

The Rise of China and Structural Changes in Korea and Asia

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1. Post-1990s' East Asian economic growth*

Danny Quah

1.1 INTRODUCTION

Since 1960, East and Southeast Asia (or, succinctly, ESE Asia) more than doubled its share of world gross domestic product (GDP) and increased per capita income at an average growth rate almost two and a half times that in the rest of the world.¹ By 2006, ESE Asia was producing 24 per cent of the world's \$38 trillion GDP, with per capita income 79 per cent of world average.

At the same time, ESE Asia has recently been both a stabilizing influence on and a steady contributor to world economic growth. In 1991, at the end of a sustained period of productivity slowdown in the US, GDP in ESE Asia increased by nearly 20 times the size of the decline in US GDP. In 2001, the end of the dotcom boom, ESE Asia's GDP grew by double the growth in US GDP. Outside of these extreme events as well, ESE Asia's contribution to world economic growth has been strengthening. Over 1992–2000, growth in ESE Asia's GDP was 63 per cent that of the US; by 2002–06, that ratio had risen to 112 per cent. In 2006, China's GDP growth alone was 64 per cent that of the US, even with China's GDP still less than one-fifth the US's. In no more than plain arithmetic, ESE Asia has recently contributed more steadily and in greater quantity to world economic growth than has the US. A still very poor China – having per capita income only 4 per cent that of the US – single-handedly added to world economic growth nearly two-thirds as much as did the US.

These statements of GDP at market exchange rates describe contribution to the world's exchange of goods and services better than, say, statements made at purchasing power parity (PPP) exchange rates. But, to be clear, since the latter almost uniformly adjust upwards the assessed incomes in poorer places – the Balassa–Samuelson effect that is manifest empirically as the so-called Penn effect – at PPP the economic performance of ESE Asia would be even more remarkable.²

However, because PPP calculations seek to evaluate better the welfare

that accrues to a population, they are more appropriate when reporting, say, the condition of the world's poor. Between 1981 and 2005 the number of people in the world living on less than PPP\$1.25 a day fell from 1904 million to 1400 million, a reduction in world poverty of 504 million people (Chen and Ravallion 2008, Table 8b). Over this time, the East Asia and Pacific region saw its population in that low-income bracket decline from 1088 million to 337 million: this is a reduction of 751 million, and thus 50 per cent larger than the world's decline overall. In fact, in China alone, the number of people living on less than PPP\$1.25 a day fell from 835 million to 208 million, a fall of 627 million, already itself greater than the entire world's poverty reduction.

Both in its contribution to world growth and in reducing global poverty, the economic development of ESE Asia has emerged over the last half-century as perhaps the single largest significant force in the world. Three large events have played significant roles in this macroeconomic history, and in different directions. First, Japan – in 2006 still ESE Asia's largest economy, at market exchange rates more than double the size of China – has seen growth slow dramatically to an annual rate of just 1.3 per cent since 1990, from an annual average of 10 per cent in the 1960s, and 4 per cent in the 1970s and 1980s.

Second, China has, as a matter of simple arithmetic, powered a lot of the growth in ESE Asia: from a GDP level only 5 per cent of ESE Asia's total on average through the 1960s, China grew to make up 23 per cent of total ESE Asia GDP by 2006, just as Japan's share in ESE Asia shrank from an average of over 80 per cent in the 1960s to 55 per cent by 2006. At the same time as China experienced spectacular economic growth and dramatically reduced the number of its people living in extreme poverty, inequality within China also sharply increased (for example, Quah 2003).

Third, the 1997 Asian Currency Crisis saw a sharp simultaneous fall in the value of many ESE Asian currencies: from June 1997 to mid-January 1998 exchange rates against the US dollar of the currencies of Indonesia, South Korea, Malaysia, the Philippines and Thailand fell by over 50 per cent, and that of Singapore, 20 per cent (Ito 2007, Figure 1.3). In Japan and in every single one of these Asian Currency Crisis economies, GDP growth turned negative in 1998, with the combined fall in these economies' 1998 GDP amounting to 2.4 per cent of GDP in ESE Asia the preceding year.

