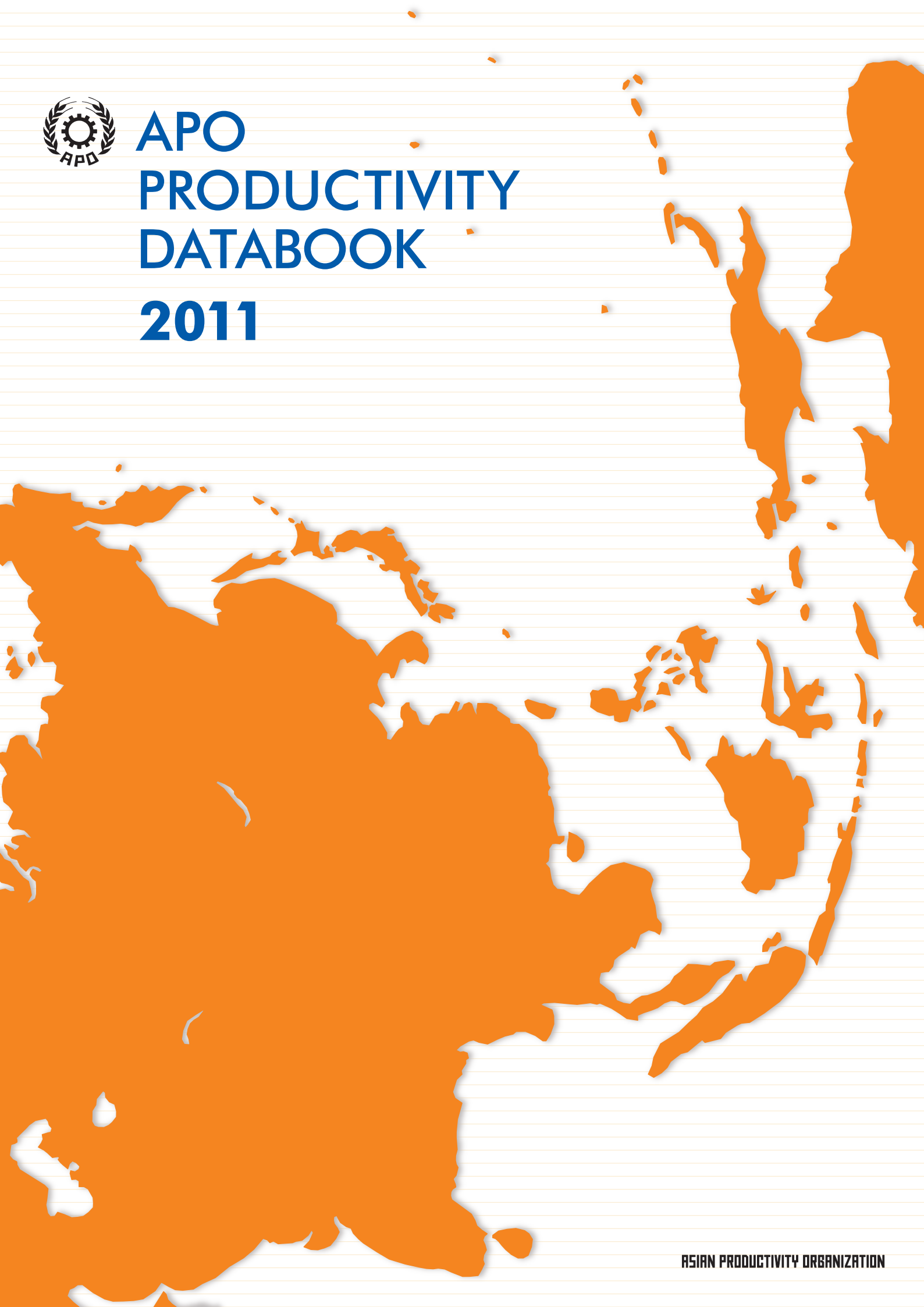
APO PRODUCTIVITY DATABOOK 2011



ASIAN PRODUCTIVITY ORGANIZATION

APO PRODUCTIVITY DATABOOK 2011

ASIAN PRODUCTIVITY ORGANIZATION

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Foreword

I am delighted to introduce the 2011 edition of the *APO Productivity Databook*, especially since the release of this volume coincides with the APO's 50th anniversary. The APO's half-century of commitment to contributing to the socio-economic development of its member economies through productivity gains has translated into tangible achievements for all. Over the past five decades, the size of the combined GDP of APO member economies has grown by almost five-fold. The APO economies as a whole have also rebounded quickly from the recent global financial crisis and are on track to continue their sterling performance.

The size of the combined APO economies has also been catching up rapidly with that of developed economies such as the USA and EU members. I believe that continued productivity growth will be a powerful driver of economic growth for our members in coming decades. To chart effective economic policy directions, careful analysis of the potential sources of economic growth is critical. I sincerely hope that the readers of this *APO Productivity Databook* will find its detailed comparative productivity analyses practical and useful for both public and private decision making.

This edition includes some notable improvements, such as expansion of total factor productivity (TFP) analysis to an additional five member countries, Malaysia, Mongolia, Hong Kong, Vietnam, and Singapore. In total, TFP has been computed for 12 APO member countries. There is also wider, more precise coverage of the economic indicators, which allows better cross-country comparisons. This publication is the fruit of the APO Productivity Databook Project, initiated by the Research and Planning Department of the APO Secretariat, in collaboration with Keio Economic Observatory, Keio University, Tokyo.

I would like to thank all 17 national experts for this project for providing the national data in line with the APO methodology. My profound gratitude goes to the team of productivity specialists-cum-authors of this publication at the Keio Economic Observatory: Professor Koji Nomura, Ms. Eunice Y. M. Lau, Ms. Kyoko Ishikawa, Ms. Shinyoung Oh, Mr. Fumio Momose, Ms. Keiko Inoue, and Mr. Hiroshi Shirane, who worked hard to upgrade the quality of data and methodology for the APO Productivity Databook Project. The solid data analyses for extended international comparisons of productivity performance would not have been possible without their commitment and partnership with the APO.

Ryuichiro Yamazaki
Secretary-General
Asian Productivity Organization
Tokyo, April 2011

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Box

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Abbreviations

ADB	Asian Development Bank
AEP	age-efficiency profile
AMA	Analysis of Main Aggregate (UNSD database)
APO	Asian Productivity Organization
APO20	20 member economies of Asian Productivity Organization: Bangladesh, Cambodia, the Republic of China, Fiji, Hong Kong, India, Indonesia, Islamic Republic of Iran, Japan, the Republic of Korea, Lao People's Democratic Republic, Malaysia, Mongolia, Nepal, Pakistan, the Philippines, Singapore, Sri Lanka, Thailand, and Vietnam
AQGM	Asian quarterly growth map
ASEAN	Association of Southeast Asian Nations: Brunei, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam
Asia23	APO20 plus the People's Republic of China, Brunei, and Myanmar
Asia29	Asia23 plus GCC countries
CPI	consumer price index
EU	European Union
EU15	15 member economies of European Union prior to enlargement: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and United Kingdom
EU27	European Union: EU15 plus Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovak Republic, and Slovenia
FISIM	financial intermediation services indirectly measured
GCC	Gulf Cooperation Council: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE
GDP	gross domestic product
GFCF	gross fixed capital formation
GFS	Government Finance Statistics
GNI	gross national income
ICP	International Comparisons Program
IMF	International Monetary Fund
ISIC	International Standard Industry Classification
IT	information technology
KEO	Keio Economic Observatory, Keio University
Lao PDR	Lao People's Democratic Republic
LCU	local currency unit
NDP	net domestic product
NPISHs	non-profit institutions serving households
NPO	national productivity organization
NSO	national statistical office
OECD	Organization for Economic Co-operation and Development
PPI	producer price index
PPP	purchasing power parity
QNA	quarterly national accounts
ROC	Republic of China
SEEA	System of Integrated Environmental and Economic Accounting
SNA	System of National Accounts
TFP	total factor productivity
UAE	United Arab Emirates
UN	United Nations
UNSD	United Nations Statistics Division
US	United States

1 Introduction

The Asian Productivity Organization (APO) is a regional intergovernmental organization, established in May 1961 as part of a productivity initiative to drive greater economic development in the Asia and Pacific region. The current APO membership comprises Bangladesh, Cambodia, the Republic of China (here after the ROC), Fiji, Hong Kong, India, Indonesia, Islamic Republic of Iran (hereafter Iran), Japan, the Republic of Korea (hereafter Korea), Lao People's Democratic Republic (hereafter Lao PDR), Malaysia, Mongolia, Nepal, Pakistan, the Philippines, Singapore, Sri Lanka, Thailand, and Vietnam. It works through a network of national productivity organizations (NPOs) that are designated as official liaison bodies to implement APO projects and propel national productivity movements in their own countries. Serving as a think-tank and regional adviser for its 20 member economies, the APO, through its secretariat based in Tokyo, conducts research and surveys to identify common needs for developing appropriate action plans that support its members' efforts in economic development via productivity enhancement. Another key function of the APO, among others, is to disseminate information and knowledge on productivity tools and methodologies across the region through seminars, conferences, workshops, and study meetings.

1.1 APO Productivity Databook 2011

This is the fourth publication in the *APO Productivity Databook* series. The publication aims to provide a cross-country comparison of economic growth and productivity levels of Asian countries in relation to global and regional economies. The productivity measures in this report are based on the estimates developed in the *APO Productivity Database project* conducted since September 2007 as a joint research effort of the APO and Keio Economic Observatory (KEO), Keio University, under consultancy of Professors Dale W. Jorgenson (Harvard University) and W. Erwin Diewert (University of British Columbia).

Baseline indicators are calculated for 29 Asian economies, representing the 20 APO member economies (referred to as the APO20) and nine non-member countries in Asia – the People's Republic of China (hereafter China), Brunei, Myanmar, and the Gulf Cooperation Council (hereafter GCC) that consists of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates (hereafter UAE), and two reference economies, the United States (US) and European Union (EU). The GCC countries are included in the APO Productivity Database for the first time in this publication to cover the Western Asian countries. The sources of economic growth are decomposed to factor inputs of labor and capital services and total factor productivity (TFP) during 1970–2008 for 13 Asian economies (China, the ROC, Fiji, Hong Kong, Indonesia, Japan, Korea, Malaysia, Mongolia, the Philippines, Singapore, Thailand, and Vietnam) and the US as reference economies.

This project is managed by Koji Nomura (Keio University), with coordination by Yasuko Asano (Research and Planning Department, APO). The questionnaire was designed at KEO and sent to national experts in APO member countries. This report would not have been possible without the contributions from the national experts, who supply the data and deal with our follow-up queries. These experts are listed in Section 1.2. The submitted data were examined and processed by the research team at KEO, led by Koji Nomura, who in conjunction with Eunice Lau, Kyoko Ishikawa, Shinyoung Oh, Hiroshi Shirane, Fumio Momose, and Keiko Inoue prepared the text, tables and figures presented in this report.

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2 Overview

The global financial storm of 2008–2009 might have passed, but the world economy is still licking its wounds from pungent impacts which were both sharp and extensive in their scope. World output growth plunged from a recent peak of 5.3 per cent in 2007 to 2.8 per cent in 2008 and −0.58 per cent in 2009. This recession was worldwide: all G7 economies experienced the deepest output retrenchment since the 1930s, while growth in emerging and developing economies was slashed from 8.7 per cent before the crisis to 2.5 per cent in 2009. As governments around the world responded promptly to the crisis with rescue and fiscal packages on a historically unprecedented scale, output has been growing, albeit more sluggishly in some economies than others. According to International Monetary Fund (IMF) estimates (Leigh et al., 2010), world output will grow at 4.8 per cent and growth in the emerging and developing economies will accelerate to 7.1 per cent in 2010. Developing Asia will be the fastest-growing region in 2010, at 9.4 per cent. By these figures, it would appear that we were out of the woods. But in reality the groaning had only just started, and it is feared that the period of convalescence will be prolonged as the rich economies deal with their colossal debt.

Before the crisis, a shift in the global economic balance of power had already been discerned; but the crisis looks set to hasten its pace. This dramatic shift reflects not only the rapid catching up with their rich counterparts by virtually all developing countries but also the lack of growth in major economies like the US, Western Europe, and Japan. The global financial crisis and ensuing recession have left the developed world laden with ballooning public debt at a level unprecedented outside world wars, and exposed the limitations of its debt-financed model which had been, in hindsight, both fueled and kept under control by the exuberance of the 1980s and 1990s. In 2009 rich countries' budget deficits averaged about 9 per cent of GDP (gross domestic product), up from only 1 per cent in 2007; and their ratio of public debt to GDP is expected to hit 100 per cent by the end of 2010 (*The Economist*, 2010a). The level of public debt has significantly raised the risk of sovereign default in some peripheral EU countries, heightened the tension within the currency union, and pushed the euro toward its breaking point. A reversal of fiscal positions has occurred, with the developed world now being more indebted on average than the developing world, and the medium-term outlook for the rich countries is further exacerbated by the economic and financial implications of their graying populations. Options to deal with a debt overhang are never palatable, as the rich countries will testify, but the aftermath of the global financial crisis can be an opportunity as much as a challenge. A dire situation can work to strengthen the political resolve to confront long-term debt problems and, hopefully, will bring forth the much-needed productivity-enhancing structural reforms. The question is whether the rich world is going to squander such an opportunity.

By conventional wisdom, debts in the major economies have already breached the limit where debt turns sour and ceases to be a boon. The growth-boosting potential of these debts seems to have petered out since early 2007 (*The Economist*, 2010b). One estimate even goes further, to suggest that these debts will knock half a percentage point off the collective growth rate of the G20's rich members (Caner, Grennes, and Koehler-Geib, 2010). Fiscal consolidation is therefore not an option that the rich economies can choose to dodge, and the task ahead is formidable. By IMF calculations, to cut their debt-to-GDP ratios back to 60 per cent by 2030 will require a swing in the budgets of 9 per cent or more of GDP in the US, Britain, Greece, Ireland, Japan, and Spain. This is the backdrop to the current wave of substantial fiscal squeeze we observe. Virtually all advanced economies have planned some sort of fiscal consolidation in 2011 following the expiry of their stimulus packages. According to the IMF, collectively these measures would amount to a tightening of some 1.25 per cent of GDP, the biggest simultaneous fiscal squeeze since modern records began.

Although fiscal austerity is not an option, the timing and the details of the deficit reduction plans are, to a degree, at governments' discretion. Some have argued that the proposed fiscal measures may be too tight too soon, risking a double-dip recession, whereas others believe that cutting the deficit will itself boost growth. How the economies will fare is uncertain. In the short term, fiscal retrenchment will dampen demand, and there is little room to compensate that effect with monetary stimulus as interest rates are already at a record low. But bolstering short-term demand with debt is not a long-term solution either. *The Economist* (2010c) says that rising government debt is a Ponzi scheme that requires an ever-growing population to assume the burden – unless some *deus ex machina*, such as a technological breakthrough, can boost growth. The advanced economies, with an unfavorable demography, are expected to grow more slowly, not only because they have a shrinking workforce, but also because they save and invest less. This makes rising debt unsustainable unless they achieve a productivity miracle, which is not promising. Recently US and EU15 productivity growth has taken a setback due to the global financial crisis. But even their performance before the crisis was no match with Asia's vigorous improvement (Tables 8 and 13). Even at their best, outgrowing their debt will still be a tall order, not to say their productivity performance has been sluggish.

In judging the merits of the deficit reduction plans, therefore, we ask if the measures damage or enhance

an economy's productivity capability – if the inflicted short-term pain will lead to improved future prospects. By this, some countries fare better than others. This is all the more important if the depth and nature of the 2009 recession are believed to have permanently damaged the growth potential of these economies. The rich countries could easily miss this opportunity to alter their grim growth prospects if their policy debate centers largely on demand and lacks any microeconomic ambition.

With the world economy more integrated, the impact of domestic economic and monetary policies is not ring-fenced by national boundaries. With the tight squeeze coming into play, it is not surprising that the IMF estimates growth in the advanced economies will slow from 2.5 per cent in 2010 to 2.0 per cent in 2011. But growth in other country groups is also projected to slow: from 7.1 per cent to 6.4 per cent in emerging and developing economies, from 9.4 per cent to 8.4 per cent in developing Asia, and from 7.8 per cent to 4.5 per cent in newly industrialized countries. As demand from rich economies weakens, developing countries will probably have to develop more domestic demand to fill the gap. The long-standing system of vendor financing, whereby the developing world is lending to the developed world to buy its goods, cannot carry on endlessly, especially when it may have encouraged the rich world to concentrate on consumption rather than investment. It also strains trade relations, particularly between the US and China. Some are outraged by this direction of capital flow, as the poor countries are lending cheaply to the rich ones, mainly the US, when they could have put the resources to much better use for their own development.

Foreign exchange reserves increased from US$1.3 trillion (5 per cent of world GDP) in 1995 to US$8.4 trillion (14 per cent) today, two-thirds of which is held by the emerging economies, mostly accumulated in the past ten years (*The Economist*, 2010d). This is the size of the accumulated global imbalance measured in monetary terms. It creates a tension between emerging economies' demand for reserves and their fear that the main reserve currency, namely the US dollar, will devalue. This is why when the Federal Reserve announced its second round of quantitative easing, it sparked fiery international exchanges on the theme of a currency war.

But away from the limelight, changes may have already started. Labor unrest in China is catching the headlines. This may mark a turning point in China's development. The workshop of the world is aging, with the number of Chinese aged 15–29 falling quite sharply after 2011. Migrant workers are becoming scarcer and pay would have to rise to attract workers. Until recently, productivity has been rising faster than labor costs, leading to falling unit labor costs and enhancing China's competitiveness. This is also reflected in the falling labor share of national income in the past two decades, contributing to China's low rate of consumption – its share of GDP at 35.1 per cent in 2008 was the lowest of all the countries compared (see Table 6). But between the summers of 2006 and 2008, the prices Americans paid for imports from China rose by 6 per cent (*The Economist*, 2010e). This may have reflected rising unit labor costs. By *The Economist's* rough estimate, they have risen by 25 per cent since the first quarter of 2005, compared with 4 per cent in American manufacturing. By this calculation, China's real exchange rate with America has strengthened by almost 50 per cent since 2005, even if its nominal rate stays the same (*The Economist*, 2010f). As labor share of GDP increases at the expense of profit, China is rebalancing its economy by giving households more spending power. Higher prices and a higher saving rate will mean that China's trade surplus will shrink as its domestic market grows and fulfills its potential. As the workshop of the world retreats, this may even give opportunities to smaller Asian developing economies to rise; Vietnam is already hailed as the next China.

India has been a tiger trailing behind China, which has an economy four times bigger and a per capita GDP twice that of India. But it has maintained its recent vibrant growth and is expected to expand by 8.4 per cent in 2010. It is speculated that India may grow faster than any other large country over the next 25 years. First, while China's workforce starts to age, India has a favorable demography with one of the best dependency ratios in the world, and this will remain for a generation. This "demographic dividend" has propelled many of Asia's economic miracles. Second, although its growth seems somewhat chaotic when compared with the carefully orchestrated process in China, India's democracy, despite its ineffectiveness, is more conducive to the flow of ideas. This gives India an edge in the knowledge-intensive age. But to fulfill its full potential, India needs to address its structural bottlenecks. To reap the demographic dividend, it will first need to find jobs for those who are joining the workforce. Removing some of the structural rigidities in the labor market will help. Its notorious infrastructure also requires an extensive overhaul in order to support a sprinting economy. Whether India can take off, therefore, depends to a large extent on whether its government can deliver.

In the coming years, as we dissect the impact of the global financial crisis as it makes its way into our annual data, productivity analysis will help cast valuable insight into how the long-term growth potential of an economy has been affected. As it stands at the moment, the prospect for the West looks less promising than for the East as far as future capability for productivity growth

is concerned. In focusing on the long-term analysis, the *APO Productivity Databook* not only looks into a country's productivity performance but also its economic composition and sources of growth in order to provide readers with more comprehensive descriptions and comparisons of a country's economic structure and characteristics. Furthermore, we have been able to expand the number of countries covered in our total factor productivity (TFP) analysis from eight to 13 Asian countries.

International comparisons of economic performance are never a precise science, but are fraught with measurement and data comparability issues. Despite our best efforts in aligning the data, some data uncertainty remains. As we operate in a reality of incomplete information, some adjustments made are necessarily conjectural, while others are based on assumptions. In addressing this shortcoming, conclusions drawn are cross-referenced against other similar studies. However, the magnitude of economic indicators and differences could be subject to a higher degree of data uncertainty.

Bearing in mind these caveats, the main findings from our analysis are as follows.

Economic scale and growth

- In terms of exchange-rate-based GDP, Japan was still the largest Asian economy in 2008, with China (and other fast-growing economies) constantly eroding its lead. It is projected that China has overtaken Japan in 2010 as the second-largest economy in the world after the US. In 2008 the size of Asia23 was roughly equal to that of the US on this measure (Table 1).

- Based on GDP adjusted for purchasing power parity, China overtook Japan as the largest Asian economy in 2000. India came third. With its recent rapid growth, China is extending its lead. On this measure, APO20 was of similar size to the US economy while Asia23 was 62 per cent larger in 2008. While Asia is expanding, EU15 has been shrinking in size against the US (Table 2 and Figure 3).

- Between 1990 and 2008 the economic growth differential between Asia and the US was 2.5 per cent per annum on average, of which China's growth explained 70.1 per cent and India's 17.4 per cent. Japan was the only Asian economy which grew more slowly than the US (1.2 per cent versus 2.8 per cent), and was a drag of 17.6 per cent on the regional relative economic growth (Figure 4).

- In the 2000s growth recovered in Asia after the Asian financial crisis, achieving 6.8 per cent and 4.4 per cent on average a year for Asia23 and APO20 respectively in the period 2005–2008. Growth in the US and EU15 were 1.5 per cent and 1.9 per cent over the same period (Table 3).

- In 2000–2008 China and India contributed just over 50.0 per cent and 16.2 per cent to regional growth. Despite its lackluster growth of 1.2 per cent a year on average, Japan was the third-largest contributor due to its size (Figure 5).

Catching up in GDP per capita

- Our results show the outcome of the dramatic development effort of the four Asian Tigers. Singapore and Hong Kong have managed to close a per capita GDP gap with the US of around 65 per cent in just under four decades. Singapore has even surpassed the US since 2004, something that Japan has failed to achieve. In 2008 the ROC's and Korea's per capita GDP was 69 per cent and 58 per cent of that of the US, respectively (Figures 7 and 24).

- Despite their rapid growth, per capita GDP of China and India was 13 per cent and 6 per cent of that of the US in 2008, due to their population size. The level achieved by APO20 and Asia23 was similar, at around 14 per cent of that of the US, indicating that there is ample room for catch-up (Figure 7).

- The oil-exporting countries typically have per capita GDP many times that of any reference country. This is because the GDP measure exaggerates their income by erroneously including the resource rent. For these countries, the sustainable income level is lower than suggested by their headline GDP figures (Table 4, Boxes 3 and 6).

- Asia's huge per capita GDP gap with the US is predominantly explained by its labor productivity gap. With the exception of the four Asian Tigers, Japan, and Iran, all Asian countries have a labor productivity gap of 60 per cent or more (Figure 9). However, labor productivity growth explained most of countries' per capita GDP growth, although the change in employment rate also played a significant role (Figure 10).

The demand-side story

- With a few exceptions, household consumption is the biggest component of GDP. Its share in GDP tends to be stable, if not trending slightly upwards, in more mature economies. In contrast, it tends to be more volatile and trend downwards in economies

undergoing rapid transformation (Table 6).

- Asia's average household consumption share of 49.8 per cent is the lowest when compared with the US 69.9 per cent and EU15 57.5 per cent in 2008.

- China's household consumption share of GDP fell from 54.7 per cent in 1970 to 46.4 per cent in 2000. Since then the share has reduced by a further 11 per cent in just eight years. However, given the recent developments in its labor market, household consumption share might have reached its trough and may even start to turn up.

- Asia on average invests more. While the investment share of GDP in the US and EU15 has been stable at around 20 per cent, the corresponding figures for APO20 and Asia23 are 5–10 percentage points and 10–15 percentage points higher respectively (Figure 19). China's investment share of 43.9 per cent in 2008 is phenomenal.

- Net exports accounts for 2.6 per cent of Asia23's GDP in 2008, up from 0.8 per cent in 1990. A lot of the strengthening was due to China's net export share rising from 2.4 per cent in 2000 to 7.7 per cent in 2008. South Asia, like the US, has a sizeable trade deficit, while the position of net exports in EU15 has been more or less neutral.

- High household consumption share tends to correlate with a high dependency ratio (Figure 14).

- The decomposition of household consumption displays strongly the cross-country version of Angel's law, whereby basic necessities account for a high proportion of household consumption in poor countries and vice versa (Figure 18). Korea and India spent over 7 per cent of their household consumption on education, while the US spent almost one-fifth on health, unmatched in other countries.

- During the Asian financial crisis, when investment took a battering in many countries, household consumption was the main driver of growth. However, in some countries, like Hong Kong and Malaysia, net exports accounted for most of the economic growth (Figure 22).

- In the 2000s investment recovered in the Asian economy and drove growth. But for Singapore, Hong Kong and the ROC, the strength of net exports was still the dominant force behind their economic growth (Figure 22).

- According to countries' annual data, the Asian financial crisis marked an exceptional time for many Asian economies, causing investment to nose-dive in 1998 and consumption to fall, albeit to a lesser extent. Net export growth, on the other hand, was exceptionally strong in some of these countries, which are likely to have benefited from the rapid devaluation of the Asian currencies at the time of the crisis. Similarly, the impact of the dot.com crash is visible from the data, most notably in the ROC (Figure 23).

Economy-wide productivity – The supply-side story

GDP per worker

- On the per worker GDP measure in 2008, Singapore and Hong Kong have virtually closed the gap with the US (i.e. with a margin of −10 per cent), while the ROC and Japan sustained a gap of 25 per cent and Korea 40 per cent. But these are the exceptions, as most Asian countries had a gap with the US of 80 per cent or more (Figure 24).

- Measured against the US level, per-worker GDP was 16 per cent, 14 per cent, and 11 per cent for APO20, Asia23, and ASEAN in 2008. The figures for China and India were 12 per cent and 8 per cent respectively. In the past decade or so, Asia as a group has achieved little change in its relative position against the US (Table 7).

- Growth of per-worker GDP in Asia has outstripped that in the US, allowing catch-up. After the Asian financial crisis, productivity growth has been accelerating. As a group, Asia23 achieved a yearly average productivity growth of 5.2 per cent in the period 2005–2008, up from 3.7 per cent in 2000–2005. In contrast, US productivity growth slowed rapidly from 2.1 per cent to 0.8 per cent on average a year over the same periods (Table 8).

GDP per hour

- The productivity gap based on the per hour GDP measure is generally wider between Asian countries and the US. In particular, the gaps between the Asian Tigers and the US increased more than 16 percentage points, suggesting that the former work longer hours (Figure 26).

- Per hour GDP growth has been consistently higher that per worker GDP growth in the ROC, Korea, and Japan, suggesting that working hours are reducing (Table 10).

Total factor productivity

- Over the period 1970–2008, China, Thailand, the

ROC, and Hong Kong achieved TFP growth faster than that of the US. China is a league of its own, with its yearly average TFP growth double that of the other three countries, whose TFP growth in turn is double the 0.8 per cent achieved by the US. Between the two sub-periods 1970–1990 and 1990–2008, TFP growth generally slowed; China is the exception with TFP growth soaring from 1.7 per cent to 4.7 per cent between the two periods (Figure 30).

- Over the whole estimation period, capital input growth typically explained half or more of economic growth, of which 16 percentage points were contributed by IT capital in the US compared with 3–10 percentage points in the Asian countries. The contribution from TFP growth was around one-fifth; its share of 36 per cent in China was the highest among all countries compared (Figures 31 and 32).

- The decade 1985–1995 appeared to be the golden period for TFP growth, accounting for over 30 per cent in eight of the countries studied. Economic growth in the earlier period was predominated by capital input growth, while countries' experience in the more recent period was mixed (Figures 33 and 34).

- In the initial period, vibrant growth in the Asian Tigers was clearly driven by capital accumulation, but TFP growth gained significance in subsequent periods. Although lower in percentage points, there has been a recent resurgence in contribution from TFP growth accounting for 45–60 per cent of economic growth, except in Singapore which has gone back to input-driven growth lately (Figure 35).

Enhancement of labor productivity growth

- Capital deepening has been taking place in all countries compared (Figure 37), but all countries have negative capital productivity growth. Where capital deepening was most rapid (e.g. at a rate of 9 per cent on average a year in Korea between 1970 and 2008), the fall in capital productivity was the steepest as well (at an average of 3 per cent a year in Korea) (Figure 38).

- Capital deepening was the prime source of labor productivity growth in the past four decades, with the exception of the US. But TFP growth also made a significant contribution, e.g. by 30 per cent in the Asian Tigers (except Singapore), 44 per cent in Thailand, and 48 per cent in China (Figures 39 and 40).

- An allocation shift to IT capital can be clearly seen from the composition of capital services. IT capital accumulation started in the 1980s in the US, in the mid-1990s in Japan, and at the turn of the century in the Asian Tigers (Figure 36).

- Comparing the sub-periods, the rise of IT capital contribution in explaining labor productivity growth, especially since 1995, is remarkable. It rose from a range of 2–7 per cent in the period 1970–1985 and 6–13 per cent in the period 1985–1995 to a range of 8–29 per cent in the period 1995–2008. In China it has more than tripled in the past decade, from 1 per cent in 1985–1995 to 7 per cent in 1995–2008, compared with around a quarter to one-third in the US since 1985 (Figure 42).

Industry perspective

Industry structure

- Evidence supports the view that a country's industry structure transforms with its economic development. There is a broad negative correlation between the share of agriculture in total GDP and the per capita GDP gap with the US. Finance, real estate and business activities rises in weight as countries move up income level, whereas mining is the sector that defines the oil-exporting countries (Figure 44).

- Manufacturing is a significant sector, accounting for over 20 per cent of total value added in most Asian economies. It is particularly prominent in China, Korea, and the ROC. Asian manufacturing is dominated by machinery and equipment (Figure 45).

- Asian countries are diversifying away from agriculture, which, however, still dominates employment. Agriculture accounts for 41.7 per cent of total employment in 2008 for Asia29, down from 62.0 per cent in 1980. Its share in total value added was relatively stable at around 15–17 per cent up to 2000 before dropping to 12 per cent in 2008 (Figure 46). Manufacturing is expanding without a proportionate rise in employment, suggesting sectoral labor productivity growth (Figure 50).

Industry origins of economic growth

- Our results support the observation that China and India have taken different development paths, with the former relying more on the traditional growth engine of manufacturing and the latter on services.

- In the past two-and-a-half decades China has been undergoing a slight transition, with its growth shifting from being manufacturing-driven to more service-driven. In the period 2000–2008 the contributions to economic growth by manufacturing and

services were 35.1 per cent and 44.3 per cent respectively, compared with 47.1 per cent and 30.1 per cent in the first half of the 1990s.

- In contrast, growth in India has always been more driven by services, the contribution of which rose from 50 per cent in the late 1980s to over 60 per cent in the 2000s, while manufacturing has never contributed more than one-fifth (Figure 51).

- One-third of Asia29's regional growth originated from the expansion of manufacturing in the 2000s, two-thirds of which was accounted for by China. In other words, China's manufacturing alone contributed 21.4 per cent to regional growth (Figure 60).

Industry origins of labor productivity growth

- Our results show that services are no longer a drag on a country's productivity performance, but are as capable as manufacturing in generating labor productivity growth.

- In the 2000s transport, storage, and communications achieved the fastest labor productivity growth in Asia23 (at 4.0 per cent on average a year), followed by manufacturing (at 2.9 per cent) and wholesale and retail trade, hotels, and restaurants (at 2.8 per cent). Agriculture also managed a labor productivity growth of 2.2 per cent on average a year (Table 15).

- While the importance of manufacturing as a contributor to overall labor productivity growth has never waned in some countries (Korea, the ROC, China, and Thailand), services were contributing at least one-third or more in most Asian countries compared in the 2000s. Manufacturing has never been a major contributor in India in its recent development process, or in Hong Kong and Sri Lanka in the 2000s (Figures 63 and 66).

Real income and terms of trade

- Real GDP could systematically underestimate (overestimate) growth in real income when terms of trade improve (deteriorate). It is generally observed that the trading gain effect is more significant in the short term than in the long term.

- Our results show that for most countries studied the difference between growth of real GDP and real income was within the margin of ±20 per cent over the long period 1970–2008. But for some countries, the divergence can be immense.

- The extreme cases are experienced the oil-rich nations. For example, real GDP underestimates Kuwait's and Brunei's real income growth by 730 per cent and 192 per cent respectively over the period 1970–2008. Singapore has the most negative trading gain effect, with real income growth being 18 per cent lower than real GDP growth on average (Table 16 and Figure 69).

- Over shorter time periods, the impact of trading gain can have a larger impact on individual countries. For example, trading gain has worked to counterbalance falling real GDP in Saudi Arabia and Brunei, leaving them with a handsome real income growth of 9.6 per cent and 9.7 per cent in the recent period of 2005–2008. In contrast, the effect of trading gain in the ROC was to wipe out 90 per cent of the handsome 4.1 per cent real GDP growth on average a year, leaving real income to grow at 0.4 per cent over the same period (Table 16 and Figure 70).

- Historically, trading gain has been significant in oil-rich countries, e.g. with annual real income growth being 5.0 percentage points higher than annual real GDP growth on average in Kuwait. For most countries the impact is modest, adding ±1 percentage point to annual real GDP growth for most of the period 1971–2008. The huge volatility caused by oil price hikes can also be clearly discerned (Figure 73).

Asia is a diverse regional economy within which countries have embarked on their own journeys of economic development at different times and different paces. As shown by our analysis, nearly all countries are making concerted efforts to move away from agriculture and accumulate capital in order to improve their growth potential and catch up with the West. Their efforts are yielding results beyond just impressive growth rates. Our evidence confirms that countries' capital accumulation is accompanied by strong productivity improvements. Through the statistics and data presented in this report, we manage to catch a glimpse of the unparalleled economic dynamics inherent in the region right now. Furthermore, the region as a whole has demonstrated unexpected resilience and strengths in the way it weathered the recent global financial storm. China in particular has been rising in the world economic rankings, having overtaken Germany as the largest exporter in 2009 and Japan as the second-largest economy in 2010. Growth in India has also received a sudden spur in recent years. As the rich economies are heavily laden by debt (to crisis point in some) and the associated difficulties, this may well prove to be an opportunity for the region to consolidate its development achievements further.

3 Development of Asian Economy

Asia has been rising in prominence in the world economy. By 2008 the regional economy accounted for 36 per cent of world output (32 per cent for Asia23), compared with EU27's 22 per cent (19 per cent for EU15) and the US 21 per cent (Figure 1). The IMF projects that the bulk of the world economy will continue to shift to Asia, with its share reaching 43 per cent (39 per cent for Asia23) by 2015. In contrast, EU27 will shrink to 18 per cent (16 per cent for EU15) of world output. Similarly, the US share of world output is projected to fall to 18 per cent by 2015. This is the manifestation of the divergent growth performance, with developing Asia and G7 countries growing at 7–8 per cent and 2 per cent respectively on average per year in the past two decades. This wedge in growth rates is projected to persist into the medium term.

Moving away from the world scene, in this chapter we focus on the dynamics in the long-term economic growth of the Asian countries within the region since the 1970s, through cross-country level comparisons of GDP and other related performance indicators.[1] The US and EU15 are included as reference "advanced" economies. By our measures, the size of the regional economy defined as Asia23 exceeded that of the US economy in 1990. Although literally all Asian economies are catching up, we observe divergence in performance. Within the region, East Asia (China, the ROC, Hong Kong, Japan, Korea, and Mongolia) caught up with the US in 2007 from a low base of 40 per cent in 1970. Despite the catch-up effort of South Asia (Bangladesh, India, Nepal, Pakistan, and Sri Lanka), raising its relative size from 13.8 per cent of the US economy in 1970 to just under 30 per cent in 2008, its gap with East Asia is widening, especially in the past decade.

In addition, we introduce the six Arab states that form the Gulf Cooperation Council (GCC – Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates (UAE) – in our comparisons for the first time. Asia23 plus GCC countries make up the new grouping Asia29. These GCC countries display very different economic characteristics from other Asian economies due to their preponderant reliance on the oil and energy sector.[2] Given the dominance of the state sector (and as a corollary, the relatively small private sector) and the operation of extensive distortionary subsidies and prices, it may be difficult to classify the GCC countries as market economies. In interpreting the results in this report, we must bear in mind that conventional GDP tends to overstate the income of these oil-exporting countries since it does not account for the depletion of natural resource stock, and in turn a large part of their GDP may not be sustainable.[3]

3.1 Economic Scale

Underlying international level comparisons are harmonized GDP data of individual countries[4] and a set of conversion rates between the individual national currencies and a common currency unit (customarily the US dollar). Despite their shortcomings, market

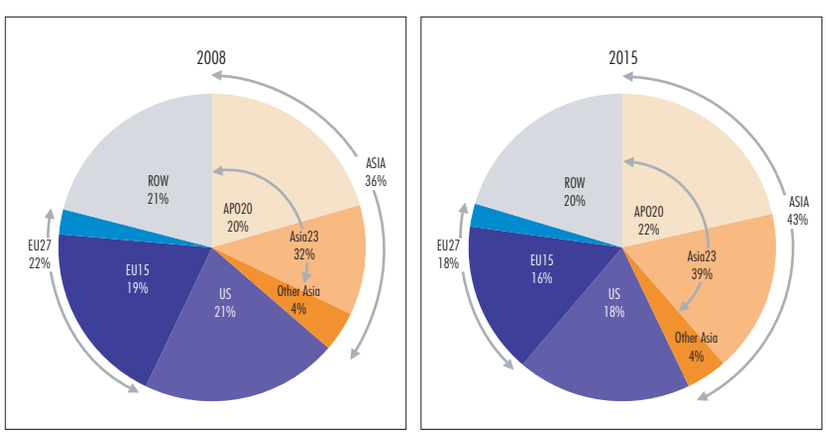

Figure 1: Share of Asia in World GDP in 2008 and Projection for 2015
—Share of PPP-GDP
Source: IMF World Economic Outlook Database.

1: The APO Productivity Database includes adjustments made to harmonize GDP coverage better across countries. The current decision to exclude FISIM (financial intermediation services indirectly measured) and investment of valuables and to include software investment is detailed in Box 2. There are also some revisions to the data when compared with *Databook 2010*, largely results of national GDP revisions including backward amendment and/or benchmark revisions.

2: Together these countries account for about 45 per cent of the world's proven oil reserves and 25 per cent of crude oil exports, and possess at least 17 per cent of the proven global natural gas reserves.

3: Besides, GDP growth can underestimate the growth of real income available to the country brought about by a favorable change in terms of trade, and vice versa. For an oil-exporting country, the growth wedge of the two measures could be significant in face of volatile oil prices. For example, Saudi Arabia's real GDP growth underestimated its real income growth by 24.5 per cent between 1970 and 2008 (see Chapter 7). For details on the limitations of GDP and the concept of sustainability, see Box 3.

4: Box 1 discusses the extent to which countries' GDP data are comparable and Box 2 discusses adjustments made by APO Productivity Database to harmonize data further.

Table 1: Cross-country Comparisons of GDP Using Market Exchange Rate, 1970, 1990, 2000, 2007, and 2008

—GDP at current market prices, using market exchange rate

	1970	(%)		1990	(%)		2000	(%)		2007	(%)		2008	(%)
Japan	207	100.0	Japan	3,076	100.0	Japan	4,692	100.0	Japan	4,399	100.0	Japan	4,906	100.0
China	90	43.4	China	404	13.1	China	1,193	25.4	China	3,494	79.4	China	4,532	92.4
India	63	30.4	India	331	10.7	Korea	524	11.2	India	1,176	26.7	India	1,258	25.6
Pakistan	12	5.9	Korea	266	8.6	India	472	10.1	Korea	1,026	23.3	Korea	911	18.6
Iran	11	5.1	ROC	163	5.3	ROC	321	6.8	Indonesia	435	9.9	Indonesia	515	10.5
Indonesia	10	4.8	Indonesia	126	4.1	Saudi Arabia	191	4.1	Saudi Arabia	393	8.9	Saudi Arabia	480	9.8
Bangladesh	10	4.7	Saudi Arabia	105	3.4	Hong Kong	169	3.6	ROC	388	8.8	ROC	386	7.9
Korea	8.8	4.2	Iran	94	3.1	Indonesia	166	3.5	Iran	316	7.2	Iran	377	7.7
Thailand	7.1	3.4	Thailand	86	2.8	Thailand	123	2.6	Thailand	249	5.7	Thailand	275	5.6
Philippines	6.6	3.2	Hong Kong	77	2.5	Iran	105	2.2	Hong Kong	207	4.7	UAE	247	5.0
ROC	5.7	2.7	Pakistan	48	1.5	Malaysia	94	2.0	UAE	200	4.6	Malaysia	223	4.6
Saudi Arabia	5.1	2.5	Malaysia	46	1.5	Singapore	93	2.0	Malaysia	188	4.3	Hong Kong	215	4.4
Malaysia	4.0	1.9	Philippines	44	1.4	Philippines	75	1.6	Singapore	173	3.9	Singapore	190	3.9
Hong Kong	3.8	1.8	Singapore	38	1.2	Pakistan	72	1.5	Philippines	144	3.3	Philippines	167	3.4
Kuwait	2.9	1.4	UAE	34	1.1	UAE	70	1.5	Pakistan	144	3.3	Kuwait	153	3.1
Myanmar	2.7	1.3	Bangladesh	29	0.9	Bangladesh	45	1.0	Kuwait	118	2.7	Pakistan	146	3.0
Sri Lanka	2.6	1.3	Kuwait	19	0.6	Kuwait	38	0.8	Qatar	72	1.6	Qatar	101	2.1
Singapore	1.9	0.9	Oman	12	0.4	Vietnam	31	0.7	Vietnam	71	1.6	Vietnam	91	1.9
Cambodia	0.8	0.4	Sri Lanka	8.3	0.3	Oman	20	0.4	Bangladesh	68	1.5	Bangladesh	79	1.6
UAE	0.7	0.3	Qatar	7.4	0.2	Qatar	18	0.4	Oman	42	1.0	Oman	61	1.2
Qatar	0.5	0.3	Vietnam	6.5	0.2	Sri Lanka	17	0.4	Sri Lanka	32	0.7	Sri Lanka	41	0.8
Bahrain	0.4	0.2	Myanmar	5.2	0.2	Bahrain	8.0	0.2	Bahrain	19	0.4	Myanmar	29	0.6
Oman	0.3	0.1	Nepal	4.4	0.1	Myanmar	7.3	0.2	Myanmar	19	0.4	Bahrain	22	0.5
Fiji	0.2	0.1	Bahrain	4.4	0.1	Nepal	6.2	0.1	Brunei	12	0.3	Brunei	15	0.3
Brunei	0.2	0.1	Brunei	3.6	0.1	Brunei	6.1	0.1	Nepal	12	0.3	Nepal	14	0.3
Mongolia	0.1	0.1	Cambodia	1.8	0.1	Cambodia	3.7	0.1	Cambodia	8.7	0.2	Cambodia	10	0.2
			Fiji	1.3	0.0	Fiji	1.7	0.0	Lao PDR	4.2	0.1	Lao PDR	5.3	0.1
			Mongolia	1.1	0.0	Lao PDR	1.7	0.0	Mongolia	3.9	0.1	Mongolia	5.2	0.1
			Lao PDR	0.8	0.0	Mongolia	1.1	0.0	Fiji	3.4	0.1	Fiji	3.6	0.1
(regrouped)			(regrouped)			(regrouped)			(regrouped)			(regrouped)		
APO20	353	171.0	APO20	4,447	144.5	APO20	7,014	149.5	APO20	9,050	205.7	APO20	9,819	200.1
Asia23	446	215.8	Asia23	4,860	158.0	Asia23	8,220	175.2	Asia23	12,576	285.8	Asia23	14,394	293.4
Asia29	456	220.6	Asia29	5,042	163.9	Asia29	8,565	182.6	Asia29	13,419	305.0	Asia29	15,457	315.1
East Asia	315	152.3	East Asia	3,987	129.6	East Asia	6,899	147.1	East Asia	9,520	216.4	East Asia	10,955	223.3
South Asia	87	42.2	South Asia	420	13.6	South Asia	612	13.0	South Asia	1,432	32.6	South Asia	1,538	31.4
ASEAN	33	16.1	ASEAN	357	11.6	ASEAN	602	12.8	ASEAN	1,305	29.7	ASEAN	1,520	31.0
GCC	10	4.8	GCC	182	5.9	GCC	346	7.4	GCC	844	19.2	GCC	1,064	21.7
(reference)			(reference)			(reference)			(reference)			(reference)		
US	1,028	497.2	US	5,718	185.9	US	9,788	208.6	US	13,850	314.8	US	14,128	288.0
EU15	1,199	580.1	EU15	6,170	200.6	EU15	9,530	203.1	EU15	13,144	298.8	EU15	13,159	268.2

Unit: Billions of US dollars at current market prices, using market exchange rate.
Note: See Box 2 for the adjustments made to harmonize GDP coverage across countries.
Sources: Official national accounts in each country, including our adjustments.

exchange rates can be used for this purpose and provide intuitive nominal comparisons of economic scale.

Table 1 ranks Asian countries by their exchange-rate-based GDP at current market prices[5], in the years 1970, 1990, 2000, 2007, and 2008. By this measure, Japan was the biggest economy in Asia, followed by China in all five years of comparison. The gap between Japan and China has been narrowing, especially in the past decade. (China finally overtook Japan and became the second-largest economy in the world after the US in 2010.) The 1990 comparisons marked the turning point in Japan's fortune. They captured the end of Japan's bubble years in the late 1980s and the start of its descent. Japan clearly surged ahead strongly between the 1970 and 1990 comparisons, dwarfing the relative size of all other Asian economies and reducing the US lead from five times to less than two times its economy. Thereafter the stagnation in Japan combined with the vibrant growth in developing Asia has resulted in the rapid erosion of Japan's prominence in the regional economy.

In 2008 Japan's economy was about one-third the size of that of the US and EU15, down from about half in 2000. China's GDP was 92.4 per cent that of Japan (up from 25.4

5: The market exchange rates used in this *Databook* are the adjusted rates, which are called the AMA (Analysis of Main Aggregate) rates in the UN Statistics Division's National Accounts Main Aggregate Database. The AMA rates coincide with the IMF rates (which are mostly the annual average of market or official exchange rates) except for some periods in countries with official fixed exchange rates and high inflation, when there could be a serious disparity between real GDP growth and growth converted to US dollars based on IMF rates. In such cases, the AMA adjusts the IMF-based rates by multiplying the growth rate of the GDP deflator relative to that of the US.

per cent in 2000) or 32.1 per cent of the US. India, surpassing Korea in 2007 as the third-largest economy in Asia, was equivalent to around one-quarter of Japan's GDP. APO member economies, excluding Japan, as a group achieved 100.1 per cent of Japan's GDP in 2008, down from 105.7 per cent in 2007 reflecting not higher growth of Japan's GDP but the appreciation of the Japanese yen. When China, Brunei, and Myanmar are included, the size of Asia23 minus Japan was 193.4 per cent of Japan's GDP in 2008, compared with 185.8 per cent in 2007. According to the exchange-rate-based GDP level comparisons, the size of the Asian economy (Asia23) was 101.9 per cent that of the US in 2008, up from 90.8 per cent in 2007 and 43.4 per cent in 1970.

Comparisons based on market exchange rates could appear arbitrary, as movements in market exchange rates can be volatile, subject to short-term, at times substantial, fluctuations of speculative capital flows and government intervention. Furthermore, comparisons based on market exchange rates typically underestimate the size of a developing economy and in turn the perceived welfare of its residents. The rankings of scale of economy change dramatically when international price differences are properly accounted for. This is because market exchange rates embody the trade sector bias (i.e. more influence by the prices of traded than non-traded goods and services) and thus do not necessarily succeed in correcting the price differentials among countries. As developing economies tend to have relatively lower wages and in turn lower prices for non-traded goods and services, a unit of local currency has greater purchasing power in the local economy than reflected in its market exchange rate.

Figure 2 shows the extent to which the market exchange rates have failed to reflect countries' price differentials properly relative to the US. With the exception of Japan,[6] market exchange rates systematically under-represent the relative purchasing power for all the countries covered in this report. The underestimation is substantial for some, ranging from 15 per cent for Fiji to 76 per cent for Myanmar. The figure for China is 58 per cent, which partly reflects its government's active management of the Chinese yuan. Thus the exchange-rate-based GDP considerably underestimates

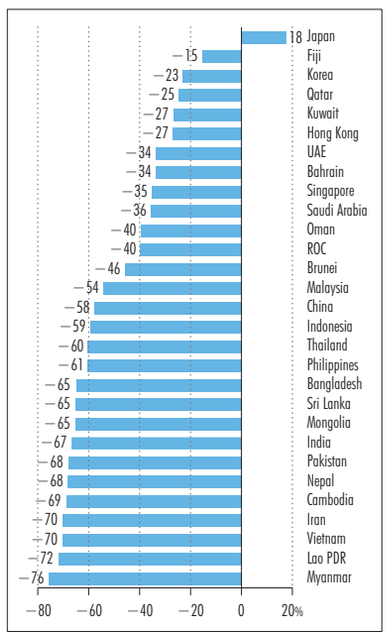

Figure 2: Relative Prices of GDP, 2005
—Ratio of PPP to market exchange rate (reference country=US)

Sources: AMA rates by UNSD and PPP by World Bank.

the economic scales in real terms for those countries. By taking into account the international price differentials, purchasing power parity (PPP) rectifies the traded sector bias, and in turn the relative size of economies can be more adequately measured.[7]

Table 2 corrects this bias and presents the rankings of PPP-based GDP[8] at current market prices for Asian countries in the years 1970, 1990, 2000, 2007, and 2008. The relative size of China's economy in 2008 almost doubled to 190.5 per cent that of Japan, compared with 92.4 per cent when market exchange rates are used as described in Table 1. Similarly, its size increased from 32.1 per cent to 58.9 per cent relative to the US economy in 2008. On this measure, China's economy has overtaken Japan since 2001 to become the biggest in Asia. This represents remarkable growth, considering that the Chinese economy was only 21.4 per cent that of Japan and 62.5 per cent that of India in 1970. The growing dominance of the Chinese economy

6: Japan is the only country which has its market exchange rate overstating its relative purchasing power (by 18 per cent) in 2005.

7: It is therefore important to note that any international GDP comparisons are sensitive not only to revisions in national accounts but also to revisions in multilateral PPPs. Results presented in this edition are based on the PPP estimates of the 2005 International Comparisons Program benchmarking round.

8: Hereafter, all cross-country GDP and GDP-related level comparisons in this report are implicitly based on PPP, and PPP-based GDP is simply referred to as GDP, since the exchange-rate-based GDP is used only in Table 1. Caution should be exercised when comparing economies by their GDP and other related indicators. To allow for errors in the calculation of GDP and other variables, as well as in the estimation of PPPs, small differences in cross-country comparisons should not be considered as significant. It is generally accepted that differences in GDP of less than 5 per cent lie within the margin of error of PPP estimation. Rather than ranking economies, it is preferable to group economies by broad size categories (see World Bank, 2008).

Box 1 Compilation of National Accounts in Asian Countries

Understanding data comparability is essential for the construction of an international database, and requires significant effort and expert knowledge. Between May and August 2010 metadata surveys on the national accounts and other statistical data required for international comparisons of productivity were conducted among the APO member countries. The aim of these surveys was to gather the metadata of the input data series required to populate the APO Productivity Database.

Broadly speaking, cross-country data inconsistency can arise from variations in one or more of the three aspects of a statistic: definitions, coverage, and methodology. The international definitions and guidelines work to standardize countries' measurement efforts, but country data can deviate from the international best practice and vary in terms of omissions and coverage achieved. Last but not least, countries can also vary in their estimation methodology and assumptions, which may account for part of the differences we observe in the data and interfere with comparisons of countries' underlying economic performance.

Most of the economic performance indicators in this report are GDP-related. The surveys therefore put a lot of emphasis on finding out countries' GDP compilation practices. For GDP, we take the System of National Accounts 1993 (1993 SNA) as the standard, and note how countries' practices deviate from it. Since there are differences between the 1993 SNA and its predecessor (1968 SNA) in some concepts and coverage, it is important to know in which year in the data series definitions and classification started to switch over, so as to identify breaks in the time series. Figure B1 presents the current situation in compilations and data availability of the backward estimates based on the 1968 and 1993 SNA and the future plan for introducing the 2008 SNA. For example, Japan started to publish national accounts based on the 1993 SNA in 2000 (backward estimates based on the 1993 SNA are available from 1980 at present) and will introduce the 2008 SNA progressively and switch it in 2015–2016.

As Figure B1 suggests, countries differ in their year of introduction, the extent of implementation, and backward estimates available. According to our survey response, most APO countries are currently 1993 SNA compliant (partly or fully), although for some countries the switchover was only a recent affair and for Indonesia and Thailand the 1993 SNA is planned to be fully introduced in the near future. The starting year of the official 1993 SNA compliant time series therefore varies a great deal across countries, reflecting the difference in the availability of backward estimates. Countries may have adopted the 1993 SNA as the framework for their national accounts, but the extent of compliance in terms of coverage may still vary. Our survey findings highlight two areas which require alignments to improve comparability: the treatment of FISIM (financial intermediation services indirectly measured) and the capitalization of software.

FISIM is an indirect measure of the value of financial intermediation services provided, but for which financial institutions do not charge explicitly (United Nations, 1993: para. 6.124). It represents a significant part of the income of the financial sector. The 1993 SNA recommends that FISIM should be allocated to users (to individual industries and final demands). This is in contrast to the 1968 SNA, where the imputed banking services were allocated exclusively to the business sector. The common practice was to create a notional industry which buys the entire service as an intermediate expense and generates an equivalent negative value added. As such, the imputed banking services have no impact on GDP. Therefore the 1993 SNA recommendation, if fully implemented, will impact on industry GDP and the overall GDP for the total economy (by the part of FISIM allocated to final demands). Among the 20 APO member economies, nine countries have incorporated FISIM in their official national accounts. Due to the lack of information to adjust the data properly, our current decision is to harmonize the data by excluding FISIM from GDP for all countries in the APO Productivity Database.

The 1993 SNA also recommends the capitalization of intangible assets, which changes not only the size of GDP but also the size of capital input. One intangible asset is computer software, which includes pre-packaged software, custom software, and own-account software. Among the APO member countries, only six have capitalized all three types of software. Another five countries exclude own-account software in their capitalization, and in one country only custom software is capitalized. For the APO Productivity Database, tentative adjustments have been made to harmonize data to include software. See Box 2 for details of the adjustments.

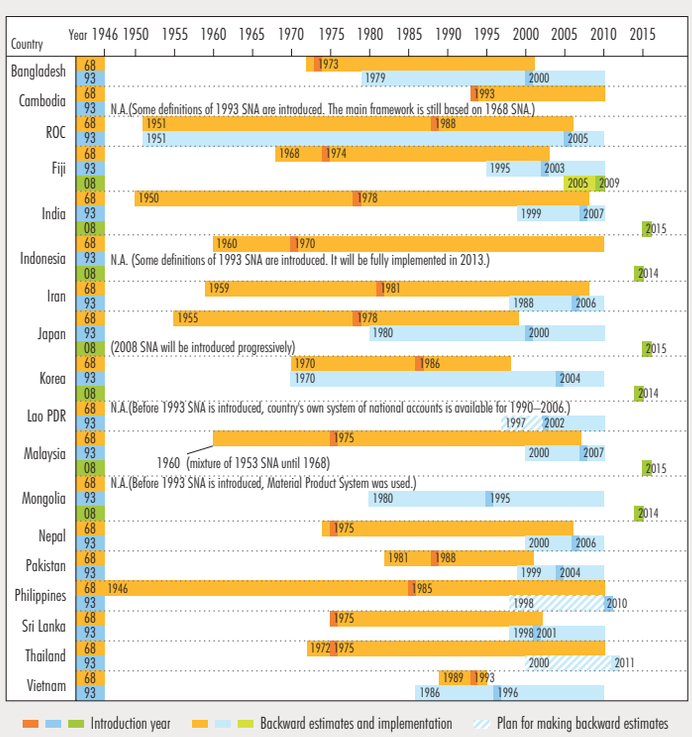

Figure B1: Implementation of the 1968 and 1993 SNA and Plan for the 2008 SNA

Source: APO Metadata Survey 2010.

pulls ahead and reduces the sizes of other economies relative to its own. For example, between 2000 and 2008 Japan shrank from 107.0 per cent to 52.5 per cent, the US from 324.0 per cent to 169.9 per cent, and the EU15 from 318.2 per cent to 162.8 per cent relative to China. Even India, a fast-growing economy, could not match China, with its relative size reduced from 52.0 per cent to 40.9 per cent that of China.

The relative size of the Indian economy is also more accurately reflected as 77.8 per cent of Japan in 2008, compared with 34.3 per cent in 1970. If the economies in India and Japan are assumed to keep their paces of economic growth experienced during 2000–2008 (annual average growth rate is 7.1 per cent for India and 1.2 per cent for Japan), India is expected to be the second-largest economy in Asia in 2013. Then, under this simple assumption for China and the US, the total GDP of the three largest Asian countries will be about 50 per cent larger than the US economy.

Table 2: Cross-country Comparisons of GDP Using PPP, 1970, 1990, 2000, 2007, and 2008
—GDP at constant market prices, using 2005 PPPs

	1970	(%)		1990	(%)		2000	(%)		2007	(%)		2008	(%)
Japan	1,328	100.0	Japan	3,243	100.0	Japan	3,647	100.0	China	6,986	100.0	China	7,656	100.0
India	455	34.3	China	1,264	39.0	China	3,408	93.4	Japan	4,065	58.2	Japan	4,020	52.5
China	285	21.4	India	1,048	32.3	India	1,773	48.6	India	2,979	42.6	India	3,128	40.9
Iran	205	15.4	Korea	458	14.1	Korea	864	23.7	Korea	1,186	17.0	Korea	1,214	15.9
Saudi Arabia	125	9.4	Indonesia	371	11.4	Indonesia	563	15.4	Iran	800	11.5	Indonesia	845	11.0
Indonesia	91	6.8	Iran	370	11.4	Iran	523	14.3	Indonesia	797	11.4	Iran	830	10.8
Korea	77	5.8	Saudi Arabia	312	9.6	ROC	500	13.7	ROC	670	9.6	ROC	676	8.8
Kuwait	73	5.5	ROC	274	8.5	Saudi Arabia	412	11.3	Saudi Arabia	537	7.7	Saudi Arabia	563	7.3
Philippines	69	5.2	Thailand	225	6.9	Thailand	349	9.6	Thailand	495	7.1	Thailand	507	6.6
Pakistan	62	4.7	Pakistan	182	5.6	Pakistan	268	7.3	Pakistan	384	5.5	Pakistan	390	5.1
Thailand	55	4.2	Philippines	148	4.6	Malaysia	240	6.6	Malaysia	341	4.9	Malaysia	358	4.7
ROC	52	3.9	Hong Kong	135	4.2	Philippines	201	5.5	Philippines	283	4.1	Philippines	294	3.8
Bangladesh	51	3.8	Malaysia	120	3.7	Hong Kong	199	5.4	Hong Kong	277	4.0	Hong Kong	283	3.7
Malaysia	30	2.3	UAE	92	2.8	UAE	152	4.2	UAE	247	3.5	UAE	265	3.5
Hong Kong	30	2.2	Bangladesh	78	2.4	Singapore	152	4.2	Singapore	223	3.2	Singapore	228	3.0
Singapore	15	1.1	Singapore	74	2.3	Bangladesh	124	3.4	Vietnam	210	3.0	Vietnam	223	2.9
Sri Lanka	14	1.0	Vietnam	60	1.8	Vietnam	124	3.4	Bangladesh	184	2.6	Bangladesh	195	2.6
Qatar	10	0.8	Kuwait	45	1.4	Kuwait	79	2.2	Kuwait	121	1.7	Kuwait	129	1.7
Myanmar	8.4	0.6	Sri Lanka	34	1.1	Sri Lanka	57	1.6	Sri Lanka	80	1.2	Qatar	85	1.1
Brunei	6.8	0.5	Oman	28	0.9	Oman	44	1.2	Qatar	73	1.0	Sri Lanka	85	1.1
UAE	4.7	0.4	Qatar	19	0.6	Qatar	38	1.1	Myanmar	59	0.8	Oman	66	0.9
Oman	4.6	0.3	Nepal	15	0.5	Myanmar	27	0.7	Oman	58	0.8	Myanmar	60	0.8
Bahrain	3.9	0.3	Myanmar	15	0.4	Nepal	25	0.7	Nepal	32	0.5	Nepal	33	0.4
Mongolia	1.5	0.1	Brunei	13	0.4	Brunei	16	0.4	Cambodia	25	0.4	Cambodia	26	0.3
Fiji	1.3	0.1	Bahrain	9.4	0.3	Bahrain	15	0.4	Bahrain	24	0.3	Bahrain	25	0.3
			Cambodia	6.6	0.2	Cambodia	13	0.4	Brunei	19	0.3	Brunei	18	0.2
			Mongolia	4.5	0.1	Lao PDR	7.2	0.2	Lao PDR	11	0.2	Lao PDR	12	0.2
			Lao PDR	3.9	0.1	Mongolia	4.9	0.1	Mongolia	8.0	0.1	Mongolia	8.7	0.1
			Fiji	2.6	0.1	Fiji	3.2	0.1	Fiji	3.6	0.1	Fiji	3.6	0.0
(regrouped)			(regrouped)			(regrouped)			(regrouped)			(regrouped)		
APO20	2,538	191.1	APO20	6,855	211.4	APO20	9,638	264.3	APO20	13,055	186.9	APO20	13,360	174.5
Asia23	2,837	213.7	Asia23	8,146	251.2	Asia23	13,089	358.9	Asia23	20,119	288.0	Asia23	21,095	275.5
Asia29	3,059	230.4	Asia29	8,652	266.8	Asia29	13,829	379.2	Asia29	21,179	303.2	Asia29	22,229	290.3
East Asia	1,772	133.5	East Asia	5,379	165.9	East Asia	8,623	236.4	East Asia	13,193	188.8	East Asia	13,858	181.0
South Asia	583	43.9	South Asia	1,357	41.8	South Asia	2,247	61.6	South Asia	3,659	52.4	South Asia	3,832	50.1
ASEAN	276	20.8	ASEAN	1,037	32.0	ASEAN	1,692	46.4	ASEAN	2,463	35.3	ASEAN	2,572	33.6
GCC	221	16.7	GCC	505	15.6	GCC	740	20.3	GCC	1,060	15.2	GCC	1,134	14.8
(reference)			(reference)			(reference)			(reference)			(reference)		
US	4,224	318.2	US	7,920	244.2	US	11,043	302.8	US	13,028	186.5	US	13,008	169.9
EU15	4,939	372.0	EU15	8,628	266.1	EU15	10,843	297.3	EU15	12,433	178.0	EU15	12,466	162.8

Unit: Billions of US dollars at constant market prices, using 2005 PPPs.
Note: See Box 2 for the adjustments made to harmonize GDP coverage across countries.
Sources: Official national accounts in each country, including our adjustments.

The relative size of ASEAN[9] in 2008 also doubled from 31.0 per cent using the exchange-rate-based GDP to 64.0 per cent that of Japan using the PPP-based GDP. However the effect of using PPPs only marginally raised the relative size of GCC countries against Japan from 21.7 per cent to 28.2 per cent in 2008. As of 2008, the combined size of the Asia23 economies and Asia29 including GCC is 62.2 per cent and 70.9 per cent larger than the US economy and 69.2 per cent and 78.3 per cent larger than that of EU15, respectively. Even excluding the three non-APO members from Asia23, APO20 as a group is similar in size to the US economy and EU15, equivalent to 102.7 per cent of

9: ASEAN (the Association of Southeast Asian Nations) consists of Brunei, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam.

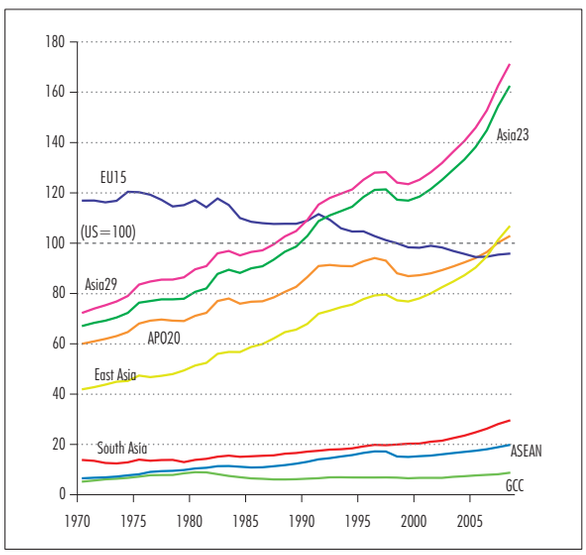

Figure 3: GDP Relative to the US, 1970–2008
—Indices of GDP at constant market prices, using 2005 PPPs (US=100)

Sources: Official national accounts in each country, including our adjustments.

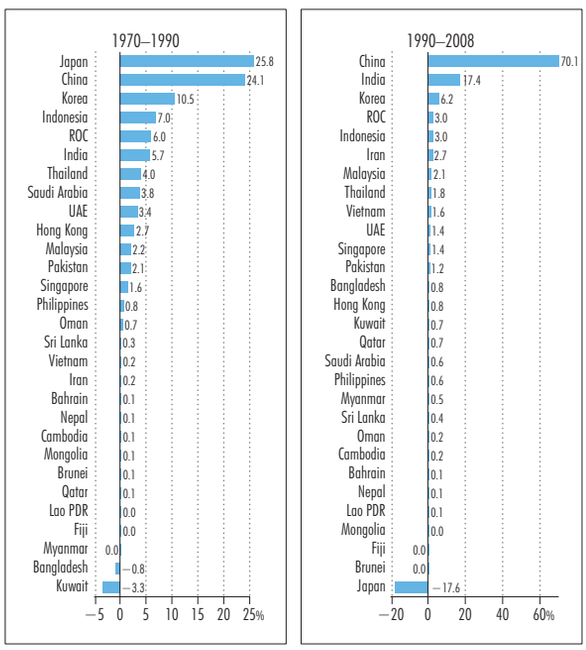

Figure 4: Country Origins of Regional Economic Growth Relative to the US, 1970–1990 and 1990–2008
—Contribution share to the growth differential between Asia29 and the US (the gap of growth rates=100)

Sources: Official national accounts in each country, including our adjustments.

the former and 107.2 per cent of the latter in 2008. The balance of the world economy is shifting, and Asia as a regional economy is gaining weight.

3.2 Economic Growth

Figure 3 traces the time path of the changes in the economic size of EU15, APO20, Asia23, Asia29, East Asia, South Asia, ASEAN, and GCC relative to the US (= 100) since 1970. Over the past four decades APO20 has been expanding in its relative size, from 60.1 per cent of the US economy in 1970 to roughly the same size (102.7 per cent) in 2008. Progress was put back by the impact of the Asian financial crisis in 1997–1998, as can be clearly seen in the chart. It took APO20 as a group nearly a decade to recover the lost ground and return to its peak before the dip in the late 1990s in terms of its size relative to the US; by 2008 it had caught up. While APO20 has been expanding, EU15 has been experiencing a relative decline in economic size over the same period, from 116.9 per cent of the US economy in 1970 to a low of around 94.5 per cent in 2005 and 2006. Since then EU15 has stopped shrinking against the US, and reached 95.8 per cent of the US economy in 2008. Only time will tell if this is the start of an upturn in the trend. The difference in fortunes for the two regions is made more pronounced when China, Brunei, and Myanmar are included in the Asian group (Asia23).

In Figure 3 we can clearly see the impact of China, with its recent impressive growth performance, which accounts for most of the acceleration in the Asian group's overtaking process from around 1990 to 2008. Adding GCC countries (Asia29) lifts the level but does not alter the shape of the trend. Looking at GCC countries as a group, its relative size has stayed fairly constant over the years. But if we look at its real income, which takes into account of the impact of terms-of-trade movements on consumption possibilities, the story is quite different (see Chapter 7).

Between 1990 and 2008 the Asian economy (Asia23) was growing at 5.3 per cent per year on average, compared with 2.8 per cent in the US economy. China accounted for 70.1 per cent of this growth differential (i.e. 2.5 per cent per annum), as shown in the right-hand chart of Figure 4.[10] This was followed by India, contributing 17.4 per cent to the region's relative expansion. Those countries which had been hardest hit by the Asian financial crisis in 1997–

10: The regional economic growth relative to the US is the sum of the contributions by countries in the region as in: $\sum_x (1/2)(s_x^t + s_x^{t-1}) \ln(GDP_x^t / GDP_x^{t-1})$ where s_x^t is a share of GDP in country x with respect to the regional GDP in period t.

Box 2 Adjustments in GDP

The coverage of GDP is harmonized by adjusting the treatment of three factors: FISIM, software, and valuables. In addition to these adjustments, an extra adjustment is necessary for the harmonization of the price concept of GDP. Procedures for all these adjustments are explained below.

1) FISIM

Among the 20 APO member countries, only the ROC, India, and Korea allocate FISIM to final demands in their national accounts, as does the US as a reference country in this report. Our current decision is to harmonize the data by excluding FISIM from GDP for all countries in the APO Productivity Database. For the ROC and Korea (Cho, 2000; Ahn, 2008), although FISIM or the imputed banking service charge is available, information on the proportion which has been allocated to the final demands is not available. We tentatively impute this proportion using an average of the ratios of Japanese trial estimates (by the Economic and Social Research Institute, Cabinet Office of Japan) calculated over the period 1995–2007. This average comes up as 40 per cent. The proportions by which our adjustments for FISIM reduce GDP of these four countries in 2007 are 3.7 per cent of GDP (the ROC), 1.9 per cent (India), 2.2 per cent (Korea), and 1.6 per cent (the US).

2) Software

The treatment of software also varies across countries. Among the countries studied, software investment is available only for the ROC, Japan, Korea, and China. To harmonize data, a country's GDP is adjusted to include software investment (through its software industry) by using the ratio between software investment and GDP (hereafter software ratio) and the tangible GFCF to GDP ratio (hereafter GFCF ratio). Data from the OECD Productivity Database (Schreyer, Bignon, and Dupont, 2003) and APO Productivity Database suggest an inverse relationship between these two ratios (Figure B2). Countries with a low GFCF ratio tend to be those with high per capita GDP, and the observed data suggest that information technology tends to play a more important role in these countries than in the less developed countries. Furthermore, it is observed from the OECD and APO software data that the software ratio has been gradually increasing over the past 25 years.

We apply this inverse relationship between these two ratios observed from the OECD countries to estimate the software ratio in 2006 for those APO member countries which do not capitalize software investment. The estimated ratios for individual countries in 2006 are gradually tapered off as we move back in time. However, there is an exception. Countries at the very early stage of economic growth are found to have a GFCF ratio as low as countries with high per capita GDP, but for a different reason. The low GFCF ratio is explained by the fact that these countries have not experienced economic development yet, and in turn this does not imply an important role for software investment. In this report, we regard Cambodia, Lao PDR, and Nepal as countries at the very early stage of economic development, and assign Vietnam's software ratio, which is the lowest of all APO member countries, to these countries.

Another problem arises from partial software capitalization. There are three types of software: custom software, pre-packaged software, and own-account software. Countries may have capitalized one or two types of software, but software investment data are often not available separately. We attempt to adjust for the varied level of capitalization across countries by adding the type of software which was not capitalized to countries' GDP. In the case of Japan's own-account software and ownership transfer cost, we used estimates by Nomura (2004) and added these to the GDP of Japan's software industry and GFCF.

3) Valuables

Valuables are defined as "goods of considerable value that are not used primarily for purposes of production or consumption but are held as stores of value over time" (United Nations, 1993: para. 10.7). They are held under the expectation that their prices will not deteriorate and will rise in the long run. Valuables consist of precious stones and metals such as diamonds; art-works such as paintings and sculptures; and other valuables such as jewelry made from stones and metals. In some countries, net acquisitions of valuables are recorded as a part of capital formation. Our current decision is to harmonize the data by excluding net acquisition of valuables from GDP for all countries in the APO Productivity Database. According to our calculation, the figures were 1.1 per cent of GDP for India and 0.05 per cent for EU15 in 2007.

4) GDP at basic prices

GDP can be valued using different price concepts: market prices, factor cost, and basic prices. If the price concept is not standardized across countries, it will interfere with the international comparisons. All the countries we covered in this Databook officially report GDP at market prices, but this is not true for GDP at factor cost and GDP at basic prices. Thus international comparisons in Section 3 (on

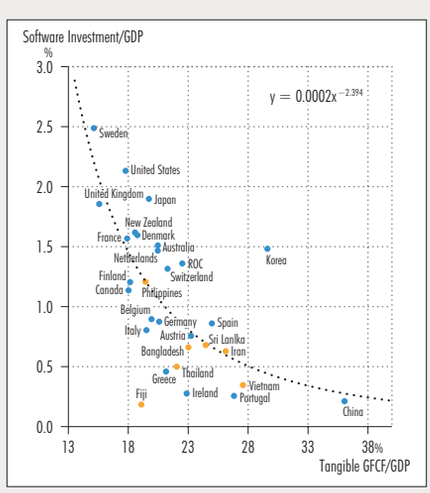

Figure B2: Software Investment Ratio and GFCF Ratio to GDP, 2005

Source: APO Productivity Database 2011.01.

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economic scale and growth) and Section 4 (on final demand) are based on GDP at market prices. However, by valuing output and input at the prices that producers actually pay and receive, GDP at basic prices is a more appropriate measure of countries' output than GDP at market prices for international comparisons of total factor productivity and industry performance, as it is a measure from the producers' perspective. Hence, Chapter 5 on whole-economy productivity performance are based on GDP at basic prices.

These three concepts of GDP differ in the treatment of indirect tax and subsidies. The difference between GDP at basic prices and GDP at market prices is "taxes on products" minus "subsidies on products." "Taxes on products" are the indirect taxes payable on goods and services mainly when they are produced, sold, and imported, and "subsidies on products" are subsidies payable on goods and services mainly when they are produced, sold, and imported. Since GDP at basic prices is available for only a few countries, such as Iran and Korea, we need to construct GDP at basic prices for all other countries. To obtain GDP at basic prices, we subtract "taxes on products" from and add "subsidies on products" to GDP at market prices, which is available for all the countries studied. The main data sources for estimating "taxes on products" and "subsidies on products" are tax data in national accounts and the IMF's GFS.

Table 3: Cross-country Comparisons of GDP Growth, 1990–1995, 1995–2000, 2000–2005, and 2005–2008
—Average annual growth rate of GDP at constant market prices

1990–1995		1995–2000		2000–2005		2005–2008		1990–2008		2000–2008	
China	11.6	Qatar	11.0	Myanmar	12.1	Qatar	13.7	China	10.0	China	10.1
Kuwait	9.2	China	8.3	China	9.3	China	11.5	Qatar	8.3	Myanmar	10.0
Malaysia	9.1	Cambodia	7.1	Cambodia	9.0	Cambodia	8.9	Myanmar	7.9	Qatar	10.0
Singapore	8.4	Vietnam	6.7	Qatar	7.8	Mongolia	8.8	Cambodia	7.7	Cambodia	8.9
Thailand	8.3	Myanmar	6.6	Kuwait	7.3	Oman	8.2	Vietnam	7.3	Vietnam	7.3
Vietnam	7.9	UAE	6.4	Vietnam	7.3	Lao PDR	7.7	Lao PDR	6.4	Mongolia	7.2
Korea	7.6	Lao PDR	6.0	India	6.8	India	7.7	Singapore	6.2	India	7.1
Indonesia	7.6	Singapore	5.8	UAE	6.6	UAE	7.5	India	6.1	UAE	6.9
ROC	7.0	India	5.7	Mongolia	6.3	Vietnam	7.4	Malaysia	6.0	Lao PDR	6.7
Cambodia	6.5	Bangladesh	5.1	Lao PDR	6.2	Bahrain	6.9	Kuwait	5.9	Bahrain	6.3
Lao PDR	6.2	Korea	5.1	Bahrain	5.9	Sri Lanka	6.6	UAE	5.9	Kuwait	6.2
Myanmar	5.7	ROC	5.0	Iran	5.7	Myanmar	6.4	Bahrain	5.5	Iran	5.8
Oman	5.7	Sri Lanka	4.9	Bangladesh	5.3	Bangladesh	6.2	Korea	5.4	Bangladesh	5.6
Bahrain	5.3	Nepal	4.8	Thailand	5.0	Singapore	6.1	Bangladesh	5.1	Indonesia	5.1
Sri Lanka	5.3	Malaysia	4.7	Pakistan	4.9	Iran	5.9	Sri Lanka	5.0	Singapore	5.1
Hong Kong	5.1	Iran	4.3	Malaysia	4.7	Indonesia	5.8	ROC	5.0	Oman	5.0
Nepal	4.9	Bahrain	4.3	Indonesia	4.6	Malaysia	5.6	Oman	4.7	Malaysia	5.0
India	4.8	Philippines	3.9	Singapore	4.5	Philippines	5.3	Indonesia	4.6	Sri Lanka	4.9
Pakistan	4.5	Mongolia	3.6	Philippines	4.4	Hong Kong	5.0	Thailand	4.5	Philippines	4.7
Bangladesh	4.3	Pakistan	3.2	Korea	4.3	Nepal	4.7	Iran	4.5	Pakistan	4.7
UAE	3.6	Oman	3.2	Hong Kong	4.1	Kuwait	4.4	Nepal	4.3	Thailand	4.7
Qatar	3.0	Saudi Arabia	2.7	Sri Lanka	4.0	Pakistan	4.4	Pakistan	4.2	Hong Kong	4.4
Brunei	3.0	Hong Kong	2.6	Saudi Arabia	3.9	Thailand	4.1	Hong Kong	4.1	Korea	4.2
Saudi Arabia	2.9	Kuwait	2.1	ROC	3.6	Korea	4.1	Philippines	3.8	Saudi Arabia	3.9
Fiji	2.7	Fiji	2.0	Oman	3.1	ROC	4.0	Mongolia	3.7	ROC	3.8
Iran	2.6	Brunei	1.6	Nepal	3.1	Saudi Arabia	3.9	Saudi Arabia	3.3	Nepal	3.7
Philippines	2.2	Japan	1.0	Brunei	2.2	Japan	1.1	Brunei	2.1	Brunei	1.7
Japan	1.4	Indonesia	0.8	Fiji	2.0	Brunei	1.0	Fiji	1.9	Fiji	1.4
Mongolia	−1.8	Thailand	0.5	Japan	1.3	Fiji	0.4	Japan	1.2	Japan	1.2
(regrouped)		(regrouped)		(regrouped)		(regrouped)		(regrouped)		(regrouped)	
APO20	3.9	APO20	3.0	APO20	3.9	APO20	4.4	APO20	3.7	APO20	4.1
Asia23	5.3	Asia23	4.2	Asia23	5.5	Asia23	6.8	Asia23	5.3	Asia23	6.0
Asia29	5.2	Asia29	4.2	Asia29	5.5	Asia29	6.7	Asia29	5.2	Asia29	5.9
East Asia	5.2	East Asia	4.3	East Asia	5.3	East Asia	7.0	East Asia	5.3	East Asia	5.9
South Asia	4.8	South Asia	5.3	South Asia	6.4	South Asia	7.2	South Asia	5.8	South Asia	6.7
ASEAN	7.2	ASEAN	2.6	ASEAN	5.0	ASEAN	5.6	ASEAN	5.0	ASEAN	5.2
GCC	3.9	GCC	3.7	GCC	5.1	GCC	5.7	GCC	4.5	GCC	5.3
(reference)		(reference)		(reference)		(reference)		(reference)		(reference)	
US	2.5	US	4.2	US	2.4	US	1.5	US	2.8	US	2.0
EU15	1.7	EU15	2.9	EU15	1.6	EU15	1.9	EU15	2.0	EU15	1.7

Unit: Percentage.
Note: See Box 2 for the adjustments made to harmonize GDP coverage across countries.
Sources: Official national accounts in each country, including our adjustments.

1998 recovered from the recession and showed positive contributions to the regional relative economic growth. Comparing with the preceding two decades of 1970–1990, Japan had the biggest turnaround in roles. In the period 1970–1990, Japan, together with China, was the main engine driving Asian economic growths in the catch-up with the US (the left-hand chart of Figure 4). But since the 1990s, Japan has been the only economy in the Asia-Pacific region to grow more slowly than the US. Japan's growth rate was 1.2 per cent on average a year between 1990 and 2008, short of the 2.8 per cent on average a year in the US. Combining with the weight of its economy in the region, Japan's slower growth is reflected as a sizeable drag of 17.6 per cent on the regional relative growth in the period 1990–2008.

Table 3 presents cross-country comparisons of economic growth in Asia in six recent periods: 1990–1995, 1995–2000, 2000–2005, 2005–2008, 1990–2008, and 2000–2008.[11] During the latter half of the 1990s growth slowed across the Asian countries. The region's growth was 4.2 per cent per year on average (for both of Asia23 and Asia29) in the period 1995–2000, compared with 5.3 per cent for Asia23 (5.2 per cent for Asia29) in the previous period, reflecting the impact of the Asian financial crisis in 1997–1998. ASEAN countries were particularly hard hit, with average annual growth slowing from 7.2 per cent in 1990–1995 to 2.6 per cent in

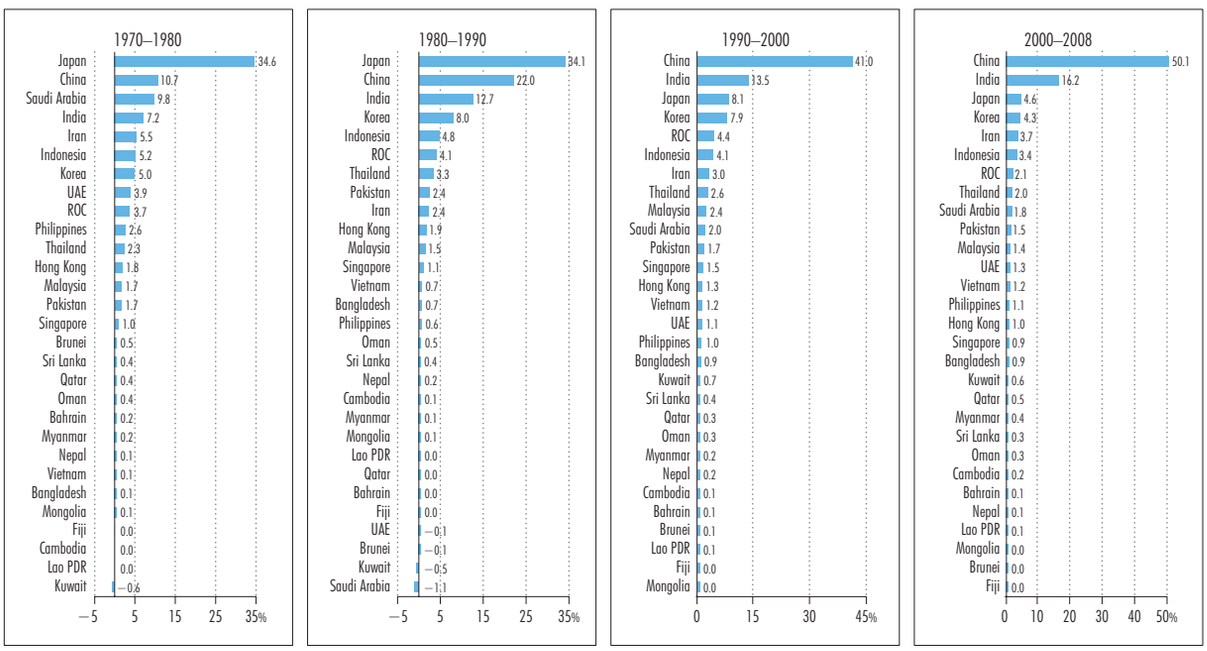

Figure 5: Country Contributions to Asian Economic Growth, 1970–1980, 1980–1990, 1990–2000, and 2000–2008
—Contribution share to the growth of gross regional products (growth rate of Asia29=100)

Sources: Official national accounts in each country, including our adjustments.

1995–2000. In contrast, growth in the US and EU15 accelerated over the same period from 2.5 per cent to 4.2 per cent and from 1.7 per cent to 2.9 per cent respectively. In the 2000s growth in Asia recovered, achieving 6.8 per cent a year on average for Asia23 (6.7 per cent for Asia29) in 2005–2008. Growth in ASEAN countries also accelerated to 5.6 per cent a year on average, although it was still lower than their pre-crisis average growth rate of 7.2 per cent. These compare with 1.5 per cent and 1.9 per cent achieved in the US and EU15.

