth in trade points to lower costs as a determining factor. This appears to be the case both for trade flows between the PRC and India (Box table 1) and for these countries' trade with the United States, Europe, Japan, and the ASEAN countries.

Fourth, the bulk of trade cost reduction appears to be on the account of the PRC. Indeed, besides reducing its trade costs with India, the PRC managed to do so with most of the other trade partners or regions considered in this study (Box table 2).

Fifth, India's bilateral trade costs with the partner countries appear to have fallen by proportionally less than the PRC's. Even after accounting for PRC's generally lower trade costs than India's at the outset, the fall in trade costs involving PRC as a trading partner is consistently more pronounced than that of India, in relation to all the trading partners (Box table 2).

Bilateral trade, trade costs, and tariffs, People's Republic of China and India



Source: Brooks and Ferrarini (2010).

[Click here for figure data](#)

1 Sources of trade expansion between the People's Republic of China and India (%)

Period	Trade expansion	Due to GDP growth	Due to lower costs
1981–1990	137.0	71.4	28.6
1991–2000	1,025.7	26.8	73.2
2001–2008	852.0	15.1	84.9

Note: Based on averages of export and import data reported by the PRC and India.

Source: Brooks and Ferrarini (2010).

2 Bilateral trade costs (calculated as tariff equivalent, %)

Year	Between PRC and:					Between India and:			
	IND	JPN	US	EU3	AS4	JPN	US	EU3	AS4
1980	119.3	43.1	65.9	67.3	62.8	67.3	72.0	66.0	78.5
1985	124.0	39.8	64.9	61.5	65.6	66.0	73.9	62.8	80.8
1990	117.0	52.9	58.2	60.9	56.7	74.7	73.5	63.7	69.7
1995	88.7	46.1	49.6	54.5	50.5	78.6	71.2	59.6	64.6
2000	78.7	41.2	46.9	48.8	39.8	79.4	70.5	57.7	52.2
2005	53.8	30.3	37.3	39.3	28.4	75.9	64.2	50.4	47.8
2008	44.3	25.7	33.6	31.3	27.0	64.3	56.9	39.5	42.3

AS4 = ASEAN-4 (Indonesia, Malaysia, Philippines and Thailand); PRC = People's Republic of China; EU3 = France, Germany, and United Kingdom; IND = India; JPN = Japan; US = United States.

Source: Brooks and Ferrarini (2010).

Source

Brooks and Ferrarini (2010).

Third, there is the vulnerable group of countries (Table 2.2.1, above). A highly heterogeneous subset, their common characteristic is that they are the region's least developed economies. Although some of them have managed to diversify their exports into higher value-added manufactures and services, these countries generally remain vulnerable to commodity price fluctuations and to sudden demand disruptions. Any such shock

carries the risk of setting back development and poverty reduction initiatives, thereby worsening the prospects for long-term growth.

The key trade challenges differ by circumstances. East Asia and Southeast Asia need industrial restructuring to accommodate a gradual shift in the distribution of demand toward domestic consumption and regional trade. South Asia requires greater economic integration among countries within the subregion as well as closer ties with the rest of the developing Asian region. Finally, vulnerable economies will need support to develop the capacity to benefit from greater openness to international trade.

Industrial restructuring to accommodate domestic and regional demand

For East Asia and Southeast Asia, the key challenge is how the international production networks that are centered on the PRC will adjust to a prolonged period of reduced demand from traditional export markets.⁴ Recovery from the global financial crisis in the US and in Europe (as well as Japan) is slow and tentative. More significantly, the policy agenda of these economies well into the medium term will be to rebalance their macroeconomic and external accounts, which will pay little heed to import demand.

Some recent policy discussions have thus prescribed that developing Asia in general—and East Asia and Southeast Asia in particular—should reorient its growth strategy and accord a larger role to domestic and regional demand (ADB 2009a, for example). Not only would this provide additional engines of growth, it would also reduce the region's vulnerability to shocks from the global economy.

For the East Asian economies in particular (Box 2.2.3), the recommendation is to stimulate household consumption both by transferring corporate saving to households and by reducing precautionary saving by, say, providing insurance and expanding social safety nets. Additionally, on the supply side, support could be provided to sectors and industries that cater to domestic markets, notably small- and medium-sized enterprises (SMEs) and service industries (ADB 2009b).

Little attention, though, has been devoted to the problem that the value chains of the PRC-centered international production networks will have to undergo structural adjustments in response to a different composition of demand. But a restructuring is inevitable for as long as exports to developed-country markets remain sluggish and if a gradual shift toward more domestic and regional demand is to be accommodated, for several reasons.

First, there is the issue of production specificity. PRC final-goods exports tend to be specific to foreign markets, and much of the PRC's physical and human infrastructure is linked to a manufacturing sector that is geared for exports rather than for domestic consumption. For many of the PRC's East Asian and Southeast Asian intermediate-goods suppliers, the problem may be worse, as the parts and components that they produce are not likely to have domestic uses, specific as these are to the regional production network. For the same reason, it is unlikely that

these intermediate-goods exports can be easily diverted from the PRC to third markets.

Second, it is generally acknowledged that the production networks have excess plant capacity. If so, the excess capacity is likely to increase with the slowdown of exports to developed-country markets (and until

2.2.3 East Asian networks of production and trade

Global and regional production sharing has become part of the economic landscape of developing Asia. Since the late 1990s, production and trade between countries in the region have been characterized increasingly by vertical specialization in networks, with intense intra-industry trade in parts of components, particularly in the information and communications technology and electrical machinery industries.

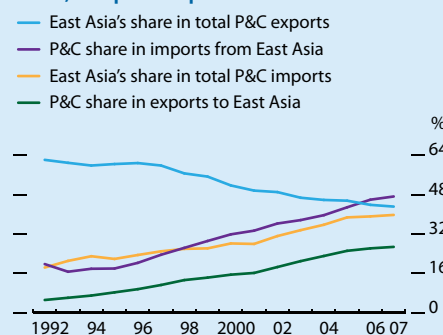
With the People's Republic of China (PRC) as the network hub of regional assembly and the jump-off point of final-goods exports predominantly to the United States (US) and Europe, intraregional trade—mainly Japan, the newly industrialized economies (NIEs) and the more advanced Association of Southeast Asian Nations (ASEAN) economies as suppliers of intermediate goods—has grown even faster than the region's trade with the rest of the world.

In 2008, the share of intraregional trade in parts and components accounted for more than 55% of total trade by East Asia and Southeast Asia combined. By contrast, the share of intraregional trade in final goods was just about 43%. This reflects the region's strong bias toward network trade in parts and components, rather than trade in final goods consumed in the region. Indeed, for Asia including Japan, trade in final goods is predominantly accounted for by demand outside the region—71%; 46% goes to the US and Europe (Box figure 1).

Box figure 2 illustrates the PRC's spectacular ascension as the central hub of final assembly, linking East Asia with

the rest of the world through global production networks. Indeed, the PRC has been sourcing a growing share of parts and components from other countries in the region, including Japan, while exporting the bulk of final goods to the rest of the world. As a share of PRC's total manufacturing imports from East Asia, parts and components imports grew from 18% in 1994/95 to more than 46% in 2006/07. Vertical integration and network trade appear to have increased—rather than reduced—Asia's dependence on external demand (Athukorala and Menon 2010).

2 Parts and components in manufacturing trade, People's Republic of China

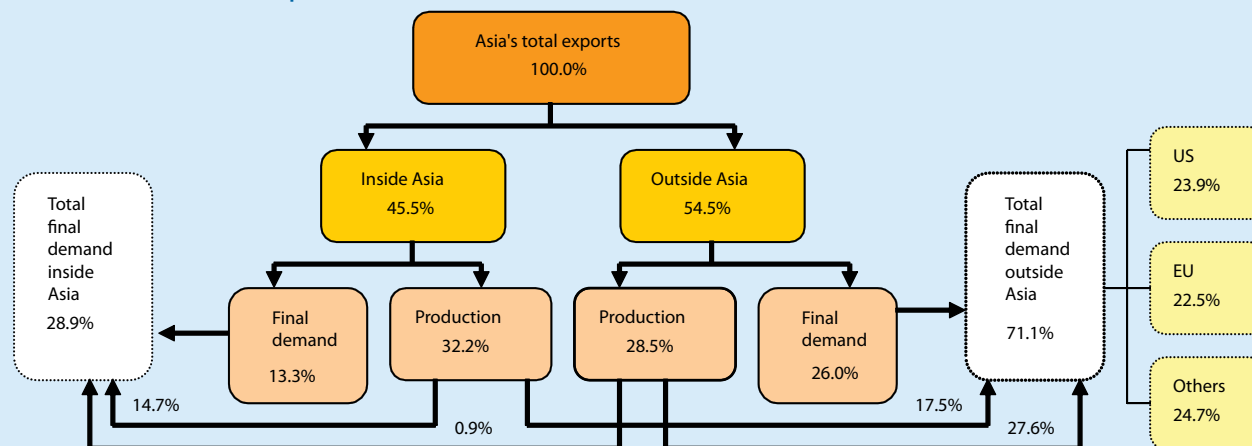


P&C = Parts and components.

Source: Athukorala and Menon (2010).

[Click here for figure data](#)

1 Final demand for Asia's exports



Note: Asia includes the 13 developing Asian economies for which data are available plus Japan. These are as follows: Bangladesh; People's Republic of China; Hong Kong, China; India; Indonesia; Republic of Korea; Malaysia; Pakistan; Philippines; Singapore; Taipei, China; Thailand; and Viet Nam.

Source: ADB (forthcoming).

domestic demand and intraregional trade increase), which in turn will increase the pressure for plant and firm closures.

Third, while domestic and regional consumption levels do not offset the shortfall in export demand, lower aggregate demand in East Asian and Southeast Asian economies is likely to lead to vertical consolidation in the production networks. Increased competition will drive out high-cost producers, reducing the number of parts and components suppliers. Similarly, import substitution (of intermediate goods) in the PRC may well reduce the scope for specialization in production and the number of segments in value chains.⁵ However, establishing final goods-producing firms in the intermediate goods-exporting countries may not be an option if the latter lack the endowments to produce the entire value chain.

Affording larger roles for domestic consumption and regional demand in East Asia and Southeast Asia in particular and in developing Asia in general, will thus require a gradual move away from vertical specialization and network trade to product-based horizontal specialization and intraregional trade in final goods, in a manner similar to the sequential “flying geese” pattern of division of labor. This strategy not only corrects imbalances between investment and consumption, on the one hand, and profits and wages, on the other; it also allows wages and private consumption both to march in step with productivity improvements and to underpin the expansion of productive capacity by expanding domestic and regional markets in final goods.

For the PRC, the strategy implies that there will be increased pressure to phase out labor-intensive manufactures and allow them to move to less developed countries. Rather than retaining such industries by keeping wages behind productivity and holding the value of the currency down, the PRC must eventually become an importer of such goods.

A benefit of this restructuring is that, for countries at similar levels of industrial development and technological maturity as the PRC, a shift from vertical to horizontal specialization in the long term will promote the kind of intra-industry trade that underpinned the rapid expansion and integration of Western Europe when countries were producing and trading similar products, such as passenger cars, consumer electronics, and other household durables.

In the process of reorientation toward horizontal specialization, foreign direct investment (FDI) from more advanced economies in developing Asia will play a key role in relocating labor-intensive industries to the region’s less developed countries, thereby helping to deepen regional integration through both trade and investment. This was the course taken by Japan and subsequently the NIEs in the process of industrial upgrading and productivity growth.

Closing the gap between wages and productivity in the PRC will not only help to accelerate the growth of domestic consumption and demand for final goods, it will also encourage firms in certain labor-intensive industries to relocate gradually to poorer countries through FDI in Southeast Asia and South Asia. Recent data from the United Nations Commodity Trade Statistics Database (UNCTAD) show that intraregional FDI has been growing since the mid-2000s and now accounts for about half the region’s total inward FDI stock. Most notably, the PRC’s outward FDI to ASEAN has accelerated during the global crisis, expanding almost

threefold between 2007 and 2009 alone and contributing to industrial upgrading broadly across the region, including in least developed countries such as Cambodia and the Lao People's Democratic Republic (the Lao PDR).

For the relatively more advanced economies in ASEAN—Indonesia, Malaysia, the Philippines, and Thailand—the key challenge will be how to reanimate private investment in high-productivity, skill-intensive sectors. Many of the sectors vacated by the NIEs have been captured by the PRC rather than by these higher-wage ASEAN economies. To avoid falling into a middle-income trap with the fragmentation of regional production networks, these countries need to move up the industrial ladder. They have ample domestic resources to do so, but lack the entrepreneurial expertise and investment needed (despite the recent increase in intraregional FDI) for such a restructuring. Boosting private investment will thus serve the dual purpose of accelerating the growth of domestic demand as well as industrial restructuring in these countries.

Indeed, new investment⁶ will mainly be needed to achieve the industrial restructuring necessary for a change in the product mix to match domestic and/or regional demand in East Asia and Southeast Asia. However, the new incentive structure associated with the rebalancing of domestic and external demand, including changes in wage-productivity configurations and exchange rates, may not be sufficient to drive investment toward areas that need to expand in order to meet a faster growing domestic market. Therefore, government action toward higher domestic demand needs to be accompanied by industrial and investment strategies for dovetailing the structure of production to the pattern of domestic and regional demand.

In sum, it would be difficult to envisage a change in the configuration of demand (with larger shares accounted for by domestic consumption and regional trade in final goods) without accompanying adjustments to the industrial structure characterizing East Asia's production networks. The pace and scope of industrial restructuring will be determined by the rate at which domestic and intraregional demand grows over time as well as by developments in US and European markets.

Although there is evidence⁷ that the share of final goods in the PRC's imports from the region has been rising in recent years, the momentum is not yet enough to trigger the supply-side responses discussed in this section. Relevant in this regard will be India's emergence as the second pole of high growth and demand in the region, as its involvement in a broad and inclusive pan-Asian integration process can be expected to generate the momentum necessary for domestic and regional demand to play a greater role in driving growth.