This chapter assesses the factors surrounding ESE Asia's remarkable recent economic performance, paying attention to these three large events. It concludes that in the main productivity growth has improved since 1997; and that trading patterns have shifted more towards trade across different parts of ESE Asia itself. Provided economic growth is sufficiently rapid, increased inequality does not hinder reduction in poverty. The balance in

ESE Asia has been that economic growth has been sufficiently high, and poverty reduction has taken place. In ESE Asia, it is growth rather than the reduction of inequality that has most successfully brought the poor out of extreme poverty.

The remainder of this chapter is organized as follows. Section 1.2 presents, again, facts on the patterns of economic growth in ESE Asia, this time in greater detail. It highlights the importance of both China and the 1997 Asian Currency Crisis for shaping recent growth in the region.

Section 1.3 considers sources of growth in ESE Asia: it studies the evolution of productivity in different parts of ESE Asia, and points to where the situation has changed and where it has not since the 1997 Asian Currency Crisis. The data here vary across sources but, in this chapter's reading, show productivity growth in ESE Asia as neither significantly worse nor better than that elsewhere in the world. Some of the data indicate improvement in ESE Asian productivity growth since 1997.

Section 1.4 analyses patterns of trade across ESE Asia. It shows the importance of integration within the region itself. China's trade with the rest of ESE Asia has consistently been double that with either the EU or the US. Similarly, Japan and South Korea's trade with ESE Asia (including China) had by the mid-2000s similarly grown to be double that with either the EU or the US. Although Japan and South Korea used to have one-third of their trade with the US, since the mid-2000s or earlier, it has been with China that each of them has had much the larger and rising trade share.

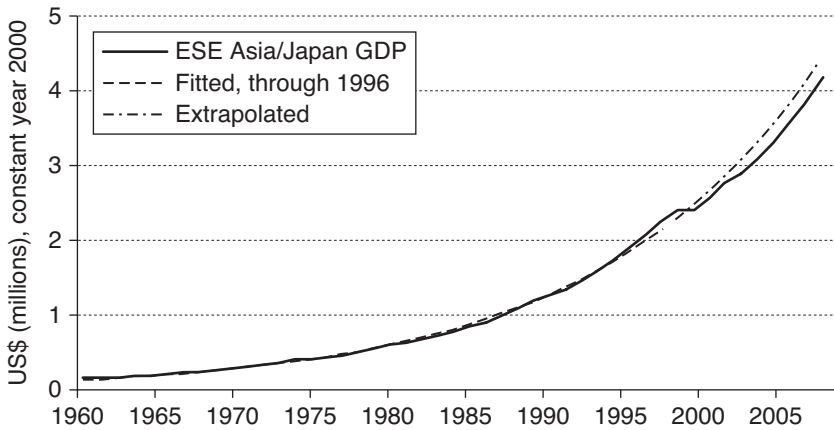
Section 1.5 concludes. (The appendix provides details on the data used in this chapter.)

1.2 THE BASIC FACTS AGAIN, IN GREATER DETAIL

This section provides more detail and context for the description of ESE Asian growth given in the introduction. To begin, this section draws together and quantifies the significance of three key observations: the large economy that is Japan; the fast growth in China; and the relative economic slowdown in ESE Asia following the 1997 Asian Currency Crisis. All three of these are examined in the following.

1.2.1 ESE Asian Economic Growth after 1997

If Japan is excluded from ESE Asia, the income growth path for the entire region is practically unchanged before and after 1997 (Figure 1.1).³



Note: The exponential trend fitted for 1960–96 shows growth at 7.6% per year. The figure shows 5.1% accumulated underperformance in GDP relative to the extrapolated trend over 1997–2006.