Within the Asian region the performance was again dominated by China, which achieved spectacular growth of 10.0 per cent on average per annum in the period 1990–2008. At 8.3 per cent on average per annum, growth was somewhat slower in the second half of the 1990s before it accelerated back to a rate of over 10.1 per cent in 2000–2008. China was not the only economy enjoying vibrant growth. Qatar, Cambodia, Vietnam, Mongolia, and India are also sustaining spectacular performance. In terms of growth rate, South Asia pulled ahead of East Asia in the 2000s: 6.7 per cent on average per annum compared with 5.9 per cent.

The shift in the economic balance in the Asian regional economy can be clearly seen in Figure 5.[12] Japan was the story of yesteryears while China and India emerge as the driving force propelling Asia forward. The fast growth of China in the past two decades, combined with its size, meant that it toppled Japan as the leading contributor to the region's growth. In 2000–2008, China's contribution was just over 50 per cent. India also rose to take second place, accounting for 16.2 per cent of the region's growth over the same period. Other fast-growing economies in South Asia are too small to make a significant impact on the region's growth and the heavy weight of China simply dwarfed their effort. In contrast, despite being the slowest-growing economy in Asia in the past two decades, managing only a relatively lackluster 1.2 per cent on average per year, Japan remained the third-largest contributor to the region's growth due to the size of its economy.

11: Annual data maximize the use of available information and data, and are normally published two to three years in arrears. For more timely analysis, quarterly economic data are used as they are normally published within a month of the reference period and are subsequently revised as more data become available. That is, there is a trade-off between data timeliness and precision. See Box 5 for more details.

12: The regional economic growth is the sum of the contributions by countries in the region as in: $\sum_x (1/2)(s_x^t + s_x^{t-1}) \ln(GDP_x^t / GDP_x^{t-1})$ where s_x^t is a nominal share of GDP in country x with respect to the regional GDP in period t.

3.3 Catching Up in Per Capita GDP

Asia is a populous region. In 2008 it accounted for 57 per cent (52 per cent for Asia23) and China and India alone account for more than one-third of the world's population (Figure 6). Performance comparisons based on whole-economy GDP do not take into account the population size and can in turn exaggerate the well-being of countries with large populations. Despite its limitations, per capita GDP, which adjusts for differences in the population size, is more commonly used for international comparisons of performance.[13]

Figure 7 provides snapshot comparisons in per capita GDP measure for the years of 1970, 1990, 2000, and 2008. The results highlight the outcome of the dramatic development effort made by the four Asian Tigers (Singapore, Hong Kong, the ROC, and Korea). Not only were they edging to the top, they were also constantly closing the gap with the US. In 2008 Singapore had a per capita GDP level 10.0 per cent above that of the US. This represented a remarkable achievement considering that Singapore's per capita GDP was only 35.7 per cent that of the US in 1970. Within three-and-a-half decades, Singapore had

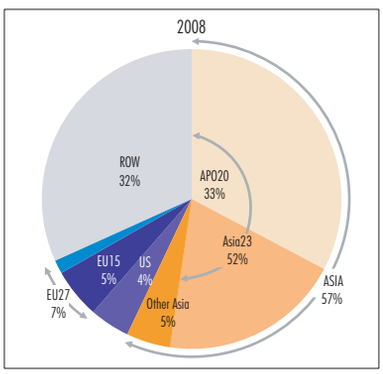

Figure 6: Share of Asian Population in the World in 2008

Source: World Bank's World Development Indicators.

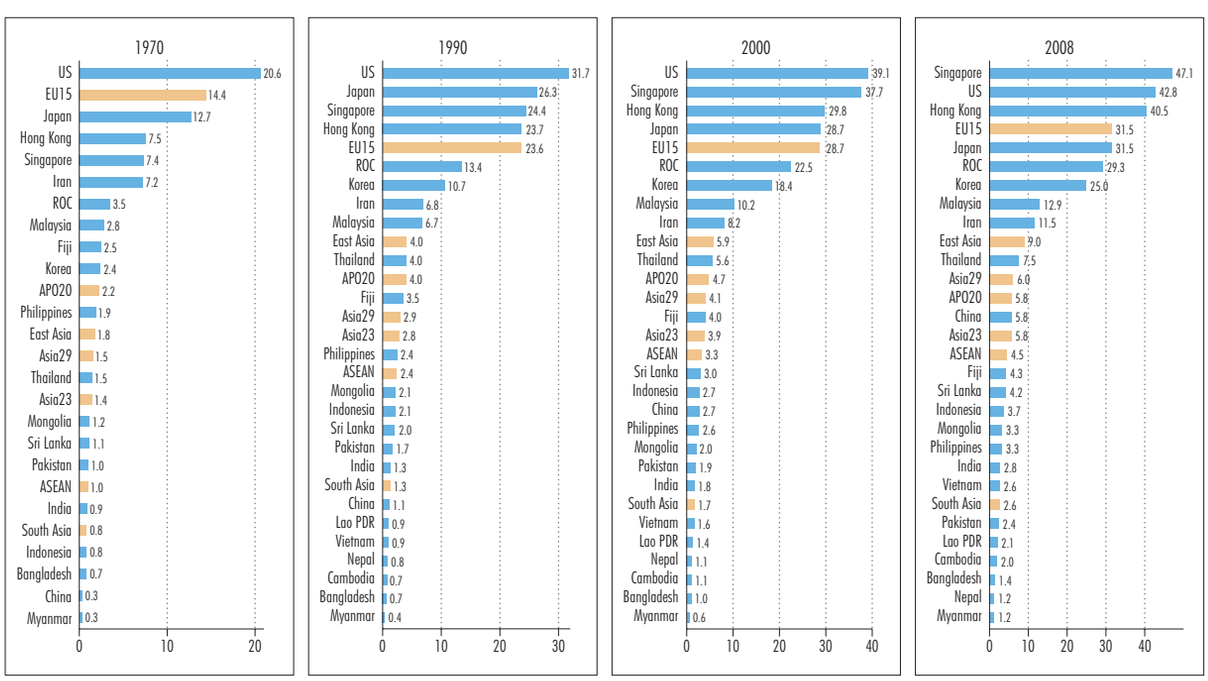

Figure 7: Per Capita GDP, 1970, 1990, 2000, and 2008
—GDP at constant market prices per person, using 2005 PPPs

Sources: Official national accounts in each country, including our adjustments.

13: Even so, it is not without its shortcomings as a welfare measure. As noted in Box 3, a rise in the per capita GDP data does not always directly translate into an improvement in the welfare of the people concerned. In fact, as an average measure, per capita GDP can bear little relevance to individuals' personal experience if, for example, the distribution of economic gain is highly skewed or economic advancement has been achieved at high environmental and health costs which are not accounted for in the statistics. There are a lot more attributes to individuals' welfare than captured in one simple measure called per capita GDP. Supplementary statistics are therefore necessary in order to build a fuller picture of progress made in individual well-being.

Box 3 Limitations of GDP as a Welfare Measure

GDP is a measure of production, but it is often taken as a measure of welfare. The strong appeal of GDP stems from it being a single headline figure constructed on a more-or-less consistent basis of the System of National Accounts (SNA), allowing simple comparisons of socio-economic performance over time or across countries.

However, the SNA makes no claim that GDP is a welfare measure. Indeed the SNA highlights its several conventions that argue against the welfare interpretation of the accounts (para.1.75, United Nations, 2009). Among other things, the SNA acknowledges that the accounts do not capture welfare-reducing environmental externalities caused by some productive activities, and notes that major natural disasters (i.e. welfare-reducing external events) can be reflected as an increase in GDP if the need to repair the damage in their aftermath induces extra productive activities. Furthermore, welfare is not determined by economic factors alone but is necessarily a multi-faceted concept. While the basic structure of the SNA can be extended, by means of satellite accounts, to address some of the omissions, e.g. the environmental accounts and the household accounts, it is more difficult to envisage that other more subjective welfare parameters, such as health and satisfaction, can be meaningfully incorporated into a system designed primarily to facilitate economic analysis.

National accounts data used in this report are in compliance with the 1993 SNA for most countries. However, the 1993 SNA has become increasingly inadequate even in what it was designed to measure. It has fallen behind the rapidly changing economic environment in many countries, and has not taken advantage of the recent advancement in methodology research in measuring some of the more difficult components of the accounts. New aspects of economies have come into prominence, and in turn shifted the focus of analytical attention. To meet the arising needs of data users, an overhaul of the 1993 SNA has been carried out and the result of this effort is the 2008 SNA.

As economies evolve rapidly, the accuracy of GDP (under the 1993 SNA) in measuring growth has been compromised. More specifically, the 1993 SNA does not adequately capture "the new economy" – a term coined in the late 1990s to collectively refer to the new, high-growth industries which were on the cutting edge of knowledge and technology, such as the internet and the increasingly powerful computers. This failure stems from its coverage and the system's insensitivity to quality changes.

To address these shortcomings, the 2008 SNA expands coverage by updating recommendations regarding the financial sector to reflect one of the fastest-changing segments of many economies. In particular, it provides a more comprehensive overview of financial services, expanding the financial assets boundary and introducing some new functional classifications. The 2008 SNA also recommends that producer unit undertaking ancillary activities to be recognized as a separate establishment in certain cases, as opposed to be always regarded as an integral part of the establishments it served in the 1993 SNA. This mainly affects large establishments which engage in a large diversity of production, and will give rise to more homogeneous institutional units. As the SNA defines industries in terms of establishments, this amendment will lead to a clearer demarcation of industries, and in turn facilitate analyses of production, in which the technology of production plays an important role.

Furthermore, to better represent the knowledge economy, the 2008 SNA recommends that a separate establishment should be distinguished for research and development when possible, and that databases to be included in the asset category of computer software. The chapter concerning prices and volumes has also been significantly updated to reflect the latest methodological developments in the area, including the measurement of changes in quality over time. As quality change is an increasing feature of product markets, appropriate quality adjustment procedures have become all the more important in accurately measuring volume changes. For compiling volume indices of non-market services, prices of which are not available, the 2008 SNA recommends the direct "output volume method", based on quantity indicators, adequately quality-adjusted, and weighted together using average cost weights. On the input side, the 2008 SNA recommends that estimates of capital services be compiled in a supplementary table, which will greatly facilitate, among other things, productivity analysis. Methods for compiling real income (see Chapter 7 in this report) have also been included in the 2008 SNA.

When implemented, the 2008 SNA should make a significant improvement in the accounts to track economic growth and developments more accurately, and to offer a wealth of data for analysing modern-day economies. Discussion of the broader welfare dimensions and indicators that falls outside the SNA can be found in Stiglitz, Sen, and Fitoussi (2009), covering the notions of quality of life and sustainability.

At the core of the concept of sustainability is a set of wealth accounts which go beyond the SNA to include natural capital, produced capital, intangible capital (i.e. human capital and institutional capital). Measuring and managing natural capital systematically is of particular pertinence to the oil-rich West Asian countries covered in this report. The World Bank (2011) presents a set of "wealth accounts" for over 150 countries for 1995, 2000, and 2005 to assess long term global, regional and country performance in building wealth. Their findings confirm expectations that developing countries differ sharply from developed countries in where their wealth is based. In 2005 natural capital (forests, farmland, energy, and minerals) accounted for 20–35 per cent of total wealth in the low-income group, compared with only 2 per cent in the high income OECD countries. The share of natural capital exceeded that of produced capital (13 per cent) in the low-income group. "Intangible" capital was the largest component across all country groups, accounting 57 per cent of total wealth in low income group and 81 per cent in the high income group. Growth in intangible capital accounted for nearly 100 per cent of the increase in wealth in Sub-Saharan Africa, Eastern Europe, and Central Asia. This share was 80 per cent in South Asia and 72 per cent in Latin America and Caribbean.

A strong message emerged from the World Bank report is that development is about leveraging natural capital for growth. The challenge is how a developing

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country transforms non-renewable capital into other assets. This requires not only efficient extraction of resources but also sound institutional capital for recovering the resource rent and making sure it is channeled into long-term growth through careful investment. Botswana was highlighted as the flagship country in this respect. In contrast, Middle East and North Africa accumulated least additional wealth of all regions during the period of 1995–2005. This might suggest that they are not meeting their long-term development challenge especially if they are currently enjoying high GDP growth.

Table 4: Cross-country Comparisons of Per Capita GDP, 1970, 1990, 2000, 2007, and 2008

—GDP at constant market prices per person, using 2005 PPPs

	1970	(%)		1990	(%)		2000	(%)		2007	(%)		2008	(%)
Japan	12.7	100.0	Japan	26.3	100.0	Singapore	37.7	100.0	Singapore	48.6	100.0	Singapore	47.1	100.0
Hong Kong	7.5	59.1	Singapore	24.4	92.9	Hong Kong	29.8	79.1	Hong Kong	40.0	82.2	Hong Kong	40.5	86.1
Singapore	7.4	57.8	Hong Kong	23.7	90.3	Japan	28.7	76.3	Japan	31.8	65.4	Japan	31.5	66.9
Iran	7.2	56.6	ROC	13.4	51.2	ROC	22.5	59.6	ROC	29.2	60.1	ROC	29.3	62.3
ROC	3.5	27.7	Korea	10.7	40.7	Korea	18.4	48.8	Korea	24.5	50.4	Korea	25.0	53.1
Malaysia	2.8	22.0	Iran	6.8	25.9	Malaysia	10.2	27.1	Malaysia	12.6	25.8	Malaysia	12.9	27.4
Fiji	2.5	19.4	Malaysia	6.7	25.3	Iran	8.2	21.7	Iran	11.3	23.2	Iran	11.5	24.5
Korea	2.4	18.7	Thailand	4.0	15.1	Thailand	5.6	14.9	Thailand	7.4	15.2	Thailand	7.5	16.0
Philippines	1.9	14.9	Fiji	3.5	13.5	Fiji	4.0	10.7	China	5.3	10.9	China	5.8	12.3
Thailand	1.5	11.7	Philippines	2.4	9.3	Sri Lanka	3.0	8.0	Fiji	4.3	8.8	Fiji	4.3	9.1
Mongolia	1.2	9.2	Mongolia	2.1	8.2	Indonesia	2.7	7.2	Sri Lanka	4.0	8.3	Sri Lanka	4.2	9.0
Sri Lanka	1.1	8.8	Indonesia	2.1	7.9	China	2.7	7.1	Indonesia	3.5	7.3	Indonesia	3.7	7.9
Pakistan	1.0	8.0	Sri Lanka	2.0	7.6	Philippines	2.6	7.0	Philippines	3.2	6.6	Mongolia	3.3	7.0
India	0.8	6.7	Pakistan	1.7	6.4	Mongolia	2.0	5.4	Mongolia	3.1	6.3	Philippines	3.3	6.9
Indonesia	0.8	6.1	India	1.3	4.8	Pakistan	1.9	5.2	India	2.7	5.5	India	2.8	5.9
Bangladesh	0.7	5.8	China	1.1	4.2	India	1.8	4.7	Vietnam	2.5	5.1	Vietnam	2.6	5.6
China	0.3	2.7	Lao PDR	0.9	3.6	Vietnam	1.6	4.3	Pakistan	2.4	5.0	Pakistan	2.4	5.2
Myanmar	0.3	2.5	Vietnam	0.9	3.5	Lao PDR	1.4	3.7	Lao PDR	2.0	4.0	Lao PDR	2.1	4.4
			Nepal	0.8	3.2	Nepal	1.1	2.9	Cambodia	1.9	3.9	Cambodia	2.0	4.2
			Cambodia	0.7	2.8	Cambodia	1.1	2.9	Bangladesh	1.3	2.8	Bangladesh	1.4	3.0
			Bangladesh	0.7	2.7	Bangladesh	1.0	2.7	Nepal	1.2	2.5	Nepal	1.2	2.6
			Myanmar	0.4	1.4	Myanmar	0.6	1.5	Myanmar	1.2	2.5	Myanmar	1.2	2.6
Bahrain	18.8	148.1	Bahrain	19.4	74.0	Bahrain	23.9	63.6	Bahrain	31.4	64.7	Bahrain	32.7	69.5
Kuwait	97.6	767.1	Kuwait	21.0	80.0	Kuwait	35.9	95.3	Kuwait	45.5	93.5	Kuwait	47.5	100.8
Oman	6.1	48.2	Oman	15.4	58.7	Oman	18.4	48.9	Oman	21.4	44.0	Oman	23.7	50.3
Qatar	90.0	707.0	Qatar	40.8	155.3	Qatar	62.2	165.2	Qatar	64.4	132.5	Qatar	66.6	141.5
Saudi Arabia	21.8	171.6	Saudi Arabia	34.5	131.3	Saudi Arabia	19.9	52.9	Saudi Arabia	22.2	45.7	Saudi Arabia	22.8	48.5
UAE	19.7	154.8	UAE	86.0	327.7	UAE	50.8	134.9	UAE	55.0	113.1	UAE	55.7	118.3
Brunei	52.5	412.7	Brunei	86.1	328.1	Brunei	48.0	127.5	Brunei	48.7	100.1	Brunei	46.9	99.8
(regrouped)			(regrouped)			(regrouped)			(regrouped)			(regrouped)		
APO20	2.2	17.7	APO20	4.0	15.1	APO20	4.7	12.5	APO20	5.8	11.9	APO20	5.8	12.4
Asia23	1.4	11.2	Asia23	2.8	10.7	Asia23	3.9	10.3	Asia23	5.5	11.4	Asia23	5.8	12.2
Asia29	1.5	12.1	Asia29	2.9	11.2	Asia29	4.1	10.8	Asia29	5.8	11.9	Asia29	6.0	12.8
East Asia	1.8	14.1	East Asia	4.0	15.3	East Asia	5.9	15.5	East Asia	8.6	17.7	East Asia	9.0	19.2
South Asia	0.8	6.6	South Asia	1.3	4.8	South Asia	1.7	4.5	South Asia	2.5	5.1	South Asia	2.6	5.5
ASEAN	1.0	7.7	ASEAN	2.4	9.0	ASEAN	3.3	8.7	ASEAN	4.4	9.0	ASEAN	4.5	9.5
GCC	28.4	223.1	GCC	22.0	83.9	GCC	25.1	66.7	GCC	29.5	60.7	GCC	30.7	65.2
(reference)			(reference)			(reference)			(reference)			(reference)		
US	20.6	161.9	US	31.7	120.9	US	39.1	103.9	US	43.2	88.9	US	42.8	90.9
EU15	14.4	113.6	EU15	23.6	89.8	EU15	28.7	76.2	EU15	31.6	65.1	EU15	31.5	67.0

Unit: US dollar at constant market prices, using 2005 PPPs.
Note: See Box 2 for the adjustments made to harmonize GDP coverage across countries.
Sources: Official national accounts in each country, including our adjustments.

overtaken the US per capita GDP level by 2004.[14] Hong Kong follows close behind, at 94.7 per cent of the US level. Japan's per capita GDP level, at 73.6 per cent of the US level or around two-thirds of the group leader, Singapore, is similar to that of EU15. The ROC and Korea trail close behind at 68.6 per cent and 58.4 per cent of the US level, respectively.

The relative performance of China and India, the two most populous countries in the world, is pulled down on this measure due to their population size, with their per capita GDP at 13.5 per cent and 6.4 per cent that of the US in 2008, respectively. Even so, this should not tarnish their remarkable progress made over the past decades, especially China, whose per capita GDP was only 1.7 per cent that of the US in 1970. The per capita GDP level of Asia23 is 13.5 per cent that of the US. Thus the income gap between the US and the majority of Asian countries is

14: Singapore's population comprises not only Singapore citizens but also non-citizens who have been granted permanent residence in Singapore as well as non-permanent residents such as employment pass holders, work permit holders, and student pass holders. It is known that many workers and students commute to Singapore from outside the country every day. According to the most recent census, in 2000 the share of Singapore citizens with respect to total population was 74 per cent, the share of permanent residents who are not Singapore citizens was 7 per cent, and the share of non-permanent residents was 19 per cent.

still sizeable, indicating that there is still a lot of room to catch up.

Table 4 shows cross-country comparisons by per capita GDP in 1970, 1990, 2000, 2007, and 2008. The new data for 2008 bring little change to countries' relative positions when compared with 2007, except that all countries continue to edge a little forward in closing the gap with Japan and the US. Japan's per capita GDP used to top the Asian countries until it was overtaken by Singapore in 1993. Singapore has also achieved what Japan has not managed, i.e. overtaking the US on the per capita GDP measure in 2004. The snapshot comparisons in Table 4 help us catch a glimpse of Japan's catching-up process with the US, with its per capita GDP starting at 61.8 per cent of the US in 1970 and rising to 82.7 per cent in 1990 before declining to the current stable level of around 74 per cent since 2000.

The rise of the Asian Tigers is evident in Table 4. Based on their per capita GDP levels in 1970, the Tigers fall into two natural groups: Singapore and Hong Kong, with per capita GDP at 35.7 per cent and 36.5 per cent that of the US respectively, and the ROC and Korea at 17.1 per cent and 11.6 per cent respectively. By 2008 the income levels had leapt to 110.0 per cent, 94.7 per cent, 68.6 per cent, and 58.4 per cent that of the US for Singapore, Hong Kong, the ROC, and Korea respectively, as a result of their remarkable development efforts. China is another country which has made commendable effort, raising its per capita GDP from 1.7 per cent to 13.5 per cent that of the US between 1970 and 2008. In comparison, India's progress is much slower, with an income level rising from 4.1 per cent to 6.4 per cent over the same period.

Table 4 presents separately the figures for seven oil-rich economies (Brunei and the six GCC countries). At first glance, figures in 1970 and to a lesser extent in 1990 suggest that these economies enjoyed an income many times that of Japan and the US. For example, Kuwait, Qatar, and Brunei had a per capita GDP 7.7 times, 7.1 times, and 4.1 times that of Japan's respectively in 1970.[15] However, the measurement of GDP as an indicator of income is misleading for these countries, as it erroneously includes proceeds from the liquidation of a natural resource stock as part of the income flow. In other words, GDP overestimates income of the oil-exporting economies, as it does not account for depletion of their natural resource assets. A large part of that income is unsustainable into the future when oil is being depleted. As can be seen in Table 4, these countries are struggling to maintain their initial level of per capita income. If the countries have not invested some of their oil revenues productively but have squandered their windfalls instead, the future prospect will be compromised, with a sustainable steady income stream being out of reach and a declining income inevitable. In addition, per capita GDP, which assumes an equal distribution, has probably painted a rosier picture of well-being for the average citizens of these countries than the reality. The concentration of power and wealth is one of the characteristics of the oil-exporting countries in the Middle East. For reasons why natural resource endowment might not be a blessing to a country's development effort, see Box 6.

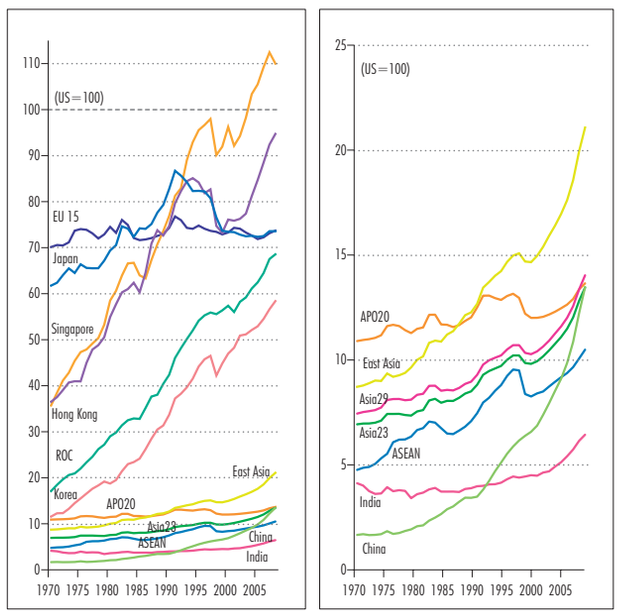

Figure 8: Per Capita GDP Relative to the US, 1970–2008
—Indices of per capita GDP at constant market prices, using 2005 PPPs (US=100)

Sources: Official national accounts in each country, including our adjustments.

Figure 8 plots Asian countries' per capita GDP relative to the US for the period 1970–2008 (with an enlarged picture for low per capita GDP countries given in the right-hand chart). It shows that APO20 as a group has achieved little in terms of catching up with the US, with its relative per capita GDP edging up only marginally from 10.9 per cent to 13.7 per cent of the US level in the past four decades. Including China, Brunei, and Myanmar has the effect of pulling the average per capita GDP down, but Asia23 as a group made a bigger leap from 6.9 per cent to 13.5 per cent over the same period. Yet the group performance conceals the interesting dynamics of individual countries in the region. Japan started its catching up much earlier

15: These extreme figures have been omitted from Figure 7.

Table 5: Country Groups Based on the Initial Economic Level and the Pace of Catching Up with the US

—Level and average annual growth rate of GDP at constant market prices, using 2005 PPPs

Initial GDP Level to the US	Annual Rate to Catch-up to the US			
	(C1) > 3%	(C2) 1% <– < 3%	(C3) 0% <– < 1%	(C4) < 0%
(L1) 60% <			Japan, EU15, UAE	Brunei, Bahrain, Kuwait, Qatar, Saudi Arabia
(L2) 20%<– < 60%	Singapore	Hong Kong, Oman		Iran
(L3) 5% <– < 20%	ROC, Korea	Malaysia, Sri Lanka, Thailand	Mongolia	Fiji, Philippines
(L4) < 5%	Cambodia, China	India, Indonesia, Lao PDR, Vietnam, Myanmar	Nepal, Pakistan	Bangladesh

Note: The annual catch-up rates are based on the difference in the growths of per capita GDP at constant prices between each country and the US during 1970–2008. The starting years for some countries are different due to data availability: Cambodia (1987–), Lao PDR (1984–), Nepal (1974–), and Vietnam (1976–).

Sources: Official national accounts in each country, including our adjustments.

than other countries in Asia: by 1970 its per capita GDP was 61.8 per cent that of the US, quite a distance ahead of other Asian countries. It was closing the gap with the US up to 1991 (86.7 per cent), but the gap widened again when the impact of the long recession of the 1990s started to manifest itself.[16]

A similar process was seen taking place among the four Asian Tigers, which have managed impressive growth for the past four decades and have been aggressively closing the per capita GDP gap with the US. In 1970 Hong Kong and Singapore had similar per capita GDP, at around 36 per cent that of the US. By 2008 Singapore had surpassed the US and Hong Kong was at 94.7 per cent of the US level, bypassing Japan on the way. During this time their progress was only seriously frustrated once, by the Asian financial crisis of 1997–1998; for Hong Kong there was also the added uncertainty due to its handover to China from British rule in 1997. Thereafter, it bounced back strongly. Per capita GDP has also been rising in the ROC and Korea, from 17.1 per cent and 11.6 per cent in 1970 to 68.6 per cent and 58.4 per cent relative to the US in 2008 respectively. The remarkable performance of the Asian Tigers has set them apart from other developing economies that were comparable in the 1960s. Because of its potential policy significance, the "Asian miracle" has generated vigorous research to establish the underlying factors in this sustained economic success. In the pack of low-income countries, China is showing the strongest acceleration in recent years, while India has yet to fulfill its full growth potential.

Catching up to the per capita GDP level of the advanced economies is a long-term process that could take several decades to accomplish. Empirical evidence has suggested that there may be a negative correlation between per capita GDP level and the speed of catching up, although not without exceptions. With the possibility of adopting successful practices and technologies from the more advanced economies, less advanced economies are poised to experience faster growth in per capita GDP, enabling them to catch up in average income level. However, as their income levels come closer to those of the more advanced countries, their economic growth rates are expected to decline over time.[17]

Table 5 summarizes the relationship between the initial economic level and speed of catching up in the countries of Asia29. Economic level is measured by a country's real per capita GDP relative to the US at the start of the series, i.e. 1970, or from whichever year the data first became available for the individual country under concern. Countries are grouped according to their per capita GDP level: Group-L1, with per capita GDP at or above 60 per cent of the US; Group-L2, from 20 per cent to under 60 per cent; Group-L3, from under 5 per cent to under 20 per cent; and Group-L4, below 5 per cent. Likewise, countries are also grouped according to the speed of their catch-up with the US: Group-C1, at 3 per cent per annum or above; Group-C2, from 1 per cent to under 3 per cent; Group-C3, from 0 per cent to under 1 per cent; and Group-C4, under 0 per cent. The speed of catch-up with the US is defined as the difference in the average annual growth rate of per capita real GDP between each country and the US. Table 5 shows that many Asian countries (not belong to Group-C4)

16: Jorgenson and Nomura (2007) indicated that the manufacturing sector was the main contributor to the catching-up process of the Japanese economy in the 1960s, and that the US-Japan TFP gap for the manufacturing sector had almost disappeared by 1990.

17: The OECD (2008) observes that GDP per capita has broadly converged in the OECD (Organization for Economic Co-operation and Development) countries since the 1970s. But more advanced economies that started with high income levels in the 1970s have had lower rates of catch-up, or even stagnated or recently diverged *vis-à-vis* the US. Between 1973 and 2006 Ireland and Korea managed the highest rates of catch-up in per capita GDP, with 2.3 per cent and 3.8 per cent per year respectively.

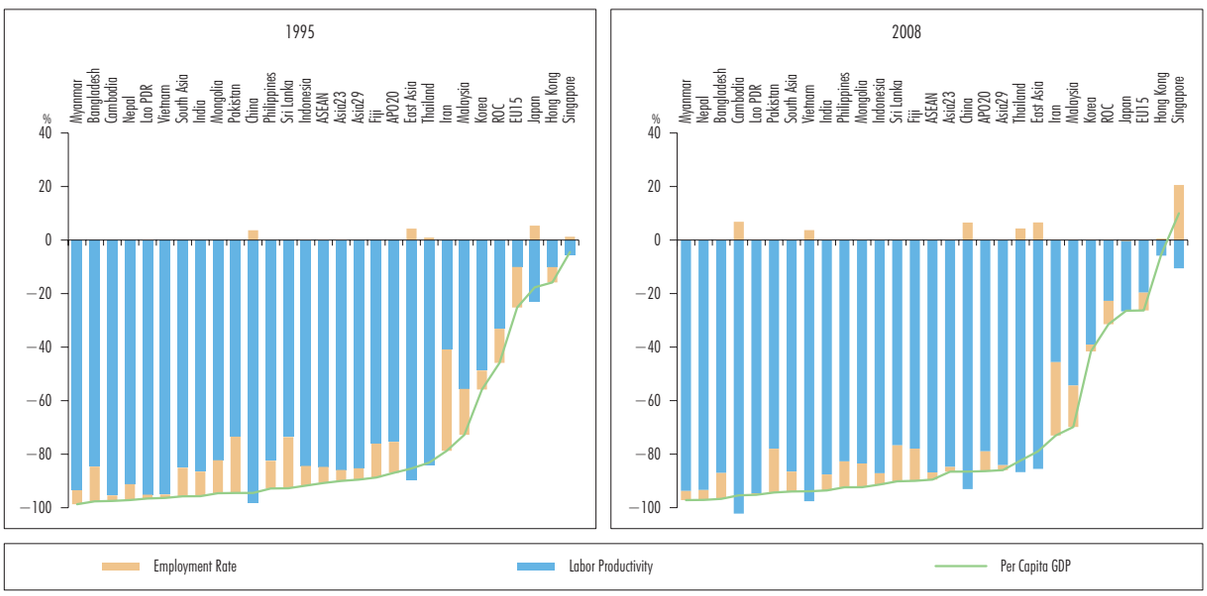

Figure 9: Labor Productivity and Employment Rate Gap Relative to the US, 1995 and 2008
—Decomposition: Gap of GDP at constant market prices per person, using 2005 PPPs

Sources: Official national accounts in each country, including our adjustments.

succeeded in closing the gap in per capita real GDP against the US over the last four decades.

From Table 5 we can also see that the initial economic level does not fully explain the catch-up process. Of the Asia29 countries, four achieved very fast catch-up, i.e. over 3 per cent a year on average between the respective starting years of their data series and 2008. Their per capita GDP level varies from Group-L3 to Group-L4. Nine countries in Group-C4 experienced deterioration in their relative income level against the US. Low-income countries like Bangladesh, Fiji, and the Philippines have failed to take off. The five high-income countries in Group-C4 are all GCC countries. But it is worth noting that these countries had exceptionally high GDP (which is distortionary, as aforementioned) at the beginning of the period. Japan was the only Asian non-oil-exporting country with a high income level in 1970. But, like EU15, Japan has failed to achieve further catch-up with the US since then.

To understand the diverse performance in the Asian group further, per capita GDP can be broken into two components, namely labor productivity (defined here as real GDP per worker) and the corresponding labor utilization rate (i.e. number of workers to population ratio, or the employment rate in this report). Figure 9 shows the percentage point difference in per capita GDP decomposed into the contributions by the labor productivity gap and the employment rate gap relative to the US in 1995 and 2008.[18] Most of the Asian countries display a huge per capita GDP gap with the US, predominantly explained by their relative labor productivity performance. Except for the four Asian Tigers, Japan, and Iran, all the other Asian countries had labor productivity gaps of more than 60 per cent against the US in 2008. Hong Kong and Singapore had the smallest labor productivity gaps of 5.8 per cent and 10.6 per cent with the US respectively. Allowing for a margin of error of ±10 per cent, these gaps are not statistically significant. In contrast, the labor productivity gaps of the other two Asian Tigers are still sizeable against the US, at 22.7 per cent and 39.0 per cent for the ROC and Korea respectively.

Most countries also have an employment rate short of the US level, substantially in the case of Iran, Pakistan, Bangladesh, Fiji, Sri Lanka, and Malaysia, further reinforcing their poor productivity performance. Notwithstanding, a handful of countries – Singapore, Cambodia, China, Thailand, and Vietnam – had higher

18: The gap of country x's per capita GDP relative to the US is decomposed into the sum of the gap of labor productivity and employment rate with respect to the US, as in:

$$\underbrace{\ln(GDP^t_x/POP^{t-1}_x)-\ln(GDP^t_{us}/POP^{t-1}_{us})}_{\text{Gap of per capita GDP}}=\underbrace{\ln(GDP^t_x/EMP^{t-1}_x)-\ln(GDP^t_{us}/EMP^{t-1}_{us})}_{\text{Gap of labor productivity}}$$

$$+\underbrace{\ln(EMP^t_x/POP^{t-1}_x)-\ln(EMP^t_{us}/POP^{t-1}_{us})}_{\text{Gap of employment rate}}$$

where POP^t_x is population of country x in period t and EMP^t_x is the number of employment of country x in period t.

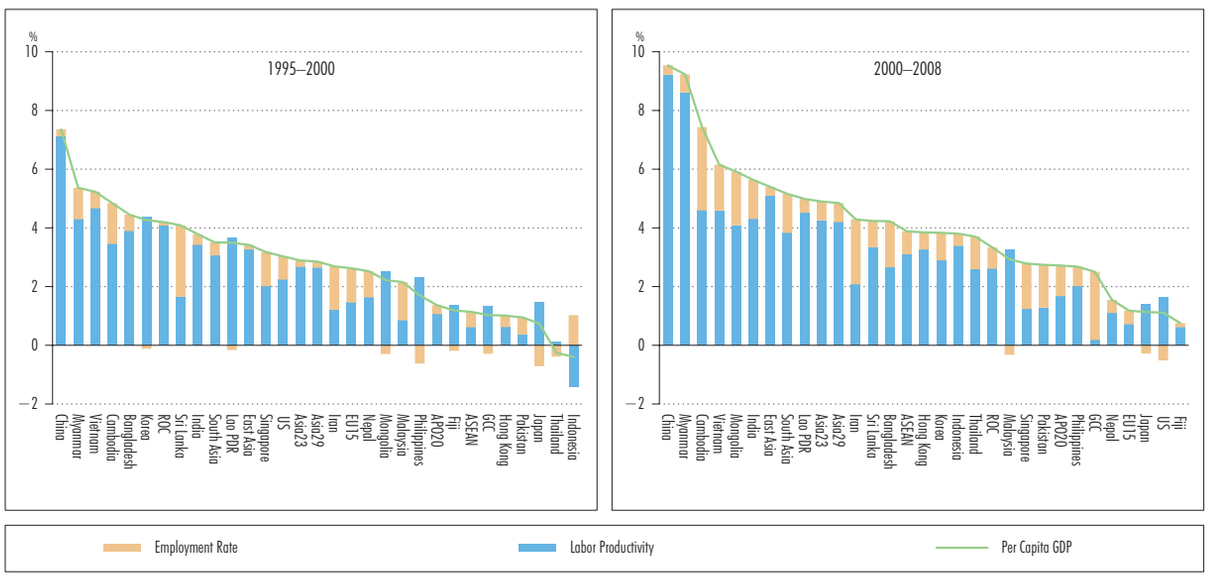

Figure 10: Sources of Per Capita GDP Growth, 1995–2000 and 2000–2008
—Decomposition: Average annual growth rate of GDP at constant market prices per person, using 2005 PPPs

Sources: Official national accounts in each country, including our adjustments.

employment rates than the US, counteracting the negative impact of their productivity performances. In particular, the positive gap in employment rate plays a significant role in nudging Singapore ahead of the US in per capita GDP. More specifically, Singapore's labor productivity was 10.6 percentage points short of the US level, but its employment rate was 20.6 percentage points higher, giving an overall per capita GDP 10.0 per cent higher than the US. In Section 3.4 we take a closer look at the time profiles of countries' labor utilization relative to the US, while more detailed analysis of labor productivity is presented in Sections 5.1 and 5.2.

Figure 10 focuses on explaining a country's per capita GDP growth by its components: namely labor productivity growth and the change in the employment rate for the periods 1995–2000 and 2000–2008, respectively.[19] For most countries in Asia the majority of per capita GDP growth can be explained by labor productivity, but this should not lead us to underestimate the role played by changes in the employment rate. On average, Asia23's per capita GDP grew by 2.9 per cent a year (the same for Asia29) between 1995 and 2000, and accelerated to 4.9 per cent a year (4.8 per cent for Asia29) between 2000 and 2008. The earlier period captured the dampening effect of the Asian financial crisis of the late 1990s. Emerging from the crisis, both labor productivity growth and employment growth strengthened. For most countries, labor productivity explains a larger share of per capita GDP growth than employment, but for Brunei, Iran, GCC, Singapore, and Pakistan the change in employment rate dominated over labor productivity growth in explaining the per capita GDP gap in the period between 2000 and 2008. The employment rate contribution relative to labor productivity was also highly significant in Cambodia (61.8 per cent), Mongolia (44.8 per cent), EU15 (65.1 per cent), Bangladesh (59.2 per cent), and Thailand (42.9 per cent).

China's improvement was the most impressive, achieving per capita GDP growth of 7.4 per cent and 9.5 per cent a year on average in the two periods respectively. Over 95 per cent of that growth was consistently explained by improvement in labor productivity. In growth terms, Myanmar achieved similar performance to China, with a per capita GDP growth of 5.4 per cent and 9.2 per cent a year on average in the two periods. However, this growth was from a very low base; even in 2008, Myanmar's per capita GDP was only 21.0 per cent that of China (see Table 4).[20]

19: Country x's per capita GDP is decomposed into the product of its labor productivity and employment rate, as in:

$$\underbrace{\ln(GDP_x^t/POP_x^t)}_{\text{Per capita GDP}} = \underbrace{\ln(GDP_x^t/EMP_x^t)}_{\text{Labor productivity}} + \underbrace{\ln(EMP_x^t/POP_x^t)}_{\text{Employment rate}}$$

where POP_x^t is population of country x in period t and EMP_x^t is the number of employment of country x in period t.

Like China, Myanmar's per capita GDP growth was predominantly explained by labor productivity, with its contribution increasing from 80.0 per cent in the period 1995–2000 to 93.3 per cent in 2000–2008. Brunei was the only country which experienced negative growth in labor productivity in both periods, bearing in mind the caveats against GDP as an income indicator for the oil-exporting countries. Its rising employment rate was insufficient in compensating for poor labor productivity growth performance. Its per capita GDP growth in both periods was dismal, allowing other fast-growing Asian countries to catch up. Japan had a worsening employment rate in both periods. With an aging population (see Box 4), this pattern may well persist. To sustain per capita GDP growth, labor productivity growth will have to accelerate in order to counteract the negative effect of its employment rate.

3.4 Labor Utilization

Labor utilization and labor productivity together determine per capita GDP.[21] Other things being equal, increasing employment and improving labor productivity could present a policy trade-off in the short term, i.e. they cannot be achieved simultaneously. If the policy target is to increase employment, productivity may suffer in the short term as marginal and less-productive workers are recruited, bringing down the average productivity performance. The huge labor productivity gap between Asia and the US discussed in Chapter 5 should therefore be considered in the context of the generally high employment rate in Asia.

Figure 11 shows cross-country comparisons of employment rates in 2008. Three countries – Cambodia, Singapore, and China – lead the Asian group with employment rates of 0.63, 0.61, and 0.58, which was 0.08–0.13 percentage points higher than the US and 0.12–0.17 percentage points higher than EU15 respectively in 2008. Two other economies also had employment rates above the US rate of 0.50 – Vietnam (0.56) and Thailand (0.55). (Hong Kong and Japan have a slightly higher rate.)

Figure 12 charts Asian countries' employment rates relative to that of the US under the same groupings used in Table 5 in Section 3.2.[22] It is clear that Group-C1 countries (Figure 12.1), which have the fastest catch-up speed in per capita GDP against the US, have also had high and rising relative employment rates among the Asian countries in the past four decades.[23] The pickup in employment rates has been particularly strong in Singapore, Cambodia, and Vietnam in recent years. Of the six countries in this group, only the ROC and Korea still have an employment rate below that of the US. Group-C2 countries (Figure 12.2) have the second-highest relative employment rate as a group. Countries in this group have high employment rates, although a clear trend of a rising employment rate in the long run was rarely observed. Most of the countries have employment rates that are more than 80 per cent

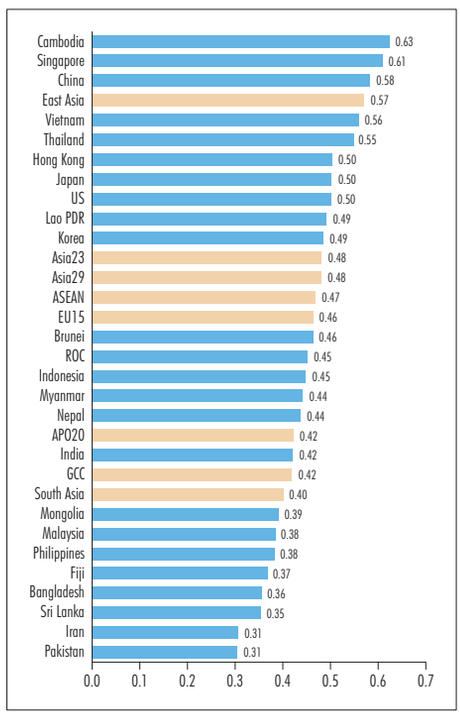

Figure 11: Employment Rates, 2008
—Ratio of employment to population

Sources: Employment and population data by NSO in each country.

20: Readers should be cautioned about the reliability and quality of Myanmar's official statistics, which have been questioned (see a report on Myanmar in ADB, 2009). Nonetheless, official statistics from Myanmar are presented in this report, as there is no comprehensive and transparent alternative data source.

21: Due to data constraints, labor utilization is measured as the number of workers relative to the population (termed the employment rate in this report), to ensure consistency with the definition of labor productivity (i.e. GDP per worker) that is measured in all APO member countries, although it is frequently defined as hours worked per capita (OECD, 2008). In Section 5.2 we provide labor productivity measures based on hours worked for some selected countries. Also, in the computation of TFP in Section 5.3, hours worked data are used.

22: Relative employment rate is measured as countries' employment rate divided by the US employment rate in Figure 12.

23: The jump of China's employment rate from 1989 to 1990 in Figure 12.1 reflects a large increase (by 15.7 per cent) in the number of employed persons in *China Statistics Yearbook 2010*.

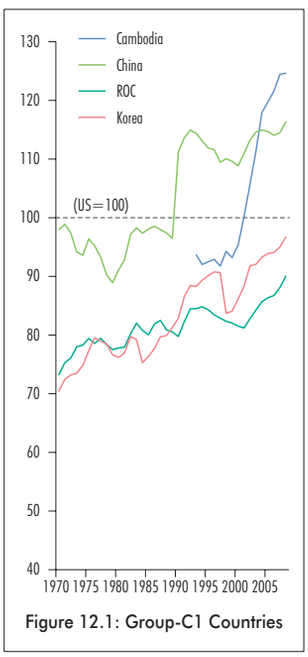

Figure 12.1: Group-C1 Countries

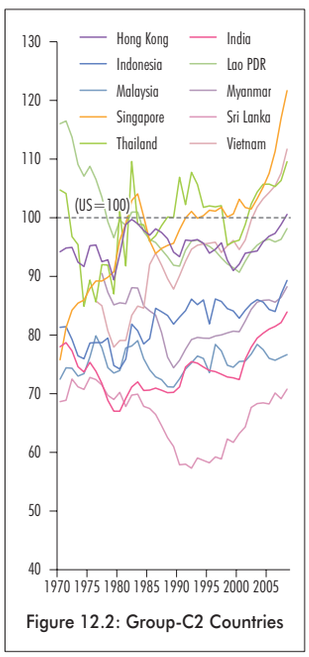

Figure 12.2: Group-C2 Countries

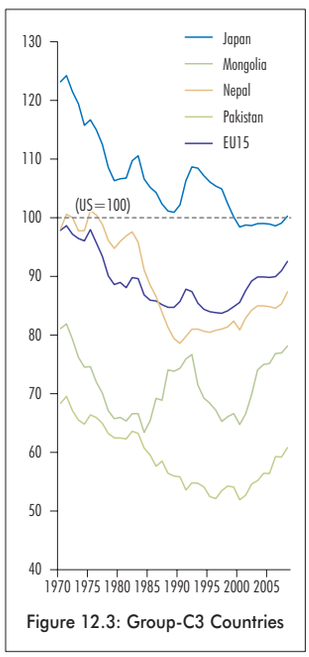

Figure 12.3: Group-C3 Countries

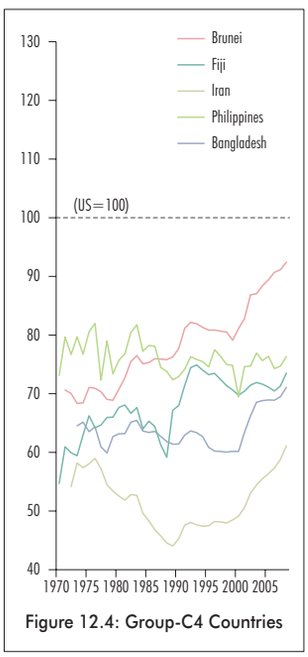

Figure 12.4: Group-C4 Countries

Figure 12: Employment Rates Relative to the US, 1970–2008
—Indices of employment rate (US=100)

Sources: Employment and population data by NSO in each country.

of the US level. Thailand has an employment rate higher than the US level; Sri Lanka reached a trough of less than 60 per cent in 1990, but has been catching up with other countries in this group since then.

Countries in Group-C3 have widespread relative employment rates, ranging from 60 per cent to just over 100 per cent of US rates in 2008 (Figure 12.3). Japan and EU15 are different from the other economies in this group, in that they are in the high-income group and their employment rates have been relatively high. Japan's employment rate sees a clear declining trend over the past four decades, but it has stabilized in recent years at a similar level to that in the US. The employment rate of EU15 had been below that of the US, but since 2000 it has improved and is gradually closing the gap. The employment rates of Pakistan and Mongolia trended downwards initially, starting from a much lower level than the US. But, similar to EU15, employment has strengthened in these two countries since 2000, reaching around 60 per cent of the US level for Pakistan in 2008. The corresponding figure for Mongolia was 78.1 per cent.

Historically, all countries in Group-C4 have a lower employment rate than other groups. In 2008, all Group-C4 countries had rates below that of the US, ranging from 60 per cent to over 90 per cent. Iran has the lowest employment rate in the pack: it reached a trough of just under 45 per cent of the US level in the late 1980s and is only gradually returning to its 1970s' level of just above 60 per cent. Figure 12.4 shows that employment rates in this group of countries lack the vigor seen in Group-C1 and Group-C2 (the two catching-up groups), although most of their gap in per capita GDP with the US is explained more by labor productivity performance. For Fiji, Bangladesh, and the Philippines, employment rates contributed 12.0 per cent, 9.7 per cent, and 9.7 per cent to their per capita GDP gap against the US in 2008, respectively (Figure 9). In contrast, the employment rate explained 27.4 per cent of Iran's per capita GDP gap with the US in 2008. But as suggested by Figure 10, the Philippines, Iran, and Bangladesh have been improving their positions recently with per capita GDP growth faster than the US, i.e. they are catching up in the period 2000–2008. Fiji and Brunei are the only two countries which have failed to outperform the US in per capita GDP growth in the recent period.

Box 4 Populations of Asian Countries

According to the United Nations (2009), the world's population is estimated to reach 6.9 billion in 2010, of which Asian countries account for 60.3 per cent. The region is by far the most populous in the world. China and India account for 19.6 per cent and 17.6 per cent of the world's population respectively. It has been observed that falling fertility rates and rising living standards go hand in hand with each other, although the direction of causality is less certain. The evolution of the demographic structure implies dynamics in a society that are not captured by the overall population size or growth. As people's economic behavior, aspirations, and needs vary at different stages of life, changes in a country's age structure can have a significant impact on its economic performance.

By UN estimates, the proportion of the world population living in countries at or below the replacement level of fertility – which causes a country's population to slow down and eventually stabilize – will rise from 44 per cent today to over 50 per cent by the middle of the next decade. This social revolution is widespread. In the 1970s only 24 countries had a fertility rate of 2.1 or less, all of them rich. Now there are over 70 such countries, and in every continent, including Africa. What is even more staggering is the pace of change. For example, it took Britain over 130 years (1800–1930) to halve its fertility rate; it took Korea only 20 years to achieve it. This is echoed all around the world. The most dramatic change was in Iran, where the fertility rate declined from 7.0 to below the replacement level in just 22 years. Coupled with changes in the mortality rate, this can dramatically change the age profile of a country's population, and with it comes the economic implications.

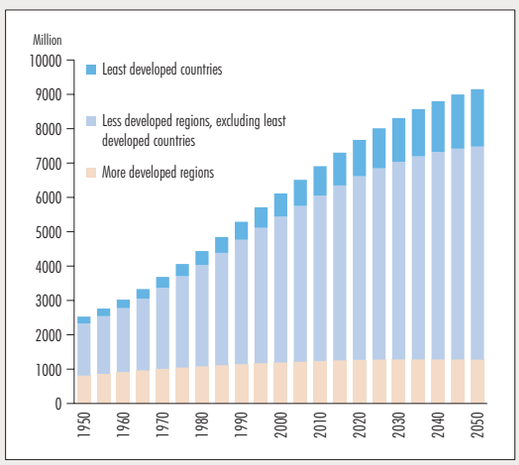

Figure B4.1: Distribution of the World's Population in Different Regions, 1950–2050

Source: World Bank's World Development Indicators.

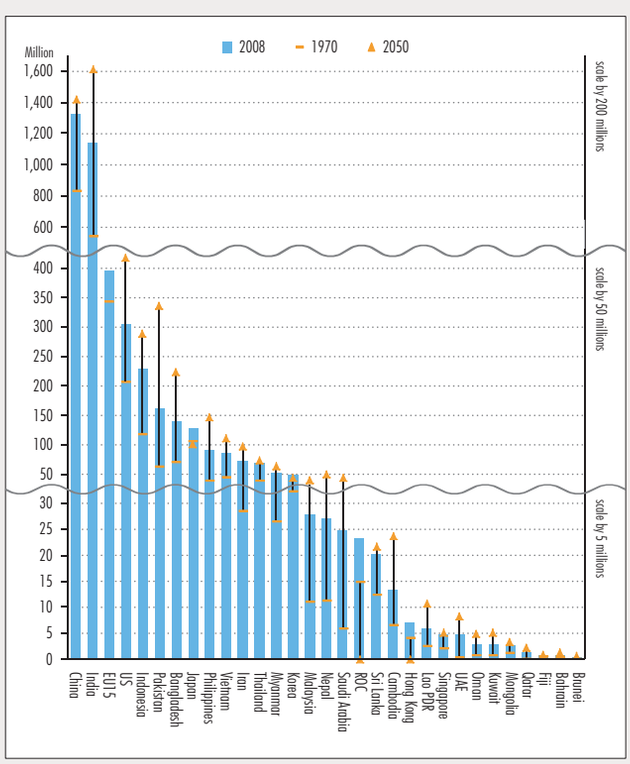

Figure B4.2: Asian Countries' Population Size and Projection, 1970, 2008, and 2050

Source: World Bank's World Development Indicators.

The growth rate of the world's population has slowed from its peak of around 2.0 per cent in the 1970s to today's 1.2 per cent a year. With the falling fertility rate, the UN projects that the world's population growth rate will decelerate to 0.34 per cent a year by 2050. Even so, the world population will still increase by one-third in the next 40 years, from 6.9 billion to 9.2 billion. Figure B4.1 shows that nearly all that increase will take place in the less developed regions. Consequently, we will see the more developed regions' share of the world's population gradually decline from 17.9 per cent to 13.9 per cent, compared with 32.1 per cent in 1950, whereas the share of the least developed countries rises from today's 12.4 per cent to 18.3 per cent in 2050, up from 7.9 per cent in 1950. Turner (2009) highlights the challenge of the continued rapid population growth to economic and social progress in many countries in Africa and the Middle East, and its major and adverse impact on the global environment.

Figure B4.2 shows the current population size of individual Asian countries compared with the 1970 level and projection in 2050. It is interesting to note that China's population is

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expected to more or less stabilize around the current level. China has socially engineered the change with its one-child policy which has made its current population 300–400 million lower than it would have been otherwise. Under the current assumptions, India will overtake China as the most populous country in the world by 2050. What is not obvious from Figure B4.2 is the population explosion that took place in the oil-rich countries. Between 1970 and 2008, the UAE's and Qatar's populations increased by 19 times and ten times respectively. For the other four GCC countries, their 2008 populations were three to four times their 1970 level. In the next 40 years the GCC population is projected to increase by 60–90 per cent, compared with 7 per cent in China and 42 per cent in India.

Figure B4.3 shows countries' demographic make-up in 2008, i.e. the population proportions of the under-15 and over-65 age groups, which together make up the dependent population. Ranking the countries by the share of old-age population filters the rich economies to the top end; these economies also have a relatively low share of the young age group compared to less developed countries. This suggests that demographic transition tends to go in parallel with economic progress, although the direction of causation is not certain.

As countries move from high to low mortality and fertility rates, the demographic transition produces a "boom" generation that is larger than those immediately before and after it. As this boom generation gradually works through the nation's age structure, it produces a demographic dividend of economic growth as people reach their prime. The improved ratio of productive workers to child dependents and the increase in available resources for investment open up a special window for faster economic growth and human development. It has been suggested that the demographic dividend accounted for a third of East Asian growth in 1965–1990 (Bloom, Canning, and Malaney, 2000).

Although China has a smaller dependent ratio than India, its population is aging rapidly. India, on the other hand, has one of the most favorable demographics in waiting. This demographic dividend can work wonders to produce virtuous cycles of wealth creation if it is combined with appropriate health, labor, financial, human capital, and growth-enhancing economic policies. If India is able to capitalize on this dividend, it may well overtake China in economic growth in the not-so-distant future. However, the experience of East Asia suggests that this dividend is far from being automatic but needs to be earned. This one-off opportunity will pass in a couple of generations, and it will be regrettable if it is missed.

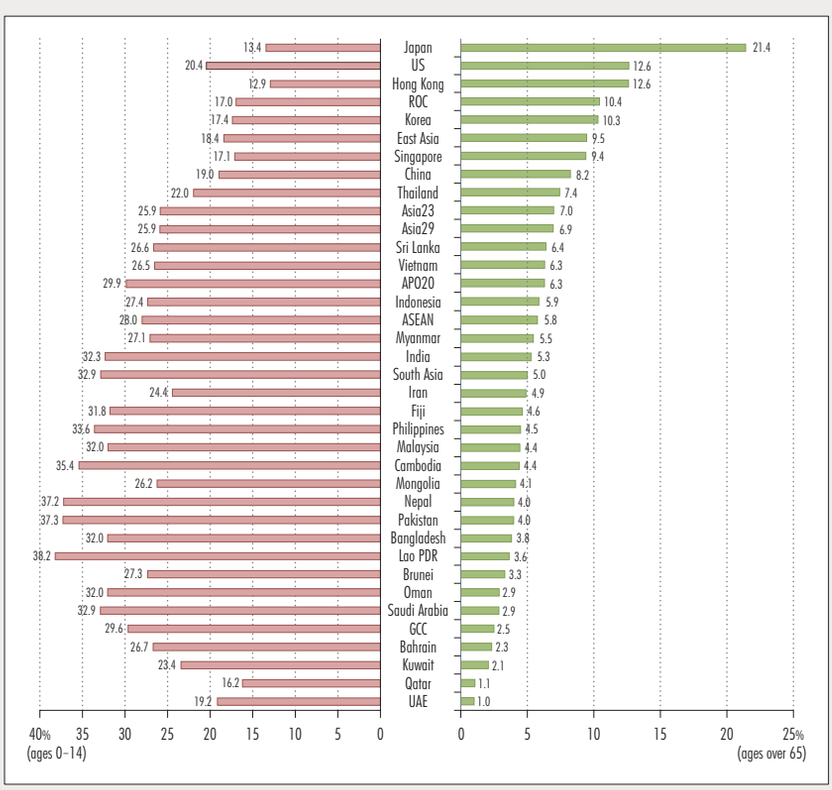

Figure B4.3: Population Proportion of the Dependent Population, 2008

Sources: Population census and official national accounts in each country.

4 Output Growth: The Demand-side Story

GDP can be decomposed according to expenditure on final demand and income to factor inputs or production (i.e. into industry or products). These decompositions are valuable in understanding the structure, and in turn the behavior, of an economy. In this chapter we look at countries' economic composition from the expenditure side. We investigate the decomposition of output growth into input growth and total factor productivity growth (the supply side) in Chapter 5, while countries' industry structure is presented and analyzed in Chapter 6.

4.1 Composition of Final Demand

The Asian regional economy and the two reference economies, the US and EU15, are very different in their economic structures. With the differences in emphasis and vulnerabilities, their behavior and reaction to economic shocks can be expected to be quite diverse. Table 6 presents comparisons of final demand shares of nominal GDP. GDP is decomposed into four categories of final demand: household consumption (including consumption of non-profit institutions serving households: NPISHs), government consumption, investment (or, in national accounts terminology, gross fixed capital formation (GFCF) plus changes in inventories), and net exports (i.e. exports minus imports).

With the exceptions of Brunei, China, and most GCC countries, household consumption is by far the biggest component of GDP in an economy.[24] Over the past four decades, we observe that the share of household consumption for mature economies tends to be rather stable and trending upwards in recent years, while it is more volatile and largely trending downwards in economies undergoing rapid transformation, such as the Asian Tigers in the 1970s and 1980s, and India and China currently. South Asia displays a particularly strong downward trend, with household consumption share falling from 75.5 per cent in 1970 to 62.0 per cent in 2008, while investment increased from 16.0 per cent to 32.9 per cent over the same period.

China's household consumption as a share of GDP has been trending downward. It fell from 54.7 per cent in 1970 to 46.4 per cent in 2000. The decline accelerated in the 2000s, seeing the household consumption share plummet to 35.1 per cent in 2008. Labor pay has not been keeping up with the pace of economic growth, and labor share of national income has fallen in the past two decades, contributing to China's low rate of consumption. But the situation is changing. The notorious "China price," which once undercut all rivals, is starting to rise recently. Before 2005, labor productivity was rising faster than labor costs, leading to falling unit labor costs and making China's manufacturing competitive. But the World Bank reckons

Table 6: Comparisons of Final Demand Shares in GDP, 1970, 1980, 1990, 2000, and 2008
—Share of final demands with respect to GDP at current market prices

	Household Consumption					Government Consumption					Investment					Net exports				
	1970	1980	1990	2000	2008	1970	1980	1990	2000	2008	1970	1980	1990	2000	2008	1970	1980	1990	2000	2008
APO20	51.3	55.8	54.5	57.8	58.4	10.8	13.7	12.8	13.9	13.3	37.0	31.9	32.1	26.0	28.8	0.9	−1.4	0.6	2.4	−0.5
Asia23	51.6	55.7	53.9	55.0	49.8	10.8	13.8	12.9	14.4	13.2	36.7	32.2	32.4	28.2	34.3	0.8	−1.6	0.8	2.4	2.6
Asia29	51.2	52.0	53.3	54.2	48.7	10.9	13.9	13.7	14.7	13.3	36.2	31.0	31.8	27.9	33.7	1.7	3.1	1.2	3.2	4.3
East Asia	49.7	54.3	52.2	52.7	43.9	10.9	14.1	13.3	15.6	14.6	38.3	33.0	33.1	29.6	36.5	1.1	−1.3	1.4	2.0	4.9
South Asia	75.5	75.7	67.3	65.7	62.0	8.7	9.4	11.3	12.1	11.8	16.0	19.4	23.8	23.7	32.9	−0.3	−4.5	−2.5	−1.5	−6.7
ASEAN	65.5	58.0	55.9	55.8	59.7	13.1	12.2	10.3	9.7	9.5	26.3	32.3	35.1	24.7	26.9	−4.9	−2.6	−1.3	9.8	3.9
GCC	31.4	23.6	41.3	37.0	30.3	15.0	15.2	28.8	22.4	15.2	14.3	21.6	20.5	19.6	24.1	39.3	39.6	9.5	21.0	30.3
China	54.7	53.2	48.8	46.4	35.1	11.5	15.5	13.6	15.9	13.3	33.8	36.5	34.9	35.3	43.9	0.1	−5.2	2.6	2.4	7.7
India	74.1	73.8	64.2	63.2	58.5	9.6	10.3	12.1	13.2	11.9	16.5	19.0	25.1	24.5	35.2	−0.1	−3.1	−1.4	−0.9	−5.5
Japan	48.8	54.2	52.7	55.9	57.5	10.7	14.1	13.3	16.8	18.4	39.3	32.6	33.1	25.8	24.0	1.2	−0.9	0.9	1.4	0.1
US	62.2	62.6	65.8	68.2	69.9	18.3	16.9	16.8	14.5	16.8	19.1	21.1	18.9	21.3	18.4	0.3	−0.6	−1.4	−4.0	−5.1
EU15	57.5	58.4	58.1	58.8	57.5	16.3	20.1	20.0	19.8	20.9	26.7	24.0	22.8	21.2	21.1	−0.5	−2.4	−0.8	0.3	0.5

Unit: Percentage.
Note: Final demand shares in country groups are computed by using PPPs for GDP. Household consumption includes consumption of NPISHs. Investment includes GFCF plus changes in inventories.
Sources: Official national accounts in each country, including our adjustments.

24: Based on our metadata survey on national accounts in Asian countries, Japan is an exceptional country which estimates GDP from the expenditure side. In other countries, GDP is estimated from the production side (value added in industries), and some countries record statistical discrepancy as the difference in the estimates between production-based GDP and the sum of final expenditures. In this *Databook*, statistical discrepancy is attributed to household consumption when data are recorded. For some countries it is significant: e.g. it accounts for 10.6 per cent of GDP in 2005 in the Philippines.

Figure 13: Final Demand Shares in GDP, 1995 and 2008
—Share of final demands with respect to GDP at current market prices

Note: Household consumption includes consumption of NPISHs. For Myanmar, however, household consumption includes government consumption due to data limitations. Investment includes gross fixed capital formation plus changes in inventories.
Sources: Official national accounts in each country, including our adjustments.

that China's unit labor costs have risen more often than not in the past five years, and this is beginning to be noticeable.[25] China is aging, an inevitable outcome of its one-child policy first introduced in the late 1970s to alleviate the pressure from overpopulation. Coupled with its segmented labor market, even labor-abundant China now faces a tightened supply of surplus labor on the coasts, which is building an upward pressure on wages. This could be good news for the world, as a higher labor share of GDP will enable higher household consumption which will help the domestic market to fulfill its potential. This will make China less dependent on foreign demand on the one hand and generate demand for foreign products on the other hand.

India, another fast-emerging economy, has seen its household consumption share declining rapidly in the past four decades, from 74.1 per cent in 1970 to 56.2 per cent in 2007. It bounced up quite strongly in 2008 to 58.5 per cent (see Table 6). Such volatility is within its historical norm, and only time will tell if this is a blip or the beginning of a more persistent upward trend. In contrast, share of household consumption was relatively stable in the US at around 62 per cent for the 1970s and 1980s before rising consistently, from 65.8 per cent of GDP in 1990 to 68.2 per cent in 2000 and 69.9 per cent in 2008. The share of household consumption in EU15, which is in the upper 50 per cent range, has stayed slightly higher than the Asian average and been relatively stable over the past decade (Table 6).[26]

APO20 on average invests a lot more than the US or EU15, and has been sustaining an investment share in the region of the upper 20 to 30 per cent of GDP. The inclusion of Brunei, China, and Myanmar had the effect of pulling up the Asian average from 28.8 per cent to 34.3 per cent in 2008. This compares with a relatively stable share of around 20 per cent in the US and EU15. The share of investment in China is phenomenal, at 43.9 per cent in 2008, and has overtaken household consumption as the biggest final demand component of GDP since 2004.

Net exports are gaining weight in the Asian economy, rising from 0.8 per cent of GDP in 1990 to 2.6 per cent in 2008. China explained most of the strengthening between 2000 and 2008, with a net export share of 7.7 per cent in 2008, up from 2.4 per

25: For example, between the summers of 2006 and 2008, the prices Americans paid for imports from China rose by 6 per cent. (*The Economist*, 2010e)

26: The lower share of household consumption in EU15 has been offset by a larger share of government consumption, which accounts for around 20 per cent of its nominal GDP. This compares with 13–15 per cent in Asia and 14–17 per cent in the US.

cent in 2000. Including the GCC countries, where net exports accounted for nearly one-third of GDP, the contribution of net exports to the GDP of Asia29 was 1.2 per cent in 1990, rising to 4.3 per cent in 2008. In contrast, the deficit between exports and imports has considerably expanded in the US, from 1.4 per cent of GDP in 1990 to 5.1 per cent in 2008, and in South Asia, from 2.5 percent of GDP in 1990 to 6.7 per cent in 2008. In EU15 net exports have been a positive component, but have shrunk from 0.8 per cent in 1990 to 0.5 per cent in 2008.

Figure 13 shows the cross-country comparisons of final demand shares in current-price GDP in 1995 and 2008. The charts are ranked by the share of household consumption, the range of which is trending downwards among this group of countries. GCC and other oil-exporting countries tend to cluster at the low end of household consumption share of GDP in both years of comparison. The average household consumption share for GCC countries has fallen from 45.8 per cent in 1995 to 30.3 per cent in 2008. Given that a large part of GCC countries' GDP is not sustainable income, it is in fact prudent for oil-exporting countries not to overconsume beyond their sustainable level but purposefully invest much to generate a steady income stream for the eventuality of oil depletion, no matter how distant this may now seem.[27]

Among Asia23, Singapore had the second smallest household consumption share, but since 2001 China has replaced Singapore in that position, with a share of 35.1 per cent in 2008. At the other end, Bangladesh, Cambodia, Fiji, and Nepal have the highest household consumption share.[28] A deficit in net exports tends to be associated with high household consumption. Refraining from consumption is required to support high investment levels. Countries with low income, however, may struggle to defer consumption in order to invest. In 2008 only Bangladesh, Cambodia, Lao PDR, Myanmar, and Nepal[29] remained in the bottom income group among the countries studied in this report (see Table 13). It is no coincidence that these are also the countries which have the highest household consumption share in Asia. Besides, countries with a high proportion of dependent population also tend to have a high household consumption share in their GDP (see Figure 14). Net exports carry a particularly large

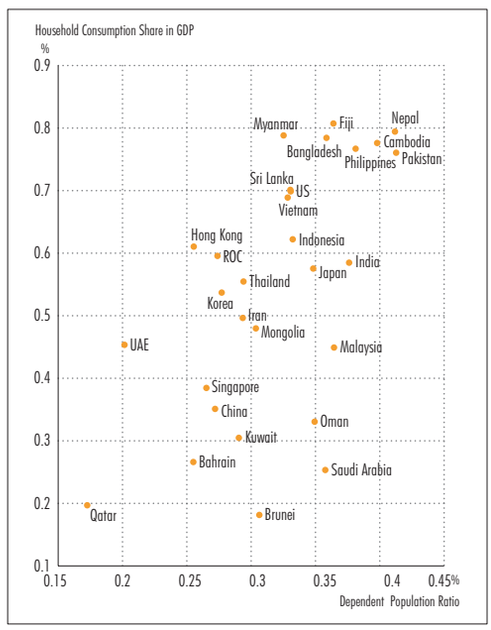

Figure 14: Ratio of Dependent Population and Consumption Share in Nominal GDP, 2008

Sources: Population data by NSO in each country and World Bank's World Development Indicators, official national accounts in each country with our own estimates.

weight in a handful of economies: in 2008 it was 20.1 per cent in Singapore, 22.9 per cent in Malaysia, and 10.2 per cent in Hong Kong, reflecting their entrepôt function in Asia. This explains why the total values of exports and imports are exceptionally high relative to the size of GDP in these economies (Figure 15).

Figure 16 shows the long-term trends of household consumption share of GDP for selected Asian countries. The Asian Tigers have been the high performers, and come top in most of the level indicators presented in Chapter 3. As seen in Figure 16.1, Singapore and Korea showed the most rapid relative retrenchment in household consumption as a share of GDP in their development process, falling from 68.5 per cent of GDP to 38.4 per cent and from 73.7 per cent to 53.7 per cent between 1970 and 2008 respectively.

27: It should also be noted that the shares are calculated in current market prices. Revenues from oil exports are notoriously erratic. It is possible that sudden surge in export revenues relative to imports can squeeze the shares of other components of final demand without real change in the underlying behavior in the economies. For example, Qatar has the smallest share of household consumption, which shrank from 32.0 per cent in 1995 to 19.7 per cent in 2008, while over the same period, net exports swung from 1.0 per cent to 25.7 per cent. Similarly net exports for GCC countries as a whole swung from 8.5 per cent to 30.3 per cent, squeezing household consumption from 45.8 per cent in 1995 to 30.3 per cent in 2008.

28: Note that household consumption for Myanmar includes government consumption due to data limitations; that is to say, its comparable household consumption share is unavailable.

29: Lao PDR is also in the bottom income group; it is, however, omitted from Figure 13 because of a lack of final demand data.

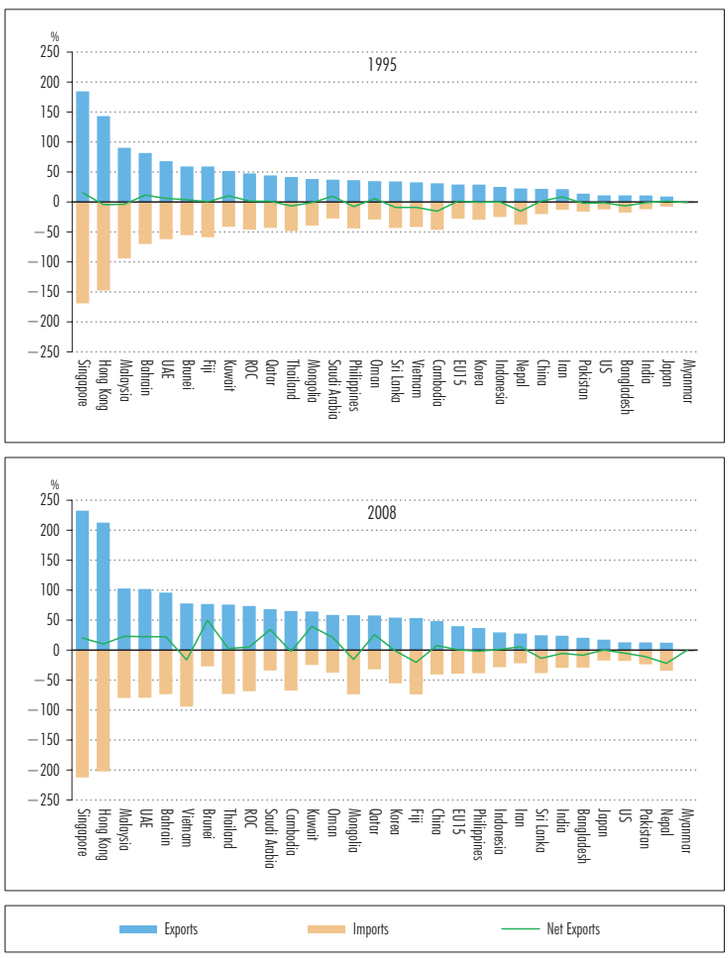

Figure 15: Export and Import Shares in GDP, 1995 and 2008
—Share of exports and imports with respect to GDP at current market prices

Sources: Official national accounts in each country, including our adjustments.

Figure 16.2 plots the trends of household consumption in the three largest Asian economies by size. The downward long-term trend in India and China is unmistakable. When GDP is growing faster than consumption, the share of the latter in GDP will diminish. The falling share of household consumption may partly reflect the falling labor income share of GDP and/or an uneven distribution of economic gain between the rich and the poor in these countries. Furthermore, the fact that China has a dependent population (under-15s and over-65s) of 27.2 per cent, compared with 37.6 per cent in India, may help explain why India has to sustain a much higher share of household consumption than China despite its falling trend over time (Figure 14). In contrast, the household consumption share in Japan has been rising slowly since 1970, from just under 48.8 per cent to 57.5 per cent in 2008. With a rapidly aging population, this rising trend can be expected to continue. Japan's population dependency ratio stood at 34.8 per cent in 2008, nearly 60 per cent of which was accounted for by the over-65 age group (Figure 17). To a lesser extent, all the Asian Tigers, China, and the US have a high proportion of over-65s relative to other countries.

Relative to the US, however, Asians spend a lot less in proportion (Figure 16.3). Household consumption in the US accounted for nearly 70 per cent of its GDP in 2008, rising from a level of 62.2 per cent in 1970. The share of household consumption in EU15 is more comparable to the APO20 average level, fluctuating within a tight range between 57 per cent and 60 per cent of GDP over the past four decades.[30] In 1970 household consumption accounted for around 50 per cent of GDP in APO countries. It rose to a peak of 56.8 per cent in 1983 before falling back and hovering around 55 per cent. Since the early 1990s, however, it has been trending up towards 60 per cent (see Figure 16.3). APO's pattern closely follows that of Japan. After the burst of its bubble economy, investment share of GDP shrank; household consumption and government consumption rose in their shares to sustain final demands (see Figure 13). The

Comparatively, this trend of retrenchment was mild in Hong Kong, with household consumption falling from 64.8 per cent of GDP to 61.0 per cent over the past four decades. The household consumption share did fall to nearly 55 per cent in the late 1980s, but it was subsequently reversed before stabilizing in recent years. The ROC is the only exception, where the reversal of the downward trend since the mid-1980s was so strong that the household consumption share was higher in 2008 than in 1970 (59.6 per cent compared with 56.1 per cent).

30: It is worth noting that the GDP share of government consumption in EU15 was 7.7 percentage points higher than the average of Asia23 in 2008 (Table 6). In fact, when it comes to welfare measurement, actual individual consumption, as opposed to household consumption, is preferred because the former takes into account expenditures by NPISHs and government expenditure on individual consumption goods and services (such as education and health) in addition to household consumption. (For more details see Box 3.)

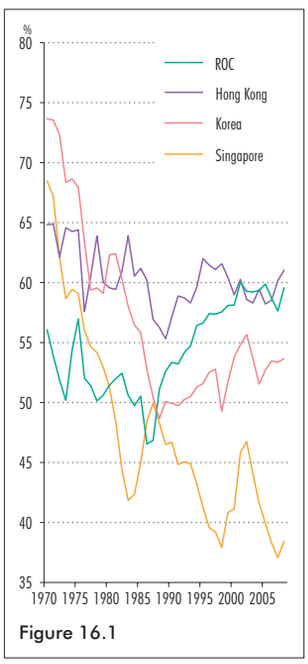

Figure 16.1

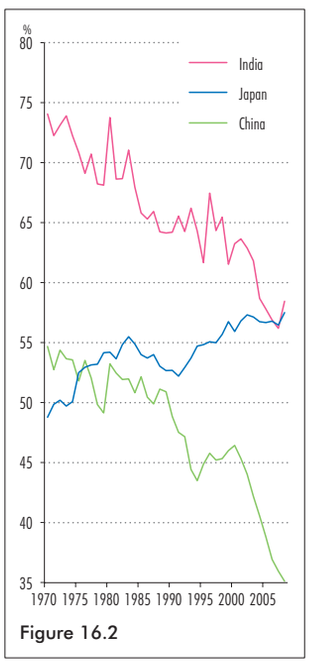

Figure 16.2

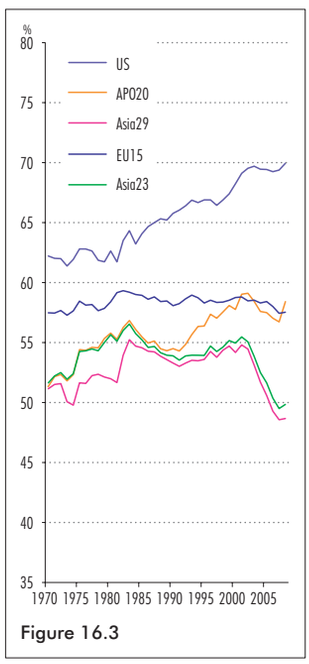

Figure 16.3

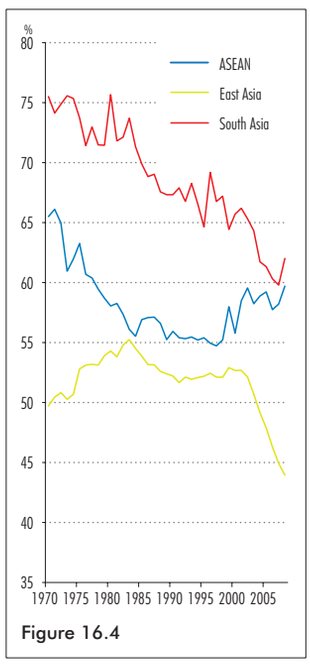

Figure 16.4

Figure 16: Long-term Trend of Household Consumption Share in GDP, 1970–2008
—Share of household consumption with respect to GDP at current market prices

Sources: Official national accounts in each country, including our adjustments.

share for Asia23 traced that of APO20 closely until 1990, when they began to diverge. While APO20's was edging up, the share of household consumption for Asia23 stayed within a narrow range of 54–55 per cent. Over the past decade, the share declined rapidly from 55.5 per cent to just under 50 per cent. This largely reflects China's recent household consumption behavior as it gained weight in the regional economy. The trend in East Asia is similar to Asia23, but it diverged from APO20 earlier, from the mid-1980s, and the recent downward pull is stronger.

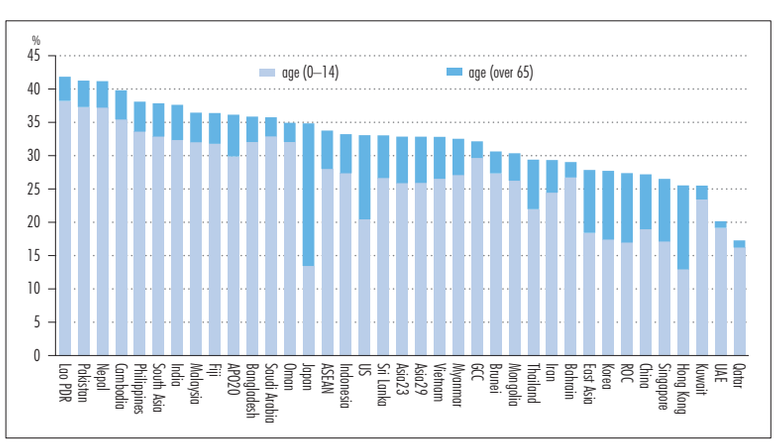

Figure 17: Ratio of Dependent Population, 2008

Sources: Population data by NSO in each country and World Bank's World Development Indicators

Figure 18 presents the decomposition of household consumption in 2008 for selected countries. It displays strongly the cross-country version of Angel's law which says that basic necessities will account for a high proportion of household consumption for a lower per capita income group and vice versa. It is staggering to note that 57.2 per cent of Fiji's household consumption was spent on food and non-alcoholic beverages at one end, compared with only 6.7 per cent in the US at the other end. Eating out and recreation and culture are something that the poorest countries cannot afford. Besides food and non-alcoholic beverages, housing/utilities and transport are the other two large spending categories. In the rich economies, these two categories account for bigger shares in household consumption than food and non-alcoholic beverages. Korea and India spent 7.5 and 7.4 per cent of their household consumption on education respectively, the highest share among all the countries shown. In the US, health is a clear burden on the household budget, accounting for close to one-fifth of its consumption, unmatched in

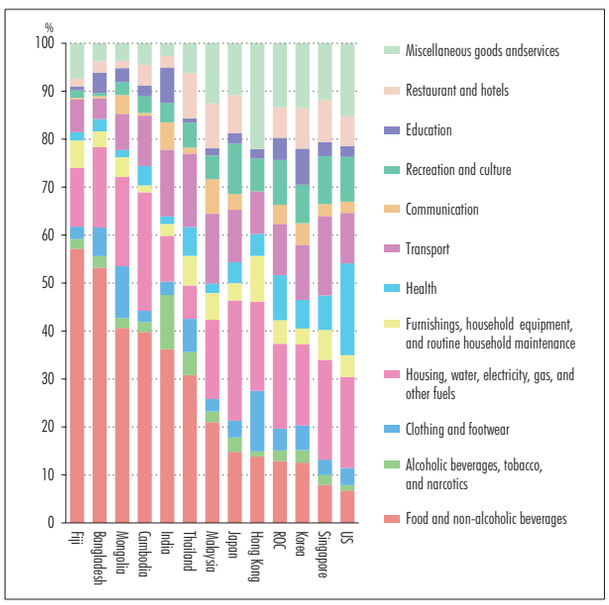

Figure 18: Decomposition of Household Consumption, 2008

Note: Hong Kong data are for 2007; transportation includes communication; recreation and culture includes hotels; miscellaneous goods and services includes restaurants.

Sources: Official national accounts in each country.

other countries.[31]

Figure 19 looks at the long-term trend of investment share in GDP across countries. Asia generally invests more than EU15 or the US (Figure 19.3), where investment share has stabilized around 20 per cent of GDP in the past decade or so. Asia's averages have stayed above the 20 per cent mark for the whole period, despite their ups and downs. Investment share was 10 per cent and 16 per cent higher than the US's in APO20 and Asia23 respectively in 2008. The Asian Tigers had high investment share in the initial period, but this has softened in recent years to within the 20–30 per cent range (Figure 19.1). In contrast, investment share in China and India has been rising. India in particular has been investing very aggressively since 2000, coming within 10 per cent of China's 45 per cent share from a much lower base at the beginning of the period. Japan's investment share has fallen from 40 per cent in the 1970s to around 25 per cent in 2008 (Figure 19.2). South Asia and East Asia's investment share has converged to around 35 per cent, with the former reflecting India's recent effort. ASEAN's investment share used to be around 35 per cent, but it fell sharply to around 25 per cent during the Asian financial crisis in the late 1990s and has yet to recover (Figure 19.4).

Figure 20 shows the nominal share of six types of assets – dwellings, non-residential buildings, other construction, transportation equipment, IT capital, and other non-IT capital – for some selected countries.[32] The expansion of IT capital is significant even at the current price comparisons. The real-term comparisons are conducted at the flow and stock levels in Chapter 5.

Figure 21 plots the long-term trend of net export share in GDP from 1970 to 2008. Net exports used to be a drag on the Asian Tigers' GDP. In the early 1970s all the Tigers had huge negative net exports, except Hong Kong. But they rapidly improved their position, and in recent years net exports are making a positive contribution to GDP in all Tigers except Korea, which dipped back into the negative zone in 2008. The share of net exports in Singapore is particularly large, at 20.1 per cent in 2008, compared with −1.2 per cent, 5.0 per cent, and 10.2 per cent for Korea, the ROC, and Hong Kong respectively. In contrast, net export shares for the three largest Asian economies fluctuate within a much smaller range over the years (Figure 21.2). All three countries started off from a position of balanced trade in 1970; thereafter they branched out on three different paths. The balanced position turned into a mild trade deficit in India at the start of the 1980s, and was stable till 2003 when it started to deteriorate rapidly. In 2008 the share of net exports in GDP was −5.5 per cent in India. Japan has been running a small trade surplus, which peaked in the mid-1980s. Since then, it has been oscillating between 0 and 2 per cent; in 2008 the share of net exports was 0.1 per cent. For China, after teetering around the balanced position for much of the period, a trade surplus has been established since the mid-1990s. The rise in its share in GDP has been particularly strong since 2004, reaching an all-time peak of 8.8 per cent in 2007 before dipping to 7.7 per cent in 2008 in the immediate aftermath of the global financial storm. This impact is expected to carry over to 2009 with falling exports from China in the face of weaker foreign demand.