Growth potential from tighter integration

South Asia is probably the most heterogeneous subregion in Asia in terms of trade development.⁸ The giant Indian economy dominates the subregion, with an emerging manufacturing sector (with strengths in labor-intensive manufactures, automotive, iron and steel, and pharmaceuticals) and a distinct competitive advantage in services, particularly ICT and financial services. Bangladesh, Pakistan, and

Sri Lanka have developed a manufacturing base in textiles and garments to augment competitiveness in primary products. Bhutan, Maldives, and Nepal are more oriented toward services, particularly tourism, although Nepal has agriculture and Maldives has fisheries.

Compared to East Asia and Southeast Asia, however, South Asia trades less, receives less investment, and is less integrated with other countries inside and outside the region (Figure 2.2.1). Trade costs, including tariff and nontariff protection, are well above the regional average. The intraregional trade share is but a fraction of East Asia's. The extent of network trade is negligible.

Among the South Asian countries, only India stands out as a dynamic pole of economic growth that has been deepening its integration with the rest of Asia. Its "Look East" policy and gradual lowering of trade costs and protective barriers have served to establish India as one of the most thriving economies in developing Asia.

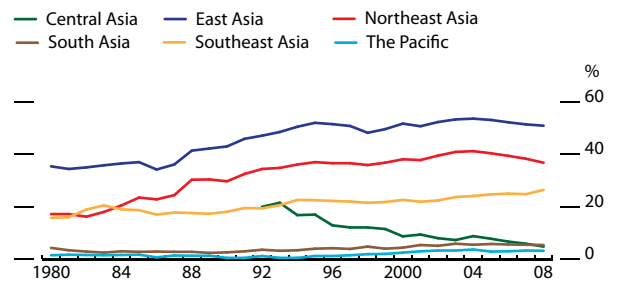
India represents an opportunity for growth through trade for the rest of South Asia. The sheer size of its market means that India can be a haven for exports from other countries in the subregion. In addition, its tighter integration with East Asia implies that India can serve as a subregional springboard for pan-Asian integration: India has already concluded several free trade agreements (FTAs), including with ASEAN and the Republic of Korea. Moreover, India has taken a leading role in promoting deeper economic integration in the subregion through the SAARC⁹ Preferential Trading Arrangement and the South Asian Free Trade Area (SAFTA). These can be the bases for South Asia to integrate initially within the subregion and later with East Asia and Southeast Asia, leaving no country to suffer from exclusion (Box 2.2.4).

A prerequisite for South Asia's integration will be the reduction of trade costs. High tariff and nontariff trade protection, poor physical connectivity, and cumbersome, behind-the-border procedures have long been identified as major hurdles. A recent assessment by ADB and the Federation of Indian Chambers of Commerce and Industry (FICCI) points to the importance of targeted issues for improving the business environment in South Asia in the short and medium terms (ADB-FICCI 2010). Examples of priority actions for private sector-led integration are expanding the SAARC visa exemption scheme to business travelers, dealing with nontariff barriers, improving customs stations on land, and promoting intraregional investment. South Asia's integration with the rest of developing Asia, in turn, faces three problems.

First, broad-based support for new trade agreements may be hard to secure in South Asian countries and the vulnerable economies that are likely to be adversely affected by the erosion of preferential tariff rates and by altered discrimination patterns. Comprehensive strategies that address adjustment costs in this regard will thus be needed. An example is the Aid for Trade Initiative, particularly the parts with a regional focus, which will play an important role in supporting integration in South Asia.

Second, the benefits from regionwide integration are likely to be unevenly distributed across countries and subregions. The still-large

2.2.1 Intraregional trade shares



Notes: Central Asia comprises Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyz Rep., Tajikistan, Turkmenistan, and Uzbekistan. East Asia comprises Northeast and Southeast Asia. Northeast Asia consists of People's Rep. of China; Hong Kong, China; Japan; Rep. of Korea; Mongolia; and Taipei, China. South Asia consists of Afghanistan, Bangladesh, India, Maldives, Pakistan, and Sri Lanka. Southeast Asia comprises Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Viet Nam. The Pacific comprises Fiji Islands, Papua New Guinea, Samoa, Solomon Islands, Tonga, and Vanuatu.

Source: ADB (forthcoming).

[Click here for figure data](#)

2.2.4 Free trade agreements

Free trade agreements (FTAs) are playing an increasingly prominent role in the process of gradual integration between South and East Asia. Examples of FTAs already in effect are the Asia-Pacific FTA, the Comprehensive Economic Partnership Agreements between India and ASEAN and India and the Republic of Korea. (See www.aric.adb.org for a comprehensive list of FTAs in effect and under negotiation.)

Against the backdrop of stagnating global talks in relation to the World Trade Organization's Doha Round, however, policy makers in developing Asia must ensure that the proliferation of FTAs between South and East Asian countries do not represent stumbling blocks that undermine the prospects of establishing a more comprehensive regional arrangement and of making further progress in world trade liberalization.

Rather, policy makers should pursue "open regionalism" with its emphasis on inclusiveness and on the compatibility of regional integration with multilateralism. This requires that developing Asia strive for the most far-reaching and comprehensive agreement, including all countries in all subregions, thereby boosting regional trade and incomes, while limiting the adverse effects on the countries excluded.

differences in most-favored-nation (MFN) applied tariff levels, for instance, imply that some countries and subregions have lower trade costs and are more open to trade. In turn, these countries handle larger trade volumes. More specifically, at 11.9% in 2008, the average tariff level of South Asia was considerably higher than those of East Asia and Southeast Asia, at 3.1% and 5.5%, respectively (Table 2.2.1, above). Being more open, East Asia is thus preferred as a trading partner to South Asia and, potentially, will benefit more from regionwide integration.

Third, the substantial reduction of MFN tariffs in East Asia and Southeast Asia, and in India more recently, has diminished the trade-enhancing potential of preferential tariff arrangements. This shifts the policy emphasis to reducing trade costs. Put differently, the benefits of pan-Asian integration will be greatest if regional tariff liberalization in trade of goods and services goes hand in hand with substantial improvements in trade-related infrastructure and trade facilitation. Trade infrastructure and facilitation initiatives, however, are either costly or administratively difficult to implement.

A recent study (Francois and Wignaraja 2009) explored the income effects of various regional integration scenarios. Based on a global computable general equilibrium model of 35 country groups and 36 sectors, benchmarked to the year 2017, and premised on zero tariffs in goods and services and substantial improvements in trade facilitation and trade-related infrastructure, the study compared the outcomes of a narrow South Asia FTA; an FTA between ASEAN, Japan, the PRC, and the Republic of Korea (ASEAN+3); an ASEAN+3 FTA that also includes India; and a pan-Asian integration scenario between ASEAN+3, India, and all the other countries of South Asia. Table 2.2.2 summarizes the simulation results in terms of income changes in East Asia (including Japan), South Asia, and the rest of the world.

2.2.2 Income effect of free trade agreement scenarios (at constant 2001 prices)

	Value (\$ million) ^a			
	South Asia	ASEAN+3	ASEAN+3 and India	ASEAN+3 and South Asia
East Asia^b	-540	226,855	239,097	241,485
Japan	-9	74,825	78,080	78,650
China, People's Rep. of	-157	41,502	43,289	43,454
Other East Asian economies	-374	110,528	117,728	119,381
South Asia^c	3,695	-3,620	16,199	22,423
India	1,138	-2,371	17,779	18,240
Other South Asian economies	2,557	-1,249	-1,580	4,183
Rest of the world^d	361	-9,316	-3,934	-3,001
World	3,516	213,919	251,363	260,907

ASEAN+3 = Association of Southeast Asian Nations plus People's Rep. of China, Japan, and Rep. of Korea.

^a Values relative to 2017 baseline.

^b East Asia comprises Brunei Darussalam; Cambodia; Hong Kong, China; Indonesia; Rep. of Korea; Japan; Lao PDR; Malaysia; Myanmar; Philippines; Singapore; Thailand; and Viet Nam.

^c South Asia comprises Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka.

^d Rest of the world includes all other countries not shown on the table.

Source: Francois and Wignaraja (2009).

Among all the scenarios, the gains are largest for Asia including Japan (about \$260 billion) and the losses smallest for the rest of the world under the broad pan-Asian integration (ASEAN+3 and South Asia FTA) scenario. Reflecting relative size, East Asia (Japan in particular) stands to gain the most in absolute terms. In proportion to regional incomes, however, the gains for South Asia and East Asia are comparable, at 2.0%–2.3%.

Individual South Asian countries—and South Asia as a subregion—stand to gain substantially from being part of broad pan-Asian integration. Similarly, the South Asia FTA benefits all its members, albeit India's gains will be a fraction of those that it gets from integration with East Asia. Although India stands to benefit the most by looking east—with or without the rest of South Asia—it is in the interest of both India and the other South Asian countries to jointly pursue integration with East Asia. This would yield the largest gains for India and the happy prospect that no South Asian country suffers the consequences of exclusion.

South Asia has the potential to become an economic power in the next 2 decades. For the region to live up to its potential, India may have to grant unilateral tariff concessions to its neighboring countries, thereby providing access to its huge market. In turn, South Asian countries will need to lower trade costs, which would enable them to exploit the economies of scale of a large production base made possible by an expanded (because integrated) market. Only by standing together will the countries of South Asia reap the largest benefits from integration with the rest of Asia.

Asia's vulnerable economies and the role of aid for trade

Asia's vulnerable economies are characterized by small market shares, extreme export concentration, relatively high tariff barriers, poor logistics, and economic growth rates that are far below the regional average (Table 2.2.1 above).¹⁰ There is much heterogeneity among these countries in terms of the sources of vulnerability and key impediments to trade.

Some are least developed countries, like Bangladesh and Cambodia, which through infrastructure investment and policy reforms (that brought about greater integration with external markets) made use of their cheap labor endowments to partially shift out of primary commodities and into labor-intensive manufactures, particularly in textiles and garments. The key challenges for these countries are how to sustain the levels of textiles and garments exports in an increasingly competitive global market; and how the range of export products can be extended into related goods, such as footwear and soft toys.

Others are small economies, such as the Pacific islands, Bhutan, the Lao PDR, and Maldives. These economies are disadvantaged by their small size, limited skill base, geography, and distance from international markets. Factor costs in these economies tend to be high, ruling out competitiveness in manufacturing. The key areas of development are services (particularly tourism), fishing, and agriculture.

A few are conflict or postconflict economies, such as Afghanistan and Timor-Leste, facing particular stabilization and reconstruction challenges.

A prime source of vulnerability for all these economies is the limited range of commodities and services that form the base of production and exports. The combination of small domestic markets, insignificant global markets shares, and volatile export receipts constrains the operational size of production, which in turn precludes firms from exploiting scale economies, undermining their competitiveness. The consequent low productivity worsens the output effect of scarce physical and human capital stocks. Volatility in global market prices and other external demand shocks add further difficulties. The ultimate effect is that countries are unable to move into higher value-added, downstream processing and manufacturing industries.

As for trade capacity of these vulnerable economies, this is constrained by the limited availability of resources, whether in terms of infrastructure, institutions, or policies. Basic trade-related infrastructure, such as transport and storage or energy supply, are rarely adequate and inhibit export sectors from successfully competing in foreign markets. Progress in policy reform and macroeconomic management tends to be slow and erratic, institutions are often weak, and state ownership in key sectors of the economy still prevails in many countries. The effectiveness of foreign aid in support of these economies is also often undermined by “Dutch disease,” in which the domestic currency appreciates as a result of foreign exchange inflows, thereby weakening the competitiveness of export sectors.

Against this background, the international community of donors has increasingly come to recognize that firms in many developing countries may be unable to benefit from the market access opportunities that the multilateral trading system or regional trade agreements offer. Policy reforms and trade liberalization alone will not provide the solution for these countries. Development assistance will have to be tailored to address the specific constraints on the countries’ supply-side capacities in order to enable them to fully exploit the potential of enhanced market access, and compensation will have to be provided for the costs of prospective trade reforms (such as preference erosion or loss of tariff revenues).

Such impetus for trade-related aid gained momentum in the context of the ongoing World Trade Organization Doha Round negotiations, formalized through the launch of the Aid for Trade Initiative at the sixth ministerial WTO conference in Hong Kong, China, in December 2005 (Box 2.2.5). Multilateral development banks have endorsed the initiative and the work plan to implement it.

The need for aid for trade has grown in the postcrisis economic environment, as external demand has weakened and domestic vulnerability has sharpened. Vulnerable Asia is not yet sufficiently integrated with the rest of Asia to benefit from the region’s swift recovery and sustained growth, and continues to suffer from the sluggish and uncertain recovery of the global markets. This has increased the urgency of aid for trade, lest the gap with the more dynamic economies of developing Asia widen even further. More and better targeted aid for trade will be needed in the future to support vulnerable Asia’s economic recovery and long-term goal of economic diversification and integration with the global economy.

2.2.5 Aid for Trade Initiative

Successive rounds of multilateral trade negotiations have successfully expanded market access. Reforms intended to liberalize trade that were undertaken by developing countries over the past 2 decades have been associated with rapid growth, particularly in Asia. Export-oriented policies and the increase in per capita incomes have helped lift millions of people out of poverty.

These gains notwithstanding, many developing countries, and particularly the least developed ones, remain unable to take advantage of the potential benefits from market access opportunities. Governments and firms in these countries lack the capacity to compete effectively in global markets, because of considerable infrastructure and other supply-side constraints, as well as flaws in policy and procedures.

In recognition of these challenges, the 2005 Hong Kong World Trade Organization (WTO) Ministerial Declaration called for the Aid for Trade (AFT) Initiative to set in motion a process to mobilize more and better aid to help developing countries overcome structural limitations that undermine their ability to reap the benefits from trade opportunities.