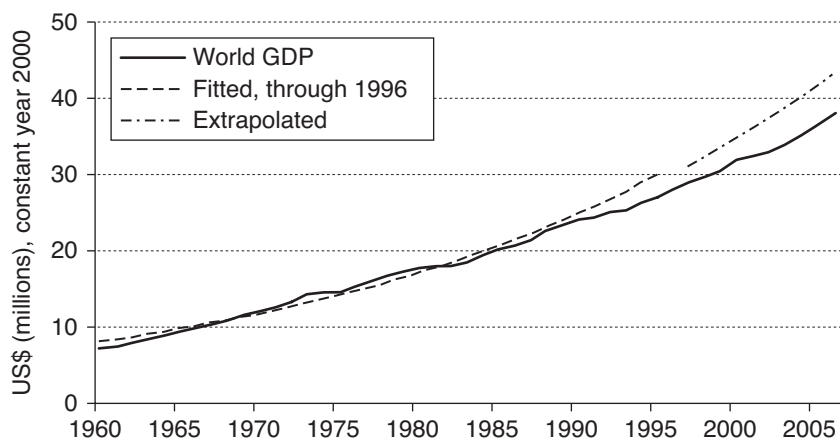
Figure 1.1 ESE Asia GDP growth

To assess the quantitative significance of this observation, Figures 1.2 and 1.3 provide the same calculations for world GDP and ESE Asia (now including Japan) in turn. In both these cases the underperformance relative to trend is marked: for world GDP the accumulated underperformance relative to the 1997–2006 extrapolated trend amounts to 11 per cent; for ESE Asia, 27 per cent. By contrast the underperformance for ESE Asia (excluding Japan) is only 5 per cent.

The post-1997 trend performance of ESE Asia excluding Japan, compared to that for the world economy, is noteworthy for how it contradicts a widely held view on the permanent and significant effects of the 1997 Asian Currency Crisis. Indeed, by historical standards the region appears to have performed better than the world economy overall.

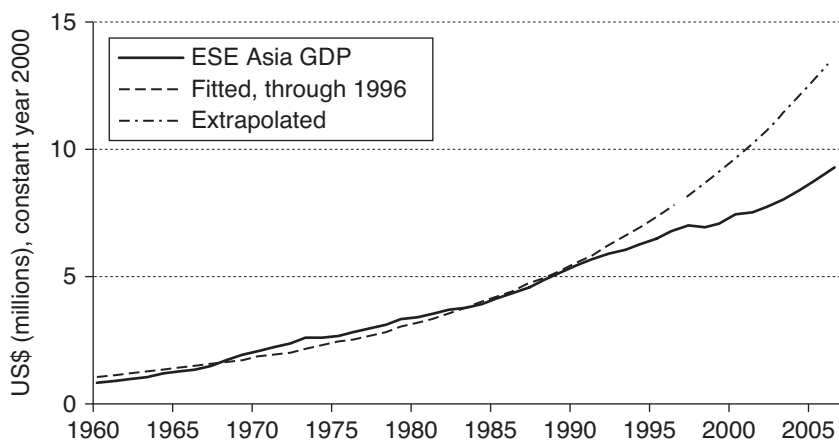
Figure 1.4 illustrates how much of this is due to a single economy, China alone. Over 1997–2006 ESE Asia – excluding China and Japan – underperformed 21 per cent relative to the historical trend. Admittedly, the standard used is exacting: even for 1997–2006 the annual growth rate for this bloc of economies still exceeded 6 per cent while the extrapolated trend growth rate of 7.4 per cent is twice the pre-1997 growth rate for the world economy overall. This trend growth rate is approximately the same as when China is included (Figure 1.1).

This relative slowdown in growth relative to historical trend has not reduced the increasing weight of ESE Asia's GDP in the world economy.