31: If household consumption pattern does correlate with and differ a great deal according to income level, this undermines the concept of a single representative consumption basket which underpins the construction of a consumer price index (CPI) as a measure of the cost of living. When all prices move together, the difference may not be huge. But if the rise in CPI is driven by, say, soaring oil and food prices, then it is going to bear more heavily upon the poor than the rich. GDP, using CPI as a deflator, in turn inherits this shortcoming of the price index as a welfare measure.

32: The investment data by type of assets includes our own estimates for the countries where data are not available. Although our estimates are constructed based on ten classifications of assets, we have aggregated them to six assets in this table. The IT capital is defined as IT hardware, communications equipment, and computer software.

Box 5 Quarterly Growth in Asia

Timely analysis of the current economic situation is beyond the scope of this *Databook*, which presents results based on annual data, and the latest year covered is 2008. In the meantime, if one would like to catch a glimpse of, say, the strength of recovery after the global financial storm, one has to rely on countries' quarterly national accounts (QNA). Although they are timelier, the QNA are often less precise, and are subject to frequent revisions as more reliable data become available in their normal estimation cycle. With this trade-off between timeliness and data quality in mind, the APO sees the complementary benefits of collating and presenting countries' QNA alongside its database of annual data. As a result, the APO and KEO have developed an Asian quarterly growth map (AQGM) that provides an instinctive understanding of recent economic growth covering Asian countries; readers can find it at the APO website (www.apo-tokyo.org/AQGM.html).

The AQGM visualizes the seasonally adjusted rates of quarterly economic growth at constant prices. It is worth noting that there are three constant-price measures of quarterly growth. The first is the quarterly output compared with the same quarter in the previous year, which is also called the year-on-year quarterly growth. The second is quarterly output on the previous quarter, or the quarter-on-quarter growth rate. The third is annualized quarter-on-quarter growth rates, which is also often used in economic analysis of the current economic situation. The first two measures are presented in the AQGM (with year-on-year growth displayed as a default).

The current version includes 20 Asian countries which publish QNA: China, Hong Kong, India, Indonesia, Japan, Korea, Malaysia, Mongolia, the Philippines, the ROC, Singapore, Sri Lanka, Thailand, Vietnam, Armenia, Cyprus, Georgia, Israel, Jordan, and Turkey. For the purpose of international comparisons, the current version includes 50 non-Asian countries, based on the data available from OECD.Stat and independent publications by the respective statistical offices in those countries. The AQGM is updated at least once a month, to reflect revisions and cover newly available data.

Based on the AQGM, Figure B5.2 presents the year-on-year quarterly GDP growth for Asian countries, the US, and EU15 from 2008Q3 to 2010Q3. Asia has returned to healthy growth after the adverse impact of the global financial crisis of 2008. China's GDP grew at 10.6 per cent (close to its recent peak before the crisis) in 2010Q3 compared to the same quarter in the previous year. India has also made a sudden sprint, growing at 8.9 per cent in 2010Q3, which is higher than its recent average of around 5–6 per cent a year. On the whole, vibrant growth has returned to Asia. Even Japan is growing at 5.3 per cent in the latest quarter. In contrast, the experience in the West is more mixed. Most countries in Europe have come out of recession in 2010Q1 or 2010Q2, later than Asia. A handful, for example, Greece and Ireland, still have falling GDP. Germany, growing at 3.9 per cent year on year in 2010Q3, has recovered strongly by the European standard and its recent records. France, in comparison, grew at 1.8 per cent and the UK at 2.8 per cent. The figure for the US was 3.2 per cent.

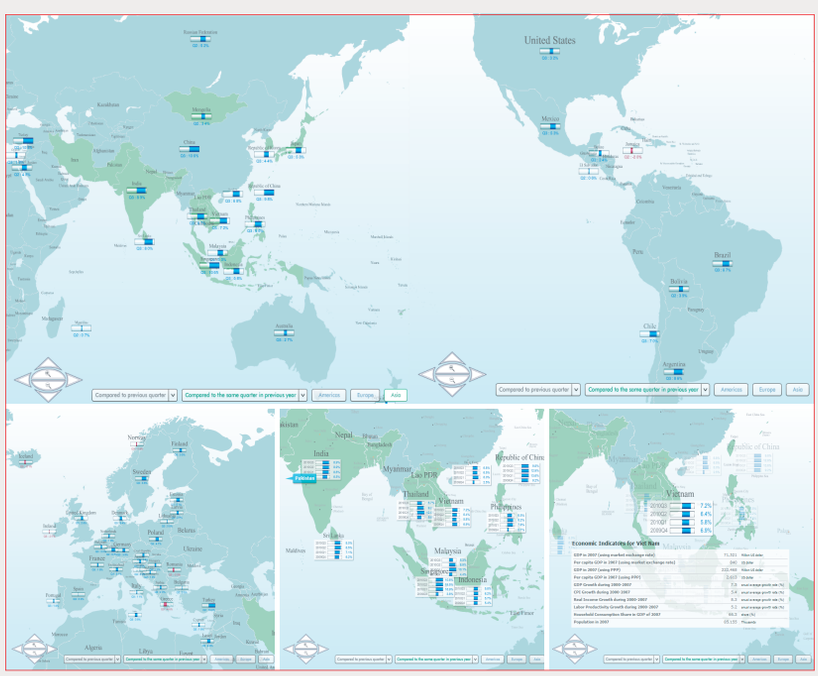

Figure B5.1: Views of Quarterly Economic Growth in Asian Countries by the AQGM

Source: Asian Quarterly Growth Map, January 2011.

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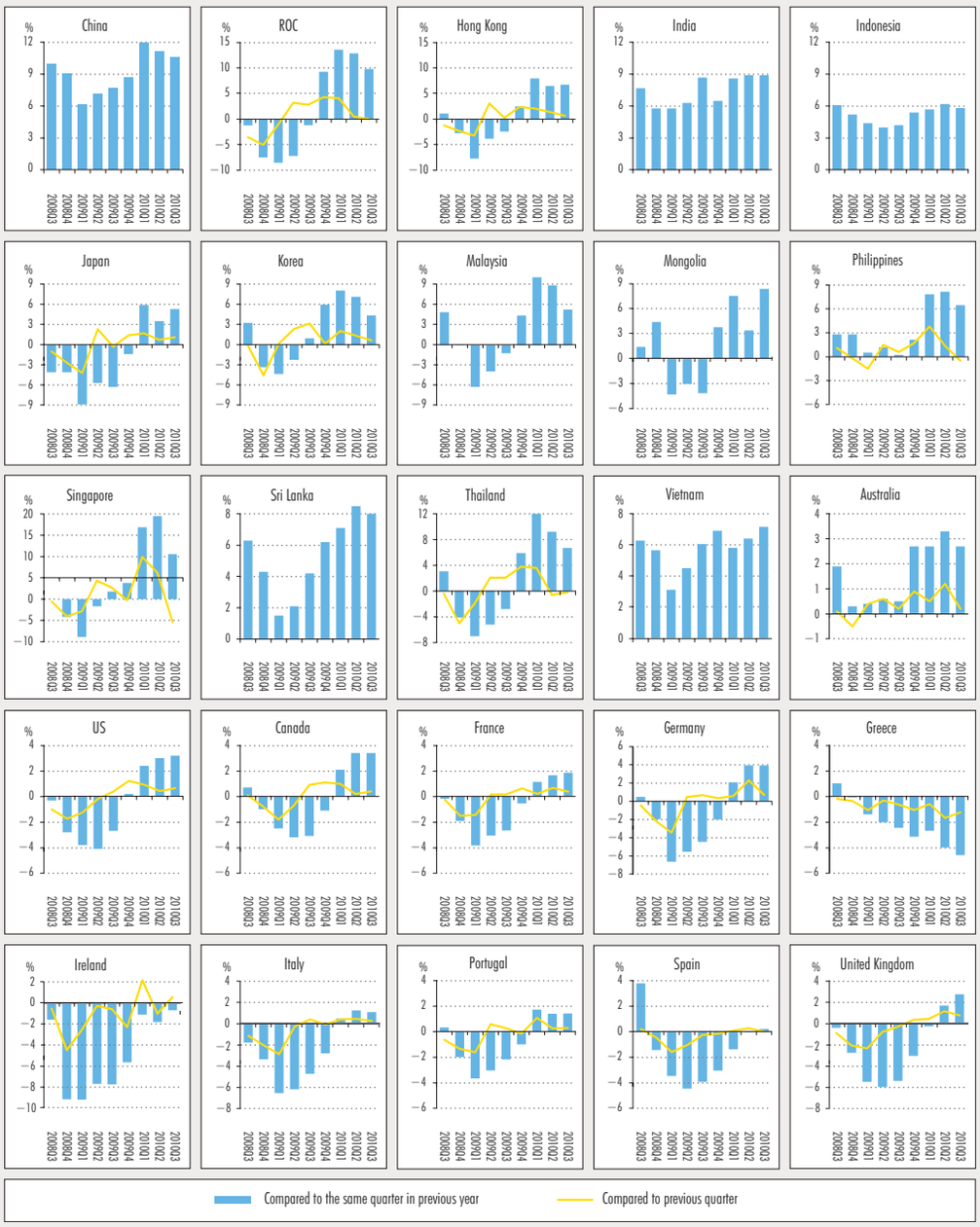


Figure B5.2: Quarterly Economic Growth in Asian Countries, 2008Q3–2010Q3

Source: Asian Quarterly Growth Map, January 2011.

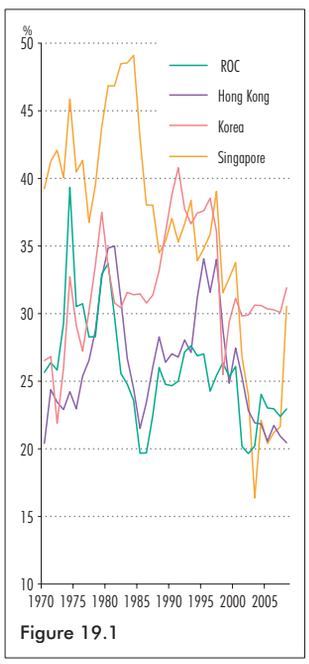


Figure 19.1

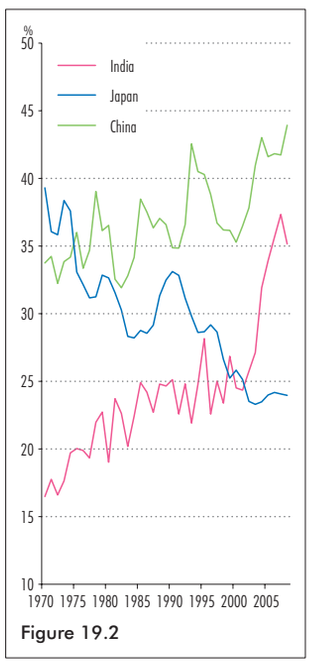


Figure 19.2

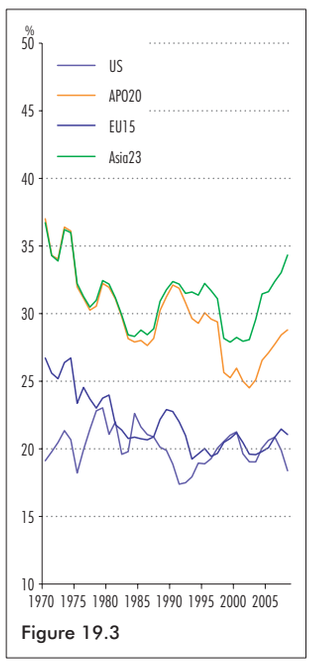


Figure 19.3

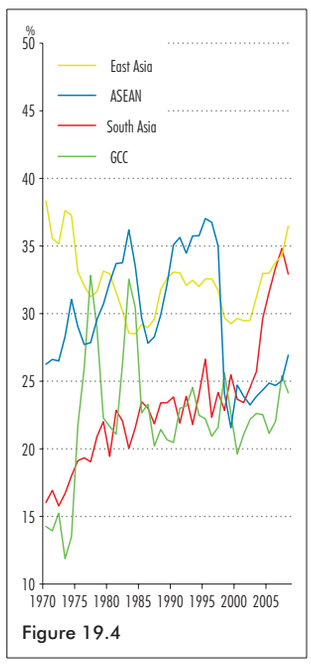


Figure 19.4

Figure 19: Long-term Trend of Investment Share in GDP, 1970–2008
—Share of investment with respect to GDP at current market prices

Sources: Official national accounts in each country, including our adjustments.

Figure 21.3 compares the average net export shares for APO20 and Asia23 with the US and EU15. Both the US and EU15 faced a trade deficit at the beginning of the period. While EU15 managed to revert and has been in surplus since the early 1990s, the US position has significantly deteriorated since the early 1990s, after a tremendous effort in restoring its trade balance in the late 1980s. In 2008 the size of the US trade deficit stood at 5.1 per cent of its GDP. In contrast, APO20 and Asia23 have been in surplus continuously since the early 1980s. In 2008 the average net export share for APO20 was −0.5 per cent of GDP. The inclusion of Brunei, China, and Myanmar swings this up to 2.6 per cent. But when we look more closely, East Asia and South Asia behave in a completely opposite way. While East Asia has been running a surplus throughout the period, South Asia has been running a deficit. Furthermore, the wedge is widening as East Asia's surplus and South Asia's deficit grow bigger. In 2008, East Asia trade surplus was 4.9 per cent of its GDP, compared to a deficit of 6.7 per cent for South Asia.

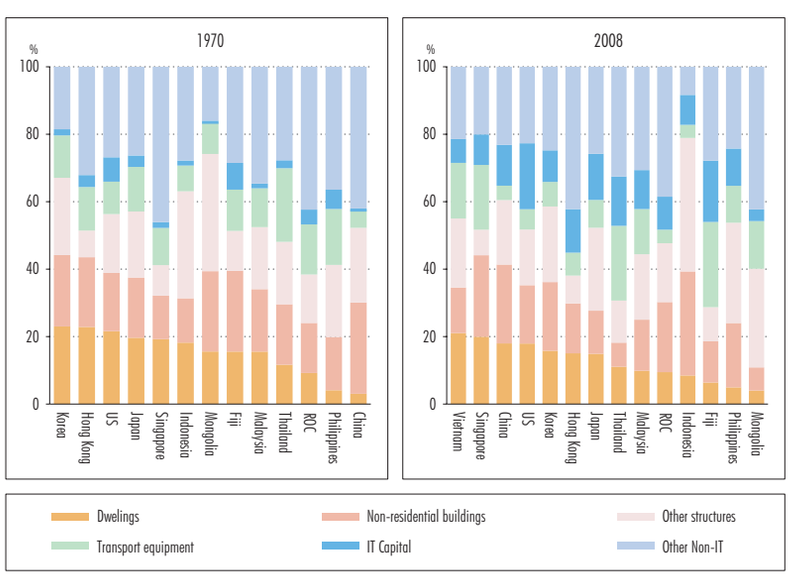


Figure 20: Asset Composition of Investment, 1970 and 2008

Sources: Official national accounts in each country, including our estimates based on input-output tables and the commodity flow data.

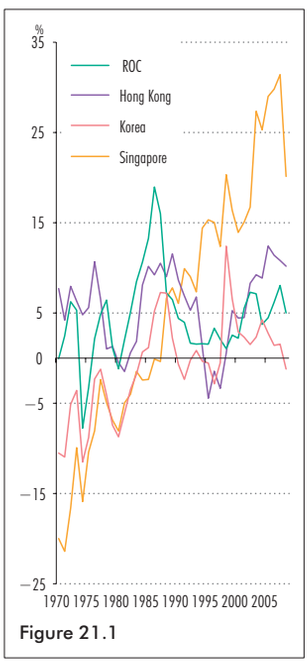


Figure 21.1

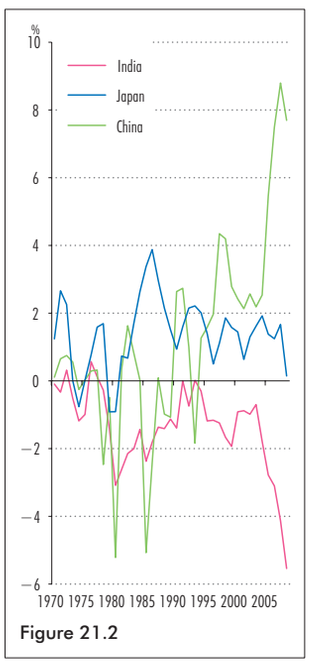


Figure 21.2

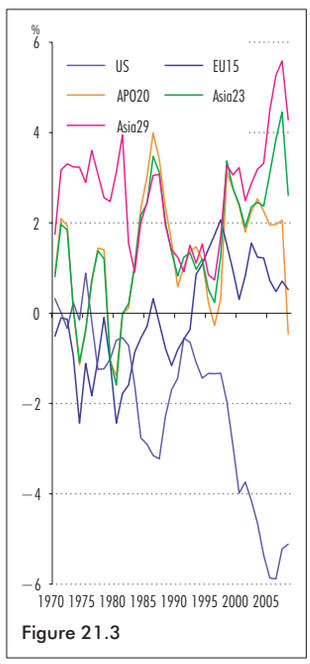


Figure 21.3

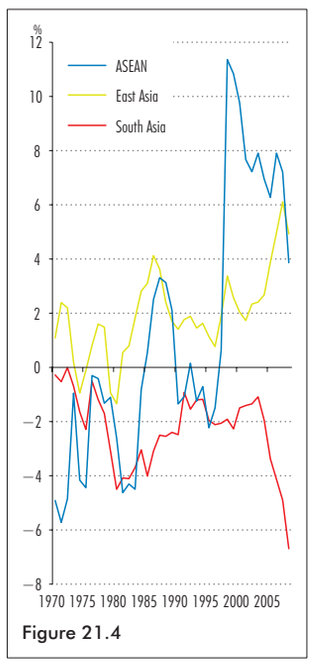


Figure 21.4

Figure 21: Long-term Trend of Net Export Share in GDP, 1970–2008
—Share of net exports with respect to GDP at current market prices

Sources: Official national accounts in each country, including our adjustments.

4.2 Demand-side Growth Decomposition

Figure 22 shows the decomposition of the average annual economic growth by final demand for the periods 1995–2000 and 2000–2008 respectively.[33] During the earlier period Asia was suffering from the Asian financial crisis, which appeared to hit investment particularly hard in Thailand and Indonesia. Investment fell by 4.3 and 3.4 percentage points on average respectively in these countries, cancelling out growth in other components of final demand and resulting in virtually no overall economic growth. During this period, for most countries in Asia the engine of growth was household consumption. However, net exports were the real driving force in some economies, accounting for 60.2 per cent and 91.2 per cent of economic growth in Hong Kong and Malaysia respectively, to counter-balance the fall in investment expenditure. Hong Kong and Malaysia achieved an economic growth of 2.4 per cent and 5.2 per cent on average a year respectively over the period. Net exports also made a significant contribution in Korea, accounting for 54.6 per cent of its 5.0 per cent economic growth. In Japan and the Philippines net exports also accounted for around a quarter of 1.0 per cent and 4.4 per cent economic growth on average per annum respectively. The US, EU15, Kuwait, and Sri Lanka were the only economies where net exports dragged down growth.

During the period 1995–2000 Qatar experienced the fastest economic growth among the countries studied, averaging 8.9 per cent per year, three-quarters of which was driven by net exports. Singapore was second, with an average economic growth of 7.9 per cent per annum. Unlike the nature of growth in Qatar, its growth was more even, with all components making their fair shares of positive contribution. Similarly, China's growth averaged 7.7 per cent per year, of which 41.7 per cent was contributed by household consumption, 17.3 per cent by government consumption, 26.1 per cent by investment, and 14.9 per cent by net exports. This compares with average annual growth of 4.4 per cent in the US and 2.9 per cent in EU15 (Table 3). The contribution from household consumption was 67.8 per cent and 59.5 per cent in the US and EU15 respectively.

33: The Törnqvist quantity index is adopted for calculating the growth of real GDP. Using this index, we can decompose the growth of real GDP into the products of contributions by final demands:

$$\underbrace{\ln(GDP^{t}/GDP^{t-1})}_{\text{Real GDP growth}}=\sum_i \underbrace{(1/2)(S_i^{t}+S_i^{t-1})\ln(Q_i^{t}/Q_i^{t-1})}_{\text{Contribution of final demand } i}$$

where Q_i^t is quantity of final demand i in period t and S_i^t is expenditure share of final demand i in period t. Thus the real GDP growth may diverge from the official estimates or those presented in Table 3.

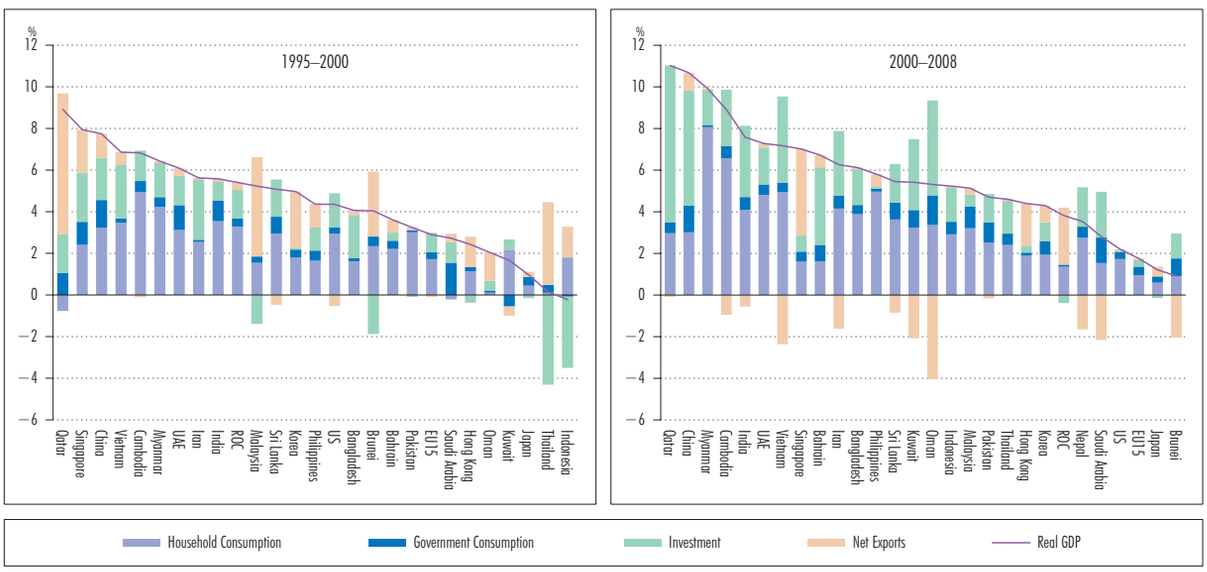


Figure 22: Final Demand Contributions to Economic Growth, 1995–2000 and 2000–2008
—Decomposition: Average annual growth rate of GDP at constant market prices

Sources: Official national accounts in each country, including our adjustments.

During this period investment growth also played a significant role, accounting for 37.4 per cent and 32.1 per cent of growth in the US and EU15 respectively.

On the back of the Asian financial crisis, investment growth surged strongly: its impact on real GDP growth became more significant in Asia in the 2000s, and appeared to be a major driving force in the Asian economies, as presented in the right-hand chart of Figure 22. Countries which experienced the fastest economic growth were also those where the contribution from investment growth was the largest in terms of percentage points: 5.5 per cent in China, 1.7 per cent in Myanmar, 2.7 per cent in Cambodia, 3.4 per cent in India, and 4.1 per cent in Vietnam. The role played by investment in China has strengthened, with its contribution to economic growth doubling between 1995–2000 and 2000–2008 from 26.1 per cent to 51.9 per cent, whereas the contribution of net exports was halved from 14.9 per cent to 7.9 per cent. However, for Singapore, Hong Kong, and the ROC the strength of net exports was the economic story, accounting for half to three-quarters of their economic growth on average per year between 2000 and 2008. The reverse was true in India, where net exports swung from making a positive contribution of 2.7 per cent in the earlier period to being a drag on economic growth with a negative contribution of –7.2 per cent in the period 2000–2008. In some of these economies the contribution of household consumption to economic growth was really squeezed: for example, from 41.7 per cent in 1995–2000 to 28.2 per cent in 2000–2008 in China, from 30.3 per cent to 22.9 per cent in Singapore and from 60.8 per cent to 36.1 per cent in the ROC. Also, in the latter period net exports made negative contributions in countries such as Vietnam, Nepal, Cambodia, India, and most of the oil-exporting countries.

In the 2000s economic growth slowed in both the US and EU15: from 4.4 per cent on average per year in 1995–2000 to 2.2 per cent in 2000–2008, and from 2.9 per cent to 1.8 per cent, respectively. In terms of contributions, household consumption increased from 67.8 per cent to 78.4 per cent and government spending from 6.9 per cent to 16.0 per cent in the US over the two periods. This suggests that household consumption did not retrench as the economy slowed, while the government increased spending to bolster the economy. Investment in the US took a plunge, however, from a contribution of 37.4 per cent to 3.3 per cent over the two periods. Its net exports improved from −12.2 per cent to 2.3 per cent. EU15 had a similar pattern, where the contribution of government spending nearly doubled over the two periods from 11.4 per cent to 23.4 per cent, squeezing out the contribution of investment by one-third, while household consumption remained more or less stable. Its net exports also improved from −2.9 per cent to 1.2 per cent.

Figure 23 shows how the contribution of economic growth by final demand varies across countries and over time for the period 1970–2008. Economic restructuring is a gradual process and could take a long time to establish. Some shifting in the relative weight of the key drivers of growth may be emerging in some countries, and is

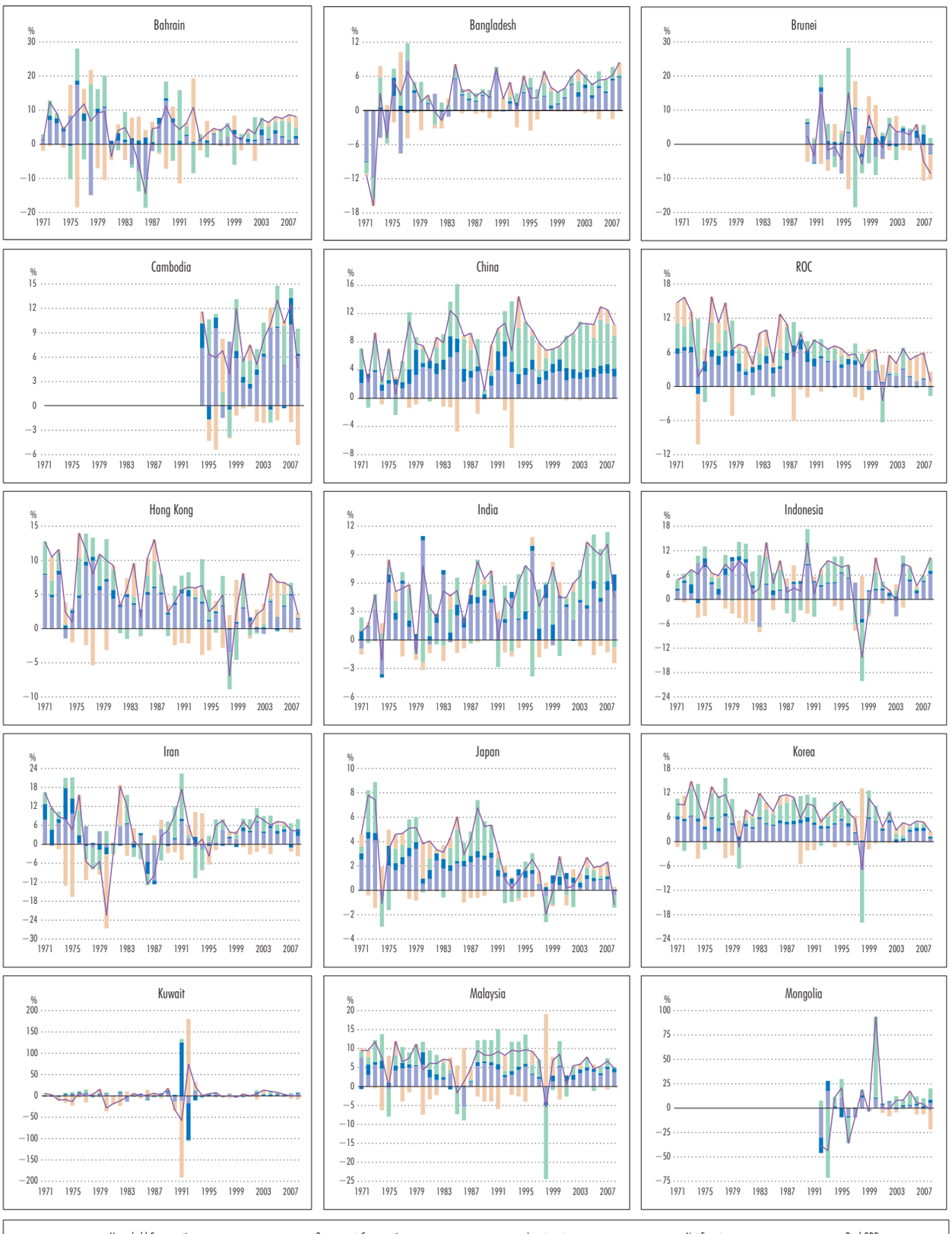
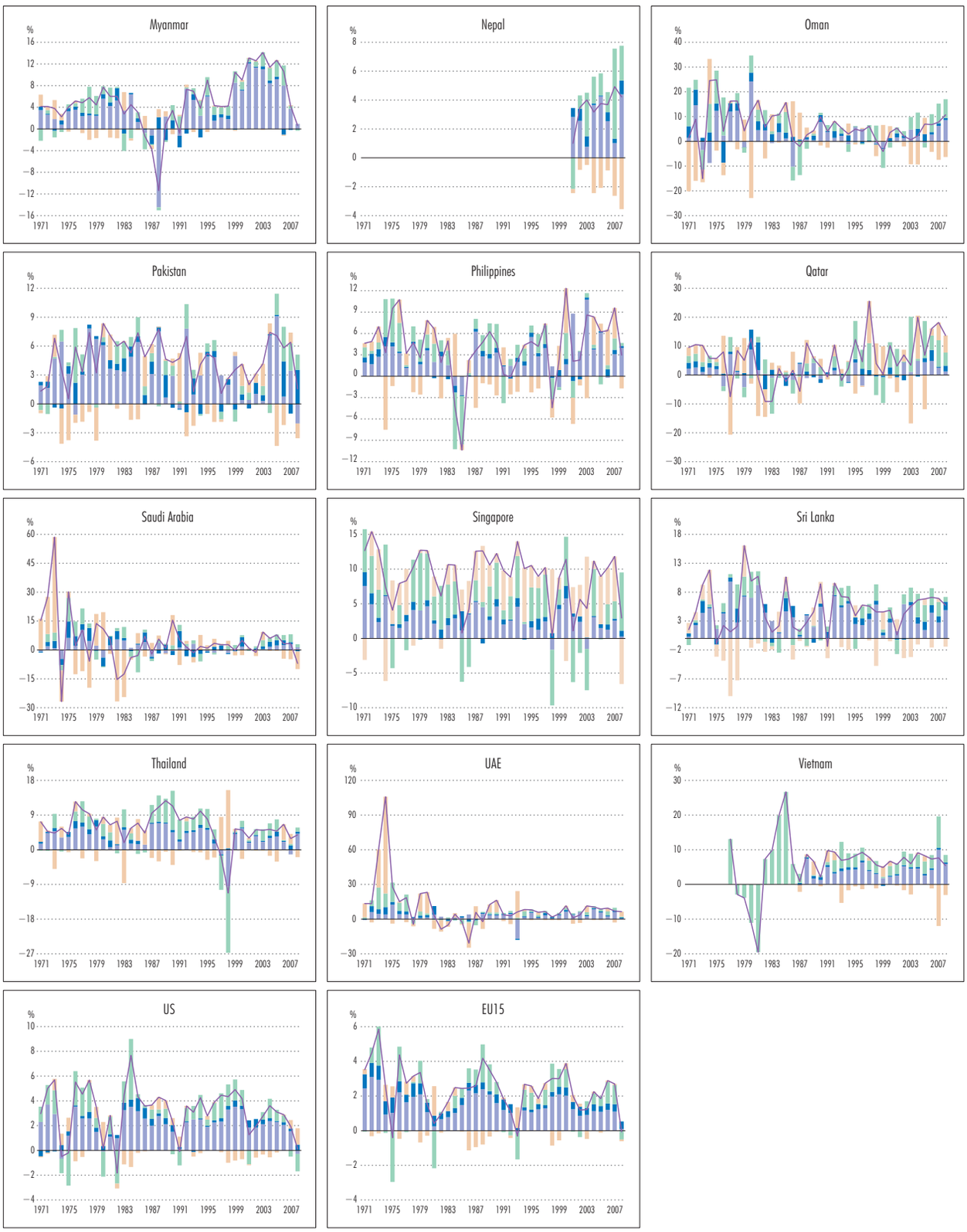


Figure 23: Final Demand Decomposition of Real GDP Growth, 1970–2008

Unit: Percentage.
Note: Myanmar's household consumption includes government consumption due to data limitations.
Sources: Official national accounts in each country, including our adjustments.


Myanmar
Nepal
Oman
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Qatar
Saudi Arabia
Singapore
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UAE
Vietnam
US
EU15
%
1971 1975 1979 1983 1987 1991 1995 1999 2003 2007
Household Consumption
Government Consumption
Investment
Net Exports
Real GDP

discernible in our data covering almost four decades. Furthermore, the Asian financial crisis of 1997–1998 marked an exceptional time for many Asian economies. Its impact can clearly be seen in Indonesia, Korea, Malaysia, Singapore, and Thailand, where investment took a nose-dive in 1998; consumption also fell, albeit to a lesser extent. In contrast, net export growth was exceptionally strong, and was likely to have benefited from the rapid devaluation of the Asian currencies at the time of the crisis.[34] We are also beginning to see the impact of the global financial crisis of 2007–2008 coming through the annual data. For most countries, the economic slowdown started in 2007 and accelerated into 2008, albeit more sharply in some than others. The US, EU15, and the ROC achieved virtually no growth in 2008, while the Japanese economy actually contracted. Most of the other countries also experienced a slowdown in growth.

Household consumption has been one key driver of economic growth in the Asian countries, but its importance varies across countries and across time. In the ROC and Hong Kong, for example, it bore a much larger weight at the beginning of the period, but in recent years the percentage contributed by household consumption has been much lower. Investment has, on the one hand, been a consistent and significant driver of economic growth in many Asian economies (notably in the four Asian Tigers, and more recently in China, India, Vietnam, and Thailand); on the other hand, it has also contributed to the volatility of economies.

Net exports have been a significant driver in Asia, and subject to wider swings when compared to the US and EU15. In the ROC they were a key engine of growth in the 1970s. In the latter half of the 1980s and the 1990s growth was mainly about household consumption and investment. Since the turn of the millennium, however, net exports have regained their importance as a driver of economic growth. Similarly, in the 2000s growth in Hong Kong has been mainly led by net exports, as has growth in Singapore barring 2004. The story in Korea has been about household consumption and investment; the role of net exports has not been firmly established. In contrast, net exports have emerged to play a more significant role in Japan's modest growth in the past five years.

For China, investment is clearly a key driver in the economy, and since the early 1990s it has often been the main contributor to economic growth. In recent years net exports have also emerged as being capable of making a positive contribution to growth. In contrast, the prominence of investment in India is less stark than in China, and net exports are still a drag on its growth effort.

For the US, household consumption as the key component of economic growth has never been challenged. Investment was strong and consistent for a decade in the 1990s, but contracted after the burst of the dot.com bubble at the turn of the millennium before recovering in recent years. Investment began to fall in 2007 (−0.5 per cent), and continued in 2008 (−1.4 per cent) in the wake of the global financial crisis. Government consumption also went through ebbs and flows. It was strong in the 1980s, fueling overall economic growth. A clear effort to restrain it took place in the early 1990s before it picked up again. Growth in government consumption doubled from 0.2 per cent to 0.5 per cent between 2007 and 2008. Since the early 1990s net exports have played a negligible role in US economic growth, if not being a drag on the economy.

Like the US, economic growth in EU15 is largely determined by household consumption and investment. Net exports have not been making a significant contribution to growth in recent years. Growth of government consumption has been steady throughout the period, but efforts at restraint during the 1990s can clearly be seen before growth picked up again in the 2000s.

It is difficult to understand the oil-exporting economies fully without analyzing the oil market in parallel. We can clearly observe its volatility from Figure 23, with huge swings from peak to trough particularly in the 1970s. The oil booms of the 1970s brought benefits, but the downturns also hurt. Net exports are still erratic, but overall volatility seemed to have reduced in the past two decades. Qatar experienced the fastest GDP growth among the oil-exporting countries in recent years with very strong investment growth, but its economy is still very dependent on oil and gas and related industries, which account for over 50 per cent of its GDP in 2008 (Figure 44), roughly 80 per cent of its export earnings, and 70 per cent of government revenues in the 2000s.[35] In contrast, Bahrain has diversified to be a regional banking and financial center and benefited from the regional boom in recent years. Even so, petroleum production and processing still account for less than 30 per cent of its GDP in 2008 (Figure 44), about 60 per cent of export earnings, and 75 per cent of government revenues in the 2000s.[36] The economic fortunes of these countries are therefore tied up with the rest of the world via their dependence on the oil and gas industry. For example, demand for oil has been driven up by the rapid growth in emerging economies. If, say, China slows down, the demand for oil will also relent. Their future depends on how well they can diversify away from oil and gas while the stock of natural resources lasts.

34: It appears that some Asian countries, for example the ROC, Hong Kong, Japan, and Malaysia, also suffered adversely in 2001 following the burst of the dot.com bubble.

35: Data from the series of *Annual Statistical Abstract*, State of Qatar.

36: Data from Ministry of Finance, Kingdom of Bahrain.

Box 6 Being Resource Rich – A Blessing or a Curse?

Resource curse refers to the empirical observation that natural-resource-intensive countries tend to grow slower over time than countries which are less richly endowed. In some countries, per capita income stagnates or even declines. Correcting GDP to account properly for capital depreciation does not change the observation of a "resource curse." A substantial gap in growth performance is still observed between the two groups of countries when growth is measured in terms of a genuine income concept, although the "resource curse" appears to be marginally weaker than in terms of growth of GDP (Neumayer, 2004).

Natural-resource-intensive countries at least enjoy one huge advantage over their less richly endowed counterparts in their development effort: they have large amounts of foreign exchange made available to them, which they do not have to repay, through exporting their natural resources. All they need to be concerned about is investing the revenues well to generate a sustainable future income without the burden of repaying or servicing a debt. When the real prices of their exports rise, this advantage is further accentuated by the amount of additional resources made available to them via a favorable change in terms of trade. To these economies, changes in terms of trade can have an enormous impact on their consumption possibilities, and this is neglected by the conventional concept of GDP. For example, in the period 1970–2008 real GDP growth underestimated real income growth by 730 per cent, 192 per cent, and 47 per cent on average in Kuwait, Brunei, and Iran respectively (Table 16). To a lesser extent, the corresponding figures for Saudi Arabia and Oman were 25 per cent and 22 per cent respectively. The UAE is the only oil-exporting country where the trading gain effect is not welfare enhancing over the long term.

But in reality not all resource-rich countries manage to capitalize on this blessing; instead, resource-rich governments have a tendency to be profligate. As the GDP (as well as the real income measure) of these countries exaggerates their level of income by erroneously including their natural resource rents from the depletion of an asset, this tends to encourage unsustainable consumption. Resource booms also allow economically incoherent, inapt, and even damaging policies to be followed for longer than would otherwise be the case, numbing the urgency and dampening the discipline required to adopt a medium- to long-term perspective in policy-making and build sound foundations for sustainable development.

Natural resource bonanzas are also accompanied by the so-called "Dutch disease," which plagues the manufacturing and other tradable sectors of the economy with loss of competitiveness and productivity as foreign demand for the natural resource export drives up the exchange value of the exporting country's currency. (The Economist first used the term in the 1970s to describe the hardships faced by Dutch manufacturers following the discovery of natural gas in the Netherlands.) The Dutch disease tends to have a greater detrimental impact on developing than on developed countries, for two reasons. First, the natural resource intensity (measured by the share of natural capital depreciation relative to GDP) tends to be higher in developing countries. Second, the Dutch disease hits the developing economy before it has a chance to diversify, and in turn chokes off the development of a more sophisticated economic structure.

In addition, resource-rich economies are prone to political instability and conflicts, even violence. As Stiglitz (2006) puts it, "The resources are both the object of the conflict and the source of financial wherewithal that enables the conflict to go on. The violence that has afflicted these resource-rich countries represents the extreme of the resource curse." We often observe in these countries a high concentration of wealth and power, and those in control lack accountability. Corruption and political conflict are rampant. It is no accident that not one of the oil-rich countries of the Middles East has anything approaching a democracy. The political dynamics are such that they often lead to high levels of inequality. The development of economic institutions and infrastructure essential for a thriving market economy is neglected. Human capital accumulation, entrepreneurships and innovative activity are crowded out by rent-seeking activities, which divert the attention of policy makers from development effort and resources from productive use.

The roots of the resource curse are complex, with economic factors interacting with intricate geopolitics. Admittedly it is a formidable task to manage a natural-resource-intensive economy well with its highly unpredictable revenues among its other vices, but the outcome of a resource curse is not deterministic. Weaknesses in institutions and governance usually act to compound the difficulties, which become detrimental to the country's growth prospects. In this report, we see some mixed successes in these economies in managing their resources. Our findings suggest that GCC countries and

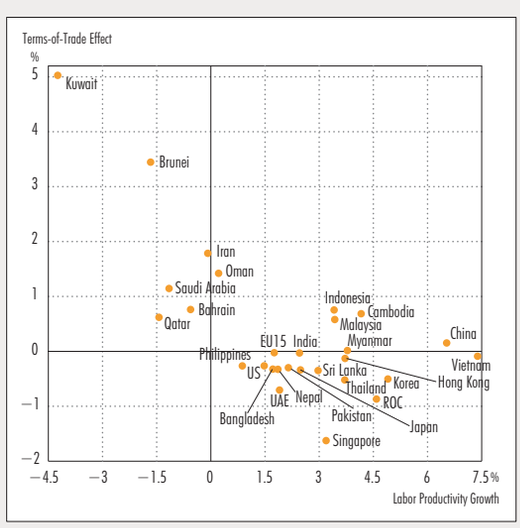

Figure B6: Terms-of-trade Effect and Productivity Growth, 1970–2008

Note: The starting years for some countries are different due to data availability during 1970–2008: Brunei (1989–), Cambodia (1993–), Mongolia (2000–), Nepal (2000–), and Vietnam (1986–).

Sources: Official national accounts in each country, including our adjustments.

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other oil-exporting nation still rely predominantly on the mining sector for revenues and growth, giving rise to huge economic volatility. This economic structure is probably not conducive to labor productivity growth, as seen in Figure B6; the productivity performance of oil-exporting countries is the worst among all countries compared. In face of reduction in oil and gas production, some countries seem to be better adapted than others. Bahrain has been successful in branching into finance, real estate and business activities, which accounted for 41 per cent of its 6.4 per cent overall growth over the period 2000–2008. Oman also sustained growth of 4.1 per cent on average a year, 76 per cent of which originated from the service sector. In contrast, Brunei has not managed as well, with dismal growth of 0.9 per cent on average a year over the same period. Historically, Brunei has been enjoying a favorable terms-of-trade effect which works to counterbalance its less-than-impressive growth performance and its poor labor productivity growth (Figure B6).

5 Productivity: The Supply-side Story

Productivity performance is crucial to a country's future economic prospect. As the factors of inputs (labor and capital devoted to production) cannot increase indefinitely, productivity gains, which enable an economy to produce more for the same amount of inputs, are the only route to sustain economic growth in the long run. It follows that monitoring and improving national productivity capability (the supply side of the economy) are important aspects of public policy in many countries.[37]

As a ratio of a volume measure of output to a volume measure of input use, productivity is simple as a notion. But when comes to applying it, we quickly realize the complexity in operationalizing this notion to suit different purposes and in a world with data limitations. Consequently we have different measures of productivity for different purposes, and different estimation approaches and definitions subject to the data used. In this report, national accounts are the basis for our productivity estimates, and in turn growth accounting with the appropriate choice of index numbers is adopted here as our estimation approach.[38] We present two productivity measures in this chapter, namely labor productivity and total factor productivity (TFP).

Labor productivity can be measured in a number of ways, depending on the definitions of output and labor input measures. The preferred measure is the basic-price GDP per actual hour worked, which adjusts for different work patterns across countries and across time.[39] However, total actual hours worked cannot be constructed for all the countries studied. To include all countries and define Asian country groups, therefore, the labor productivity measure in terms of GDP per worker is used in Section 5.1. To the extent that the high-performing Asian countries tend to work longer hours than the US on average, the per-worker-based labor productivity gaps probably put the Asian countries in a more favorable light than otherwise. Although being a one-factor or partial-factor productivity measure, interest in labor productivity has never waned due to its simplicity as a concept, its broad availability and its direct link to per capita GDP performance. In Section 3.3, we see how the per capita GDP gap with the US for most Asian economies is largely explained by their labor productivity shortfalls. The cross-country comparisons of labor productivity performance conducted in Section 5.1 are based on a definition compatible with Sections 3.3 and 3.4, namely GDP per worker. In Section 5.2, we shift our focus to our own estimates of the alternative labor productivity measure, namely GDP per hour worked for some selected Asian countries. In Section 5.3 we include capital input as another key factor of production and present the TFP estimates for 13 Asian countries and the US, based on our estimates of capital services.

5.1 Per Worker Measure of Labor Productivity

Figure 24 presents the cross-country comparisons of labor productivity level in 2008, measured as GDP per worker. These figures are discussed, with the US level serving as the benchmark (= 100).[40] Singapore and Hong Kong achieved a labor productivity level that was close to the US level, i.e. within −10 per cent that of the US. The ROC and Japan took third and fourth places among the Asian group, with productivity levels around 25 per cent below that of the US. Korea followed, with a gap of 40 per cent. Iran and Malaysia achieved productivity levels which are around 40–45 per cent of the US level. Thereafter the Asian group displayed a long tail of countries with labor productivity levels of less than 20 per cent that of the US, pulling down the average performance of the group to 16 per cent for APO20, 14 per cent for Asia23, and 11 per cent for ASEAN. Included in the long tail were China and India, with productivity levels that were 12 per cent and 8 per cent of the US level, respectively.

Table 7 presents cross-country comparisons of labor productivity levels defined by per-worker GDP in 1970,

37: For example, the UK government sets out public service agreements (PSAs) which outline the improvements that are expected by government expenditure. The PSAs are agreed every three years between the main government departments and the Treasury as part of the spending review process. Top of the 30 targets, PSA1 aims to "raise the productivity of the UK economy." The EU KLEMS project, which was funded by the European Commission and ran from 2003 to 2008, was also a major initiative responding to, among other things, the data demands arising from policy evaluation, especially in the assessment of the goals concerning competitiveness and economic growth potential as established by the Lisbon and Barcelona summit goals.

38: The growth accounting approach is based on the microeconomic production theory and the nominal accounting balance of input and output of production. The standard model was presented by Solow (1957) and has been developed by researchers such as Zvi Griliches, Dale Jorgenson, Charles Hulten, and Erwin Diewert. See Jorgenson and Griliches (1967) for example. Also see OECD (2001) that presents definitions, theoretical foundations, and a number of practical issues in measuring productivity.

39: GDP is valued at basic prices in this chapter, as opposed to GDP at market prices used in the previous chapters. GDP at basic prices is defined as GDP at market prices minus net indirect taxes on products. Since it reflects prices actually paid and received by the producer, it is more relevant to productivity comparisons. As most Asian countries do not provide the official estimates for GDP at basic prices in their national accounts, they are calculated based on available tax data. See Box 2 for the methods employed for our calculations.

40: Cross-country level productivity comparisons are notoriously difficult and hence are subject to a lot of data uncertainty. Estimates should therefore be taken as indicative for broad groupings rather than for precise ranking.

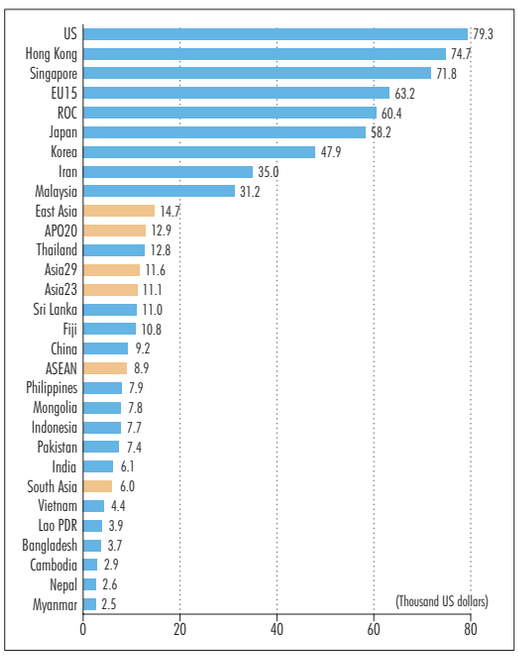


Figure 24: Labor Productivity Level by Per-worker GDP, 2008
—GDP at constant basic prices per worker, using 2005 PPPs

Source: APO Productivity Database 2011.01.

1980, 1990, 2000, 2007, and 2008 for all Asian countries, the US, and EU15.[41] In the past decade Asia as a group achieved little change in its labor productivity relative to that of the US, hovering around 15–17 per cent for APO20 and 8–14 per cent for Asia23. Japan's labor productivity was the highest in this region until 1991, when both Singapore and Hong Kong caught up and overtook it thereafter. In 2000 Hong Kong sustained a productivity gap of 17 per cent with the US, but by 2008 the gap was further narrowed by nearly two-thirds to around 6 per cent. The productivity levels of Hong Kong and Singapore have been similar in the past decade.

Comparing the new data for 2008 with 2007 shows that productivity was little changed between the two years, stressing the structural nature of productivity performance, which requires medium- to long-term effort to make statistically significant improvements. In the past decade the top eight countries have maintained their relative positions, although the Asian leaders have been closing up on the region's leader, Japan. China and India are the two giant and fast-emerging economies in Asia. China started off with one-third of India's productivity level in 1970; but four decades later China is showing signs of pulling ahead of India. China's relative performance moved up from 3.4 per cent to 15.8 per cent of Japan's level between 1970 and 2008, while India managed little change over the same period, with its relative performance remaining around 10 per cent that of Japan – the leader in 1970.[42]

The figures for GCC countries and Brunei are uncharacteristically high, especially in 1970, but there are also noticeable variations within the country group. The atypically high figures in the early period reflect the natural resource rents – the value of the resource over and above the cost of extraction – which are erroneously included in these countries' GDP. The extent of exaggeration appears to be proportional to their oil production: Saudi Arabia has the largest proven oil reserves in the world and is the largest world oil exporter; Kuwait has the fourth-largest oil reserves in the world; also Qatar has become the fourth-largest exporter of liquefied natural gas. In contrast, Bahrain has the smallest oil reserve compared to its peers. Its dependence on oil is therefore considerably lower and it has worked to diversify its economy over the past decade (see Figure 61). The GCC countries have also been experiencing high population growth, especially in the later 1970s and the early 1980s. In the last two decades this has somewhat stabilized at around 2 per cent a year, except in the UAE and Qatar where the population grew at 6.2 per cent and 12.6 per cent over the previous year in 2008. The working-age population has been expanding accordingly. Employment is erratic from one year to another, and this will be reflected in the labor productivity figures.

Table 8 shows cross-country comparisons of labor productivity growth for four periods: 1990–1995, 1995–2000, 2000–2005, and 2005–2008. Not only has China been sustaining rapid productivity growth in the past decade, but its growth accelerated to an average of 10.7 per cent a year in 2005–2008 from 7.1 per cent a year in 1995–2000 and 8.3 per cent a year in 2000–2005. This compares with India's 5.4 per cent, 3.4 per cent, and 3.6 per cent, and Hong Kong's 3.3 per cent, 0.6 per cent, and 3.3 per cent over the same periods. As a group, Asia23 achieved the highest labor productivity growth in recent years, reaching 5.2 per cent on average a year in 2005–2008, up from 3.7 per cent in 2000–2005. Within Asia, labor productivity growth has been accelerating in both South Asia and East Asia but East Asia has persistently displayed

41: The output in EU15 includes FISIM, thus it may be about 1–2 per cent higher than that of Asian countries and the US by definition.

42: If the comparisons were with the region's leader at different times, India's relative labor productivity has actually fallen back, while China has managed to make a substantial leap to close in on the leader, albeit from a very low level.

more vibrant labor productivity growth than South Asia (for example, 6.3 per cent compared with 4.8 per cent in the period 2005–2008). Overall the Asian Tigers have managed to sustain their labor productivity growth performance but they are no match with the fast-emerging economies in recent years.

In contrast, Japan has been struggling with labor productivity performance. Having managed to grow at 1.5 per cent and 1.7 per cent on average a year for the periods 1995–2000 and 2000–2005 respectively, labor productivity growth in Japan has slowed to 0.9 per cent per year on average since 2005. After a decade of over 2 per cent growth a year, average annual productivity growth in the US also slowed rapidly to 0.8 per cent between 2005 and 2008. Average annual labor productivity growth in EU15 has been weakening as well, slowing in every successive period from 2.0 per cent in the first half of the 1990s to 0.6 per cent in the most recent period of 2005–2008. Productivity growth for the GCC as a group has been dismal, especially in the 2000s. The achievement of 1.3 per cent labor productivity growth on average per year in the latter half of the 1990s looks more like an aberration.

Table 7: Cross-country Comparisons of Per-worker Labor Productivity Levels, 1970, 1980, 1990, 2000, 2007, and 2008
—GDP at constant basic prices per worker, using 2005 PPPs

1970		(%)	1980		(%)	1990		(%)	2000		(%)	2007		(%)	2008		(%)
Japan	22.7	100.0	Japan	32.6	100.0	Japan	46.9	100.0	Singapore	65.0	100.0	Singapore	76.0	100.0	Hong Kong	74.7	100.0
Singapore	21.3	94.1	Singapore	30.5	93.5	Hong Kong	46.4	98.8	Hong Kong	57.6	88.5	Hong Kong	73.9	97.3	Singapore	71.8	96.0
Hong Kong	18.2	80.3	Hong Kong	29.3	90.0	Singapore	45.5	96.9	Japan	52.0	79.9	ROC	60.6	79.7	ROC	60.4	80.8
ROC	10.6	46.6	Iran	27.4	84.0	ROC	30.8	65.6	ROC	49.0	75.4	Japan	58.7	77.2	Japan	58.2	77.9
Fiji	9.9	43.7	ROC	18.7	57.3	Iran	27.4	58.5	Korea	38.0	58.4	Korea	47.1	62.0	Korea	47.9	64.1
Malaysia	8.5	37.4	Malaysia	13.0	39.7	Korea	23.6	50.2	Iran	29.6	45.6	Iran	35.0	46.1	Iran	35.0	46.8
Korea	7.4	32.8	Korea	12.3	37.8	Malaysia	16.8	35.7	Malaysia	24.1	37.0	Malaysia	30.1	39.7	Malaysia	31.2	41.8
Philippines	5.7	25.1	Fiji	9.4	28.9	Fiji	9.5	20.2	Thailand	10.4	15.9	Thailand	12.7	16.7	Thailand	12.8	17.1
Sri Lanka	3.6	15.8	Philippines	6.8	20.9	Thailand	6.8	14.5	Fiji	10.3	15.8	Fiji	11.0	14.5	Sri Lanka	11.0	14.8
Pakistan	3.3	14.4	Mongolia	4.8	14.6	Sri Lanka	6.3	13.5	Sri Lanka	8.5	13.0	Sri Lanka	10.6	14.0	Fiji	10.8	14.5
Mongolia	3.2	14.0	Thailand	4.4	13.4	Philippines	6.1	13.1	Philippines	6.7	10.4	China	8.4	11.1	China	9.2	12.3
Thailand	3.1	13.7	Sri Lanka	4.4	13.3	Pakistan	5.5	11.7	Pakistan	6.7	10.3	Philippines	7.8	10.3	Philippines	7.9	10.6
India	2.4	10.6	Pakistan	3.8	11.8	Mongolia	5.3	11.3	Indonesia	5.9	9.0	Pakistan	7.5	9.9	Mongolia	7.8	10.4
Indonesia	2.1	9.3	Indonesia	3.6	11.2	Indonesia	4.6	9.7	Mongolia	5.6	8.6	Indonesia	7.4	9.8	Indonesia	7.7	10.3
China	0.8	3.4	India	2.7	8.3	India	3.2	6.9	China	4.4	6.8	Mongolia	7.3	9.5	Pakistan	7.4	9.9
			Bangladesh	2.0	6.2	Bangladesh	2.1	4.5	India	4.3	6.6	India	5.9	7.8	India	6.1	8.1
			Nepal	1.4	4.2	Nepal	2.0	4.2	Vietnam	3.0	4.6	Vietnam	4.2	5.6	Vietnam	4.4	5.8
			China	1.1	3.5	Lao PDR	1.9	4.0	Bangladesh	3.0	4.6	Lao PDR	3.7	4.9	Lao PDR	3.9	5.2
			Myanmar	0.9	2.7	Vietnam	1.8	3.9	Lao PDR	2.7	4.2	Bangladesh	3.5	4.7	Bangladesh	3.7	4.9
			Vietnam	0.7	2.2	China	1.8	3.9	Nepal	2.4	3.7	Cambodia	2.8	3.6	Cambodia	2.9	3.9
						Myanmar	0.9	1.8	Cambodia	2.0	3.1	Nepal	2.6	3.4	Nepal	2.6	3.5
									Myanmar	1.3	2.0	Myanmar	2.5	3.3	Myanmar	2.5	3.4
Bahrain	63.5	280.0	Bahrain	58.8	180.2	Bahrain	43.0	91.7	Bahrain	51.4	79.1	Bahrain	49.6	65.3	Bahrain	51.3	68.6
Kuwait	288.6	1272.4	Kuwait	116.4	356.9	Kuwait	48.9	104.1	Kuwait	61.0	93.8	Kuwait	53.7	70.7	Kuwait	57.6	77.1
Oman	49.0	215.9	Oman	65.6	201.4	Oman	70.3	149.8	Oman	59.0	90.8	Oman	56.1	73.9	Oman	53.1	71.1
Qatar	161.2	710.9	Qatar	135.4	415.2	Qatar	78.4	167.1	Qatar	115.7	177.9	Qatar	113.3	149.1	Qatar	93.4	125.0
Saudi Arabia	101.3	446.9	Saudi Arabia	101.8	312.2	Saudi Arabia	56.2	119.7	Saudi Arabia	63.2	97.3	Saudi Arabia	64.5	84.9	Saudi Arabia	65.3	87.3
UAE	40.9	180.3	UAE	150.7	462.3	UAE	94.2	200.6	UAE	81.7	125.6	UAE	83.7	110.2	UAE	84.2	112.7
			Brunei	240.3	737.1	Brunei	116.2	247.6	Brunei	105.4	162.1	Brunei	97.6	128.4	Brunei	94.2	126.1
(regrouped)			(regrouped)			(regrouped)			(regrouped)			(regrouped)			(regrouped)		
APO20	6.8	29.9	APO20	7.9	24.1	APO20	9.7	20.8	APO20	11.2	17.3	APO20	12.8	16.9	APO20	12.9	17.2
Asia23	3.8	16.8	Asia23	4.7	14.4	Asia23	5.7	12.2	Asia23	7.9	12.2	Asia23	10.8	14.2	Asia23	11.1	14.9
Asia29	4.1	18.1	Asia29	5.2	15.9	Asia29	6.1	12.9	Asia29	8.3	12.8	Asia29	11.2	14.8	Asia29	11.6	15.5
East Asia	4.0	17.5	East Asia	5.5	16.7	East Asia	6.7	14.4	East Asia	9.8	15.0	East Asia	14.1	18.5	East Asia	14.7	19.7
South Asia	2.6	11.6	South Asia	2.7	8.4	South Asia	3.3	7.1	South Asia	4.4	6.8	South Asia	5.8	7.7	South Asia	6.0	8.0
ASEAN	3.5	15.5	ASEAN	4.1	12.5	ASEAN	5.2	11.0	ASEAN	7.0	10.7	ASEAN	8.7	11.5	ASEAN	8.9	11.9
GCC	121.5	535.8	GCC	107.5	329.9	GCC	60.9	129.7	GCC	67.1	103.1	GCC	67.6	88.9	GCC	68.1	91.0
(reference)			(reference)			(reference)			(reference)			(reference)			(reference)		
US	45.3	199.6	US	50.1	153.8	US	58.0	123.5	US	69.7	107.1	US	79.0	104.0	US	79.3	106.2
EU15	32.4	143.0	EU15	42.0	128.8	EU15	50.2	107.1	EU15	59.7	91.8	EU15	63.5	83.6	EU15	63.2	84.5

Unit: Thousand US dollars at constant basic prices per worker, using 2005 PPPs.
Source: APO Productivity Database 2011.01.

Figure 25 shows labor productivity levels relative to the US (= 100) for the Asian countries. The same grouping as in Section 3.2, based on the speed of catch-up with the US in per capita GDP, is used here. Broadly speaking, countries that are catching up fast with the US in per capita GDP (Group-C1) are also fast catching up in labor productivity (Figure 25.1). Similarly, countries with deteriorating relative per capita GDP (Group-C4) are found to be also deteriorating or of little change against the US in labor productivity (Figure 25.4).

In Figure 25.1 we see two sub-groups in Group-C1 countries. The first is made up of the ROC, Korea, and Singapore, which started at relatively high levels and made most progress in closing the productivity gap with the US. Singapore has closed the gap from under 50 per cent in 1970 to almost zero in 2004. Although the ROC and Korea still have a sizeable gap of 20 per cent

Table 8: Cross-country Comparisons of Labor Productivity Growth, 1990–1995, 1995–2000, 2000–2005, and 2005–2008

—Average annual growth rate of GDP at constant basic prices per worker, using 2005 PPPs

1990–1995		1995–2000		2000–2005		2005–2008	
Kuwait	11.8	China	7.1	Myanmar	10.8	China	10.7
China	10.6	Qatar	6.1	China	8.3	Mongolia	6.4
Thailand	8.3	Oman	5.8	Vietnam	4.8	Cambodia	6.3
Indonesia	6.5	Vietnam	4.7	Lao PDR	4.1	India	5.4
Malaysia	6.4	Korea	4.4	India	3.6	Lao PDR	5.2
ROC	5.2	Myanmar	4.3	Indonesia	3.6	Myanmar	5.0
Vietnam	5.2	ROC	4.1	Cambodia	3.5	Sri Lanka	4.7
Korea	5.2	Bangladesh	3.9	Hong Kong	3.3	Vietnam	4.3
Singapore	5.1	Lao PDR	3.7	Oman	3.3	Bahrain	4.3
Cambodia	4.2	Cambodia	3.5	Singapore	3.1	Bangladesh	4.0
Sri Lanka	4.1	India	3.4	Malaysia	3.1	Philippines	3.7
Hong Kong	3.7	Mongolia	2.5	Korea	2.8	Malaysia	3.6
Lao PDR	3.6	Philippines	2.3	Mongolia	2.7	Hong Kong	3.3
Myanmar	3.6	Singapore	2.0	ROC	2.7	Korea	3.1
Pakistan	3.5	Saudi Arabia	1.7	Thailand	2.6	Indonesia	3.0
Bangladesh	2.8	Sri Lanka	1.7	Sri Lanka	2.5	Thailand	2.5
Nepal	2.4	Nepal	1.6	Iran	2.1	ROC	2.5
Bahrain	2.4	Japan	1.5	Pakistan	1.9	Iran	2.1
India	2.3	Fiji	1.4	Bangladesh	1.8	Nepal	2.0
Qatar	1.6	Iran	1.2	Japan	1.7	UAE	2.0
Saudi Arabia	0.7	Bahrain	1.2	Fiji	1.6	Saudi Arabia	1.1
Japan	0.6	Malaysia	0.9	Philippines	1.0	Japan	0.9
Iran	0.3	UAE	0.8	Nepal	0.5	Pakistan	0.2
Fiji	0.2	Hong Kong	0.6	Saudi Arabia	0.0	Kuwait	−0.8
Brunei	−0.2	Pakistan	0.4	UAE	−0.6	Fiji	−1.0
Philippines	−0.4	Thailand	0.1	Kuwait	−0.7	Brunei	−1.8
Mongolia	−1.3	Indonesia	−1.4	Qatar	−1.0	Singapore	−1.9
UAE	−3.7	Brunei	−1.7	Brunei	−1.2	Qatar	−5.5
Oman	−9.3	Kuwait	−7.4	Bahrain	−2.6	Oman	−8.9
(regrouped)		(regrouped)		(regrouped)		(regrouped)	
APO20	1.8	APO20	1.1	APO20	1.4	APO20	2.1
Asia23	3.7	Asia23	2.7	Asia23	3.7	Asia23	5.2
Asia29	3.6	Asia29	2.6	Asia29	3.6	Asia29	5.1
East Asia	4.1	East Asia	3.3	East Asia	4.4	East Asia	6.3
South Asia	2.5	South Asia	3.1	South Asia	3.3	South Asia	4.8
ASEAN	5.3	ASEAN	0.6	ASEAN	3.1	ASEAN	3.1
GCC	0.6	GCC	1.3	GCC	0.0	GCC	0.4
(reference)		(reference)		(reference)		(reference)	
US	1.4	US	2.2	US	2.1	US	0.8
EU15	2.0	EU15	1.5	EU15	0.8	EU15	0.6

Unit: Percentage.
Source: APO Productivity Database 2011.01.

and 40 per cent respectively against the US, they started with a much bigger gap than Singapore – around 80 per cent in 1970. The second group is made up of China, Cambodia, and Vietnam, all of which had productivity levels below 3 per cent of that of the US even in around 1990. All these countries show signs of a strong and promising start in their catch-up process in the past decade. The growth of their productivity did not deteriorate during the Asian financial crisis.

Figure 25.2 shows the performance of Group-C2 countries, which managed an annual catch-up rate of 1 per cent to under 3 per cent in per capita GDP against that of the US. Hong Kong and Malaysia had the highest and second-highest relative income as well as labor productivity in this group. During the period 1970–2008, Hong Kong's relative labor productivity improved from 40.2 per cent to 94.2 per cent against that of the US, and Malaysia's improved from 18.7 per cent to 39.3 per cent. Like Thailand and Indonesia, the catch-up efforts of Hong Kong and Malaysia were frustrated by the Asian financial crisis of the late 1990s, but their relative productivity levels have already surpassed their previous peaks and reached respective record levels by 2008. The relative productivity performance of the remaining six countries in this group has been increasing over a long period of time. While the earlier progress made by Thailand and Indonesia appears to have been stalled by the Asian financial crisis of 1997–1998, these countries are slowly recovering the lost ground.

Countries which have managed little catch-up with the US in per capita GDP (Group-C3) are also those with rather stagnant labor productivity. Japan is the only high-income country in this group, while the rest are all low-income countries with per capita GDP less than 10 per cent of that of the US. Japan showed strong catch-up in the earlier period, with relative labor productivity peaking at 81.5 per cent of that of the US in 1991, and since 2000 the subsequent decline has been halted at a productivity gap of around 27 per cent. Similarly EU15, a reference economy with high income, has seen its productivity gap doubled against the US since 1995, from 10 per cent to 20 per cent in 2008. The low-income countries have managed little catch-up: the labor productivity level in 2008 is below 10 per cent that of the US in Pakistan, Bangladesh, and Mongolia (Figure 25.3).

Figure 25.4 shows that countries with declining per capita GDP against that of the US (Group-C4), namely Iran, Fiji, Nepal, and the Philippines,[43] also have declining relative labor productivity. Among the countries of this group, Iran experienced a drastic decline in its relative labor productivity from its former peak of 82.3 per cent in 1976 to 44.1 per cent in 2008. Fiji's decline was from a peak of 21.9 per cent in 1973 to 13.6 per cent in 2008, and the corresponding figures for the Philippines were 13.6 per cent in 1980 and 10.0 per cent in 2008. And at 3.3 per cent in 2008, Nepal has made very little difference to its relative labor productivity against the US over the past three decades or so.

43: Oil-exporting countries have been omitted from the chart because of their distortionary figures.

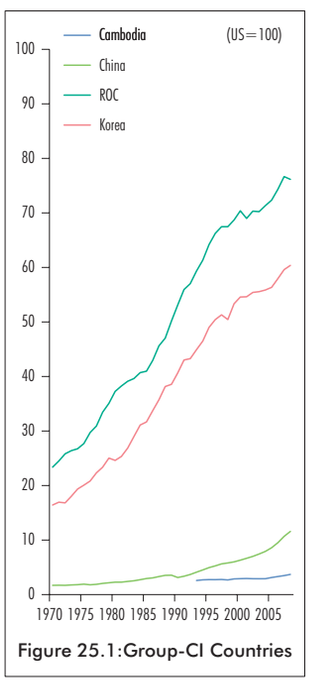


Figure 25.1:Group-CI Countries

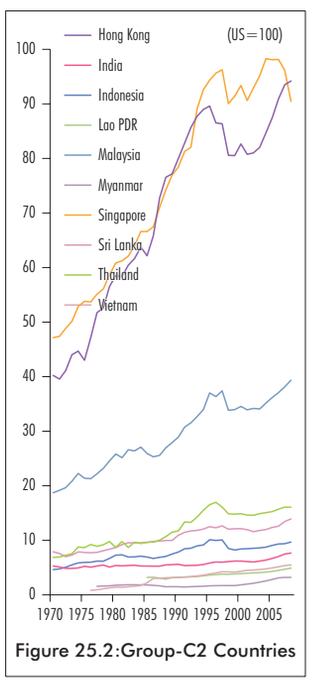


Figure 25.2:Group-C2 Countries

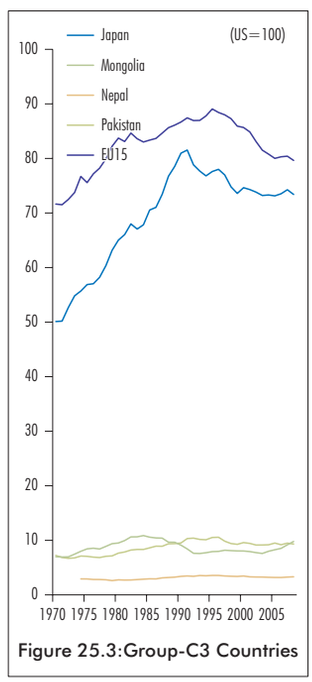


Figure 25.3:Group-C3 Countries

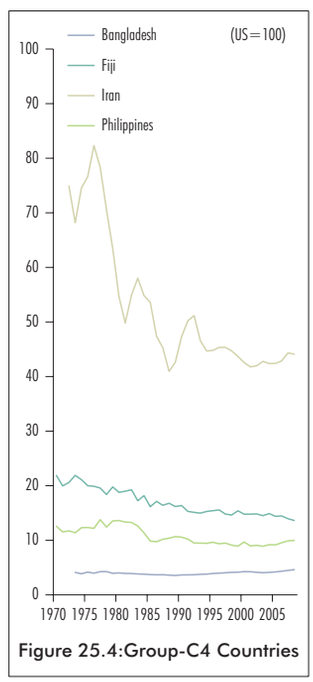


Figure 25.4:Group-C4 Countries

Figure 25: Labor Productivity Level Relative to the US, 1970–2008
—Indices of GDP at constant basic prices per worker, using 2005 PPPs (US = 100)

Source: APO Productivity Database 2011.01.

5.2 Per Hour Measure of Labor Productivity

The per-worker-based labor productivity gaps presented in Section 5.1 are probably conservative estimates, since the high-performing Asian countries tend to work longer hours than the US on average. In this section, we focus on per hour measures of labor productivity. Total hours worked are constructed in our database for 15 Asian countries and the US, although the quality of the estimates may vary considerably across countries.[44] Figure 26 shows how the productivity gap against the US in 2008 varies depending on which measure of labor productivity is used.[45] There is little difference in the productivity gap between the two measures of labor productivity for ten out of the 15 countries presented, whereas they make a bigger difference for countries with high performance. The labor productivity gap against the US is wider on the per hour GDP measure by more than 16 percentage points for the four Asian Tigers (Singapore, Hong Kong, the ROC, and Korea), suggesting that they work much longer hours than the US. Europeans generally work fewer hours, and this is shown in Figure 26 with EU15 as the only economy having a smaller productivity gap with the US on the per-hour GDP basis.

Table 9 presents snapshot cross-country comparisons of labor productivity levels among some Asian countries, measured as GDP at constant basic prices per hour worked, for 1970, 1980, 1990, 2000, 2007, and 2008. By this measure, US labor productivity has been able to maintain a big lead over even the Asian high performers. In 1970 the US productivity level was nearly 2.5 times that of the Asian leader, Japan. This gap was then reduced to around 90 per cent and 50 per cent in 1980 and 1990 respectively. Since 1990

44: Cross-country hours worked comparisons are notoriously difficult, not least because harmonized data are rarely readily available. In the countries studied, three published their total hours worked as part of their official statistics, but they are not for the whole period studied in this report and may be constructed based on different methodologies. Some countries only publish estimates for average weekly hours worked, which need estimates of number of weeks worked to derive the total average hours worked per worker. Others may have only benchmark hours worked estimates available, which are then extrapolated to form a series. Consequently, growth of employment and growth of total hours worked become identical, as in the case of China and Thailand. In reading the results, it is therefore important to bear in mind the data limitations. See Box 7 for an explanation of the estimation procedure of total hours worked.

45: The labor productivity gap for country x is country x's labor productivity divided by the US labor productivity in Figure 26.

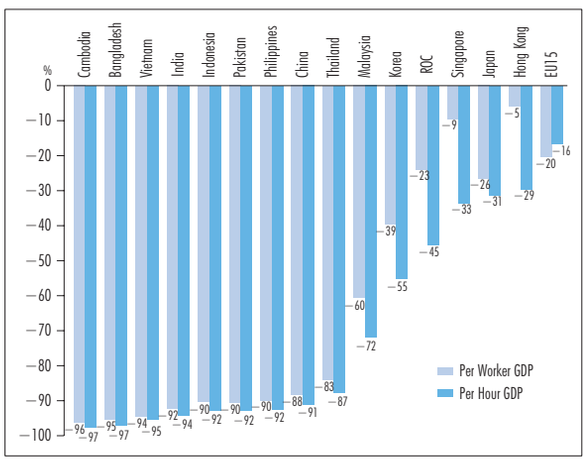


Figure 26: Labor Productivity Gap by Per-worker and Per-hour GDP Relative to the US, 2008
—GDP at constant basic prices per worker and hour, using 2005 PPPs

Source: APO Productivity Database 2011.01.

the pace in closing the gap has slowed. By 2008 a sizeable gap of 42 per cent still remained. This is in contrast with the picture painted by the per worker productivity measure, based on which the Asian leaders (Singapore and Hong Kong) have almost closed the gap with the US (Figure 25).[46] EU15's lead over the Asian leader was around 30 per cent in 2000, and rapidly eroded to under 20 per cent by 2008.

The levels of labor productivity for the top five countries, Japan and the four Asian Tigers, maintained their relative positions for almost four decades. The progress of labor productivity in these countries during 1970–2008 is shown in Figure 27. Within four decades, per hour GDP has roughly tripled for the top three economies, namely Japan, Singapore, and Hong Kong, and the gap among them has literally disappeared. They are ahead of the ROC and Korea by 20 per cent and 40 per cent respectively in 2008, despite the ROC's and Korea's effort in catching up with Japan by 1.9 per cent and 2.4 per cent a year on average respectively over the past four decades. If they could keep up this effort at the same pace, it would take the ROC 13 years and Korea 19 years finally to catch up with Japan.

Figure 28 presents the long-term performance in hourly productivity growth among Asian countries together with the US for the whole period of 1970–2008, and also split into two sub-periods of 1970–1990 and 1990–2008. Between the two sub-periods, we observe a deceleration in the hourly productivity growth for most countries, e.g. in 1990–2008 2.1 percentage points and 1.9 percentage points

Table 9: Cross-country Comparisons of Per-hour Labor Productivity Levels, 1970, 1980, 1990, 2000, 2007, and 2008
—GDP at constant basic prices per hour, using 2005 PPPs

1970		(%)	1980		(%)	1990		(%)	2000		(%)	2007		(%)	2008		(%)
Japan	10.5	100.0	Japan	15.6	100.0	Japan	23.2	100.0	Japan	28.5	100.0	Singapore	33.3	100.0	Hong Kong	33.4	100.0
Singapore	9.0	85.7	Singapore	12.9	83.1	Hong Kong	19.8	85.4	Singapore	28.1	98.5	Japan	32.9	98.6	Japan	32.6	97.5
Hong Kong	7.1	67.5	Hong Kong	11.7	75.3	Singapore	19.6	84.4	Hong Kong	25.2	88.3	Hong Kong	32.4	97.0	Singapore	31.5	94.1
ROC	4.1	39.1	ROC	7.3	46.6	ROC	12.3	52.9	ROC	20.0	69.9	ROC	25.3	75.7	ROC	25.9	77.3
Malaysia	3.6	34.0	Malaysia	5.4	34.8	Korea	9.1	39.4	Korea	15.1	52.8	Korea	20.3	61.0	Korea	21.2	63.5
Korea	2.7	25.8	Korea	4.5	28.7	Malaysia	7.0	30.3	Malaysia	10.1	35.3	Malaysia	12.7	38.2	Malaysia	13.3	39.8
Philippines	2.6	24.9	Philippines	3.0	19.6	Thailand	3.1	13.3	Thailand	4.7	16.5	Thailand	5.8	17.3	Thailand	5.8	17.3
Pakistan	1.5	14.4	Thailand	2.0	12.8	Philippines	2.7	11.7	Philippines	3.1	10.7	China	3.8	11.5	China	4.2	12.5
Thailand	1.4	13.6	Pakistan	1.8	11.6	Pakistan	2.5	10.9	Pakistan	3.1	10.7	Philippines	3.6	10.8	Philippines	3.6	10.8
India	1.1	10.4	Indonesia	1.7	10.6	Indonesia	2.1	8.9	Indonesia	2.7	9.4	Pakistan	3.5	10.5	Pakistan	3.5	10.3
Indonesia	1.0	9.1	India	1.2	7.8	India	1.5	6.3	China	2.0	7.0	Indonesia	3.3	9.9	Indonesia	3.4	10.2
China	0.3	3.3	Bangladesh	0.9	5.7	Vietnam	1.1	4.6	India	2.0	6.9	India	2.7	8.2	India	2.8	8.4
			China	0.5	3.3	Bangladesh	1.0	4.2	Vietnam	1.5	5.4	Vietnam	2.3	6.9	Vietnam	2.2	6.7
						China	0.8	3.6	Bangladesh	1.4	4.8	Bangladesh	1.4	4.2	Bangladesh	1.4	4.3
									Cambodia	0.8	2.9	Cambodia	1.1	3.3	Cambodia	1.2	3.6
(reference)			(reference)			(reference)			(reference)			(reference)			(reference)		
US	25.4	243.2	US	29.4	188.5	US	34.3	147.6	US	41.2	144.3	US	47.2	141.5	US	47.5	141.9
									EU15	36.5	127.8	EU15	39.7	119.1	EU15	39.6	118.4

Unit: US dollars at constant basic prices per hour, using 2005 PPPs.
Source: APO Productivity Database 2011.01.

46: Note that the differentials in the labor quality per hour worked among countries have not been accounted for in this comparison: labor productivity will tend to be overestimated if labor quality has been rising, and vice versa. Jorgenson and Nomura (2007) provide a comprehensive picture of bilateral productivity comparisons between the US and Japan, based on detailed estimates for 164 commodities, 33 assets (including land and inventories), and 1,596 labor categories. Even when the differences in quality of labor have been adjusted for, they find that the US-Japan labor productivity gap was still sizeable, at 34.3 per cent for 2004. They also point out that the gap in the "level" of TFP has been the major source of the labor productivity gap since the mid-1990s; lower TFP explains 57.0 per cent of the labor productivity gap in 2004, while non-IT-capital deepening (defined by capital input per unit of labor input) accounts for 37.3 per cent. In the next section we analyze the gap in labor productivity "growth" among countries, without the level comparisons of capital deepening and TFP due to lack of data.

were shaved from productivity growth of the earlier period in Hong Kong and Japan. Only three countries, China, India, and the Philippines (and marginally Malaysia) managed to accelerate their productivity improvement after 1990. Among these, China's performance is the most outstanding, with productivity growth almost doubling from 4.3 per cent to 7.9 per cent between the two sub-periods.

Figure 29 presents the growth rate of labor input measured as hours worked for some selected countries.[47] Behind the surge in China's labor productivity growth in the latter sub-period of 1990–2008 was a slow pace of labor input growth of 1.0 per cent a year on average. This compared with 3.2 per cent in the previous sub-period. Japan was the only economy which experienced an actual fall in labor input in the period 1990–2008. This had worked to compensate for the sluggish output growth during that period, and to sustain a positive labor productivity growth of 2.1 per cent a year on average.

Table 10 looks more closely at the latter sub-period and provides the growth rates of per-hour based labor productivity since 1990. The growth patterns of individual countries generally follow closely their counterparts in per worker productivity growth as presented in Table 8, but the two measures have divergence, which was large in some countries and not consistent throughout all the periods compared. For example, per hour productivity growth had been higher in Japan than per worker productivity growth until recently, suggesting that hours worked had been growing less strongly (or falling faster) than number of workers. This contrast was particularly stark in the first half of the 1990s, when Japan's hourly productivity growth was 2.1 per cent compared with 0.6 per cent in per worker productivity growth. Hourly productivity growth was consistently higher in Korea and the ROC, implying that their hours worked had been growing

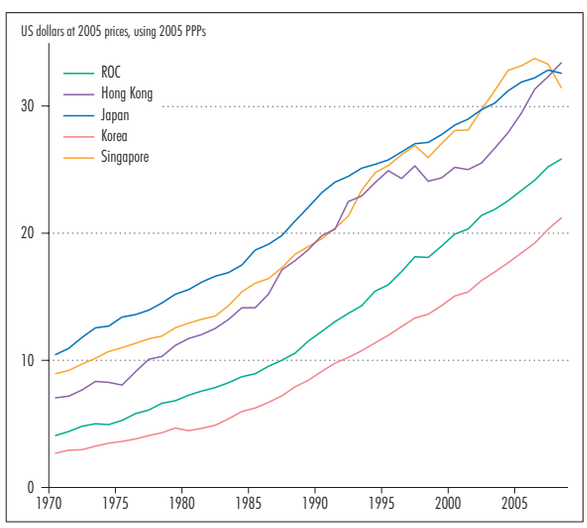


Figure 27: Labor Productivity Trends in Japan and the Four Asian Tigers, 1970–2008
—GDP at constant basic prices per hour, using 2005 PPPs

Unit: US dollars at 2005 prices, using 2005 PPPs.
Sources: Our own estimates based on official national accounts in each country and the national experts' data in our project.

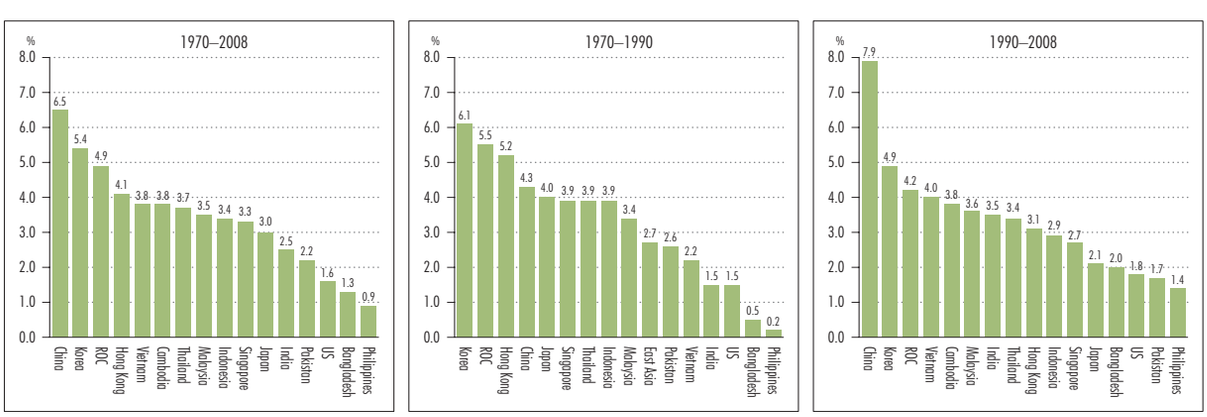


Figure 28: Labor Productivity Growth, 1970–2008, 1970–1990, and 1990–2008
—Average annual growth rate of GDP at constant basic prices per hour

Source: APO Productivity Database 2011.01.