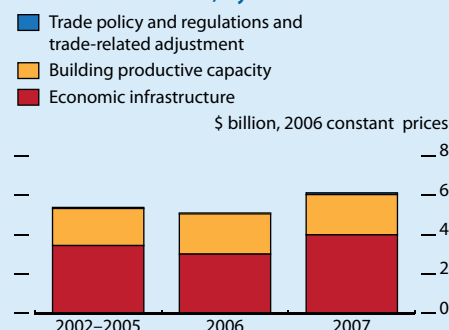
The WTO Task Force on Aid for Trade aims to enable developing countries (particularly the least developed), to use trade more effectively to promote growth, development, and poverty reduction. This includes helping them to build supply-side capacity and trade-related infrastructure, as well as facilitating, implementing and adjusting to trade reform. Assisting regional, global integration, as well as implementation of trade agreements, are also Task Force objectives, as is the need for bridging the demand for AFT and donors' response at all levels.

The joint OECD–WTO *Aid for Trade at a Glance 2009* report highlights that the Initiative has achieved remarkable progress so far. Recipient countries increasingly mainstream trade through operational priorities and action plans in their national development strategies. Among the most binding constraints they identify are network infrastructure, competitiveness, export diversification and trade policy analysis, negotiation, and implementation.

Donors are responding by scaling up aid resources, building in-house expertise, and undertaking more joint and cooperative initiatives and cooperation with other donors. According to the OECD Creditor Reporting System, AFT flows have grown by about 10% per year since 2005. In 2007, AFT accounted for 32% of total aid spent on specific economic or social sectors. Asia has been the largest recipient of AFT flows, with the majority spent on economic infrastructure, including transport and storage, communications, and energy supply and generation (Box figure).

Regional integration processes can be important drivers for AFT. The AFT Initiative has had an important impact on funding for regional programs, which more than

Aid for Trade in Asia, by sector



Source: Organisation for Economic Co-operation and Development. Creditor Reporting System. <http://stats.oecd.org> (accessed 13 September 2010).

[Click here for figure data](#)

doubled between 2005 and 2007. The regional development banks have been central to catalyzing AFT and economic integration processes at the regional level, such as through the establishment of the Inter-American Bank's Aid for Trade Strategic Fund, or the Regional Technical Group for Asia and the Pacific of the Asian Development Bank.

The latter provides an important platform for helping mobilize and channel AFT funds effectively, through increased lending to trade-related infrastructure at country, subregional, and regional levels. It also helps to coordinate the activities of many AFT donors, shares cross-border experiences, and provides technical expertise on AFT activities.

The global economic downturn has added a new urgency to the development challenges and opportunities faced by low-income countries. Remittances and global foreign direct investment inflows have declined, growth in international tourism dropped sharply, and commodity prices have been highly volatile. More than ever before AFT is needed to provide the additional stimulus, while addressing the underlying vulnerabilities that keep producers in recipient countries from effectively participating and competing in local, regional and international markets.

What matters most for international support to be effective in the postcrisis environment are the speed, scale, and quality of AFT initiatives. This will require reinforcing the country and regional component, strengthening on a country-by-country basis the identification of binding constraints, and aligning the aid response through a sustained dialogue among governments, civil society, private sector, and donors.

Sources

ADB (2009c); OECD–WTO (2009).

Summary

To boost their growth prospects through international trade, countries in developing Asia need to pursue different strategies depending on their circumstances. For economies in East Asia and Southeast Asia, the key challenge is for production and trade networks to undertake the adjustments necessary to accommodate increased domestic consumption and expand the volume and scope of intraregional trade. In particular, these economies may need to shift from vertical specialization and network trade to product-based horizontal specialization and intraregional trade in final goods.

For non-Indian South Asia, the priority is to continue down the track of further economic integration with the subregion's dominant economy; for the subregion as a whole, to reduce excessively high trade costs and integrate more closely with the rest of Asia. Trade facilitation and regional integration are critical to speed up South Asia's participation in regional production networks. In this endeavor, India stands out as a huge market for exports from neighboring countries and as a subregional springboard for pan-Asian integration.

Asia's vulnerable economies need to build the supply-side capacity necessary to reap the benefits from trade integration. Those that managed to break into basic manufacturing find it difficult to move up the value chain and integrate with the region's production networks. For these countries, aid for trade as a special conduit for donor support has a crucial role to play.

Trade is of course only one of the four drivers of developing Asia's future growth. The region's success in the last few decades has also depended on its educational prowess—debatable to its degree, though undeniable in its fact. But is the system that worked in the past, still the system for the region's future?

Human capital accumulation in economic growth

Developing Asia's stock of human capital—its well-educated labor force—is often cited as one of the critical factors in the region's rapid economic growth. This impression is supported by the region's record in educational attainment over the past 4 decades. In 2010, its population aged 15 years and over has an average of 7.8 years of schooling, from just 4.1 years in 1970.

By contrast, the mean years of schooling of the high-income countries for the same population group is 10.7 years, from 7.5 years in 1970, while that of the rest of the world is 7.4 years, from 3.4 years in 1970 (Figure 2.3.1). Nonetheless, progress in educational attainment has not been uniform across countries and subregions, and the links between education, on the one hand, and productivity and income growth, on the other, have not been always clear.

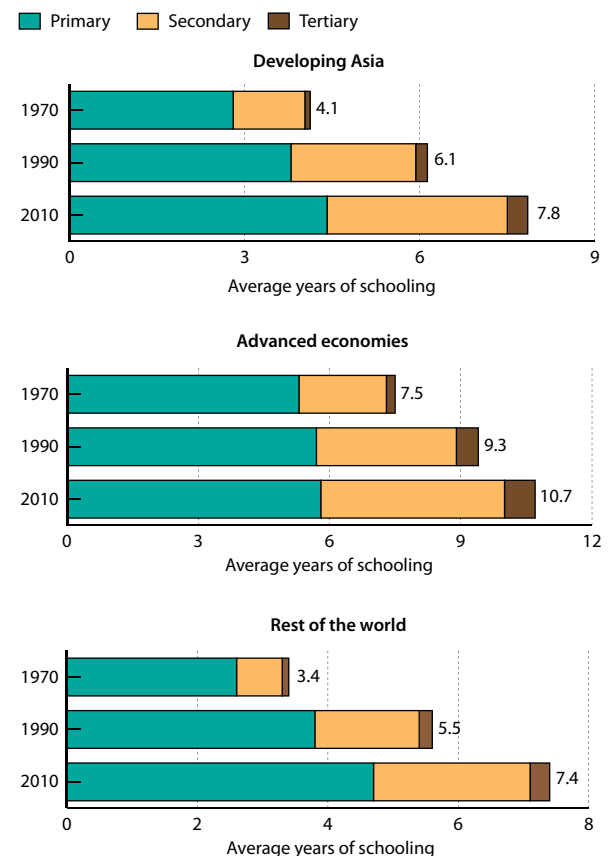
Room for improvement

Developing Asia's record in educational attainment is due mainly to achievements in primary and secondary schooling. Average schooling years for primary and secondary schooling increased by 1.6 and 1.9 years, respectively, between 1970 and 2010. This increase accounts for almost 90% of the 3.7 year increase in schooling overall. In particular, the average length of secondary schooling increased from 1.2 years in 1970 to almost 3.1 years in 2010. Tertiary education has grown rapidly as well, increasing from almost zero in 1970 to 0.3 years in 2010.

Still, substantial variation remains (Figure 2.3.2). In 2010, the average level of educational attainment in East Asia is comparable to that of the advanced economies (10.7 years), and those of Taipei, China (11.3 years) and the Republic of Korea (11.8 years) are higher. In contrast, average educational attainments in South Asia and Southeast Asia are lower.

Although India and Pakistan made rapid progress in education in the past 40 years, lengths of schooling, on average, remain below 6 years. The records of Indonesia (6.2 years) and Viet Nam (6.4 years) are not much stronger. The following characterization puts these statistics in stark relief—the average educational attainment of developing Asia in 2010 is where the advanced countries were half a century ago.

2.3.1 Educational attainment, total population 15 years and above



Source: ADB calculations based on data from Barro and Lee (2010).

[Click here for figure data](#)

Population structure and enrollment

The persistently high educational attainment of younger cohorts is the primary reason for developing Asia's significant educational progress, and

stems from the fact that the age structure of developing Asia's population is still pyramidal. In 1970, persons aged 15–24 years represented 31.2% of the total population, the same as the average of developing countries generally, but well above the 23.7% of the advanced countries.

A pyramidal age distribution for the population implies that improvements in educational outcomes for younger cohorts contribute more to the population average (because of their larger population shares) than similar achievements for older cohorts. Indeed, for India, Malaysia, and Pakistan in particular, the age structure will continue to be an important determinant of the rate of educational progress beyond 2010 (Lee and Francisco 2010). For these countries, it is estimated that every percentage point increase in the proportion of 15–24-year-olds who reach the tertiary education level translates to a 0.3 percentage point increase in the proportion of the population 15 years and above who achieve that level.

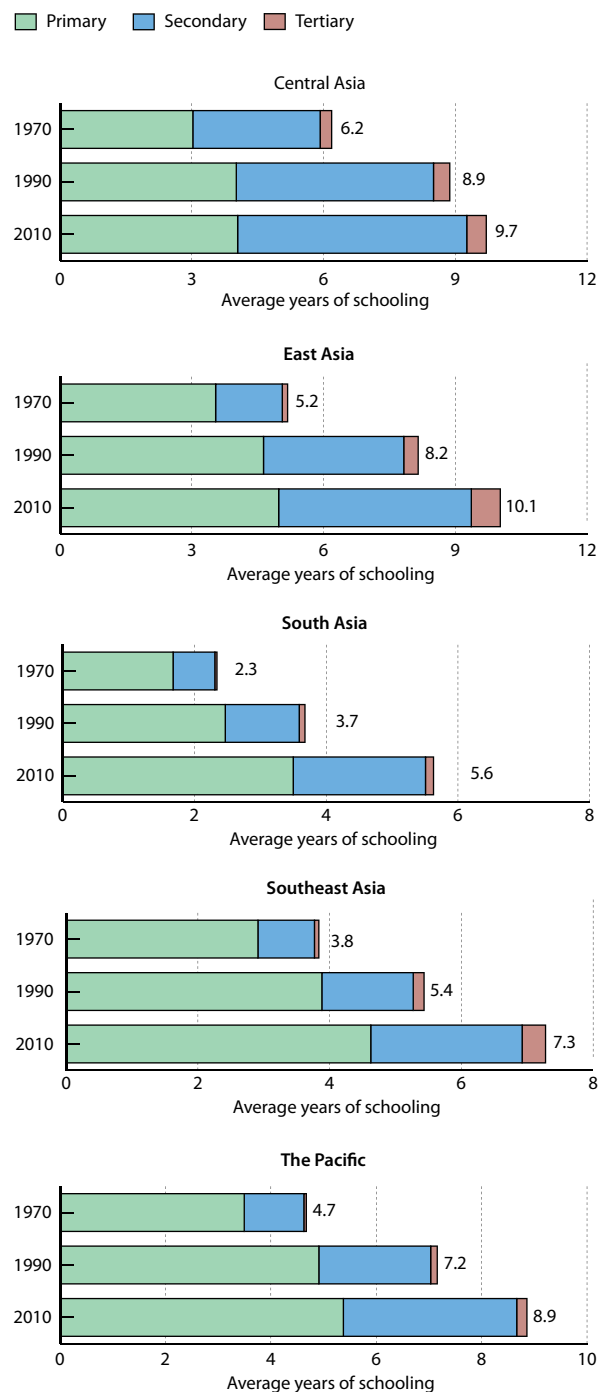
In developing Asia as a whole, the proportion of young people with no schooling declined by almost 20 percentage points from 1970 to 2010, as enrollment rates increased in all levels (Figure 2.3.3). Completion rates of these population segments also improved significantly, especially at the primary level for South Asia and secondary level for all subregions. Nonetheless, these improvements vary across countries. The secondary completion rate in the PRC; the Republic of Korea; and Hong Kong, China was 85% and above; India's was lower than 2%.

A long catch-up path ahead

Developing Asia has made excellent progress in increasing average years of schooling over the last 4 decades. In particular, years of schooling in South Asia grew by 2.2% annually.¹¹ This expansion was due to the rapid growth in the schooling of females, although gender disparity remains a significant issue in South Asia (Box 2.3.1). In contrast, the growth rate of human capital stocks in advanced countries has been modest at about 1%, suggesting eventual convergence in educational attainments, since people cannot study forever. If so, how many years will it take developing Asia to catch up with the current level of human capital of the advanced countries?

Estimates vary depending on the assumptions adopted. If future growth rates in years of schooling are set at the average rates recorded over the past 6 decades, it will take about 3 decades for South Asia and 10 years or so for Central Asia to achieve current levels of schooling in industrial economies (Son 2010). Even this scenario, however, may be too optimistic, given that growth rates are likely to decelerate as the average education level increases, and these figures may be better thought of as the lower bound for time convergence.

2.3.2 Educational attainment (15 years and above), developing Asia



Source: ADB calculations based on data from Barro and Lee (2010).

[Click here for figure data](#)

2.3.1 Gender disparity in educational attainment in South Asia

The worldwide average number of years of schooling is 8.1 years, with males having 8.4 years and females 7.8 years. Measured as the ratio of female-to-male average years of schooling, gender disparity in educational attainment is therefore small (0.93), if not negligible.

This worldwide mean, however, hides considerable variation in the gender distributions of educational attainment. When countries are grouped by per capita GDP deciles, lower income deciles are associated with wider gender disparity in educational attainment (Box figure, top panel).