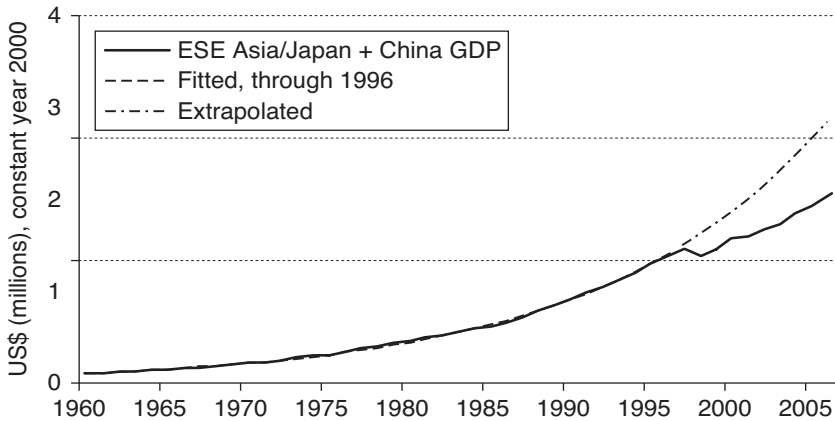
Note: World GDP growth after 1997 indicates a slowdown relative to earlier the trend. The exponential trend fitted for 1960–96 shows growth at 3.7% per year. The figure has 10.6% accumulated underperformance in GDP relative to the extrapolated trend over 1997–2006.

Figure 1.2 World GDP growth



Note: ESE Asia GDP growth after 1997 indicates a slowdown relative to earlier the trend. The exponential trend fitted for 1960–96 shows growth at 5.7% per year. The figure has 26.6% accumulated underperformance in GDP relative to the extrapolated trend over 1997–2006.

Figure 1.3 ESE Asia GDP growth



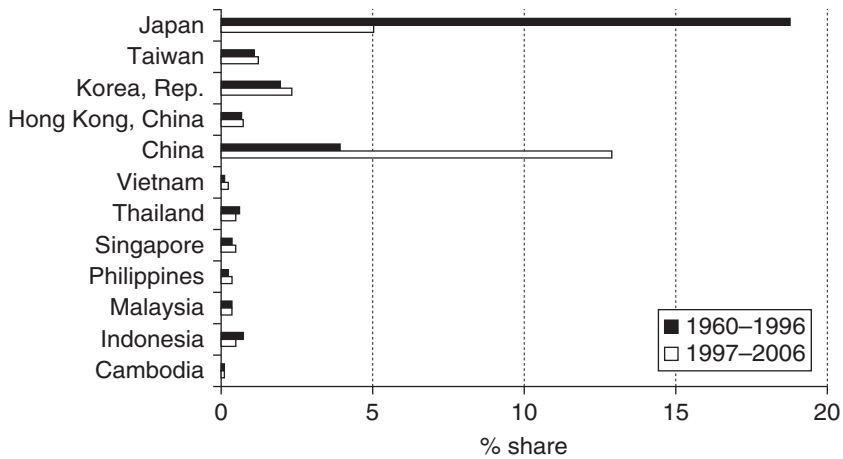
Note: ESE Asia, without China and Japan, shows a marked slowdown in GDP growth after 1997.

Figure 1.4 ESE Asia, without China and Japan, GDP growth

Figure 1.5 shows that except for Japan, Thailand and Indonesia, every single economy in ESE Asia has increased its share of world growth after 1997, compared to before. Across all of ESE Asia, excluding Japan, the share of world growth doubled to 20 per cent after 1997 from only 10 per cent before.

Figure 1.5 holds three key messages. First, Japan and China necessarily dominate any discussion of the performance of ESE Asia, with South Korea a relatively distant third. Second, is that already stated: the great majority of economies in ESE Asia contributed more to world growth after 1997 than before. Third, the figure gives a dramatic illustration of group (conditional) convergence in the sense described by Barro and Sala-i-Martin (1992), Baumol (1986) and Quah (1997). Those economies that were originally richer grow more slowly; those that were originally poorer, faster. With Japan and China by 2006 over one-half and nearly one-quarter of all ESE Asia respectively, the dynamics in Figure 1.5 show growth patterns that imply a force for equality in the region.