47: By definition, positive labor productivity growth occurs when output grows faster than labor input. Figure 28 and Figure 29 therefore tend to have an inverse relationship, i.e. the higher the labor input growth, the lower will be labor productivity growth, other things being equal.

Box 7 Measuring Hours Worked

Hours worked are defined in this *Databook* as the economy-wide hours worked by employees and the self-employed. Japanese and US national accounts publish estimates of the annual hours worked per employee. For both countries, the economy-wide hours worked were estimated in this *Databook* by simply assuming annual per worker hours worked are the same for employees and the self-employed.

Other Asian countries do not publish the hours worked in their national accounts. For Korea, the *Report on Monthly Labor Survey* shows monthly hours worked per employee. The economy-wide annual hours worked in Korea are calculated from average monthly hours worked per worker and the number of workers. Monthly hours worked per worker are assumed to be the same for employees and the self-employed.

For other countries, economy-wide annual hours worked are calculated from average weekly hours worked and the number of workers. It is necessary to know the number of weeks worked per annum in order to calculate annual hours worked from weekly hours worked. Benchmark average annual hours worked from Crafts (1999) and Maddison (1995) are used for our calculation. We utilize Craft's estimates only for Hong Kong and Singapore, which are not covered in Maddison (ibid.).

In simple terms, the procedure of constructing economy-wide annual hours worked consists of three steps for all countries other than Japan, Korea, and the US. First, we obtain average weekly hours worked and the number of workers from official statistics, such as the labor force survey. Secondly, from annual hours worked per worker in benchmark years available in Maddison (ibid.) and Crafts (ibid.), we obtain the number of weeks worked in benchmark years. Thirdly, numbers of weeks worked are interpolated over non-benchmark years under the assumption of a constant growth rate. Multiplying the average hours worked by the number of workers gives economy-wide average weekly hours worked. Multiplying economy-wide average weekly hours worked by the number of weeks worked gives economy-wide annual hours worked.

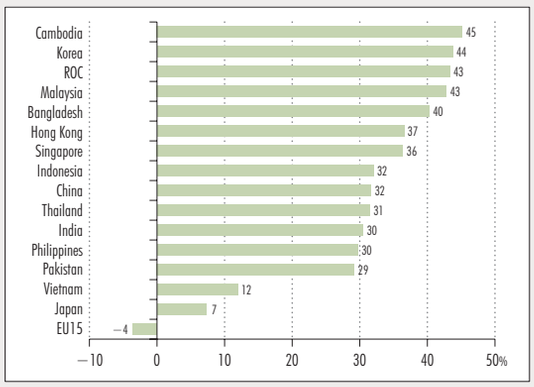


Figure B7: Average Annual Hours Worked Per Worker Relative to the US, 2000–2008

Sources: Official national accounts and labor force survey in each country, including our adjustments.

Figure B7 presents a cross-country comparison of average annual hours worked per worker for 2000–2008, relative to the level of the US. It indicates that workers in Asian countries tend to work much longer hours than those in the US and Europe. In many countries in our sample, the difference in annual hours worked per person relative to the US is more than 30 per cent of the US level. Prolonged working hours are observed in Asian countries regardless of their stage of development, spanning low-income countries such as Bangladesh and Cambodia to high-income countries such as the ROC and Singapore. Exceptions are Japan and Vietnam. Workers in both countries are likely to work much shorter hours than those in other Asian countries. However, compared with the US and EU15, hours worked by workers in Japan and Vietnam are still about 10 per cent longer.

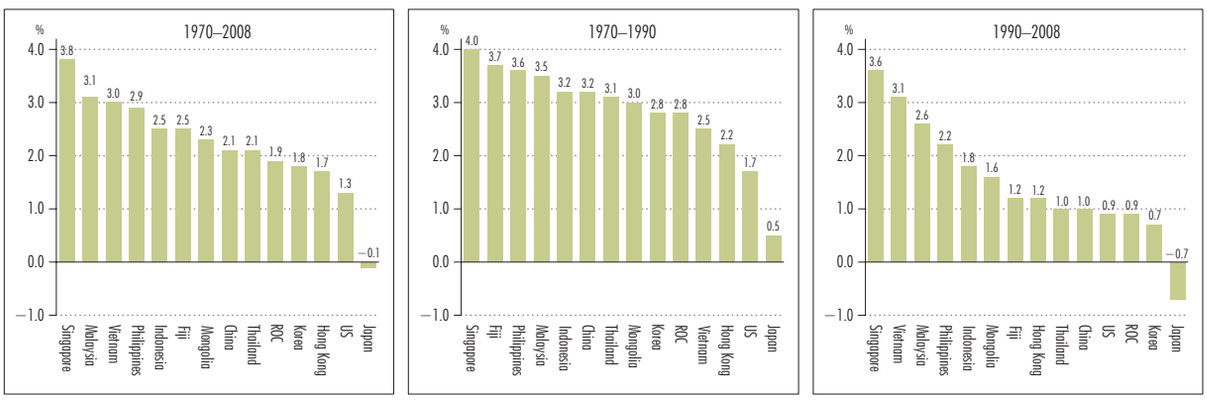


Figure 29: Labor Input Growth, 1970–2008, 1970–1990, and 1990–2008
—Average annual growth rate of total hours worked

Source: APO Productivity Database 2011.01.

slower than the number of workers. This suggests that Korea and the ROC are working to reduce working hours. Such trend has not been discerned in Singapore, while Hong Kong tends to respond to hard economic times by working longer hours and only has the confidence to hire during economic good times – an indication of a flexible workforce and labor market.

Cambodia is the country where the two productivity measures tell quite a different story. By hourly productivity, Cambodia experienced a much sharper slowdown in productivity growth in the 1990s, from 5.5 per cent in 1990–1995 to 1.7 per cent in 1995–2000, than suggested by per worker productivity (from 4.2 per cent to 3.5 per cent). In contrast, the acceleration in productivity growth in the 2000s was less stark by the hourly measure than by the per worker measure. By the hourly measure, productivity growth accelerated from 4.0 per cent between 2000 and 2005 to 5.6 per cent between 2005 and 2008. The figures in terms of per worker measure were 3.5 per cent and 6.3 per cent.[48]

5.3 Total Factor Productivity

Labor productivity in the previous sections is only a one-factor or partial-factor productivity measure and does not provide a full perspective of production efficiency. An observation of low labor productivity could suggest production inefficiency, but it could also be a mere reflection of different capital intensities in the chosen production method under the relative labor-capital price faced by the economy concerned. By observing relative movements in labor productivity alone, it is not easy to distinguish which is the case. In populous Asian economies, which are relatively abundant in low-skilled labor, production lines may be deliberately organized in a way that utilizes this abundant, and hence relatively cheap, resource. It follows that the chosen production method is most likely to be (low-skilled) labor intensive with little capital, manifested in low labor productivity. This is why economists analyze TFP, which is GDP per unit of combined inputs, to get a more complete picture of countries' production efficiency.[49]

Capital input is a key factor for measuring TFP, and is defined by capital services – the flow of services from productive capital stock, as recommended in the new system of national accounts.[50] The required basis for estimating capital services is the appropriate measures of capital stock. The 1993 SNA recommended constructing the national balance-sheet account for official national accounts, but this is still not a common practice in the national accounts of many Asian countries.[51] Even if estimates of net capital stocks are available for the whole economy, the assumptions and methodologies can differ considerably among

48: For China and Thailand, both measures give the same productivity growth. This is a result of a statistical construct in our current database rather than the underlying trend.

49: Different types of inputs and outputs are aggregated by using index numbers, and TFP is calculated as the output quantity index divided by the input quantity index. In this chapter, the Törnqvist index is used for aggregating labor and 10 types of capital inputs.

50: See the chapter 20.capital services and the national accounts of the 2008 SNA (United Nations, 2009). The second edition of the *OECD Capital Manual* (OECD, 2009), provides a comprehensive framework for constructing prices and quantities of capital services.

51: Based on our metadata survey, half of APO member countries do not estimate the balance-sheet accounts within the official national accounts; these countries are Bangladesh, the ROC, Iran, Korea, Lao PDR, Mongolia, Nepal, Pakistan, Sri Lanka, and Vietnam (but the National Wealth Survey is available in the ROC and Korea for some selected years).

Table 10: Cross-country Comparisons of Labor Productivity Growth, 1990–1995, 1995–2000, 2000–2005, and 2005–2008

—Average annual growth rate of GDP at constant basic prices per hour, using 2005 PPPs

1990–1995		1995–2000		2000–2005		2005–2008	
China	10.6	China	7.1	China	8.3	China	10.7
Thailand	8.3	Korea	4.6	Vietnam	6.4	Cambodia	5.6
Indonesia	6.5	ROC	4.5	Korea	4.0	India	5.4
Malaysia	6.4	Bangladesh	4.1	Cambodia	4.0	Korea	4.6
Cambodia	5.5	Vietnam	3.0	India	3.8	Malaysia	4.5
Korea	5.4	India	2.5	Singapore	3.3	Hong Kong	4.2
ROC	5.2	Philippines	2.3	Indonesia	3.3	ROC	3.4
Singapore	5.2	Singapore	2.1	ROC	3.2	Philippines	3.3
Hong Kong	4.6	Japan	2.0	Hong Kong	3.1	Thailand	2.5
Vietnam	4.3	Cambodia	1.7	Malaysia	2.8	Bangladesh	2.4
India	3.3	Malaysia	0.9	Thailand	2.6	Indonesia	2.4
Pakistan	3.0	Pakistan	0.7	Japan	2.2	Vietnam	2.1
Bangladesh	2.5	Hong Kong	0.2	Pakistan	2.2	Japan	0.7
Japan	2.1	Thailand	0.1	Philippines	1.3	Pakistan	0.4
Philippines (reference)	0.1	Indonesia (reference)	−1.2	Bangladesh (reference)	−0.5	Singapore (reference)	−1.8
US	1.4	US	2.3	US	2.5	US	0.6
EU15	0.0	EU15	1.8	EU15	1.2	EU15	0.8

Unit: Percentage.
Note: The annual average growth rates for Cambodia and Vietnam during 1990–1995 are their annual average growth over 1993–1995 because of the lack of hours-worked data.
Source: APO Productivity Database 2011.01.

countries. In response to this challenge, harmonized estimates for productive capital stocks and capital services have been constructed and compiled within the APO Productivity Database built on the same methodology and assumptions. In our methodology changes in the quality of capital are incorporated into the measurement of capital services in two ways: changes in the composition is captured by explicitly differentiating assets into ten types, and an appropriate and harmonized deflator is used for IT capital to reflect the rapid quality change embodied in IT-related assets (see Box 8).

The current APO Productivity Database estimates capital services[52] and TFP for 13 Asian countries for which long-time investment data by type of asset are available or estimated.[53] Their economic growth is decomposed into its sources from factor inputs and TFP based on the methodology developed by Jorgenson and Griliches (1967). This report defines output as GDP at basic prices, and factor inputs as labor, IT capital, and non-IT capital.[54] Labor input is measured by total hours worked (except for Fiji and Mongolia), without adjustments for changes in labor quality.[55]

Cross-country comparisons of TFP growth for the 13 Asian countries and the US are shown in Figure 30 for the period 1970–2008, and two sub-periods of 1970–1990 and 1990–2008. Taking the US as the reference economy, countries fall into three general

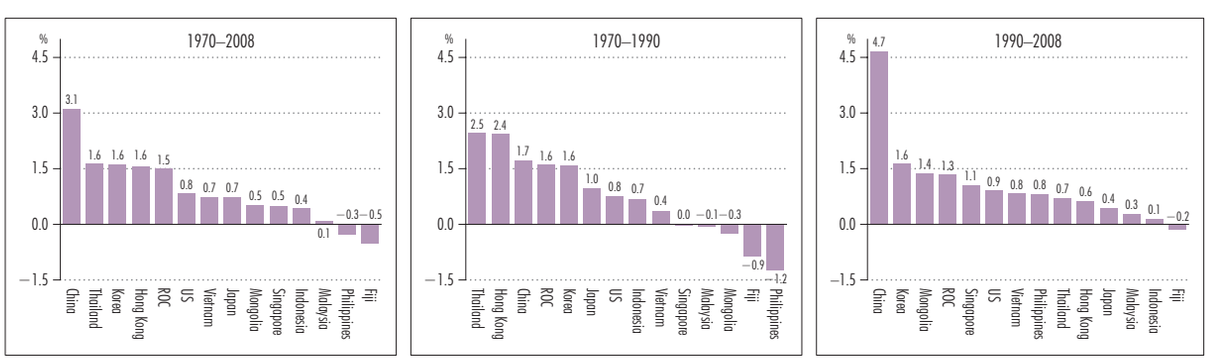


Figure 30: TFP Growth, 1970–2008, 1970–1990, and 1990–2008

Note: The starting period for Vietnam is 1986. The labor inputs for Fiji and Mongolia are defined by numbers of employment.
Source: APO Productivity Database 2011.01.

52: The estimated results of the APO Productivity Database on capital services and TFP estimates were first reported in *Databook* 2009. The number of Asian countries covered has been expanded from the original four to eight in *Databook* 2010 and 13 in this edition. See Box 9 for the estimation method.

53: In measuring TFP, income generated from domestic production should be separated into labor compensation and returns to capital. The national accounts readily provide the estimates of labor compensation for employees as a component of value added; labor compensation for the self-employed is not separately estimated but is combined with returns to capital in *mixed income*. As a crude approximation in this *Databook*, we assume that the per worker wages for self-employed and family workers are 30 per cent of the per worker wage for employees, using the evidence in the studies for Japan by Kuroda et al. (1997), in order to measure total labor compensation. Note that in the current database this simplification is applied to all countries except China, where labor remuneration in the national accounts includes labor income for the self-employed (Holtz, 2006). For sensitivity of our TFP results to our assumptions, see Box 10.

54: IT capital is defined as a composite asset of IT hardware (computers and copying machines), communications equipment, and computer software.

Box 8 Capital Stock and Quality Change

At present half of APO member countries publish estimates of capital stocks in their system of national accounts. Even if the estimates are available, users must be careful about a difference in methodologies and assumptions used to estimate capital stock and a large diversity in the treatment of quality adjustment in price statistics among countries. In the APO Productivity Database 2011.01 a harmonized methodology is applied in estimating capital stock and capital services, covering 13 Asian economies: China, the ROC, Fiji, Hong Kong, Indonesia, Japan, Korea, Malaysia, Mongolia, the Philippines, Singapore, Thailand, and Vietnam and the US as a reference country.

Quality changes in the aggregate measure of capital input can originate from two kinds of sources; the composition change by type of assets, and the quality change in each type of asset. To take the composition change of assets into account, our current database classifies ten types of assets (shown in Table B8). For countries in which detailed investment data are not available in their national accounts, the ten types of investment data are estimated based on the benchmark input-output tables and our estimates of the commodity flow data of domestic production and export/import of assets. The starting years for estimating capital stock based on the perpetual inventory method are 1901 for the US, 1951 for the ROC, 1952 for China, 1953 for Korea, 1955 for Japan, 1960 for Singapore, 1961 for Hong Kong, 1976 for Vietnam, and 1970 for other countries.

It is well known that prices of constant-quality IT capital have been falling rapidly. For cross-country comparisons, it has been noted that there is great diversity in the treatment of quality adjustment in price statistics among countries. Cross-country comparisons will be significantly biased if some countries adjust their deflators for quality change while others do not. Price harmonization is sometimes used in an attempt to control for methodological differences in the compilation of price indexes, under the assumption that individual countries' price data fail to capture quality improvements. Assuming that the relative price of IT to non-IT capital in the countries compared is set equal to the IT to non-IT prices relative in the reference country, the harmonized price is formulated as: $\Delta \ln \hat{p}^X_{IT} = \Delta \ln p^X_{nIT} + (\Delta \ln p^{ref}_{IT} - \Delta \ln p^{ref}_{nIT})$, where the superscript X denotes the country included in the comparisons, p_{IT} is the price of IT capital, and p_{nIT} is the price of non-IT capital. The price of IT capital in country X, $\hat{p}^X_{IT}$, is computed by the observed prices p^{ref}_{IT} and p^{ref}_{nIT} in the reference country and p^X_{nIT} in X. Schreyer (2002) and Schreyer, Bignon, and Dupont (2003) applied price harmonization to OECD capital services, with the US as a reference country, since the possible error due to using a harmonized price index would be smaller than the bias arising from comparing capital services based on national deflators.

In this *Databook* the same price harmonization method is applied to adjust the quality improvement for IT hardware and communications equipment in countries where the appropriate quality-adjusted price data are not available, with Japan's prices as a reference country. A similar procedure was applied in cases where the prices for some assets are not available, to estimate missing data based on the relative price of these assets to total GFCF. In measuring capital services, this *Databook* basically follows the framework of the OECD Productivity Database (see Schreyer, Bignon and Dupont, ibid.). The OECD assumes the truncated normal distribution as profiles for asset discarding (retirement), and the hyperbolic distribution as profiles for asset decaying. The age-efficiency profile (AEP) is defined as a combined distribution of discard and decay of assets. The AEP in each asset is based on the two parameters in hyperbolic function: T (average service life) and β ($-\infty < \beta \leq 1$). The hyperbolic function becomes one-hoss shay (no decay until T) when $\beta=1$ and linear when $\beta=0$. We set these two parameters as shown in Table B8. The estimates of productive capital stock by type of asset are used in measuring capital services (see Box 9).

Figure B8 presents the estimated capital-output ratio (stock coefficient) that is defined by the ratio of the beginning-of-period net capital stock (all types of produced fixed assets owned by private and public institutions) to the basic-price GDP at current prices. Japan has the highest capital-output ratio among Asian countries, at 3.9. However, the ratio may not work well for cross-country comparison since the price differential between for GDP and for fixed assets in each country are not accounted for. Compared to the 1980 level in each country, all Asian countries except Mongolia have an increasing trend of capital-output ratio, unlike the ratio in the US, which is stable.

Table B8: Parameters in Hyperbolic Function

	T	β
1. IT hardware	7	0.50
2. communications equipment	15	0.50
3. transportation equipment	15	0.50
4. other machinery and equipment	15	0.50
5. residential buildings	30	0.75
6. non-residential buildings	30	0.75
7. other construction	40	0.75
8. cultivated assets	10	0.50
9. computer software	3	0.50
10. other intangible assets	7	0.50

Source: APO Productivity Database 2011.01.

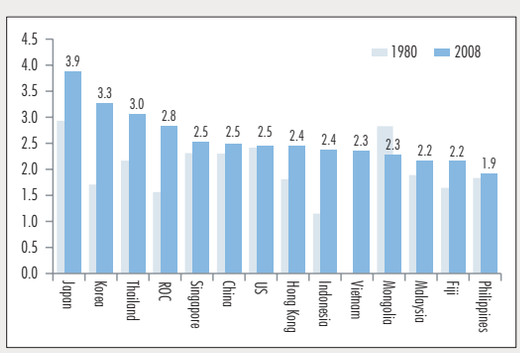


Figure B8: Capital-Output Ratio, 1980 and 2008
—Ratio of the beginning-of-period net capital stock to GDP at current prices

Source: APO Productivity Database 2011.01.

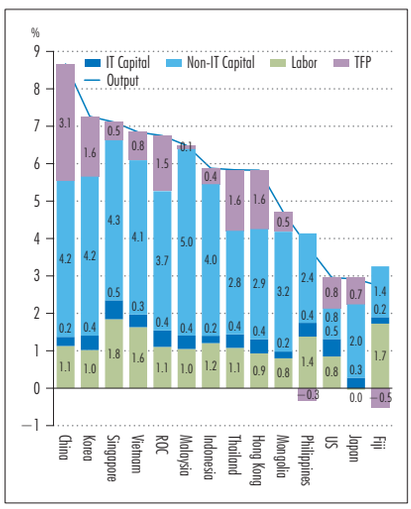


Figure 31: Sources of Economic Growth, 1970–2008

Note: The starting period for Vietnam is 1986. The labor input for Fiji is defined by numbers of employment.
Source: APO Productivity Database 2011.01.

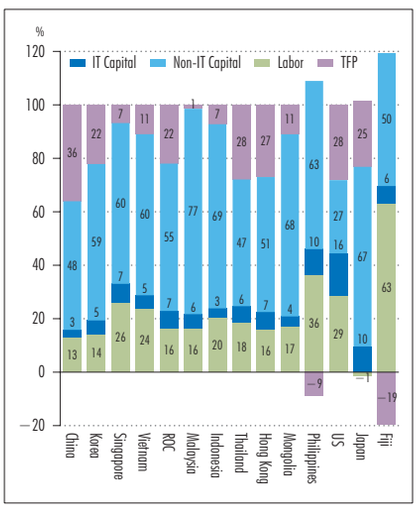


Figure 32: Contribution Shares of Economic Growth, 1970–2008

Source: APO Productivity Database 2011.01.

groups: performing better than, similar to, and worse than the US. Over the whole estimation period, China, Thailand, the ROC, and Hong Kong have achieved significantly higher TFP growth than the US. Within this group, China is in a league of its own, with TFP growth nearly double that of the other three countries, whose growth in turn is double the 0.8 per cent achieved by the US. Japan and Vietnam achieved productivity growth on a par with the US, whereas productivity performance in the Philippines and Fiji actually deteriorated over the same period by 0.3 and 0.5 per cent, respectively, on average per year.[56]

Looking into the sub-periods (i.e. 1970–1990 and 1990–2008), we can discern that the two were not identical but had quite significant differences in terms of the magnitude of growth and countries' relative performance. Most countries experienced a slowdown in TFP growth between the two periods. China is a clear exception, with TFP growth soaring from 1.7 per cent on average a year to 4.7 per cent. More modestly, Mongolia's productivity growth improved from −0.3 per cent on average a year in the earlier period to 1.4 per cent since 1990.[57] For other countries, productivity growth slowed, for example from 2.5 per cent to 0.7 per cent in Thailand and from 1.0 per cent to 0.4 per cent in Japan over the two periods. Korea was the only country which sustained the same TFP growth (of 1.6 per cent on average per year) over the two periods.[58]

Figure 31 to Figure 35 present the sources of and contributions to economic growth from the supply side for the 13 Asian countries and the US during the period 1970–2008. As can be clearly seen in Figure 32, economic growth is dominantly explained by the contribution of capital input in Asian countries. Typically capital input accounts for close to or more than half of the economic growth in Asian countries, compared with 43 per cent in the US. But IT capital contributes more in the US than among the Asian countries, i.e. 16 percentage points compared with 3–10 percentage points, with China and Indonesia at the low end. Moreover, economically more advanced countries tend to have higher contribution from TFP, accounting for more than one-fifth of economic growth. Singapore is the exception, with TFP growth contributing only 7 per cent to its economic growth. During the whole period of estimation, China achieved the highest economic growth of 8.6 per cent on average per annum, of which 36 per cent was explained by TFP growth (by far the highest share among all countries compared) and 51 per cent by capital services. Korea and Singapore achieved similar average annual output growth rates of above 7 per cent (Figure 31), but their respective sources of economic growth varied (Figure

55: The failure to take into account improvements in labor quality leads to TFP overestimation. The current APO Productivity Database estimates the labor quality index for only a handful of countries, and covering more Asian countries is the next challenge.

56: Negative TFP growth for both countries is also observed in other studies. Baier, Dwyer, and Tamura (2006) estimate the average annual growth rate of TFP of Fiji was −0.75 per cent during 1960–2000. Cororaton (2002) shows that the average annual TFP growth of the Philippines was −1.09 per cent during 1970–2000.

57: In Mongolia, subsoil assets may have a significant role in economic growth, although omitted in our measures of capital inputs.

58: Note that economic growth at the aggregate level for Korea has been revised upward considerably in this edition of the *Databook*, reflecting the revisions of its official national accounts. The GDP revisions raise the annual growth rate of TFP to 1.6 per cent on average per year over the whole estimation period of 1970–1990, compared with our estimate of 0.3 per cent in *Databook* 2010. The main revisions stem from the introduction of a chain index in Korea's system of national accounts. As a result Korea's GDP growth at constant market prices has been revised up from 7.0 per cent to 8.6 per cent on average in the 1970s, from 8.4 per cent to 9.3 per cent in the 1980s, and from 5.9 per cent to 6.3 per cent in the 1990s.

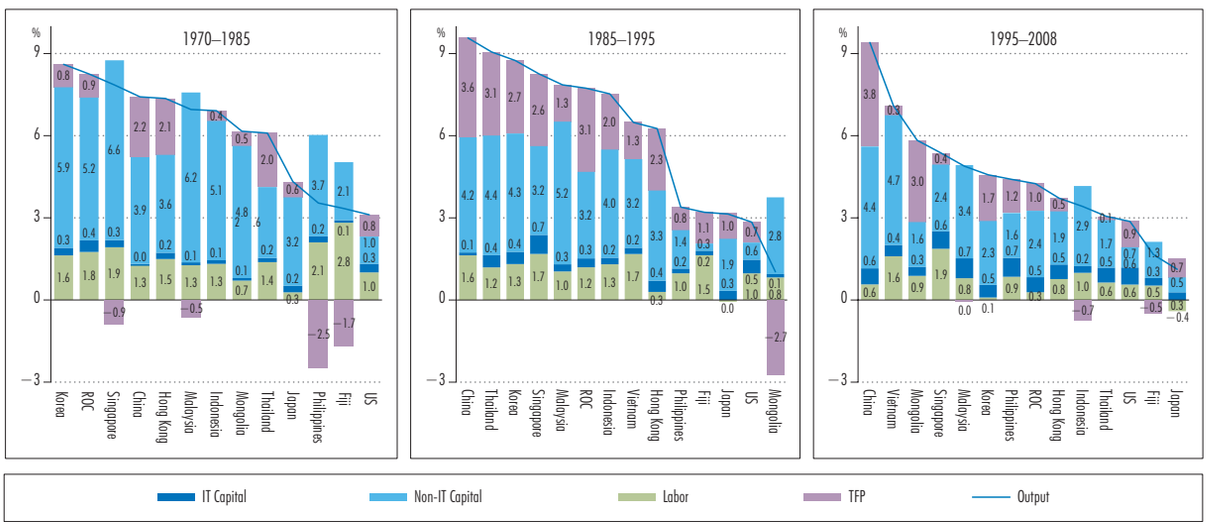


Figure 33: Sources of Economic Growth, 1970–1985, 1985–1995, and 1995–2008

Source: APO Productivity Database 2011.01.

32). In Korea, TFP growth explained 22 per cent of economic growth, while its main engine was an expansion of capital input, contributing about 64 per cent (5 per cent by IT capital and 59 per cent by non-IT capital) to economic growth. In Singapore TFP played a smaller role, accounting for only 7 per cent of economic growth in the long run, whereas growth of capital services contributed 67 per cent (7 per cent by IT capital and 60 per cent by non-IT capital).

The Philippines and Fiji were the only two countries which had negative TFP growth on average throughout the whole period of estimation. Negative TFP growth, if not due to measurement errors, is not sustainable in the long run. Looking at the breakdown of the period in Figure 33, we can see that the Philippines was running overall negative TFP growth only in the period 1970–1985, at –2.5 per cent on average per annum,[59] whereas its TFP growth was positive in the subsequent two periods. Fiji had negative TFP growth in two out of the three periods: –1.7 per cent and –0.5 per cent on average per year in the periods 1970–1985 and 1995–2008 respectively.

China's productivity performance has been outstanding in this period. The average TFP growth was 3.1 per cent per year during 1970–2008 (Figure 31). This compares to the long-run estimates of 3.8 per cent during 1978–2005 in Holz (2006) and also 3.8 per cent during 1978–2004 in Bosworth and Collins (2008). The Chinese experience of long-term TFP growth of about 3 per cent is not unprecedented in Asia. According to Jorgenson and Nomura (2005), Japan achieved annual TFP growth of 3.1 per cent during 1960–1973, even after improvements in labor quality were taken into account in the estimation of labor growth (and, as such, eliminating overestimation in TFP).[60] The ROC and Thailand also achieved TFP growth of 3.1 per cent during the period 1985–1995, as shown in the second chart of Figure 33.[61]

There has been long-standing debate on what drives growth in Asia. Tracing the decomposition of economic growth over shorter time periods (Figure 33 and Figure 34) may offer some insights into the debate between accumulation and assimilation. According to our findings, it is true that, historically, capital accumulation has played a much more significant role in the Asian countries than in the US. But the relative contribution shares are not constant across countries and over time; there were periods when (and some countries where) capital assimilation as reflected in TFP growth also contributed significantly towards driving growth. Looking at Figure 34, capital accumulation was the dominant factor in the early period of 1970–1985,

59: The Philippines' economy shrank by 15.2 per cent for two years from 1983 to 1985 under the regime of Ferdinand Marcos (see Figure 23).

60: In the same period of 1960–1973 the average annual contribution rate of labor quality improvement to growth is measured as 0.54 per cent in Jorgenson and Nomura (2005). As a measure of TFP contribution that is comparable with the estimates in this *Databook*, their estimate can be recognized as 3.6 per cent per year during the same period.

61: These findings are by around 1 per cent larger than some preceding studies. Timmer and van Ark (2000) show that the average annual TFP growth of the ROC was 2 per cent during 1985–1996. Warr (2006) shows that the average annual TFP growth of Thailand was 2 per cent during 1987–1996.

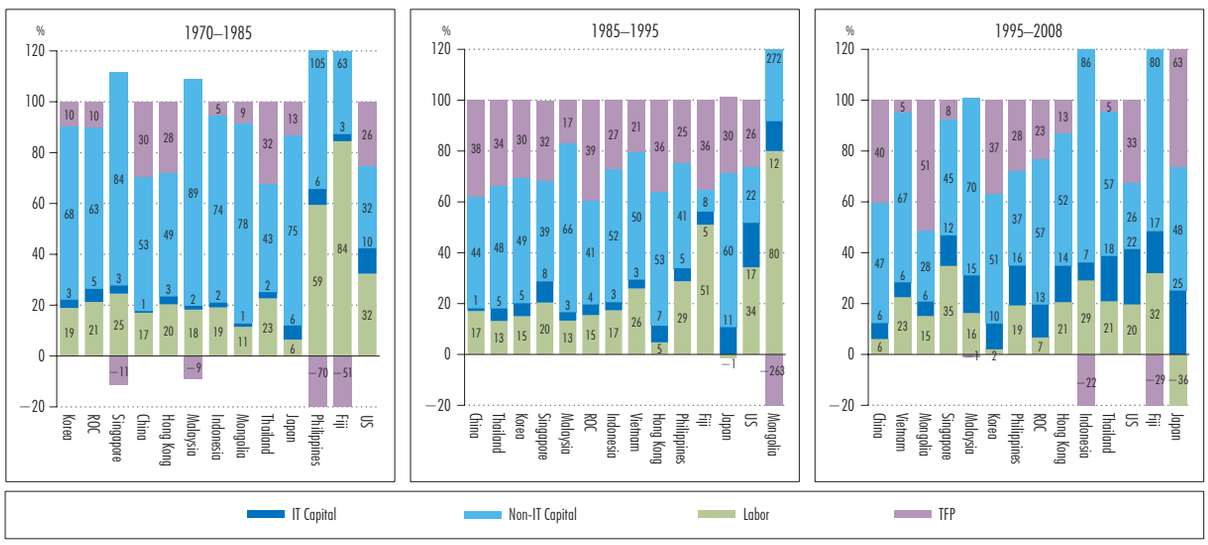


Figure 34: Contribution Shares of Economic Growth, 1970–1985, 1985–1995, and 1995–2008

Source: APO Productivity Database 2011.01.

typically explaining two-thirds to three-quarters of economic growth achieved. But in China, Hong Kong, and Thailand the contribution of TFP growth was still significant, accounting for around 30 per cent of their respective economic growth.

The period 1985–1995 was the golden era for TFP growth, which ranged from over 2 per cent to 3.6 per cent on average a year and accounted for over 30 per cent of economic growth in eight of the countries studied. On the other hand, the contribution by capital input was squeezed to below 50 per cent during this period. Countries' experience in the most recent period (1995–2008) is more mixed. The contribution of TFP growth gained further weight in some countries but retrenched in others, with the contribution of capital input bearing the mirror image. For example, the weight of TFP growth was 40 per cent in China, 51 per cent in Mongolia, and 37 per cent in Korea, compared with the weight of capital input growth of 70 per cent in the ROC, two-thirds in Hong Kong and Singapore, and over 70 per cent in Malaysia and Vietnam. Reflecting on these results, capital accumulation is a necessary step to economic growth. In addition, countries may go through cycles of capital accumulation and assimilation. Although a prerequisite, capital accumulation does not guarantee TFP growth. Some countries may be more capable than others in reaping the benefits through capital assimilation but the reasons as to why this is so are beyond the scope of this report.

Figure 35 shows the growth accounting decomposition for individual countries in five-year intervals covering the period 1970–2008. Comparing the time profiles of the Asian Tigers, it was a common experience that a large part of the vibrant growth in the initial period was driven by input growth. Hong Kong was the exception, in that its TFP growth contributed 5.2 percentage points (47 per cent) to the 11.0 per cent of economic growth in the early period of 1975–1980. Since 1980 TFP growth in Korea has been making a steady contribution to its economic growth, especially in the 1980s. The ROC shared a very similar experience to Korea, with TFP growth making a significant contribution in the second half of the 1980s and the first half of the 1990s. TFP performance in Singapore has been far from consistent, with negative growth for half of the periods compared. Its economic growth was dominated by input growth at the start of the period, and in recent years we observe another period of input-driven growth. TFP growth was best only in the decade 1985–1995. With the exception of Singapore, all the Asian Tigers experienced a resurgence in TFP growth in recent years. Although lower in percentage points, TFP contribution in proportions has been historically high, reaching 59 per cent in Korea, 46 per cent in the ROC, and 56 per cent in Hong Kong in the most recent period of 2005–2008. This resurgence is also shared by Malaysia (44 per cent) and the Philippines (58 per cent). TFP growth in Mongolia has been particularly strong since 1995 and in Indonesia and Thailand has also bounced back from negative after the Asian financial crisis of the late 1990s, but has softened again since 2005.[62]

Looking at the decomposition of China's economic growth, the two key drivers have been TFP growth and non-IT capital input growth. The contribution of TFP growth ranged from 2.9 percentage points to 6.9 percentage points during the period since 1990. The

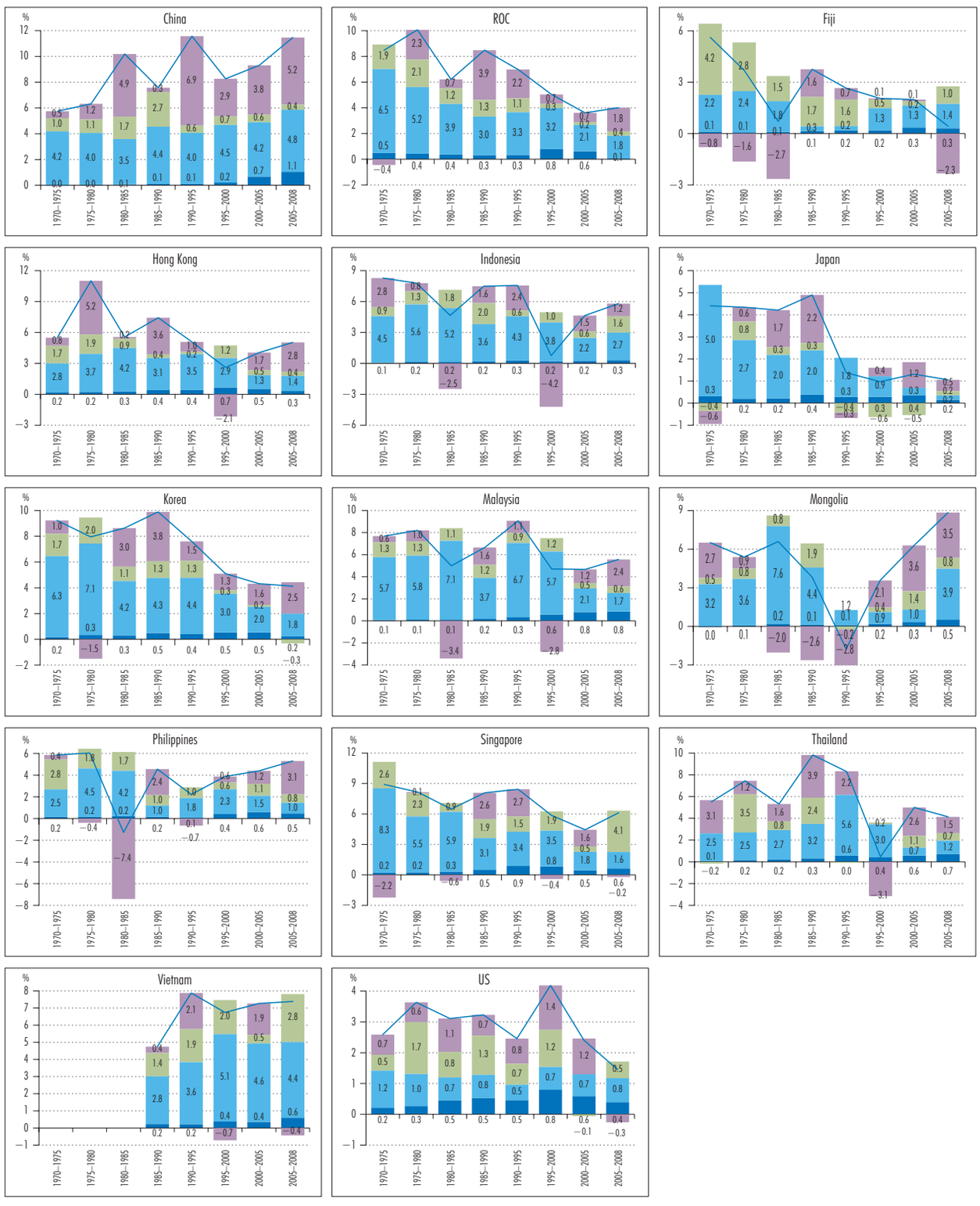


Figure 35: Individual Countries' Growth Accounting Decomposition, 1970–2008

Source: APO Productivity Database 2011.01.

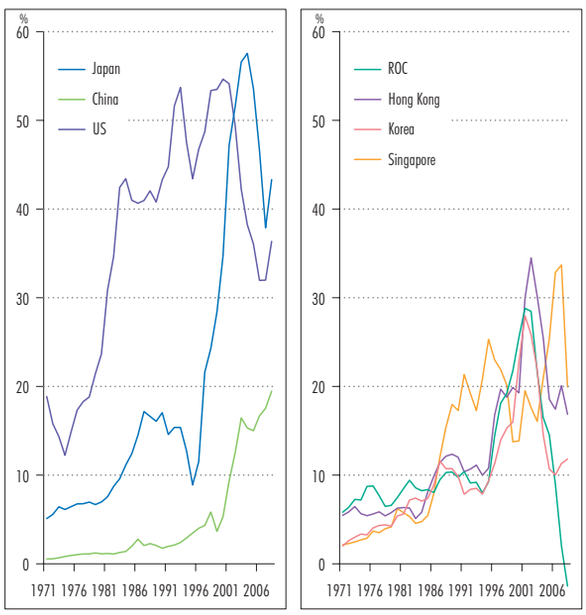


Figure 36: IT Capital Contribution to Capital Input Growth, 1970–2008

Source: APO Productivity Database 2011.01.

contribution from labor input growth has been dwindling from a peak of 2.7 percentage points in the second half of the 1980s to 0.4 percentage points in the latest years. In contrast, the role played by IT capital input growth has strengthened since 2000, albeit from a very low base. The golden period of TFP growth in Japan was the 1980s. Since then, economic growth has slowed significantly and has not recovered to the previous peak of 5 per cent on average per year. In the more recent period, TFP performance was the best in the first half of the 2000s, which worked to compensate for the fall in labor input growth. Since 2005 TFP growth has slowed again. The surge in TFP growth in the US took place in the latter half of the 1990s, sustained into the first half of the 2000s. In the most recent period, the US experienced negative TFP growth in the wake of the global financial storm.

Tracking the size and growth of IT capital has become a standard practice in productivity research, following attempts to establish the driving force behind the productivity resurgence in the developed economies, starting with the US in the 1990s. Unlike technological advancements in the past, which were largely confined to manufacturing, IT is a technology that can permeate the economy and bring about significant production gains in, for example, wholesale and retail, banking and finance, and transportation and telecommunications, i.e. service sectors which traditionally struggled with slow productivity growth. Given the weight of the service sector in the economy (see Figure 46 for the Asian countries), its potential and implications for economic development and productivity gains could therefore be immense. A frequent question asked by policymakers and researchers has been how best to emulate the US in capitalizing on the productivity potential brought forth by this IT revolution. As with non-IT capital, it involves the processes of accumulation and assimilation.

Figure 36 presents efforts in accumulating IT capital since 1970 in terms of its contribution to total capital input at the whole-economy level for China, Japan, the four Asian Tigers, and the US. It is clear that the US started investing heavily in IT capital much earlier than any Asian economy. At its height IT capital contributed over 50 per cent of total capital input growth and, such intensive investment activities precipitated the dot.com bubble. Correction in the US after the burst of the dot.com bubble in 2000 is clearly visible from the chart. The contribution of IT capital fell back to the early 1980s' level by the mid-2000s before turning up again recently. Japan's shift in capital allocation took place much later than the US but at a much more rapid pace. The process took off in earnest from the mid-1990s, and the contribution of IT capital reached a peak of 56.6 per cent in 2003 before declining to 37.9 per cent in 2007; it picked up to 43.3 per cent in 2008. This echoes the findings in Jorgenson and Nomura (2005). In the 1980s IT capital contributed 31.9 per cent of the growth of total capital inputs in the US, as measured in Jorgenson, Ho, and Stiroh (2005), but only 13.5 per cent in Japan.[63] Since 1995 the Japanese economy had been rapidly shifting its capital allocation from non-IT to IT capital, achieving in five years what the US had achieved over 20 years. In 2002 the contribution of IT capital in Japan rose to 50.8 per cent, which is more than the 49.4 per cent in the US.

A similar allocation shift to IT capital is also found in other Asian economies (the ROC, Hong Kong, and

62: Van der Eng (2008) provides estimates of capital stock for Indonesia and Van der Eng (2009) shows that the annual average TFP growth increased from –4.4 per cent during 1995–2000 to 1.7 per cent during 2000–2007 in Indonesia. For Thailand, Bosworth (2005) shows that the annual average TFP growth increased from –4.6 per cent during 1996–1999 to 2.1 per cent during 1999–2004. Warr (2006) also finds that TFP growth increased from –9.0 per cent during 1997–1998 to 1.5 per cent during 1999–2002 for Thailand.

63: Based on our own estimates presented, IT capital contributes 38.5 per cent in the US and 18.5 per cent in Japan to the growth of total capital input. Although the estimates in the 1980s in this report are somewhat higher than the industry-level estimates in Jorgenson, Ho, and Stiroh (2005) and Jorgenson and Nomura (2005), the trends of both the US and Japan shown in Figure 36 are very similar to Figure 3 in Jorgenson and Nomura (ibid.).

Table 11: Output Growth and Contributions of Labor, Capital, and TFP

	Output	Labor	Capital		TFP
			IT	Non-IT	
China					
1970–1975	5.74	1.03 (18)	0.03 (1)	4.15 (72)	0.53 (9)
1975–1980	6.32	1.05 (17)	0.05 (1)	4.01 (63)	1.21 (19)
1980–1985	10.19	1.74 (17)	0.05 (0)	3.54 (35)	4.86 (48)
1985–1990	7.57	2.70 (36)	0.10 (1)	4.45 (59)	0.32 (4)
1990–1995	11.57	0.56 (5)	0.11 (1)	3.96 (34)	6.94 (60)
1995–2000	8.27	0.67 (8)	0.22 (3)	4.47 (54)	2.92 (35)
2000–2005	9.31	0.58 (6)	0.68 (7)	4.21 (45)	3.84 (41)
2005–2008	11.47	0.40 (3)	1.05 (9)	4.81 (42)	5.21 (45)
1970–2008	8.66	1.13 (13)	0.24 (3)	4.17 (48)	3.12 (36)
Fiji					
1970–1975	5.62	4.15 (74)	0.11 (2)	2.15 (38)	−0.79 (−14)
1975–1980	3.69	2.84 (77)	0.07 (2)	2.41 (65)	−1.63 (−44)
1980–1985	0.71	1.47 (207)	0.09 (13)	1.79 (252)	−2.65 (−373)
1985–1990	3.76	1.72 (46)	0.14 (4)	0.28 (7)	1.62 (43)
1990–1995	2.65	1.55 (59)	0.19 (7)	0.24 (9)	0.67 (25)
1995–2000	2.05	0.51 (25)	0.19 (9)	1.29 (63)	0.06 (3)
2000–2005	1.99	0.24 (12)	0.35 (17)	1.29 (65)	0.11 (5)
2005–2008	0.43	1.03 (239)	0.30 (70)	1.43 (332)	−2.33 (−542)
1970–2008	2.73	1.72 (63)	0.17 (6)	1.36 (50)	−0.53 (−19)
Indonesia					
1970–1975	8.28	0.89 (11)	0.06 (1)	4.52 (55)	2.81 (34)
1975–1980	7.79	1.29 (17)	0.17 (2)	5.55 (71)	0.78 (10)
1980–1985	4.66	1.78 (38)	0.17 (4)	5.20 (112)	−2.49 (−53)
1985–1990	7.49	2.05 (27)	0.18 (2)	3.63 (48)	1.63 (22)
1990–1995	7.57	0.56 (7)	0.30 (4)	4.28 (57)	2.43 (32)
1995–2000	0.76	1.00 (132)	0.20 (26)	3.77 (500)	−4.21 (−558)
2000–2005	4.65	0.64 (14)	0.24 (5)	2.23 (48)	1.54 (33)
2005–2008	5.80	1.58 (27)	0.31 (5)	2.67 (46)	1.23 (21)
1970–2008	5.88	1.20 (20)	0.20 (3)	4.05 (69)	0.43 (7)
Korea					
1970–1975	9.23	1.74 (19)	0.18 (2)	6.27 (68)	1.03 (11)
1975–1980	7.95	2.02 (25)	0.33 (4)	7.10 (89)	−1.51 (−19)
1980–1985	8.63	1.12 (13)	0.31 (4)	4.21 (49)	2.99 (35)
1985–1990	9.89	1.30 (13)	0.49 (5)	4.27 (43)	3.83 (39)
1990–1995	7.60	1.33 (17)	0.40 (5)	4.37 (58)	1.50 (20)
1995–2000	5.10	0.27 (5)	0.54 (11)	3.01 (59)	1.28 (25)
2000–2005	4.32	0.16 (4)	0.53 (12)	2.00 (46)	1.63 (38)
2005–2008	4.13	−0.31 (−8)	0.22 (5)	1.77 (43)	2.45 (59)
1970–2008	7.26	1.02 (14)	0.38 (5)	4.25 (59)	1.61 (22)
Mongolia					
1970–1975	6.51	0.49 (8)	0.03 (0)	3.25 (50)	2.74 (42)
1975–1980	5.39	0.80 (15)	0.06 (1)	3.63 (67)	0.90 (17)
1980–1985	6.59	0.83 (13)	0.18 (3)	7.61 (115)	−2.03 (−31)
1985–1990	3.82	1.87 (49)	0.14 (4)	4.43 (116)	−2.63 (−69)
1990–1995	−1.76	−0.22 (13)	0.10 (−6)	1.17 (−67)	−2.81 (160)
1995–2000	3.57	0.35 (10)	0.19 (5)	0.92 (26)	2.10 (59)
2000–2005	6.29	1.43 (23)	0.34 (5)	0.96 (15)	3.55 (56)
2005–2008	8.84	0.85 (10)	0.53 (6)	3.95 (45)	3.52 (40)
1970–2008	4.70	0.80 (17)	0.18 (4)	3.20 (68)	0.52 (11)
Singapore					
1970–1975	8.91	2.61 (29)	0.21 (2)	8.31 (93)	−2.23 (−25)
1975–1980	8.15	2.29 (28)	0.25 (3)	5.50 (67)	0.11 (1)
1980–1985	6.49	0.88 (14)	0.32 (5)	5.88 (91)	−0.59 (−9)
1985–1990	8.08	1.86 (23)	0.50 (6)	3.12 (39)	2.60 (32)
1990–1995	8.44	1.51 (18)	0.89 (11)	3.36 (40)	2.68 (32)
1995–2000	5.85	1.90 (32)	0.84 (14)	3.52 (60)	−0.40 (−7)
2000–2005	4.44	0.53 (12)	0.45 (10)	1.82 (41)	1.64 (37)
2005–2008	6.12	4.07 (67)	0.64 (11)	1.61 (26)	−0.21 (−3)
1970–2008	7.11	1.84 (26)	0.51 (7)	4.28 (60)	0.48 (7)
Vietnam					
1986–1990	4.74	1.36 (29)	0.23 (5)	2.78 (59)	0.37 (8)
1990–1995	7.88	1.94 (25)	0.22 (3)	3.62 (46)	2.10 (27)
1995–2000	6.74	1.99 (30)	0.37 (6)	5.10 (76)	−0.72 (−11)
2000–2005	7.27	0.48 (7)	0.35 (5)	4.58 (63)	1.85 (25)
2005–2008	7.38	2.80 (38)	0.59 (8)	4.42 (60)	−0.43 (−6)
1986–2008	6.84	1.63 (24)	0.34 (5)	4.13 (60)	0.74 (11)

	Output	Labor	Capital		TFP
			IT	Non-IT	
ROC					
1970–1975	8.48	1.91 (23)	0.50 (6)	6.52 (77)	−0.45 (−5)
1975–1980	10.07	2.14 (21)	0.42 (4)	5.19 (52)	2.32 (23)
1980–1985	6.21	1.21 (20)	0.37 (6)	3.93 (63)	0.70 (11)
1985–1990	8.48	1.30 (15)	0.32 (4)	3.00 (35)	3.86 (46)
1990–1995	6.99	1.09 (16)	0.34 (5)	3.32 (47)	2.25 (32)
1995–2000	5.04	0.32 (6)	0.79 (16)	3.19 (63)	0.74 (15)
2000–2005	3.61	0.21 (6)	0.62 (17)	2.05 (57)	0.72 (20)
2005–2008	4.01	0.35 (9)	0.06 (2)	1.76 (44)	1.84 (46)
1970–2008	6.75	1.10 (16)	0.45 (7)	3.72 (55)	1.48 (22)
Hong Kong					
1970–1975	5.49	1.72 (31)	0.17 (3)	2.82 (51)	0.78 (14)
1975–1980	11.02	1.88 (17)	0.23 (2)	3.69 (34)	5.21 (47)
1980–1985	5.56	0.88 (16)	0.28 (5)	4.22 (76)	0.18 (3)
1985–1990	7.44	0.36 (5)	0.41 (6)	3.11 (42)	3.56 (48)
1990–1995	5.09	0.23 (5)	0.41 (8)	3.48 (68)	0.96 (19)
1995–2000	2.60	1.23 (47)	0.66 (25)	2.86 (110)	−2.15 (−83)
2000–2005	4.05	0.50 (12)	0.53 (13)	1.32 (33)	1.71 (42)
2005–2008	5.04	0.44 (9)	0.32 (6)	1.45 (29)	2.82 (56)
1970–2008	5.82	0.93 (16)	0.38 (7)	2.94 (51)	1.57 (27)
Japan					
1970–1975	4.41	−0.35 (−8)	0.31 (7)	5.04 (114)	−0.59 (−13)
1975–1980	4.34	0.84 (19)	0.19 (4)	2.66 (61)	0.65 (15)
1980–1985	4.21	0.35 (8)	0.21 (5)	1.97 (47)	1.68 (40)
1985–1990	4.90	0.33 (7)	0.39 (8)	2.00 (41)	2.18 (44)
1990–1995	1.38	−0.42 (−31)	0.28 (21)	1.77 (128)	−0.25 (−18)
1995–2000	0.97	−0.63 (−65)	0.28 (29)	0.93 (96)	0.38 (40)
2000–2005	1.31	−0.54 (−41)	0.36 (28)	0.33 (25)	1.17 (89)
2005–2008	1.06	0.19 (18)	0.15 (14)	0.20 (19)	0.51 (49)
1970–2008	2.92	−0.04 (−1)	0.28 (10)	1.95 (67)	0.73 (25)
Malaysia					
1970–1975	7.68	1.35 (18)	0.08 (1)	5.69 (74)	0.57 (7)
1975–1980	8.20	1.31 (16)	0.12 (1)	5.79 (71)	0.98 (12)
1980–1985	4.99	1.15 (23)	0.11 (2)	7.14 (143)	−3.41 (−68)
1985–1990	6.64	1.18 (18)	0.19 (3)	3.70 (56)	1.57 (24)
1990–1995	9.07	0.91 (10)	0.33 (4)	6.72 (74)	1.12 (12)
1995–2000	4.70	1.22 (26)	0.58 (12)	5.70 (121)	−2.79 (−59)
2000–2005	4.66	0.49 (10)	0.80 (17)	2.14 (46)	1.23 (26)
2005–2008	5.56	0.61 (11)	0.85 (15)	1.67 (30)	2.44 (44)
1970–2008	6.49	1.05 (16)	0.36 (6)	4.98 (77)	0.10 (1)
Philippines					
1970–1975	5.86	2.75 (47)	0.15 (3)	2.54 (43)	0.41 (7)
1975–1980	6.04	1.82 (30)	0.15 (2)	4.46 (74)	−0.39 (−7)
1980–1985	−1.28	1.73 (−136)	0.22 (−18)	4.17 (−327)	−7.41 (580)
1985–1990	4.56	0.96 (21)	0.17 (4)	1.03 (23)	2.40 (53)
1990–1995	2.23	0.99 (44)	0.07 (3)	1.82 (82)	-0.65 (−29)
1995–2000	3.88	0.63 (16)	0.42 (11)	2.27 (59)	0.56 (14)
2000–2005	4.40	1.12 (25)	0.60 (14)	1.49 (34)	1.18 (27)
2005–2008	5.30	0.78 (15)	0.48 (9)	0.98 (18)	3.07 (58)
1970–2008	3.80	1.38 (36)	0.27 (7)	2.42 (64)	−0.27 (−7)
Thailand					
1970–1975	5.52	−0.15 (−3)	0.07 (1)	2.54 (46)	3.06 (55)
1975–1980	7.45	3.50 (47)	0.17 (2)	2.53 (34)	1.25 (17)
1980–1985	5.31	0.80 (15)	0.21 (4)	2.71 (51)	1.60 (30)
1985–1990	9.82	2.42 (25)	0.32 (3)	3.16 (32)	3.92 (40)
1990–1995	8.30	−0.03 (0)	0.57 (7)	5.58 (67)	2.18 (26)
1995–2000	0.47	0.16 (34)	0.41 (89)	3.03 (652)	−3.14 (−675)
2000–2005	5.00	1.09 (22)	0.57 (11)	0.74 (15)	2.60 (52)
2005–2008	4.14	0.69 (17)	0.71 (17)	1.23 (30)	1.50 (36)
1970–2008	5.84	1.08 (18)	0.36 (6)	2.77 (47)	1.63 (28)
US					
1970–1975	2.59	0.51 (20)	0.21 (8)	1.20 (47)	0.66 (25)
1975–1980	3.64	1.68 (46)	0.27 (7)	1.04 (29)	0.64 (18)
1980–1985	3.11	0.83 (27)	0.46 (15)	0.74 (24)	1.08 (35)
1985–1990	3.23	1.27 (39)	0.53 (16)	0.75 (23)	0.68 (21)
1990–1995	2.46	0.68 (28)	0.46 (19)	0.50 (20)	0.82 (33)
1995–2000	4.19	1.21 (29)	0.80 (19)	0.74 (18)	1.44 (34)
2000–2005	2.40	−0.06 (−3)	0.59 (25)	0.71 (30)	1.16 (48)
2005–2008	1.45	0.54 (37)	0.39 (27)	0.78 (54)	−0.26 (−18)
1970–2008	2.96	0.85 (29)	0.47 (16)	0.81 (27)	0.83 (28)

Unit: Average annual growth rate (percentage).
Source: APO Productivity Database 2011.01.

Box 9 Capital Services and Endogenous Rate of Return

In the analysis of production and productivity, capital service provides an appropriate concept of capital as a factor of production. The fundamental assumption in measuring capital services is proportionality between the (productive) capital stock and capital services in each type of asset. Thus the growth rates of capital services can differ from that of capital stock only at the aggregate level. For aggregating different types of capital, the user costs of capital by type of asset should be estimated. This box outlines the methodology of the user cost of capital estimation and presents the estimated results of endogenous rate of return for Asian countries in the APO Productivity Database 2011.01.

The user cost of capital of a new asset (with type of asset denoted as k of the period t), $u^k_{t,0}$, is defined as, $q^k_{t-1,0}\{r_t+(1+\zeta^k_t)\delta^k_{p,t,0}-\zeta^k_t\}$, where r_t, $\delta^k_{p,t,0}$, and $q^k_{t,0}$ are the expected nominal rate of return, cross-section depreciation rate and asset price, respectively. The asset-specific inflation rate ζ^k_t is defined as $(q^k_{t,0}/q^k_{t-1,0}-1)$. The OECD assumes the country-specific *ex ante* real rate of return r^* that is constant for the whole period, and defines the nominal rate of return as $r_t=(1+r^*)(1+\rho_t)-1$, where ρ_t represents the expected overall inflation rate, defined by a five-year centered moving average of the rate of change of the consumer price index (see Schreyer, Bignon, and Dupont, 2003).

One of the main difficulties in applying the *ex ante* approach for measuring user cost of capital is obtaining proper estimates for real rates of return, which can differ considerably among countries and over time. On the other hand, the *ex post* approach originated by Jorgenson and Griliches (1967) enables us to estimate it based on observed data. Assuming constant returns to scale and competitive markets, capital compensation can be derived from the summation of the capital service cost V^k_t for each asset, which is defined as the product of the user cost of capital and the productive capital stock, i.e. $V_t=\sum_k V^k_t=\sum_t u^k_{t,0}S^{k^*}_t$. Based on this identity and the n-equations the n+1 variables of $u^k_{t,0}$ and r_t are simultaneously determined, using the observed capital compensation V_t as the total sum of V^k_t that is not observable in each asset. Note that the depreciation rate $\delta^k_{p,t,0}$ is not independent of the estimated r_t.

The estimated results of *ex post* real rate of return based on $r^*_t=(1+r_t)/(1+p_t)-1$ for t13 Asian countries and the US are shown in Figure B9. Although there are large fluctuations in countries like Thailand, Mongolia, and Vietnam, we may find a decreasing trend in the (endogenous) real rate of return for many Asian countries, compared to the US, which has a stable rate of around 10 per cent. In 2008 the real rate of return ranges from 4 per cent (Fiji) to 27 per cent (Indonesia). Using these *ex post* estimates, the aggregate capital services are measured in this report. The difference caused by the *ex ante* and *ex post* approaches may provide a modest difference in the growth measure of capital services, regardless of the substantial differences in the rates of return and capital compensations (Nomura, 2004).

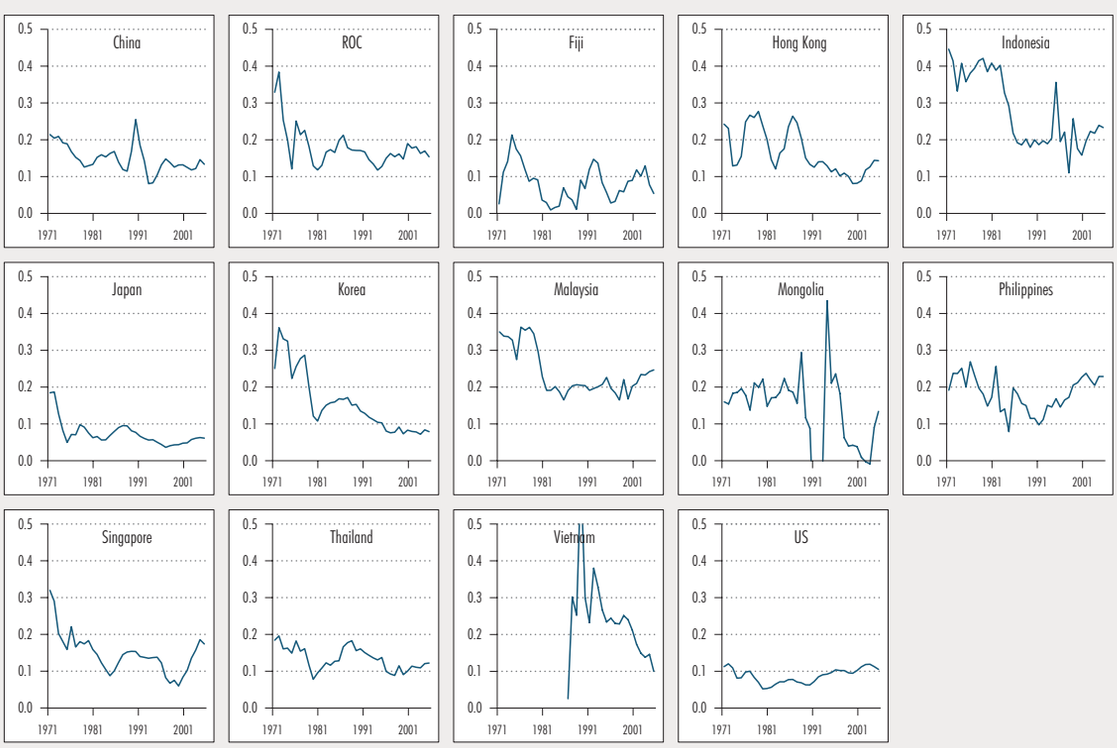


Figure B9: Ex Post Real Rate of Return in Asia, 1970–2008

Note: The starting period for Vietnam is 1986.
Source: APO Productivity Database 2011.01.

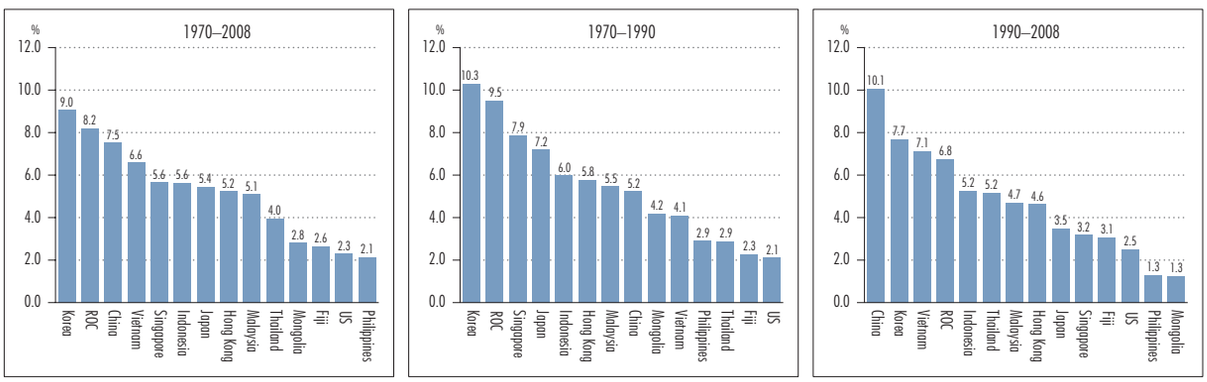


Figure 37: Capital Deepening, 1970–2008, 1970–1990, and 1990–2008

Note: The starting period for Vietnam is 1986. The labor input for Fiji is defined by numbers of employment.
Source: APO Productivity Database 2011.01.

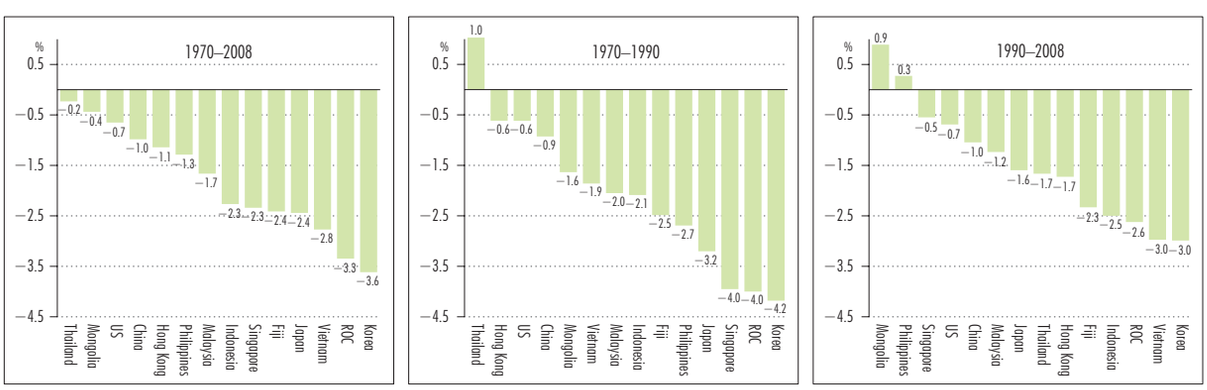


Figure 38: Capital Productivity Growth, 1970–2008, 1970–1990, and 1990–2008

Note: The starting period for Vietnam is 1986.
Source: APO Productivity Database 2011.01.

Korea), which saw the contribution of their IT capital to total capital input rising from 10 per cent or below to around 30 per cent at their peaks, although the timing is somewhat later than Japan due to the impacts of the Asian financial crisis. After the dot.com crash the contribution of IT capital went back to the level before 1995 in the US, the ROC, and Korea. China is a latecomer as far as investing in IT capital is concerned. The surge in the contribution of IT capital took off around 2000, and its contribution remains steady even after the dot.com crash. Investment in IT capital is a necessary step to adopting and benefiting from the advancements in information and communication technology.

5.4 Enhancement of Labor Productivity

Although TFP measures more accurately how efficiently an economy utilizes its factor inputs, labor productivity and its drivers are of interest not least because of the close link to GDP per capita. Within the same growth accounting framework, average labor productivity growth at the aggregate level can be decomposed into effects of capital deepening (as measured by capital input per hour worked), which reflects the capital-labor substitution, and TFP. In other words, these factors are key in fostering labor productivity.

Capital deepening has been taking place in all the countries compared, albeit to various degrees (Figure 37). The process was most intense in Korea and the ROC throughout the earlier period of 1970–1990, with capital-labor ratio rising by 10 per cent on average a year. Since then the pace has relented, but they are still leading Asia in capital deepening. China intensified the process recently, doubling its pace between the two periods to lead Asia since 1990. In the later period, we also see Indonesia, Thailand, and Vietnam making concerted effort in increasing their capital-intensity.

Figure 38 compares capital productivity across countries. In contrast to the steady improvement in

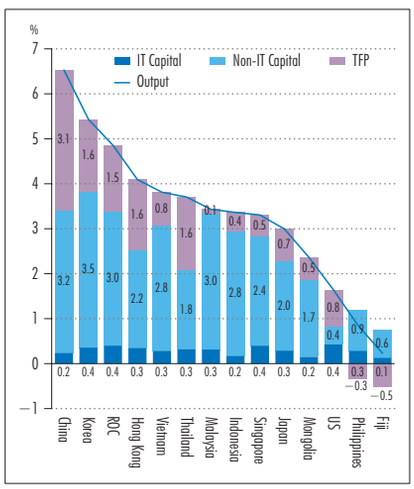


Figure 39: Sources of Labor Productivity Growth, 1970–2008

Source: APO Productivity Database 2011.01.

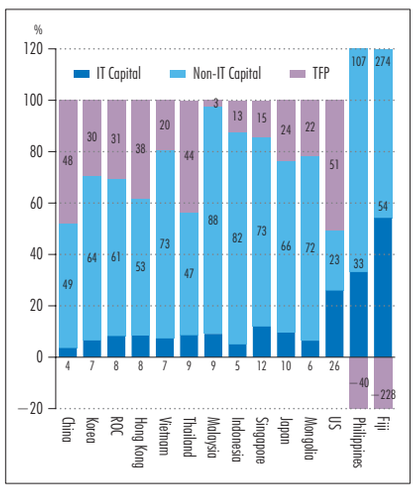


Figure 40: Contribution Shares of Labor Productivity Growth, 1970–2008

Source: APO Productivity Database 2011.01.

labor productivity for all countries shown in Figure 28, the growth rate of capital productivity as the other measure of partial productivity is negative for all countries during 1970–2008. The rates of capital deepening in Korea and the ROC have been outstanding, at 9.0 per cent and 8.2 per cent per year, but their capital productivity experienced the sharpest decline of over 3.0 per cent per year on average during this period. Looking at the two sub-periods, overall the rate of deterioration in capital productivity was slower in the latter period.

Figure 39 and Figure 40 present the decomposition of labor productivity growth and the contribution of TFP growth, non-IT capital growth, and IT capital growth for the past four decades. Generally, capital deepening is the prime cause of labor productivity growth – the US is the only exception to this observation. For example, capital deepening explained 76 per cent of labor productivity growth in Japan, 71 per cent in Korea, and 69 per cent in the ROC. However, TFP growth also plays a significant role. Its contribution was over 50 per cent in the US, 48 per cent in China, 44 per cent in Thailand, and over 30 per cent in the Asian Tigers (except Singapore). Looking at the breakdown of this long period, overall labor productivity performance was best in the period 1985–1995. Barring China, labor productivity growth slowed in the latest period of 1995–2008 (Figure 41). In Figure 42, it is possible to see that the role played by TFP has weakened in the ROC, with a contribution of 27 per cent in 1995–2008 dropping from its height of 53 per cent in 1985–1995. In contrast, TFP growth has strengthened in Japan, accounting for 39 per cent of labor productivity growth in 1995–2008, up from 30 per cent in 1985–1995. In China we see the shrinking role of TFP growth as the role of capital accumulation rises in explaining labor productivity growth. Even so, in recent years TFP growth still explains around 49 per cent of labor productivity growth, down from 56 per cent in the previous period.

It is interesting to note the rise of IT capital contribution in explaining labor productivity growth, especially since 1995 (Figure 42), from a range of 2–7 per cent in the period 1970–1985 and 6–13 per cent in 1985–1995 to a range of 8–29 per cent in the period 1995–2008. More specifically, the role played by IT capital deepening in the ROC rose from 7 per cent in the period 1970–1995 to around 14 per cent in the more recent years of 1995–2008. Similarly, in Korea it rose from 4 per cent in the earlier period of 1970–1995 to 10 per cent in 1995–2008. The contribution by IT deepening in Japan doubled between 1970–1985 and 1985–1995 from 6 per cent to 11 per cent, before rising further to 17 per cent in 1995–2008. This rise in the role of IT capital deepening took place earlier in Japan than in other Asian countries, mirroring its investment effort in Figure 36. In China, the contribution of IT capital deepening has more than tripled in the past decade, from 1 per cent in 1985–1995 to 7 per cent in 1995–2008. In the US IT capital deepening has been explaining around a quarter to one-third of its labor productivity growth since 1985.

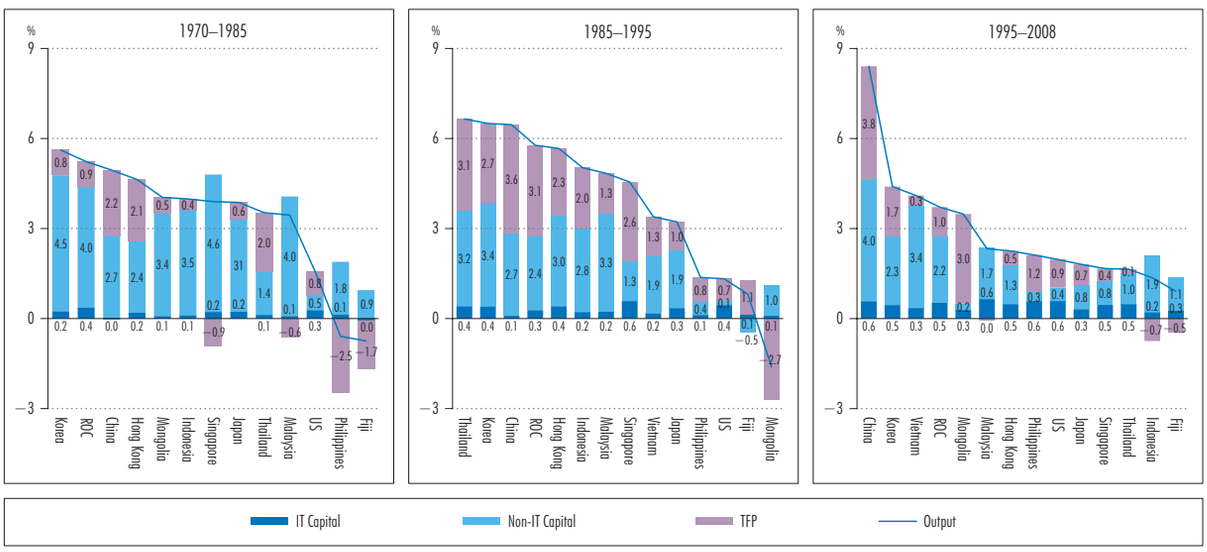


Figure 41: Sources of Labor Productivity Growth, 1970–1985, 1985–1995, and 1995–2008

Source: APO Productivity Database 2011.01.

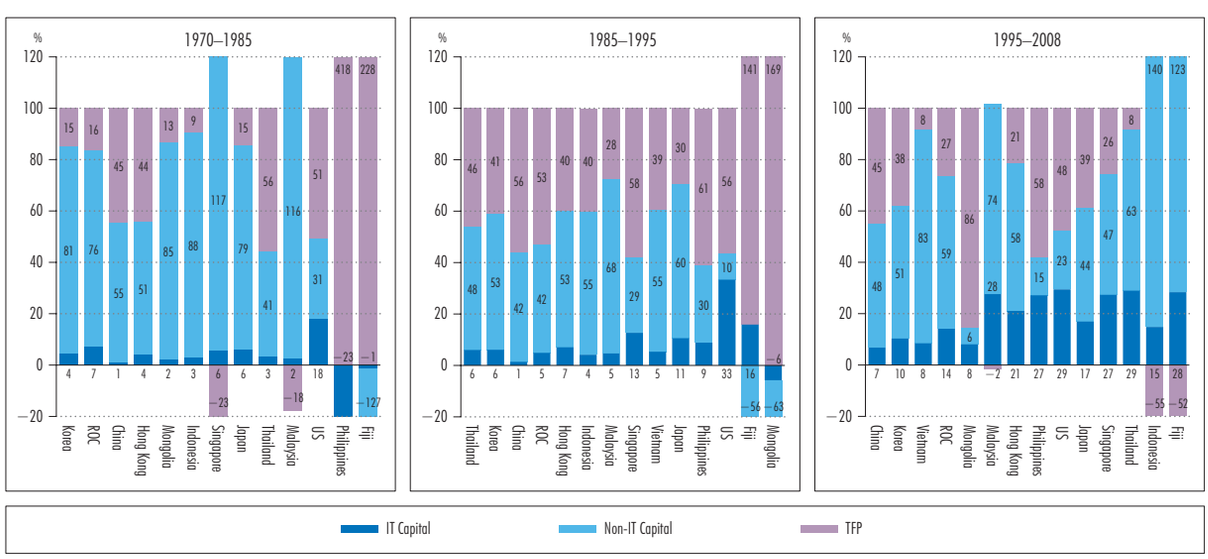


Figure 42: Contribution Shares of Labor Productivity Growth, 1970–1985, 1985–1995, and 1995–2008

Source: APO Productivity Database 2011.01.

Figure 43: Decomposition of Labor Productivity Growth, 1970–2008

Source: APO Productivity Database 2011.01.

Table 12: Role of TFP and Capital Deepening in Labor Productivity Growth, 1970–2008

	Labor Productivity	Capital Deepening		TFP		Labor Productivity	Capital Deepening		TFP	
		IT	Non-IT				IT	Non-IT		
China						ROC				
1970–1975	3.68	0.03 (1)	3.12 (85)	0.53 (15)		1970–1975	5.13	0.45 (9)	5.13 (100)	−0.45 (−9)
1975–1980	4.24	0.04 (1)	2.99 (70)	1.21 (29)		1975–1980	6.38	0.35 (5)	3.72 (58)	2.32 (36)
1980–1985	6.92	0.04 (1)	2.02 (29)	4.86 (70)		1980–1985	4.18	0.33 (8)	3.15 (75)	0.70 (17)
1985–1990	2.35	0.08 (3)	1.95 (83)	0.32 (14)		1985–1990	6.31	0.28 (4)	2.18 (34)	3.86 (61)
1990–1995	10.57	0.10 (1)	3.53 (33)	6.94 (66)		1990–1995	5.23	0.30 (6)	2.69 (51)	2.25 (43)
1995–2000	7.12	0.21 (3)	3.99 (56)	2.92 (41)		1995–2000	4.48	0.77 (17)	2.97 (66)	0.74 (16)
2000–2005	8.30	0.66 (8)	3.80 (46)	3.84 (46)		2000–2005	3.17	0.59 (19)	1.85 (58)	0.72 (23)
2005–2008	10.75	1.03 (10)	4.51 (42)	5.21 (48)		2005–2008	3.36	0.03 (1)	1.49 (44)	1.84 (55)
1970–2008	6.53	0.23 (4)	3.17 (49)	3.12 (48)		1970–2008	4.86	0.41 (8)	2.97 (61)	1.48 (30)
Fiji						Hong Kong				
1970–1975	−0.48	−0.06 (12)	0.37 (−78)	−0.79 (166)		1970–1975	2.65	0.14 (5)	1.72 (65)	0.78 (30)
1975–1980	−0.53	0.01 (−1)	1.09 (−205)	−1.63 (307)		1975–1980	7.49	0.19 (2)	2.09 (28)	5.21 (70)
1980–1985	−1.22	0.08 (−6)	1.36 (−111)	−2.65 (217)		1980–1985	3.76	0.26 (7)	3.32 (88)	0.18 (5)
1985–1990	1.38	0.11 (8)	−0.35 (−25)	1.62 (117)		1985–1990	6.74	0.40 (6)	2.78 (41)	3.56 (53)
1990–1995	0.25	0.15 (60)	−0.57 (−230)	0.67 (270)		1990–1995	4.60	0.40 (9)	3.23 (70)	0.96 (21)
1995–2000	1.38	0.17 (13)	1.14 (83)	0.06 (5)		1995–2000	0.21	0.58 (277)	1.78 (851)	−2.15 (−1028)
2000–2005	1.61	0.34 (21)	1.16 (72)	0.11 (7)		2000–2005	3.13	0.48 (15)	0.94 (30)	1.71 (54)
2005–2008	−1.03	0.27 (−26)	1.03 (−100)	−2.33 (225)		2005–2008	4.20	0.29 (7)	1.09 (26)	2.82 (67)
1970–2008	0.23	0.13 (54)	0.64 (274)	−0.53 (−228)		1970–2008	4.09	0.34 (8)	2.18 (53)	1.57 (38)
Indonesia						Japan				
1970–1975	6.33	0.05 (1)	3.46 (55)	2.81 (44)		1970–1975	4.98	0.32 (6)	5.26 (105)	−0.59 (−12)
1975–1980	4.78	0.15 (3)	3.84 (80)	0.78 (16)		1975–1980	2.99	0.18 (6)	2.16 (72)	0.65 (22)
1980–1985	0.85	0.13 (15)	3.21 (376)	−2.49 (−292)		1980–1985	3.64	0.20 (6)	1.76 (48)	1.68 (46)
1985–1990	3.59	0.14 (4)	1.81 (51)	1.63 (46)		1985–1990	4.33	0.38 (9)	1.77 (41)	2.18 (50)
1990–1995	6.47	0.28 (4)	3.76 (58)	2.43 (38)		1990–1995	2.11	0.31 (14)	2.06 (97)	−0.25 (−12)
1995–2000	−1.23	0.16 (−13)	2.82 (−230)	−4.21 (343)		1995–2000	2.02	0.32 (16)	1.32 (65)	0.38 (19)
2000–2005	3.33	0.22 (7)	1.58 (47)	1.54 (46)		2000–2005	2.24	0.40 (18)	0.68 (30)	1.17 (52)
2005–2008	2.39	0.25 (10)	0.91 (38)	1.23 (51)		2005–2008	0.72	0.14 (19)	0.07 (9)	0.51 (72)
1970–2008	3.36	0.17 (5)	2.77 (82)	0.43 (13)		1970–2008	2.99	0.29 (10)	1.98 (66)	0.73 (24)
Korea						Malaysia				
1970–1975	5.95	0.16 (3)	4.77 (80)	1.03 (17)		1970–1975	3.97	0.06 (2)	3.35 (84)	0.57 (14)
1975–1980	4.18	0.29 (7)	5.39 (129)	−1.51 (−36)		1975–1980	4.51	0.10 (2)	3.43 (76)	0.98 (22)
1980–1985	6.72	0.28 (4)	3.45 (51)	2.99 (44)		1980–1985	1.86	0.09 (5)	5.18 (278)	−3.41 (−183)
1985–1990	7.59	0.44 (6)	3.32 (44)	3.83 (50)		1985–1990	3.29	0.16 (5)	1.56 (47)	1.57 (48)
1990–1995	5.41	0.35 (6)	3.57 (66)	1.50 (28)		1990–1995	6.39	0.29 (5)	4.98 (78)	1.12 (17)
1995–2000	4.60	0.51 (11)	2.80 (61)	1.28 (28)		1995–2000	0.85	0.49 (57)	3.16 (371)	−2.79 (−328)
2000–2005	4.05	0.52 (13)	1.90 (47)	1.63 (40)		2000–2005	3.05	0.73 (24)	1.09 (36)	1.23 (40)
2005–2008	4.65	0.24 (5)	1.96 (42)	2.45 (53)		2005–2008	3.59	0.75 (21)	0.40 (11)	2.44 (68)
1970–2008	5.43	0.35 (7)	3.47 (64)	1.61 (30)		1970–2008	3.43	0.31 (9)	3.02 (88)	0.10 (3)
Mongolia						Philippines				
1970–1975	5.06	0.03 (1)	2.29 (45)	2.74 (54)		1970–1975	0.69	0.04 (6)	0.24 (35)	0.41 (59)
1975–1980	3.13	0.05 (2)	2.18 (70)	0.90 (29)		1975–1980	2.45	0.09 (4)	2.75 (112)	−0.39 (−16)
1980–1985	3.93	0.17 (4)	5.79 (147)	−2.03 (−52)		1980–1985	−4.92	0.17 (−3)	2.32 (−47)	−7.41 (150)
1985–1990	−1.87	0.08 (−5)	0.67 (−36)	−2.63 (140)		1985–1990	2.63	0.13 (5)	0.10 (4)	2.40 (91)
1990–1995	−1.34	0.10 (−8)	1.36 (−102)	−2.81 (209)		1990–1995	0.11	0.04 (33)	0.73 (646)	−0.65 (−579)
1995–2000	2.52	0.17 (7)	0.24 (10)	2.10 (83)		1995–2000	2.27	0.38 (17)	1.33 (59)	0.56 (24)
2000–2005	2.70	0.27 (10)	−1.13 (−42)	3.55 (132)		2000–2005	1.26	0.48 (38)	−0.40 (−32)	1.18 (94)
2005–2008	6.41	0.48 (7)	2.41 (38)	3.52 (55)		2005–2008	3.28	0.39 (12)	−0.18 (−5)	3.07 (93)
1970–2008	2.36	0.15 (6)	1.69 (72)	0.52 (22)		1970–2008	0.85	0.21 (24)	0.92 (108)	−0.27 (−32)
Singapore						Thailand				
1970–1975	4.11	0.17 (4)	6.17 (150)	−2.23 (−54)		1970–1975	5.91	0.08 (1)	2.76 (47)	3.06 (52)
1975–1980	3.23	0.20 (6)	2.92 (90)	0.11 (3)		1975–1980	0.82	0.10 (12)	−0.52 (−63)	1.25 (151)
1980–1985	4.35	0.29 (7)	4.65 (107)	−0.59 (−14)		1980–1985	3.85	0.19 (5)	2.06 (53)	1.60 (42)
1985–1990	3.94	0.40 (10)	0.94 (24)	2.60 (66)		1985–1990	4.99	0.23 (5)	0.83 (17)	3.92 (79)
1990–1995	5.16	0.76 (15)	1.72 (33)	2.68 (52)		1990–1995	8.31	0.57 (7)	5.56 (67)	2.18 (26)
1995–2000	2.07	0.65 (31)	1.82 (88)	−0.40 (−19)		1995–2000	0.13	0.40 (308)	2.87 (2200)	−3.14 (−2409)
2000–2005	3.33	0.39 (12)	1.30 (39)	1.64 (49)		2000–2005	2.64	0.46 (18)	−0.43 (−16)	2.60 (99)
2005–2008	−1.78	0.24 (−13)	−1.80 (102)	−0.21 (12)		2005–2008	2.51	0.62 (25)	0.39 (15)	1.50 (60)
1970–2008	3.31	0.39 (12)	2.43 (73)	0.48 (15)		1970–2008	3.71	0.32 (9)	1.76 (47)	1.63 (44)
Vietnam						US				
						1970–1975	1.82	0.20 (11)	0.96 (53)	0.66 (36)
						1975–1980	1.06	0.22 (20)	0.20 (19)	0.64 (61)
						1980–1985	1.82	0.43 (23)	0.31 (17)	1.08 (60)
1986–1990	2.24	0.20 (9)	1.67 (75)	0.37 (17)		1985–1990	1.26	0.47 (37)	0.11 (9)	0.68 (54)
1990–1995	4.32	0.17 (4)	2.05 (47)	2.10 (49)		1990–1995	1.39	0.42 (30)	0.16 (11)	0.82 (59)
1995–2000	3.01	0.30 (10)	3.44 (114)	−0.72 (−24)		1995–2000	2.29	0.71 (31)	0.13 (6)	1.44 (63)
2000–2005	6.36	0.33 (5)	4.17 (66)	1.85 (29)		2000–2005	2.49	0.59 (24)	0.73 (29)	1.16 (47)
2005–2008	2.15	0.46 (22)	2.11 (98)	−0.43 (−20)		2005–2008	0.59	0.34 (58)	0.50 (86)	−0.26 (−44)
1986–2008	3.81	0.28 (7)	2.79 (73)	0.74 (19)		1970–2008	1.64	0.43 (26)	0.38 (23)	0.83 (51)

Unit: Average annual growth rate (percentage).
Source: APO Productivity Database 2011.01.