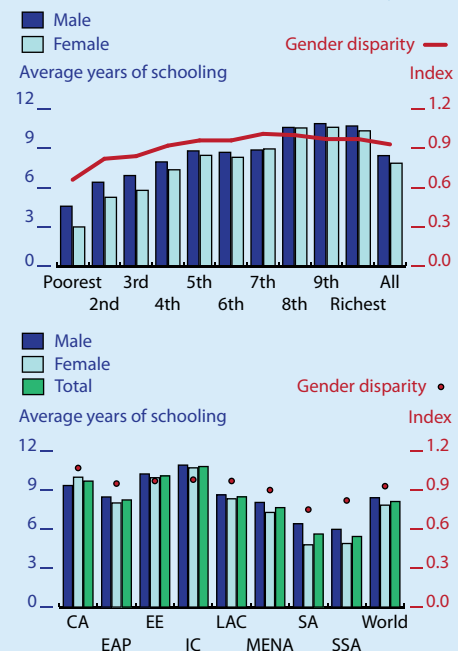
Among developing Asian subregions, Central Asia stands out for the longer length of time that females stay in school compared to males (Box figure, bottom panel). Possibly, this reflects the legacy of equal educational opportunities from the Soviet era, though this trend may be weakening since independence. In stark contrast, South Asia shows the largest deficit in the educational attainment of females compared to males, which is worse than even Sub-Saharan Africa's.

In South Asia, Afghanistan has the worst record: On average, females only have a quarter of the length of schooling of their male counterparts. The gender disparity is generally high in the rest of South Asia, too—in India, Nepal, and Pakistan. The exception is Sri Lanka, where the average number of schooling years is 8.6 for males and 8.3 for females.

That gender disparity is in a bad state in South Asia is not surprising. Das Gupta (1987) notes that South Asia has higher mortality rates among females than males due to gender discrimination, and documents a persistent bias for sons and discrimination against daughters in Punjab, despite the region's relative prosperity. Likewise, Filmer, King, and Pritchett (1998) report lower human capital outcomes for females in South Asia in various measures of human capital such as mortality rates, medical treatment, school enrollment, and literacy.

Gender disparity in South Asia may be the consequence of a confluence of factors, including gender discrimination,

Years of schooling and gender disparity, 2010



CA = Central Asia; EAP = East Asia and the Pacific; EE = Eastern Europe; IC = Industrial countries; LA = Latin America and the Caribbean; MENA = Middle East and North Africa; SA = South Asia; SSA = Sub-Saharan Africa.

Notes: The gender disparity index is defined as the ratio of female to male average years of schooling. Thus, if this index is less than one, then females are deemed to suffer deprivation due to the shortfall in their years of schooling relative to males. Income decile in the top panel is based on 2008 GDP per capita, purchasing power parity (constant 2005 international dollars).

Source: Son (2010).

[Click here for figure data](#)

cultural beliefs, biological differences, and economic conditions. A strong policy thrust is needed if gender discrimination and disparities in human capital are to be addressed within a reasonable amount of time.

Source

Son (2010).

Lee and Francisco (2010) estimate enrollment rates and project educational attainments by taking into account the likely changes in per capita income, parental education, and fertility rates over the next 2 decades for 12 developing Asian economies. Their projections show a rather modest increase in average years of schooling: 0.54 years. This is a significant deceleration from the 2.1-year increase that the countries registered between 1990 and 2010. In effect, without substantial policy interventions, developing Asia's deficit relative to the educational capital stocks of industrial economies will remain quite large as far into the future as 2030.

Numerous cross-country empirical studies have established the positive correlation between human capital, on the one hand, and output and economic growth, on the other. Most recently, Barro and Lee (2010) find that schooling has a significant positive effect on output. Barro (1991) found that primary and secondary school enrollment rates were positively linked to economic growth and investment, but were negatively related to fertility rates. In the same vein, Hanushek and Woessmann (2009) obtain the result that a unit increase in a country's average cognitive test scores in math and science increases per capita GDP growth by more than the unit increase in its average total cognitive test scores (which includes reading). Generally, education is significantly and positively correlated with economic growth, and that causation runs from education to growth in line with human capital growth models.

Did lower illiteracy rates and higher primary and secondary schooling rates in developing Asia enhance the region's technology absorptive capacity? A simple scatter plot of initial human capital levels and subsequent total factor productivity (TFP) growth over the period between 1970 and 2005 addresses this issue (Figure 2.3.4). The raw correlation between these two variables is positive, suggesting that economies with larger initial human capital stocks tended to exhibit higher TFP growth.

The capacity to adopt technology is vital for countries that are technologically behind. Benhabib and Spiegel (1994) maintain that the more technologically behind a country is, the greater technology spillovers are likely to be. Hence, if the level of human capital stock is positively correlated with the rate of adoption of new technology, a country with a large

Figure 1.1: Education levels of young populations, 1970-2010

The figure consists of two stacked bar charts showing the percentage of the total young population by education level (No schooling, Primary, Secondary, Tertiary) for various regions and the world average in 1970 and 2010.

Top Chart: Global and Regional Trends

Region/Category	Year	No schooling	Primary	Secondary	Tertiary
Developing Asia	1970	~25%	~35%	~30%	~10%
	2010	~5%	~25%	~55%	~15%
Advanced economies	1970	~2%	~35%	~55%	~8%
	2010	~2%	~25%	~55%	~18%
Rest of the world	1970	~25%	~35%	~30%	~10%
	2010	~15%	~25%	~45%	~15%
World	1970	~25%	~35%	~30%	~10%
	2010	~10%	~25%	~55%	~10%

Bottom Chart: Regional Trends

Region	Year	No schooling	Primary	Secondary	Tertiary
Central Asia	1970	~10%	~25%	~55%	~10%
	2010	~5%	~20%	~55%	~20%
East Asia	1970	~5%	~35%	~50%	~10%
	2010	~5%	~15%	~55%	~25%
South Asia	1970	~75%	~15%	~10%	~0%
	2010	~10%	~25%	~55%	~10%
Southeast Asia	1970	~25%	~35%	~30%	~10%
	2010	~15%	~25%	~45%	~15%
The Pacific	1970	~25%	~35%	~30%	~10%
	2010	~10%	~25%	~55%	~10%

[Click here for figure data](#)

Average annual TFP growth (%), 1970–2005

Log years of schooling (1970)

Legend: ■ Developing Asia, ● Rest of the world

Labeled countries: NEP, AFG, PNG, IND, BAN, PAK, INTH, VIE, PRC, MLD, ARM, TON, MAL, PHL, FIJ, CAM, MON, BRU.

Source: ADB calculations based on data from Barro and Lee (2010) and Park (2010).

technology gap but with a large stock of human capital as well would be able to achieve more rapid growth than a comparator country that is not similarly endowed in human resources.

Some economies in developing Asia have in fact benefited from technological spillover effects over the past few decades. The PRC and Thailand, for instance, were far behind the US in TFP in 1970 (Figure 2.3.5). But productivity in both countries grew impressively since, reaching an average TFP growth of above 2%. More to the point, economies with more educated workforces in 1970 (including Hong Kong, China; Malaysia; and Taipei, China) registered rapid productivity growth between 1970 and 2005, conditional on their distance to the technological frontier, in effect confirming the Benhabib–Spiegel hypothesis.

On the other hand, a counterexample was the Philippines. Endowed with a relatively well-educated labor stock in 1970, the country did not perform particularly well in productivity growth. Son (2008) explains that this may be due to mismatches between skills learned in school and labor market requirements (Box 2.3.2).

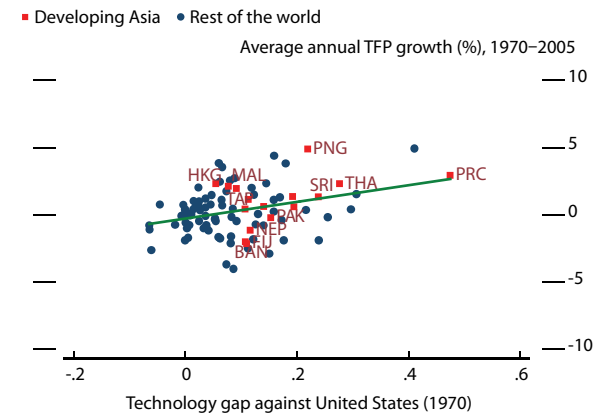
Low-income growth stagnation

Examples of the converse proposition, that a low stock of human capital is associated with economic stagnation, are Bangladesh, Nepal, and Pakistan. With their populations having less than 2 years of schooling in 1970, these countries saw their TFP levels worsen between 1970 and 2005.

One interpretation of the common experience of these countries is that a critical level of education is required for technology diffusion to take place. Benhabib and Spiegel (2005), for example, argue that the diffusion process depends on barriers to imitation (such as that posed by workers with low levels of schooling). In this light, Bowman and Anderson (1963) hypothesize that a literacy rate of 30%–40% is a precondition for rapid growth. Below this critical level of human capital stock, technological diffusion does not occur. The effect then is that the country falls in a steady state of a poverty trap without economic growth. This seems to be the case for some countries in South Asia. While population with no schooling declined significantly over the last 4 decades, those with no schooling was as high as 80% of the young population in Pakistan and 66% in India in 1970.

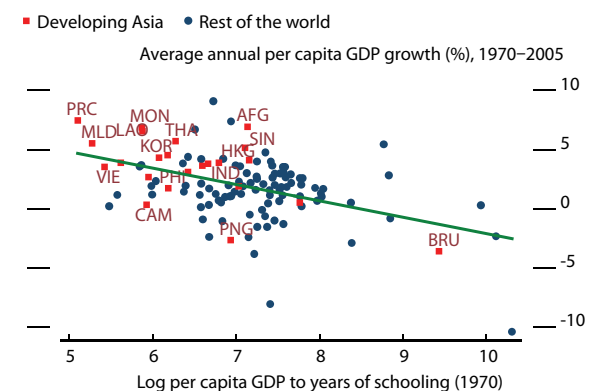
Figure 2.3.6 plots average annual growth rate of per capita GDP from 1970 to 2005 against a measure of relative human capital in 1970, the ratio of per capita GDP to education attainment. The key observation is that no data points appear in the upper right-hand side of the chart, a finding that is consistent with a weaker form of the threshold hypothesis argued above: No country was able to grow quickly during the sample period without the benefit of a highly qualified labor force. And all those that did grow quickly (the PRC, the Lao PDR, Maldives, Mongolia, and Viet Nam) in developing Asia

2.3.5 Technology gap against the United States and subsequent TFP growth, selected economies



Notes: For full form of acronyms, see Figure 2.3.4. Data cover 98 economies.
Source: Park (2010).

2.3.6 Per capita GDP growth and human capital, selected economies



Notes: For full form of acronyms, see Figure 2.3.4. Data cover 125 economies.
Source: ADB calculations based on data from Barro and Lee (2010) and Heston Summers and B. Aten, Penn World Table Version 6.3, Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania, August 2009.

2.3.2 Human capital and the labor market mismatch—The case of the Philippines

Skills learned in the educational system should be used by firms in the production of goods and services so that workers are paid wages commensurate with their productivity. Without this link, even educated workers will realize lower returns from their educational investment, and the economy will not reap the benefits of investment in education through higher productivity. Son (2008) observes the missing link for the Philippines, where the proportion of employed household members with secondary and tertiary education increased, while that with only primary education decreased over 1997–2003.

Son (2008) argues that this observation might be due to the structural shift in employment from agriculture to the service sector, especially among female workers. The service sector includes low-productivity jobs like housemaids and drivers as well as high-productivity jobs like lawyers and financial advisers. The same paper calculates that real labor productivity declined by 4.76% in 1997–2000, and by 1.42% in 2000–2003.

Concurrently, the real returns to education declined by 23.5% for secondary education—from P6.75 per hour in 1997 to P5.16 per hour in 2003—and by 16.3% for tertiary education—from P19.80 per hour in 1997 to P16.57 per hour in 2003. Therefore, workers with secondary or tertiary education were increasingly accepting low-productivity jobs, resulting in lower productivity and rates of return to education.

The above observations clearly show that the labor market in the Philippines is not able to effectively utilize the country's increasingly educated workforce. Despite having a greater proportion of workers with secondary or tertiary education, the average productivity of workers is on the decline. The labor market is not generating enough quality jobs for the educated workers, so workers end up taking up low-productivity jobs or looking for more

gainful employment overseas. The decrease in productivity may also indicate cream-skimming in the country's labor force, where workers with higher skill are able to find overseas employment while lower-skilled workers stay to work at home.

Either way, this indicates that the educational system is not teaching the skills needed by the country's labor market, either because of a mismatch between skills supplied and demanded or because of poor quality of education. Thus, educational attainment is not leading to high productivity in the Philippines, and therefore economic growth remains slow.

As also pointed out in *Asian Development Outlook 2008*, these labor market mismatches are a challenge for many other developing Asian economies, including Cambodia (Sakellariou 2008); Mongolia (Pastore 2009); the People's Republic of China (Li, Morgan, and Ding 2008); and Taipei, China (Hung 2008). Governments in developing Asia need to address the mismatches in order to accelerate productivity and sustain economic growth.

While each country's needs and conditions are different, education policy in general must be closely tied with labor and economic policy. If the country seeks to develop its information technology sector, then the quality of math and science education will need to be improved. Likewise, if a country needs to improve governance and institutions, then civics and history cannot be neglected in the curriculum. The educational system must not exist in a vacuum; rather, decisions on priorities, curricula, and budget allocation need to be made in line with medium- and long-term development plans.

Source

Son (2008).

possessed workforces that were exceptionally well-qualified, given the starting levels of their per capita incomes.

Figure 2.3.6 (above) also displays a “frontier” of economic performance. On this frontier, or close to it, lie countries whose growth rates are the highest given their ratio of per capita GDP to education or, more generally, their development stage. Some economies, such as Hong Kong, China; Singapore; and Thailand, have data points that are close to the frontier. But quite a number in developing Asia, such as Cambodia, Papua New Guinea, and the Philippines, are a good distance below it. In effect, the GDP of these latter countries have been expanding much more slowly than the qualifications of their working populations warrant. Some countries are apparent laggards in the sense that their workers' average educational outcomes have not reached the critical threshold to enable them to reap the growth benefits of increases in the stock of

human capital. Others, such as the Philippines, which have already high stocks of human capital, seem to be suffering from other factors, such as noncompetitive markets and/or technology–skill mismatches.

Extent of need for higher education

There are two sources of technological progress—adoption and creation of new technologies. These two sources require different types of human capital. Low-skilled human capital is better suited to technology adoption, while high-skilled human capital is more apt for technology creation. The appropriate composition of human capital for economic growth and the impacts of each type of human capital on growth therefore depend on a country's development stage, which may be proxied by its distance from the technological frontier, as argued by Krueger and Lindahl (2001), among others.