As earlier stated, one of the virtues of measurement at current market exchange rates is that the results directly assess contribution to a global exchange of goods and services. To that end, Table 1.1 shows how growth in ESE Asia in general and China in particular has begun to match in magnitude that of the US economy. By 2002–2006 ESE Asia grew by 12 per cent more than the US did, the ratio having steadily risen over the preceding decade. In that period China alone, although having per capita



Note: The underlying data are in constant (year 2000) US\$ at market exchange rates.

Figure 1.5 Share of world growth before and after 1997 for individual economies in ESE Asia

Table 1.1 Ratio of GDP growth to the US across episodes

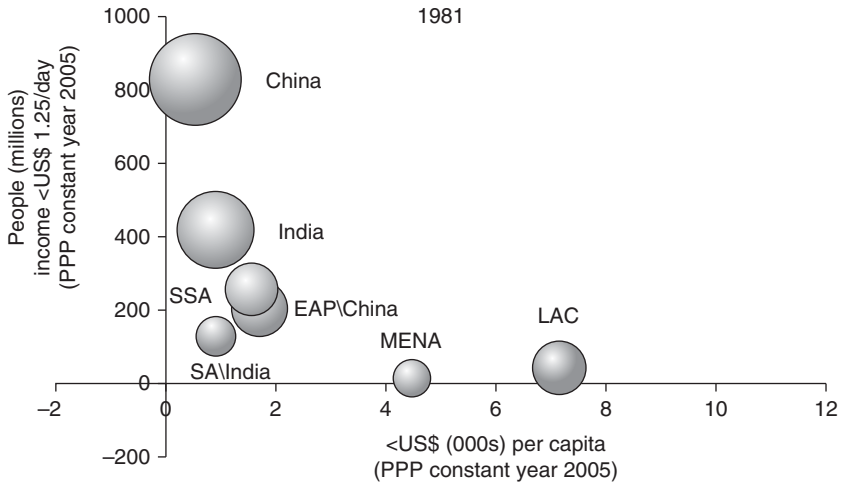
Ratio of GDP growth	1961-90	1991 (denominator value of US decline)	1992-2000	2001	2002-06
ESE Asia/US	1.03	18.19	0.63	1.78	1.12
China/US	0.08	2.99	0.26	1.34	0.54

Note: In 1991 US GDP, measured in constant (year 2000) US\$, declined, while growth in both ESE Asia and China remained positive. The column for that year uses the absolute value of the US decline in its denominator.

Source: Calculated by the author from data in World Bank (2008).

GDP only 4 per cent of that in the US, contributed 54 per cent as much as did the latter to world economic growth.

The world economy was also stabilized by ESE Asia and China through periods of US slowdown. In 2001 when US growth dipped, ESE Asia and China grew by 78 per cent and 34 per cent more than the US. In 1991 when US growth turned negative, ESE Asia and China grew by 18 and three times, respectively, more than the US growth slowdown.



Note: See Appendix for the abbreviations used and for further details.