Box 10 Sensitivity of TFP Estimates

The TFP computation based on the growth accounting framework depends on data that are sometimes hard to observe. One of the hard tasks is to observe the wages for self-employed and unpaid family workers. As a crude approximation in this report, we assume that per worker wages for self-employed and family workers are 30 per cent of the per worker wage for employees, in order to estimate the labor compensation for total employment. The future review on this assumption affects the TFP estimates directly through the revision of factor income shares and indirectly through the estimates of the *ex post* rate of return and thus the aggregate measure of capital services.

The right-hand chart of Figure B10.1 presents the labor income share (the ratio of compensation for employees to the basic-price GDP) based on the official national accounts (including our adjustments in basic-price GDP for some countries) in 13 Asian countries and the US in 2008. There is a large divergence in labor income share for employees among the Asian countries. Roughly we find two groups: countries with around 50 per cent share, and countries with around 30 per cent share of compensation for employees. It does not necessarily reflect the differences in the number of employees to total employment. The left chart provides the employee share to total employment. Although Malaysia has a high employee share of 78 per cent, the labor income share is only 28 per cent.

Figure B10.2 gives the sensitivity of TFP estimates by changing the factor income share in 2008. In general, the growth rate of capital input is higher than that of labor input, so the higher income share of labor gives higher estimates in TFP growth. In other words, labor productivity is improved over a given period much faster than that of capital productivity, the growth of which tends to be frequently negative (See Figure 28 and Figure 38). The TFP estimate reflects the improvement of labor productivity more when the labor income share increases. In Malaysia with TFP growth of 0.1 per cent on average during the period 1970–2008, the true estimate could be 0.6 per cent if the current labor income shares is underestimated by 10 per cent.

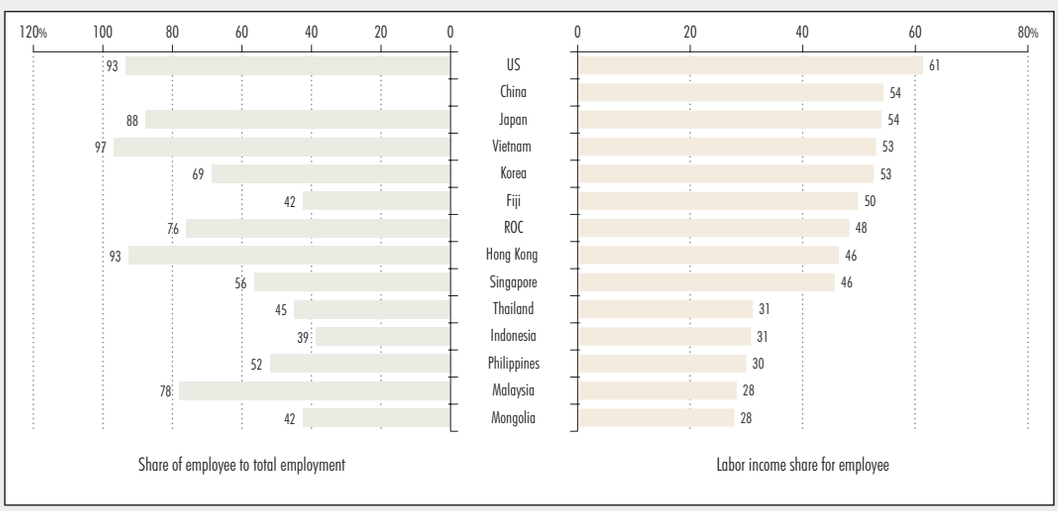


Figure B10.1: Labor Income Share for Employees, 2008

Sources: Official national accounts in each country, including our adjustments.

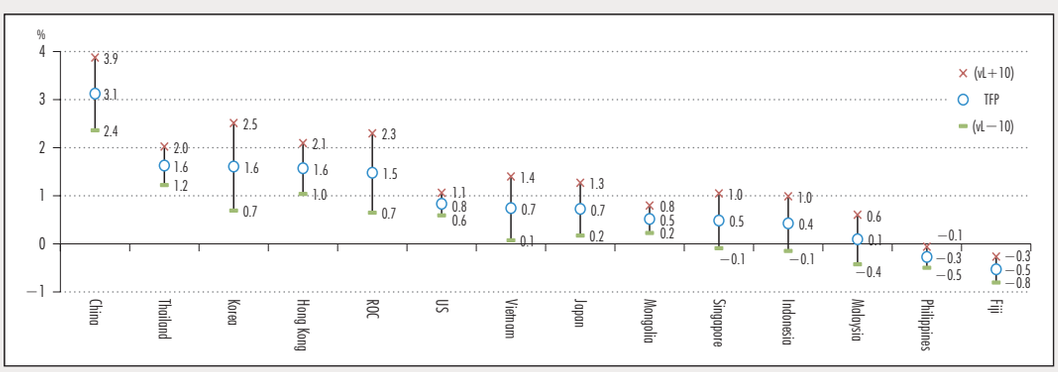


Figure B10.2: Sensitivity of TFP Estimates by the Change of Income Share, 1970–2008

Note: The starting period for Vietnam is 1986. The labor inputs for Fiji and Mongolia are defined by number of employment.
Source: APO Productivity Database 2011.01.

6 Industry Perspective

This chapter provides the industry origins of economic growth and labor productivity growth in Asian countries. An industry decomposition allows an insight into the source of a country's economic dynamics, which in turn determines its overall performance and characteristics, its strengths and vulnerabilities. Furthermore, industry structure is a key indicator of an economy's stage of development. As a rough sketch, at one end of the spectrum are predominantly agricultural and rural-based economies, while at the other end the agricultural sector is negligible and the service sector is the dominant economic base. In the middle is a stage where manufacturing may be the main driver of economic growth. As an economy matures, its depth and sophistication will increase and its resilience to economic shocks should accordingly be strengthened. The different composition of economic activities among countries is also one of the main sources of the huge gap in average labor productivity at the aggregate level, as observed in Chapter 5. By analyzing the industry structure of Asian economies, we can clearly trace the path of economic development and identify the stages countries are in based on their characteristics.[64]

6.1 Output and Employment

Table 5 in Section 3.2 introduces a country grouping according to stages of development (as measured by per capita GDP relative to the US). Table 13 regroups countries based on the same set of criteria as in Table 5, but applied to countries' 2008 income levels. The difference in countries' relative per capita GDP between the two tables reflects the impact of their catch-up efforts since 1970 or the beginning year of the data series in this report for the country concerned.

Comparing Table 13 with Table 5, we observe that the most upwardly mobile countries during the period covered fall in the fast catch-up groups, as one would expect. Among Group-C1 countries, the ROC has moved up two income levels to join Japan in the top income group; Korea and China managed to move up one income level from where they were at the beginning of the period. Cambodia is the only country which fails to move up in income group despite its fast pace of catch-up, but this is partly due to its short time series.[65] Half of Group-C2 countries have managed to move up one level in income grouping, while the other half (Oman, Sri Lanka, Thailand, Lao PDR, and Myanmar) stayed in the same income group as before. This, however, masks the noticeable progress Thailand has made during this period, with its relative income rising from 7.2 per cent to 17.6 per cent of that of the US (within the income range of Group-L3). As expected, there were few movements in country groups with little or no catch-up. Only Pakistan moved up one level (as it marginally crossed the boundary of income

Table 13: Country Groups Based on the Current Economic Level and the Pace of Catching Up with the US
—Level and average annual growth rate of GDP at constant market prices, using 2005 PPPs

Per Capita GDP Level to the US in 2008	Annual Rate to Catch-up to the US			
	(C1) >3%	(C2) 1% <– < 3%	(C3) 0% < – < 1%	(C4) < 0%
(L1) 60% <	ROC, Singapore	Hong Kong	Japan, EU15, UAE	Brunei, Bahrein, Kuwait, Qatar
(L2) 20% < – < 60%	Korea	Malaysia, Oman		Iran, Saudi Arabia
(L3) 5% < – < 20%	China	India, Indonesia, Sri Lanka, Thailand, Vietnam	Mongolia, Pakistan	Fiji, Philippines
(L4) < 5%	Cambodia	Lao PDR, Myanmar	Nepal	Bangladesh

Note: The annual catch-up rates are based on the data during 1970–2008. The starting years for some countries are different due to data availability: Cambodia (1987–), Lao PDR (1984–), Nepal (1974–), and Vietnam (1976–).
Sources: Official national accounts in each country, including our adjustments.

64: Constructing the industry origins of labor productivity growth requires confronting a large volume of data from different sources. Issues of data inconsistency arising from fragmentation of national statistical frameworks can present enormous hurdles to researchers in this area. The industry data in this chapter are mainly based on official national accounts. Where back data are not available, series are spliced together using different benchmarks and growth rates. Data inconsistencies in terms of concepts, coverage, and data sources have not been fully treated. Levels of breakdown are deliberately chosen to minimize the potential impact of these data inconsistencies. In this sense, APO industry data should be treated as work in progress and it is difficult to advise on data uncertainty. We will further develop and examine these data issues in the near future. Readers should bear these caveats in mind in interpreting the results.

65: The reason behind Cambodia's failure to move up in income group is its short time series, which starts in 1987. Therefore, despite its average catch-up speed of 3.3 per cent per annum, it has had less time to catch up than other countries with series starting from 1970. Between 1987 and 2008 Cambodia's relative income moved up from 2.3 per cent to 4.6 per cent of the US level.

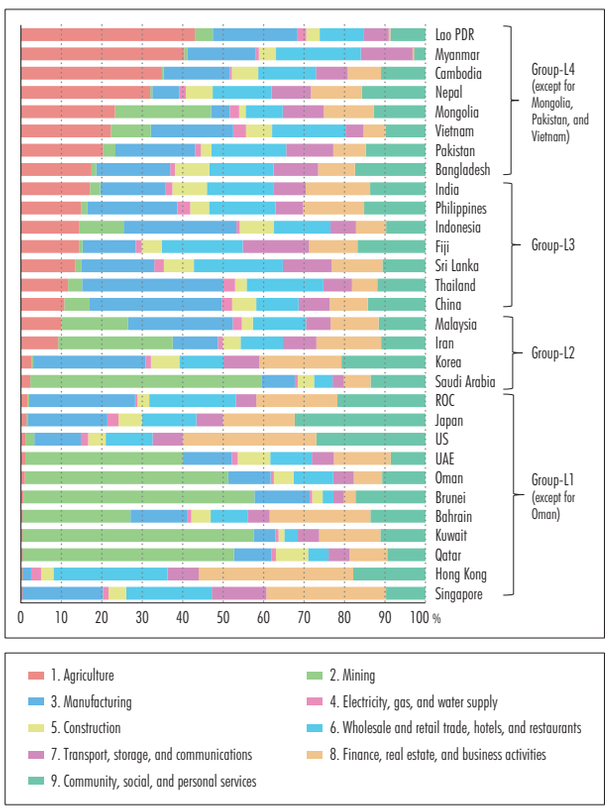


Figure 44: Industry Shares of Value Added, 2008

Sources: Official national accounts in each country, including our adjustments.

groups from 4.9 per cent to 5.7 per cent of that of the US), whereas Saudi Arabia moved down one level in income group.

Figure 44 shows the industry composition of the Asian economies in 2008, and ranks countries by the share of their agricultural sector in total value added.[66] Industries are classified into nine groups.[67] Figure 44 indicates a broad negative correlation between the share of the agricultural sector and the relative per capita GDP against the US. Half of the Asian countries compared have a significant agricultural sector, ranging from 10.7 per cent in China to 43.0 per cent in Lao PDR, and they all have relative per capita GDP below 20 per cent that of the US. Malaysia and Iran are the exceptions, in that they are the only countries in the higher income group still with a significant agricultural sector (i.e. 9–10 per cent), compared to 1.6–2.7 per cent for the other countries in Group-L2. Group-L1 economies, in line with the US as the reference country, have a negligible agricultural sector. Note also how finance, real estate, and business activities grow in weight as we move up income level. The financial sector is particularly prominent in Hong Kong, Singapore, and the US. Mining is what defines the oil-exporting countries, typically accounting for over 50 per cent of total value added, except in Bahrain (26.8 per cent), Iran (28.3 per cent), and the UAE (39.0 per cent).

Manufacturing is a key sector in propelling countries to make a leap in economic development. It accounts for around 20 per cent in most Asian countries, over a quarter in Korea, the ROC, and Indonesia, and around one-third in China and Thailand. Figure 45 shows the breakdown of the manufacturing sector, consisting of nine sub-industries, for 14 selected Asian countries and the US.[68] The dominance of machinery and equipment in Asian manufacturing can be clearly seen, particularly in the ROC and Singapore (over 60 per cent of

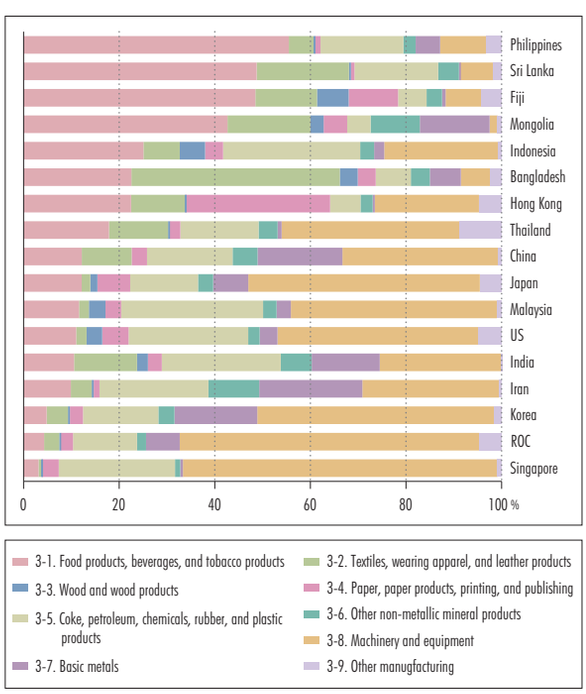


Figure 45: Industry Shares of Value Added in Manufacturing, 2008

Sources: Official national accounts in each country, including our adjustments.

66: Unlike in the previous chapters, GDP is not necessarily valued at basic prices in this chapter.

67: The nine industries are 1–agriculture; 2–mining; 3–manufacturing; 4–electricity, gas, and water supply; 5–construction; 6–wholesale and retail trade, hotels, and restaurants; 7–transport, storage, and communications; 8–finance, real estate, and business activities; and 9–community, social, and personal services. See Appendix A.3 for the concordance with the International Standard Industry Classification of All Economic Activities (ISIC), Revision 3.

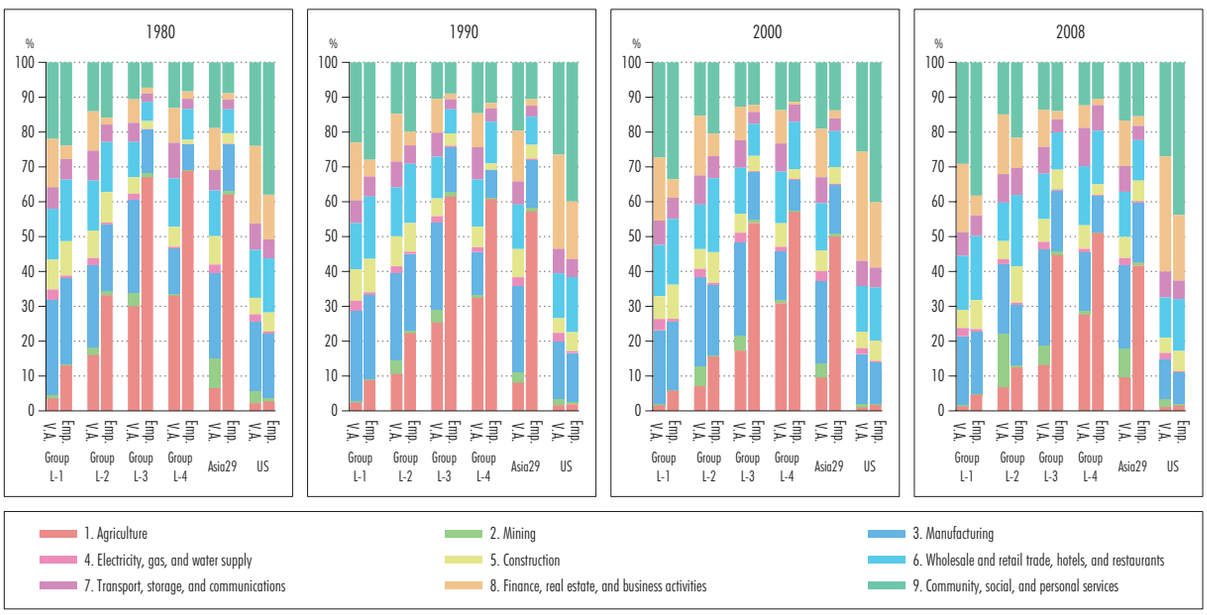


Figure 46: Industry Shares of Value Added and Employment by Country Group, 1980, 1990, 2000, and 2008

Sources: Official national accounts in each country, including our adjustments.

manufacturing's total value added), and Korea and Japan (around 50 per cent). At the other end are countries dominated by light manufacturing, e.g. the food products, beverages, and tobacco products sector in the Philippines, Sri Lanka, Fiji, and Mongolia; and the textiles, wearing apparel, and leather products sector in Bangladesh, accounting for 43.6 per cent of manufacturing industry and 8.0 per cent of total value added of the whole country.

Figure 46 shows the industry shares of value added and employment by four country groups, compared with Asia29 average and the US for the years 1980, 1990, 2000, and 2008.[69] The first thing to note is that the value added in the service sector accounts for the largest share of the economy in all country groups, independent of their economic development.[70] That said, Group-L1 has always had the biggest service sector among all Asian countries, and this has become much more distinctive as the weight of the economy in this group shifts heavily towards services over time. By 2008 the service sector accounted for 71.0 per cent of total value added in Group-L1, compared to 79.0 per cent in the US and 51.3 per cent in Group-L2.[71] Group-L3 has the smallest service sector, albeit only marginally when compared with Group-L4. This reflects the relative importance of manufacturing to this group of countries at their particular stage of development.

Second, Asia is still a region dominated by agriculture as far as employment is concerned, despite its downward trend. In the past three decades, agricultural employment share for Asia29 dropped from 62.0 per cent in 1980 to 41.7 per cent in 2008, while its share in total value added held quite stable at 15–17 per cent until 2000 before dropping in more recent years to 12 per cent in 2008. Comparing the four country groups across time, we see a trend of diversifying away from agriculture, with the process taking place most rapidly in Group-L3. The poorest countries, in contrast, have not been as successful. They started

68: Manufacturing consists of nine sub-industries: 3.1–food products, beverages, and tobacco products; 3.2–textiles, wearing apparel, and leather products; 3.3–wood and wood products; 3.4–paper, paper products, printing, and publishing; 3.5–coke; refined petroleum products, chemicals, rubber, and plastic products; 3.6–other non-metallic mineral products; 3.7–basic metals; 3.8–machinery and equipment; and 3.9–other manufacturing. See Appendix A.3 for the concordance with ISIC, Revision 3.

69: The group averages as industry share of value added are based on a country's industry GDP, using market exchange rates for the whole economy without consideration of the differences in relative prices of industry GDP among countries.

70: The service sector is defined in this *Databook* as 6–wholesale and retail trade, hotels, and restaurants; 7–transport, storage, and communications; 8–finance, real estate, and business activities; and 9–community, social, and personal services.

71: If Figure 44 is ranked by the size of service sector, Hong Kong will top the table at 92.0 per cent, followed by the US (79.0 per cent), and other Group-L1 countries, namely the ROC (68.3 per cent), Japan (70.1 per cent), and Singapore (74.0 per cent). Fiji is an exception, with a large service sector share (65.2 per cent) relative to its per capita GDP level.

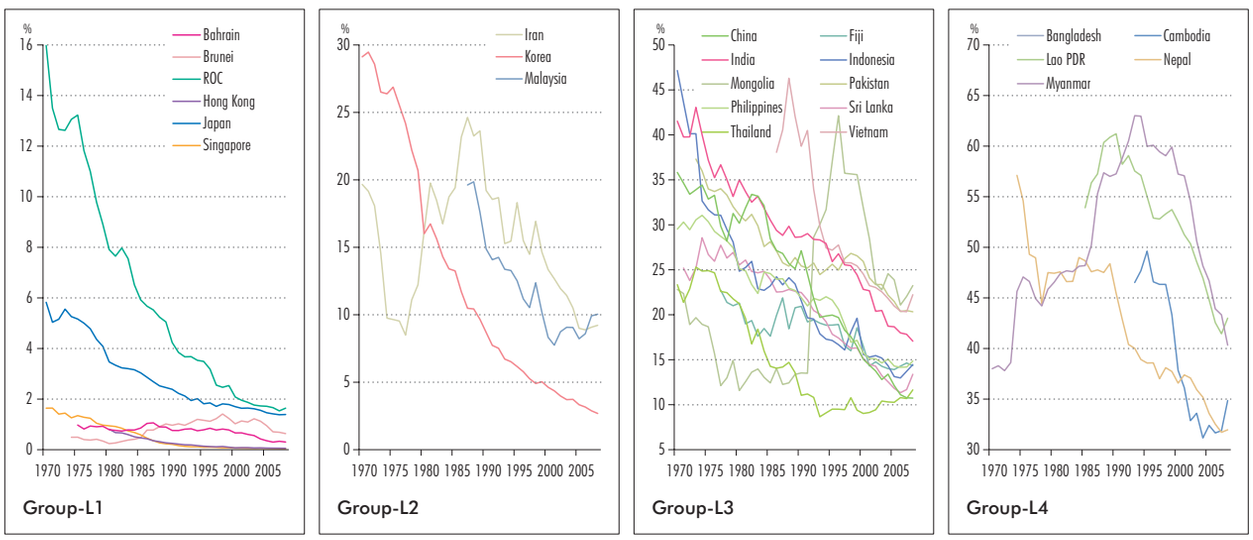


Figure 47: Long-term Trends of Value Added Share in the Agriculture Sector, 1970–2008

Sources: Official national accounts in each country, including our adjustments.

off with an agricultural value added share similar to Group-L3, at around one-third in 1980. By 2008 the share remained stubbornly high at 27.6 per cent, compared with 13.2 per cent achieved by Group-L3 countries. In the meantime, the richest economies continued to squeeze out agriculture even though it had a share of only 3.5 per cent in the total value added and 13.0 per cent in total employment in 1980. By 2008 the figures had fallen to 1.3 per cent and 4.6 per cent respectively.

Comparisons of the value added and employment shares also reveal some interesting facts. Agriculture is the only industry sector that consistently has a disproportionately higher employment share than justified by its share in value added across all country groups. This suggests that agriculture is still highly labor intensive and/or there may be a high level of underemployment in the sector in Asia, both of which imply that the labor productivity level is low compared to other industry sectors.[72] Thus countries with a big agricultural sector are often those with low per capita GDP. The US is an exception, where its agricultural value added share and employment share are similar, suggesting that labor productivity in this sector is higher than experienced by other countries. The reverse is true for the sector of finance, real estate, and business activities, which often generates a bigger value added share than suggested by its employment share. Manufacturing is similar in this respect, albeit to a lesser extent.

Third, Asian countries differ from the US industry structure in the relative importance of manufacturing, even in Group-L1 countries, where manufacturing accounts for 19.7 per cent of the economies' value added, compared with 11.5 per cent in the US in 2008. The US economy is highly skewed towards the service sector, accounting for 79.0 per cent of the total value added, compared with an average of 71.0 per cent in Group-L1 countries. Especially, its share of finance, real estate, and business activities at 33.0 per cent is much larger than the share of Group-L1 countries, at 19.6 per cent. This suggests that Asian economies could experience further deindustrialization and a shift in prominence towards services as they continue to mature. The relative prominence of manufacturing in the Asian regional economy as a whole is reflected in the fact that income groups are not filtered out by the size of a country's manufacturing sector.[73]

Figure 47 shows how the share of the agricultural industry in total value added shrank over time in the Asian economies. This could reflect the actual decline in agricultural output and/or the relatively rapid expansion in other sectors. Despite the wide spread,

72: Gollin, Parente, and Rogerson (2004) and Caselli (2005) demonstrated the negative correlation between employment share of agriculture and GDP per worker. They showed that the agricultural sector was relatively large in poor countries and agricultural labor productivity was lower than that in other sectors.

73: If Figure 44 ranks the size of the manufacturing sector, Thailand (a Group-L3 country) leads with a share of 34.9 per cent. It is followed by China and Indonesia, also Group-L3 countries, at 32.7 per cent and 27.9 per cent, and Korea and the ROC (Group-L2 countries) at 27.9 per cent and 26.2 per cent respectively.

the downward trend is unmistakable, even for Group-L4 countries. The share of the agricultural sector displays a long-term declining trend in all countries, albeit at different paces and at different starting times. Looking at the available data, the share of agriculture in most Asian countries clustered around the 30–50 per cent band in the 1970s, trending down to the 10–20 per cent band by 2008. Vietnam and Mongolia are two countries where the agricultural sector experienced similar relative decline but within a much shorter time span (from the late 1980s and mid-1990s respectively). The relative decline of agriculture was most rapid in Korea, from 29.1 per cent of total value added in 1970 to 2.7 per cent in 2008. In many countries the share of the agricultural sector was more than halved between 1970 and 2008: for example, from 47.2 per cent to 14.5 per cent in Indonesia, from 41.5 per cent to 17.1 per cent in India, and from 39.5 per cent in 1973 to 17.5 per cent in Bangladesh. In China the share of this sector also significantly declined, from 35.8 per cent in 1970 to 10.7 per cent in 2008.

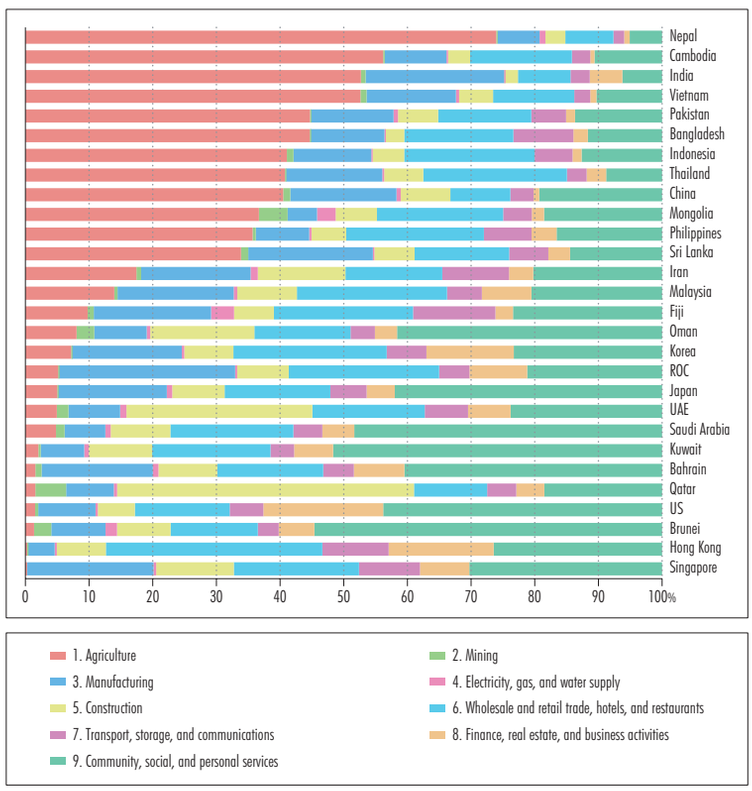


Figure 48: Industry Shares of Employment, 2008

Sources: Official national accounts in each country, including our adjustments.

Despite the relative decline of agriculture's share in total value added, employment in the sector for Asia as a whole still accounted for 41.7 per cent of total employment in 2008. Figure 48 shows countries' industry shares in total employment, and ranks them by the size of employment in the agricultural sector. The five countries[74] which top Figure 44 also top Figure 48, with the exception of Mongolia.

The trend of employment share over time (Figure 49) suggests that the relative decline in the share of agriculture in total value added has been accompanied by a downward trend in its share in total employment. This trend is unmistakable in most countries plotted in Figure 49. However, the decline in share does not always reflect an actual fall in employment for the agricultural sector; rather, it could reflect total employment rising faster than employment in agriculture. Countries that have been experiencing a consistent fall in actual employment in the agricultural sector are, for example, the ROC, Fiji, Japan, and Korea, whereas in Cambodia, India, Iran, Nepal, and Pakistan actual employment has been rising. Other countries such as Thailand, Indonesia, Singapore, Malaysia, the Philippines, and Vietnam alternate between positive and negative employment growth. China, however, has seen actual employment in agriculture falling since the turn of this millennium.

As shown in Figure 49, the decline in agricultural employment share has been rapid in some countries.[75] Between 1970 and 2008 the employment share in agriculture shrank from 50.4 per cent to 7.2 per cent in Korea and from 19.8 per cent to 5.0 per cent in Japan. Employment in agriculture also fell rapidly in the ROC, from 24.9 per cent in 1978 to 5.1 per cent in 2008. In all these countries, the decline reflects an actual fall in employment in the agricultural sector. In China the share has declined from 70.5 per cent in 1978 to 40.5 per cent in 2008.

Manufacturing is a main absorption sector for workers who have been displaced from the agricultural sector, especially in initial stages of economic

74: Data for Lao PDR and Myanmar are unavailable for Figure 48.

75: Nepal's employment by industry is constructed by interpolating benchmark data taken from its labor force survey as well as its population census. In Figure 49 its share of agriculture has increased since 1999. It reflects the employment share of agriculture of 66 per cent in the population census in 2001 and its share of 74 per cent in the labor force survey in 2008.

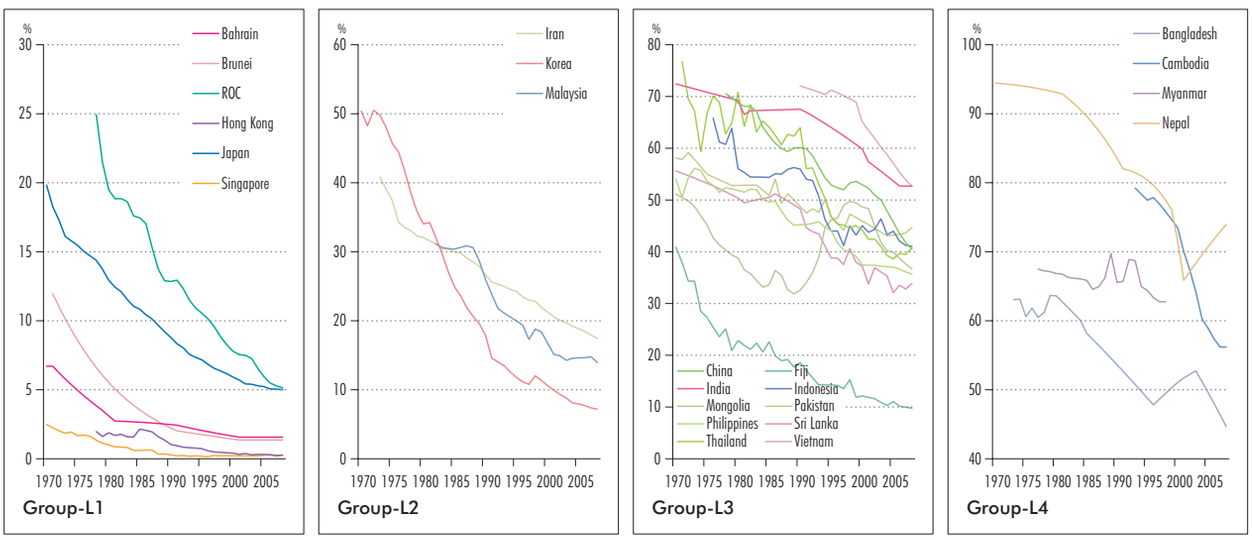


Figure 49: Long-term Trends of Employment Share in the Agricultural Sector, 1970–2008

Sources: Official national accounts in each country, including our adjustments.

development. Figure 50 traces the time path of the average annual growth rate of GDP and employment combination in manufacturing for some selected Asian countries and the US for the past four decades. Each solid dot represents a decade with the end point (i.e. for the period 2000–2008) denoted by a clear circle. If manufacturing GDP and employment grow at the same rate, it will be on a 45° line through the origin running from lower left to the upper right quadrants. In Japan and the US the output growth of manufacturing does not induce a demand for employment. In other words, the expansion of output was realized by improvement in labor productivity in those countries. In Korea and the ROC, although the effect of job creation by expansion of manufacturing existed in the 1970s and 1980s, it seemed to disappear in the 1990s and 2000s. As shown in the middle chart of Figure 50, we can find similar trends in Singapore, Indonesia, and Thailand, and even in China. In India, Pakistan, Sri Lanka, and Iran the job creation role of manufacturing is still effective or getting more important, as shown in the third chart.

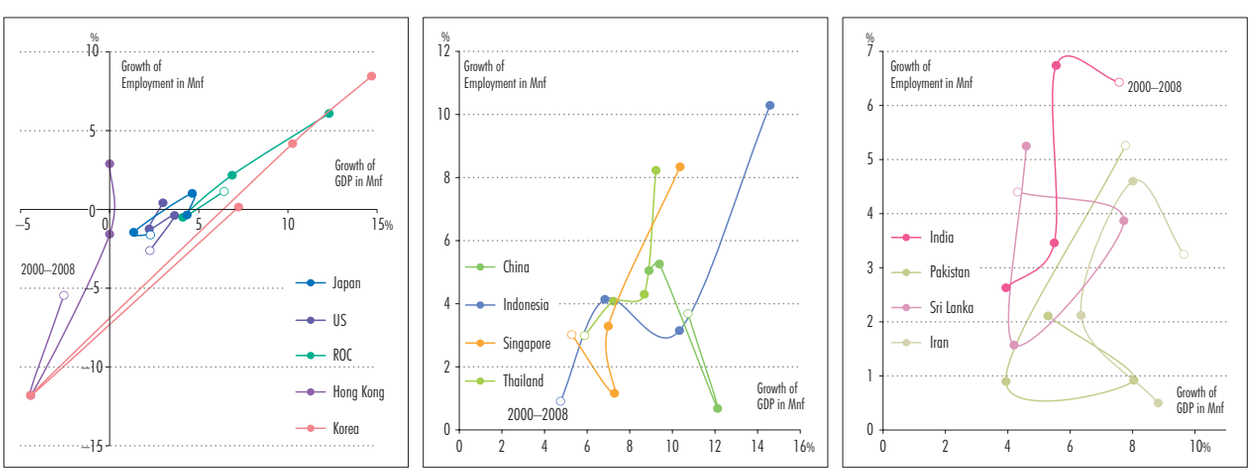


Figure 50: Job Creation in Manufacturing, 1970–2008
—Average annual growth rate of GDP at constant prices and number of employment

Sources: Official national accounts in each country, including our adjustments.

6.2 Industry Origins of Economic Growth

In Section 3.2 we see that, as a region, growth in Asia29 accelerated between 2005 and 2008, averaging 6.7 per cent per annum, up from 5.5 per cent between 2000 and 2005. China and India have been the two main drivers among the Asian economies, accounting for 50.1 per cent and 16.2 per cent of the region's growth during 2000–2008, respectively. But looking at industry composition, the origins of economic growth in China and India are quite different. For the period 1978–2004, Bosworth and Collins (2008) indicated that China's economic growth was fueled by industry sector expansion,[76] whereas for India economic growth was led by service sector expansion. Although our findings broadly support their conclusion, we also discern that the nature of growth in China may have started shifting more towards services in recent years.

Figure 51 presents the industry origins of average economic growth per annum in Asian countries for the periods 1985–1990, 1990–1995, 1995–2000, and 2000–2008.[77] Thailand was the fastest-growing country in Asia in the second half of the 1980s, achieving an

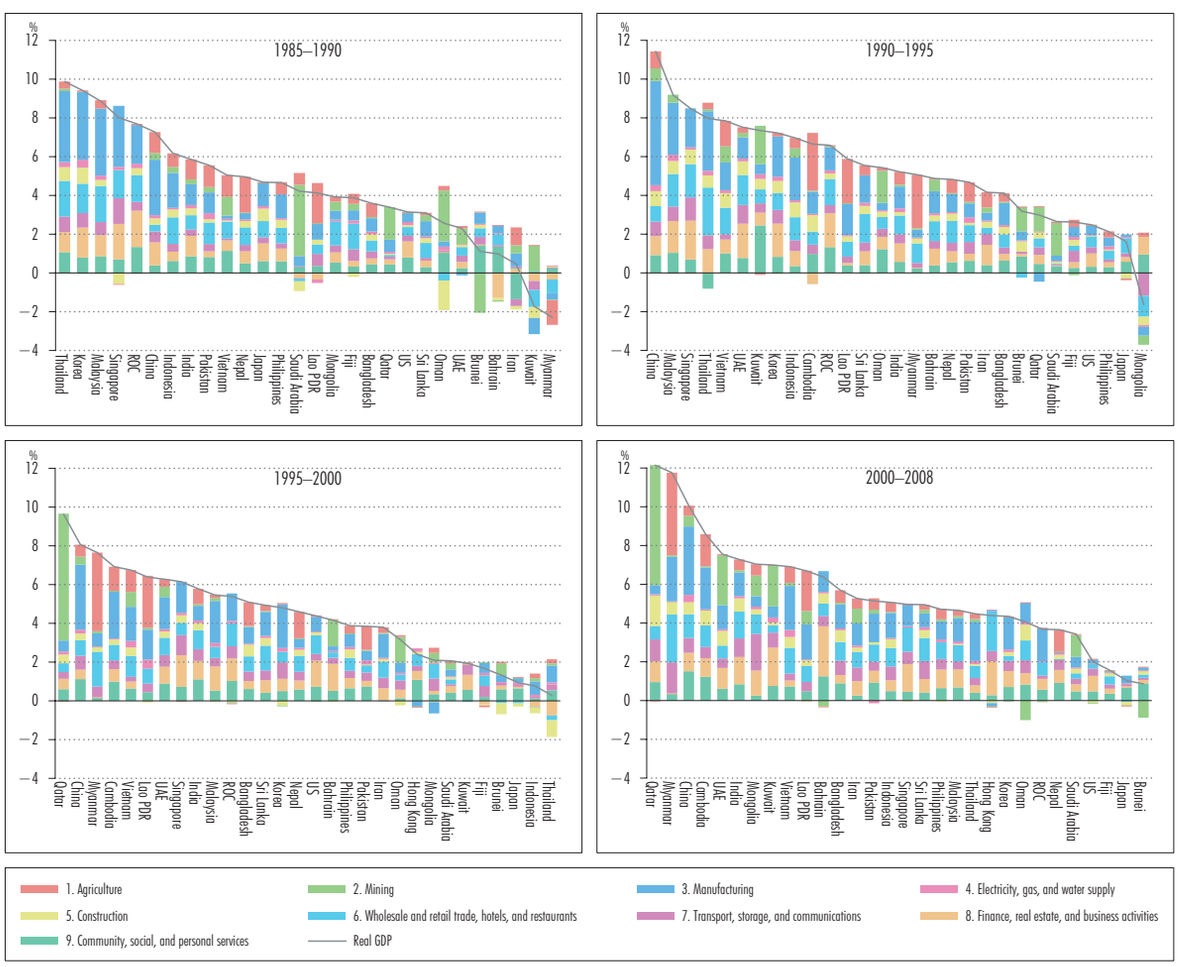


Figure 51: Industry Origins of Economic Growth, 1985–1990, 1990–1995, 1995–2000, and 2000–2008
—Industry decomposition: Average annual growth rate of GDP at constant prices

Sources: Official national accounts in each country, including our adjustments.

76: The industry sector in Bosworth and Collins (2008) is equivalent to the industry groups 2–5 in this report.

77: The Törnqvist quantity index is adopted for calculating the growth of real GDP. Using this index, we can decompose the growth of real GDP into the products of contributions by industries:

$$\underbrace{\ln(GDP^{t}/GDP^{t-1})}_{\text{Real GDP growth}}=\Sigma_i\underbrace{(1/2)(s_i^{t}+s_i^{t-1})\ln(Q_i^{t}/Q_i^{t-1})}_{\text{Contribution of an industry } i}$$

where Q_i^t is real GDP of an industry i in period t and s_i^t is the nominal GDP share of an industry i in period t.

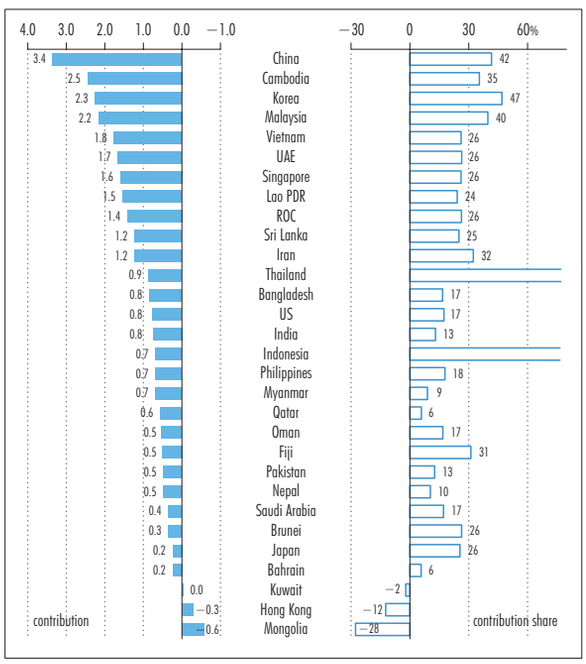


Figure 52: Contribution of Manufacturing to Economic Growth, 1995–2000

Sources: Official national accounts in each country, including our adjustments.

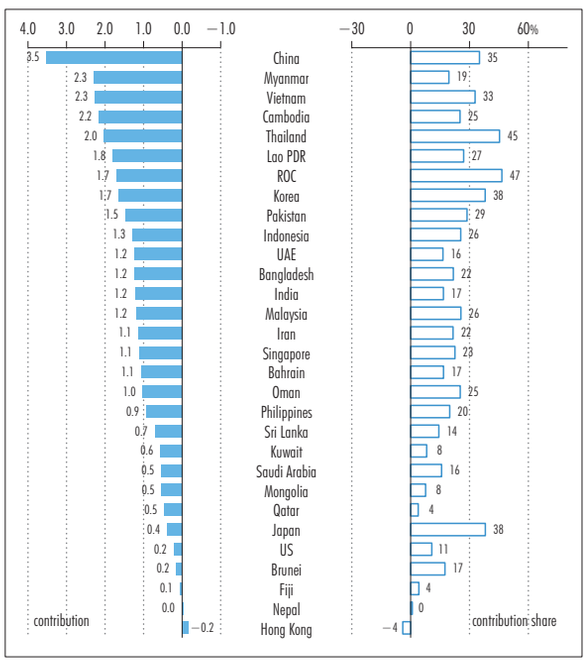


Figure 53: Contribution of Manufacturing to Economic Growth, 2000–2008

Sources: Official national accounts in each country, including our adjustments.

average annual growth rate of close to 10 per cent. Manufacturing was the clear driver, accounting for 37.1 per cent of the growth during this period. The role played by manufacturing was similar in the next top six fastest-growing economies: Korea, Malaysia, Singapore, the ROC, China, and Indonesia. With the exception of China, the contribution of the service sector was still larger than that of manufacturing.

In the first half of the 1990s Thailand was dethroned by China, Malaysia and Singapore, partly because growth accelerated in these countries while it decelerated in Thailand. In China 47.0 per cent of the 11.4 per cent average growth a year achieved was driven by manufacturing, compared with 30.1 per cent by services. This was in contrast to Malaysia and Singapore, where 55.6 per cent and 66.1 per cent of growth was driven by services respectively. In the latter half of the 1990s growth in Qatar suddenly took off: 68 per cent of the 9.6 per cent growth (up from 3.0 per cent in the previous period) was driven by mining, as shown in the third chart of Figure 51. Growth generally slowed during this period due to the Asian financial crisis. Growth in Thailand was slashed, from 8.0 per cent to 0.3 per cent between the two halves of the 1990s. China sustained a handsome growth of 8.0 per cent, with manufacturing and services contributing more evenly than in the previous period.

Growth generally bounced back in the 2000s. Growth in China accelerated to 10.1 per cent on average a year between 2000 and 2008,[78] but the origins of growth continued to shift from manufacturing to services. In the 2000s the service sector replaced manufacturing as the main engine of growth in China, contributing 44.3 per cent compared with 35.1 per cent for manufacturing. Only in Thailand, Korea, and the ROC has manufacturing remained a dominant force, contributing 45 per cent, 38 per cent, and 47 per cent to growth respectively (Figure 53). Such dominance of manufacturing is above the norm, even though the contribution of this sector in most other Asian countries was also significant, accounting for a quarter or more of economic growth between 2000 and 2008. At the other extreme, manufacturing has become a laggard sector in Hong Kong.

Growth in India has been steady throughout the period studied. In 1985–2000 India grew 5–6 per cent

78: Official statistics depict Myanmar as achieving a growth rate of over 11 per cent during 2000–2008. However, researchers have suggested that this is not consistent with other variables closely correlated with GDP, such as energy use. Non-official estimates put GDP growth at less than half of the official estimates. See ADB (2009) and Economist Intelligence Unit (2010).

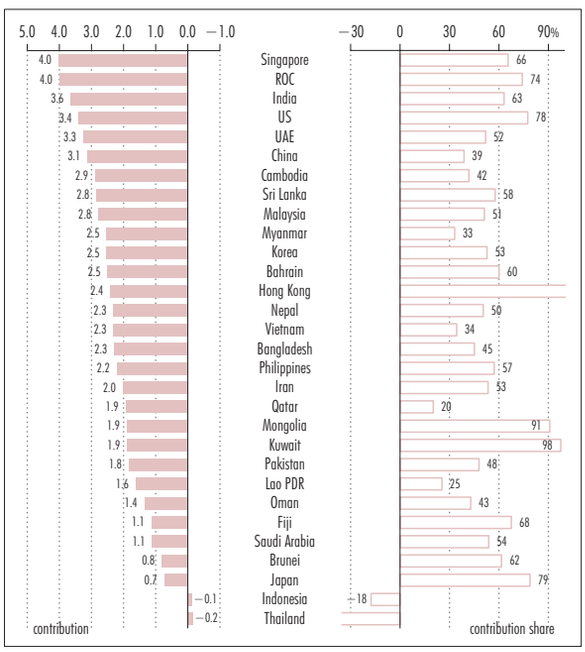


Figure 54: Contribution of Service Sector to Economic Growth, 1995–2000

Sources: Official national accounts in each country, including our adjustments.

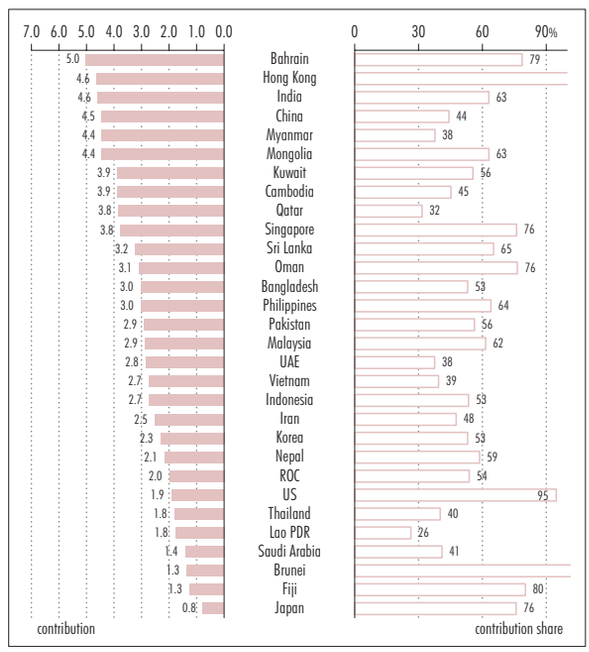


Figure 55: Contribution of Service Sector to Economic Growth, 2000–2008

Sources: Official national accounts in each country, including our adjustments.

on average a year and was not much affected by the Asian financial crisis. But in the 2000s we see a sudden acceleration in India's growth rate to 7.3 per cent on average a year. Unlike China, services have always been a more important driver in India, accounting for just over 50 per cent of growth in the latter half of the 1980s and rising to over 60 per cent in the 2000s. In contrast, manufacturing never contributed more than one-fifth of its growth.

The services sector plays an equally, if not more, important role in Asian economic growth. Services made the biggest contribution to economic growth in all Asian countries except Lao PDR and Qatar (Figure 55). In Thailand manufacturing and services made roughly equal contributions. In contrast to the industry composition of China's growth, the story behind India's recent growth has been about services, accounting for 63.1 per cent of economic growth for the period 2000–2008 compared to 16.7 per cent from manufacturing. Within the services sector, contribution is quite evenly spread among the sub-sectors. Modern information and communication technology has allowed India to take an unusual path in its economic development, bypassing a stage when manufacturing steers growth.[79] More recently, iron/steel and motor vehicle sectors are rapidly developing in India. For further improvement in per capita GDP and to capitalize on the demographic dividend (see Box 4), expansion of labor-intensive manufacturing may be required for more job creation.

Economic growth in the Asian Tigers was also dominated by the service sector, albeit more so in Singapore and Hong Kong than in the ROC and Korea, where manufacturing was a significant force. The service sector accounted for 54 per cent of growth in the ROC for the period 2000–2008, 53 per cent in Korea, 76 per cent in Singapore, and 106 per cent in Hong Kong (to counterbalance the negative contribution of 4 per cent by manufacturing) (Figure 55). These compare with 95 per cent in the US. In the 2000s growth in Hong Kong has been highly skewed towards wholesale and retail trade, hotels, and restaurants, accounting for 47 per cent of growth. This compares with 25 per cent in Singapore and 19 per cent in the ROC. In contrast, the sector contributed only 6 per cent to Korea's growth over the same period (Figure 51).

79: The computer software industry in India depends considerably on export demands. According to the *India's Input-Output Table 2006–2007*, 82.0 per cent of the output in computer and related activities is exported. This export is equivalent to 14.8 per cent of total exports in India and is the second-largest export product (among 130 products in this table).

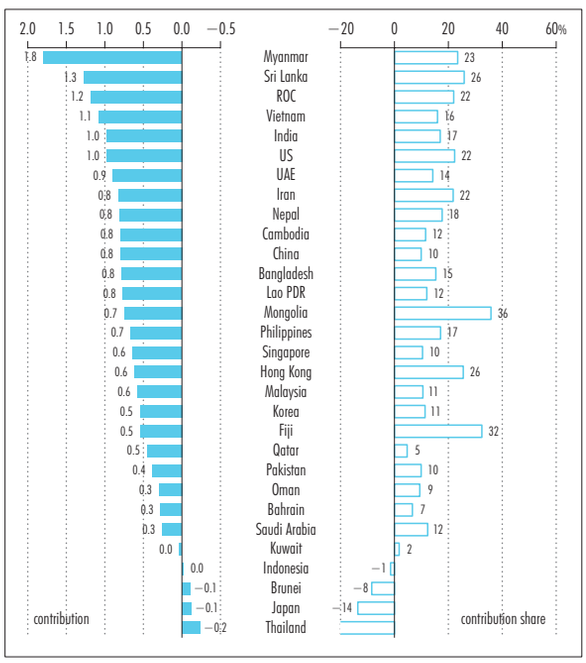


Figure 56: Contribution of Wholesale and Retail to Economic Growth, 1995–2000

Sources: Official national accounts in each country, including our adjustments.

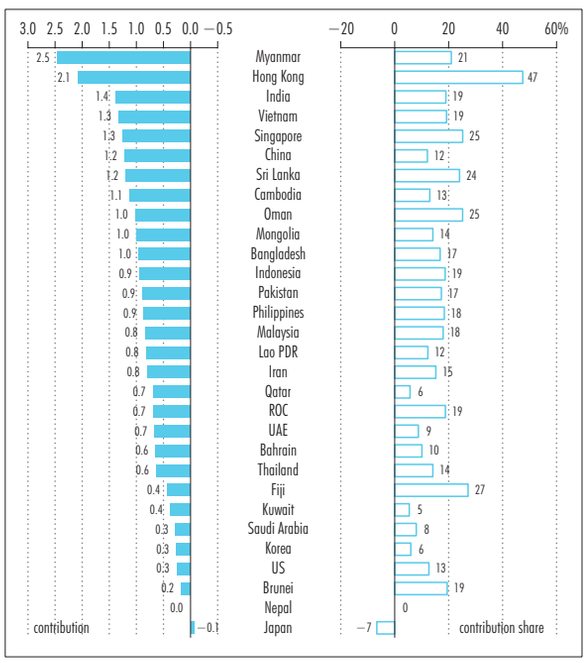


Figure 57: Contribution of Wholesale and Retail to Economic Growth, 2000–2008

Sources: Official national accounts in each country, including our adjustments.

Finance, real estate, and business activities also played an important part, contributing 40 per cent of Hong Kong's growth, 29 per cent of Singapore's, and 15 per cent of the ROC's.

The oil-exporting countries have different industry structures from other countries, with their reliance on mining for growth. The sector is volatile in nature and could in turn give rise to big swings in these economies from one period to another. In 2000–2008 mining accounted for half of economic growth in Qatar, around one-third in the UAE, Kuwait, and Saudi Arabia, and 14 per cent in Iran. But it has been a drag, a significant one in some cases, on growth: its contribution was −5 per cent in Bahrain, −25 per cent in Oman, and −103 per cent in Brunei, reflecting reduction in oil or gas production. These countries have to learn to diversify. Bahrain has been successful in branching into finance, real estate, and business activities, which accounted for 40 per cent of the 6.4 per cent overall growth over the same period. Oman also sustained growth of 4.1 per cent on average a year, 76 per cent of which originated from the service sector. Brunei has not managed as well, with dismal growth of 0.9 per cent on average a year between 2000 and 2008. Oil and gas production activities are also reflected in Mongolia and Lao PDR, where mining accounted for 15 per cent and 10 per cent of overall economic growth respectively in the 2000s.

The split of contributions in Japan between manufacturing and services was 38 per cent and 76 per cent respectively for the period 2000–2008. This compares with the 11 per cent/95 per cent split in the US (Figure 53 and Figure 55). Japan's growth rate (at 1.0 per cent) was one of the slowest in the region. The bulk of growth came from the service subsector of community, social, and personal services, contributing 63 per cent to overall growth (Figure 51). Japan is the only country where the contribution of wholesale and retail trade, hotels, and restaurants was negative (−7 per cent) (Figure 57). In contrast, the contribution to growth is more evenly spread among the service sub-sectors in the US, with finance, real estate, and business activities leading with a 40 per cent contribution (Figure 51).

For some Asian countries, agriculture is still the biggest sector. The four countries where the agricultural sector has the largest share in total value added are Myanmar, Lao PDR, Nepal, and Cambodia (Figure 44). For the period 2000–2008, agriculture in Lao PDR, Nepal, and Cambodia had the highest contribution to economic growth among all Asian countries, accounting for 31.1 per cent, 30.7 per cent, and 19.3 per cent of growth, respectively.[80]

Table 14 presents cross-country comparisons of output growth by industry between 2000 and 2008. Comparing the country groups, Asia enjoyed more vibrant growth than the US in all sectors. While mining

and construction have been retrenching in the US, their growth has been the strongest in East Asia and South Asia, at 9.9 per cent and 8.7 per cent a year on average respectively. Fastest-growing sectors in GCC countries and South Asia were construction, and transport, storage, and communications, probably reflecting their effort in building and upgrading infrastructure for their development needs. Manufacturing has been growing at 7.2 per cent a year on average in Asia23 and 7.3 per cent in GCC countries, compared with 1.8 per cent in the US. Growth in finance, real estate, and business activities has been fastest in South Asia (at 9.0 per cent a year on average), followed by GCC's 7.1 per cent. Agricultural output is still expanding in most Asian economies, suggesting that the shrinkage in its value added share (Figure 47) over the recent period is more a result of rapid growth in other sectors than any actual contraction of the sector.

Looking at the individual countries, it is interesting to note that all sectors in China grew faster than those in India, except transport, storage, and communications, showing India's special strength. Industrial specialization in services has intensified in Hong Kong, especially in finance, real estate, and business activities, with manufacturing hollowing out and agriculture, construction, and mining contracting. This process is probably a reflection of its economic integration with the Chinese economy following the handover in 1997: the two economies are evolving to complement each other. Manufacturing maintains its prowess as the fastest-growing sector in Korea (6.1 per cent) and the ROC (6.3 per cent), while Singapore's relative strength is in services. Growth has been weak in Japan all round. Construction has been suffering badly, contracting by 2.8 per cent on average a year. While wholesale and retail trade, hotels, and restaurants has also been shrinking by 0.5 per cent a year on average, the strongest growth (2.1 per cent) in Japan has been experienced in community, social, and personal services. These may be signs of the impact of a rapidly aging population.

Figure 58 presents the sub-industry origins of average annual growth of manufacturing GDP for the

Table 14: Output Growth by Industry, 2000–2008
—Average annual growth rate of industry GDP at constant prices

	1. Agriculture	2. Mining	3. Manufacturing	4. Electricity, gas, and water supply	5. Construction	6. Wholesale and retail trade, hotels, and restaurants	7. Transport, storage, and communications	8. Finance, real estate, and business activities	9. Community, social, and personal services
Bahrain	1.2	−1.5	9.4	7.6	12.2	6.3	8.8	9.3	7.9
Bangladesh	3.1	7.7	7.5	6.9	7.6	6.6	7.2	4.2	5.3
Brunei	2.8	−1.3	0.9	2.5	6.1	4.9	3.7	5.5	4.3
Cambodia	5.1	16.5	11.6	13.0	11.9	7.7	7.9	11.6	11.4
China	4.2	10.9	10.9	10.9	11.1	12.0	9.1	11.2	11.0
ROC	0.3	−7.7	6.3	3.0	−1.0	3.5	2.8	2.9	2.7
Fiji	0.3	−13.1	0.4	1.1	3.6	2.5	1.3	2.4	1.9
Hong Kong	−4.3	−1.8	−4.2	1.8	−3.7	7.6	5.3	5.2	1.4
India	2.9	4.5	7.6	5.8	9.4	8.7	12.0	9.5	6.2
Indonesia	3.4	0.3	4.6	7.3	6.7	6.0	11.7	6.8	5.0
Iran	5.1	2.8	9.7	7.7	5.3	6.9	8.8	4.9	2.1
Japan	0.1	−7.4	1.9	1.2	−2.8	−0.5	1.8	0.5	2.1
Korea	1.8	−0.2	6.1	5.7	2.6	2.3	5.7	4.1	3.7
Kuwait	6.6	4.6	8.2	16.1	6.6	6.0	13.9	12.2	4.4
Lao PDR	4.6	32.1	9.2	2.1	10.5	8.0	7.7	−1.3	5.6
Malaysia	3.3	1.3	4.1	4.7	2.0	6.6	6.2	7.2	5.7
Mongolia	3.5	5.8	10.9	4.6	10.6	9.2	16.0	9.8	2.4
Myanmar	8.6	13.5	20.3	10.1	20.1	11.0	17.4	23.1	12.4
Nepal	3.2	4.1	0.2	6.5	3.3	0.3	6.3	5.2	8.0
Oman	0.6	−2.4	11.8	11.7	22.4	11.4	11.9	6.5	5.3
Pakistan	2.7	6.7	8.6	−6.1	4.7	5.1	3.7	8.6	6.2
Philippines	3.7	10.0	4.1	4.3	0.2	5.4	7.7	6.9	3.9
Qatar	−2.3	11.0	6.1	5.8	27.4	14.0	29.5	12.6	9.5
Saudi Arabia	1.2	2.6	5.5	6.2	4.7	4.6	8.1	3.9	2.5
Singapore	0.5	0.0	4.2	4.0	0.7	6.8	4.6	5.5	4.3
Sri Lanka	2.3	12.3	3.8	6.4	5.9	5.0	8.2	5.7	3.9
Thailand	2.6	5.0	5.9	5.2	2.8	3.2	4.9	5.9	3.4
UAE	0.9	7.6	9.9	5.2	10.2	5.6	7.3	7.6	5.8
Vietnam	3.8	1.7	11.1	10.6	9.1	7.7	8.4	5.1	6.8
(regrouped)									
APO20	2.8	2.6	4.7	3.3	2.5	4.0	6.0	4.1	3.3
Asia23	3.4	5.8	7.2	6.3	5.0	5.9	7.1	5.5	5.0
Asia29	3.4	5.1	7.2	6.3	5.2	6.0	7.2	5.6	5.0
East Asia	3.6	9.9	7.4	6.6	4.1	5.5	6.0	4.5	5.0
South Asia	2.9	4.9	7.5	4.3	8.7	7.9	10.1	9.0	6.1
ASEAN	3.8	1.4	5.4	5.9	4.7	5.7	7.8	6.5	4.8
GCC	1.2	3.8	7.3	7.7	9.5	6.2	10.2	7.1	4.0
(reference)									
US	2.8	−1.5	1.8	0.2	−2.6	2.0	5.0	2.5	1.8

Unit: Percentage.
Sources: Official national accounts in each country, including our adjustments.

80: In Myanmar, agriculture accounted for over 40 per cent of GDP in 2008. Since 1988 its government has continued its modest steps to liberalize the sector and marketing controls have been made less onerous. As a result, farm production has increased. According to the official statistics, the quality of which has been questionable, the sector accounted for 36.2 per cent of GDP growth in 2000–2008.

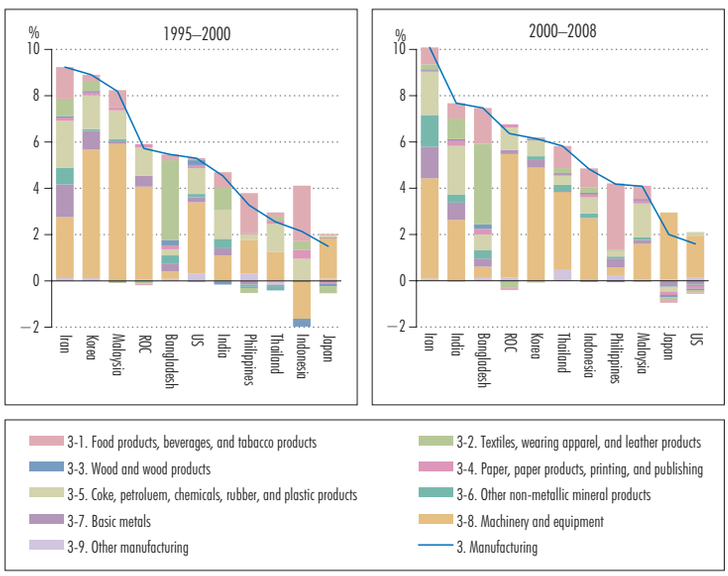


Figure 58: Industry Origins of Output Growth in Manufacturing, 1995–2000 and 2000–2008
—Sub-industry decomposition: Average annual growth rate of GDP at constant prices

Sources: Official national accounts in each country, including our adjustments.

selected Asian countries for the periods 1995–2000 and 2000–2008.[81] Manufacturing in Asia has been dominated by machinery and equipment, accounting for half or more of overall manufacturing growth in most countries compared. Its role has strengthened in the 2000s, accounting for 80 per cent and 85 per cent of overall manufacturing growth in Korea and the ROC respectively, for example. The food products, beverages, and tobacco products sub-sector is the largest contributor in the Philippines for both periods. In Bangladesh, manufacturing growth has been dominated by the sub-sector of textiles, wearing apparel, and leather products.

Figure 59 contrasts industry contributions to economic growth for the periods 1995–2000 and 2000–2008, as well as between the US and Asian averages.[82] Even within such a short period, we can see the industry structure of growth is changing. The first striking feature is the dominance of manufacturing in the Asian countries. Between 1995 and 2000 its contribution to economic growth in Asia23 nearly doubled that of the US, i.e. 33.3 per cent compared with 17.4 per cent. Although its significance has fallen in recent years, it still accounted for 30.2 per cent of economic growth in Asia23 between 2000 and 2008, compared with 10.8 per cent in the US. This, however, masks the divergence within Asia. In the earlier period, manufacturing accounted for 37.7 per cent of growth in East Asia but for only 13.4 per cent in South Asia. The corresponding figures were 34.7 per cent and 17.8 per cent in the 2000s, so the differential is narrowing. Another big difference between East Asia and South Asia was the contribution made by agriculture, at 5.7 per cent and 15.7 per cent respectively in the late 1990s. In the 2000s its contribution was halved in South Asia, although it was still twice as big as in East Asia. Over the same period the contribution from construction increased by 50 per cent. The country group most dominated by manufacturing in the late 1990s was ASEAN, with a contribution of 39.5 per cent. But in recent years manufacturing's contribution was reduced by 10 percentage points to 28.8 per cent, while wholesale and retail trade, hotels, and restaurants more than doubled from 8.6 per cent to 18.3 per cent. On the whole, we see wholesale and retail trade, hotels and restaurants increased its weight in the Asian economies between the two periods compared, probably as a rebound after the Asian financial crisis. In the US the finance, real estate, and business activities sub-sector made the biggest contribution in both periods, accounting for 30.5 per cent of economic growth in 1995–2000, rising to 39.8 per cent in 2000–2008. In contrast, its contribution in Asia was 12.9 per cent in the period 2000–2008. Between the two periods, the story for GCC countries was about mining and construction, the contributions of which increased from 19.9 per cent to 32.3 per cent and from 3.6 per cent to 8.9 per cent respectively.

The agricultural sector is much more significant in Asia23 than in the US, with a contribution of 7.8 per cent compared with a relatively negligible 1.7 per cent for the period 1995–2000. In the 2000s, however, the relative significance of the agricultural sector in Asia23

81: The Törnqvist quantity index is adopted for calculating the growth of real GDP of manufacturing. Using this index, we can decompose the growth of real GDP of manufacturing into the products of contributions by sub-industries of manufacturing:

$$\underbrace{\ln(GDP^{t}/GDP^{t-1})}_{\text{Real GDP growth of manufacturing}} = \underbrace{\Sigma_i (1/2)(s_i^{t}+s_i^{t-1})\ln(Q_i^{t}/Q_i^{t-1})}_{\text{Contribution of a sub-industry } i}$$

where Q_i^t is real GDP of a sub-industry i in period t and s_i^t is the nominal GDP share of a sub-industry i in period t.

82: Asian averages are calculated using the Törnqvist index to aggregate the growth rates of industry GDP of each country based on the two-period average of each country's shares of industry GDP to the gross regional products as weights.

fell to 5.8 per cent. Construction was really hit in the ASEAN countries during the Asian financial crisis, pulling down economic growth by 6.6 per cent in the latter half of the 1990s. It bounced back subsequently and contributed 4.6 per cent to growth in the 2000s. The corresponding figures for Asia23 were 0.7 per cent and 5.1 per cent. The reverse was true in the US, where the contribution of construction was 3.8 per cent in the earlier period but fell to −6.2 per cent in the later period in the 2000s. Somewhat surprising was the high contribution of wholesale and retail trade, hotels and restaurants in the US. In 1995–2000 it accounted over one-fifth of the US economic growth compared with 10.1 per cent in Asia23. But in 2000–2008 its contribution was reduced to 12.7 per cent in the US, whereas its significance to economic growth rose to 13.7 per cent in Asia23.

Figure 61 presents industry contributions to regional economic growth in Asia29 during 2000–2008, decomposing Figure 4 in Section 3.1 into countries' industry origins.[83] In each industry contribution we present the top eight countries. The top four industries contributing to regional growth are manufacturing (31.0 per cent), community, social, and personal services (14.0 per cent), wholesale and retail trade (13.5 per cent), and finance, real estate, and business services (11.3 per cent). One-third of Asian economic growth originated from the expansion of its manufacturing sector, two-thirds of which was accounted for by China. In other words, China's manufacturing sector alone accounted for 21.5 per cent of the region's economic growth. This is followed by China's community, social, and personal services (9.5 per cent) and wholesale and retail trade, hotels, and restaurants (7.4 per cent).

Figure 60 shows the industry origins of economic growth by countries for the period 1970–2008. For the ROC and Korea, manufacturing has been a clear driving force behind economic growth on the whole. In the decade between the mid-1980s and the mid-1990s, however, the importance of manufacturing retreated in the ROC temporarily while the economy developed its service sector. Since the mid-1990s the role of manufacturing in explaining growth in the ROC has increased again. But compared to its heydays back in the 1970s and 1980s, the impact in terms of percentage points is much reduced.

Comparing the industry profiles of China and India over time, the differences in the nature of their growth

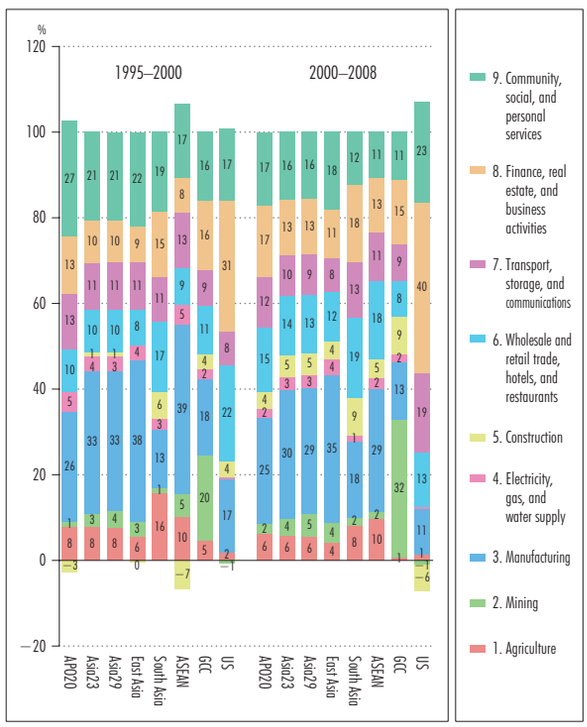


Figure 59: Industry Origins of Regional Economic Growth, 1995–2000 and 2000–2008
—Contribution share

Sources: Official national accounts in each country, including our adjustments.

can clearly be seen. In contrast to the dominance of manufacturing in China (and in, for example, Korea, the ROC, and Japan in their similar development stage), manufacturing has never driven economic growth in India. Over the years agriculture has become less important in driving economic growth, while service industries gain significance. In recent years services have become more important to China's growth. In Singapore finance, real estate, and business activities and wholesale and retail trade, hotels, and restaurants are important driving industries alongside the manufacturing sector. With the limited data we have, Hong Kong is a clear service-driven economy in recent years. The lack of diversification of the oil-exporting countries cannot be missed. Historically, the preponderance of the mining sector underlay the volatility faced by these economies. But in recent years the GCC countries have

83: The average growth rate of the Asian economy for 2000–2008 is set at 100 per cent. Asian economic growth is calculated as the sum of the contributions over countries and industries:

$$\sum_x (1/2)(s_x^t + s_x^{t-1}) \underbrace{\sum_j (1/2)(s_{x,j}^t + s_{x,j}^{t-1}) \ln(Q_{x,j}^t / Q_{x,j}^{t-1})}_{\text{Contribution of an industry } j \text{ in a country } x}$$

where $Q_{x,j}^t$ is real GDP of an industry j in a country x in period t, $s_{x,j}^t$ is GDP share of an industry j in a country x with respect to GDP of a country i in period t and s_x^t is GDP share of a country x with respect to the regional GDP in period t. All the industries whose contribution is more than 0.25 per cent are shown in Figure 60.

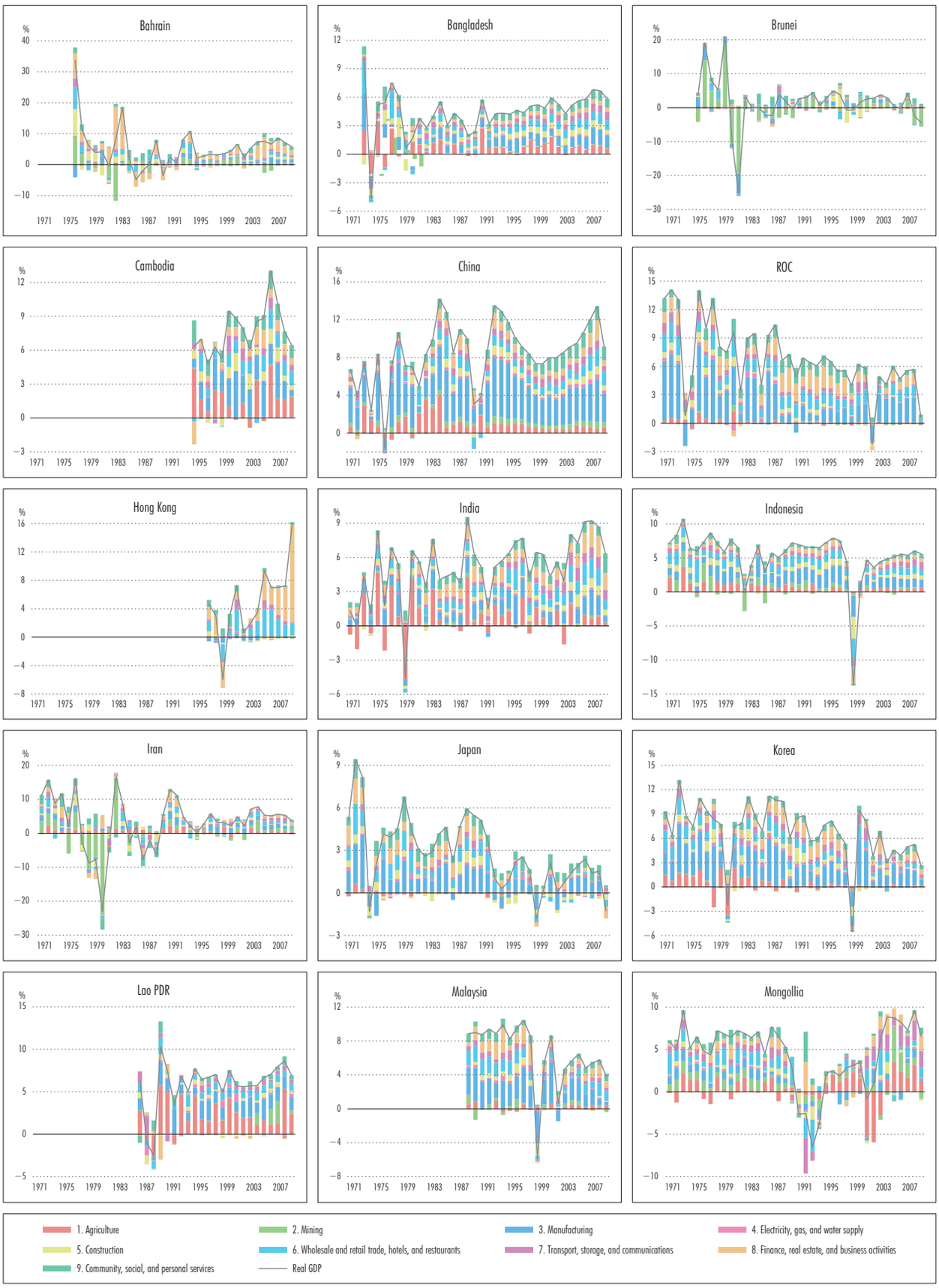


Figure 61: Industry Origins of Economic Growth, 1970–2008

—Industry decomposition: Average annual growth rate of GDP at constant prices

Sources: Official national accounts in each country, including our adjustments.


Myanmer
Nepal
Oman
Pakistan
Philippines
Qatar
Saudi Arabia
Singapore
Sri Lanka
Thailand
UAE
Vietnam
US
%
1971 1975 1979 1983 1987 1991 1995 1999 2003 2007
1. Agriculture
2. Mining
3. Manufacturing
4. Electricity, gas, and water supply
5. Construction
6. Wholesale and retail trade, hotels, and restaurants
7. Transport, storage, and communications
8. Finance, real estate, and business activities
9. Community, social, and personal services
Real GDP

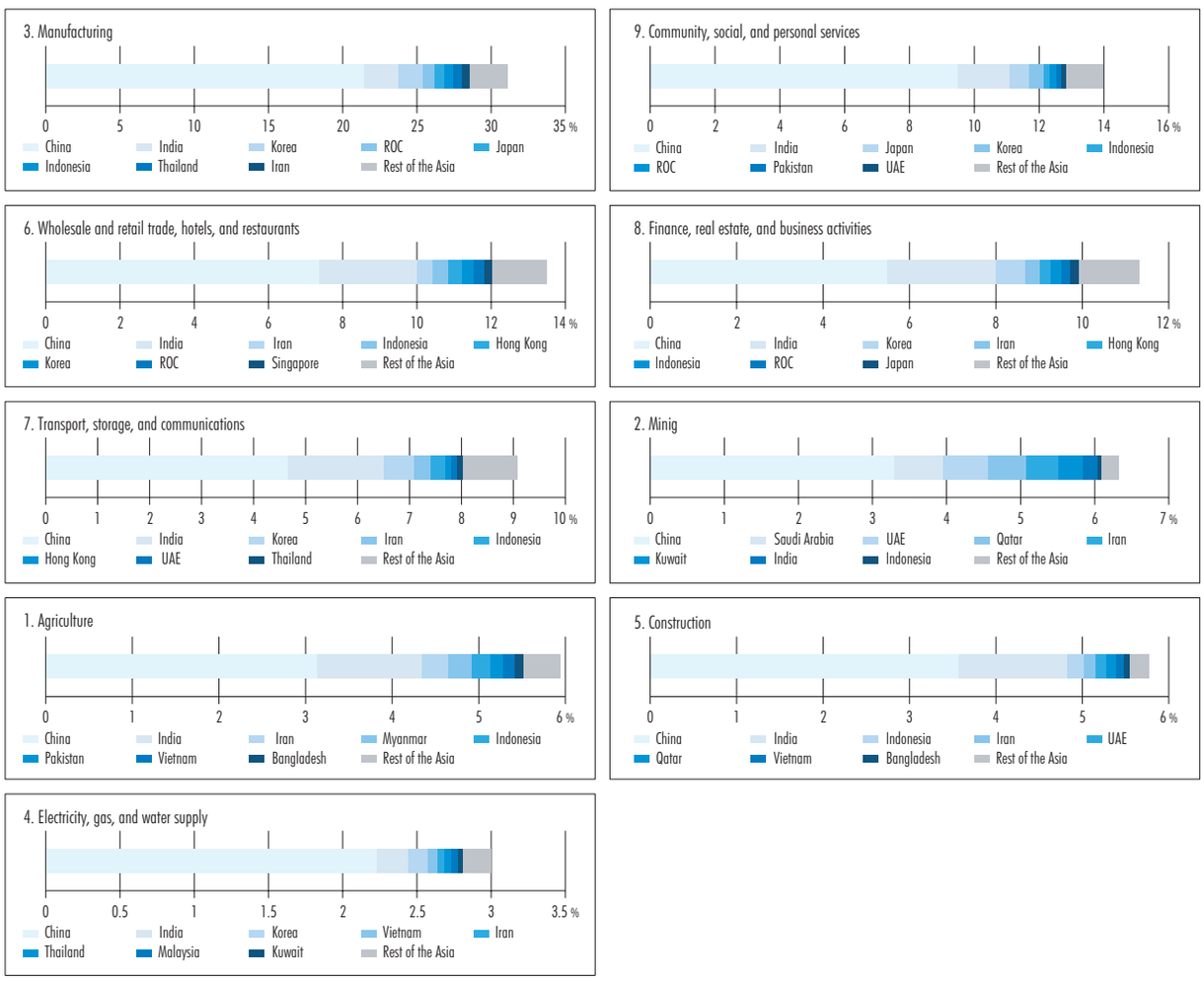


Figure 60: Industry Origins of Asian Economic Growth, 2000–2008
—Contribution to regional growth of GDP at constant prices, using 2005 PPPs

Sources: Official national accounts in each country, including our adjustments.

been making efforts in diversifying, especially into the service sector, with different degrees of success. Bahrain and Oman are leading the way and have yielded results.

6.3 *Industry Origins of Labor Productivity Growth*

Section 5.1 discusses per worker measures of labor productivity performance in level terms, and identifies a large gap between Asia as a whole and the US. In 2008 Hong Kong and Singapore were the countries that had a labor productivity level comparable to that of the US. Besides these two, the best performers in Asia achieved productivity levels that were at least 40 per cent of the US; yet Asia collectively was dragged down by a long tail of countries with labor productivity of less than 20 per cent of the US level, pulling down the average performance to 16.3 per cent of that of the US for APO20 and 14.0 per cent for Asia23. In growth terms, however, Asia's performance far exceeded that of the US, allowing the countries to close the gap with the US gradually over time. Labor productivity growth in Asia23 was 3.7 per cent per annum on average, compared to 2.1 per cent in the US. Including China, the Asian averages became 3.6 per cent and 5.2 per cent, compared to 2.1 per cent and 0.8 per cent in the US, for the periods 2000–2005 and 2005–2008, respectively (Table 8).

Table 15 presents cross-country comparisons in labor productivity growth by industry[84] for the period 2000–2008.[85] Positive labor productivity growth was achieved across all sectors for Asia23. Our findings highlight the fact that service industries are no longer a drag on the economy's productivity performance but

are as capable as manufacturing in achieving productivity growth. The sector which managed the fastest labor productivity growth was transport, storage, and communications (at 4.1 per cent on average a year). Agriculture and manufacturing came next 4.0 per cent and 3.0 per cent respectively. Construction was the sector with the slowest productivity growth: 0.8 per cent. Labor productivity achieved by the other sectors ranged from 1.4 per cent (in finance, real estate, and business activities) to 2.9 per cent (in utilities). Within Asia, the divergence between South Asia and East Asia is stark. While South Asia had much higher labor productivity in services and construction, East Asia led by quite a distance in the other four sectors, i.e. agriculture, mining, manufacturing, and utilities.