Using data on 19 countries in the Organisation for Economic Co-operation and Development (OECD) between 1960 and 2000, Vandenbussche, Aghion, and Meghir (2006) empirically show that, as a country moves closer to the technology frontier, tertiary education becomes increasingly more important for growth than primary and secondary education, and that the effect of high-skilled human capital on growth becomes stronger in countries that are closer to the technology frontier.

Similarly, Acemoglu, Aghion, and Zilibotti (2006) show that, as a country's distance to the technological frontier narrows, technology creation, more competitive market policies, and the supply of skilled entrepreneurs become more important for growth. In particular, a noncompetitive environment created by the state intervention, long-term relationships between firms and banks, and/or lobbying need to be minimized to increase productivity. They warn that when markets are persistently protected, an economy can get stuck in a nonconvergence trap.

Basic literacy skills and “rocket scientists”

An important policy question concerns whether education resources ought to be concentrated on gifted students or spread out more uniformly to achieve universal basic education. On the one hand, allocating more resources toward developing the skills of high-aptitude students can provide an economy with a pool of highly skilled professionals and scientists, and increase the likelihood of generating technological innovations. The downside is that a greater proportion of the workforce would be poorly educated and unskilled, rendering them incapable of working with existing technologies.

On the other hand, spreading basic education resources uniformly can generate a workforce with the requisite basic technical skills. But this lowers the likelihood of generating growth-spurring technological innovations. In graphic terms, the question may be cast as follows: Should a country devote significant resources to developing an elite group of “rocket scientists,” or should these resources be used instead to teach basic skills to all students?

Hanushek and Woessman (2009) find that both “rocket scientists” and “basic-skills students” contribute positively to growth, although

the former have a much stronger impact. Moreover, the impact of the share of “rocket scientists” is significantly stronger for countries that have a long way to catch up with developed countries. Thus, developing countries with a high share of “rocket scientists” but with low initial GDP per capita are able to catch up faster with the industrial economies. Nonetheless, investment in human capital cannot be exclusively allocated for the development of rocket scientists: The same study finds that a country needs to have both an elite pool of “rocket scientists” to generate technological innovations as well as a workforce with basic literacy skills that can use these technologies in production.

Summary

Developing Asia has achieved much in improving educational outcomes over the last 4 decades. Its remarkable progress has been due mainly to increases in average years of schooling at the primary and secondary levels, which account for almost 90% of the overall increase in average schooling years. The gap in the human capital stocks of the industrial economies and developing Asia, however, remains wide. Estimates of time to convergence indicate that developing Asia’s educational capital will remain lower than those of advanced countries well into the future, unless substantial investment is made to buck the decelerating rate of growth of the human capital stock.

Human capital accumulation enhances the capacities of countries to absorb or create technology (or both). As a country’s distance to the technology frontier narrows, technology creation, more competitive market policies, and the supply of skilled human capital become more important. Correspondingly, tertiary education becomes more important for growth than primary and secondary education. Countries well below the technological frontier, however, have to surmount a critical threshold of human capital stock so as to avoid falling into a poverty trap. For these countries, reducing illiteracy rates and increasing average years of schooling are of paramount importance.

Still, simply increasing a country’s stock of human capital may not automatically translate into higher rates of economic growth. For human capital investment to be effective, the education reform agenda has to take cognizance of the standards and skill sets required by the labor market, and by the pattern of education required for the level of the country’s infrastructure.

Infrastructure in economic growth

Infrastructure's impact on economic growth

The traditional perspective is that, being a component of physical capital, infrastructure affects economic growth through factor accumulation. Moreover, this infrastructure-growth nexus is bolstered by the stylized fact that differences in firm productivity across countries and regions are due, in part, to variations in the availability and quality of infrastructure services.¹²

But the link between the infrastructure and economic growth or at least between infrastructure quality and productivity is not clear from the data. Whether the availability and the quality of infrastructure stocks exert positive effects on economic growth and productivity is, therefore, still subject to debate (Box 2.4.1).

Still behind the advanced economies

While some developing Asian countries have far better infrastructure than others, overall, the region remains below the world average in terms of both quantity and quality. Quality of infrastructure and access to infrastructure services are also uneven across subregions and countries. Except for five relatively advanced economies—Hong Kong, China; the Republic of Korea; Malaysia; Singapore; and Taipei, China (the Asia-5)—the quality of infrastructure in developing Asia lags behind that of the industrial economies (Figure 2.4.1).

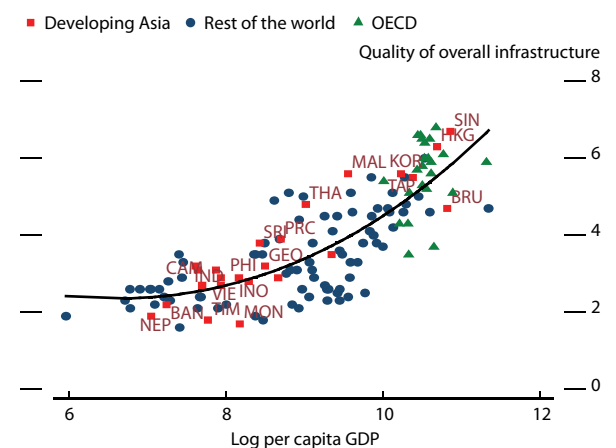
Aggregate measures of infrastructure stock are not systematically available. A survey conducted by the World Economic Forum (WEF 2009) of over 130 economies, however, suggests that, in general, the perceived quality of infrastructure stocks for 25 Asian economies considerably improved in the previous 4 years. In particular, significant upgrades in the quality of transport, telephony, and energy infrastructures were reported for Cambodia, Georgia, and Sri Lanka.

But the survey results also turned up certain issues of concern. For instance, some countries, such as Bangladesh and Mongolia, registered declines in overall infrastructure quality over reference period of the survey, even though, given these countries' low levels of infrastructure stocks, there should have been nowhere to go but up (Figure 2.4.2).

Another worrisome finding was that close to half of the surveyed economies reported a worsening in the quality of electricity supply since 2005. The situation appeared to be particularly severe in some South Asian economies including Bangladesh, Nepal, and Pakistan.

A closer look at different types of infrastructure capital over a longer period reveals a similar trend—growth that is robust but uneven across

2.4.1 Quality of overall infrastructure and GDP per capita, selected economies, 2008



Notes: For full form of acronyms, see Figure 2.3.4. Per capita GDP is based on purchasing-power-parity (PPP) in current international dollars. Quality of overall infrastructure refers to assessments of the quality of general infrastructure (e.g., transport, telephony, and energy) in an economy. 1 indicates extremely underdeveloped while 7 indicates extensive and efficient by international standards. Data cover 132 economies.

Source: ADB calculations based on data from World Economic Forum (2009) and International Monetary Fund, World Economic Outlook database (April 2010).

2.4.1 Impact of infrastructure stock on economic growth in developing Asia

The literature explores the infrastructure–growth nexus from both micro and macro perspectives. On the micro side, firm-level surveys on the investment climate provide indications of the extent to which infrastructure deficiencies constitute barriers to entrepreneurial development. For example, the World Bank's Enterprise Surveys suggest that a large proportion of respondents (between 20% in East Asia and the Pacific and 55% in the Middle East, North Africa, and Latin America) view the state of electricity, telecommunications, or transport networks as a major or severe obstacle to doing business (<http://www.enterprisesurveys.org/>).

In Asia, electricity supply is considered a major constraint by, for example, 78% of surveyed firms in Bangladesh, 76% in Nepal, 75% in Pakistan, 68% in Afghanistan, 61% in Timor-Leste, 44% in Samoa, 32% in India, and 30% in the People's Republic of China (PRC). For transport, high proportions of firms that find it a major problem are found in Nepal (33%), Afghanistan (30%), Samoa (29%), and Thailand (21%). These findings highlight the importance of both availability and quality of infrastructure in promoting economic growth.

On the macro side, the literature uses growth regressions, augmented by measures of infrastructure capital. Previous studies, however, provide mixed evidence—at least for East Asia. Using a panel dataset consisting of 16 East Asian economies with time periods grouped into 5-year intervals, Seethepalli, Bramati, and Veredas (2008) find a positive growth effect for all dimensions of infrastructure stocks (including telecommunications, electricity, roads, water and sanitation).

They also conclude that these significant effects vary with country-level characteristics. For example, telecommunications and sanitation are found to have a greater effect in economies with better governance, higher income levels, and low inequality in access to infrastructure.

In contrast, Straub, Vellutini, and Warlters (2008) obtain much weaker results, based on a sample of 93 developing or emerging economies, which include 16 East Asian economies. Although they find that the number

of phone lines has a positive effect on growth and obtain some evidence of an above average effect for East Asia and high-income economies, most of their results are not robust to the different estimation methodologies used in the study. Straub, Vellutini, and Warlters (2008) also perform a growth accounting exercise on five East Asian economies and find few significant results. Telecommunications investment contributes to total factor productivity (TFP) growth more than other types of capital in Indonesia and the Philippines, while roads have a positive influence on TFP growth only in Thailand.

Straub and Terada-Hagiwara (forthcoming) revisit the macro approach and extend the analysis in Straub, Vellutini, and Warlters (2008) by including more economies in the analysis and specifying interactions between infrastructure stocks and several subgroups of Asian economies.

This later sample covers the period 1971–2006 and consists of 102 developing or emerging economies, of which 16 (the PRC; Fiji Islands; Hong Kong, China; Indonesia; the Republic of Korea; the Lao PDR; Malaysia; Mongolia; Myanmar; Papua New Guinea; the Philippines; Singapore; Thailand; Tonga; Vanuatu; and Viet Nam) belong to the East Asian and Pacific subregions and five (Bhutan, India, Nepal, Pakistan, Sri Lanka) to the South Asian subregion.

Specifically, Straub and Terada-Hagiwara (forthcoming) explore the effects of physical infrastructure indicators for energy, telecommunications, transport, and water supply on the growth of per capita GDP, while controlling for standard growth regression explanatory variables, such as initial per capita GDP (to take account of the conditional convergence hypothesis) and education and investment variables. They find that each of the four sets of the infrastructure indicators is a positive correlate of per capita GDP growth for economies in East Asia and the Pacific and South Asia.

Their findings, therefore, highlight the need for further investment in infrastructure to promote growth in Asia.

Source

Straub and Terada-Hagiwara (forthcoming).

countries and subregions. Electricity-generating capacity in developing Asia grew by 4.4% annually (Figure 2.4.3) and more than doubled between 1990 and 2007. In particular, some lower-income countries, such as Cambodia, PRC, and Viet Nam, recorded robust expansions in generating capacity in the 2000s. But countries in Central Asia showed only marginal growth, if not contractions. Even for the Asia-5, capacity growth slowed by 2000, as the economies of these high performers matured.

Expansions in other infrastructure stocks, as in telecommunications or the number of internet connections, have also been significant. The proportion of internet users in the population more than tripled, from five users per 100 persons in 2000 to 17 users per 100 persons by 2008 (Figure 2.4.4). Growth in this area, however, is largely due to the Asia-5, and the current level lags far behind that of the Latin American economies, for example, where 28 out of every 100 people had access to the internet in 2008, a level comparable to the world average.

The share of paved roads (as a share of all roads) increased from less than half in 1990 to almost 71% by 2006 (Figure 2.4.5). But again the country estimates are quite dispersed. In Bangladesh, Cambodia, Mongolia, and Papua New Guinea, the roads are hardly paved; in Armenia; Hong Kong, China; Kazakhstan; and Singapore, almost all roads are.

The all-important question, however, is: Are these infrastructure developments sufficient to improve productivity? WEF (2009) finds that the inadequate supply of infrastructure is a problem for doing business in countries such as Bangladesh, Nepal, and Viet Nam. Despite recent improvements, the overall infrastructure quality in these economies remains limited, and it is unlikely that the low levels of infrastructure stocks are able to enhance productivity there.

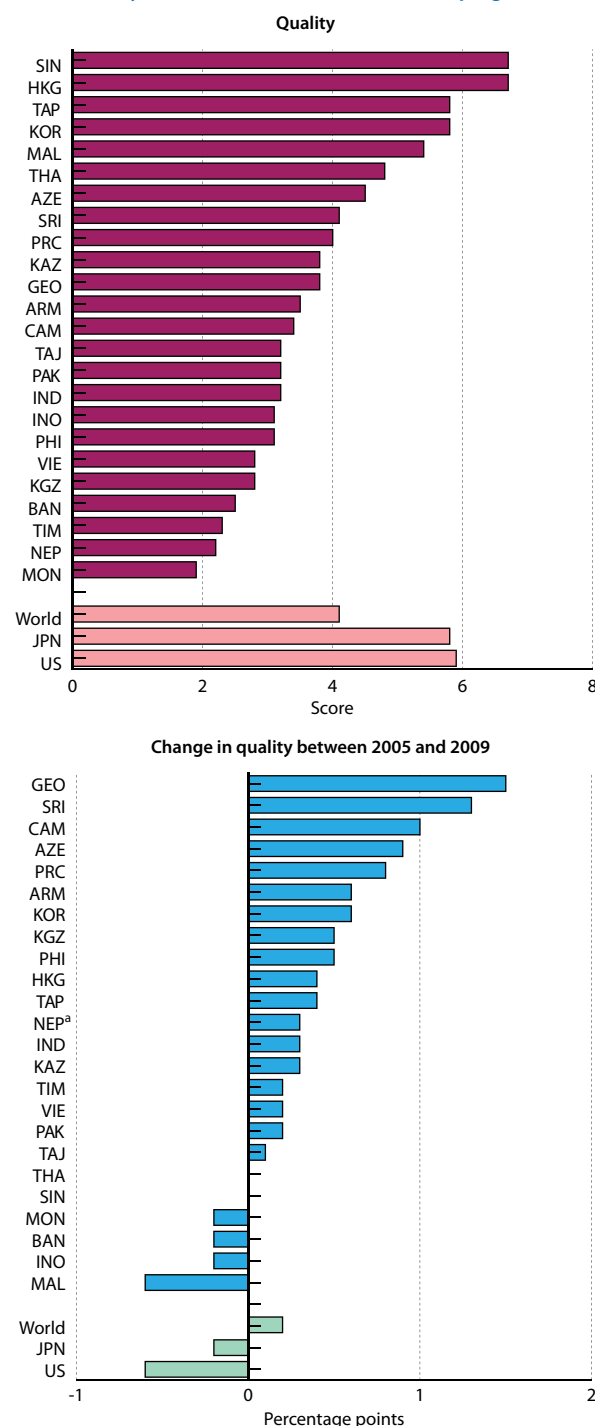
Rising infrastructure demand in cities

Except for Hong Kong, China; the Republic of Korea; and Singapore, where more than 80% of the population live in urban areas, the majority of people in developing Asia still reside in rural areas. The population share of a country's urban residents, however, tends to be highly correlated with its level of income (Bloom et al. 2008). As countries in developing Asia have been growing rapidly, the fraction of people living in urban areas has correspondingly risen significantly (Figure 2.4.6). The share of the urban population in developing Asia went from 17.5% in 1960 to 33.8% in 2000, and it is expected to be 51.7% in 2030.¹³

Urban areas provide markets for output, inputs, labor, and other services, and they allow firms to profit from economies of scale and scope, specialization, and rapid diffusion of knowledge and innovation. Moreover, there is strong evidence that workers in urban areas are individually more productive and earn more than rural workers.