Figure 1.6 Income and poverty 1981

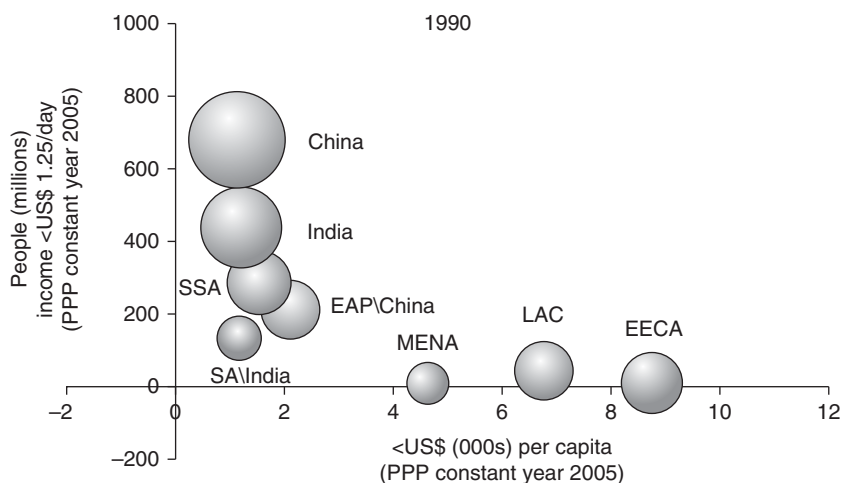
1.2.2 Poverty

The contribution of ESE Asia and China in the world economy occurred, however, not just through adding to world GDP growth but also through reducing the absolute numbers of poor in the world.

In 1981 the world's population living on less than PPP\$1.25 a day numbered 1904.3 million; by 2005, that number had fallen to 1399.6 million, a reduction of 504.7 million people (Chen and Ravallion 2008).⁴ In this time the population of China in that same income bracket fell from 835.1 to 207.7 million, a decline of 627.4 million. Thus, China single-handedly lifted more people out of extreme (\$1.25/day) poverty than did the entire world.

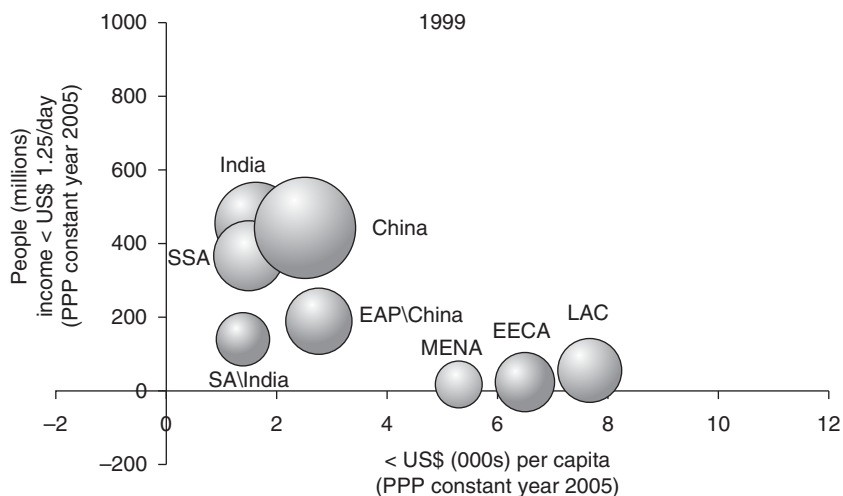
Figures 1.6–1.9 show four snapshots of the evolution of world poverty and economic growth, and provide a striking depiction of the significance of China (and the ESE Asian region) in this history. An animation that dynamically describes this historical evolution is available at <http://econ.lse.ac.uk/staff/dquah/p/2008.09-wpdyn-2005.gif>.

Each bubble in the figures represents the state of a continental grouping or large economy – China and India, in particular, are explicitly given, as are East Asia and the Pacific (EAP) excluding China, and South Asia (SA) excluding India. Sub-Saharan Africa (SSA), Latin America and the