Compared with Asia23, the US was stronger in labor productivity growth in three sectors: manufacturing (4.9 per cent versus 3.0 per cent), transport, storage, and communications (5.6 per cent versus 4.1 per cent), and finance, real estate, and business activities (2.0 per cent versus 1.4 per cent). But if we look at individual countries, there was stronger performance than the US in these sectors: e.g. manufacturing in Mongolia (12.5 per cent), Korea (6.8 per cent), China (6.7 per cent), Iran (6.7 per cent), Malaysia (5.5 per cent), and ROC (5.2 per cent); transport, storage, and communications in India (8.3 per cent), Indonesia (8.1 per cent), and China (6.7 per cent); and finance, real estate, and business activities in China (8.5 per cent), India (5.8 per cent), and Hong Kong (2.1 per cent). Note that although different countries top the ranking in different industries,

Table 15: Cross-country Comparisons of Labor Productivity Growth by Industry, 2000–2008
—Average annual growth rate of industry labor productivity

	1. Agriculture	2. Mining	3. Manufacturing	4. Electricity, gas, and water supply	5. Construction	6. Wholesale and retail trade, hotels, and restaurants	7. Transport, storage, and communications	8. Finance, real estate, and business activities	9. Community, social, and personal services
Bahrain	−4.6	−7.0	2.7	1.9	6.4	−0.2	2.9	3.1	1.6
Bangladesh	1.8	20.8	2.0	16.6	4.2	2.5	−1.1	−10.2	3.8
Brunei	0.2	−3.7	−3.2	−0.4	3.6	1.9	1.1	2.4	1.1
Cambodia	4.1	10.0	3.5	−8.4	−5.2	−3.0	−0.9	1.0	−0.6
China	6.6	7.9	6.7	7.1	6.2	8.2	6.7	8.5	7.5
ROC	4.4	−0.2	5.2	3.7	−1.2	2.1	2.4	−0.4	0.3
Fiji	2.2	−8.4	1.6	0.6	−10.9	−0.9	2.1	−4.3	1.9
Hong Kong	−0.4	6.9	0.8	3.7	−2.3	6.5	4.7	2.1	−1.1
India	1.7	0.4	1.3	2.1	5.6	4.9	8.3	5.8	2.4
Indonesia	2.9	−10.5	3.7	−6.0	2.0	4.5	8.1	0.6	1.2
Iran	3.9	0.0	6.7	3.1	−1.2	2.7	1.3	−2.5	−0.2
Japan	2.4	−1.7	3.5	2.2	−0.4	0.3	2.3	0.9	0.5
Korea	5.4	−2.8	6.8	1.3	0.9	2.5	3.7	−1.2	−0.8
Kuwait	−1.5	5.2	1.3	8.7	−0.3	−1.6	6.7	0.5	−1.9
Lao PDR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Malaysia	3.8	−7.1	5.5	2.1	−1.4	2.4	2.5	0.2	4.6
Mongolia	3.9	−5.7	12.5	−2.2	−2.6	−0.2	12.1	5.3	−0.3
Myanmar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nepal	0.2	−6.7	−1.1	−0.5	1.4	−2.4	2.6	−0.9	10.3
Oman	−6.2	−11.5	5.5	−0.3	13.9	6.3	6.0	−0.4	−0.4
Pakistan	−0.4	4.8	3.2	−9.7	0.9	1.3	0.5	0.0	4.2
Philippines	1.6	3.7	3.6	3.6	−3.2	−0.7	4.6	−1.8	3.7
Qatar	−8.4	−3.8	−0.8	6.6	3.8	3.4	12.6	−4.2	6.6
Saudi Arabia	0.7	2.5	4.4	8.4	0.7	0.7	3.8	−5.3	−1.1
Singapore	−5.5	0.0	0.9	1.5	−1.4	3.2	1.3	−0.6	−0.5
Sri Lanka	1.9	10.2	0.5	14.5	3.0	1.8	4.1	−1.7	5.1
Thailand	1.6	1.4	3.6	5.5	−2.4	−0.4	2.8	0.7	3.0
UAE	0.4	4.0	7.1	−1.4	−1.5	−1.1	1.4	−5.9	2.1
Vietnam	3.8	−5.4	3.4	−2.3	−1.8	4.4	8.4	−9.7	−2.5
(regrouped)									
APO20	1.7	−2.4	0.3	0.6	−0.7	1.1	2.5	−0.2	0.5
Asia23	4.0	2.0	3.0	2.9	0.8	2.8	4.1	1.4	1.9
Asia29	3.9	1.3	3.0	2.9	0.9	2.7	4.1	1.4	1.8
East Asia	6.0	6.9	4.0	3.4	0.1	2.6	4.0	2.0	1.8
South Asia	−1.5	1.1	1.4	2.8	5.1	4.1	5.7	4.9	3.1
ASEAN	3.1	−7.5	3.0	−0.9	−0.8	2.5	4.7	−0.8	1.5
GCC	−0.5	0.4	4.2	6.6	0.4	1.0	4.6	−3.3	−0.2
(reference)									
US	3.4	−5.9	4.9	1.1	−3.0	1.8	5.6	2.0	0.3

Unit: Percentage.
Source: APO Productivity Database 2011.01.

84: Labor productivity in Table 15 is defined simply as per worker GDP at constant prices by industry (ν_i). The industry decomposition of labor productivity growth for the whole economy (ν) in Figure 62 is based on the equation $\nu=\sum_i \overline{w}_i \nu_i^*$ where the weight is the two period average of value added shares. In this decomposition, the number of workers as a denominator of the labor productivity (ν_i^*) is adjusted, weighting the reciprocal of the ratio of the real per worker GDP by industry to its industry average. Thus the industry contribution ($\overline{w}_i \nu_i^*$) is emphasized more in industries in which the per worker GDP is higher than the industry average, in comparison with the impact ($\overline{w}_i \nu_i$) of using the non-adjusted measure of labor productivity.

85: Data presented in this chapter are subject to bigger uncertainty than those in the previous chapters and quality across countries is also more varied. Employment data of the less developed countries often lack frequency as well as industry details. Neither does the industry classification of employment data necessarily correspond to those of industry output data. Consequently, quality of labor productivity estimates at industry level is adversely affected. Furthermore, estimates on the manufacturing sector should be of better quality than those on the service sector because many countries do not have a census covering the service sector but have occasional manufacturing censuses.

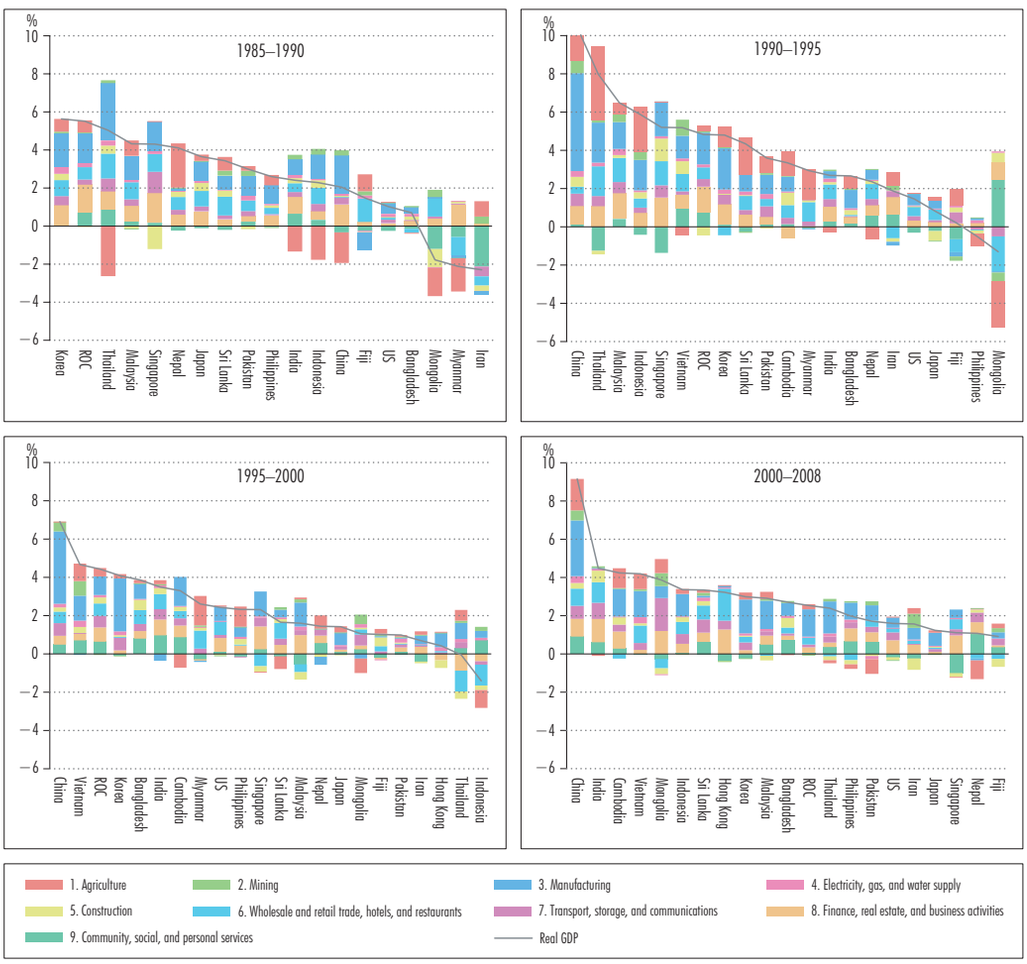


Figure 62: Industry Origins of Labor Productivity Growth, 1985–1990, 1990–1995, 1995–2000, and 2000–2008
—Industry decomposition: Average annual growth rate of GDP at constant prices

Source: APO Productivity Database 2011.01.

China was the only country with labor productivity persistently strong and close to the region's leaders across all sectors.

Figure 62 shows the industry origins of the average labor productivity growth per annum in four periods: 1985–1990, 1990–1995, 1995–2000, and 2000–2008.[86] Among these periods, labor productivity clearly slowed in the second half of the 1990s due to the general impact of the Asian financial crisis. Countries gradually recovered in the 2000s, but at different paces. Table 8 suggests that Asia23's labor productivity growth was restored back to the rate before the crisis in the first half of the 2000s. Thereafter there was a strong pick-up between 2005 and 2008. China has been leading labor productivity growth among the countries compared by a big margin since 1990. In the past two-and-a-half decades we can see that the role played by agriculture (both positive and negative) has been diminishing in Asian countries. While the importance of manufacturing has never waned in some countries (e.g. Korea, the ROC, China, and Thailand), it has not been a major contributor in India in its recent development process, or in Hong Kong and Sri Lanka in the 2000s.

The manufacturing sector has been a major driving force behind productivity growth in most Asian countries, as shown in Figure 63 and Figure 64. In the late 1990s manufacturing accounted for a significant part of labor productivity growth in Korea (68 per cent),

86: Not all Asian countries are included, because employment by industry sector is not available for some countries.

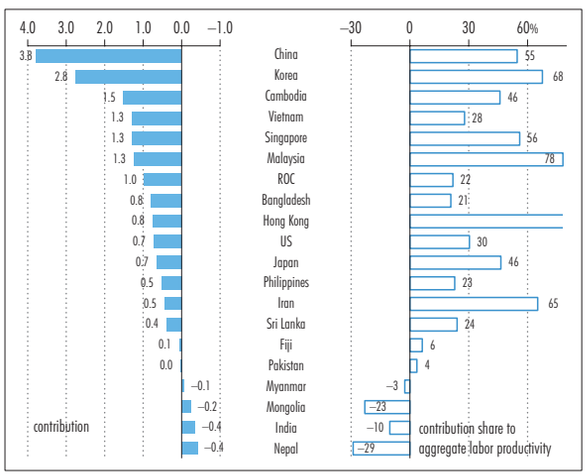


Figure 63: Contribution of Manufacturing to Labor Productivity Growth, 1995–2000

Source: APO Productivity Database 2011.01.

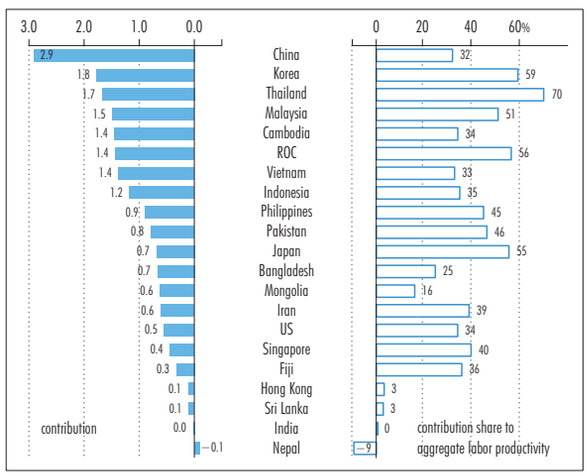


Figure 64: Contribution of Manufacturing to Labor Productivity Growth, 2000–2008

Source: APO Productivity Database 2011.01.

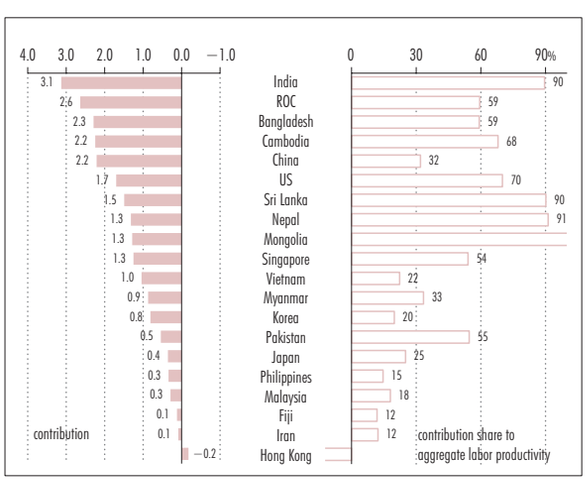


Figure 65: Contribution of Service Sector to Labor Productivity Growth, 1995–2000

Source: APO Productivity Database 2011.01.

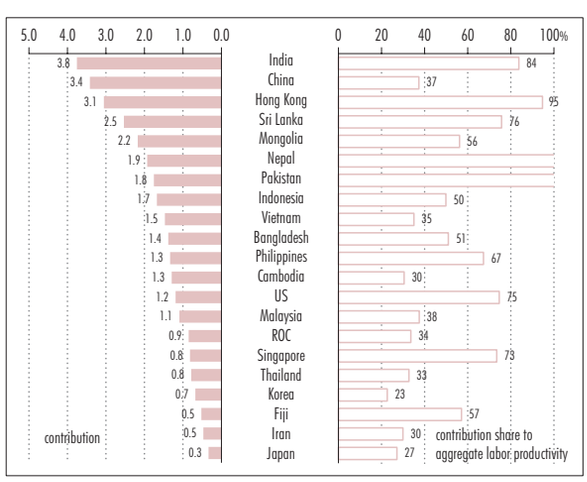


Figure 66: Contribution of Service Sector to Labor Productivity Growth, 2000–2008

Source: APO Productivity Database 2011.01.

Malaysia (78 per cent), and China (55 per cent). But its role has lessened in the 2000s to 59 per cent, 51 per cent, and 32 per cent respectively. In contrast, the contribution by manufacturing strengthened from 22 per cent to 56 per cent in the ROC and from 46 to 55 per cent in Japan between the two periods. However, in some economies, like India, Hong Kong, Sri Lanka, and Nepal in the 2000s, manufacturing plays a negligible role.

Traditionally, it has been difficult for the service sector to realize productivity growth, but modern advancements in information and communication technology have changed that. A lot of IT-intensive users are in this sector, which is capable of capturing the productivity benefits arising from IT utilization. We have observed the growing importance of services in explaining productivity growth in Western economies in recent decades. In Asia the contribution from services is matching that of manufacturing. Among the four industries in the services sector, three are potentially IT-using industries: wholesale and retail trade, hotels, and restaurants; transport, storage, and communications; and finance, real estate, and business activities. Figure 65 and Figure 66 present the contribution of services in labor productivity growth by country. In the 2000s services were contributing at least one-third or more to

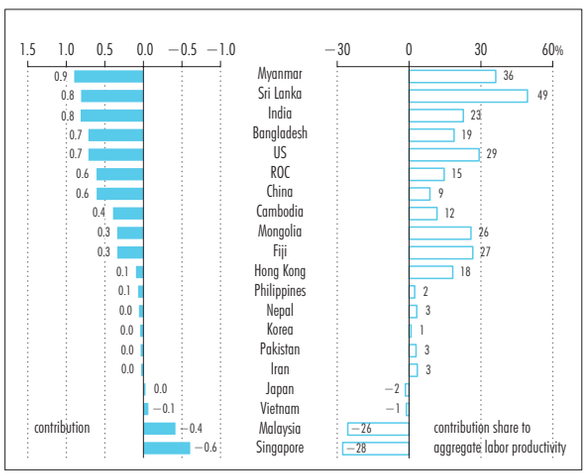


Figure 67: Contribution of Wholesale and Retail Sector to Labor Productivity Growth, 1995–2000

Source: APO Productivity Database 2011.01.

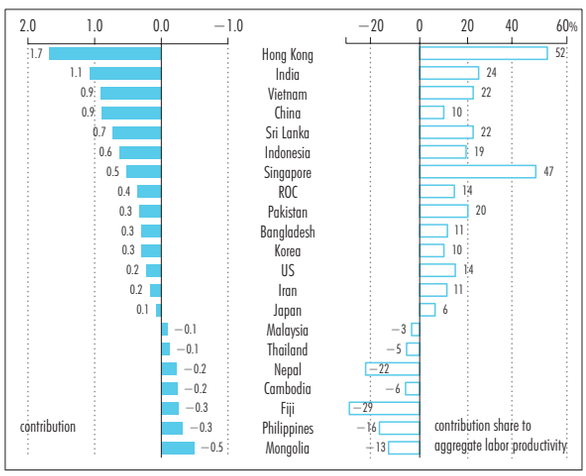


Figure 68: Contribution of Wholesale and Retail Sector to Labor Productivity Growth, 2000–2008

Source: APO Productivity Database 2011.01.

labor productivity growth in most Asian countries. The contribution was predominant in Hong Kong and India, accounting for 95 per cent and 84 per cent of labor productivity growth respectively. It also accounted for around three-quarters of labor productivity growth in the US, Sri Lanka, and Singapore. Korea and Japan had the lowest share from the service sector, accounting for around a quarter of labor productivity growth. We see a slight expansion of the role played by services in China, from 32 per cent to 37 per cent between the two periods. The contribution of services was also highly significant in South Asian countries like Bangladesh, India, Nepal, and Pakistan over the same period. Finance, real estate, and business activities and wholesale and retail trade, hotels, and restaurants made the largest contribution of 1.2 percentage points and 1.1 percentage points in India respectively, while transport, storage, and communications made the largest contribution of 1.7 percentage points in Mongolia and finance, real estate, and business activities made the largest contribution of 1.3 percentage points in Hong Kong. It was particularly prominent that in India all three industries significantly contributed to the improvement of economy-wide labor productivity for the period 2002–2008, while the contribution of manufacturing was negative for the period 1995–2000 and close to zero in 2000–2008.

7 Real Income and Terms of Trade

The standard GDP concept does not adequately measure welfare, as discussed in Box 3. Among the shortcomings is its neglect of the terms-of-trade effect. An improvement in the terms of trade (i.e. the relative prices of a country's exports to imports) unambiguously raises real income and in turn welfare.[87] In many ways a favorable change in the terms of trade is synonymous with technological progress, as it makes it possible to get more for less; that is, for a given trade balance position, a country can either import more for what it exports, or export less for what it imports.

By focusing on production *per se*, the real GDP concept does not capture this beneficial effect of the improvement in the terms of trade.[88] In contrast, real income focuses on an economy's consumption possibilities, and in turn captures the impact of a change in the relative price of exports to imports. Real income growth attributed to changes in the terms of trade can be significant when there are large fluctuations in import and export prices and the economy under concern is highly exposed to international trade, like many Asian economies (see Figure 15). For example, real income growth for oil-exporting countries nearly doubled that of real GDP growth in recent years (as in Oman and Saudi Arabia), while there has been no significant difference between real income growth and real GDP growth in Myanmar, which is a relatively closed economy (Figure 73).

The distinction between real income and real GDP lies in the differences between the corresponding deflators. Real GDP is calculated from a GDP deflator aggregating prices of household consumption, government consumption, investment, exports, and imports,[89] while real income is calculated from the prices of domestic expenditure, consisting of household consumption, government consumption, and investment. Therefore real income can be considered as how much domestic expenditure can be purchased with the current income flow.[90] As such, real income captures the purchasing power of the income flow. Applying the method proposed by Diewert and Morrison (1986), the annual growth rate of real income can be fully attributed to two components: annual growth rate of real GDP, and real income growth attributed to changes in prices of exports and imports.[91] The second component is called the trading gain by some authors (Kohli, 2006). This term is adopted in this report.

Table 16 lists annual average growth rates of real income, real GDP, and trading gain for the long period of 1970–2008 and three recent shorter periods: 1995–2000, 2000–2005, and 2005–2008. The general observation is that trading gain effect is small on average over a long period of time, but could be bigger over a shorter period.[92] As shown in Figure 69,

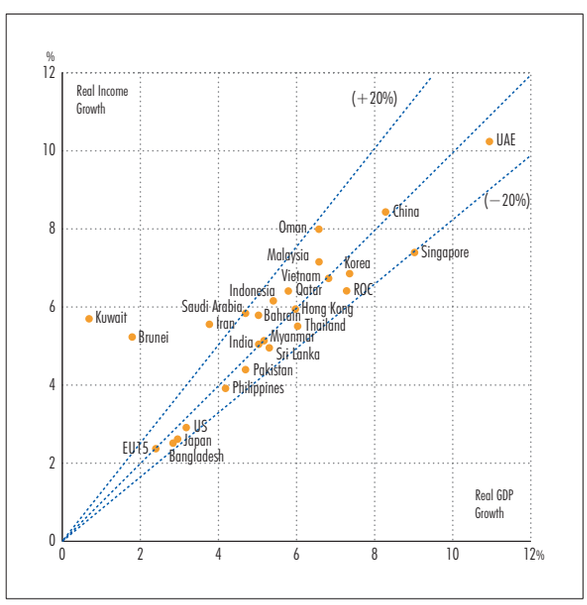


Figure 69: Real Income and Real GDP Growths, 1970–2008

—Average annual growth rate of GDP at constant prices and real income

Sources: Official national accounts in each country, including our adjustments.

87: See Diewert and Morrison (1986) and Kohli (2004).

88: Kohli (2004) explains this point: "if real GDP is measured by a Laspeyres quantity index, as it is still the case in most countries, an improvement in the terms of trade will actually lead to a fall in real GDP."

89: The weight for import price changes is negative. Thus if import prices decrease, this tends to raise the GDP deflator.

90: This definition of real income is the same as in Kohli (2004, 2006). An alternative definition is nominal GDP deflated by the price of household consumption; this is adopted by Diewert, Mizobuchi, and Nomura (2005) and Diewert and Lawrence (2006).

91: Real income growth can be decomposed into two components as follows:

$$\underbrace{\ln(GDP^t/GDP^{t-1})-\ln(P_D^t/P_D^{t-1})}_{\text{Real income growth}}=$$
$$\underbrace{\ln(GDP^t/GDP^{t-1})-(1/2)\Sigma_i(s_i^t+s_i^{t-1})\ln(P_i^t/P_i^{t-1})}_{\text{Real GDP growth}}+$$
$$\underbrace{(1/2)(s_x^t+s_x^{t-1})(\ln(P_x^t/P_x^{t-1})-\ln(P_D^t/P_D^{t-1}))-(1/2)(s_M^t+s_M^{t-1})(\ln(P_M^t/P_M^{t-1})-\ln(P_D^t/P_D^{t-1}))}_{\text{Real income growth attributed to changes in the terms of trade (=trading gain)}}$$

where P_i^t is price of final demand i in period t and s_i^t is expenditure share of final demand i in period t. D is domestic expenditure, X is export and M is import. Note that the real GDP growth based on this formulation may differ from that used in other chapters, since the implicit Törnqvist quantity index is adopted for calculating it.

92: Negative and positive effects in shorter periods cancel each other out. In the end, the accumulated effect often becomes negligible.

Table 16: Cross-country Comparisons of Growth Rates of Real Income, Real GDP, and Terms of Trade, 1970–2008, 1995–2000, 2000–2005, and 2005–2008
—Average annual growth rate of real income, real GDP, and trading gain

1970–2008				1995–2000				2000–2005				2005–2008			
	Real Income	Real GDP	Trading Gain		Real Income	Real GDP	Trading Gain		Real Income	Real GDP	Trading Gain		Real Income	Real GDP	Trading Gain
China	8.43	8.28	0.15	Vietnam	7.03	6.81	0.21	Myanmar	12.78	12.79	0.00	Cambodia	12.49	9.13	3.36
Singapore	7.40	9.02	−1.63	China	6.95	7.74	−0.79	China	10.48	9.89	0.59	China	11.86	12.00	−0.14
Malaysia	7.16	6.58	0.58	Cambodia	6.68	6.80	−0.12	Iran	9.88	6.92	2.97	Mongolia	10.19	2.74	7.45
Korea	6.85	7.36	−0.50	Singapore	6.61	7.95	−1.34	Mongolia	9.85	6.56	3.29	India	7.85	7.85	0.00
Vietnam	6.73	6.82	−0.09	Myanmar	6.45	6.42	0.03	Cambodia	8.93	8.78	0.15	Malaysia	7.64	5.63	2.02
ROC	6.41	7.28	−0.87	Malaysia	5.67	5.27	0.40	Vietnam	7.21	7.40	−0.19	Vietnam	7.41	6.86	0.55
Indonesia	6.16	5.40	0.75	India	5.41	5.58	−0.17	India	7.11	7.42	−0.32	Iran	5.88	5.17	0.71
Hong Kong	5.95	5.97	−0.13	ROC	5.30	5.41	−0.11	Malaysia	6.09	4.84	1.25	Bangladesh	5.48	6.68	−1.20
Iran	5.56	3.77	1.79	Iran	5.16	5.60	−0.45	Sri Lanka	5.51	4.80	0.71	Indonesia	5.40	6.56	−1.16
Thailand	5.51	6.03	−0.52	Sri Lanka	5.01	5.08	−0.07	Bangladesh	5.31	5.79	−0.48	Singapore	5.24	8.30	−3.06
India	5.14	5.17	−0.03	Philippines	4.97	4.36	0.61	Singapore	4.87	6.25	−1.38	Sri Lanka	5.24	6.58	−1.34
Myanmar	5.05	5.03	0.02	Bangladesh	3.86	4.06	−0.20	Philippines	4.66	5.51	−0.85	Myanmar	5.14	5.15	−0.01
Sri Lanka	4.95	5.30	−0.35	Pakistan	3.22	3.24	−0.02	Pakistan	3.96	4.77	−0.80	Philippines	4.51	6.31	−1.81
Pakistan	4.40	4.69	−0.30	Korea	3.04	4.97	−1.93	Thailand	3.89	4.69	−0.80	Nepal	4.33	4.28	0.05
Philippines	3.92	4.18	−0.26	Hong Kong	2.78	2.43	0.35	Korea	3.56	4.42	−0.86	Thailand	4.31	4.46	−0.16
Japan	2.62	2.95	−0.34	Japan	0.73	0.96	−0.23	Indonesia	3.44	4.44	−1.00	Hong Kong	4.14	5.03	−0.89
Bangladesh	2.51	2.84	−0.32	Indonesia	0.42	−0.30	0.73	Hong Kong	3.01	4.02	−1.01	Pakistan	2.88	4.58	−1.70
				Thailand	−0.85	0.20	−1.05	Nepal	2.54	3.09	−0.56	Korea	2.22	4.10	−1.89
								ROC	2.19	3.68	−1.49	ROC	0.42	4.06	−3.65
								Japan	1.00	1.30	−0.31	Japan	−0.07	1.05	−1.12
Bahrain	5.79	5.02	0.76	Bahrain	6.68	3.65	3.04	Bahrain	7.06	5.85	1.20	Bahrain	7.84	8.11	−0.28
Kuwait	5.70	0.69	5.03	Kuwait	6.08	1.66	4.42	Kuwait	12.29	7.70	4.60	Kuwait	13.34	1.62	11.72
Oman	7.99	6.57	1.42	Oman	6.15	2.05	4.10	Oman	7.65	3.46	4.18	Oman	15.62	8.41	7.21
Qatar	6.41	5.79	0.62	Qatar	14.84	8.95	5.89	Qatar	13.48	8.05	5.43	Qatar	11.43	15.97	−4.55
Saudi Arabia	5.84	4.69	1.15	Saudi Arabia	4.74	2.73	2.01	Saudi Arabia	9.47	4.57	4.90	Saudi Arabia	9.55	−0.13	9.68
UAE	10.24	10.94	−0.70	UAE	8.95	6.08	2.87	UAE	9.35	7.07	2.28	UAE	8.94	7.64	1.30
Brunei	5.23	1.79	3.45	Brunei	7.46	4.10	3.37	Brunei	8.06	3.00	5.07	Brunei	9.66	−2.54	12.21
(reference)				(reference)				(reference)				(reference)			
US	2.91	3.18	−0.26	US	4.27	4.35	−0.08	US	2.37	2.53	−0.16	US	1.16	1.66	−0.50
EU15	2.37	2.40	−0.02	EU15	2.80	2.90	−0.10	EU15	1.79	1.70	0.08	EU15	1.76	1.84	−0.08

Unit: Percentage.
Note: See footnote 91 for the definition of real GDP growth, real income growth, and trading gain growth. The starting years for some countries are different due to data availability during 1970–2008: Brunei (1989–), Cambodia (1993–), Mongolia (2000–), Nepal (2000–), and Vietnam (1986–).
Sources: Official national accounts in each country, including our adjustments.

real income growth of most countries compared fall within the margin of ±20 per cent of real GDP growth. But for some countries the divergence can be immense. For Kuwait, Brunei, and Iran, real GDP growth underestimated real income growth by 732 per cent, 193 per cent, and 47 per cent respectively. To a lesser extent, the corresponding figures for Saudi Arabia and Oman, also resource-rich economies, were 24 per cent and 22 per cent respectively. The UAE is the only oil-exporting country where the trading gain effect is not welfare enhancing over the long term. Among all countries, Singapore has the most negative trading gain effect, with real income growth being 18 per cent lower than real GDP growth on average during the estimation period.[93]

Over shorter time periods, the impact of trading gain can have a larger impact and be more significant for individual countries. Unlike the oil-exporting countries, roughly half the Asian countries compared have been sustaining a negative trading gain effect, albeit at variable extents in different time periods. The period 1995–2000 reflects the impact of the Asian financial crisis. For Thailand the relative trading gain effect more than outweighed the small positive average real GDP growth per year (of 0.20 per cent), giving rise to a marginal fall in real income of −0.85 per cent. In Korea negative trading gain also shaved 39 per cent off real GDP growth of 5.0 per cent, giving a real income growth of 3.0 per cent. At the start of the 2000s the Asian economy recovered from the financial crisis,

93: According to Kohli's (2004) study on real income of 26 OECD countries during 1980–1996, trading gain on average over the entire period varies across countries, from the smallest effect of −0.8 per cent (−30.9 per cent of real income growth) per year in Norway to the largest of 0.63 per cent (29.4 per cent of real income growth) per year in Switzerland.

but the trading gain effect worked against welfare for some countries, and such negative impact even intensified after 2005. For example, in the ROC the trading gain effect caused real income growth to be 40 per cent lower than real GDP growth in the period 2000–2005, but in the period 2005–2008 it wiped out 90 per cent of the handsome 4.1 per cent real GDP growth on average a year, leaving real income to grow at 0.4 per cent. Similarly, in Korea the trading gain effect caused real GDP growth to overestimate real income growth by 20 per cent in the first half of the 2000s, which increased to 46 per cent in the years 2005–2008. Between the two periods, the negative trading gain effect in Japan nearly quadrupled in terms of percentage points (Figure 70). It more than wiped out the 1.1 per cent real GDP growth, leaving real income actually falling by 0.1 per cent a year on average in the period 2005–2008.

In contrast, trading gain has worked to counterbalance falling real GDP in Saudi Arabia and Brunei, leaving them with handsome real income growths of 9.6 per cent and 9.7 per cent, despite their contracting real GDP of 0.13 per cent and 2.5 per cent respectively in the latest period. In Kuwait and Oman real income growth was more than seven times and 86 per cent faster than real GDP growth respectively.[94] Relatively, the trading gain effect has been small in EU15, making a difference of ±5 per cent between real GDP growth and real income growth. In the US the trading gain effect has always been unfavorable, but it has been small until recently, when it forged a difference of 30 per cent between real GDP and real income growth.

Figure 71 provides the results of further decomposition of trading gain into the *terms-of-trade effect* and the *real exchange rate effect* in the Asian countries for the period 1970–2008.[95] The terms-of-trade effect is the part of real income growth attributed to the change in the relative price between exports and imports, while the real exchange rate effect refers to the part of real income growth attributed to changes in the relative prices of traded goods and domestically consumed goods. By applying this result, real income growth can be decomposed into real GDP growth, terms-of-trade effect, and real exchange rate effect. The left-hand chart of Figure 71 applies this decomposition to the Asian countries for the period 1970–2008, and shows

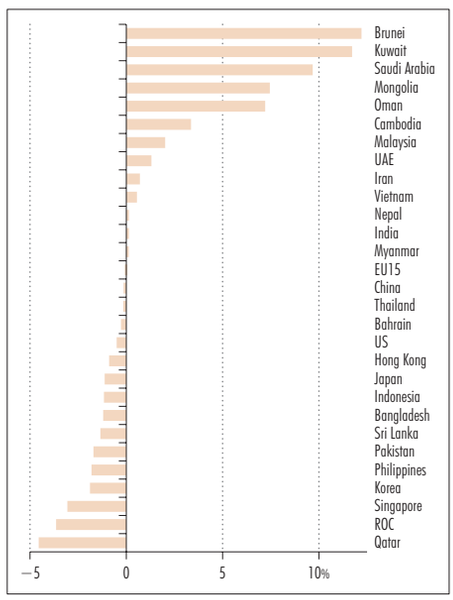


Figure 70: Trading Gain Effect, 2005–2008
—Average percentage points

Sources: Official national accounts in each country, including our adjustments.

that the real exchange rate effect is generally much smaller than the terms-of-trade effect. The sign of the two effects is the same for those countries where the impact of trading gain is not negligible. The right-hand chart of Figure 71 shows the decomposition for the most recent period 2000–2008. It shows that trading gain, particularly the terms-of-trade effect, is highly significant for the countries which topped in real income growth, i.e. mostly the oil-exporting countries.

Figure 72 shows the decomposition of average annual real income growth covering two periods of major economic shocks faced by the Asian economies: during 1973–1979, which includes the two oil price hikes in 1974 and 1979, and 1996–1998 to capture the impact of the Asian financial crisis. High oil prices improved the terms for oil-exporting countries, such as Iran and Indonesia, and worsened the terms of trade for oil-importing countries. During the Asian financial crisis the terms-of-trade effect was still the predominant factor in deciding the difference between real income

94: The price of crude oil increased relentlessly in 2008, peaking in mid-July at 147 dollars per barrel, although it was about 40 dollars per barrel as of the beginning of 2005 and again also as of the end of 2008 due to the global financial crisis.

95: Following Kohli (2006), trading gain can be decomposed into two components as follows:

$$\underbrace{(1/2)(s_x^t+s_x^{t-1})(\ln(P_x^t/P_x^{t-1})-\ln(P_D^t/P_D^{t-1}))-(1/2)(s_M^t+s_M^{t-1})(\ln(P_M^t/P_M^{t-1})-\ln(P_D^t/P_D^{t-1}))}_{\text{Real income growth attributed to changes in the terms of trade (=trading gain)}}=$$

$$\underbrace{(1/4)(s_x^t+s_x^{t-1}+s_M^t+s_M^{t-1})(\ln(P_x^t/P_x^{t-1})-\ln(P_M^t/P_M^{t-1}))}_{\text{Terms-of-trade effect}}+$$

$$\underbrace{(1/2)(s_x^t+s_x^{t-1}-s_M^t-s_M^{t-1})((1/2)\ln(P_x^t/P_x^{t-1})+(1/2)\ln(P_M^t/P_M^{t-1})-\ln(P_D^t/P_D^{t-1}))}_{\text{real exchange rate effect}}$$

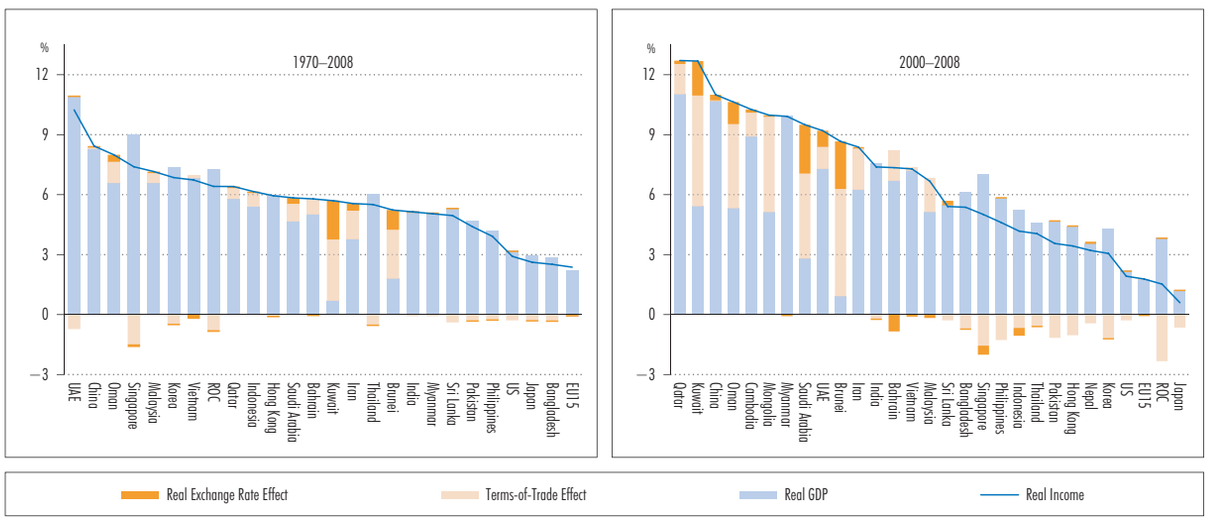


Figure 71: Decomposition of Real Income Growth, 1970–2008 and 2000–2008

Sources: Official national accounts in each country, including our adjustments.

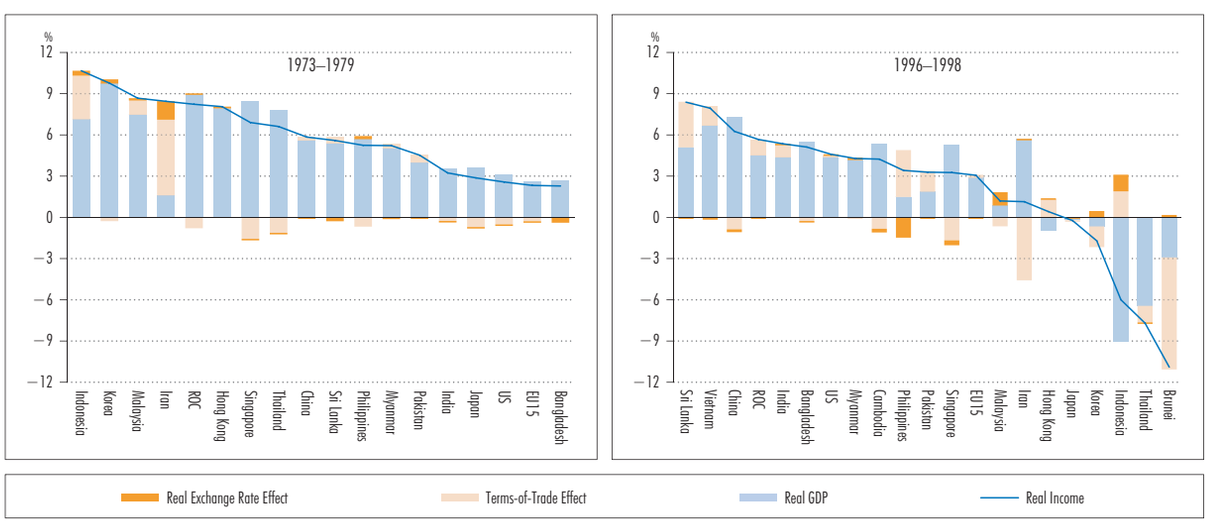


Figure 72: Decomposition of Real Income Growth, 1973–1979 and 1996–1998
—Decomposition: Average annual growth rate of real income

Sources: Official national accounts in each country, including our adjustments.

growth and real GDP growth. In Brunei the terms-of-trade effect further reinforced negative real GDP growth of −2.9 per cent, reducing its real income growth by a further 8.0 percentage points. In Iran the negative terms-of-trade effect discounted most of the 5.7 per cent real GDP growth, giving a more modest real income growth of 1.1 per cent. In the Philippines the strong favorable terms-of-trade effect was moderated by the negative real exchange rate effect, with the resulting real income growth more than doubling the real GDP growth.[96]

Figure 73 shows this decomposition of real income

96: Kohli (2006) calculated trading gain, the terms-of-trade effect, and real exchange rate effect of Canada during 1982–2005. Average annual trading gain over the entire period is very low, at 0.1 per cent. This is small by the standard of Asian economies. However, trading gain became significant, especially for the three years of 2002–2005. Over these years the average trading gain is 1.6 per cent per year. This effect is decomposed into a terms-of-trade effect of 1.4 per cent and real exchange rate effect of −0.1 per cent.

in each Asian country, along with the US and EU15,[97] from 1970 or whichever year a country's time series starts. Trading gain can be positive or negative, depending on the direction of change in the terms of trade. Its impact is modest for most countries, adding less than ±1 percentage point to annual real GDP growth for most of the time. However, historically trading gain has been significant in oil-rich countries, e.g. annual real income growth being 5.0 percentage points higher than annual real GDP growth on average in Kuwait. In 1974, as a consequence of the first oil price shock, the improvement in the terms of trade was responsible for over 80 per cent of the 41.4 per cent increase in real income in Iran from 1973 to 1974. The opposite was true in EU15, where the negative trading gain effect counterbalanced real GDP growth leaving virtually no growth in real income in the period 1973–1974. The effect of the second oil spike can be seen in the late 1970s. Sri Lanka, Malaysia, and Indonesia also experienced volatile variations in trading gains in the 1970s. Trading gain has been working against Singapore's welfare for most of the period covered.

97: There are several studies on the decomposition of real income growth for other countries: Kohli (2004) for 26 OECD countries during 1980–1996, Kohli (2006) for Canada during 1981–2005, and Diewert and Lawrence (2006) for Australia during 1960–2004.

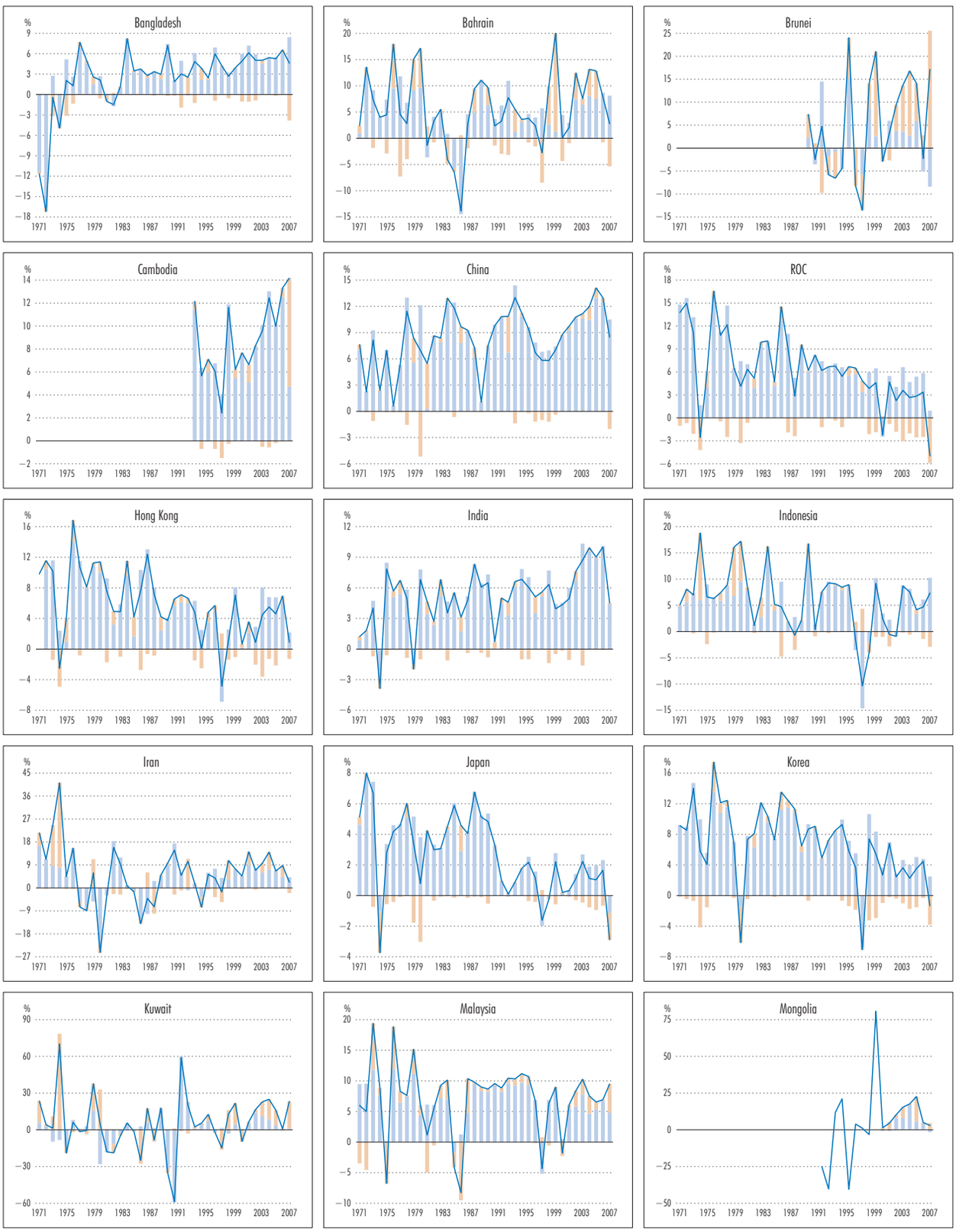
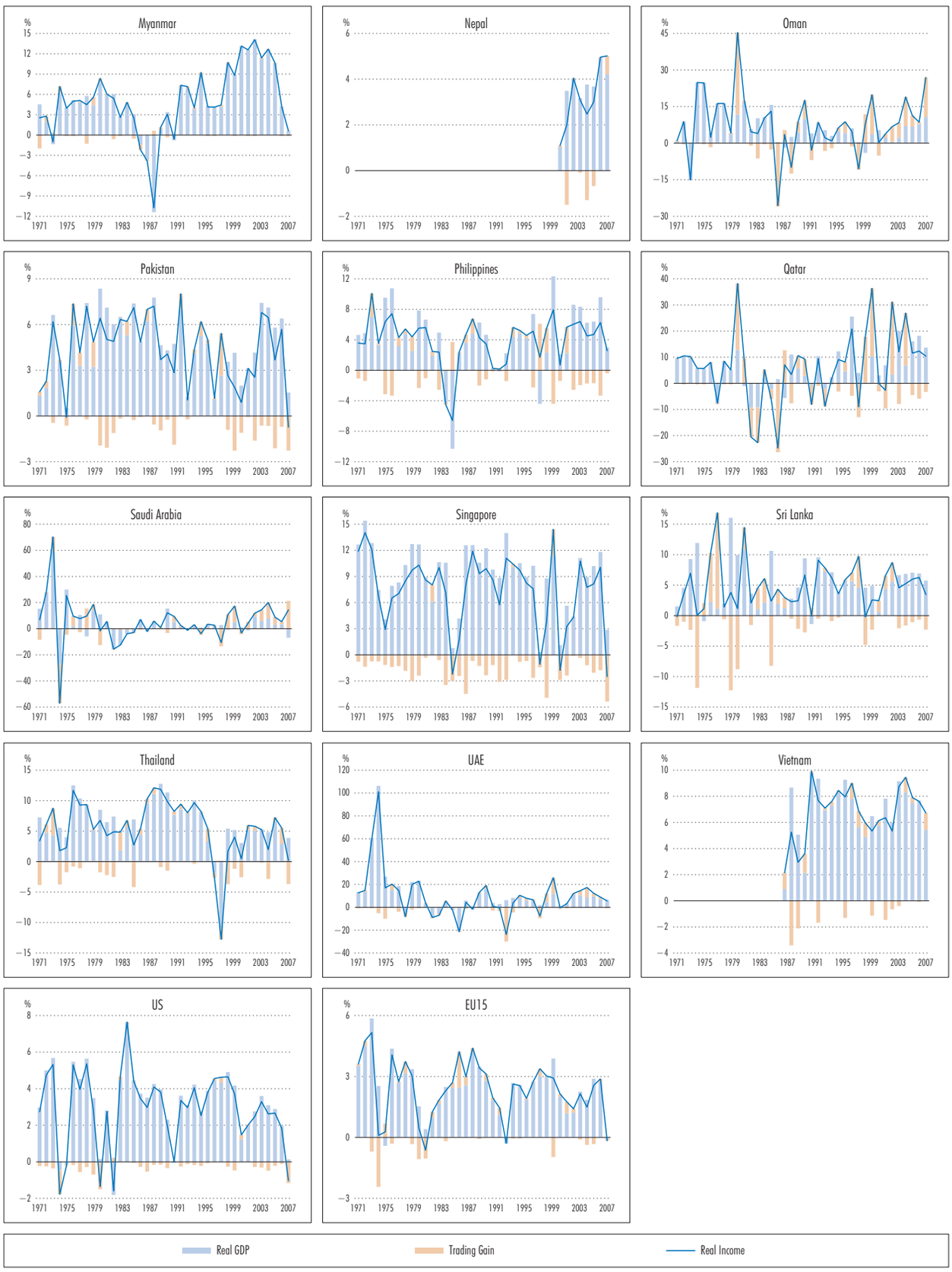


Figure 73: Sources of Real Income Growth, 1970–2008

Sources: Official national accounts in each country, including our adjustments.


Myanmar
Nepal
Oman
Pakistan
Philippines
Qatar
Saudi Arabia
Singapore
Sri Lanka
Thailand
UAE
Vietnam
US
EU15
%
1971 1975 1979 1983 1987 1991 1995 1999 2003 2007
Real GDP
Trading Gain
Real Income

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Appendix

Data 1 GDP at Constant Prices

	Bangladesh	Cambodia	ROC	Fiji	Hong Kong	India	Indonesia	Iran	Japan	Korea	Lao PDR	Malaysia
1970	50.9	n.a.	52.0	1.28	29.8	455.4	90.5	204.9	1327.6	76.8	n.a.	30.4
1971	48.1	n.a.	58.5	1.36	31.9	462.8	97.2	231.5	1386.3	84.9	n.a.	33.5
1972	41.4	n.a.	66.1	1.47	35.3	460.2	107.5	269.3	1503.3	90.4	n.a.	36.6
1973	45.4	n.a.	73.9	1.65	39.6	475.5	121.0	284.2	1624.4	103.7	n.a.	40.9
1974	43.5	n.a.	75.3	1.70	40.5	481.3	129.0	311.1	1605.2	113.5	n.a.	44.3
1975	46.0	n.a.	79.5	1.70	40.7	525.3	137.0	329.0	1655.0	121.9	n.a.	44.7
1976	47.2	n.a.	90.1	1.75	47.3	533.8	147.5	387.3	1721.5	138.2	n.a.	49.9
1977	50.5	n.a.	99.9	1.82	52.9	572.6	161.7	382.3	1797.9	154.6	n.a.	53.7
1978	53.0	n.a.	113.4	1.86	57.3	605.3	173.9	353.7	1893.7	170.5	n.a.	57.3
1979	53.4	n.a.	122.5	2.08	64.0	573.3	185.2	328.6	1998.2	184.8	n.a.	62.7
1980	55.2	n.a.	131.5	2.04	70.6	612.0	202.2	285.2	2056.3	181.4	n.a.	67.3
1981	55.9	n.a.	140.0	2.17	77.2	648.6	216.9	270.4	2141.8	194.9	n.a.	72.0
1982	57.2	n.a.	145.6	2.14	79.5	671.2	219.2	305.5	2214.6	211.0	n.a.	76.3
1983	59.5	n.a.	157.7	2.06	84.2	720.2	228.4	344.1	2283.4	236.6	n.a.	81.1
1984	62.6	n.a.	172.4	2.23	92.5	747.8	245.6	338.7	2386.0	259.9	2.95	87.4
1985	64.6	n.a.	179.4	2.12	93.2	786.8	255.2	345.7	2538.4	279.3	3.18	86.4
1986	67.4	n.a.	199.0	2.29	103.5	824.5	273.6	314.1	2611.7	313.4	3.33	87.4
1987	69.9	5.6	220.3	2.14	117.4	857.0	291.6	309.8	2721.8	351.7	3.29	92.1
1988	71.4	6.5	232.6	2.19	127.3	939.7	312.1	290.3	2916.9	392.7	3.23	101.3
1989	73.3	6.5	256.6	2.47	130.1	995.5	340.5	314.8	3074.3	419.2	3.67	110.5
1990	77.7	6.6	274.2	2.56	135.2	1047.9	371.2	370.1	3243.0	458.1	3.91	120.4
1991	80.3	7.0	295.8	2.49	142.9	1056.6	404.5	412.1	3350.8	502.6	4.07	132.0
1992	84.3	7.5	318.2	2.64	151.6	1116.8	433.8	438.7	3379.3	531.6	4.36	143.7
1993	88.2	7.8	339.6	2.71	160.7	1160.9	465.3	408.7	3384.4	565.3	4.61	157.9
1994	91.8	8.5	365.5	2.85	170.4	1239.6	500.5	407.8	3412.5	615.1	4.99	172.5
1995	96.3	9.1	388.8	2.92	174.3	1332.9	541.8	421.8	3474.6	669.9	5.34	189.5
1996	100.8	9.6	410.4	3.06	181.6	1435.0	584.3	451.3	3565.2	718.2	5.71	208.5
1997	106.3	10.1	432.4	2.99	190.8	1491.6	612.1	472.2	3621.4	759.9	6.11	223.8
1998	111.9	10.6	446.8	3.03	179.3	1586.3	531.6	486.2	3550.1	716.7	6.35	207.4
1999	117.4	11.9	473.2	3.29	183.9	1698.7	536.1	506.1	3546.0	794.0	6.81	220.2
2000	124.4	12.9	500.3	3.23	198.5	1772.9	562.6	523.2	3647.2	864.2	7.21	239.8
2001	131.0	14.0	491.6	3.29	199.5	1867.7	583.4	537.8	3654.2	894.9	7.63	241.1
2002	136.8	14.9	518.0	3.40	203.2	1937.0	609.9	580.8	3666.6	957.5	8.08	254.1
2003	144.0	16.2	537.6	3.43	209.3	2096.6	639.1	627.1	3719.1	983.8	8.55	268.9
2004	153.0	17.9	571.5	3.62	227.0	2273.1	671.3	659.8	3821.3	1031.6	9.14	287.3
2005	162.1	20.2	599.1	3.57	243.1	2486.1	709.8	695.6	3894.4	1072.8	9.81	302.7
2006	172.9	22.4	632.4	3.64	260.1	2717.4	748.9	738.7	3972.1	1128.8	10.63	320.5
2007	184.0	24.7	670.4	3.61	276.7	2978.6	796.7	800.5	4065.3	1186.4	11.46	341.4
2008	195.3	26.4	675.7	3.62	282.7	3128.3	844.7	829.8	4019.8	1214.1	12.36	357.7

Unit: Billions of US dollars at constant market prices, using 2005 PPPs.
Note: See Box 2 for the adjustments made to harmonize GDP coverage across countries.
Sources: Official national accounts in each country, including our adjustments.

Mongolia	Nepal	Pakistan	Philippines	Singapore	Sri Lanka	Thailand	Vietnam	Brunei	China	Myanmar	US	EU15	
1.46	n.a.	62.5	69.5	15.3	13.9	55.3	n.a.	6.8	284.6	8.4	4224.3	4939.2	1970
1.54	n.a.	63.4	72.9	17.1	13.9	58.0	n.a.	7.5	304.5	8.8	4366.2	5106.7	1971
1.61	n.a.	64.4	76.4	19.4	14.4	60.4	n.a.	8.3	316.1	9.0	4597.4	5344.0	1972
1.78	n.a.	68.6	83.0	21.5	15.7	66.4	n.a.	9.1	341.0	8.9	4862.6	5682.0	1973
1.89	8.1	72.2	87.4	22.9	16.8	69.4	n.a.	10.2	348.9	9.3	4830.7	5817.8	1974
2.02	8.4	74.6	93.1	23.8	17.1	72.8	n.a.	10.2	379.2	9.6	4809.6	5784.2	1975
2.12	8.7	78.0	100.6	25.6	18.0	79.5	34.7	12.3	373.2	10.2	5074.1	6051.8	1976
2.17	9.1	81.0	106.8	27.5	18.9	87.4	36.0	13.7	401.5	10.7	5307.7	6221.9	1977
2.35	9.3	87.5	112.7	29.8	20.2	96.0	36.3	14.6	448.5	11.4	5598.1	6415.3	1978
2.56	9.1	91.7	119.7	32.6	21.5	101.1	36.5	17.9	482.6	11.9	5777.0	6651.4	1979
2.64	9.8	99.6	126.0	35.8	22.7	105.7	35.5	16.6	520.2	12.9	5767.4	6753.4	1980
2.87	10.2	106.5	130.3	39.6	24.0	112.0	36.7	13.3	547.3	13.7	5921.9	6768.0	1981
3.10	10.2	113.5	135.0	42.4	25.2	118.0	39.5	13.9	597.1	14.4	5803.5	6834.6	1982
3.28	10.9	121.2	137.6	46.1	26.4	124.6	42.3	14.0	662.1	15.0	6037.8	6954.4	1983
3.48	11.5	127.4	127.5	50.1	27.7	131.8	45.6	14.0	762.8	15.8	6481.7	7130.3	1984
3.68	12.0	137.1	118.2	49.6	29.1	137.9	49.4	13.8	865.8	16.2	6740.1	7313.5	1985
4.02	12.3	144.6	122.2	50.2	30.4	145.5	49.6	12.3	942.0	16.1	6968.4	7523.0	1986
4.17	13.2	154.0	127.5	55.4	30.9	159.4	51.4	12.3	1051.2	15.4	7189.0	7739.2	1987
4.38	13.8	165.7	136.1	61.7	31.7	180.6	54.5	12.3	1170.0	13.7	7494.3	8073.1	1988
4.56	14.4	173.9	144.6	67.9	32.4	202.7	57.0	12.6	1218.0	14.2	7774.5	8374.5	1989
4.45	15.3	181.7	148.4	74.3	34.4	225.3	59.9	12.7	1264.3	14.6	7920.0	8628.4	1990
4.20	16.0	190.9	147.2	79.4	36.0	244.7	63.4	13.1	1380.6	14.5	7889.5	8800.2	1991
3.97	16.6	205.6	146.9	85.1	37.6	264.5	68.9	13.7	1576.6	15.9	8146.9	8906.3	1992
3.80	17.9	209.3	151.8	95.1	40.2	286.4	74.5	13.8	1797.4	16.9	8384.4	8881.1	1993
3.91	18.6	217.1	158.4	105.4	42.5	312.2	81.1	14.2	2032.8	18.1	8730.5	9135.2	1994
4.08	19.5	228.0	165.9	113.3	44.8	341.1	88.8	14.8	2254.4	19.4	8957.1	9378.2	1995
4.19	20.6	239.1	175.6	122.3	46.5	361.4	97.1	15.3	2479.8	20.6	9288.9	9550.1	1996
4.37	21.2	241.5	184.7	132.3	49.5	356.5	105.1	15.0	2710.4	21.8	9698.5	9815.6	1997
4.58	22.1	247.8	183.7	129.8	51.9	319.0	111.2	15.0	2921.9	22.9	10117.3	10112.9	1998
4.81	23.5	256.9	189.9	138.3	54.1	333.3	116.5	15.5	3143.9	24.1	10603.3	10429.1	1999
4.87	24.8	267.9	201.3	151.7	57.4	349.1	124.4	16.0	3408.0	26.9	11043.2	10842.9	2000
5.02	24.8	273.3	204.9	149.3	56.6	356.7	133.0	16.5	3690.9	30.0	11166.7	11051.4	2001
5.25	25.8	282.1	214.0	155.5	58.9	375.8	142.4	17.1	4026.7	33.6	11369.1	11175.8	2002
5.62	27.0	295.9	224.6	162.4	62.4	402.8	152.9	17.6	4429.4	38.3	11665.5	11305.1	2003
6.22	28.0	317.6	239.0	177.5	65.8	428.5	164.9	17.8	4876.8	43.5	12076.0	11561.3	2004
6.67	28.9	341.9	250.8	189.6	69.9	448.2	178.9	17.9	5427.9	49.4	12450.4	11766.2	2005
7.24	29.9	363.1	264.4	206.1	75.3	471.6	193.7	18.7	6117.2	55.7	12792.3	12104.7	2006
7.99	31.7	383.9	283.2	223.1	80.4	495.2	210.1	18.7	6985.9	58.8	13027.9	12433.4	2007
8.70	33.3	390.4	294.1	227.7	85.2	507.4	223.2	18.4	7656.5	60.0	13007.7	12466.3	2008

Data 2 Growth Rate of GDP at Constant Prices

	Bangladesh	Cambodia	ROC	Fiji	Hong Kong	India	Indonesia	Iran	Japan	Korea	Lao PDR	Malaysia
1970	–	–	–	–	–	–	–	–	–	–	–	–
1971	−5.6	n.a.	11.7	5.8	6.9	1.6	7.1	12.2	4.3	10.0	n.a.	9.6
1972	−15.1	n.a.	12.3	7.6	10.0	−0.6	10.1	15.1	8.1	6.3	n.a.	9.0
1973	9.2	n.a.	11.1	12.0	11.6	3.3	11.9	5.4	7.8	13.8	n.a.	11.1
1974	−4.2	n.a.	1.9	2.6	2.3	1.2	6.4	9.0	−1.2	9.0	n.a.	8.0
1975	5.5	n.a.	5.4	0.2	0.4	8.7	6.0	5.6	3.1	7.1	n.a.	0.8
1976	2.6	n.a.	12.5	2.6	15.0	1.6	7.4	16.3	3.9	12.6	n.a.	11.0
1977	6.8	n.a.	10.4	4.4	11.2	7.0	9.2	−1.3	4.3	11.2	n.a.	7.5
1978	4.7	n.a.	12.7	1.8	8.1	5.6	7.3	−7.8	5.2	9.8	n.a.	6.4
1979	0.8	n.a.	7.7	11.4	11.0	−5.4	6.3	−7.4	5.4	8.1	n.a.	9.0
1980	3.3	n.a.	7.1	−1.7	9.8	6.5	8.8	−14.2	2.9	−1.9	n.a.	7.2
1981	1.2	n.a.	6.3	5.8	9.0	5.8	7.0	−5.3	4.1	7.2	n.a.	6.7
1982	2.4	n.a.	3.9	−1.1	2.9	3.4	1.1	12.2	3.3	8.0	n.a.	5.8
1983	4.0	n.a.	8.0	−4.1	5.8	7.1	4.1	11.9	3.1	11.5	n.a.	6.1
1984	5.0	n.a.	8.9	8.1	9.4	3.8	7.3	−1.6	4.4	9.4	n.a.	7.5
1985	3.2	n.a.	4.0	−5.2	0.7	5.1	3.8	2.1	6.2	7.2	7.3	−1.1
1986	4.1	n.a.	10.4	7.8	10.5	4.7	7.0	−9.6	2.9	11.5	4.7	1.1
1987	3.7	n.a.	10.2	−6.7	12.6	3.9	6.4	−1.4	4.1	11.6	−1.1	5.3
1988	2.2	14.9	5.4	2.1	8.1	9.2	6.8	−6.5	6.9	11.0	−1.8	9.5
1989	2.6	−0.4	9.8	12.0	2.2	5.8	8.7	8.1	5.3	6.5	12.6	8.7
1990	5.8	1.0	6.6	3.6	3.8	5.1	8.6	16.2	5.3	8.9	6.5	8.6
1991	3.2	7.1	7.6	−2.7	5.5	0.8	8.6	10.8	3.3	9.3	3.9	9.1
1992	4.9	6.6	7.3	6.0	5.9	5.6	7.0	6.3	0.9	5.6	6.8	8.5
1993	4.5	3.8	6.5	2.6	5.9	3.9	7.0	−7.1	0.2	6.1	5.7	9.5
1994	4.0	8.7	7.3	5.0	5.8	6.6	7.3	−0.2	0.8	8.4	7.9	8.8
1995	4.8	6.3	6.2	2.5	2.3	7.3	7.9	3.4	1.8	8.5	6.9	9.4
1996	4.6	5.3	5.4	4.7	4.1	7.4	7.6	6.8	2.6	7.0	6.7	9.6
1997	5.3	5.5	5.2	−2.4	4.9	3.9	4.7	4.5	1.6	5.7	6.7	7.1
1998	5.1	4.9	3.3	1.3	−6.2	6.2	−14.1	2.9	−2.0	−5.9	3.9	−7.6
1999	4.8	11.3	5.7	8.4	2.5	6.8	0.8	4.0	−0.1	10.2	7.0	6.0
2000	5.8	8.4	5.6	−1.7	7.7	4.3	4.8	3.3	2.8	8.5	5.7	8.5
2001	5.2	7.9	−1.7	1.9	0.5	5.2	3.6	2.7	0.2	3.5	5.6	0.5
2002	4.3	6.4	5.2	3.2	1.8	3.7	4.4	7.7	0.3	6.8	5.8	5.3
2003	5.1	8.2	3.7	0.9	3.0	7.9	4.7	7.7	1.4	2.7	5.6	5.7
2004	6.1	9.9	6.1	5.3	8.1	8.1	4.9	5.1	2.7	4.8	6.7	6.6
2005	5.8	12.5	4.7	−1.3	6.8	9.0	5.6	5.3	1.9	3.9	7.1	5.2
2006	6.4	10.3	5.4	1.9	6.8	8.9	5.4	6.0	2.0	5.1	8.0	5.7
2007	6.2	9.8	5.8	−0.8	6.2	9.2	6.2	8.0	2.3	5.0	7.5	6.3
2008	6.0	6.6	0.8	0.2	2.1	4.9	5.8	3.6	−1.1	2.3	7.5	4.7

Unit: Percentage (average annual growth rate of GDP at constant market prices).
Note: See Box 2 for the adjustments made to harmonize GDP coverage across countries.
Sources: Official national accounts in each country, including our adjustments.

Mongolia	Nepal	Pakistan	Philippines	Singapore	Sri Lanka	Thailand	Vietnam	Brunei	China	Myanmar	US	EU15	
–	–	–	–	–	–	–	–	–	–	–	–	–	1970
5.4	n.a.	1.5	4.8	11.3	0.5	4.7	n.a.	9.9	6.8	4.2	3.3	3.3	1971
4.2	n.a.	1.5	4.7	12.6	3.1	4.1	n.a.	10.0	3.7	2.2	5.2	4.5	1972
10.4	n.a.	6.4	8.3	10.5	8.7	9.5	n.a.	9.4	7.6	−1.3	5.6	6.1	1973
5.8	n.a.	5.2	5.1	6.0	7.1	4.4	n.a.	11.2	2.3	4.3	−0.7	2.4	1974
6.8	4.3	3.2	6.4	4.1	1.8	4.8	n.a.	0.4	8.3	4.0	−0.4	−0.6	1975
5.0	3.0	4.5	7.7	7.0	4.8	8.8	n.a.	18.4	−1.6	5.4	5.4	4.5	1976
2.0	4.3	3.7	6.0	7.5	4.7	9.4	3.6	10.4	7.3	5.1	4.5	2.8	1977
8.3	2.3	7.7	5.4	7.9	7.1	9.4	0.7	6.6	11.1	6.0	5.3	3.1	1978
8.4	−2.3	4.7	6.1	8.9	5.9	5.1	0.6	20.4	7.3	4.6	3.2	3.6	1979
3.4	7.9	8.3	5.1	9.6	5.5	4.5	−2.9	−7.2	7.5	7.6	−0.2	1.5	1980
8.1	3.8	6.7	3.4	10.1	5.4	5.8	3.5	−22.0	5.1	6.1	2.6	0.2	1981
8.0	0.4	6.4	3.6	6.7	5.1	5.2	7.5	3.9	8.7	5.3	−2.0	1.0	1982
5.6	5.9	6.6	1.9	8.4	4.7	5.5	6.7	0.6	10.4	4.3	4.0	1.7	1983
5.8	6.0	5.0	−7.6	8.3	4.9	5.6	7.6	0.7	14.2	4.8	7.1	2.5	1984
5.5	4.5	7.3	−7.6	−1.0	4.9	4.6	7.8	−1.4	12.7	2.8	3.9	2.5	1985
9.0	1.7	5.4	3.4	1.3	4.2	5.4	0.4	−12.0	8.4	−1.1	3.3	2.8	1986
3.5	7.4	6.3	4.2	9.8	1.6	9.1	3.6	0.4	11.0	−4.1	3.1	2.8	1987
5.0	4.2	7.4	6.5	10.7	2.7	12.5	5.9	−0.2	10.7	−12.0	4.2	4.2	1988
4.1	4.5	4.9	6.0	9.6	2.0	11.5	4.6	2.3	4.0	3.7	3.7	3.7	1989
−2.5	6.2	4.4	2.6	9.0	6.1	10.6	5.0	1.0	3.7	2.8	1.9	3.0	1990
−5.8	4.0	4.9	−0.8	6.7	4.7	8.2	5.7	3.2	8.8	−0.6	−0.4	2.0	1991
−5.6	3.8	7.4	−0.3	6.9	4.3	7.8	8.3	4.7	13.3	9.3	3.2	1.2	1992
−4.4	7.9	1.8	3.3	11.2	6.7	8.0	7.8	0.2	13.1	5.9	2.9	−0.3	1993
2.9	3.4	3.7	4.3	10.2	5.5	8.6	8.5	2.9	12.3	7.2	4.1	2.8	1994
4.1	5.2	4.9	4.6	7.2	5.4	8.9	9.1	4.2	10.4	6.7	2.6	2.6	1995
2.8	5.1	4.8	5.7	7.7	3.7	5.8	9.0	3.5	9.5	6.3	3.6	1.8	1996
4.2	2.9	1.0	5.1	7.8	6.3	−1.4	7.9	−1.7	8.9	5.6	4.3	2.7	1997
4.7	4.4	2.5	−0.6	−1.9	4.7	−11.1	5.6	−0.5	7.5	4.9	4.2	3.0	1998
4.9	5.9	3.6	3.4	6.3	4.2	4.4	4.7	3.5	7.3	4.9	4.7	3.1	1999
1.3	5.5	4.2	5.8	9.2	5.8	4.7	6.6	3.3	8.1	11.3	4.1	3.9	2000
2.9	0.1	2.0	1.7	−1.6	−1.4	2.2	6.7	2.8	8.0	10.8	1.1	1.9	2001
4.6	3.9	3.2	4.4	4.0	4.0	5.2	6.9	3.8	8.7	11.4	1.8	1.1	2002
6.8	4.6	4.8	4.8	4.3	5.8	6.9	7.1	3.0	9.5	13.0	2.6	1.2	2003
10.1	3.4	7.1	6.2	8.9	5.3	6.2	7.5	0.8	9.6	12.7	3.5	2.2	2004
7.0	3.3	7.4	4.9	6.6	6.1	4.5	8.1	0.7	10.7	12.8	3.1	1.8	2005
8.2	3.4	6.0	5.3	8.4	7.4	5.1	7.9	4.4	12.0	12.0	2.7	2.8	2006
9.7	5.9	5.6	6.9	7.9	6.6	4.9	8.2	0.2	13.3	5.4	1.8	2.7	2007
8.6	4.8	1.7	3.8	2.1	5.8	2.4	6.1	−1.7	9.2	2.0	−0.2	0.3	2008

Data 3 Growth Rate of Per Capita GDP at Constant Prices

	Bangladesh	Cambodia	ROC	Fiji	Hong Kong	India	Indonesia	Iran	Japan	Korea	Lao PDR	Malaysia
1970	–	–	–	–	–	–	–	–	–	–	–	–
1971	−8.3	n.a.	9.6	3.7	4.8	−0.7	4.7	9.0	3.0	8.0	n.a.	7.0
1972	−17.7	n.a.	10.4	5.5	8.1	−2.8	7.6	12	6.7	4.4	n.a.	6.5
1973	6.5	n.a.	9.4	9.9	8.8	1.1	9.4	2.4	6.9	12.0	n.a.	8.7
1974	−6.9	n.a.	0.1	0.6	−0.9	−1.0	4.0	6.0	−3.1	7.3	n.a.	5.6
1975	3.6	n.a.	3.5	−1.8	−1.5	6.5	3.6	2.4	1.5	5.4	n.a.	−1.7
1976	0.8	n.a.	10.4	0.8	13.8	−0.6	5.1	13.1	3.2	11.0	n.a.	8.6
1977	5.0	n.a.	8.6	2.6	9.7	4.8	6.8	−4.5	3.4	9.6	n.a.	5.0
1978	2.8	n.a.	10.8	0.0	6.2	3.3	5.0	−11.0	4.3	8.3	n.a.	4.2
1979	−1.1	n.a.	5.7	9.4	5.5	−7.6	4.0	−10.7	4.5	6.6	n.a.	6.6
1980	1.5	n.a.	5.3	−3.8	7.2	4.3	6.5	−17.6	2.1	−3.4	n.a.	4.6
1981	−0.7	n.a.	4.5	3.4	6.6	3.7	4.8	−8.9	3.3	5.6	n.a.	4.0
1982	−0.4	n.a.	2.2	−3.7	1.4	1.2	−1.1	8.6	2.7	6.4	n.a.	3.1
1983	1.3	n.a.	6.5	−6.6	4.2	4.9	2.0	8.2	2.4	10.0	n.a.	3.4
1984	2.4	n.a.	7.4	6.0	8.5	1.6	5.2	−5.4	3.8	8.2	n.a.	4.9
1985	0.6	n.a.	2.7	−6.8	−0.4	3.0	1.9	−1.9	5.6	6.2	4.5	−3.9
1986	1.6	n.a.	9.4	6.9	9.2	2.5	5.0	−13.2	2.2	10.5	2.1	−1.6
1987	1.3	n.a.	9.1	−7.0	11.6	1.7	4.5	−4.6	3.6	10.6	−3.8	2.6
1988	−0.2	11.4	4.3	2.0	7.3	7.1	5.0	−9.4	6.5	10.0	−4.6	6.9
1989	0.3	−3.9	8.8	11.8	1.2	3.7	7.0	5.6	4.9	5.6	9.9	6.1
1990	3.6	−2.5	5.4	3.1	3.5	3.1	6.9	14.0	5.0	7.9	3.8	6.2
1991	1.0	3.7	6.6	−3.6	4.7	−1.2	6.9	9.1	3.0	8.3	1.6	6.7
1992	3.5	3.2	6.3	4.8	5.1	3.5	5.3	4.6	0.6	4.6	4.6	5.8
1993	3.1	0.5	5.6	1.2	4.2	1.8	5.4	−8.7	−0.1	5.1	3.5	6.7
1994	2.7	5.6	6.5	3.6	3.6	4.6	5.7	−1.8	0.5	7.4	5.8	6.1
1995	1.6	3.4	5.4	1.3	0.3	5.3	6.4	1.8	1.4	7.5	5.0	6.8
1996	2.8	2.6	4.6	3.7	−0.3	5.4	6.4	5.2	2.3	6.0	3.9	7.0
1997	4.9	3.0	4.2	−3.3	4.1	1.9	3.5	3.0	1.3	4.7	4.0	4.5
1998	4.7	2.6	2.4	0.5	−7.1	4.2	−15.3	1.2	−2.2	−6.6	1.4	−10.2
1999	4.4	9.3	5.0	7.6	1.6	4.9	−0.3	2.3	−0.3	9.5	4.7	3.5
2000	5.5	6.6	4.7	−2.5	6.8	2.4	3.7	1.7	2.6	7.6	3.4	6.0
2001	4.9	6.2	−2.3	1.2	−0.2	3.4	2.3	1.1	0.0	2.8	4.0	−1.7
2002	2.6	4.9	4.7	2.5	1.4	2.1	3.1	6.1	0.1	6.2	4.3	3.2
2003	3.4	6.7	3.3	0.2	3.2	6.4	3.4	6.1	1.2	2.2	4.2	3.6
2004	4.5	8.4	5.7	4.7	7.4	6.7	3.6	3.6	2.7	4.4	5.3	4.5
2005	4.2	11.0	4.4	−1.9	6.4	7.6	4.3	3.8	1.9	3.7	5.6	3.1
2006	4.9	8.8	4.9	1.2	6.1	7.5	4.1	4.6	2.0	4.8	5.8	3.8
2007	4.8	8.3	5.5	−1.5	5.2	7.8	5.0	6.7	2.3	4.7	5.4	4.3
2008	4.6	5.1	0.4	−0.4	1.4	3.6	4.7	2.3	−1.1	2.0	5.4	2.7

Unit: Percentage (average annual growth rate of GDP at constant market prices).
Note: See Box 2 for the adjustments made to harmonize GDP coverage across countries.
Sources: Official national accounts in each country, including our adjustments.

Mongolia	Nepal	Pakistan	Philippines	Singapore	Sri Lanka	Thailand	Vietnam	Brunei	China	Myanmar	US	EU15	
–	–	–	–	–	–	–	–	–	–	–	–	–	1970
2.2	n.a.	−1.6	2.0	9.5	−1.7	2.1	n.a.	5.3	4.1	1.7	2.0	2.7	1971
1.3	n.a.	−1.7	1.9	10.8	1.3	1.5	n.a.	5.6	1.5	−0.3	4.1	4.0	1972
7.6	n.a.	3.4	5.6	8.7	6.9	7.0	n.a.	5.1	5.3	−3.9	4.7	5.6	1973
3.0	n.a.	2.2	2.4	4.3	5.4	1.9	n.a.	7.0	0.4	1.8	−1.6	1.9	1974
4.1	1.7	0.2	3.7	2.7	0.1	2.4	n.a.	−3.7	6.6	1.6	−1.4	−1.0	1975
2.2	0.3	1.6	5.0	5.6	3.2	6.5	n.a.	14.5	−3.0	3.0	4.4	4.2	1976
−0.9	1.7	0.9	3.2	6.1	3.1	7.2	1.3	6.6	6.0	2.8	3.5	2.4	1977
5.4	−0.3	4.9	2.7	6.7	5.6	7.2	−1.6	2.9	9.7	3.7	4.3	2.7	1978
5.5	−5.0	1.9	3.4	7.6	4.5	2.9	−1.6	16.9	6.0	2.3	2.0	3.3	1979
0.5	5.3	5.7	2.5	8.3	4.2	2.3	−5.0	−10.5	6.3	5.3	−1.1	1.1	1980
5.4	1.1	4.1	0.9	5.2	4.2	3.5	1.6	−25.1	3.7	3.8	1.7	−0.1	1981
5.4	−1.7	3.5	1.2	2.3	3.4	3.0	5.7	1.0	7.1	3.0	−3.0	0.8	1982
3.2	3.8	3.8	−0.5	7.1	3.1	3.3	5.0	−2.3	9.0	2.1	3.0	1.6	1983
3.4	3.9	2.2	−9.9	6.4	3.4	3.6	5.8	−2.1	12.9	2.7	6.2	2.4	1984
3.4	2.4	4.6	−9.9	−1.2	3.3	2.6	5.8	−4.2	11.2	0.8	3.0	2.4	1985
6.7	−0.4	2.6	1.0	1.4	2.6	3.7	−1.9	−14.9	6.9	−3.0	2.4	2.6	1986
1.4	5.4	3.5	1.9	8.3	0.0	7.5	1.1	−2.5	9.3	−5.9	2.2	2.6	1987
3.1	2.2	4.6	4.2	8.2	1.2	11.0	3.4	−3.1	9.1	−13.8	3.3	3.9	1988
2.3	2.5	2.2	3.7	6.7	0.4	10.1	2.2	−0.5	2.5	2.0	2.7	3.3	1989
−4.3	4.1	1.7	0.4	5.1	4.5	9.2	3.1	−1.8	2.3	1.2	0.7	2.6	1990
−7.5	1.9	2.3	−3.3	3.8	3.2	6.9	3.8	0.4	7.5	−2.2	−1.7	1.6	1991
−7.2	1.5	4.8	−2.8	3.9	2.9	6.5	6.6	1.9	12.1	7.8	1.8	0.8	1992
−5.9	5.6	−0.8	0.8	8.7	5.3	6.7	6.1	−2.6	12.0	4.5	1.6	−0.7	1993
1.5	1.1	1.1	1.9	7.1	4.2	7.5	6.8	0.2	11.2	5.9	2.8	2.5	1994
2.7	2.9	2.3	2.2	4.2	4.2	7.9	7.5	1.5	9.3	5.4	1.4	2.3	1995
1.3	2.8	2.2	3.5	3.7	2.6	5.0	7.4	0.9	8.5	4.9	2.5	1.6	1996
2.8	0.6	−1.5	2.9	4.5	5.3	−2.0	6.3	−4.3	7.9	4.2	3.1	2.5	1997
3.4	2.1	0.1	−2.7	−5.3	3.7	−11.7	4.1	−3.0	6.6	3.7	3.1	2.8	1998
3.7	3.7	1.7	1.2	5.5	3.3	3.7	3.2	1.1	6.5	3.7	3.5	2.8	1999
0.0	3.3	2.3	3.7	7.5	5.5	3.8	5.2	1.0	7.3	10.3	3.0	3.5	2000
1.5	−2.0	0.0	−0.4	−4.3	0.3	1.1	5.4	0.6	7.3	9.9	0.1	1.5	2001
3.2	1.5	1.2	2.2	3.1	2.9	4.1	5.7	1.7	8.1	10.7	0.9	0.6	2002
5.5	2.3	2.8	2.7	5.8	4.5	5.7	5.9	0.9	8.9	12.3	1.7	0.6	2003
9.0	1.2	5.2	4.1	7.6	4.2	5.0	6.3	−1.3	9.0	12.1	2.5	1.6	2004
5.9	1.2	5.5	2.8	4.2	5.0	3.5	7.0	−1.3	10.1	12.1	2.2	1.1	2005
7.0	1.2	3.5	3.2	5.2	6.3	4.2	6.8	2.4	11.4	11.2	1.8	2.3	2006
8.3	4.0	3.8	4.9	3.7	6.0	4.2	7.1	−1.8	12.8	4.5	0.9	2.1	2007
6.9	2.9	−0.1	2.0	−3.3	4.8	1.8	5.0	−3.6	8.7	1.1	−1.1	−0.3	2008

Data 4 Growth Rate of Household Consumption at Constant Prices

	Bangladesh	Cambodia	ROC	Fiji	Hong Kong	India	Indonesia	Iran	Japan	Korea	Lao PDR	Malaysia
1970	–	–	–	–	–	–	–	–	–	–	–	–
1971	−9.8	n.a.	10.4	n.a.	12.2	−1.3	2.9	15.2	5.1	7.4	n.a.	12.7
1972	−12.1	n.a.	11.9	n.a.	7.2	1.9	5.8	−1.1	8.5	6.8	n.a.	5.0
1973	−5.0	n.a.	11.7	n.a.	12.5	4.4	2.2	16.2	8.2	8.8	n.a.	9.8
1974	−4.1	n.a.	5.9	n.a.	−2.2	−4.9	13.9	21.4	−0.7	7.2	n.a.	8.4
1975	2.8	n.a.	4.7	n.a.	3.5	8.4	12.5	26.2	3.9	4.3	n.a.	−1.2
1976	−8.5	n.a.	9.6	n.a.	7.3	3.1	5.7	0.8	3.1	8.4	n.a.	7.5
1977	10.2	n.a.	7.3	n.a.	15.6	8.5	1.9	14.9	4.0	4.1	n.a.	9.0
1978	3.5	n.a.	10.3	n.a.	16.0	2.0	9.6	−2.3	5.2	10.4	n.a.	9.4
1979	1.9	n.a.	10.7	n.a.	9.1	−1.4	15.6	8.3	6.3	6.8	n.a.	10.6
1980	1.3	n.a.	5.1	n.a.	11.5	14.8	16.6	−1.7	1.0	0.4	n.a.	11.3
1981	3.4	n.a.	3.8	n.a.	7.4	−0.7	15.1	0.8	1.7	6.0	n.a.	4.4
1982	−1.8	n.a.	4.7	n.a.	5.2	2.6	4.3	9.1	4.5	5.2	n.a.	3.2
1983	−1.2	n.a.	5.6	n.a.	7.4	9.9	−10.9	10.5	3.2	9.3	n.a.	3.4
1984	6.3	n.a.	8.0	n.a.	5.6	−0.3	6.6	1.6	2.9	7.4	n.a.	6.7
1985	3.2	n.a.	4.6	n.a.	4.2	3.9	2.0	4.3	4.0	6.8	n.a.	0.4
1986	2.1	n.a.	6.4	n.a.	8.1	2.0	4.4	−8.1	3.6	8.3	n.a.	−10.3
1987	1.9	n.a.	9.9	n.a.	10.1	5.8	5.8	−17.3	4.3	8.1	n.a.	2.3
1988	3.2	n.a.	12.3	n.a.	8.9	6.0	6.9	7.3	5.0	8.5	n.a.	10.9
1989	2.8	n.a.	12.5	n.a.	3.7	7.3	7.2	5.7	4.7	9.1	n.a.	12.2
1990	7.7	n.a.	8.1	n.a.	6.1	6.1	16.0	2.4	5.1	9.7	n.a.	10.9
1991	−0.2	n.a.	6.6	n.a.	8.9	3.4	7.7	13.3	2.2	8.1	n.a.	8.5
1992	1.4	n.a.	9.2	n.a.	8.0	2.8	5.9	3.7	2.1	6.3	n.a.	4.7
1993	1.0	n.a.	7.9	n.a.	7.5	6.7	7.9	−1.7	1.0	6.4	n.a.	6.2
1994	3.7	7.3	8.4	n.a.	6.2	3.2	7.5	−3.4	2.3	8.2	n.a.	8.9
1995	4.8	6.8	5.8	n.a.	1.7	3.4	11.9	1.7	1.9	10.0	n.a.	10.9
1996	2.2	10.0	6.7	n.a.	3.6	14.6	9.3	1.6	2.4	7.1	n.a.	6.9
1997	3.0	−1.6	6.6	n.a.	5.3	−0.2	7.4	9.8	0.7	3.8	n.a.	4.3
1998	0.4	8.5	6.0	n.a.	−5.7	6.8	−8.2	3.7	−0.9	−13.9	n.a.	−9.3
1999	1.6	6.4	4.8	n.a.	1.2	−0.9	3.4	3.4	1.0	11.2	n.a.	3.1
2000	2.9	3.2	4.5	n.a.	4.9	7.3	3.4	8.4	0.7	9.1	n.a.	12.2
2001	5.8	2.5	0.9	n.a.	1.8	5.5	3.6	7.7	1.6	4.9	n.a.	3.0
2002	3.1	4.6	3.3	n.a.	−0.9	3.4	1.2	14.1	1.1	8.4	n.a.	3.8
2003	5.1	7.5	3.0	n.a.	−1.3	6.3	−6.8	7.3	0.4	−0.6	n.a.	7.8
2004	2.8	11.9	5.2	n.a.	6.8	5.5	13.5	10.5	1.6	0.5	n.a.	9.4
2005	5.2	11.6	3.0	n.a.	3.0	9.2	7.1	7.0	1.3	4.6	n.a.	8.7
2006	4.1	6.4	1.6	n.a.	5.8	7.0	2.4	8.5	1.5	4.8	n.a.	6.6
2007	6.9	12.5	2.0	n.a.	8.2	9.3	7.0	8.7	1.6	4.9	n.a.	10.0
2008	7.5	7.8	−0.5	n.a.	2.3	9.0	10	5.5	−0.7	1.3	n.a.	8.2

Unit: Percentage (average annual growth rate).
Note: Household consumption includes consumption of NPISHs. For Myanmar, it also includes government consumption due to data limitations.
Sources: Official national accounts in each country, including our adjustments.