Rapid urbanization, however, tends to be associated with overcrowding, environmental degradation, and other impediments to productivity. In order to keep cities in developing Asia competitive, investment in infrastructure will need to be designed to take account of these problems.

2.4.2 Quality of overall infrastructure, developing Asia



^a Between 2006 and 2009.

Note: For full form of acronyms, see Figure 2.3.4. For the definition of quality of overall infrastructure, see Figure 2.4.1.

Source: World Economic Forum (2005, 2006, 2009).

[Click here for figure data](#)

Needs of the rural poor

While developing Asia is rapidly urbanizing, the majority of people (62% or 2.3 billion in 2008) still live in rural areas. Moreover, poverty in developing Asia is overwhelmingly rural, and rural–urban disparities—in incomes and access to services—provoke political outcries, but also legitimate demands for inclusion in economic development.

In rural areas, poverty tends to be associated with poor access to infrastructure services. The generally poor condition of rural roads, for instance, restricts the mobility of entire communities both within and between towns. Lack of readily available and reliable supplies of potable water increases health risks as well as the time and travel costs of transporting such supplies.

A telling statistic is that, in 2006, 90% of the urban population in developing Asia had improved drinking water sources, while only 68% of the rural population enjoyed the same service. Moreover, the urban–rural gap was particularly significant in the Lao PDR, Mongolia, Papua New Guinea, and Vanuatu.

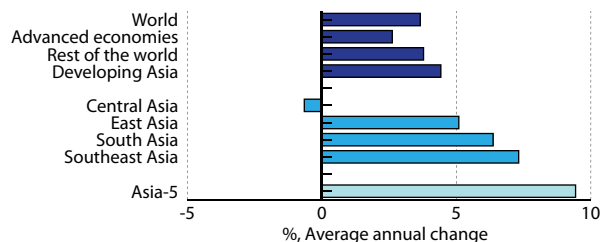
Institutional and financing requirements

Many parts of Asia—inland and remote areas, landlocked countries, distant islands—are isolated economically and geographically. Hence, connecting them through regional infrastructures, such as communication networks and trans-Asian transport systems (such as highways, railroad systems, sea and air links), can potentially bring enormous economic benefits. Studies of the economic impacts of such infrastructure, however, are rare, although a few do show that the benefits, which often pass through various channels, are large particularly in the long run; tend to be widely distributed; facilitative in nature; and often help the poor.

Of particular importance is the effect of regional connectivity on regional trade costs, income, and consumption. Warr, Menon, and Yusuf (2010) analyzed the regional economic impact of the Second Mekong International Bridge between Mukdahan Province in Thailand and Savannakhet Province in the Lao PDR. They showed that transport costs between the two countries fell, which in turn increased trade volumes and real consumption levels in both. Menon and Warr (2008), through a multi-household general equilibrium modeling approach, showed that rural road improvement in the Lao PDR also reduced poverty incidence.

But while regional infrastructure projects are expected to bring big economic and welfare gains in the long run, possible negative effects, such as traffic and other congestions, displacements of people, asymmetric distribution of costs and benefits, and environmental damage, have to be recognized. To mitigate these negative consequences and to make

2.4.3 Growth in electricity production, 1970–2007

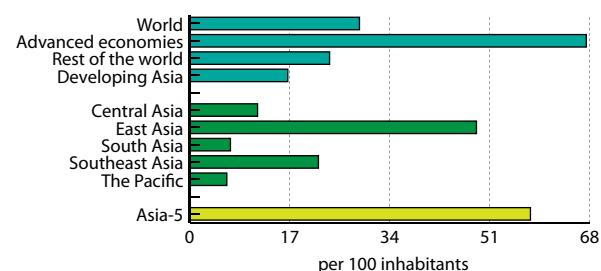


Note: Asia-5 comprises Hong Kong, China; Rep. of Korea; Malaysia; Singapore; and Taipei, China.

Source: ADB calculations based on data from World Bank. World Development Indicators online database (accessed 19 August 2010).

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2.4.4 Internet usage, 2008

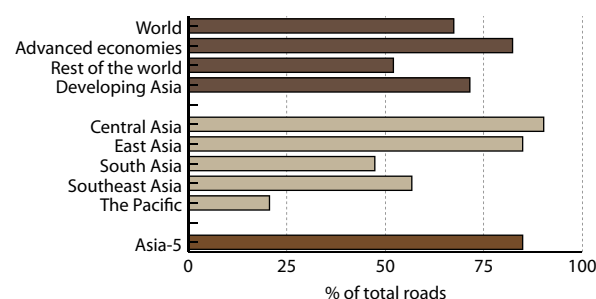


Note: Asia-5 comprises Hong Kong, China; Rep. of Korea; Malaysia; Singapore; and Taipei, China.

Source: ADB calculations based on data from World Bank. World Development Indicators online database (accessed 19 August 2010).

[Click here for figure data](#)

2.4.5 Paved roads, 2006



Notes: Asia-5 comprises Hong Kong, China; Rep. of Korea; Malaysia; Singapore; and Taipei, China. Data for the Pacific pertain to share in 2000. Paved roads are those surfaced with crushed stone and hydrocarbon binder or bituminized agents, with concrete, or with cobblestones, as a percentage of all the country's roads, measured in length.

Source: ADB calculations based on data from World Bank. World Development Indicators online database (accessed 19 August 2010).

[Click here for figure data](#)

2.4.2 Alternative financing for infrastructure investment: Making public–private partnerships work

Infrastructure investment tends to be large and lumpy, with long implementation periods and relatively low direct financial revenue (especially when the infrastructure is a public good). It also tends to be associated with sovereign risks that create uncertainties about future costs and revenue streams.

Given such characteristics, Brooks and Zhai (2008) and ADB and ADBI (2009) argue that the public sector has to play a dominant role in developing and funding infrastructure. Governments, however, may not have the fiscal capacity to fund infrastructure projects. Consequently, public–private partnerships (PPPs) and foreign direct investment may be needed to supplement the public spending.

Weaknesses in legal, regulatory, and institutional frameworks, however, can be stumbling blocks to broader private participation in infrastructure. Brooks and Zhai (2008), for instance, report that private sector involvement in the People's Republic of China and India

is still in its nascent stage, and they argue that this may be because of institutional impediments.

Sanghi, Sundakov, and Hankinson (2007) identify common institutional problems, which they call “government failures”—poor procurement incentives, lack of coordination and skill in managing PPP programs, high transaction costs, and lack of information. They argue that establishing a PPP unit in the government may help to address these failures.

Designed to promote or improve PPPs, a PPP unit has to have a lasting mandate to manage multiple PPP transactions, often in multiple sectors. The unit has to be able to provide services that a government needs if it is to manage PPPs, offer value for money as measured against public provision of the service, and comply with general standards of good governance. International experience suggests that the unit needs to be strongly endorsed by its government and have the capability to identify government failures and correct them.

infrastructures more environmentally friendly, infrastructure projects need to have well-designed plans. Moreover, an institutional framework is needed to foster better coordination and cooperation among as well as strong commitments from development partners.

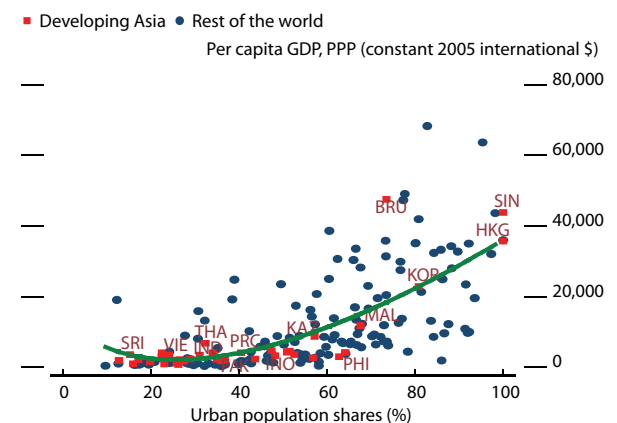
Considering these factors and given the current level of infrastructure stock, developing Asia's overall national infrastructure investment needs between 2010 and 2020 may amount to \$8 trillion for both new capacity and maintaining and replacing existing infrastructure (ADB and ADBI 2009). The needs vary across economies, yet they are well beyond the financing capacity of many governments in the region, and hence often require facilitating arrangements (Box 2.4.2).

Summary

Infrastructure stocks in developing Asia have been increasing at a significant pace. Their levels, however, remain well below world averages in terms of both quality and quantity. Since recent empirical evidence suggests that infrastructure stocks have positive impacts on economic growth, massive investment is needed to promote economic growth, but these may well be beyond the financing capacities of many governments. Facilitating arrangements with donor organizations may therefore be required.

The provision of infrastructure services is failing to keep up with the challenges posed by rapid urbanization. To keep cities in developing Asia competitive, investment in infrastructure has to be designed to take account of congestion, environmental degradation,

2.4.6 Urbanization and income per capita, selected economies, 2005



and other impediments to productivity that are associated with urban agglomeration.

Urban–rural disparities in infrastructure services detract from the inclusiveness of growth. Improving access to basic infrastructure services, such as the provision of potable water and sanitation, in rural areas is crucial for poverty reduction. Though physical infrastructure may be low, the recent global financial crisis suggests that developing Asia is somewhat better placed in terms of its financial infrastructure.

Financial development and economic growth

Importance of financial development

Financial systems in developing Asia remain far below industrial-country standards and lag substantially behind its dynamic real sectors, in particular manufacturing, which is world class in many parts. This explains why much of the region's huge pool of saving is intermediated by more advanced financial systems outside the region. Crucial for developing Asia's future growth, however, will be to allocate those savings to their most efficient and productivity-improving uses in the region. Thus, for developing Asia, financial development means the establishment of sounder and more efficient banks, equity markets, and bond markets.

As the global financial crisis highlighted, financial innovation that runs ahead of regulation can generate instability both for the financial system itself and the real economy. Serendipitously, the relative lack of financial sophistication of banks in developing Asia limited their exposure to subprime assets and protected them from the worst aspects of the global financial crisis.

But then, as the Asian crisis underscored, financial underdevelopment can have large costs as well. That crisis was ultimately the consequence of a gradual deterioration in the quality of investment which, in turn, resulted from large capital inflows into underdeveloped financial systems that could not allocate them efficiently. For a region that had grown rapidly on the back of high investment rates, the Asian crisis served as a reminder that the quality of investment matters.

Developing Asia has made significant strides in building more robust and efficient financial systems as a result of extensive post-Asian crisis reform and restructuring. In particular, the health and performance of Asia's commercial banks, which continue to play a dominant role in Asian financial systems, have improved markedly. This is reflected in their lower incidence of nonperforming loans, higher capital-adequacy ratios, and more competitive rates of return compared to precrisis levels.

Asian banks have also moved into new business areas such as investment banking, consumer lending, and real estate, in addition to providing a wider range of new financial products and services. Furthermore, prudential supervision and regulation have been strengthened and are more forward looking and risk based.

Equity markets have also rapidly developed, as have bond markets though to a less significant extent. A more diverse financial system is more robust and resilient to adverse shocks. Equally important, vibrant capital markets are the primary source of long-term capital for financing long-term investment needs.

The fundamental reason that sound financial systems, which efficiently channel capital to its most productive uses, are pivotal to

sustaining growth beyond the recent crisis is this: developing Asia needs healthy investment for strong future growth. In the past, when the region was a low-income, capital-scarce region, the primary contribution of the financial system to economic growth was to mobilize large pools of saving to augment investment and capital stocks.

But rapid growth is transforming developing Asia into an increasingly middle-income, capital-abundant region. As noted earlier, this implies that productivity improvements are becoming increasingly important for growth. As such, the primary role of the financial system in the region's growth will evolve from mobilizing saving and boosting the quantity of investment to fostering productivity growth by enhancing the efficiency of investment.

Such a role requires deeper, broader, and more liquid financial systems, which move the region closer toward the frontier of global finance. Financial development can promote not only static efficiency, which leads to a more efficient allocation of resources, but also dynamic efficiency. By facilitating entry of new producers into the market, improved financial access stimulates a competitive environment which is conducive for productivity growth. In particular, expanding financial access to SMEs and would-be entrepreneurs is vital for dynamic efficiency in which new products, services, and industries bring about structural change and deliver large welfare gains over time.

Nevertheless, the trajectory of financial development will inevitably be country-specific, given the heterogeneity of development levels within the region. While some elements of a robust and efficient financial system, such as sound prudential regulation and supervision, are relevant for all countries, other elements, such as well-functioning corporate bond markets, are more relevant for the more developed countries.