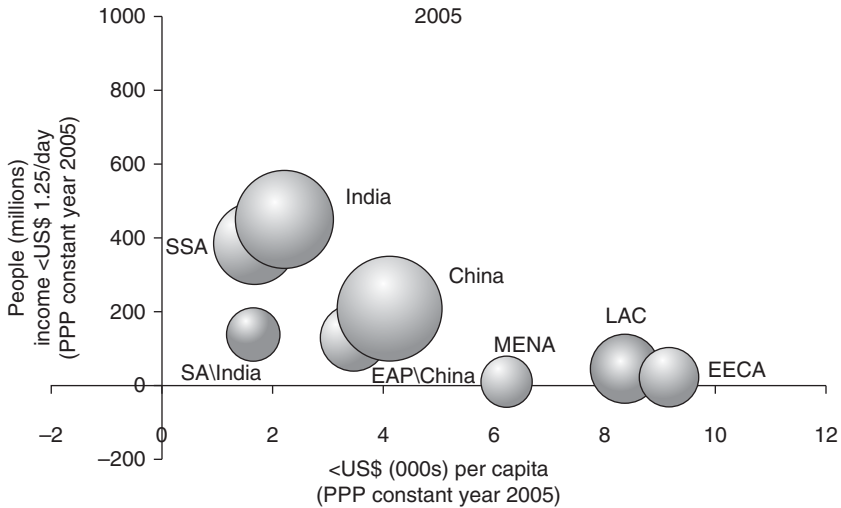
Note: See Appendix for the abbreviations used and for further details.

Figure 1.7 Income and poverty 1990



Note: See Appendix for the abbreviations used and for further details.

Figure 1.8 Income and poverty 1999



Note: See Appendix for the abbreviations used and for further details.

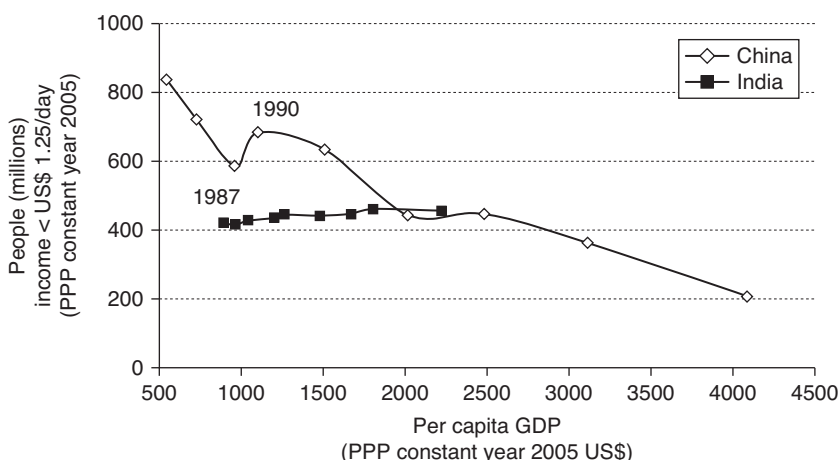
Figure 1.9 Income and poverty 2005

Caribbean (LAC) and the Middle East and North Africa (MENA) also appear explicitly, with Eastern Europe and Central Asia (ECA) unavailable until 1990. (The Appendix provides more detail on the data and the construction of these figures.)

The horizontal axis measures per capita GDP, in thousands of PPP constant year 2005 US dollars; the vertical axis measures in millions the number of people living on less than \$1.25 a day, in PPP constant year 2005 US dollars. The location of each bubble is the state of the economy; the relative size of each bubble, the population. As population increases, the bubble grows in size.

For 1981 China appears in the extreme upper left in Figure 1.6: it is poor on average and holds many extremely poor people. Over time, the China bubble sinks and moves to the right. Economic growth occurs and lifts hundreds of millions of Chinese out of extreme poverty. By 2005 China both holds fewer extremely poor people and is per capita richer than India and sub-Saharan Africa.

Figures 1.6–1.9 also show that the rest of East Asia and the Pacific region have, in parallel with China, grown and successfully reduced poverty, although nowhere to the same magnitude as China alone. By contrast, the rest of the world has changed little in that same positive direction. The only other significant event is, instead, a negative one. Figures



Note: China and India are the only billion-people economies extant. Together they make up one-third of the world's population.