Mongolia	Nepal	Pakistan	Philippines	Singapore	Sri Lanka	Thailand	Vietnam	Brunei	China	Myanmar	US	EU15	
–	–	–	–	–	–	–	–	–	–	–	–	–	1970
n.a.	n.a.	2.6	2.7	11.2	0.4	2.3	n.a.	n.a.	4.0	4.3	3.7	4.2	1971
n.a.	n.a.	2.2	2.4	7.6	3.0	6.4	n.a.	n.a.	5.3	3.2	6.0	5.4	1972
n.a.	n.a.	6.2	4.0	3.9	5.8	7.3	n.a.	n.a.	6.9	2.3	4.8	5.1	1973
n.a.	n.a.	8.3	6.3	10.6	6.5	4.9	n.a.	n.a.	2.0	1.0	−1.1	1.6	1974
n.a.	n.a.	3.9	6.2	3.0	2.0	5.0	n.a.	n.a.	3.9	4.2	1.9	1.8	1975
n.a.	n.a.	−1.4	4.9	2.6	5.3	8.2	n.a.	n.a.	3.6	4.6	5.6	3.8	1976
n.a.	n.a.	4.0	1.8	4.4	12.9	8.9	n.a.	n.a.	2.7	3.1	4.1	2.8	1977
n.a.	n.a.	10.1	6.8	7.5	3.7	6.1	n.a.	n.a.	4.0	3.4	4.1	3.4	1978
n.a.	n.a.	8.5	2.5	7.5	10.0	9.1	n.a.	n.a.	6.7	3.4	2.4	3.6	1979
n.a.	n.a.	7.6	5.4	8.9	9.2	4.1	n.a.	n.a.	8.6	7.9	−0.2	1.8	1980
n.a.	n.a.	4.6	3.0	4.2	11.8	1.1	n.a.	n.a.	8.0	6.0	1.8	0.4	1981
n.a.	n.a.	4.4	4.1	−0.4	5.7	2.1	n.a.	n.a.	6.6	7.4	1.6	1.1	1982
n.a.	n.a.	4.2	2.3	4.4	3.8	8.2	n.a.	n.a.	7.8	4.7	5.1	1.3	1983
n.a.	n.a.	6.2	−1.9	6.9	1.3	2.6	n.a.	n.a.	11.3	8.6	5.5	1.7	1984
n.a.	n.a.	8.0	−3.7	2.7	6.2	2.4	n.a.	n.a.	12.7	1.7	5.0	2.5	1985
n.a.	n.a.	−0.1	0.1	7.5	4.8	2.2	n.a.	n.a.	4.6	−1.0	4.0	3.9	1986
n.a.	n.a.	4.2	8.6	10.8	0.5	11.7	−0.3	n.a.	5.8	−1.5	3.1	3.7	1987
n.a.	n.a.	10.4	3.9	9.2	5.5	11.6	8.3	n.a.	7.5	−18.7	4.2	4.1	1988
n.a.	n.a.	0.9	3.5	5.6	2.7	11.7	1.9	n.a.	−0.2	3.1	3.2	3.6	1989
n.a.	n.a.	4.1	4.7	9.9	7.2	7.9	1.5	18.3	3.6	0.1	2.3	2.7	1990
n.a.	n.a.	−0.7	2.0	4.4	−0.1	3.8	5.9	−16.8	8.3	−1.7	0.2	2.0	1991
n.a.	n.a.	11.2	2.0	6.0	9.9	8.0	3.9	42.2	12.5	9.8	3.4	1.8	1992
n.a.	n.a.	1.4	2.7	10.2	7.2	8.5	4.9	−10.8	8.1	6.9	3.8	−0.2	1993
n.a.	n.a.	4.1	2.0	4.7	8.2	10.4	5.5	−8.5	4.5	3.1	3.9	2.0	1994
n.a.	n.a.	6.8	7.6	3.7	3.4	9.5	5.8	−23.3	7.5	7.7	2.8	1.8	1995
n.a.	n.a.	6.7	3.8	3.1	3.3	2.9	8.6	9.8	9.0	1.9	3.4	2.1	1996
n.a.	n.a.	4.0	5.4	6.2	4.8	−2.2	5.3	27.9	4.4	2.7	3.5	2.2	1997
n.a.	n.a.	2.7	1.9	−4.3	8.6	−17.7	4.3	−6.6	5.7	2.3	5.0	3.4	1998
n.a.	n.a.	6.7	−2.2	10.7	0.8	7.6	2.6	11.0	8.0	10.6	5.3	3.6	1999
n.a.	n.a.	0.5	2.5	14.1	3.9	9.9	3.3	−10.7	8.3	9.0	4.9	3.4	2000
4.8	3.5	0.5	12.8	7.2	1.8	3.2	3.9	−15.4	5.5	15.4	2.7	2.1	2001
7.9	3.1	1.4	4.9	5.2	8.3	6.5	8.1	4.4	6.3	13.8	2.7	1.5	2002
−2.6	0.9	0.4	14.4	−3.3	8.0	3.6	6.9	13.7	6.3	13.0	3.0	1.6	2003
1.7	4.6	9.7	4.9	7.5	3.5	5.3	6.9	14.0	7.1	10.1	3.4	1.9	2004
5.9	5.3	12.1	7.8	3.7	2.1	6.1	4.0	15.8	7.6	11.1	3.3	1.9	2005
6.0	3.1	1.0	−0.3	3.3	6.5	3.7	6.8	7.2	9.2	9.9	3.0	2.1	2006
−1.1	1.3	4.6	4.1	6.8	4.1	−2.2	15.7	−2.0	9.7	4.7	2.2	1.9	2007
11.4	5.5	−2.7	5.2	0.7	7.1	7.7	8.7	−12.9	8.6	1.2	−0.4	0.2	2008

Data 5 Growth Rate of Government Consumption at Constant Prices

	Bangladesh	Cambodia	ROC	Fiji	Hong Kong	India	Indonesia	Iran	Japan	Korea	Lao PDR	Malaysia
1970	–	–	–	–	–	–	–	–	–	–	–	–
1971	−9.3	n.a.	5.5	n.a.	2.3	9.4	6.9	25.7	4.7	7.4	n.a.	−4.0
1972	−9.6	n.a.	3.9	n.a.	6.0	1.0	7.9	22.7	4.8	6.2	n.a.	15.6
1973	42.0	n.a.	6.6	n.a.	9.7	−0.1	24.4	6.4	5.3	2.6	n.a.	4.5
1974	1.5	n.a.	−9.2	n.a.	8.8	−3.8	−11.1	48.1	−0.4	8.3	n.a.	13.9
1975	100.8	n.a.	12.2	n.a.	6.1	9.2	26.5	19.6	11.9	7.1	n.a.	6.6
1976	16.9	n.a.	7.9	n.a.	6.6	7.2	7.1	10.4	4.1	4.2	n.a.	8.2
1977	−8.8	n.a.	10.3	n.a.	8.9	3.4	15.2	−2.7	4.1	7.1	n.a.	9.4
1978	10.7	n.a.	7.0	n.a.	9.5	7.1	16.2	1.7	5.1	6.7	n.a.	5.7
1979	−2.9	n.a.	7.0	n.a.	10.1	6.1	9.1	−7.5	4.1	5.0	n.a.	1.7
1980	4.3	n.a.	9.2	n.a.	7.2	4.5	10.2	−10.1	3.1	8.7	n.a.	22.4
1981	−2.6	n.a.	4.1	n.a.	19.8	4.1	9.7	−1.0	5.4	5.7	n.a.	12.5
1982	0.3	n.a.	6.1	n.a.	5.3	9.2	7.9	−2.0	4.4	3.1	n.a.	8.4
1983	2.5	n.a.	5.4	n.a.	5.9	4.4	−1.0	1.0	5.5	3.7	n.a.	4.5
1984	3.7	n.a.	8.6	n.a.	3.8	7.2	3.4	−6.4	3.3	3.0	n.a.	−5.0
1985	1.6	n.a.	6.3	n.a.	2.7	10.0	11.8	4.7	1.4	3.3	n.a.	−0.9
1986	7.6	n.a.	3.2	n.a.	6.3	9.0	0.1	−23.0	3.3	6.2	n.a.	1.3
1987	2.0	n.a.	8.8	n.a.	3.8	7.9	−1.5	−7.2	3.8	6.3	n.a.	1.5
1988	0.8	n.a.	7.7	n.a.	3.7	5.3	7.3	−0.5	3.9	8.5	n.a.	7.1
1989	0.6	n.a.	11.2	n.a.	5.1	5.2	9.8	−4.0	2.9	8.4	n.a.	3.7
1990	0.4	n.a.	12.3	n.a.	5.3	3.3	4.7	4.2	3.3	9.9	n.a.	5.7
1991	2.1	n.a.	7.8	n.a.	7.4	−0.2	5.1	6.4	4.0	5.5	n.a.	11.1
1992	10.3	n.a.	2.3	n.a.	12.4	3.4	5.6	−0.1	2.6	6.3	n.a.	4.8
1993	11.1	n.a.	1.4	n.a.	2.1	5.8	0.2	18.1	3.1	4.9	n.a.	8.1
1994	3.3	54.0	−0.4	n.a.	3.7	1.4	2.3	−0.4	3.5	3.5	n.a.	7.6
1995	2.3	−26.4	4.1	n.a.	3.0	7.5	1.3	−3.3	3.9	3.8	n.a.	5.9
1996	−0.8	22.4	6.9	n.a.	3.6	4.5	2.7	−1.4	2.3	7.1	n.a.	0.7
1997	3.2	2.0	5.6	n.a.	2.2	10.7	0.1	−3.3	0.8	2.6	n.a.	5.5
1998	12.4	−7.7	3.6	n.a.	0.5	11.5	−16.7	4.2	1.8	2.2	n.a.	−9.3
1999	0.6	15.5	−4.0	n.a.	3.1	12.4	0.7	−6.5	4.1	3.0	n.a.	15.8
2000	0.9	11.7	1.2	n.a.	2.0	0.9	6.3	9.8	4.3	1.7	n.a.	1.6
2001	4.4	8.5	1.8	n.a.	5.9	2.2	7.3	3.8	3.0	4.9	n.a.	14.6
2002	17.5	9.4	1.5	n.a.	2.4	−0.4	12.2	2.6	2.4	4.8	n.a.	11.2
2003	12.4	4.7	−1.2	n.a.	1.8	2.5	9.6	3.8	2.3	4.3	n.a.	8.3
2004	10.1	−6.9	0.6	n.a.	0.7	3.5	3.9	6.0	1.8	3.7	n.a.	7.4
2005	7.5	2.9	0.2	n.a.	−3.3	7.9	6.4	6.7	1.5	4.2	n.a.	6.3
2006	5.8	−5.0	−0.7	n.a.	0.3	3.7	9.2	5.9	0.4	6.4	n.a.	4.9
2007	6.2	59.9	2.1	n.a.	2.9	9.2	3.8	−8.6	1.5	5.3	n.a.	6.4
2008	3.5	4.9	0.7	n.a.	1.8	15.4	9.9	19.8	0.5	4.2	n.a.	10.2

Unit: Percentage (average annual growth rate).
Note: Government consumption includes government expenditure on individual consumption goods and services as well as collective consumption services.
Sources: Official national accounts in each country, including our adjustments.

Mongolia	Nepal	Pakistan	Philippines	Singapore	Sri Lanka	Thailand	Vietnam	Brunei	China	Myanmar	US	EU15	
–	–	–	–	–	–	–	–	–	–	–	–	–	1970
n.a.	n.a.	4.6	7.4	15.7	5.1	4.4	n.a.	n.a.	16.0	4.5	−2.6	4.9	1971
n.a.	n.a.	7.5	14.4	12.5	3.8	3.1	n.a.	n.a.	4.9	1.3	−0.9	4.7	1972
n.a.	n.a.	−4.2	10.4	5.3	18.8	7.6	n.a.	n.a.	2.4	−2.7	−0.5	4.7	1973
n.a.	n.a.	−6.0	13.2	0.1	1.9	−0.7	n.a.	n.a.	7.1	6.0	2.5	4.4	1974
n.a.	n.a.	10.2	5.4	2.7	−10.7	13.2	n.a.	n.a.	4.3	4.0	2.0	4.7	1975
n.a.	n.a.	26.6	2.1	4.9	2.5	17.9	n.a.	n.a.	6.3	4.3	0.6	3.3	1976
n.a.	n.a.	4.1	0.9	8.8	7.9	9.8	n.a.	n.a.	7.0	4.7	1.1	2.3	1977
n.a.	n.a.	4.8	3.0	10.9	24.8	12.2	n.a.	n.a.	15.6	2.8	3.2	4.1	1978
n.a.	n.a.	3.9	3.6	−0.5	0.9	14.4	n.a.	n.a.	25.1	2.0	2.1	3.3	1979
n.a.	n.a.	4.4	3.7	9.0	−1.7	6.2	n.a.	n.a.	3.9	7.3	2.2	2.8	1980
n.a.	n.a.	11.4	−3.0	5.1	−0.9	13.9	n.a.	n.a.	7.5	5.7	1.1	3.0	1981
n.a.	n.a.	8.4	7.2	12.4	15.8	1.2	n.a.	n.a.	10.5	18.1	1.5	1.7	1982
n.a.	n.a.	16.4	−4.8	9.2	−7.1	5.1	n.a.	n.a.	9.8	−6.6	3.5	1.7	1983
n.a.	n.a.	11.7	−12.6	5.1	0.9	7.8	n.a.	n.a.	20.3	2.0	3.4	1.3	1984
n.a.	n.a.	6.5	−1.0	21.9	21.0	6.6	n.a.	n.a.	13.2	5.5	6.1	2.1	1985
n.a.	n.a.	9.6	0.3	1.1	15.9	−0.7	n.a.	n.a.	12.7	0.6	5.0	2.2	1986
n.a.	n.a.	12.4	4.7	0.8	2.3	0.3	7.6	n.a.	7.1	−13.1	3.1	2.4	1987
n.a.	n.a.	4.3	8.7	−6.3	0.1	4.0	8.8	n.a.	5.4	16.7	1.3	1.9	1988
n.a.	n.a.	18.6	6.8	5.4	−5.7	2.6	10.9	n.a.	4.6	−14.8	2.9	0.9	1989
n.a.	n.a.	−3.2	6.5	10.3	4.3	6.7	10.5	2.3	10.1	11.3	3.2	2.5	1990
n.a.	n.a.	−0.5	0.7	7.5	8.9	6.0	8.1	−0.2	19.0	−16.8	1.1	3.1	1991
n.a.	n.a.	−8.2	−3.7	0.4	0.4	6.2	7.2	5.9	14.1	−7.9	0.4	2.5	1992
n.a.	n.a.	16.3	6.0	13.7	2.8	5.0	12.1	4.2	10.0	10.8	−0.9	0.7	1993
n.a.	n.a.	−10.8	5.9	−1.7	3.6	7.9	9.9	2.6	10.0	−15.5	0.1	0.9	1994
n.a.	n.a.	5.3	5.4	11.1	8.5	5.1	8.1	2.3	7.0	1.8	0.6	0.7	1995
n.a.	n.a.	6.6	4.0	18.0	8.2	11.4	7.2	1.6	10.4	12.8	1.0	1.5	1996
n.a.	n.a.	−8.7	4.5	7.1	6.9	−2.9	3.9	1.6	7.3	6.6	1.8	0.9	1997
n.a.	n.a.	6.6	−2.0	8.0	5.0	3.8	3.2	−4.0	9.3	8.2	2.0	1.4	1998
n.a.	n.a.	−7.2	6.5	6.4	3.8	3.0	−5.9	2.0	8.6	−2.1	3.4	2.2	1999
n.a.	n.a.	7.3	6.0	16.9	5.2	2.2	4.9	7.4	11.2	2.3	2.0	2.4	2000
7.8	7.5	−5.8	−5.5	4.0	−1.7	2.5	6.4	8.9	11.1	1.1	4.0	2.1	2001
6.0	10.0	14.0	−3.9	6.3	−1.8	0.7	5.2	−2.0	8.4	1.0	4.5	2.6	2002
3.3	8.4	7.0	2.6	1.0	4.7	2.4	6.9	−2.6	6.6	11.8	2.3	2.0	2003
13.6	1.2	1.4	1.4	0.4	8.9	5.6	7.5	4.1	8.2	11.4	1.5	1.9	2004
0.6	0.8	1.7	2.3	5.0	11.3	10.7	7.9	−1.1	9.3	11.1	0.4	1.6	2005
15.1	6.9	39.4	9.9	7.0	9.2	2.2	8.2	12.1	8.5	−26.4	1.4	1.8	2006
17.8	3.2	−10.1	6.4	2.9	7.1	9.2	8.5	14.6	9.5	−3.8	1.3	2.1	2007
24.1	9.3	32.8	3.2	8.1	9.3	4.5	7.3	−0.8	8.8	−1.5	2.9	2.1	2008

Data 6 Growth Rate of Investment at Constant Prices

	Bangladesh	Cambodia	ROC	Fiji	Hong Kong	India	Indonesia	Iran	Japan	Korea	Lao PDR	Malaysia
1970	–	–	–	–	–	–	–	–	–	–	–	–
1971	−27.4	n.a.	16.9	n.a.	20.9	8.5	9.9	13.4	1.5	16.1	n.a.	7.8
1972	−80.9	n.a.	13.8	n.a.	8.8	−1.7	7.1	24.7	9.5	−9.4	n.a.	8.9
1973	90.1	n.a.	15.9	n.a.	11.1	9.4	13.1	8.1	11.2	27.7	n.a.	25.8
1974	−24.9	n.a.	25.6	n.a.	0.1	3.8	7.6	15.0	−6.8	28.9	n.a.	27.0
1975	16.6	n.a.	−7.8	n.a.	1.1	4.1	12.5	33.1	−4.6	−6.3	n.a.	−28.3
1976	23.3	n.a.	15.6	n.a.	23.0	6.2	4.7	29.8	3.7	21.0	n.a.	11.9
1977	23.0	n.a.	7.9	n.a.	15.6	4.5	10.3	−14.5	3.1	27.6	n.a.	18.3
1978	10.8	n.a.	12.8	n.a.	10.0	16.0	13.4	−25.4	7.4	27.2	n.a.	12.6
1979	22.2	n.a.	16.8	n.a.	15.1	−2.3	−1.8	−34.5	6.3	16.5	n.a.	19.2
1980	4.7	n.a.	7.2	n.a.	17.2	−11.2	14.7	18.6	−0.5	−18.7	n.a.	9.5
1981	−13.3	n.a.	1.5	n.a.	8.4	20.6	15.3	−9.5	2.8	2.6	n.a.	15.7
1982	7.8	n.a.	−5.5	n.a.	−2.2	−2.0	12.8	1.8	0.0	7.4	n.a.	14.3
1983	5.0	n.a.	8.2	n.a.	−5.1	−2.7	34.3	37.4	−2.0	15.5	n.a.	10.1
1984	9.2	n.a.	6.3	n.a.	3.7	11.7	19.5	−11.1	5.0	10.7	n.a.	2.8
1985	5.9	n.a.	−8.5	n.a.	−4.7	12.0	13.4	−20.6	9.0	8.1	n.a.	−23.6
1986	6.5	n.a.	14.7	n.a.	10.9	1.0	14.7	−17.9	5.2	12.2	n.a.	−13.4
1987	7.9	n.a.	21.4	n.a.	15.1	−1.5	−9.8	5.9	6.9	15.2	n.a.	2.0
1988	5.9	n.a.	17.0	n.a.	9.9	16.5	−16.4	−25.8	13.8	16.7	n.a.	23.5
1989	6.8	n.a.	5.4	n.a.	−4.4	2.3	−7.5	15.5	8.8	16.5	n.a.	20.2
1990	6.2	n.a.	6.4	n.a.	9.3	10.1	23.4	30.9	6.9	14.7	n.a.	18.8
1991	1.4	n.a.	13.6	n.a.	7.6	−11.9	−11.8	32.4	2.9	15.5	n.a.	26.4
1992	4.4	n.a.	11.5	n.a.	9.5	15.0	7.1	2.0	−3.3	−2.7	n.a.	2.8
1993	9.1	n.a.	7.9	n.a.	0.7	−5.3	13.5	−24.0	−3.1	6.2	n.a.	20.8
1994	9.0	0.6	7.4	n.a.	21.7	20.1	17.8	−24.0	−2.3	13.8	n.a.	16.5
1995	8.7	31.7	5.6	n.a.	13.7	17.9	10.9	7.3	2.7	10.5	n.a.	18.4
1996	10.1	3.0	−0.4	n.a.	−2.2	−15.1	7.8	21.8	4.7	9.7	n.a.	5.5
1997	10.5	10.6	11.8	n.a.	13.1	17.4	−17.2	9.4	0.0	−2.4	n.a.	10.8
1998	11.4	−24.4	7.1	n.a.	−17.5	1.1	−47.9	−0.1	−7.7	−41.7	n.a.	−55.9
1999	9.5	43.3	0.3	n.a.	−17.0	22.4	−18.0	4.4	−4.6	23.8	n.a.	−3.9
2000	7.0	12.7	8.0	n.a.	17.2	−6.5	21.1	8.4	4.6	12.7	n.a.	26.4
2001	5.7	15.8	−27.3	n.a.	−4.3	2.4	7.6	10.7	−1.6	−0.3	n.a.	−10.2
2002	7.9	12.9	2.1	n.a.	−0.6	11.8	−0.8	12.2	−5.7	7.3	n.a.	8.4
2003	7.6	18.0	3.1	n.a.	2.0	11.9	6.6	13.5	0.5	4.4	n.a.	−0.5
2004	8.8	−7.8	16.5	n.a.	1.8	21.1	9.2	8.8	2.8	2.7	n.a.	10.6
2005	10.2	25.9	−0.1	n.a.	−0.5	14.8	11.2	5.8	2.6	2.3	n.a.	−5.4
2006	8.0	21.6	0.5	n.a.	8.1	14.9	1.9	4.0	0.9	4.3	n.a.	8.4
2007	8.2	5.5	−0.7	n.a.	7.8	14.2	4.9	8.5	0.2	3.0	n.a.	10.2
2008	1.9	15.3	−6.1	n.a.	−0.7	−2.1	11.4	9.6	−4.2	0.3	n.a.	0.2

Unit: Percentage (average annual growth rate).
Note: Investment consists of GFCF (tangible assets, mineral exploration, and software) and changes in inventories for the whole economy.
Sources: Official national accounts in each country, including our adjustments.

Mongolia	Nepal	Pakistan	Philippines	Singapore	Sri Lanka	Thailand	Vietnam	Brunei	China	Myanmar	US	EU15	
–	–	–	–	–	–	–	–	–	–	–	–	–	1970
n.a.	n.a.	−3.5	7.9	15.4	−6.8	−0.3	n.a.	n.a.	8.8	−16.2	6.3	−0.2	1971
n.a.	n.a.	−6.0	2.2	12.9	2.9	−1.3	n.a.	n.a.	−4.0	5.3	7.8	3.5	1972
n.a.	n.a.	1.1	5.1	9.8	1.8	15.1	n.a.	n.a.	13.0	−10.6	9.2	8.7	1973
n.a.	n.a.	7.8	24.8	16.9	3.6	−1.5	n.a.	n.a.	3.7	−5.3	−5.6	−0.5	1974
n.a.	n.a.	2.2	23.8	−9.9	4.8	−0.1	n.a.	n.a.	11.7	7.1	−14.6	−11.8	1975
n.a.	n.a.	27.6	14.2	6.7	11.0	9.9	n.a.	n.a.	−6.8	6.1	14.5	8.3	1976
n.a.	n.a.	8.0	0.9	−4.4	4.2	21.7	13.1	n.a.	8.7	22.2	11.1	−0.4	1977
n.a.	n.a.	−0.4	8.1	15.9	24.3	11.8	−2.9	n.a.	22.0	31.5	10.6	0.3	1978
n.a.	n.a.	−1.8	11.2	19.9	13.5	1.4	−3.9	n.a.	4.6	16.9	3.4	5.5	1979
n.a.	n.a.	2.3	6.6	14.9	15.0	11.5	−11.1	n.a.	5.4	6.5	−9.1	0.9	1980
n.a.	n.a.	−0.4	9.1	7.3	7.8	7.2	−19.5	n.a.	−1.3	12.2	6.6	−9.5	1981
n.a.	n.a.	11.3	5.8	13.2	−2.0	−3.3	7.3	n.a.	7.1	1.0	−12.9	0.4	1982
n.a.	n.a.	7.8	7.2	10.0	−2.4	16.4	9.8	n.a.	11.2	−15.9	8.7	0.0	1983
n.a.	n.a.	4.9	−31.2	9.8	−10.3	5.5	19.9	n.a.	14.6	−10.5	23.1	3.4	1984
n.a.	n.a.	9.8	−37.0	−13.6	4.8	−3.6	31.7	n.a.	21.3	7.1	1.5	2.6	1985
n.a.	n.a.	4.5	1.9	−10.2	−5.0	−2.2	14.6	n.a.	11.1	−21.2	1.0	4.1	1986
n.a.	n.a.	4.3	8.2	7.8	4.6	17.1	19.2	n.a.	8.0	−1.8	3.6	4.2	1987
n.a.	n.a.	−1.2	12.1	2.0	−5.9	22.3	0.7	n.a.	10.6	−4.5	1.5	10.2	1988
n.a.	n.a.	7.2	21.1	12.3	0.9	18.2	1.8	n.a.	1.7	−2.9	3.8	6.9	1989
n.a.	n.a.	5.1	14.5	14.6	−1.8	26.4	3.7	5.4	1.6	24.2	−1.6	3.1	1990
n.a.	n.a.	1.2	−17.0	3.6	4.4	12.2	5.9	8.2	7.9	16.4	−6.7	−0.4	1991
n.a.	n.a.	11.8	4.5	9.4	7.5	5.9	20.4	16.2	12.1	1.6	6.3	−1.3	1992
n.a.	n.a.	4.0	8.1	16.1	13.5	8.7	36.0	18.4	21.6	8.2	6.1	−7.7	1993
n.a.	n.a.	−0.7	7.5	0.8	10.7	10.5	15.9	−10.7	15.6	21.9	10.2	5.2	1994
n.a.	n.a.	4.1	4.3	14.1	−7.4	11.9	14.8	7.5	15.9	24.9	2.7	5.0	1995
n.a.	n.a.	5.5	11.5	12.5	8.4	6.1	13.2	62.1	8.6	11.0	7.5	0.2	1996
n.a.	n.a.	−3.8	10.9	16.3	6.7	−23.5	9.4	−47.4	2.9	10.9	10.2	4.5	1997
n.a.	n.a.	−0.3	−13.3	−22.7	11.3	−63.0	11.8	−13.3	5.0	14.7	8.6	8.1	1998
n.a.	n.a.	−6.8	−2.1	6.9	2.0	1.7	1.5	−19.6	5.8	16.7	8.2	5.0	1999
n.a.	n.a.	5.0	19.1	21.4	7.6	7.7	9.7	−28.1	4.7	10.8	6.0	5.0	2000
−4.0	−10.1	4.4	−12.1	−20.8	−10.5	1.8	10.2	6.6	12.7	6.4	−5.5	−0.3	2001
2.5	4.3	−0.1	0.4	−8.2	7.7	6.3	12.0	34.4	13.2	8.3	−0.2	−1.8	2002
38.1	13.0	5.5	3.6	−29.6	11.1	12.0	11.2	−20.2	18.3	23.7	3.2	2.0	2003
16.2	7.2	−5.5	2.9	35.4	17.4	12.2	10.1	4.0	15.3	20.2	8.0	3.2	2004
29.0	5.7	12.1	−7.2	−0.4	11.2	10.8	10.0	2.7	10.1	23.0	4.4	2.8	2005
20.3	5.0	17.1	4.2	14.1	10.9	0.7	10.4	2.7	15.6	24.8	2.7	6.0	2006
21.4	21.0	12.4	10.7	11.7	8.9	1.6	22.6	20.4	13.9	3.8	−2.4	5.2	2007
25.0	7.7	7.0	2.6	32.2	3.0	3.7	5.1	12.4	10.9	−1.5	−7.3	−2.4	2008

Data 7 Growth Rate of Export at Constant Prices

	Bangladesh	Cambodia	ROC	Fiji	Hong Kong	India	Indonesia	Iran	Japan	Korea	Lao PDR	Malaysia
1970	–	–	–	–	–	–	–	–	–	–	–	–
1971	−32.3	n.a.	30.1	n.a.	4.1	1.0	11.1	15.9	14.8	22.0	n.a.	1.7
1972	−26.0	n.a.	30.4	n.a.	8.3	7.9	20.6	13.4	4.0	34.4	n.a.	2.0
1973	−34.9	n.a.	22.9	n.a.	9.5	4.8	22.1	10.9	5.1	44.1	n.a.	13.3
1974	11.5	n.a.	−6.4	n.a.	−3.7	7.9	3.6	−1.8	20.8	5.3	n.a.	14.8
1975	22.1	n.a.	−0.8	n.a.	1.1	15.2	−10.2	−10.8	−1.0	18.2	n.a.	−3.0
1976	22.7	n.a.	32.1	n.a.	23.3	18.1	11.8	10.3	15.4	32.1	n.a.	15.7
1977	−8.0	n.a.	12.1	n.a.	4.1	−3.6	20.2	−8.2	11.1	18.4	n.a.	4.1
1978	15.3	n.a.	21.0	n.a.	11.6	7.5	1.8	−31.8	−0.3	12.8	n.a.	7.3
1979	1.0	n.a.	6.1	n.a.	15.9	10.6	2.5	−24.9	4.2	1.2	n.a.	16.5
1980	24.7	n.a.	8.0	n.a.	13.2	5.1	−5.8	−108.2	15.7	8.3	n.a.	3.1
1981	14.9	n.a.	9.1	n.a.	12.8	−0.8	−2.4	−11.3	12.5	14.2	n.a.	−0.8
1982	−4.6	n.a.	1.9	n.a.	−1.1	5.8	−15.0	65.9	1.4	5.8	n.a.	10.1
1983	8.8	n.a.	15.4	n.a.	12.0	−0.9	6.1	19.8	4.9	13.9	n.a.	11.6
1984	−0.9	n.a.	16.8	n.a.	17.8	7.0	6.7	−23.1	14.3	13.6	n.a.	12.9
1985	7.6	n.a.	1.9	n.a.	5.7	−6.5	−7.0	−9.9	5.1	2.2	n.a.	0.4
1986	−1.2	n.a.	24.9	n.a.	13.8	5.3	14.6	−17.8	−5.3	21.9	n.a.	16.2
1987	1.9	n.a.	17.8	n.a.	26.3	12.0	11.3	37.8	−0.1	19.8	n.a.	8.5
1988	10.2	n.a.	6.9	n.a.	20.8	7.2	1.0	13.1	6.5	11.0	n.a.	10.3
1989	8.5	n.a.	4.8	n.a.	8.5	11.3	9.9	7.6	9.1	−3.7	n.a.	14.1
1990	16.4	n.a.	0.8	n.a.	8.1	10.5	3.3	23.9	6.9	4.8	n.a.	16.4
1991	−3.1	n.a.	12.2	n.a.	14.0	9.2	17.2	15.8	5.1	10.2	n.a.	14.6
1992	19.8	n.a.	6.6	n.a.	16.5	4.8	12.8	3.5	4.3	13.0	n.a.	11.9
1993	15.2	n.a.	6.6	n.a.	11.8	12.9	5.9	14.3	0.4	7.6	n.a.	10.9
1994	3.6	55.3	5.4	n.a.	9.1	12.3	9.5	6.3	3.8	15.2	n.a.	19.8
1995	26.8	36.3	12.0	n.a.	9.5	27.3	7.4	−23.3	4.1	22.1	n.a.	17.4
1996	7.8	−19.2	6.7	n.a.	5.4	6.1	7.3	2.5	5.7	11.0	n.a.	8.8
1997	15.3	30.8	8.2	n.a.	4.7	−2.4	7.5	−4.9	10.5	18.0	n.a.	5.3
1998	11.6	−3.0	1.9	n.a.	−4.6	13.0	10.6	10.0	−2.7	12.1	n.a.	0.5
1999	2.2	40.3	11.6	n.a.	4.4	16.6	−38.3	2.1	1.9	13.4	n.a.	12.4
2000	13.4	26.5	16.8	n.a.	15.1	16.7	23.5	1.7	12.0	16.6	n.a.	14.9
2001	13.9	15.4	−9.0	n.a.	−1.7	4.2	0.6	−1.9	−7.2	−3.5	n.a.	−7.1
2002	−2.3	12.2	10.8	n.a.	8.6	19.1	−1.2	8.1	7.2	11.4	n.a.	5.3
2003	6.6	10.5	9.7	n.a.	12.1	9.2	5.7	11.8	8.8	13.5	n.a.	5.0
2004	11.8	24.8	14.3	n.a.	14.3	24.0	12.7	−0.1	13.0	18.0	n.a.	14.9
2005	14.5	15.2	7.5	n.a.	10.1	23.0	15.4	5.2	6.7	7.5	n.a.	8.0
2006	23.0	17.6	10.8	n.a.	9.0	19.7	9.0	7.7	9.2	10.8	n.a.	6.4
2007	12.2	9.7	9.1	n.a.	8.0	5.0	8.2	−1.6	8.1	11.9	n.a.	4.0
2008	6.8	14.5	0.6	n.a.	2.5	17.7	9.1	−0.4	1.6	6.4	n.a.	1.6

Unit: Percentage (average annual growth rate).
Sources: Official national accounts in each country, including our adjustments.

Mongolia	Nepal	Pakistan	Philippines	Singapore	Sri Lanka	Thailand	Vietnam	Brunei	China	Myanmar	US	EU15	
–	–	–	–	–	–	–	–	–	–	–	–	–	1970
n.a.	n.a.	2.2	2.9	15.1	−3.2	16.4	n.a.	n.a.	12.4	15.2	3.6	6.6	1971
n.a.	n.a.	−15.2	9.3	−8.8	−2.1	15.6	n.a.	n.a.	18.0	4.3	9.2	7.6	1972
n.a.	n.a.	24.7	13.6	21.7	1.0	−4.6	n.a.	n.a.	38.3	−9.0	19.2	10.3	1973
n.a.	n.a.	−10.2	−12.5	31.1	−14.2	7.5	n.a.	n.a.	16.2	−29.1	9.6	6.6	1974
n.a.	n.a.	−16.3	−0.3	−3.8	18.3	−4.9	n.a.	n.a.	0.3	11.5	1.7	−3.7	1975
n.a.	n.a.	6.3	17.1	12.5	−5.1	21.6	n.a.	n.a.	3.1	7.8	6.6	9.1	1976
n.a.	n.a.	−15.1	15.3	15.3	−8.6	10.6	n.a.	n.a.	4.8	12.7	4.7	5.7	1977
n.a.	n.a.	12.0	3.7	12.5	9.0	11.7	n.a.	n.a.	46.3	12.8	12.5	5.2	1978
n.a.	n.a.	3.9	6.6	21.9	8.8	9.9	n.a.	n.a.	20.3	19.2	12.1	6.6	1979
n.a.	n.a.	23.7	12.5	22.2	4.9	7.5	n.a.	n.a.	7.7	5.2	12.8	1.0	1980
n.a.	n.a.	13.4	9.0	9.3	3.0	8.8	n.a.	n.a.	15.4	3.1	3.8	4.7	1981
n.a.	n.a.	−6.2	−11.1	5.6	9.5	11.0	n.a.	n.a.	1.8	−5.7	−5.6	1.0	1982
n.a.	n.a.	22.0	4.4	5.8	−3.0	−6.2	n.a.	n.a.	−0.7	14.4	−0.2	3.1	1983
n.a.	n.a.	−3.8	3.8	6.8	14.3	15.9	n.a.	n.a.	13.3	−11.2	10.6	7.6	1984
n.a.	n.a.	−0.4	−18.2	−1.6	4.9	9.3	n.a.	n.a.	2.0	−9.4	6.0	4.2	1985
n.a.	n.a.	28.4	15.8	12.1	6.5	14.3	n.a.	n.a.	0.7	17.9	10.6	1.5	1986
n.a.	n.a.	11.6	6.3	12.9	1.6	19.7	8.1	n.a.	7.7	−20.7	13.1	3.8	1987
n.a.	n.a.	−4.7	13.7	26.5	3.1	24.0	−10.6	n.a.	7.3	10.2	17.2	5.5	1988
n.a.	n.a.	12.9	10.2	10.0	7.9	19.2	102.5	n.a.	2.5	24.5	12.6	7.5	1989
n.a.	n.a.	1.1	1.2	13.2	10.5	12.9	12.4	1.3	5.1	13.5	10.2	6.4	1990
n.a.	n.a.	28.9	6.4	10.5	4.1	14.1	22.9	8.4	−10.9	−2.8	8.2	4.5	1991
n.a.	n.a.	12.9	3.0	8.4	14.0	12.9	17.3	5.9	14.7	31.6	8.7	3.5	1992
n.a.	n.a.	1.3	6.0	17.3	12.8	12.2	3.9	−2.8	14.6	14.6	5.5	1.7	1993
n.a.	n.a.	3.1	18.1	19.9	10.4	13.3	22.3	2.8	27.6	4.7	10.5	8.9	1994
n.a.	n.a.	−3.1	11.4	14.2	7.4	14.4	16.1	15.5	11.0	−24.9	11.5	8.3	1995
n.a.	n.a.	2.0	14.3	10.1	3.8	−5.7	25.3	−3.5	18.5	9.7	9.6	5.2	1996
n.a.	n.a.	−6.8	15.8	10.6	11.0	7.0	10.8	−5.2	26.8	19.2	12.8	9.8	1997
n.a.	n.a.	−5.9	−23.6	−2.9	0.1	7.9	7.5	−10.5	5.5	16.0	3.8	6.5	1998
n.a.	n.a.	−2.9	3.6	8.7	5.6	8.6	12.5	13.1	8.7	−8.0	5.7	5.5	1999
n.a.	n.a.	14.9	15.7	14.8	15.8	16.1	12.7	11.2	27.1	58.4	9.6	11.4	2000
8.8	−26.4	11.5	−3.5	−3.5	−8.3	−4.3	15.3	1.3	10.8	15.3	−4.5	3.5	2001
3.3	−4.9	9.5	4.0	7.8	3.3	11.3	8.3	5.6	18.0	18.7	−0.7	1.6	2002
7.9	11.6	25.0	4.8	13.9	3.3	6.8	11.4	2.2	15.4	−28.8	2.8	1.3	2003
20.9	−3.1	−1.5	14.0	18.5	7.5	9.2	17.8	−0.7	19.9	11.1	10.2	6.8	2004
5.2	−1.3	9.2	4.7	12.5	6.4	4.1	13.5	−1.3	19.7	11.6	7.5	5.3	2005
−4.2	0.3	9.4	12.6	11.5	3.8	8.8	13.8	3.6	17.1	−39.4	9.5	8.3	2006
10.9	−0.6	2.3	5.3	9.4	7.1	7.5	12.4	−10.1	14.6	38.5	9.8	4.4	2007
−4.5	3.8	−5.5	−1.9	4.9	0.4	5.0	1.2	−6.4	9.2	1.9	6.9	1.0	2008

Data 8 Growth Rate of Import at Constant Prices

	Bangladesh	Cambodia	ROC	Fiji	Hong Kong	India	Indonesia	Iran	Japan	Korea	Lao PDR	Malaysia
1970	–	–	–	–	–	–	–	–	–	–	–	–
1971	−24.3	n.a.	19.5	n.a.	12.0	16.6	9.5	17.8	6.8	17.9	n.a.	−0.7
1972	−0.1	n.a.	19.3	n.a.	4.8	−1.9	24.0	15.1	10.0	0.9	n.a.	−3.1
1973	−46.7	n.a.	21.7	n.a.	9.8	7.8	19.4	23.9	21.8	31.2	n.a.	15.4
1974	−11.5	n.a.	12.7	n.a.	−8.0	−13.6	23.8	58.6	4.1	16.2	n.a.	31.4
1975	31.9	n.a.	−5.4	n.a.	3.7	1.3	7.6	41.3	−10.9	2.8	n.a.	−18.7
1976	−59.2	n.a.	21.5	n.a.	21.2	1.9	7.8	−2.2	6.5	22.3	n.a.	8.8
1977	46.2	n.a.	5.1	n.a.	7.7	24.2	20.0	12.5	4.0	18.8	n.a.	14.7
1978	10.4	n.a.	13.0	n.a.	18.8	0.0	14.5	−36.1	6.7	24.5	n.a.	12.1
1979	28.8	n.a.	17.1	n.a.	16.1	17.7	18.4	−28.3	12.1	11.4	n.a.	18.6
1980	5.8	n.a.	6.1	n.a.	16.8	13.4	14.1	2.0	−8.1	−4.1	n.a.	18.7
1981	10.1	n.a.	1.6	n.a.	12.0	9.6	23.9	−5.4	2.1	5.3	n.a.	5.4
1982	9.0	n.a.	−2.2	n.a.	−1.5	3.4	7.9	−11.4	−0.7	3.9	n.a.	12.9
1983	−4.2	n.a.	9.9	n.a.	9.6	19.9	11.6	32.7	−3.5	9.7	n.a.	8.6
1984	−6.7	n.a.	13.6	n.a.	13.7	−15.5	−7.8	−37.5	10.0	8.5	n.a.	6.3
1985	7.0	n.a.	−3.8	n.a.	6.3	13.0	5.1	−7.2	−2.7	0.1	n.a.	−10.5
1986	−4.2	n.a.	19.3	n.a.	12.6	15.8	4.1	−13.8	3.7	17.2	n.a.	−2.7
1987	5.5	n.a.	24.2	n.a.	25.8	−1.7	2.0	9.5	8.6	17.6	n.a.	4.3
1988	7.2	n.a.	22.2	n.a.	22.5	8.8	−19.4	−16.1	17.1	12.7	n.a.	18.0
1989	14.0	n.a.	6.6	n.a.	8.2	2.1	10.9	18.8	16.5	14.8	n.a.	22.9
1990	8.9	n.a.	5.3	n.a.	10.8	3.3	20.8	27.5	7.8	12.5	n.a.	23.3
1991	−16.3	n.a.	13.8	n.a.	16.6	0.0	14.6	28.6	−1.1	17.0	n.a.	22.5
1992	−9.2	n.a.	9.3	n.a.	18.9	19.2	8.3	−9.5	−1.1	5.3	n.a.	6.2
1993	31.8	n.a.	7.1	n.a.	11.4	17.6	4.1	−21.9	−1.3	4.7	n.a.	14.0
1994	−6.3	28.7	4.4	n.a.	12.3	20.4	18.5	−49.5	7.9	20.5	n.a.	22.8
1995	39.5	30.4	9.7	n.a.	11.7	24.8	19.0	−0.9	13.3	20.3	n.a.	21.3
1996	13.2	−0.1	5.4	n.a.	4.3	−2.5	6.6	15.5	12.6	13.7	n.a.	4.8
1997	−1.8	5.6	12.8	n.a.	6.7	12.4	13.7	−6.7	0.5	4.1	n.a.	5.7
1998	4.4	−1.6	7.1	n.a.	−6.0	18.9	−5.4	0.4	−7.1	−24.9	n.a.	−20.8
1999	2.3	31.9	4.0	n.a.	−0.5	6.8	−48.3	−5.4	3.5	23.4	n.a.	10.0
2000	9.7	21.3	14.3	n.a.	15.2	4.4	19.1	8.0	8.8	20.3	n.a.	21.8
2001	10.6	9.8	−16.0	n.a.	−1.5	2.7	4.1	15.9	0.6	−5.0	n.a.	−8.6
2002	−11.9	13.6	6.0	n.a.	7.2	11.6	−4.3	20.9	0.9	13.5	n.a.	6.0
2003	7.1	12.2	7.4	n.a.	10.8	12.9	1.6	18.7	3.8	10.5	n.a.	4.4
2004	10.1	18.1	16.1	n.a.	13.0	20.1	23.6	12.2	7.8	11.1	n.a.	17.9
2005	17.4	16.0	3.1	n.a.	7.7	28.1	16.4	2.2	5.7	7.3	n.a.	8.5
2006	16.7	14.8	4.5	n.a.	8.7	19.9	8.2	6.9	4.1	10.7	n.a.	7.8
2007	14.8	11.4	2.9	n.a.	8.8	9.5	8.7	3.1	1.6	11.0	n.a.	5.8
2008	−2.1	20.4	−3.2	n.a.	2.3	20.7	9.5	17.1	0.4	4.3	n.a.	2.2

Unit: Percentage (average annual growth rate).
Sources: Official national accounts in each country, including our adjustments.

Mongolia	Nepal	Pakistan	Philippines	Singapore	Sri Lanka	Thailand	Vietnam	Brunei	China	Myanmar	US	EU15	
–	–	–	–	–	–	–	–	–	–	–	–	–	1970
n.a.	n.a.	5.4	0.2	15.1	−10.3	−14.3	n.a.	n.a.	17.7	−12.7	5.2	5.0	1971
n.a.	n.a.	−19.2	3.1	−10.2	−8.1	12.2	n.a.	n.a.	16.5	−4.1	10.6	9.1	1972
n.a.	n.a.	−0.5	4.4	14.8	−10.8	21.1	n.a.	n.a.	17.5	−42.7	4.5	10.7	1973
n.a.	n.a.	19.0	17.6	32.5	−34.4	−5.9	n.a.	n.a.	35.3	−40.2	−2.3	2.3	1974
n.a.	n.a.	13.2	4.7	−7.4	20.9	−1.7	n.a.	n.a.	−5.8	18.4	−11.8	−5.9	1975
n.a.	n.a.	8.9	1.0	9.7	8.3	7.1	n.a.	n.a.	−3.7	0.0	17.9	10.4	1976
n.a.	n.a.	4.0	6.2	10.7	25.8	18.1	n.a.	n.a.	3.8	22.4	10.4	2.4	1977
n.a.	n.a.	11.2	12.1	12.8	31.4	6.4	n.a.	n.a.	61.4	32.0	8.3	3.8	1978
n.a.	n.a.	22.7	15.2	21.0	−6.7	19.0	n.a.	n.a.	27.5	26.6	1.6	9.2	1979
n.a.	n.a.	4.8	3.2	21.2	6.3	−0.2	n.a.	n.a.	0.9	4.8	−6.9	2.0	1980
n.a.	n.a.	−6.6	−0.8	7.6	3.5	0.6	n.a.	n.a.	9.6	14.8	2.6	−1.8	1981
n.a.	n.a.	−0.5	2.4	6.1	9.8	−15.8	n.a.	n.a.	−10.7	9.9	−1.3	1.4	1982
n.a.	n.a.	10.5	−3.1	4.2	−0.6	28.3	n.a.	n.a.	11.5	−20.7	11.9	1.0	1983
n.a.	n.a.	7.0	−19.2	5.3	0.9	7.4	n.a.	n.a.	26.1	−3.1	21.8	5.8	1984
n.a.	n.a.	8.5	−15.3	−3.6	−3.3	−13.5	n.a.	n.a.	39.3	−5.4	6.3	4.2	1985
n.a.	n.a.	−2.5	9.7	9.0	11.2	−0.9	n.a.	n.a.	−2.4	−20.5	8.2	5.7	1986
n.a.	n.a.	2.0	25.2	10.3	2.4	28.9	16.2	n.a.	−8.6	0.3	5.8	7.5	1987
n.a.	n.a.	−3.5	17.9	22.3	2.4	33.3	−8.0	n.a.	20.2	−23.3	3.8	8.5	1988
n.a.	n.a.	8.0	14.1	8.6	−3.1	19.5	45.1	n.a.	2.8	−8.8	4.3	8.5	1989
n.a.	n.a.	−3.6	9.6	13.0	−2.4	21.3	10.5	16.5	−17.5	39.2	3.5	6.3	1990
n.a.	n.a.	−7.7	−2.0	7.5	12.3	12.2	9.2	13.4	−15.6	−9.1	−0.1	4.0	1991
n.a.	n.a.	26.9	9.2	7.1	9.4	8.6	8.9	21.6	25.3	−0.5	6.8	3.9	1992
n.a.	n.a.	13.8	10.9	16.8	13.7	12.4	17.2	3.4	45.8	34.9	8.3	−2.9	1993
n.a.	n.a.	−11.4	13.5	16.2	12.6	13.5	21.4	−7.6	8.0	−6.2	11.3	8.1	1994
n.a.	n.a.	3.9	14.9	13.6	0.8	18.2	14.0	14.7	11.1	18.1	7.7	7.2	1995
n.a.	n.a.	12.7	15.5	10.0	2.4	−0.6	22.8	19.2	16.1	−7.7	8.3	4.5	1996
n.a.	n.a.	−3.9	12.7	10.9	9.9	−12.0	6.9	−18.2	9.7	3.4	12.6	9.1	1997
n.a.	n.a.	−5.8	−15.9	−9.1	11.7	−24.4	8.6	−14.4	0.3	15.4	11.0	9.8	1998
n.a.	n.a.	−5.6	−2.8	8.6	−2.6	10.0	5.5	−3.7	10.8	−0.8	10.9	7.6	1999
n.a.	n.a.	−2.3	4.2	18.0	13.8	24.0	9.5	−6.4	29.7	−8.3	12.2	10.6	2000
12.1	−16.3	2.1	3.5	−5.9	−11.3	−5.7	15.2	3.1	13.3	10.4	−2.9	2.4	2001
14.0	0.1	3.0	5.5	5.9	10.3	12.8	10.5	12.5	19.2	−19.2	3.3	1.1	2002
9.4	8.1	10.6	10.3	9.1	10.7	8.1	14.7	−8.4	18.0	−17.2	4.3	2.9	2003
18.2	6.7	−9.0	5.6	20.5	8.6	12.6	15.1	3.7	21.4	−17.7	10.5	6.7	2004
−0.2	6.3	34.0	2.3	10.7	2.7	8.6	10.1	2.8	16.2	2.2	5.9	5.8	2005
5.9	2.9	17.1	1.9	10.6	6.7	3.3	14.5	4.0	14.9	−38.9	5.9	8.1	2006
21.1	7.9	−3.6	−4.2	7.6	3.7	4.3	25.0	12.4	12.1	36.9	2.7	4.3	2007
28.0	11.9	3.5	2.4	8.8	3.9	8.1	4.3	10.4	6.8	2.5	−2.6	1.3	2008

Data 9 GDP at Current Prices

	Bangladesh	Cambodia	ROC	Fiji	Hong Kong	India	Indonesia	Iran	Japan	Korea	Lao PDR	Malaysia
1970	70,953	13	227	192	23,100	471	3,587	800	74,411	2,726	n.a.	12,290
1971	69,053	18	263	212	26,647	504	4,086	998	81,875	3,373	n.a.	13,460
1972	62,020	9	316	261	32,168	556	4,932	1,235	93,736	4,166	n.a.	14,775
1973	94,242	13	410	338	41,284	676	7,297	1,772	114,113	5,401	n.a.	19,455
1974	154,728	11	549	450	47,165	798	11,616	2,991	136,153	7,706	n.a.	23,753
1975	137,253	11	590	563	49,567	858	13,737	3,329	150,429	10,291	n.a.	23,207
1976	144,326	11	708	624	63,141	924	16,826	4,479	168,967	14,154	n.a.	29,187
1977	180,649	11	831	661	73,222	1,047	20,688	5,270	188,331	18,173	n.a.	33,610
1978	216,553	11	994	703	85,698	1,134	24,823	5,138	207,439	24,501	n.a.	39,376
1979	243,936	11	1,200	853	112,533	1,244	34,975	6,062	224,903	31,479	n.a.	48,253
1980	287,970	11	1,501	985	143,402	1,480	49,849	6,435	243,973	38,413	n.a.	55,411
1981	318,596	11	1,789	1,057	172,965	1,739	59,178	7,758	262,235	48,428	6	59,890
1982	357,858	10	1,917	1,114	195,408	1,946	65,189	10,250	275,378	55,668	10	65,077
1983	403,967	13	2,142	1,143	216,383	2,266	85,427	12,827	286,503	65,498	19	73,238
1984	484,602	22	2,385	1,277	260,761	2,538	100,204	14,053	304,555	75,161	28	82,712
1985	555,983	21	2,486	1,318	276,823	2,865	108,324	14,961	327,236	84,174	81	80,556
1986	626,203	57	2,908	1,464	319,232	3,206	118,286	15,206	342,585	98,470	119	74,452
1987	720,571	124	3,251	1,467	393,541	3,645	142,632	18,518	356,637	115,839	154	84,330
1988	792,431	246	3,446	1,590	465,245	4,324	164,818	20,693	383,448	138,023	218	96,075
1989	882,766	303	3,954	1,757	536,268	4,967	197,786	26,308	412,987	155,797	412	109,467
1990	992,861	753	4,376	1,983	598,950	5,788	232,278	37,202	445,410	187,976	586	123,885
1991	1,094,315	1,680	4,897	2,046	690,324	6,638	275,397	51,849	472,135	227,309	690	140,592
1992	1,182,254	3,153	5,467	2,307	805,082	7,645	311,176	70,815	483,535	259,294	808	156,799
1993	1,239,070	6,828	6,035	2,527	927,996	8,726	363,454	100,985	486,380	293,443	909	179,209
1994	1,338,115	7,121	6,603	2,679	1,047,470	10,249	421,338	131,822	490,942	343,743	1,059	203,453
1995	1,507,725	8,454	7,188	2,777	1,115,739	12,021	501,138	189,053	497,424	402,361	1,368	231,605
1996	1,644,364	9,226	7,809	2,995	1,229,481	13,914	587,331	252,683	507,152	452,747	1,651	264,189
1997	1,787,061	10,173	8,462	3,031	1,365,024	15,399	692,406	301,300	517,848	497,301	2,105	293,459
1998	1,980,780	11,755	9,075	3,301	1,292,764	17,679	1,054,553	339,310	507,437	492,109	4,056	295,021
1999	2,173,999	13,418	9,506	3,836	1,266,668	19,644	1,213,744	460,168	500,230	539,133	9,885	313,332
2000	2,346,501	14,129	10,027	3,596	1,317,650	21,227	1,396,460	600,325	505,594	592,279	13,085	357,631
2001	2,510,050	15,689	9,766	3,792	1,299,218	23,037	1,654,755	685,618	500,289	636,921	15,034	353,875
2002	2,705,344	16,844	10,248	4,044	1,277,314	24,804	1,831,764	940,908	494,194	703,525	17,622	384,711
2003	2,976,398	18,609	10,538	4,407	1,234,761	27,802	2,025,355	1,158,764	493,182	748,651	21,564	420,511
2004	3,297,909	21,530	11,207	4,745	1,291,923	31,840	2,309,998	1,483,478	501,240	808,869	25,478	476,147
2005	3,670,932	25,871	11,588	5,106	1,382,590	36,468	2,792,505	1,860,616	504,526	846,381	29,322	524,907
2006	4,117,319	29,994	12,095	5,395	1,475,357	42,096	3,362,558	2,257,603	509,945	888,936	33,945	577,322
2007	4,678,880	35,222	12,754	5,509	1,615,455	48,622	3,980,282	2,928,627	518,049	953,761	40,675	645,475
2008	5,406,510	42,198	12,545	5,711	1,675,315	54,734	4,990,550	3,558,115	507,087	1,004,078	46,452	745,115

Unit: Local currency unit.

- ◆Bangladesh Million Taka
- ◆Cambodia Billion Riels
- ◆ROC Billion New Taiwan Dollars
- ◆Fiji Million Fiji Dollars
- ◆Hong Kong Million Hong Kong Dollars
- ◆India Billion Rupees
- ◆Indonesia Billion Rupiahs
- ◆Iran Billion Rials
- ◆Japan Billion Yen
- ◆Korea Billion Won
- ◆Lao PDR Billion Kips
- ◆Malaysia Million Ringgit

Note: See the note in Data 1.

Mongolia	Nepal	Pakistan	Philippines	Singapore	Sri Lanka	Thailand	Vietnam	Brunei	China	Myanmar	US	EU15	
4,132	n.a.	57,702	39,138	5,835	15,441	147,500	n.a.	622	221	13	1,028	1,199	1970
4,483	n.a.	61,378	46,213	6,877	15,758	153,544	n.a.	684	239	13	1,115	1,302	1971
4,722	n.a.	66,071	51,704	8,238	17,708	170,226	n.a.	867	245	14	1,225	1,419	1972
5,422	n.a.	81,566	66,192	10,313	21,047	222,318	n.a.	1,208	267	16	1,368	1,593	1973
5,835	18,663	106,479	91,876	12,699	25,814	279,485	n.a.	2,969	274	19	1,482	1,778	1974
6,236	19,590	134,380	105,677	13,563	29,016	303,641	n.a.	3,145	295	23	1,615	1,934	1975
6,762	19,462	157,570	124,637	14,798	32,264	346,908	2	3,993	297	27	1,802	2,140	1976
7,321	22,225	181,009	142,104	16,168	38,725	404,014	2	4,801	317	30	2,005	2,339	1977
8,158	25,021	213,157	163,709	18,037	46,751	488,851	2	5,015	361	32	2,263	2,581	1978
7,624	26,301	235,631	200,456	20,777	57,620	559,622	3	6,928	409	35	2,530	2,897	1979
8,093	30,735	283,115	243,870	25,403	71,700	663,442	3	11,994	459	39	2,755	3,208	1980
8,897	34,904	335,382	281,745	29,750	88,688	761,529	8	10,490	501	43	3,094	3,516	1981
9,831	38,028	390,821	317,355	33,198	102,332	842,950	16	10,385	559	47	3,218	3,765	1982
10,499	44,370	439,354	369,298	37,263	125,078	922,597	21	9,249	622	50	3,480	3,981	1983
10,779	50,033	506,210	524,815	40,716	154,613	989,906	34	9,190	736	54	3,876	4,233	1984
11,230	59,859	569,388	572,271	39,708	165,553	1,058,585	119	8,835	908	56	4,152	4,474	1985
11,156	68,592	620,545	609,326	39,878	180,963	1,135,782	600	5,340	1,051	59	4,388	4,703	1986
11,635	82,602	690,497	683,288	44,197	198,162	1,302,824	2,874	5,935	1,228	69	4,657	4,969	1987
12,344	95,885	814,704	799,835	52,059	229,607	1,563,521	15,444	5,403	1,539	76	5,021	5,360	1988
12,860	111,083	928,623	926,248	59,800	260,535	1,861,701	28,140	5,881	1,731	125	5,405	5,768	1989
12,153	129,299	1,033,570	1,078,233	68,309	333,680	2,189,438	42,030	6,439	1,935	152	5,718	6,170	1990
21,960	160,582	1,226,869	1,249,239	76,048	388,090	2,513,833	76,853	6,460	2,258	187	5,898	6,510	1991
53,354	184,208	1,454,495	1,352,975	82,569	442,736	2,839,565	110,756	6,890	2,757	250	6,235	6,738	1992
211,835	214,079	1,608,754	1,476,100	95,556	524,601	3,175,515	140,560	6,698	3,694	361	6,558	6,870	1993
354,089	235,472	1,884,547	1,694,940	109,611	608,051	3,641,900	178,943	6,299	5,022	474	6,973	7,212	1994
593,998	267,435	2,252,871	1,908,357	121,135	695,478	4,201,628	229,450	6,769	6,322	606	7,303	7,552	1995
706,514	301,402	2,560,272	2,174,839	132,072	810,017	4,629,110	272,743	7,281	7,416	794	7,717	7,849	1996
890,286	323,265	2,932,891	2,430,211	144,500	935,734	4,752,345	314,490	7,791	8,166	1,113	8,199	8,214	1997
918,037	367,548	3,234,654	2,669,113	139,756	1,062,138	4,646,977	362,078	6,854	8,653	1,565	8,650	8,590	1998
1,041,813	407,819	3,550,322	2,981,723	141,651	1,156,290	4,658,976	401,192	7,896	9,113	2,197	9,199	8,943	1999
1,174,100	442,009	3,839,656	3,321,490	161,003	1,307,816	4,947,468	443,115	10,510	9,875	2,561	9,788	9,530	2000
1,284,778	459,985	4,225,731	3,638,130	155,023	1,457,284	5,160,953	482,999	10,212	10,903	3,561	10,121	10,045	2001
1,414,944	492,849	4,470,502	3,971,603	159,916	1,639,066	5,481,659	537,780	10,658	12,048	5,646	10,472	10,448	2002
1,662,755	537,466	4,896,445	4,325,360	164,412	1,826,059	5,953,201	615,902	11,635	13,663	7,748	10,976	10,709	2003
2,155,392	590,250	5,666,184	4,882,314	187,534	2,095,225	6,531,293	718,358	13,549	16,080	9,118	11,686	11,235	2004
2,784,110	655,074	6,531,178	5,456,834	204,470	2,458,254	7,141,530	843,021	16,154	18,713	12,343	12,450	11,766	2005
3,721,399	728,999	7,662,390	6,046,248	225,989	2,945,657	7,907,476	978,972	18,561	22,224	16,796	13,210	12,438	2006
4,608,034	817,061	8,720,447	6,665,029	260,670	3,587,730	8,596,070	1,149,594	18,794	26,583	23,727	13,850	13,144	2007
6,031,666	993,124	10,302,420	7,444,237	268,174	4,422,540	9,150,485	1,485,800	20,789	31,490	32,563	14,128	13,159	2008

◆Mongolia Million Tugriks
◆Nepal Million Rupees
◆Pakistan Million Rupees
◆Philippines Million Pesos
◆Singapore Million Singapore Dollars
◆Sri Lanka Million Rupees
◆Thailand Million Baht
◆Vietnam Billion Dong
◆Brunei Million Brunei Dollars
◆China Billion Yuan
◆Myanmar Billion Kyats
◆US Billion US Dollars
◆EU15 Billion US Dollars

Data 10 Household Consumption at Current Prices

	Bangladesh	Cambodia	ROC	Fiji	Hong Kong	India	Indonesia	Iran	Japan	Korea	Lao PDR	Malaysia
1970	64,366	n.a.	127	128	14,975	349	2,616	414	36,302	2,008	n.a.	7,144
1971	64,625	n.a.	142	144	17,290	364	2,913	508	40,823	2,481	n.a.	8,301
1972	60,857	n.a.	164	184	19,987	406	3,319	541	47,061	3,013	n.a.	9,029
1973	88,698	n.a.	206	266	26,659	500	4,867	705	56,734	3,692	n.a.	10,866
1974	146,089	n.a.	298	334	30,306	577	7,321	989	68,192	5,289	n.a.	13,440
1975	126,198	n.a.	336	383	31,922	607	8,840	1,365	78,980	6,992	n.a.	13,729
1976	122,372	n.a.	368	434	36,358	639	10,650	1,561	89,465	8,968	n.a.	15,557
1977	159,173	n.a.	427	421	44,343	740	12,766	2,231	100,088	10,790	n.a.	17,766
1978	191,154	n.a.	498	445	54,747	774	15,582	2,459	110,365	14,589	n.a.	20,687
1979	209,515	n.a.	608	505	67,544	847	20,347	3,125	121,806	18,602	n.a.	23,752
1980	244,018	n.a.	772	557	85,411	1,092	28,904	3,757	132,247	23,934	n.a.	28,401
1981	276,868	n.a.	930	668	102,788	1,194	36,611	4,866	140,698	30,219	n.a.	32,075
1982	315,566	n.a.	1,006	693	119,091	1,336	42,348	6,330	151,011	33,566	n.a.	34,828
1983	354,518	n.a.	1,084	735	138,268	1,610	46,600	7,956	158,991	38,008	n.a.	38,300
1984	423,170	n.a.	1,186	794	157,843	1,725	54,096	8,796	167,155	42,449	n.a.	41,770
1985	483,742	n.a.	1,256	822	169,387	1,885	57,606	9,774	176,707	47,012	n.a.	42,440
1986	536,111	n.a.	1,353	902	192,143	2,094	66,211	10,870	184,028	51,942	n.a.	38,543
1987	622,799	n.a.	1,523	934	224,020	2,403	77,853	11,351	192,604	58,427	n.a.	41,499
1988	683,336	n.a.	1,761	1,082	261,754	2,777	90,273	14,862	203,367	67,176	n.a.	48,163
1989	761,638	n.a.	2,080	1,190	296,603	3,186	100,850	18,565	217,529	78,019	n.a.	55,591
1990	853,060	n.a.	2,334	1,446	342,168	3,716	124,801	20,820	234,704	93,844	n.a.	64,925
1991	922,323	n.a.	2,606	1,437	406,466	4,351	146,746	28,334	246,499	113,066	n.a.	74,056
1992	977,882	n.a.	2,961	1,650	472,798	4,913	163,784	36,311	255,976	130,289	n.a.	79,716
1993	1,014,399	6,829	3,303	1,794	541,082	5,777	193,693	43,969	261,256	148,193	n.a.	87,582
1994	1,087,103	6,680	3,726	1,905	624,409	6,590	229,016	57,963	268,599	176,329	n.a.	99,064
1995	1,242,486	8,012	4,070	1,687	691,708	7,413	280,987	87,096	272,757	207,526	n.a.	112,068
1996	1,362,992	9,015	4,483	1,830	755,508	9,386	333,523	111,076	279,306	237,871	n.a.	123,139
1997	1,440,119	9,219	4,855	1,847	833,825	9,907	388,231	145,943	284,778	262,420	n.a.	134,798
1998	1,549,218	11,202	5,223	1,769	795,948	11,571	637,727	182,214	282,589	242,552	n.a.	126,082
1999	1,702,250	12,070	5,522	2,228	765,248	12,087	828,323	228,511	283,880	278,833	n.a.	134,288
2000	1,812,733	12,306	5,827	2,419	777,141	13,425	843,654	284,084	282,772	318,580	n.a.	155,941
2001	1,961,106	13,038	5,863	2,616	782,984	14,662	1,025,669	343,410	284,217	349,209	n.a.	162,618
2002	2,061,538	13,630	6,074	2,620	748,402	15,597	1,184,969	456,474	283,254	391,590	n.a.	172,485
2003	2,281,161	14,955	6,240	2,990	719,873	17,186	1,186,723	565,696	281,791	401,916	n.a.	186,674
2004	2,484,966	17,825	6,650	3,619	767,923	18,686	1,445,215	716,112	284,428	416,849	n.a.	208,571
2005	2,787,661	21,280	6,938	3,673	804,936	21,080	1,738,433	851,309	285,936	446,126	n.a.	234,234
2006	3,112,916	23,771	7,100	4,156	863,591	23,947	2,022,240	1,042,875	289,594	475,245	n.a.	258,280
2007	3,577,066	28,419	7,350	4,237	972,028	27,322	2,476,857	1,345,255	292,523	508,853	n.a.	293,040
2008	4,241,167	32,728	7,473	4,611	1,022,678	31,993	3,105,816	1,766,832	291,596	538,853	n.a.	334,712

Unit: Local currency unit.

- ◆Bangladesh Million Taka
- ◆Cambodia Billion Riels
- ◆ROC Billion New Taiwan Dollars
- ◆Fiji Million Fiji Dollars
- ◆Hong Kong Million Hong Kong Dollars
- ◆India Billion Rupees
- ◆Indonesia Billion Rupiahs
- ◆Iran Billion Rials
- ◆Japan Billion Yen
- ◆Korea Billion Won
- ◆Lao PDR Billion Kips
- ◆Malaysia Million Ringgit

Note: See the note in Data 4.

Mongolia	Nepal	Pakistan	Philippines	Singapore	Sri Lanka	Thailand	Vietnam	Brunei	China	Myanmar	US	EU15	
n.a.	n.a.	43,607	27,956	3,995	11,237	99,505	n.a.	n.a.	121	10	638	689	1970
n.a.	n.a.	46,530	33,297	4,620	11,699	102,937	n.a.	n.a.	126	10	690	748	1971
n.a.	n.a.	49,860	36,906	5,115	13,493	116,324	n.a.	n.a.	133	11	758	819	1972
n.a.	n.a.	61,612	43,775	6,048	16,031	143,723	n.a.	n.a.	143	14	838	912	1973
n.a.	15,862	84,905	61,893	7,548	21,641	185,363	n.a.	n.a.	147	15	916	1,025	1974
n.a.	16,359	107,033	71,755	8,012	24,470	204,883	n.a.	n.a.	153	18	1,011	1,131	1975
n.a.	17,142	120,182	82,061	8,280	25,208	233,956	n.a.	n.a.	159	21	1,129	1,244	1976
n.a.	18,324	137,735	93,536	8,835	28,858	273,993	n.a.	n.a.	165	22	1,253	1,361	1977
n.a.	20,726	167,043	110,212	9,772	33,949	316,786	n.a.	n.a.	176	23	1,397	1,488	1978
n.a.	22,374	188,642	132,929	11,002	42,813	377,603	n.a.	n.a.	201	25	1,559	1,676	1979
4,826	26,076	225,321	163,222	13,025	56,625	429,435	n.a.	n.a.	233	27	1,723	1,873	1980
4,746	29,483	265,927	189,648	14,414	68,747	485,415	n.a.	n.a.	263	30	1,907	2,080	1981
4,761	32,207	312,753	218,905	14,747	81,702	522,659	n.a.	n.a.	290	34	2,040	2,234	1982
5,900	37,316	347,200	254,010	15,596	98,350	592,305	n.a.	n.a.	323	37	2,234	2,357	1983
6,008	39,888	401,253	379,152	17,238	114,747	608,911	n.a.	n.a.	374	41	2,446	2,498	1984
6,238	49,601	457,855	429,636	17,846	125,608	643,990	n.a.	n.a.	469	43	2,652	2,637	1985
6,567	56,231	470,926	439,878	19,310	138,578	672,558	544	n.a.	530	46	2,824	2,756	1986
7,228	69,153	502,292	500,010	22,075	146,983	783,062	2,529	n.a.	613	55	3,018	2,922	1987
7,703	78,079	591,852	566,837	25,149	172,974	916,414	13,932	n.a.	787	57	3,271	3,131	1988
7,351	95,489	661,656	649,922	27,809	196,188	1,076,630	24,732	1,777	881	97	3,518	3,372	1989
7,602	108,457	742,634	763,837	31,889	251,596	1,239,383	36,642	2,218	945	113	3,753	3,583	1990
11,855	134,488	848,717	911,070	34,093	291,314	1,365,628	64,071	1,936	1,073	139	3,886	3,792	1991
28,780	148,281	1,020,746	1,001,039	37,195	331,476	1,532,877	87,897	2,963	1,300	193	4,129	3,951	1992
112,797	171,089	1,155,429	1,099,071	42,898	384,911	1,717,018	108,255	2,754	1,641	282	4,374	4,050	1993
188,259	186,467	1,342,216	1,212,683	47,373	446,848	1,989,792	135,179	2,600	2,184	371	4,638	4,236	1994
353,837	215,215	1,634,497	1,413,362	49,977	495,641	2,291,871	168,839	2,194	2,837	473	4,875	4,402	1995
450,174	242,671	1,865,333	1,585,518	52,273	563,188	2,502,686	202,704	2,465	3,396	631	5,152	4,594	1996
462,990	259,049	2,192,455	1,760,853	56,648	635,906	2,595,745	224,325	3,136	3,692	887	5,438	4,793	1997
597,511	295,064	2,353,795	1,949,470	52,987	709,643	2,433,737	254,991	2,931	3,923	1,263	5,775	5,014	1998
648,489	322,562	2,699,113	2,028,912	57,840	793,975	2,570,473	273,720	3,320	4,192	1,763	6,188	5,234	1999
822,041	354,231	2,884,021	2,171,250	66,255	929,917	2,815,781	294,426	3,062	4,585	1,991	6,667	5,599	2000
954,299	377,257	3,211,093	2,616,530	71,064	1,031,799	2,982,120	312,897	2,593	4,944	2,896	6,984	5,906	2001
1,073,536	407,438	3,329,860	2,831,058	74,755	1,172,089	3,184,679	353,361	2,727	5,306	4,773	7,269	6,109	2002
1,109,827	427,289	3,600,963	3,373,950	72,427	1,314,607	3,402,598	409,937	3,147	5,765	6,569	7,638	6,268	2003
1,280,788	468,848	4,184,717	3,747,133	78,006	1,491,840	3,715,136	471,487	3,653	6,522	7,523	8,103	6,550	2004
1,511,023	538,533	5,001,499	4,355,067	81,619	1,706,267	4,098,472	525,858	4,338	7,265	10,220	8,631	6,874	2005
1,745,857	589,425	5,720,225	4,616,041	86,532	2,003,618	4,430,518	601,871	4,555	8,210	13,300	9,134	7,214	2006
2,083,382	654,807	6,543,843	4,954,729	96,611	2,422,535	4,521,926	763,113	4,511	9,561	18,826	9,594	7,549	2007
2,894,847	788,515	7,835,309	5,711,441	103,101	3,099,700	5,078,299	1,024,348	3,776	11,059	25,690	9,863	7,570	2008

◆Mongolia Million Tugriks
◆Nepal Million Rupees
◆Pakistan Million Rupees
◆Philippines Million Pesos
◆Singapore Million Singapore Dollars
◆Sri Lanka Million Rupees
◆Thailand Million Baht
◆Vietnam Billion Dong
◆Brunei Million Brunei Dollars
◆China Billion Yuan
◆Myanmar Billion Kyats
◆US Billion US Dollars
◆EU15 Billion US Dollars

Data 11 Government Consumption at Current Prices

	Bangladesh	Cambodia	ROC	Fiji	Hong Kong	India	Indonesia	Iran	Japan	Korea	Lao PDR	Malaysia
1970	757	n.a.	42	27	1,630	45	293	150	7,940	282	n.a.	2,196
1971	763	n.a.	46	31	1,741	52	341	201	9,347	357	n.a.	2,204
1972	736	n.a.	51	38	2,078	55	414	259	10,970	454	n.a.	2,780
1973	1,559	n.a.	63	42	2,559	61	716	334	13,589	501	n.a.	2,980
1974	2,556	n.a.	77	54	3,171	74	841	683	17,816	782	n.a.	3,571
1975	6,533	n.a.	93	68	3,493	87	1,254	872	21,673	1,208	n.a.	3,985
1976	7,780	n.a.	107	85	4,008	96	1,591	1,066	23,896	1,660	n.a.	4,368
1977	8,209	n.a.	128	102	4,655	103	2,077	1,200	26,554	2,118	n.a.	5,472
1978	10,073	n.a.	151	115	5,436	114	2,659	1,329	28,750	2,685	n.a.	6,185
1979	11,298	n.a.	184	144	6,755	131	3,733	1,305	31,274	3,411	n.a.	6,575
1980	13,204	n.a.	241	157	8,706	152	4,688	1,472	34,304	4,968	n.a.	8,948
1981	14,530	n.a.	290	173	12,211	179	5,788	1,788	36,876	6,255	n.a.	10,587
1982	16,455	n.a.	324	204	14,547	211	6,832	2,038	39,158	7,101	n.a.	11,647
1983	18,029	n.a.	346	232	16,336	244	8,077	2,295	41,501	7,975	n.a.	11,186
1984	20,551	n.a.	383	245	18,027	281	9,122	2,336	43,455	8,599	n.a.	11,923
1985	23,347	n.a.	411	252	19,751	334	11,400	2,606	45,371	9,698	n.a.	12,028
1986	27,443	n.a.	430	253	22,843	395	11,529	2,529	47,468	11,072	n.a.	12,315
1987	31,208	n.a.	477	255	25,672	464	11,764	2,888	49,506	12,660	n.a.	12,247
1988	34,542	n.a.	539	263	29,943	535	12,756	3,413	51,707	15,121	n.a.	13,352
1989	38,378	n.a.	638	304	36,168	613	15,698	3,428	55,046	18,245	n.a.	15,027
1990	42,137	n.a.	769	346	43,141	698	18,649	4,385	59,025	22,527	n.a.	16,680
1991	45,714	n.a.	873	357	51,294	788	20,785	5,982	63,074	26,874	n.a.	18,791
1992	53,211	n.a.	931	415	63,795	893	24,731	7,574	66,550	31,699	n.a.	19,908
1993	62,106	306	972	467	72,283	1,035	29,757	16,127	69,350	35,225	n.a.	22,087
1994	66,124	493	997	437	83,148	1,152	31,014	21,558	71,985	39,895	n.a.	24,345
1995	70,614	493	1,065	446	93,624	1,365	35,584	30,360	75,121	45,715	n.a.	27,954
1996	73,245	529	1,172	474	103,541	1,548	40,299	36,022	77,348	53,292	n.a.	28,615
1997	78,864	590	1,280	508	112,751	1,831	42,952	39,301	78,967	57,978	n.a.	30,812
1998	94,671	672	1,364	573	116,550	2,267	54,416	48,513	80,305	63,101	n.a.	28,099
1999	100,825	786	1,332	608	119,993	2,663	72,631	57,912	82,207	66,309	n.a.	33,556
2000	108,386	986	1,363	632	120,172	2,793	90,780	82,109	84,942	72,101	n.a.	36,229
2001	114,251	1,082	1,391	672	128,866	2,969	113,416	96,739	87,122	83,010	n.a.	42,448
2002	136,641	1,276	1,412	699	131,291	3,065	132,219	123,148	88,306	90,930	n.a.	49,656
2003	160,709	1,350	1,416	749	130,151	3,269	163,701	146,446	88,503	100,057	n.a.	54,306
2004	184,067	1,356	1,445	794	127,327	3,561	191,056	200,022	89,468	110,128	n.a.	59,635
2005	205,302	1,494	1,463	817	121,435	4,038	224,981	262,986	90,602	120,010	n.a.	64,516
2006	230,323	1,575	1,469	978	123,033	4,452	288,080	325,071	90,703	131,901	n.a.	68,609
2007	261,056	2,008	1,521	926	130,404	5,153	329,760	324,323	92,218	143,262	n.a.	78,396
2008	288,310	2,365	1,564	845	139,374	6,531	416,867	404,000	93,243	156,944	n.a.	92,531

Unit: Local currency unit.

- ◆Bangladesh Million Taka
- ◆Cambodia Billion Riels
- ◆ROC Billion New Taiwan Dollars
- ◆Fiji Million Fiji Dollars
- ◆Hong Kong Million Hong Kong Dollars
- ◆India Billion Rupees
- ◆Indonesia Billion Rupiahs
- ◆Iran Billion Rials
- ◆Japan Billion Yen
- ◆Korea Billion Won
- ◆Lao PDR Billion Kips
- ◆Malaysia Million Ringgit

Note: See the note in Data 5.