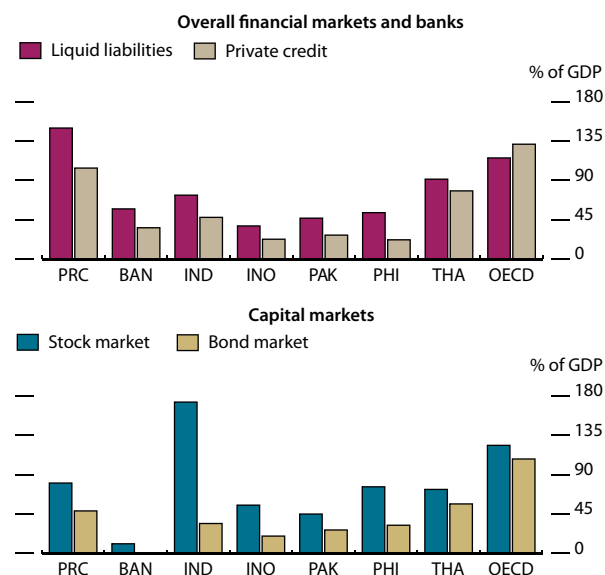
Growth from financial development?

At a broad level, the literature on the relationship between financial development and growth explores two channels of impact. The first is the *depth* of the financial system, as measured by indicators such as the ratio of total liquid liabilities to GDP, the ratio of bank credit to GDP, or the ratio of stock market capitalization to GDP. The second is the *structure* of the financial system, as measured by indicators such as the ratio of bank credit to stock market capitalization.

According to a comprehensive review of the empirical literature by Demirgüç-Kunt and Levine (2008), on balance the empirical evidence indicates that financial depth has a significant positive effect on growth whereas the financial structure does not have any appreciable effect on growth. They also find that countries with capital-market-based financial systems do not perform better than those with bank-based systems (refuting the claim that a shift from banks to capital markets is evidence of financial development).

The dominant strand of the empirical literature on the finance–growth nexus, pioneered by King and Levine (1993), seeks to explain

2.5.1 Financial depth, selected Asian and OECD countries, 2008



PRC = People's Rep. of China; BAN = Bangladesh; IND = India; INO = Indonesia; PAK = Pakistan; PHI = Philippines; THA = Thailand; OECD = Organisation for Economic Co-operation and Development.

Notes: Data on stock market and bond market refer to total market capitalization. OECD comprises high-income OECD countries but excludes Rep. of Korea, Poland, and Slovenia.

Sources: ADB calculations; Beck, Demirgüç-Kunt, and Levine (2010); CEIC Data Company (accessed 30 June 2010).

[Click here for figure data](#)

economic growth in a cross-section of countries with financial depth indicators and standard nonfinancial determinants of growth, such as initial income level and education. This strand involves growth regressions that use either cross-country data for a single time period or panel data that looks across countries and multiple time periods.

Using data for 77 countries over the period 1960–1989, King and Levine find a statistically significant positive relationship between financial depth, measured by liquid liabilities of the financial system, and three measures of growth—real per capita GDP growth, real per capita capital stock growth, and total productivity growth. Levine and Zervos (1998) find that both bank development and stock market activity have a positive effect on growth. Using panel econometric techniques to address potential biases, Levine, Loayza, and Beck (2000) and Beck and Levine (2004) re-confirm a significant and positive effect of finance on growth.

Regardless of the econometric techniques and dataset employed, the balance of evidence indicates a positive relationship between finance and growth, with a caveat on the inadequacy of the traditional indicators (such as the ratio of bank credit to GDP) of financial depth. These indicators are at best highly imperfect measures of how well the financial system performs the five specific growth-promoting core functions mentioned above.

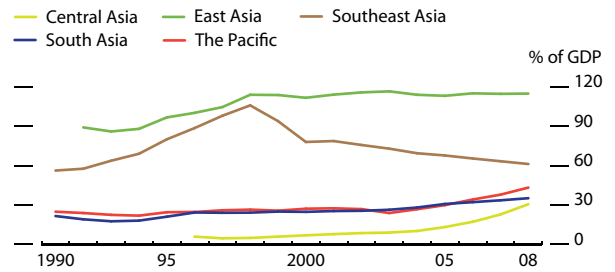
State of Asia's financial development

As said, developing Asia's financial systems substantially lag behind its dynamic real economies, despite much progress in recent years. As shown in Figure 2.5.1, it also remains financially underdeveloped relative to the industrial economies. The figure compares financial development—as measured by total liquid liabilities, bank credit, stock market capitalization, and bond market capitalization—of some major developing Asian countries with that of high-income OECD countries.

In particular, the region's bond markets are the least developed. Only recently have they expanded rapidly, and this rise stems from official measures to develop local currency bond markets, including regional efforts such as the Asian Bond Markets Initiatives and the Asian Bond Funds.¹⁴

An increase in financial depth (the size of the financial system relative to GDP) is usually viewed as evidence of financial development. Financial breadth measures the relative importance of banks relative to capital markets—that is, equity and bond markets. A rising relative importance of capital markets would indicate that the financial system is becoming less dependent on banks and more diversified. Indicators for both depth and breadth are available for a large number of countries across several years in the Financial Development and Structure Database of Beck, Demirgüç-Kunt, and Levine (2010).

2.5.2 Private credit

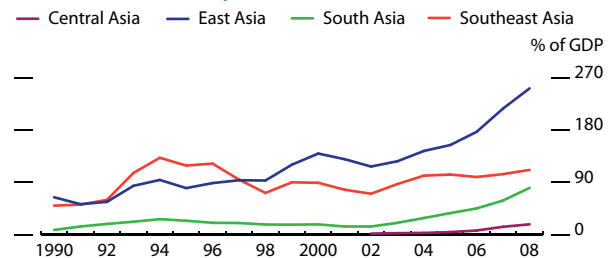


Notes: Central Asia consists of Armenia, Georgia, Kazakhstan, and Kyrgyz Republic. East Asia covers People's Rep. of China; Hong Kong, China; Rep. of Korea; and Taipei, China. Southeast Asia is made up of Indonesia, Malaysia, Philippines, Singapore, and Thailand. South Asia is composed of India, Pakistan, and Sri Lanka. The Pacific comprises Fiji Islands, Papua New Guinea, Samoa, Solomon Islands, and Tonga.

Source: ADB calculations based on data from Beck, Demirgüç-Kunt, and Levine (2010) and CEIC Data Company (accessed 30 June 2010).

[Click here for figure data](#)

2.5.3 Stock market capitalization

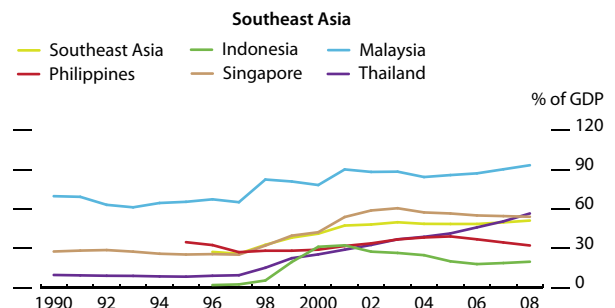
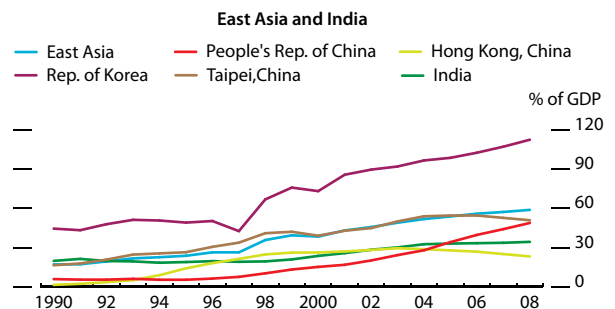


Note: See Figure 2.5.2.

Source: See Figure 2.5.2.

[Click here for figure data](#)

2.5.4 Bond market capitalization



Source: See Figure 2.5.1.

[Click here for figure data](#)

Figures 2.5.2, 2.5.3, and 2.5.4 (above) clearly show that developing Asia's aggregate financial depth in the region has increased since the 1990s. This deepening has been driven primarily by the expansion of capital markets, in particular equity markets. In contrast to the fast-growing capital markets, bank credit has remained subdued since the Asian crisis and this probably reflects, at least to some extent, a correction of precrisis excesses.

Alongside a deepening of its financial markets, the region has witnessed changes in its financial structure, as seen in the strengthening of capital markets relative to bank credit. Figure 2.5.5 indicates that, since the Asian crisis, the ratio of the total capital market to bank credit has increased for most countries in East Asia and Southeast Asia, as well as in India. While both equity and bond markets have improved across countries in the region, it is the growing equity markets that have largely contributed to the rising importance of capital markets relative to bank credit. Overall, therefore, the region appears to be moving toward a more broad-based financial system.

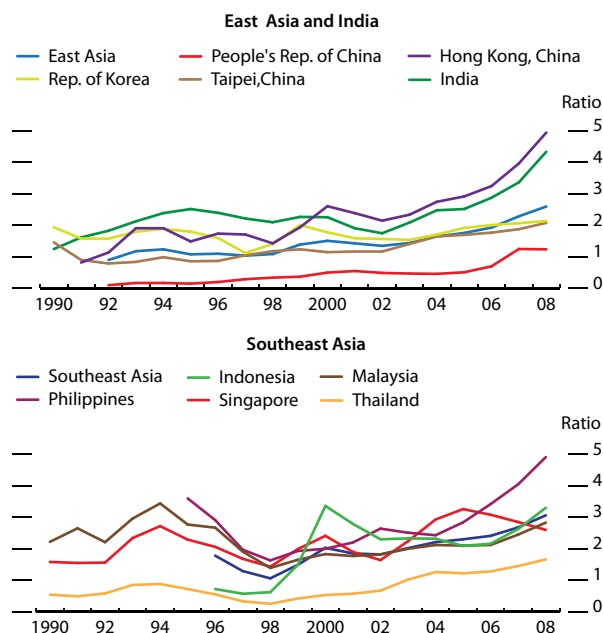
Beyond the issue of the establishment of a wider variety of financial institutions, is the question of access to those services. Broad access to financial services is important for at least two reasons. First, it may help to reduce poverty, since credit constraints prevent the poor or those with no collateral from engaging in profitable businesses. Second, it facilitates the entry of new and innovative firms that may be capital constrained, thereby fostering the creation and adoption of new technology (Beck, Demirgüç-Kunt, and Peria 2007).

Figure 2.5.6 shows that financial access, as measured by bank branches and automated teller machines per 100,000 people, varies widely across selected developing Asian countries. Overall, financial access in these countries lags behind high-income OECD countries. According to the World Bank's Enterprise Surveys, SMEs find access to financing more difficult compared to large firms in Indonesia, the Republic of Korea, Malaysia, Philippines, Thailand, and Viet Nam (World Bank 2008). Across countries, survey data also indicate that less than 20% of small firms surveyed use external finance, about half the rate of large firms (World Bank 2008).

Empirical analysis of the finance–growth relationship

Estrada, Park, and Ramayandi (forthcoming) explore the relationship between financial development, on the one hand, and economic growth and productivity improvements, on the other. They use a panel dataset that covers 116 economies, including 22 developing Asian economies, and has four nonoverlapping 5-year periods from 1987 to 2008. The study uses three indicators of financial development: total liquid liabilities relative to GDP, which measures the relative size of

2.5.5 Ratio of capital markets to private credit

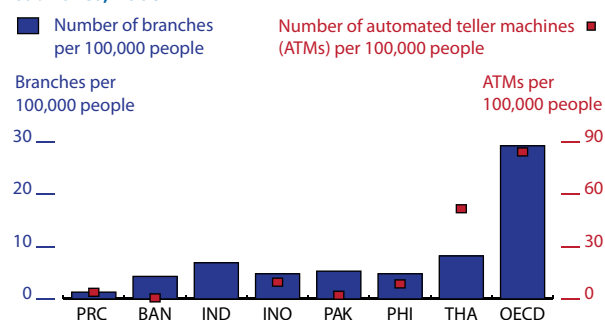


Note: Capital markets refer to the sum of stock market capitalization and bond market capitalization.

Source: See Figure 2.5.1.

[Click here for figure data](#)

2.5.6 Access to banking services, selected Asian and OECD countries, 2008



PRC = People's Rep. of China; BAN = Bangladesh; IND = India; INO = Indonesia; PAK = Pakistan; PHI = Philippines; THA = Thailand; OECD = Organisation for Economic Co-operation and Development.

Notes: Data for the PRC are based on Beck, Demirgüç-Kun, and Peria (2007). OECD comprises high-income OECD countries but excludes Rep. of Korea, Poland, and Slovenia.

Source: ADB estimates based on data from Beck, Demirgüç-Kun, and Peria (2007); International Monetary Fund. Financial Access online database. <http://www.imf.org>; and World Bank. World Development Indicators online database (both online databases accessed 31 August 2010).

[Click here for figure data](#)

overall financial depth; private credit by deposit money banks relative to GDP, which isolates the impact of the banking sector; and stock market capitalization relative to GDP, which gauges the relative size of the equity market in the economy.

In addition, some regression specifications used an indicator of financial openness, namely capital inflows relative to GDP, which measure the relative size of the total direct investment and portfolio investment in an economy. Following previous studies in this area, Estrada, Park, and Ramayandi also control for initial income, years of schooling, trade openness, inflation, government consumption, and the quality of governance.

Table 2.5.1 presents the results of baseline per capita GDP growth regressions in the study. All three financial-development indicators are found to have positive and significant effects on per capita GDP growth. Moreover, the estimates are robust across different specifications. Interestingly, liquid liabilities interacted with a developing Asia dummy variable turns out to be statistically significant. This implies that overall financial development has a bigger impact on growth in developing Asia than elsewhere.