Mongolia	Nepal	Pakistan	Philippines	Singapore	Sri Lanka	Thailand	Vietnam	Brunei	China	Myanmar	US	EU15	
n.a.	n.a.	4,444	3,721	716	1,709	16,578	n.a.	n.a.	25	2	188	196	1970
n.a.	n.a.	4,833	4,525	891	1,811	17,676	n.a.	n.a.	30	2	202	222	1971
n.a.	n.a.	5,941	5,571	1,024	1,902	18,572	n.a.	n.a.	31	2	218	245	1972
n.a.	n.a.	7,083	6,599	1,156	2,406	21,635	n.a.	n.a.	32	2	233	276	1973
n.a.	1,120	7,831	9,527	1,343	2,762	26,085	n.a.	n.a.	34	3	259	321	1974
n.a.	1,153	10,959	11,591	1,471	2,744	31,290	n.a.	n.a.	36	3	291	373	1975
n.a.	1,123	13,153	13,729	1,594	2,976	38,009	n.a.	n.a.	38	4	314	410	1976
n.a.	1,311	15,328	14,963	1,775	3,489	42,923	n.a.	n.a.	41	4	343	449	1977
n.a.	1,684	17,530	16,818	2,031	4,935	54,583	n.a.	n.a.	48	4	374	501	1978
n.a.	1,395	18,652	19,041	2,101	5,542	66,798	n.a.	n.a.	62	4	411	564	1979
1,821	1,713	21,583	22,099	2,528	6,784	81,433	n.a.	n.a.	68	5	465	643	1980
2,126	2,351	26,593	24,661	2,880	7,586	97,007	n.a.	n.a.	73	5	520	733	1981
2,204	3,045	31,526	28,929	3,686	10,589	110,167	n.a.	n.a.	81	6	566	786	1982
2,330	3,248	39,129	30,552	4,126	12,949	118,577	n.a.	n.a.	90	6	607	832	1983
2,442	3,896	47,720	36,880	4,472	15,712	130,100	n.a.	n.a.	110	6	655	875	1984
2,587	4,514	53,725	43,520	5,729	19,505	142,923	n.a.	n.a.	130	7	713	922	1985
2,809	5,167	61,753	48,431	5,441	23,391	144,564	30	n.a.	152	7	761	960	1986
2,921	6,145	72,869	57,333	5,483	26,661	147,224	173	n.a.	168	8	806	1,020	1987
3,137	7,974	98,518	72,183	5,501	30,861	156,710	980	n.a.	197	11	844	1,082	1988
3,219	7,985	121,509	88,186	6,195	33,154	176,798	2,204	1,415	235	17	895	1,142	1989
3,118	9,880	121,849	108,843	6,977	42,567	205,354	3,164	1,405	264	21	959	1,233	1990
4,753	10,613	136,909	123,885	7,566	51,654	231,127	5,055	1,444	336	21	1,008	1,323	1991
8,896	13,280	146,306	130,524	7,678	54,908	280,203	7,653	1,590	420	25	1,042	1,397	1992
44,152	14,249	164,281	149,057	8,979	66,894	315,982	10,279	1,714	549	37	1,066	1,439	1993
80,139	18,064	177,844	182,776	9,273	76,748	354,387	14,738	1,687	740	46	1,101	1,482	1994
71,397	20,516	206,080	217,045	10,432	98,944	414,403	18,741	1,795	838	51	1,133	1,530	1995
91,657	22,270	252,137	259,501	12,575	113,757	469,516	22,722	1,819	996	70	1,169	1,593	1996
112,048	24,969	271,619	319,935	13,564	128,711	476,705	25,500	1,942	1,122	90	1,214	1,637	1997
144,566	27,210	283,658	354,406	14,280	145,803	511,691	27,523	2,025	1,236	132	1,255	1,686	1998
157,128	30,272	286,294	389,238	14,406	155,632	533,041	27,137	2,231	1,372	139	1,334	1,767	1999
180,330	35,785	330,691	438,858	17,932	179,948	557,807	28,346	2,671	1,566	246	1,416	1,882	2000
210,538	38,586	327,562	444,834	19,016	191,646	581,117	30,463	2,950	1,750	244	1,516	2,000	2001
227,446	42,652	388,446	456,904	20,083	208,085	603,891	33,390	2,843	1,876	278	1,629	2,128	2002
246,082	46,397	428,689	477,411	20,095	221,622	636,002	38,770	2,750	2,004	297	1,745	2,212	2003
312,843	52,453	462,462	492,110	20,663	264,069	720,595	45,715	2,934	2,233	442	1,848	2,323	2004
344,488	56,794	509,864	527,045	21,867	321,037	843,649	51,652	2,920	2,640	437	1,965	2,445	2005
425,279	66,949	824,300	589,930	24,188	451,438	925,987	58,734	3,292	3,053	762	2,081	2,568	2006
598,566	80,663	796,204	653,760	25,794	546,545	1,038,765	69,247	4,175	3,590	950	2,205	2,680	2007
929,743	106,503	1,278,431	716,544	29,155	713,788	1,128,229	90,904	3,496	4,175	1,233	2,368	2,749	2008

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◆Myanmar Billion Kyats
◆US Billion US Dollars
◆EU15 Billion US Dollars

Data 12 Investment at Current Prices

	Bangladesh	Cambodia	ROC	Fiji	Hong Kong	India	Indonesia	Iran	Japan	Korea	Lao PDR	Malaysia
1970	5,891	n.a.	58	43	4,715	78	757	241	29,245	723	n.a.	2,450
1971	4,164	n.a.	69	53	6,495	90	907	247	29,527	905	n.a.	2,770
1972	2,144	n.a.	82	63	7,544	92	1,200	388	33,591	912	n.a.	3,158
1973	7,684	n.a.	120	76	9,457	119	1,706	455	43,783	1,402	n.a.	4,555
1974	11,100	n.a.	216	85	11,424	157	2,491	513	51,183	2,521	n.a.	6,688
1975	15,577	n.a.	180	116	11,379	172	3,432	775	49,754	2,997	n.a.	5,392
1976	18,220	n.a.	218	134	16,030	184	4,211	1,281	54,318	3,854	n.a.	6,328
1977	24,388	n.a.	235	156	19,436	202	4,979	1,573	58,700	5,487	n.a.	7,945
1978	28,026	n.a.	281	173	24,645	249	6,119	1,156	64,818	8,227	n.a.	10,397
1979	42,562	n.a.	395	250	36,777	283	8,351	846	73,878	11,803	n.a.	13,805
1980	53,287	n.a.	506	304	49,971	282	11,812	2,021	79,642	12,861	n.a.	16,729
1981	56,929	n.a.	533	368	60,535	413	14,925	2,127	82,741	14,913	n.a.	20,791
1982	64,657	n.a.	490	289	60,585	440	17,694	2,066	83,360	16,940	n.a.	24,057
1983	69,531	n.a.	531	239	57,767	457	30,930	3,557	81,143	20,678	n.a.	27,247
1984	78,274	n.a.	562	251	63,747	569	31,892	3,459	85,909	23,595	n.a.	27,501
1985	92,065	n.a.	489	248	59,542	714	35,532	3,205	94,119	26,484	n.a.	22,112
1986	106,106	n.a.	573	277	74,779	776	39,540	2,707	97,808	30,316	n.a.	19,230
1987	117,089	n.a.	730	230	102,473	828	48,798	4,021	103,966	36,330	n.a.	19,338
1988	131,121	n.a.	896	204	131,570	1,072	56,032	3,636	120,135	45,790	n.a.	25,132
1989	149,684	n.a.	979	223	141,565	1,225	73,939	6,175	134,175	56,087	n.a.	32,466
1990	171,993	n.a.	1,079	287	161,886	1,454	82,858	15,038	147,508	72,899	n.a.	39,846
1991	187,776	n.a.	1,224	316	184,907	1,499	100,482	24,815	155,015	92,717	n.a.	52,691
1992	208,071	n.a.	1,485	311	225,824	1,897	110,534	34,984	150,612	97,892	n.a.	55,131
1993	226,341	824	1,667	445	251,742	1,912	125,851	33,317	145,009	107,530	n.a.	69,712
1994	250,736	865	1,775	418	327,020	2,538	151,984	29,693	140,475	128,692	n.a.	83,179
1995	293,460	1,248	1,942	631	380,019	3,385	184,795	55,622	142,589	151,304	n.a.	100,337
1996	334,681	1,378	1,895	571	388,248	3,142	210,076	90,999	147,959	174,466	n.a.	108,919
1997	376,946	1,552	2,150	598	464,204	3,852	254,418	109,777	148,346	179,463	n.a.	125,274
1998	435,955	1,421	2,393	876	373,080	4,135	244,519	115,292	135,100	125,437	n.a.	78,541
1999	490,991	2,314	2,409	1,015	314,716	5,275	204,824	145,168	126,250	158,622	n.a.	70,141
2000	549,788	2,515	2,616	728	361,774	5,203	315,854	203,512	130,564	184,363	n.a.	96,987
2001	589,827	2,984	1,970	760	328,984	5,609	379,502	233,937	125,775	189,965	n.a.	87,318
2002	637,511	3,423	2,014	819	291,685	6,385	399,877	323,892	116,223	210,374	n.a.	96,449
2003	709,509	4,165	2,130	838	270,687	7,542	527,151	425,718	114,913	229,278	n.a.	97,070
2004	806,969	3,913	2,693	949	282,110	10,162	566,464	534,813	117,717	247,511	n.a.	111,365
2005	917,611	5,328	2,668	1,242	284,409	12,364	714,052	574,455	121,032	256,866	n.a.	106,877
2006	1,034,783	6,865	2,777	1,321	320,562	15,003	871,510	680,996	123,299	269,188	n.a.	120,372
2007	1,167,983	7,464	2,856	1,181	338,207	18,154	1,013,962	921,548	124,676	286,918	n.a.	141,829
2008	1,336,172	8,043	2,879	1,421	342,589	19,242	1,415,650	1,187,781	121,513	320,369	n.a.	147,157

Unit: Local currency unit.

- ◆Bangladesh Million Taka
- ◆Cambodia Billion Riels
- ◆ROC Billion New Taiwan Dollars
- ◆Fiji Million Fiji Dollars
- ◆Hong Kong Million Hong Kong Dollars
- ◆India Billion Rupees
- ◆Indonesia Billion Rupiahs
- ◆Iran Billion Rials
- ◆Japan Billion Yen
- ◆Korea Billion Won
- ◆Lao PDR Billion Kips
- ◆Malaysia Million Ringgit

Note: See the note in Data 6.

Mongolia	Nepal	Pakistan	Philippines	Singapore	Sri Lanka	Thailand	Vietnam	Brunei	China	Myanmar	US	EU15	
1,143	n.a.	10,928	7,097	2,290	2,788	37,846	n.a.	n.a.	74	2	196	320	1970
1,202	n.a.	11,386	8,204	2,838	2,529	37,263	n.a.	n.a.	82	2	220	333	1971
1,260	n.a.	11,049	9,073	3,467	2,553	37,022	n.a.	n.a.	79	2	250	358	1972
1,319	n.a.	12,455	12,259	4,132	2,832	60,166	n.a.	n.a.	90	2	291	420	1973
1,377	2,598	16,900	22,229	5,825	3,185	74,644	n.a.	n.a.	94	2	306	475	1974
1,436	2,847	26,281	28,863	5,490	3,788	81,456	n.a.	n.a.	106	2	293	452	1975
1,494	2,253	34,074	36,072	6,116	4,785	83,501	0.4	n.a.	99	3	358	525	1976
1,553	3,797	40,545	37,685	5,941	5,045	108,965	0.5	n.a.	110	4	429	554	1977
2,127	3,802	44,370	43,642	7,125	9,904	138,121	0.5	n.a.	138	6	515	594	1978
2,701	4,595	49,097	58,112	9,100	15,574	152,811	0.5	n.a.	148	8	581	688	1979
3,276	5,188	60,996	70,463	11,902	23,313	194,020	0.5	n.a.	160	8	580	769	1980
4,673	5,797	68,934	76,828	13,934	26,021	226,811	0.9	n.a.	163	10	679	766	1981
5,184	7,208	81,622	87,861	16,095	28,798	224,536	2.0	n.a.	178	10	630	805	1982
4,574	7,963	90,186	108,525	18,087	32,144	277,677	2.8	n.a.	204	9	687	827	1983
4,679	11,013	101,102	113,559	19,994	34,338	293,051	4.8	n.a.	252	8	875	883	1984
5,295	11,437	114,045	87,248	17,070	40,442	300,493	17	n.a.	346	9	895	928	1985
5,350	13,926	127,491	97,022	15,167	40,129	295,621	76	n.a.	394	8	920	972	1986
4,444	16,433	144,941	122,735	16,804	44,449	365,258	425	n.a.	446	8	969	1,038	1987
4,341	20,877	161,195	149,604	17,954	49,658	512,071	2,238	n.a.	570	10	1,008	1,188	1988
4,949	20,602	192,903	204,279	21,140	55,114	655,884	4,161	1,140	633	12	1,073	1,321	1989
4,626	27,113	214,826	264,757	25,301	64,881	908,871	6,100	1,250	675	21	1,077	1,404	1990
8,697	34,241	256,064	251,459	26,846	82,779	1,081,075	11,652	1,385	787	29	1,023	1,432	1991
17,906	42,988	324,259	287,447	30,242	95,746	1,139,996	19,722	1,658	1,009	34	1,088	1,414	1992
59,673	48,417	369,142	352,301	36,662	120,481	1,276,691	34,322	2,031	1,572	46	1,173	1,322	1993
90,686	59,576	405,947	406,022	37,174	153,252	1,473,496	45,892	1,845	2,034	60	1,318	1,415	1994
174,485	72,764	460,893	426,755	42,162	164,701	1,777,574	62,689	2,519	2,547	88	1,377	1,512	1995
215,793	76,580	536,178	520,259	47,366	200,076	1,946,232	77,156	3,048	2,878	99	1,484	1,526	1996
265,418	80,655	579,845	599,746	56,416	233,563	1,612,899	89,620	2,814	2,997	143	1,641	1,615	1997
286,241	76,042	622,499	541,429	44,091	267,133	966,503	105,936	2,368	3,131	178	1,774	1,759	1998
365,044	99,011	609,535	558,307	46,208	293,043	972,502	111,753	1,767	3,295	301	1,929	1,857	1999
341,790	99,140	672,654	646,916	54,394	329,221	1,148,901	132,240	1,515	3,484	326	2,077	2,019	2000
331,252	93,562	731,383	690,246	41,558	320,740	1,264,540	151,737	1,625	3,977	423	1,984	2,055	2001
378,559	106,001	756,221	702,098	38,321	363,435	1,328,350	180,001	2,420	4,557	592	1,990	2,048	2002
592,096	132,387	837,859	729,478	26,916	397,682	1,513,307	219,893	1,931	5,596	881	2,086	2,096	2003
745,746	156,745	960,700	820,169	41,426	521,461	1,780,407	256,737	2,038	6,917	1,147	2,341	2,225	2004
1,032,140	176,623	1,271,636	800,218	41,700	646,540	2,278,804	302,353	2,093	7,786	1,677	2,564	2,363	2005
1,310,359	209,951	1,726,994	882,578	47,928	810,951	2,277,189	363,335	2,238	9,295	2,726	2,752	2,596	2006
1,859,247	248,675	2,000,828	1,040,137	56,379	986,235	2,320,286	499,179	2,733	11,094	3,943	2,752	2,821	2007
3,147,238	317,905	2,318,249	1,152,514	81,919	1,207,118	2,695,348	615,830	3,179	13,833	5,632	2,592	2,771	2008

◆Mongolia Million Tugriks
◆Nepal Million Rupees
◆Pakistan Million Rupees
◆Philippines Million Pesos
◆Singapore Million Singapore Dollars
◆Sri Lanka Million Rupees
◆Thailand Million Baht
◆Vietnam Billion Dong
◆Brunei Million Brunei Dollars
◆China Billion Yuan
◆Myanmar Billion Kyats
◆US Billion US Dollars
◆EU15 Billion US Dollars

Data 13 Export at Current Prices

	Bangladesh	Cambodia	ROC	Fiji	Hong Kong	India	Indonesia	Iran	Japan	Korea	Lao PDR	Malaysia
1970	4,568	n.a.	69	93	21,532	18	450	154	7,909	366	n.a.	5,389
1971	3,365	n.a.	94	106	23,841	18	532	241	9,432	499	n.a.	5,242
1972	2,726	n.a.	134	120	27,184	22	765	299	9,759	801	n.a.	5,121
1973	2,444	n.a.	194	153	35,302	28	1,247	624	11,267	1,535	n.a.	7,767
1974	3,310	n.a.	241	221	40,926	38	3,257	1,482	18,219	2,051	n.a.	11,043
1975	4,723	n.a.	234	242	41,357	48	2,990	1,439	18,942	2,755	n.a.	10,172
1976	6,963	n.a.	336	235	56,488	61	3,597	1,788	22,534	4,236	n.a.	14,554
1977	7,393	n.a.	406	290	61,091	66	4,684	1,754	24,256	5,486	n.a.	16,216
1978	9,587	n.a.	519	299	73,416	71	5,021	1,292	22,680	6,918	n.a.	18,585
1979	12,629	n.a.	638	386	101,007	83	10,099	1,706	25,573	8,287	n.a.	26,004
1980	15,297	n.a.	783	477	127,481	90	14,525	929	32,817	12,215	n.a.	30,676
1981	16,977	n.a.	921	454	157,818	103	15,656	996	37,846	16,376	n.a.	30,154
1982	18,842	n.a.	952	481	168,121	116	13,996	1,820	39,191	18,014	n.a.	31,846
1983	23,446	n.a.	1,119	498	208,026	131	21,446	1,985	39,125	21,168	n.a.	36,298
1984	26,065	n.a.	1,324	546	278,837	158	24,939	1,689	44,902	25,940	n.a.	43,171
1985	31,189	n.a.	1,346	584	297,716	150	23,622	1,406	46,177	27,403	n.a.	42,537
1986	33,856	n.a.	1,662	609	350,012	165	22,043	598	38,058	35,151	n.a.	40,305
1987	37,587	n.a.	1,853	664	472,358	203	32,173	1,780	36,180	44,316	n.a.	50,998
1988	45,015	n.a.	1,920	862	604,374	259	37,322	1,597	37,431	50,081	n.a.	61,348
1989	51,185	n.a.	1,960	1,099	697,718	346	45,743	2,616	42,273	47,956	n.a.	75,112
1990	61,422	n.a.	2,025	1,234	782,379	406	56,016	5,129	45,863	52,907	n.a.	88,675
1991	73,634	n.a.	2,305	1,170	926,992	563	67,632	7,449	46,668	60,093	n.a.	105,161
1992	90,693	n.a.	2,350	1,195	1,110,860	673	82,608	9,645	47,288	70,726	n.a.	114,494
1993	113,049	1,094	2,639	1,321	1,255,826	861	92,537	27,420	44,109	77,423	n.a.	135,896
1994	121,892	1,833	2,864	1,508	1,404,297	1,016	106,277	39,632	44,270	91,778	n.a.	174,255
1995	165,705	2,630	3,422	1,643	1,597,770	1,307	125,429	40,362	45,230	116,564	n.a.	209,323
1996	184,359	2,334	3,700	1,878	1,683,302	1,449	144,245	51,746	49,561	127,462	n.a.	232,358
1997	216,723	3,411	4,087	1,845	1,742,544	1,652	183,405	51,007	56,074	160,290	n.a.	262,885
1998	266,809	3,661	4,360	2,002	1,609,748	1,953	530,949	44,857	55,051	222,027	n.a.	327,836
1999	289,861	5,423	4,562	2,334	1,625,385	2,277	409,619	93,509	51,144	204,289	n.a.	364,861
2000	331,446	7,020	5,392	2,173	1,887,701	2,781	569,490	131,811	55,256	232,633	n.a.	427,003
2001	390,000	8,214	4,962	2,190	1,801,786	2,908	642,595	137,732	52,567	232,820	n.a.	389,256
2002	390,021	9,300	5,437	2,289	1,909,957	3,556	595,514	247,965	55,829	238,684	n.a.	415,040
2003	427,239	10,476	5,936	2,599	2,111,509	4,174	613,721	306,096	58,882	271,321	n.a.	447,846
2004	514,938	13,636	6,981	2,453	2,456,615	5,691	739,639	411,607	66,286	338,059	n.a.	546,925
2005	614,681	16,505	7,342	2,695	2,747,138	7,121	945,122	613,102	71,913	339,757	n.a.	613,694
2006	788,788	20,475	8,326	2,671	3,032,411	9,134	1,036,316	738,427	81,756	360,625	n.a.	669,505
2007	934,403	22,892	9,304	2,640	3,359,578	10,189	1,162,974	944,164	90,830	408,754	n.a.	706,382
2008	1,110,181	27,507	9,226	3,057	3,561,247	13,108	1,475,119	979,522	88,494	544,111	n.a.	765,370

Unit: Local currency unit.

- ◆Bangladesh Million Taka
- ◆Cambodia Billion Riels
- ◆ROC Billion New Taiwan Dollars
- ◆Fiji Million Fiji Dollars
- ◆Hong Kong Million Hong Kong Dollars
- ◆India Billion Rupees
- ◆Indonesia Billion Rupiahs
- ◆Iran Billion Rials
- ◆Japan Billion Yen
- ◆Korea Billion Won
- ◆Lao PDR Billion Kips
- ◆Malaysia Million Ringgit

Mongolia	Nepal	Pakistan	Philippines	Singapore	Sri Lanka	Thailand	Vietnam	Brunei	China	Myanmar	US	EU15	
n.a.	n.a.	3,636	8,678	7,364	3,614	22,140	n.a.	n.a.	6	0.5	59	241	1970
n.a.	n.a.	3,921	9,927	8,222	3,458	24,527	n.a.	n.a.	8	1	62	263	1971
n.a.	n.a.	3,922	10,588	8,791	3,404	30,940	n.a.	n.a.	9	1	70	286	1972
n.a.	n.a.	9,959	17,079	12,225	4,481	41,317	n.a.	n.a.	12	1	94	338	1973
n.a.	1,601	11,957	23,869	19,099	6,283	60,277	n.a.	n.a.	14	1	125	433	1974
n.a.	2,034	12,991	22,803	18,704	7,306	55,695	n.a.	n.a.	14	1	137	439	1975
n.a.	2,211	13,878	24,922	22,286	8,773	70,115	n.a.	n.a.	14	1	148	508	1976
n.a.	2,264	13,988	31,007	26,484	12,311	80,532	n.a.	n.a.	15	2	158	567	1977
n.a.	2,841	16,625	34,754	30,144	14,835	97,082	n.a.	n.a.	17	2	185	618	1978
n.a.	2,911	21,524	44,445	38,831	17,660	126,150	n.a.	n.a.	35	3	227	717	1979
1,343	3,824	29,479	57,448	52,024	21,434	159,734	n.a.	n.a.	27	3	277	799	1980
1,583	3,898	35,699	67,083	59,733	25,892	181,325	n.a.	n.a.	61	3	301	925	1981
1,924	3,749	33,026	64,515	62,301	27,148	192,870	n.a.	n.a.	64	3	280	991	1982
2,082	4,553	44,386	79,799	62,759	32,016	185,222	n.a.	n.a.	64	3	273	1,058	1983
2,344	5,828	47,825	126,660	64,402	44,285	216,401	n.a.	n.a.	82	3	298	1,201	1984
2,237	7,058	49,878	137,007	61,219	42,394	245,252	n.a.	n.a.	81	3	297	1,281	1985
2,509	8,196	63,255	160,160	59,784	42,602	290,170	40	n.a.	122	2	315	1,210	1986
2,671	9,456	79,039	182,148	73,282	50,763	375,597	172	n.a.	196	2	359	1,249	1987
2,617	10,737	93,581	226,392	97,040	57,885	514,922	1,050	n.a.	257	2	440	1,346	1988
2,309	11,811	108,295	263,835	107,820	68,666	648,490	6,700	3,599	282	3	499	1,514	1989
2,701	15,433	126,556	299,160	121,949	97,117	745,286	11,084	3,944	348	3	548	1,611	1990
9,512	25,937	172,775	369,314	129,532	107,016	901,494	23,714	4,264	444	3	591	1,690	1991
15,624	33,573	209,171	393,639	134,473	135,114	1,046,659	38,405	3,944	590	4	628	1,723	1992
153,746	51,907	217,326	462,305	155,613	168,858	1,201,505	40,286	3,633	826	4	648	1,787	1993
168,857	57,587	254,133	572,548	184,630	195,805	1,410,786	60,725	3,189	1,171	5	713	1,977	1994
227,190	60,105	311,729	692,833	223,423	237,735	1,751,674	75,106	4,007	1,385	5	805	2,196	1995
262,168	80,118	358,299	879,622	237,234	269,765	1,809,910	111,177	4,323	1,427	5	861	2,322	1996
491,338	74,481	390,437	1,187,845	249,255	325,886	2,272,115	135,180	4,413	1,718	6	947	2,585	1997
452,342	84,779	441,312	1,389,622	238,160	369,485	2,723,953	161,910	3,422	1,717	8	947	2,723	1998
541,978	95,855	451,048	1,531,898	257,701	393,303	2,703,308	199,836	4,352	1,829	9	982	2,860	1999
660,953	99,610	514,280	1,858,258	313,585	492,301	3,287,284	243,049	6,968	2,314	13	1,086	3,376	2000
700,370	81,492	617,148	1,784,926	294,279	551,309	3,380,750	262,846	6,977	2,478	16	1,021	3,550	2001
786,572	77,280	677,855	1,990,991	305,108	571,195	3,499,004	304,262	7,023	3,024	19	996	3,609	2002
957,557	89,544	815,158	2,141,675	345,390	631,549	3,886,566	363,735	7,916	4,014	14	1,035	3,594	2003
1,466,595	85,958	883,704	2,480,541	416,782	738,713	4,587,868	470,216	9,154	5,428	16	1,174	3,905	2004
1,784,441	87,952	1,019,783	2,589,296	478,024	793,153	5,218,079	582,069	11,132	6,856	20	1,299	4,244	2005
2,394,112	93,567	1,161,257	2,850,902	539,648	885,381	5,777,554	717,109	13,072	8,464	22	1,464	4,765	2006
2,954,878	104,207	1,230,660	2,826,574	580,889	1,041,935	6,259,581	879,461	12,525	10,206	22	1,654	5,093	2007
3,507,053	122,737	1,316,439	2,736,310	623,437	1,095,679	6,941,526	1,155,686	15,971	15,218	22	1,833	5,253	2008

◆Mongolia Million Tugriks
◆Nepal Million Rupees
◆Pakistan Million Rupees
◆Philippines Million Pesos
◆Singapore Million Singapore Dollars
◆Sri Lanka Million Rupees
◆Thailand Million Baht
◆Vietnam Billion Dong
◆Brunei Million Brunei Dollars
◆China Billion Yuan
◆Myanmar Billion Kyats
◆US Billion US Dollars
◆EU15 Billion US Dollars

Data 14 Import at Current Prices

	Bangladesh	Cambodia	ROC	Fiji	Hong Kong	India	Indonesia	Iran	Japan	Korea	Lao PDR	Malaysia
1970	4,629	n.a.	69	99	19,752	18	529	158	6,985	652	n.a.	4,888
1971	3,864	n.a.	87	122	22,720	20	607	199	7,254	869	n.a.	5,056
1972	4,442	n.a.	114	144	24,625	20	766	251	7,645	1,014	n.a.	5,313
1973	6,143	n.a.	172	199	32,693	32	1,240	346	11,261	1,728	n.a.	6,712
1974	8,327	n.a.	284	245	38,662	48	2,294	675	19,257	2,937	n.a.	10,989
1975	15,779	n.a.	253	245	38,584	57	2,778	1,122	18,919	3,661	n.a.	10,071
1976	11,009	n.a.	321	265	49,743	56	3,222	1,218	21,247	4,564	n.a.	11,620
1977	18,514	n.a.	365	308	56,303	65	3,817	1,487	21,267	5,708	n.a.	13,788
1978	22,288	n.a.	455	330	72,546	74	4,559	1,097	19,174	7,919	n.a.	16,477
1979	32,068	n.a.	624	432	99,550	101	7,555	919	27,629	10,625	n.a.	21,884
1980	37,836	n.a.	801	511	128,167	136	10,080	1,745	35,036	15,564	n.a.	29,342
1981	46,708	n.a.	885	607	160,387	148	13,802	2,019	35,927	19,336	n.a.	33,717
1982	57,661	n.a.	855	553	166,936	157	15,682	2,005	37,341	19,953	n.a.	37,300
1983	61,558	n.a.	937	560	204,014	177	21,626	2,965	34,258	22,330	n.a.	39,793
1984	63,458	n.a.	1,070	560	257,693	195	19,845	2,227	36,866	25,421	n.a.	41,653
1985	74,361	n.a.	1,016	589	269,573	218	19,835	2,030	35,137	26,425	n.a.	38,561
1986	77,314	n.a.	1,111	577	320,545	224	21,036	1,498	24,777	30,011	n.a.	35,941
1987	88,112	n.a.	1,332	616	430,982	253	27,956	1,523	25,619	35,893	n.a.	39,752
1988	101,583	n.a.	1,671	822	562,396	320	31,566	2,814	29,191	40,144	n.a.	51,920
1989	118,120	n.a.	1,704	1,059	635,786	402	38,443	4,476	36,036	44,510	n.a.	68,730
1990	135,751	n.a.	1,833	1,330	730,624	487	50,046	8,170	41,690	54,201	n.a.	86,241
1991	135,133	n.a.	2,110	1,236	879,335	562	60,248	14,731	39,121	65,442	n.a.	110,107
1992	147,603	n.a.	2,260	1,264	1,068,195	730	70,481	17,700	36,891	71,312	n.a.	112,450
1993	176,825	2,226	2,546	1,499	1,192,937	860	78,383	19,848	33,344	74,927	n.a.	136,068
1994	187,740	2,748	2,759	1,589	1,391,404	1,047	96,953	17,024	34,387	92,951	n.a.	177,389
1995	264,540	3,929	3,310	1,631	1,647,382	1,450	125,657	24,386	38,272	118,747	n.a.	218,077
1996	310,913	4,030	3,441	1,758	1,701,118	1,610	140,812	37,160	47,022	140,344	n.a.	228,843
1997	325,591	4,598	3,910	1,767	1,788,300	1,843	176,600	44,728	50,316	162,850	n.a.	260,310
1998	365,873	5,202	4,264	1,919	1,602,562	2,247	413,058	51,567	45,607	161,008	n.a.	265,536
1999	409,927	7,174	4,320	2,350	1,558,674	2,657	301,654	64,931	43,251	168,921	n.a.	289,514
2000	455,852	8,698	5,171	2,357	1,829,138	2,975	423,318	101,190	47,940	215,398	n.a.	358,529
2001	545,134	9,630	4,421	2,445	1,743,402	3,111	506,426	126,201	49,393	218,083	n.a.	327,765
2002	520,367	10,785	4,689	2,383	1,804,021	3,800	480,815	210,570	49,417	228,054	n.a.	348,919
2003	602,221	12,337	5,184	2,770	1,997,459	4,369	465,941	285,191	50,907	253,920	n.a.	365,383
2004	693,031	15,201	6,562	3,070	2,342,052	6,259	632,376	379,076	56,660	303,678	n.a.	450,350
2005	854,323	18,736	6,823	3,320	2,575,328	8,135	830,083	441,236	64,957	316,378	n.a.	494,414
2006	1,049,491	22,692	7,577	3,731	2,864,240	10,440	855,588	529,766	75,408	348,023	n.a.	539,443
2007	1,261,628	25,561	8,277	3,474	3,184,762	12,198	1,003,271	606,663	82,198	394,026	n.a.	574,172
2008	1,569,320	28,445	8,598	4,223	3,390,573	16,140	1,422,902	780,021	87,758	556,198	n.a.	594,655

Unit: Local currency unit.

- ◆Bangladesh Million Taka
- ◆Cambodia Billion Riels
- ◆ROC Billion New Taiwan Dollars
- ◆Fiji Million Fiji Dollars
- ◆Hong Kong Million Hong Kong Dollars
- ◆India Billion Rupees
- ◆Indonesia Billion Rupiahs
- ◆Iran Billion Rials
- ◆Japan Billion Yen
- ◆Korea Billion Won
- ◆Lao PDR Billion Kips
- ◆Malaysia Million Ringgit

Mongolia	Nepal	Pakistan	Philippines	Singapore	Sri Lanka	Thailand	Vietnam	Brunei	China	Myanmar	US	EU15	
n.a.	n.a.	4,914	8,315	8,530	3,908	28,569	n.a.	n.a.	6	2	56	248	1970
n.a.	n.a.	5,292	9,740	9,694	3,739	28,859	n.a.	n.a.	6	2	62	264	1971
n.a.	n.a.	4,700	10,433	10,159	3,644	32,632	n.a.	n.a.	7	2	74	288	1972
n.a.	n.a.	9,543	13,520	13,249	4,704	44,523	n.a.	n.a.	10	1	91	353	1973
n.a.	2,518	15,115	25,643	21,117	8,058	66,884	n.a.	n.a.	15	1	128	476	1974
n.a.	2,803	22,884	29,335	20,114	9,291	69,683	n.a.	n.a.	14	1	123	460	1975
n.a.	3,267	23,717	32,146	23,478	9,478	78,673	n.a.	n.a.	13	2	151	547	1976
n.a.	3,470	26,587	35,087	26,868	10,979	102,399	n.a.	n.a.	14	2	182	591	1977
n.a.	4,032	32,412	41,717	31,033	16,872	117,721	n.a.	n.a.	25	3	212	621	1978
n.a.	4,973	42,284	54,071	40,257	23,969	163,740	n.a.	n.a.	37	4	253	748	1979
3,173	6,067	54,264	69,362	54,075	36,456	201,180	n.a.	n.a.	50	5	294	877	1980
4,231	6,625	61,771	76,475	61,210	39,558	229,029	n.a.	n.a.	59	6	318	988	1981
4,242	8,181	68,107	82,854	63,631	45,905	207,282	n.a.	n.a.	55	6	303	1,050	1982
4,387	8,710	81,546	103,588	63,305	50,381	251,184	n.a.	n.a.	59	5	329	1,093	1983
4,695	10,591	91,691	131,436	65,390	54,469	258,557	n.a.	n.a.	81	5	405	1,224	1984
5,127	12,752	106,115	125,141	62,156	62,396	274,073	n.a.	n.a.	126	5	417	1,294	1985
6,078	14,928	102,879	136,165	59,824	63,737	267,131	90	n.a.	148	4	453	1,194	1986
5,628	18,586	108,644	178,938	73,446	70,694	368,317	425	n.a.	195	4	509	1,259	1987
5,455	21,782	130,442	215,181	93,585	81,771	536,596	2,756	n.a.	272	3	554	1,388	1988
4,969	24,804	155,740	279,974	103,163	92,587	696,101	9,657	2,050	300	3	591	1,581	1989
5,895	31,584	172,296	358,363	117,807	122,481	909,456	14,960	2,378	297	6	630	1,661	1990
12,857	44,698	187,595	406,489	121,989	144,674	1,065,491	27,639	2,569	382	5	624	1,727	1991
17,852	53,914	245,987	459,674	127,020	174,508	1,160,170	42,921	3,265	562	5	668	1,747	1992
158,534	71,582	297,424	586,633	148,595	216,544	1,335,681	52,582	3,434	894	8	720	1,727	1993
173,853	86,221	295,594	679,089	168,839	264,602	1,586,561	77,591	3,022	1,108	8	813	1,898	1994
232,911	101,165	360,328	841,639	204,859	301,543	2,033,894	95,925	3,746	1,285	10	903	2,088	1995
313,278	120,238	451,676	1,070,061	217,375	336,769	2,099,234	141,016	4,374	1,281	12	964	2,187	1996
441,508	115,889	501,465	1,438,168	231,383	388,332	2,205,119	160,135	4,514	1,363	14	1,056	2,415	1997
562,622	115,547	466,610	1,565,814	209,761	429,925	1,988,907	188,282	3,892	1,354	16	1,116	2,593	1998
670,826	139,881	495,670	1,526,631	234,504	479,664	2,120,348	211,254	3,774	1,576	16	1,251	2,775	1999
831,015	146,757	561,990	1,793,793	291,164	623,570	2,862,305	253,927	3,706	2,075	15	1,475	3,347	2000
911,680	130,912	661,455	1,898,407	270,895	638,209	3,047,574	273,828	3,933	2,246	18	1,399	3,467	2001
1,051,168	140,522	681,880	2,009,448	278,351	677,676	3,134,265	331,946	4,355	2,715	15	1,430	3,447	2002
1,242,806	158,151	786,224	2,397,154	300,415	741,430	3,485,272	415,023	4,109	3,716	13	1,545	3,461	2003
1,650,580	173,754	825,399	2,657,639	369,343	923,149	4,272,713	524,216	4,230	5,020	11	1,799	3,767	2004
1,887,980	204,828	1,271,604	2,814,792	418,739	1,012,192	5,297,474	617,157	4,329	5,833	12	2,028	4,159	2005
2,154,209	230,893	1,770,386	2,893,203	472,307	1,208,757	5,503,772	761,547	4,596	6,798	13	2,240	4,705	2006
2,888,039	271,291	1,851,088	2,810,171	499,003	1,413,278	5,544,488	1,060,763	5,149	7,868	13	2,376	5,000	2007
4,447,215	342,536	2,446,008	2,872,572	569,439	1,699,328	6,692,917	1,400,134	5,633	12,795	14	2,554	5,184	2008

◆Mongolia Million Tugriks
◆Nepal Million Rupees
◆Pakistan Million Rupees
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◆Singapore Million Singapore Dollars
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◆Brunei Million Brunei Dollars
◆China Billion Yuan
◆Myanmar Billion Kyats
◆US Billion US Dollars
◆EU15 Billion US Dollars

Data 15 CPI (Consumer Price Index)

	Bangladesh	Cambodia	ROC	Fiji	Hong Kong	India	Indonesia	Iran	Japan	Korea	Lao PDR	Malaysia
1970	0.038	n.a.	0.206	0.107	0.124	0.070	0.017	0.003	0.325	0.062	n.a.	0.265
1971	0.042	n.a.	0.212	0.117	0.127	0.072	0.018	0.004	0.346	0.071	n.a.	0.269
1972	0.045	n.a.	0.218	0.143	0.136	0.077	0.019	0.004	0.363	0.079	n.a.	0.278
1973	0.069	n.a.	0.236	0.158	0.160	0.090	0.024	0.004	0.405	0.082	n.a.	0.307
1974	0.118	n.a.	0.348	0.181	0.187	0.115	0.034	0.005	0.499	0.102	n.a.	0.360
1975	0.099	n.a.	0.366	0.205	0.190	0.122	0.041	0.005	0.557	0.127	n.a.	0.376
1976	0.105	n.a.	0.375	0.229	0.196	0.113	0.049	0.006	0.610	0.147	n.a.	0.386
1977	0.123	n.a.	0.402	0.245	0.207	0.122	0.055	0.008	0.660	0.162	n.a.	0.405
1978	0.143	n.a.	0.425	0.260	0.220	0.125	0.059	0.008	0.687	0.185	n.a.	0.424
1979	0.153	n.a.	0.466	0.280	0.245	0.133	0.069	0.009	0.713	0.219	n.a.	0.440
1980	0.176	n.a.	0.555	0.320	0.283	0.148	0.081	0.011	0.768	0.282	n.a.	0.469
1981	0.195	n.a.	0.645	0.356	0.323	0.167	0.091	0.014	0.806	0.342	n.a.	0.515
1982	0.226	n.a.	0.664	0.381	0.359	0.181	0.099	0.017	0.828	0.366	n.a.	0.544
1983	0.257	n.a.	0.674	0.407	0.395	0.202	0.111	0.020	0.844	0.379	n.a.	0.565
1984	0.288	n.a.	0.673	0.428	0.429	0.219	0.123	0.022	0.863	0.388	n.a.	0.585
1985	0.319	n.a.	0.672	0.447	0.444	0.231	0.129	0.023	0.881	0.397	n.a.	0.588
1986	0.346	n.a.	0.677	0.455	0.460	0.251	0.136	0.028	0.886	0.408	n.a.	0.590
1987	0.380	n.a.	0.680	0.481	0.486	0.273	0.149	0.036	0.887	0.421	n.a.	0.595
1988	0.408	n.a.	0.689	0.538	0.523	0.300	0.161	0.046	0.893	0.451	0.021	0.610
1989	0.433	n.a.	0.720	0.571	0.577	0.319	0.171	0.056	0.913	0.476	0.034	0.628
1990	0.460	n.a.	0.749	0.618	0.636	0.347	0.184	0.060	0.941	0.517	0.046	0.647
1991	0.489	n.a.	0.776	0.658	0.708	0.396	0.202	0.071	0.972	0.565	0.052	0.675
1992	0.507	n.a.	0.811	0.690	0.776	0.442	0.217	0.089	0.989	0.601	0.057	0.707
1993	0.522	n.a.	0.835	0.726	0.843	0.470	0.238	0.108	1.001	0.629	0.061	0.732
1994	0.550	0.641	0.869	0.732	0.918	0.519	0.258	0.141	1.008	0.669	0.065	0.761
1995	0.606	0.648	0.901	0.748	1.001	0.572	0.282	0.211	1.007	0.699	0.078	0.787
1996	0.620	0.713	0.929	0.771	1.064	0.623	0.305	0.273	1.008	0.733	0.088	0.815
1997	0.653	0.735	0.937	0.797	1.127	0.667	0.324	0.320	1.026	0.766	0.112	0.835
1998	0.708	0.844	0.953	0.842	1.159	0.756	0.513	0.377	1.033	0.823	0.215	0.878
1999	0.752	0.878	0.955	0.859	1.113	0.791	0.618	0.453	1.029	0.830	0.490	0.903
2000	0.768	0.871	0.967	0.868	1.071	0.823	0.641	0.518	1.022	0.849	0.613	0.917
2001	0.784	0.866	0.967	0.905	1.054	0.853	0.715	0.577	1.014	0.883	0.661	0.929
2002	0.810	0.894	0.965	0.912	1.021	0.891	0.800	0.660	1.005	0.908	0.731	0.946
2003	0.856	0.905	0.962	0.950	0.995	0.924	0.852	0.768	1.003	0.939	0.845	0.957
2004	0.934	0.940	0.977	0.977	0.991	0.959	0.905	0.882	1.003	0.973	0.933	0.971
2005	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2006	1.068	1.061	1.006	1.025	1.021	1.058	1.131	1.119	1.002	1.022	1.068	1.036
2007	1.165	1.143	1.024	1.074	1.041	1.125	1.203	1.312	1.003	1.048	1.116	1.057
2008	1.269	1.429	1.060	1.157	1.086	1.219	1.324	1.647	1.017	1.097	1.201	1.114

Unit: Index (2005=1.0).

Mongolia	Nepal	Pakistan	Philippines	Singapore	Sri Lanka	Thailand	Vietnam	Brunei	China	Myanmar	US	EU15	
n.a.	0.063	0.052	0.025	0.350	0.034	0.148	n.a.	n.a.	0.184	0.005	0.199	n.a.	1970
n.a.	0.062	0.055	0.030	0.356	0.035	0.148	n.a.	n.a.	0.185	0.005	0.207	n.a.	1971
n.a.	0.067	0.058	0.033	0.363	0.037	0.156	n.a.	n.a.	0.186	0.005	0.214	n.a.	1972
n.a.	0.075	0.071	0.038	0.435	0.041	0.180	n.a.	n.a.	0.186	0.006	0.227	n.a.	1973
n.a.	0.090	0.090	0.052	0.532	0.046	0.223	n.a.	n.a.	0.187	0.008	0.253	n.a.	1974
n.a.	0.097	0.109	0.055	0.546	0.049	0.235	n.a.	n.a.	0.187	0.011	0.276	n.a.	1975
n.a.	0.094	0.116	0.060	0.536	0.049	0.245	n.a.	n.a.	0.188	0.013	0.291	n.a.	1976
n.a.	0.103	0.128	0.066	0.553	0.050	0.264	n.a.	0.517	0.189	0.013	0.310	n.a.	1977
n.a.	0.111	0.136	0.071	0.579	0.056	0.284	n.a.	0.547	0.194	0.012	0.334	n.a.	1978
n.a.	0.115	0.147	0.083	0.603	0.062	0.313	n.a.	0.578	0.208	0.013	0.372	n.a.	1979
n.a.	0.131	0.165	0.099	0.654	0.078	0.374	n.a.	0.611	0.221	0.013	0.422	n.a.	1980
n.a.	0.146	0.184	0.111	0.708	0.093	0.422	n.a.	0.667	0.230	0.013	0.465	n.a.	1981
n.a.	0.163	0.195	0.123	0.736	0.103	0.444	n.a.	0.709	0.238	0.013	0.494	n.a.	1982
n.a.	0.183	0.208	0.135	0.743	0.117	0.460	n.a.	0.718	0.245	0.014	0.510	n.a.	1983
n.a.	0.188	0.220	0.203	0.763	0.136	0.464	n.a.	0.740	0.253	0.015	0.532	n.a.	1984
n.a.	0.204	0.233	0.250	0.767	0.138	0.476	n.a.	0.757	0.279	0.016	0.551	n.a.	1985
n.a.	0.242	0.241	0.252	0.756	0.149	0.484	0.003	0.771	0.302	0.017	0.561	n.a.	1986
n.a.	0.268	0.252	0.262	0.760	0.161	0.496	0.015	0.780	0.324	0.022	0.582	n.a.	1987
n.a.	0.292	0.274	0.285	0.771	0.183	0.515	0.076	0.790	0.384	0.025	0.606	n.a.	1988
n.a.	0.318	0.296	0.315	0.789	0.205	0.543	0.132	0.800	0.455	0.032	0.635	n.a.	1989
n.a.	0.345	0.323	0.355	0.816	0.249	0.575	0.193	0.817	0.469	0.038	0.669	n.a.	1990
0.011	0.398	0.361	0.420	0.844	0.279	0.608	0.351	0.830	0.485	0.050	0.697	n.a.	1991
0.045	0.467	0.395	0.456	0.863	0.311	0.633	0.484	0.841	0.516	0.061	0.718	n.a.	1992
0.128	0.502	0.434	0.488	0.883	0.347	0.654	0.524	0.876	0.591	0.080	0.740	n.a.	1993
0.213	0.543	0.488	0.529	0.910	0.377	0.687	0.574	0.898	0.735	0.100	0.759	n.a.	1994
0.326	0.585	0.548	0.564	0.926	0.406	0.727	0.671	0.952	0.859	0.125	0.780	n.a.	1995
0.471	0.639	0.605	0.606	0.939	0.470	0.769	0.709	0.971	0.930	0.145	0.803	n.a.	1996
0.568	0.664	0.674	0.640	0.958	0.515	0.812	0.732	0.987	0.956	0.188	0.822	n.a.	1997
0.602	0.739	0.716	0.700	0.955	0.563	0.877	0.785	0.983	0.948	0.285	0.835	n.a.	1998
0.662	0.794	0.746	0.741	0.955	0.590	0.880	0.817	0.979	0.935	0.337	0.853	n.a.	1999
0.716	0.814	0.778	0.770	0.968	0.626	0.894	0.803	0.994	0.937	0.337	0.882	n.a.	2000
0.773	0.836	0.803	0.823	0.978	0.715	0.908	0.800	1.000	0.942	0.408	0.907	n.a.	2001
0.786	0.861	0.829	0.847	0.974	0.783	0.914	0.830	0.977	0.935	0.640	0.921	n.a.	2002
0.823	0.910	0.853	0.877	0.979	0.833	0.931	0.857	0.980	0.945	0.875	0.942	n.a.	2003
0.914	0.936	0.917	0.929	0.995	0.896	0.957	0.924	0.988	0.982	0.914	0.967	n.a.	2004
1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	n.a.	2005
1.062	1.076	1.079	1.062	1.010	1.137	1.046	1.074	1.001	1.015	1.200	1.032	n.a.	2006
1.250	1.141	1.161	1.092	1.031	1.335	1.070	1.163	1.012	1.063	1.620	1.062	n.a.	2007
1.526	1.266	1.397	1.194	1.099	1.637	1.128	1.432	0.964	1.125	2.054	1.102	n.a.	2008

Data 16 Population

	Bangladesh	Cambodia	ROC	Fiji	Hong Kong	India	Indonesia	Iran	Japan	Korea	Lao PDR	Malaysia
1970	68,682	6,477	14,754	520	3,959	535,736	116,435	28,429	104,345	32,241	2,493	10,882
1971	70,514	6,565	15,073	531	4,045	548,160	119,208	29,352	105,697	32,883	2,564	11,160
1972	72,412	6,630	15,368	542	4,124	560,392	122,176	30,269	107,188	33,505	2,640	11,441
1973	74,374	6,664	15,642	554	4,242	572,831	125,199	31,202	108,079	34,103	2,715	11,720
1974	76,398	6,663	15,927	565	4,378	585,580	128,271	32,174	110,162	34,692	2,784	12,001
1975	77,851	6,626	16,223	576	4,462	598,696	131,386	33,206	111,940	35,281	2,841	12,300
1976	79,331	6,547	16,580	587	4,518	612,144	134,536	34,284	112,771	35,849	2,886	12,588
1977	80,836	6,434	16,882	597	4,584	625,894	137,719	35,392	113,863	36,412	2,960	12,901
1978	82,366	6,325	17,202	608	4,668	639,925	140,936	36,554	114,898	36,969	3,032	13,200
1979	83,924	6,269	17,543	620	4,930	654,204	144,193	37,790	115,870	37,534	3,109	13,518
1980	85,509	6,300	17,866	634	5,063	668,689	147,490	39,124	116,782	38,124	3,199	13,879
1981	87,120	6,432	18,194	649	5,183	683,329	150,729	40,540	117,648	38,723	3,262	14,257
1982	89,517	6,654	18,516	666	5,265	698,816	153,994	42,023	118,449	39,326	3,337	14,651
1983	91,951	6,940	18,791	683	5,345	714,357	157,268	43,597	119,259	39,910	3,423	15,048
1984	94,402	7,252	19,069	698	5,398	729,871	160,530	45,281	120,018	40,406	3,518	15,450
1985	96,854	7,561	19,314	709	5,456	745,268	163,762	47,100	120,754	40,806	3,618	15,883
1986	99,302	7,858	19,509	715	5,525	761,923	166,959	48,819	121,492	41,214	3,714	16,329
1987	101,745	8,150	19,725	718	5,581	778,632	170,120	50,424	122,091	41,622	3,815	16,774
1988	104,182	8,441	19,954	719	5,628	795,476	173,244	51,898	122,613	42,031	3,920	17,219
1989	106,613	8,738	20,157	720	5,686	812,369	176,330	53,228	123,116	42,449	4,029	17,662
1990	109,039	9,047	20,401	724	5,705	829,311	179,379	54,400	123,537	42,869	4,140	18,102
1991	111,455	9,365	20,606	730	5,752	846,303	182,505	55,282	123,921	43,296	4,237	18,547
1992	113,035	9,688	20,803	739	5,801	863,939	185,598	56,178	124,229	43,748	4,333	19,068
1993	114,585	10,010	20,995	749	5,901	881,855	188,664	57,088	124,536	44,195	4,428	19,602
1994	116,117	10,324	21,178	759	6,035	899,703	191,714	58,014	124,961	44,642	4,519	20,142
1995	119,957	10,625	21,357	768	6,156	917,731	194,755	58,954	125,439	45,093	4,605	20,682
1996	122,125	10,910	21,525	776	6,436	935,922	197,089	59,879	125,761	45,525	4,735	21,223
1997	122,655	11,181	21,743	783	6,489	954,272	199,397	60,801	126,091	45,954	4,862	21,769
1998	123,149	11,438	21,929	790	6,544	972,776	201,689	61,849	126,410	46,287	4,984	22,334
1999	123,600	11,663	22,092	796	6,607	991,429	203,976	62,895	126,650	46,617	5,103	22,910
2000	124,002	11,876	22,277	802	6,665	1,010,225	206,265	63,939	126,870	47,008	5,218	23,495
2001	124,355	12,076	22,406	807	6,714	1,028,737	209,062	64,978	127,149	47,357	5,303	24,013
2002	126,532	12,264	22,521	813	6,744	1,044,846	211,870	66,014	127,445	47,622	5,383	24,527
2003	128,688	12,445	22,605	818	6,731	1,060,547	214,680	67,044	127,718	47,859	5,460	25,048
2004	130,810	12,624	22,689	823	6,784	1,075,814	217,482	68,069	127,761	48,039	5,539	25,581
2005	132,889	12,808	22,770	828	6,813	1,090,622	220,262	69,087	127,773	48,138	5,622	26,128
2006	134,921	12,996	22,877	833	6,857	1,105,795	223,018	70,098	127,756	48,297	5,747	26,640
2007	136,908	13,190	22,958	839	6,926	1,120,717	225,747	71,021	127,771	48,456	5,873	27,174
2008	138,859	13,389	23,037	844	6,978	1,135,840	228,436	71,956	127,704	48,607	6,000	27,729

Unit: Thousands.

Mongolia	Nepal	Pakistan	Philippines	Singapore	Sri Lanka	Thailand	Vietnam	Brunei	China	Myanmar	US	EU15	
1,248	11,297	61,313	36,684	2,075	12,417	37,186	42,729	130	829,920	26,403	205,052	341,844	1970
1,288	11,556	63,268	37,721	2,113	12,690	38,199	43,725	136	852,290	27,060	207,661	344,147	1971
1,326	11,854	65,309	38,774	2,152	12,924	39,211	44,758	142	871,770	27,744	209,896	346,162	1972
1,364	12,164	67,267	39,847	2,193	13,153	40,222	45,825	148	892,110	28,449	211,909	347,983	1973
1,402	12,484	69,282	40,945	2,230	13,380	41,230	46,918	154	908,590	29,165	213,854	349,496	1974
1,441	12,815	71,346	42,071	2,263	13,605	42,236	48,030	161	924,200	29,886	215,973	350,809	1975
1,482	13,157	73,453	43,239	2,293	13,828	43,234	49,158	167	937,170	30,608	218,035	351,968	1976
1,524	13,511	75,598	44,436	2,325	14,049	44,225	50,295	174	949,740	31,332	220,239	353,147	1977
1,568	13,874	77,766	45,653	2,354	14,265	45,218	51,436	180	962,590	32,061	222,585	354,311	1978
1,613	14,248	79,940	46,876	2,384	14,471	46,228	52,574	187	975,420	32,803	225,055	355,538	1979
1,661	14,631	82,108	48,098	2,414	14,666	47,264	53,700	193	987,050	33,561	227,225	357,051	1980
1,706	15,023	84,254	49,282	2,533	14,847	48,330	54,722	199	1,000,720	34,337	229,466	358,172	1981
1,751	15,338	86,651	50,462	2,647	15,094	49,418	55,687	205	1,016,540	35,125	231,664	358,849	1982
1,795	15,660	89,108	51,649	2,681	15,337	50,503	56,655	211	1,030,080	35,914	233,792	359,357	1983
1,837	15,987	91,626	52,856	2,732	15,580	51,553	57,692	217	1,043,570	36,690	235,825	359,810	1984
1,876	16,320	94,205	54,095	2,736	15,829	52,545	58,868	223	1,058,510	37,443	237,924	360,393	1985
1,920	16,659	96,839	55,366	2,733	16,085	53,466	60,249	229	1,075,070	38,168	240,133	361,117	1986
1,960	17,004	99,517	56,667	2,775	16,345	54,323	61,750	236	1,093,000	38,867	242,289	361,854	1987
1,998	17,357	102,269	57,995	2,846	16,608	55,130	63,263	243	1,110,260	39,542	244,499	363,000	1988
2,034	17,722	105,005	59,342	2,931	16,869	55,908	64,774	250	1,127,040	40,200	246,819	364,418	1989
2,071	18,100	107,803	60,703	3,047	17,127	56,673	66,017	257	1,143,330	40,844	249,623	366,003	1990
2,106	18,491	110,677	62,247	3,135	17,381	57,434	67,242	264	1,158,230	41,473	252,981	367,477	1991
2,139	18,916	113,592	63,814	3,231	17,630	58,186	68,450	272	1,171,710	42,085	256,514	369,074	1992
2,172	19,354	116,583	65,401	3,314	17,872	58,906	69,645	280	1,185,170	42,683	259,919	370,552	1993
2,204	19,804	119,656	67,003	3,419	18,102	59,563	70,825	287	1,198,500	43,275	263,126	371,578	1994
2,235	20,264	122,749	68,617	3,525	18,319	60,140	71,996	295	1,211,210	43,864	266,278	372,722	1995
2,269	20,735	125,910	70,158	3,671	18,520	60,621	73,157	303	1,223,890	44,454	269,394	373,699	1996
2,301	21,215	129,089	71,707	3,796	18,707	61,023	74,307	310	1,236,260	45,043	272,657	374,645	1997
2,331	21,701	132,352	73,272	3,927	18,881	61,399	75,456	318	1,247,610	45,614	275,854	375,473	1998
2,359	22,187	134,914	74,868	3,959	19,043	61,824	76,597	326	1,257,860	46,141	279,040	376,555	1999
2,391	22,671	137,530	76,504	4,028	19,102	62,347	77,631	333	1,267,430	46,610	282,172	377,955	2000
2,425	23,151	140,360	78,175	4,138	18,797	62,991	78,621	341	1,276,270	47,014	285,082	379,670	2001
2,459	23,701	143,170	79,883	4,176	19,007	63,734	79,539	348	1,284,530	47,363	287,804	381,676	2002
2,490	24,250	145,950	81,619	4,115	19,252	64,523	80,468	356	1,292,270	47,681	290,326	383,912	2003
2,519	24,797	148,720	83,371	4,167	19,462	65,279	81,438	363	1,299,880	48,000	293,046	386,281	2004
2,548	25,343	151,550	85,127	4,266	19,668	65,946	82,394	370	1,307,560	48,345	295,561	388,655	2005
2,579	25,887	155,360	86,885	4,401	19,886	66,507	83,313	377	1,314,480	48,723	298,363	390,756	2006
2,615	26,380	158,170	88,575	4,589	20,010	66,979	84,221	385	1,321,290	49,129	301,290	393,123	2007
2,659	26,867	160,970	90,202	4,839	20,217	67,386	85,122	392	1,328,020	49,563	304,060	395,421	2008

Data 17 Total Employment

	Bangladesh	Cambodia	ROC	Fiji	Hong Kong	India	Indonesia	Iran	Japan	Korea	Lao PDR	Malaysia
1970	n.a.	n.a.	4,576	121	1,579	176,987	40,100	n.a.	54,438	9,617	1,225	3,340
1971	n.a.	n.a.	4,738	135	1,602	180,112	40,523	n.a.	54,822	9,946	1,247	3,467
1972	n.a.	n.a.	4,948	138	1,657	183,304	40,972	6,939	55,107	10,379	1,270	3,599
1973	20,950	n.a.	5,327	144	1,711	186,565	41,789	7,926	56,352	10,942	1,293	3,735
1974	21,900	n.a.	5,486	157	1,766	189,896	42,870	8,124	56,115	11,421	1,311	3,877
1975	21,195	n.a.	5,521	164	1,821	193,300	44,278	8,260	55,977	11,691	1,324	4,020
1976	22,217	n.a.	5,669	164	1,875	196,704	46,087	8,799	56,435	12,412	1,338	4,376
1977	21,954	n.a.	5,980	172	1,890	200,181	48,315	9,024	57,112	12,812	1,366	4,476
1978	22,813	n.a.	6,231	185	2,003	203,732	51,780	9,207	57,669	13,412	1,392	4,542
1979	24,883	n.a.	6,432	194	2,084	207,360	51,004	9,540	58,262	13,602	1,420	4,700
1980	25,442	n.a.	6,547	202	2,238	211,066	51,554	9,684	58,661	13,683	1,500	4,835
1981	25,907	n.a.	6,672	208	2,411	222,517	53,838	9,892	59,108	14,023	1,515	5,219
1982	26,744	n.a.	6,811	204	2,407	228,003	57,803	10,175	59,591	14,379	1,545	5,249
1983	27,608	n.a.	7,070	212	2,427	235,989	58,235	10,534	60,493	14,505	1,586	5,457
1984	28,500	n.a.	7,308	212	2,505	244,260	59,763	10,660	60,699	14,429	1,629	5,567
1985	29,500	n.a.	7,428	222	2,543	252,826	62,457	10,935	61,028	14,970	1,674	5,653
1986	30,562	n.a.	7,733	223	2,624	261,697	68,338	11,056	61,340	15,505	1,722	5,760
1987	31,449	n.a.	8,022	217	2,681	270,884	70,402	11,370	61,583	16,354	1,778	5,984
1988	32,361	n.a.	8,107	214	2,725	280,399	72,518	11,618	62,298	16,869	1,838	6,157
1989	33,300	n.a.	8,258	246	2,723	290,254	73,425	11,926	63,216	17,560	1,884	6,391
1990	34,098	n.a.	8,283	250	2,712	300,461	75,851	12,547	64,271	18,085	1,934	6,685
1991	34,915	n.a.	8,439	259	2,754	313,924	76,423	13,097	65,578	18,649	1,991	6,849
1992	35,345	n.a.	8,632	270	2,738	320,261	78,518	13,262	66,318	19,009	2,044	7,048
1993	35,780	4,621	8,745	276	2,800	326,866	79,201	13,408	66,569	19,234	2,099	7,383
1994	36,220	4,728	8,939	279	2,873	333,755	82,038	13,688	66,644	19,848	2,149	7,618
1995	36,666	4,936	9,045	283	2,905	340,947	80,110	14,061	66,857	20,414	2,200	7,645
1996	37,117	5,117	9,068	288	3,073	348,462	85,702	14,572	66,907	20,853	2,254	8,399
1997	37,574	5,225	9,176	289	3,164	356,322	87,050	14,910	67,373	21,214	2,306	8,569
1998	38,037	5,546	9,289	290	3,122	364,551	87,672	15,259	66,579	19,938	2,362	8,600
1999	38,505	5,629	9,385	291	3,112	373,174	88,817	15,784	65,663	20,291	2,417	8,838
2000	38,979	5,915	9,491	292	3,207	382,217	89,316	16,419	65,255	21,156	2,473	9,269
2001	40,684	6,243	9,383	293	3,253	402,512	90,809	16,955	64,761	21,572	2,532	9,357
2002	42,464	6,574	9,454	294	3,218	412,761	91,647	17,755	63,747	22,169	2,571	9,543
2003	44,322	6,967	9,573	296	3,191	423,533	92,811	18,334	63,539	22,139	2,616	9,870
2004	45,311	7,496	9,786	297	3,274	434,864	93,722	19,016	63,676	22,557	2,677	9,980
2005	46,323	7,754	9,942	298	3,337	446,793	93,958	19,691	63,918	22,856	2,739	10,045
2006	47,357	8,053	10,111	299	3,401	459,050	95,457	20,476	64,198	23,151	2,807	10,275
2007	48,414	8,354	10,294	304	3,484	468,416	99,930	21,252	64,437	23,433	2,879	10,538
2008	49,492	8,369	10,403	311	3,519	478,005	102,301	22,057	64,212	23,577	2,953	10,660

Unit: Thousands.
Note: Total employment consists of employees, the self-employed and unpaid family workers. Data for Fiji, India, and Nepal over non-census years include our estimates.

Mongolia	Nepal	Pakistan	Philippines	Singapore	Sri Lanka	Thailand	Vietnam	Brunei	China	Myanmar	US	EU15	
429	4,692	17,750	11,358	666	3,610	16,493	n.a.	n.a.	344,320	n.a.	86,847	141,692	1970
440	4,853	18,370	12,543	717	3,649	16,605	n.a.	40	351,792	n.a.	86,696	141,735	1971
445	5,019	18,550	12,581	767	3,965	16,058	n.a.	42	359,264	n.a.	88,817	142,374	1972
454	5,192	19,240	13,865	818	4,087	16,754	n.a.	44	366,736	n.a.	92,518	146,552	1973
460	5,372	19,760	13,824	843	4,164	15,401	n.a.	46	374,208	n.a.	94,100	147,724	1974
461	5,559	20,300	14,517	853	4,243	16,176	n.a.	49	381,680	n.a.	92,550	147,289	1975
464	5,754	21,080	15,427	890	4,358	16,113	18,358	52	388,293	n.a.	94,897	146,634	1976
476	5,956	21,890	14,323	925	4,476	18,138	19,056	54	394,907	12,640	98,179	147,104	1977
486	6,167	22,730	16,668	978	4,598	19,215	19,194	58	401,520	12,935	102,895	147,571	1978
502	6,386	23,620	16,267	1,023	4,723	19,022	19,377	61	410,240	13,208	106,433	148,990	1979
516	6,614	24,150	17,154	1,093	4,851	22,524	19,999	64	423,610	13,515	107,028	149,644	1980
525	6,851	24,700	17,810	1,180	4,738	20,874	20,363	68	437,250	13,790	107,978	148,455	1981
535	6,865	25,270	18,614	1,249	4,828	24,831	21,284	71	452,950	14,185	106,228	147,758	1982
548	6,884	25,850	19,366	1,280	4,919	22,912	22,075	74	464,360	14,500	107,254	147,760	1983
552	6,909	26,400	19,368	1,298	5,014	24,159	23,149	77	481,970	14,790	111,870	148,243	1984
590	6,942	26,960	20,327	1,263	5,132	24,227	26,025	81	498,730	15,130	114,314	148,814	1985
643	6,982	27,020	20,926	1,242	5,175	25,086	27,399	84	512,820	15,410	116,242	150,009	1986
665	7,031	28,700	20,795	1,296	5,199	26,414	27,968	88	527,830	15,400	119,419	151,913	1987
743	7,089	28,990	21,497	1,362	5,214	27,726	28,477	92	543,340	15,140	122,820	154,509	1988
764	7,159	29,900	21,849	1,426	5,235	28,456	28,940	97	553,290	15,220	125,571	157,081	1989
784	7,242	30,650	22,532	1,520	5,047	30,844	30,286	102	647,490	15,740	127,096	159,744	1990
796	7,340	29,520	22,979	1,559	5,016	29,220	30,974	107	654,910	16,010	125,898	160,608	1991
806	7,526	30,580	23,917	1,604	4,962	30,794	31,815	110	661,520	16,379	126,008	158,464	1992
765	7,728	31,450	24,443	1,631	5,201	30,679	32,718	113	668,080	16,744	128,109	156,048	1993
760	7,949	32,230	25,166	1,707	5,281	30,164	33,664	116	674,550	17,114	130,943	156,070	1994
768	8,191	32,350	25,698	1,793	5,357	30,815	34,590	120	680,650	17,503	133,750	157,226	1995
770	8,458	33,130	27,442	1,873	5,537	31,166	35,386	124	689,500	17,915	135,985	158,116	1996
765	8,754	35,160	27,888	1,968	5,608	31,714	35,603	128	689,200	18,357	138,860	159,732	1997
793	9,087	36,940	28,262	2,023	6,049	30,105	36,954	132	706,370	18,856	141,904	162,516	1998
814	9,464	37,780	29,003	2,063	6,083	30,686	38,120	134	713,940	19,267	144,471	165,401	1999
809	9,582	37,320	27,775	2,171	6,310	31,335	38,368	141	720,850	19,623	147,461	169,020	2000
832	9,900	38,140	30,085	2,171	6,236	32,104	39,000	146	730,250	19,975	147,023	171,483	2001
871	10,121	39,640	30,251	2,148	6,519	33,061	40,162	153	737,400	20,258	145,900	172,624	2002
927	10,356	40,470	31,553	2,135	6,609	33,841	41,176	156	744,320	20,514	145,899	173,449	2003
950	10,607	42,240	31,741	2,207	6,704	34,729	42,316	161	752,000	20,757	147,496	174,798	2004
968	10,873	43,220	32,875	2,320	6,788	35,257	43,452	167	758,250	21,021	149,459	176,537	2005
1,010	11,155	46,940	32,886	2,496	7,105	35,686	44,760	174	764,000	21,250	152,029	179,134	2006
1,024	11,454	47,650	33,672	2,731	7,042	36,249	46,114	179	769,900	21,612	153,347	182,006	2007
1,042	11,770	49,090	34,533	2,952	7,175	37,017	47,673	182	774,800	21,928	152,478	183,532	2008

Data 18 Labor Productivity

	Bangladesh	Cambodia	ROC	Fiji	Hong Kong	India	Indonesia	Iran	Japan	Korea	Lao PDR	Malaysia
1970	n.a.	n.a.	0.189	0.888	0.259	0.462	0.299	n.a.	0.400	0.170	n.a.	0.302
1971	n.a.	n.a.	0.205	0.839	0.274	0.462	0.317	n.a.	0.415	0.182	n.a.	0.321
1972	n.a.	n.a.	0.222	0.890	0.292	0.451	0.347	1.098	0.448	0.186	n.a.	0.338
1973	0.619	n.a.	0.230	0.960	0.318	0.458	0.383	1.015	0.473	0.202	n.a.	0.364
1974	0.567	n.a.	0.228	0.904	0.315	0.456	0.398	1.084	0.470	0.212	n.a.	0.379
1975	0.620	n.a.	0.239	0.867	0.307	0.488	0.409	1.127	0.485	0.222	n.a.	0.369
1976	0.607	n.a.	0.264	0.888	0.346	0.488	0.424	1.246	0.501	0.237	n.a.	0.378
1977	0.658	n.a.	0.277	0.883	0.384	0.514	0.443	1.199	0.517	0.257	n.a.	0.398
1978	0.663	n.a.	0.302	0.835	0.393	0.534	0.445	1.087	0.539	0.271	n.a.	0.419
1979	0.613	n.a.	0.316	0.896	0.421	0.497	0.481	0.975	0.563	0.289	n.a.	0.442
1980	0.620	n.a.	0.333	0.844	0.433	0.521	0.519	0.834	0.575	0.282	n.a.	0.462
1981	0.616	n.a.	0.348	0.869	0.439	0.524	0.533	0.774	0.595	0.296	n.a.	0.458
1982	0.611	n.a.	0.355	0.878	0.453	0.529	0.502	0.850	0.610	0.313	n.a.	0.482
1983	0.616	n.a.	0.370	0.810	0.476	0.548	0.519	0.925	0.620	0.348	n.a.	0.493
1984	0.628	n.a.	0.391	0.879	0.507	0.550	0.544	0.899	0.645	0.384	0.506	0.521
1985	0.626	n.a.	0.401	0.794	0.503	0.559	0.541	0.895	0.683	0.398	0.529	0.507
1986	0.630	n.a.	0.427	0.856	0.541	0.566	0.530	0.804	0.699	0.431	0.540	0.503
1987	0.635	n.a.	0.456	0.824	0.601	0.569	0.548	0.771	0.725	0.458	0.517	0.511
1988	0.631	n.a.	0.476	0.854	0.641	0.602	0.570	0.707	0.768	0.496	0.491	0.546
1989	0.629	n.a.	0.516	0.836	0.656	0.616	0.614	0.747	0.798	0.509	0.544	0.574
1990	0.651	n.a.	0.549	0.851	0.684	0.627	0.648	0.835	0.828	0.540	0.565	0.598
1991	0.657	n.a.	0.582	0.800	0.712	0.605	0.701	0.891	0.839	0.574	0.571	0.639
1992	0.682	n.a.	0.612	0.815	0.760	0.627	0.731	0.936	0.836	0.596	0.595	0.677
1993	0.704	0.648	0.644	0.818	0.788	0.638	0.778	0.863	0.834	0.626	0.613	0.710
1994	0.724	0.691	0.678	0.850	0.814	0.668	0.808	0.843	0.840	0.660	0.648	0.752
1995	0.751	0.705	0.713	0.862	0.824	0.703	0.895	0.849	0.853	0.699	0.678	0.823
1996	0.776	0.717	0.751	0.886	0.811	0.740	0.903	0.877	0.875	0.734	0.707	0.824
1997	0.808	0.742	0.782	0.862	0.828	0.752	0.931	0.897	0.882	0.763	0.739	0.867
1998	0.841	0.734	0.798	0.870	0.788	0.782	0.803	0.902	0.875	0.766	0.751	0.800
1999	0.871	0.809	0.837	0.943	0.811	0.818	0.799	0.908	0.886	0.834	0.787	0.827
2000	0.912	0.838	0.875	0.923	0.850	0.834	0.834	0.902	0.917	0.870	0.814	0.858
2001	0.920	0.858	0.870	0.937	0.842	0.834	0.850	0.898	0.926	0.884	0.841	0.855
2002	0.920	0.869	0.909	0.963	0.867	0.843	0.881	0.926	0.944	0.920	0.877	0.884
2003	0.928	0.890	0.932	0.968	0.900	0.890	0.912	0.968	0.961	0.947	0.913	0.904
2004	0.965	0.913	0.969	1.017	0.952	0.939	0.948	0.982	0.985	0.974	0.953	0.955
2005	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2006	1.043	1.067	1.038	1.014	1.050	1.064	1.039	1.021	1.016	1.039	1.057	1.035
2007	1.086	1.134	1.081	0.989	1.090	1.143	1.055	1.066	1.035	1.079	1.111	1.075
2008	1.128	1.210	1.078	0.969	1.103	1.176	1.093	1.065	1.027	1.097	1.168	1.114

Unit: Index (2005=1.0).
Note: Labor productivity is defined as constant-price GDP at basic prices divided by the number of workers (total employment). GDP at basic prices includes our estimates for most countries.

Mongolia	Nepal	Pakistan	Philippines	Singapore	Sri Lanka	Thailand	Vietnam	Brunei	China	Myanmar	US	EU15	
0.494	n.a.	0.445	0.802	0.281	0.373	0.264	n.a.	n.a.	0.115	n.a.	0.584	0.523	1970
0.507	n.a.	0.437	0.762	0.292	0.371	0.275	n.a.	1.757	0.121	n.a.	0.605	0.541	1971
0.524	n.a.	0.439	0.796	0.309	0.352	0.296	n.a.	1.848	0.123	n.a.	0.621	0.563	1972
0.570	n.a.	0.451	0.785	0.322	0.373	0.312	n.a.	1.931	0.130	n.a.	0.631	0.582	1973
0.595	0.565	0.462	0.828	0.332	0.393	0.354	n.a.	2.052	0.130	n.a.	0.616	0.591	1974
0.636	0.570	0.464	0.841	0.342	0.393	0.354	n.a.	1.955	0.139	n.a.	0.624	0.589	1975
0.664	0.568	0.468	0.855	0.351	0.401	0.388	0.460	2.229	0.134	n.a.	0.642	0.619	1976
0.660	0.573	0.468	0.977	0.365	0.409	0.379	0.459	2.343	0.142	0.360	0.649	0.635	1977
0.702	0.566	0.486	0.886	0.373	0.428	0.393	0.459	2.369	0.156	0.374	0.653	0.652	1978
0.739	0.534	0.491	0.964	0.390	0.442	0.418	0.458	2.748	0.164	0.383	0.652	0.670	1979
0.744	0.558	0.522	0.962	0.401	0.454	0.369	0.431	2.416	0.172	0.404	0.647	0.677	1980
0.793	0.560	0.545	0.959	0.411	0.491	0.422	0.438	1.831	0.175	0.421	0.658	0.684	1981
0.843	0.561	0.568	0.951	0.415	0.507	0.374	0.451	1.828	0.184	0.432	0.656	0.694	1982
0.869	0.593	0.593	0.931	0.441	0.521	0.428	0.465	1.763	0.199	0.441	0.676	0.706	1983
0.914	0.627	0.610	0.863	0.472	0.537	0.429	0.479	1.700	0.221	0.454	0.696	0.722	1984
0.905	0.652	0.643	0.762	0.480	0.551	0.448	0.461	1.604	0.243	0.456	0.708	0.737	1985
0.908	0.660	0.677	0.765	0.495	0.570	0.456	0.439	1.360	0.257	0.443	0.720	0.752	1986
0.908	0.706	0.678	0.804	0.523	0.577	0.475	0.446	1.305	0.278	0.426	0.723	0.764	1987
0.855	0.730	0.723	0.830	0.554	0.591	0.512	0.464	1.243	0.301	0.384	0.732	0.784	1988
0.867	0.757	0.735	0.867	0.583	0.600	0.560	0.478	1.213	0.308	0.396	0.743	0.800	1989
0.824	0.796	0.749	0.863	0.598	0.661	0.575	0.480	1.168	0.273	0.394	0.748	0.810	1990
0.766	0.817	0.818	0.840	0.623	0.698	0.659	0.497	1.149	0.294	0.385	0.752	0.822	1991
0.715	0.828	0.850	0.805	0.649	0.736	0.676	0.526	1.171	0.333	0.413	0.776	0.843	1992
0.720	0.872	0.841	0.814	0.714	0.751	0.734	0.553	1.140	0.376	0.428	0.786	0.854	1993
0.747	0.878	0.852	0.825	0.756	0.781	0.814	0.585	1.141	0.421	0.450	0.800	0.878	1994
0.771	0.897	0.891	0.846	0.773	0.813	0.871	0.624	1.154	0.463	0.471	0.804	0.895	1995
0.790	0.915	0.912	0.839	0.799	0.816	0.912	0.667	1.159	0.502	0.490	0.820	0.906	1996
0.829	0.910	0.868	0.868	0.823	0.858	0.884	0.717	1.103	0.549	0.506	0.838	0.922	1997
0.839	0.916	0.848	0.852	0.785	0.833	0.833	0.731	1.062	0.578	0.517	0.856	0.934	1998
0.858	0.933	0.859	0.858	0.821	0.864	0.854	0.742	1.085	0.615	0.531	0.881	0.946	1999
0.874	0.973	0.907	0.950	0.855	0.883	0.876	0.788	1.060	0.660	0.584	0.899	0.963	2000
0.875	0.943	0.906	0.893	0.842	0.881	0.874	0.828	1.058	0.706	0.639	0.912	0.967	2001
0.876	0.959	0.900	0.927	0.886	0.877	0.894	0.862	1.044	0.763	0.706	0.935	0.971	2002
0.881	0.981	0.924	0.933	0.931	0.917	0.936	0.902	1.060	0.831	0.794	0.960	0.978	2003
0.950	0.992	0.950	0.987	0.984	0.953	0.970	0.947	1.029	0.906	0.891	0.983	0.992	2004
1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	2005
1.041	1.008	0.978	1.054	1.011	1.029	1.039	1.051	1.003	1.119	1.115	1.010	1.014	2006
1.132	1.042	1.019	1.102	1.000	1.109	1.074	1.107	0.981	1.268	1.157	1.020	1.025	2007
1.212	1.063	1.005	1.116	0.944	1.153	1.078	1.137	0.947	1.380	1.163	1.024	1.019	2008

A.2 Data Sources

Most of the data for APO member economies have been prepared by the national experts of each country and the research team at KEO, Keio University. A list of the national experts is given in Section 1.2. GDP and industry GDP are based on the system of national accounts estimated in each country. Employment data have been constructed by using statistics listed in the table at the end of section. For those countries where we could not find the primary statistics, we refer to the publications from which data have been taken (e.g. statistical yearbooks). These data provided by the national experts are supplemented by the use of external data sources such as CEIC Data Company, *ILO Yearbook of Labor Statistics* (http://laborsta.ilo.org), World Bank World Development Indicators, UN data (National Accounts Official Country Data – http://data.un.org) and Key Indicators of the Asian Development Bank (www.adb.org/documents/books/key_indicators).

The market exchange rates used in this edition are the adjusted rates, which are called the AMA (Analysis of Main Aggregate) rates, in the UNSD National Accounts Main Aggregate Database. The AMA rates coincide with IMF rates except for some periods in countries with official fixed exchange rates and high inflation, when there could be a serious disparity between real GDP growth and growth converted to US dollars based on IMF rates. In such cases, the AMA adjusts the IMF-based rates by multiplying the growth rate of GDP deflator relative to the US.

There are three reference countries, for which the authors collected and constructed data. For China, we use multiple data sources. GDP for the whole economy, industry GDP, final demands, and employment are taken from CEIC Data Company. Income data are taken from *China National Income 1952–1995* and *China Statistical Yearbook*. Time-series data of GFCF during 1950–2008 are constructed by the authors. Main references for GFCF construction are *Statistics on Investment in Fixed Assets of China 1950–2000*, *China Statistical Yearbook*, and *1987, 1992, 1997, 2002 Input-Output Tables of China*. Multiple data sources for manufacturing, electrics and trade data from *China's Customs Statistics are also utilized*.[98]

The data source for EU15 is OECD.Stat (http://stats.oecd.org/WBOS/index.aspx). The data for the US are taken from the website of the Bureau of Economic Analysis (www.bea.gov) and the UN website (http://data.un.org).

Tax data of member economies are supplemented by the IMF's Government Finance Statistics (GFS). From its tax revenue data, "taxes on goods and services" and "taxes on imports" are used for calculating taxes on products. From its expenditure data, "subsidies" are taken. Data taken from GFS play a key role in adjusting GDP at market prices to GDP at basic prices.

Source for Employment Data	
Bangladesh	Labor Force Survey, Populations Census
Cambodia	Socio-Economic Survey, Labor Force Survey
ROC	Yearbook of Manpower Survey Statistics in Taiwan Area,Taiwan Statistical Data Book
Fiji	Annual Employment Survey, Population Census, Estimates by FIBOS (Fiji Islands Bureau of Statistics)
Hong Kong	Data download from Census and Statistics Department of Hong Kong Statistics
India	Census of India
Indonesia	Labor Situation in Indonesia
Iran	Population Census
Japan	Labor Force Survey, National Accounts
Korea	Census on Basic Characteristics of Establishment, Economically Active Population Survey, Monthly Labor Survey
Lao PDR	ADB Key Indicator
Malaysia	Economic Report various issues, Malaysia Economic Statistics-Time Series, Labor Force Survey Report
Mongolia	Mongolian Statistical Yearbook, Labor Force Survey
Nepal	Population Census
Pakistan	Pakistan Economic Survey
Philippines	Labor Force Survey, Philippines Statistical Yearbook
Singapore	Labor Force Survey, Singapore Yearbook of Manpower Statistics
Sri Lanka	Central Bank of Sri Lanka Annual Report
Thailand	Labor Force Survey
Vietnam	Estimates by General Statistics Office

98: Holz (2006) provides a useful reference on Chinese official statistics.

A.3 Industry Classification

The concordance between the industry classification used in Section 7 and the International Standard Industry Classification of All Economic Activities (ISIC), Rev. 3, is shown in the following table.

	ISIC Rev. 3	Databook 1st	Databook 2nd	
A - Agriculture, hunting, and forestry	01	1		Agriculture, hunting, and related service activities
	02	1		Forestry, logging, and related service activities
B - Fishing	05	1		Fishing, operation of fish hatcheries and fish farms; service activities incidental to fishing
C - Mining and quarrying	10	2		Mining of coal and lignite; extraction of peat
	11	2		Extraction of crude petroleum and natural gas; service activities incidental to oil and gas extraction excluding surveying
	12	2		Mining of uranium and thorium ores
	13	2		Mining of metal ores
	14	2		Other mining and quarrying
D - Manufacturing	15	3	3.1	Manufacture of food products and beverages
	16	3	3.1	Manufacture of tobacco products
	17	3	3.2	Manufacture of textiles
	18	3	3.2	Manufacture of wearing apparel; dressing and dyeing of fur
	19	3	3.2	Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness, and footwear
	20	3	3.3	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
	21	3	3.4	Manufacture of paper and paper products
	22	3	3.4	Publishing, printing, and reproduction of recorded media
	23	3	3.5	Manufacture of coke, refined petroleum products, and nuclear fuel
	24	3	3.5	Manufacture of chemicals and chemical products
	25	3	3.5	Manufacture of rubber and plastics products
	26	3	3.6	Manufacture of other non-metallic mineral products
	27	3	3.7	Manufacture of basic metals
	28	3	3.8	Manufacture of fabricated metal products, except machinery and equipment
	29	3	3.8	Manufacture of machinery and equipment n.e.c.
	30	3	3.8	Manufacture of office, accounting, and computing machinery
	31	3	3.8	Manufacture of electrical machinery and apparatus n.e.c.
	32	3	3.8	Manufacture of radio, television, and communication equipment and apparatus
	33	3	3.8	Manufacture of medical, precision, and optical instruments, watches and clocks
	34	3	3.8	Manufacture of motor vehicles, trailers, and semi-trailers
	35	3	3.8	Manufacture of other transport equipment
	36	3	3.9	Manufacture of furniture; manufacturing n.e.c.
	37	3	3.9	Recycling
E - Electricity, gas, and water supply	40	4		Electricity, gas, steam, and hot water supply
	41	4		Collection, purification, and distribution of water
F - Construction	45	5		Construction
G - Wholesale and retail trade; repair of motor vehicles, motorcycles, and personal and household goods	50	6		Sale, maintenance, and repair of motor vehicles and motorcycles; retail sale of automotive fuel
	51	6		Wholesale trade and commission trade, except of motor vehicles and motorcycles
	52	6		Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods
H - Hotels and restaurants	55	6		Hotels and restaurants
I - Transport, storage, and communications	60	7		Land transport; transport via pipelines
	61	7		Water transport
	62	7		Air transport
	63	7		Supporting and auxiliary transport activities; activities of travel agencies
	64	7		Post and telecommunications
J - Financial intermediation	65	8		Financial intermediation, except insurance and pension funding
	66	8		Insurance and pension funding, except compulsory social security
	67	8		Activities auxiliary to financial intermediation
K - Real estate, renting, and business activities	70	8		Real estate activities
	71	8		Renting of machinery and equipment without operator and of personal and household goods
	72	8		Computer and related activities
	73	8		Research and development
	74	8		Other business activities
L - Public administration and defence; compulsory social security	75	9		Public administration and defence; compulsory social security
M - Education	80	9		Education
N - Health and social work	85	9		Health and social work
O - Other community, social, and personal service activities	90	9		Sewage and refuse disposal, sanitation, and similar activities
	91	9		Activities of membership organizations n.e.c.
	92	9		Recreational, cultural, and sporting activities
	93	9		Other service activities
P - Private households with employed persons	95	9		Private households with employed persons
Q - Extra-territorial organizations and bodies	99	9		Extra-territorial organizations and bodies

Note: "n.e.c" stands for "not elsewhere classified."

About the APO

Mission

The Asian Productivity Organization (APO) was established on 11 May 1961 as a regional intergovernmental organization. Its mission is to contribute to the socioeconomic development of Asia and the Pacific through enhancing productivity. The APO is nonpolitical, nonprofit, and nondiscriminatory.

Membership

APO members are: Bangladesh, Cambodia, Republic of China, Fiji, Hong Kong, India, Indonesia, Islamic Republic of Iran, Japan, Republic of Korea, Lao PDR, Malaysia, Mongolia, Nepal, Pakistan, Philippines, Singapore, Sri Lanka, Thailand, and Vietnam.

Key Roles

The APO seeks to realize its objective by playing the roles of think tank, catalyst, regional adviser, institution builder, and clearinghouse for productivity information.

Organization

The supreme organ of the APO is the Governing Body. It comprises one Director from each member country designated by their respective governments. The Governing Body decides on policies and strategies of APO programs and approves its budgets, finances, and matters relating to membership.

Each member country designates a national body to be its national productivity organization (NPO). NPOs are either agencies of the government or statutory bodies entrusted with the task of spearheading the productivity movement in their respective countries. They serve as the official bodies to liaise with the APO Secretariat and to implement APO projects hosted by their governments.

The Secretariat, based in Tokyo, Japan, is the executive arm of the APO. It is headed by the Secretary-General. The Secretariat carries out the decisions, policy directives, and annual programs approved by the Governing Body. It also facilitates cooperative relationships with other international organizations, governments, and private institutions.

The APO Secretariat has four functional departments: Administration and Finance, Research and Planning, Industry, and Agriculture.

Programs and Activities

APO's programs cover the industry, service and agriculture sectors, with special focus on socioeconomic development, development of small and medium enterprises, human resources management, productivity measurement and analysis, knowledge management, production and technology management, information technology, development of NPOs, green productivity, integrated community development, agribusiness, agricultural development and policies, resources and technology, and agricultural marketing and institutions.

Its activities include researches, forums, conferences, study meetings, workshops, training courses, seminars, observational study missions, and demonstration projects.

ASIAN PRODUCTIVITY ORGANIZATION

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