In contrast to the foregoing results, the study finds no evidence that financial depth affects TFP growth. This suggests that the primary contribution of financial development is through mobilizing saving for investment rather than through fostering efficiency and innovation. In light of the fact that growth for the developing countries used in the estimates—which make up the majority of the sample—would have been driven mainly by factor accumulation, this result is plausible. An important caveat to this interpretation, though, is that the traditional indicators of financial depth used in the estimates may not adequately capture the mechanisms by which financial systems improve productivity—by, for example, addressing information asymmetry and reducing transaction costs.

As mentioned, some regression specifications in the study by Estrada, Park, and Ramayandi include an indicator of financial openness. While financial openness and financial development are separate concepts, financial openness may influence financial development. For example, the entry of world-class foreign banks forces domestic banks to become more competitive. On the downside, short-term capital inflows are a

2.5.1 Income and financial indicator regressions, 1987–2008

Dependent variable (real per capita GDP growth)	Financial indicator		
	Total liquid liabilities	Bank credit	Stock market capitalization
Financial indicator, % of GDP	2.036 <i>0.84**</i>	1.586 <i>0.66**</i>	1.233 <i>0.358***</i>
Financial indicator x developing Asia dummy	3.139 <i>1.413**</i>	0.893 <i>1.017</i>	-0.341 <i>0.372</i>
Observations	385	385	287
Number of countries	116	116	92
Adjusted R-squared	0.43	0.423	0.404

Robust standard errors in italics. *** significant at 1%; ** significant at 5%.

Note: Refer to Estrada, Park, and Ramayandi (forthcoming) for the full regression results, including results for the nonfinancial control variables.

Source: Estrada, Park, and Ramayandi (forthcoming).

major source of potential instability in the financial markets. For the real economy, foreign investment brings in new technology and skills, and forces domestic firms and industries to become more efficient.

Financial openness, according to the study, has a positive and significant effect on both per capita GDP growth and TFP growth. This may be because foreign investment, especially FDI, often brings in new technology and management techniques that boost the host economy's productivity and efficiency.

Notably, the inclusion of financial openness does not alter the basic thrust of the results for financial development, as the coefficient estimates for the financial development indicators are positive and significant for per capita GDP growth, but not for TFP growth. Therefore, the evidence indicates that both financial development and financial openness are beneficial for economic growth.

Summary

Developing Asia's financial systems have become more robust and efficient since the Asian crisis. That crisis exposed the high costs of financial underdevelopment. Commercial banks, which are still the backbone of the region's financial systems, strengthened their balance sheets and improved their performance. Furthermore, the rapid growth of capital markets—equity markets in particular—has created a more broad-based financial system.

But the region's financial systems still lag behind their counterparts in industrial economies and their own dynamic real economies. This matters because financial development has a positive effect on economic growth. More specifically, what matters for growth is the overall depth of financial development rather than the structure of the financial system.

Consequently, policy makers should prioritize their efforts on deepening the financial system as a whole, instead of achieving better balance between its different components. Therefore, the most effective institutions and policies for promoting financial development are those that have a positive influence on both banks and capital markets.

One highly influential and beneficial policy reform in developing Asia's financial sector in the post-Asian crisis period is that prudential regulation and supervision procedures have been significantly strengthened and have become more forward looking and risk based. They have also become more flexible. As a result, the region's banks and financial institutions have become better at managing risk.

A critical issue facing developing Asia's authorities overseeing these procedures in the wake of the global financial crisis is the extent to which they ought to allow the entry of new financial products, services, and technologies—essentially, the speed and scope of financial innovation. It is not financial innovation itself but rather the complete failure of prudential regulators to identify and control the risks stemming from innovation, along with their failure to provide incentives for financial institutions to exercise proper risk management, which triggered the global crisis. Therefore, regulatory authorities should continue to strengthen their capacity to effectively monitor innovation and keep ahead of innovation.

Key policy messages

Developing Asia has recovered from the global crisis. As the crisis recedes, medium- and long-run growth will reassert itself as the region's priority concern. Short-term aggregate demand management will give way to structural policies that augment the economy's productive capacity.

It is thus a good time to take stock of developing Asia's growth prospects further out and to reconsider its pathways to growth. Policies that were effective in earlier years' low-income, capital-scarce Asia are likely to be less effective in today's increasingly middle-income, capital-abundant region. Developing Asia's transformation is changing the relative importance of the ingredients of its past success.

In particular, productivity growth will play a bigger role as a driver of economic growth. Structural policies that promote productivity growth therefore hold the key to sustaining the region's growth that, in turn, will reduce the numbers of the poor and spread the benefits of economic progress to more people.

Four specific areas—trade, human capital, infrastructure, and financial development—are significant in this respect.

Although the four areas were examined separately, much interdependence exists between them, and progress in one area will facilitate improvements in another. For example, a major impediment to trade in many parts of the region is inadequate transport infrastructure. Improvements in this area, both domestic and regional, can stimulate and catalyze intraregional trade and trade in general.

Similarly, financial development, especially the development of bond markets, which provide a stable and secure source of long-term financing, will have a positive impact in addressing the region's need for transport, communications, and energy infrastructure.

Financial development can also promote the accumulation of human capital by channeling resources to individuals who want to invest in their own education. Progress in the four areas will thus be mutually reinforcing and jointly push out developing Asia's production frontier.

The regionwide analysis of developing Asia's growth drivers paints a broad picture of the future pattern for the region as a whole as well as of the kinds of policies that will promote future growth. However, developing Asia is composed of countries at different development stages and with diverse structural characteristics and endowments. Therefore, the specific constraints to growth and the specific policy options for overcoming those constraints will necessarily differ.

With respect to investment, for example, the growing primacy of efficiency over quantity is more relevant for the more developed countries. In contrast, countries such as the Philippines and Viet Nam need to boost investment levels and build their capital stocks. As for the two Asian giants, an important distinction is that the PRC's infrastructure is relatively well developed, whereas India's is a major constraint to its sustained growth.

Regional cooperation and integration have been progressing in

developing Asia, especially among East Asian and Southeast Asian countries, but the global crisis has added a sense of urgency to the process. What is especially important in this context is intraregional trade, which can complement domestic demand as an additional source of dynamism in the postcrisis world. While tariffs and nontariff barriers to trade have come down sharply across the region as a result of liberalization, obstacles to trade at the border and behind the border still impede the flow of goods among the region's countries.

Steps that take the region toward a truly single market will foster competition and generate dynamic efficiency gains. Regional integration will not only benefit the region's goods markets, but its financial markets as well. In particular, greater integration of the region's bond markets can help to make them broader, deeper, and more liquid. Regional cooperation is required for building regional infrastructure, such as cross-border roads or railways, which promotes regional connectivity.

Finally, good governance and institutions matter for growth. In particular, government effectiveness and control of corruption have significant positive impacts. In addition, governance has a bigger effect in developing countries where the government tends to play a larger role in the allocation of resources. Competent and honest governments that efficiently deliver basic public services, such as administration, education, and health care, raise the productivity of all firms and industries.

Such governments are also more conducive for political stability and a more benign investment climate. Increasingly, an important dimension of strong governance and institutions will be the capacity to deliver inclusive growth which spreads the fruits of growth to the wider population. As conditional cash transfers show, well-designed inclusiveness-promoting programs can make a big dent on poverty at manageable fiscal cost. By promoting social stability, such programs can foster a more conducive environment for growth.

What follows are the specific policy messages that arise from the four sectors: trade, human capital, infrastructure, and financial development.

Trade

- To boost their growth prospects through international trade, countries in developing Asia need to pursue different strategies depending on their current circumstances. For those in East Asia and Southeast Asia, the key challenge is to adjust production and trade networks to take greater advantage of domestic consumption and to expand the volume and scope of intraregional trade (while continuing to exploit the gains from trade openness and integration with global markets). For South Asian countries, the top priorities are to reduce excessively high trade costs and to integrate more closely with the rest of developing Asia. For the vulnerable economies, the need is to expand the base of domestic production and diversify exports, so as to stabilize and then raise incomes.
- *ADO 2009* and *ADO 2009 Update* (ADB 2009a and b) made a case for developing Asia to explore producing more for domestic and regional markets (not only because of the prospect of an extended period of reduced demand from the rest of the world, but also to diversify the sources of demand). This proposal, however, may need

to be complemented by industry and investment strategies that reorient production toward meeting this demand-side restructuring. In particular, East Asian and Southeast Asian economies may need to shift from vertical specialization and network trade to product-based horizontal specialization and intraregional trade in final goods.

- Trade facilitation and regional integration are crucial to speed up South Asia's participation in regional production networks and further secure its market as the second large dynamic source of regional demand. In this enterprise, India stands out both as a possible magnet for exports from neighboring countries and as a subregional springboard for pan-Asian integration—the former because of its market size and the latter because of its closer trade ties with the rest of Asia. ASEAN, in turn, stands to benefit from its potential to act as a bridge between East Asia and South Asia.
- Developing Asia's weaker economies are incapable of reaping the full benefits from international trade. Many are primary-commodity exporters or tourism-dependent small-island nations that produce only a limited range of goods and whose export earnings are subject to price fluctuations in the global markets. Those that have broken into basic manufacturing find it difficult to move up the value chain and integrate with the region's production networks. For these vulnerable countries, aid for trade as a special conduit for donor support has a crucial role to play.

Human capital

- There are many pathways by which human capital affects economic growth. Thus, investment in human capital will be crucial for sustaining developing Asia's future growth prospects. While the region has made significant progress in educational outcomes, its average, however, still falls below that of the industrial economies and masks considerable variation across both countries and subregions. Moreover, projections suggest that, at current growth rates, average educational attainments in developing Asia will take decades to come abreast of the current average of the rich countries. Developing Asia therefore needs to invest more in human capital.
- Simply expanding human capital (i.e., raising average educational outcomes), however, may not automatically translate into higher rates of economic growth. For such investments to be effective, the education reform agenda will need to take account of how the educational system is able to produce the type and quality of skills required by the labor market.
- A threshold level of human capital may be a precondition for economic growth. The evidence suggests that a country with a large technology gap grows faster when it has better human resources because human capital facilitates technology diffusion. Poor economies will need to invest more in literacy and basic education programs to enhance their technology absorptive capacities.
- In contrast, middle- and high-income economies will increasingly rely on innovation and technology creation as the driver of long-term growth (as these economies approach the technological frontier). As this happens, the accessibility and quality of tertiary education will become an important factor in economic growth.

Infrastructure

- Overall, infrastructure stocks in developing Asia have been growing at a significant pace. Their levels, though, remain well below corresponding world averages in terms of both quantity and quality. As infrastructure-stock accumulation has a positive impact on economic growth, a massive buildup of these stocks is needed, but may well be beyond the financing capacities of many governments, which will require facilitating arrangements.
- Demand for infrastructure services is expected to soar in cities due to rapid urbanization. In order to keep cities in developing Asia competitive, investment in infrastructure needs to be designed to take account of congestion, environmental degradation, and other impediments to productivity that are associated with urban agglomeration.
- The urban–rural divide in access to infrastructure services detracts from the inclusiveness of growth in developing Asia. Improving access to basic infrastructure services in rural areas is crucial for poverty reduction.

Financial development

- As developing Asia gradually shifts from a growth regime that is spurred largely by factor accumulation to one that has a greater role for productivity improvements, its financial systems will have to evolve from a mode that primarily mobilizes saving and boosts the quantity of investment to one that enhances the efficiency of investment. In this new role, financial systems will need to be deeper, broader, and more liquid. This will require them to furnish timely and accurate information, facilitate the effective exercise of corporate governance, and provide adequate risk management. Accordingly, the region will need to strengthen the requisite institutional infrastructures, along two axes: effective legal and regulatory frameworks; and high-quality accounting and auditing standards and practices.
- As the global financial crisis demonstrated, financial stability is crucial for sustaining medium- and long-run growth. To safeguard the health of financial institutions and ensure the smooth functioning of financial markets, developing Asia's governments need to further strengthen their prudential regulatory and supervision frameworks. In addition, they should undertake initiatives that further diversify the structure of their financial systems. One way to do this is to accelerate the development of the region's bond markets.
- A key policy in promoting financial development in the region is to make financial services more accessible to small and medium-sized enterprises and households. Lack of access to finance can be a serious barrier to investment and business activity. Entrepreneurship—essential to a vibrant private sector that constantly renews itself and creates new firms, jobs, and industries—needs finance as its indispensable lubricant. Moreover, extending the reach of finance promotes equality of opportunity that fosters inclusive growth and reduces poverty.

Endnotes

- 1 For information on LPI, see <http://info.worldbank.org/etools/tradesurvey/model1b.asp>
- 2 South Asia's applied MFN tariff was 11.9%, East Asia's 3.1%.
- 3 The difference between India and the rest of South Asia is even starker than the figures of Table 2.2.1 suggest, because the subregion's performance is bolstered by the better than average record of the dominant country, India.
- 4 This section draws heavily on Akyüz (2010).
- 5 As an aside, significant restructuring and consolidation along these lines will restrict the growth of exports and incomes of the intermediate-goods-supplying countries, regardless of the state of domestic consumption in the PRC.
- 6 The prospects from merely reshuffling existing production capacity are limited, since skills, capital equipment, and organizational structures are often industry-specific and even product-specific.
- 7 See Athukorala 2008; Kim, Lee, and Park 2009; and ADB 2009a.
- 8 This section draws on Francois, Rana, and Wignaraja (2009). Additional comments from Ganesh Wignaraja, Office of Regional Economic Integration, ADB, are acknowledged.
- 9 South Asian Association for Regional Cooperation (SAARC).
- 10 This section draws on ADB (2007) and ADB (2009c).
- 11 ADB calculations based on data from Barro and Lee (2010).
- 12 See Morrison and Schwartz (1996) in the context of US states.
- 13 Estimated using data from the Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2006 Revision and World Urbanization Prospects: The 2007 Revision*, <http://esa.un.org/unup> (accessed 14 September 2010).
- 14 The Asian Bond Market Initiative (ABMI) and Asian Bond Funds (ABF I and II) are parallel initiatives to promote bond market development in East Asia. ABMI was endorsed by ASEAN+3 finance ministers in August 2003. ABF I was launched in the same year, and ABF II in the following year by the Executives' Meeting of East Asia and Pacific Central Banks.

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