Figure 1.10 Growth and poverty in one-third of the world

1.6–1.9 show sub-Saharan Africa's GDP declined and poverty nearly doubled between 1981 and 2005. By 2005 the population of all of sub-Saharan Africa was only 58 per cent that of China but in absolute numbers sub-Saharan Africa had 85 per cent more people living in extreme poverty than had China.

The impact of China on world poverty is not due only to its having such a large population. Figure 1.10 better brings out the comparison with India – the only other billion-people economy in the world – implicit in these preceding figures. Three features are particularly striking. First, compared to China over this sample period, India has both grown a lot slower and seen much less poverty reduction – indeed, the number of people in India living on less than US\$1.25 a day has remained approximately constant despite economic growth. This rise in poverty is because of India's increased population and its relatively stable income distribution (for example, Quah 2003).

Second, while successful overall, China's poverty reduction has not been uniform throughout this time. Between 1987 and 1990 when economic growth slowed, poverty in China increased markedly as well.

Third, from the 1987–90 episode in China, on the one hand, and comparison of China's and India's historical experiences reported here, on the other, it is clear that neither the sheer size of China nor the fact of economic growth alone makes large-scale poverty reduction automatic.

Growth has to be sufficiently rapid to overturn the negative effects arising from increases in population and in inequality.

1.3 SOURCES OF GROWTH

Thus, even as ESE Asia has risen to contribute significantly to world economic growth, it has significantly reduced world poverty and stabilized the world economy against downturns. Japan continues to be the largest economy in ESE Asia but its growth slowdown is more than matched by the increased growth of China.

How has this state of affairs come about? And what are prospects for its continuing? This second question is particularly compelling in light of observations by Krugman (1994) and Young (1995) on the factor input-driven nature of Asia's economic growth, suggesting that Asia's growth has occurred not through increases in productivity especially, but instead through unsustainable 'mere sweat' – nothing more than hard work and savings.

This section draws on comprehensive cross-country productivity estimates recently constructed in Jorgensen and Vu (2005) (subsequently updated and kindly provided this author by Khuong Vu). These estimates extend past 1997 and therefore allow evaluation of the impact of policies put in place or changes arising from the Asian Currency Crisis.

From differences in data sources and detail the estimates in Jorgensen and Vu (2005) do not match exactly, say, Young's (1995, 2003) estimates for the pre-1995 sample Table 1.2. Some estimates are surprisingly close (those for Hong Kong, South Korea and Taiwan); others are notably different, especially those for Singapore and China. The estimates in Hsieh (2002) for Hong Kong, South Korea and Taiwan are close to those in Young (1995) and therefore also to those from Jorgensen and Vu (2005) used here, and are thus not repeated in the table. Young (1995) estimates total factor productivity (TFP) contribution in Singapore to be negative. Hsieh's estimate for Singapore moves TFP contribution to be at least positive but the gap between the resulting 23 per cent and that from Jorgensen and Vu's estimate remains large.

Young (2003, Table 24, p. 1258) reports a baseline estimate of TFP growth of 1.4 per cent for China over 1978–98 but says also that the range –0.4 per cent to 5.6 per cent is plausible, depending on the assumptions a researcher wishes to impose. The maximum in this range would give a TFP contribution of 88 per cent, double that estimated by Jorgensen and Vu (2005).

I am unable to reconcile completely the different productivity estimates for Singapore and China. For consistent treatment across a broad range of

Table 1.2 Comparing estimated TFP contribution to economic growth

Economy	Jorgensen and Vu (2005) and updates, 1989–95 %	Alternate estimates %	Source
Hong Kong	34	38	Young (1995) Table 1.5, p. 657, 1986–91
South Korea	24	24	Young (1995) Table 1.7, p. 660, outside agriculture 1985–90
Taiwan	37	42	Young (1995) Table 1.8, p. 661, outside agriculture 1989–95
Singapore	41	-7	Young (1995) Table 1.6, p. 658
		23	Hsieh (2002) Table 1.1, p. 509, E-P ratio 1973–90
China	44	19	Young (2003)

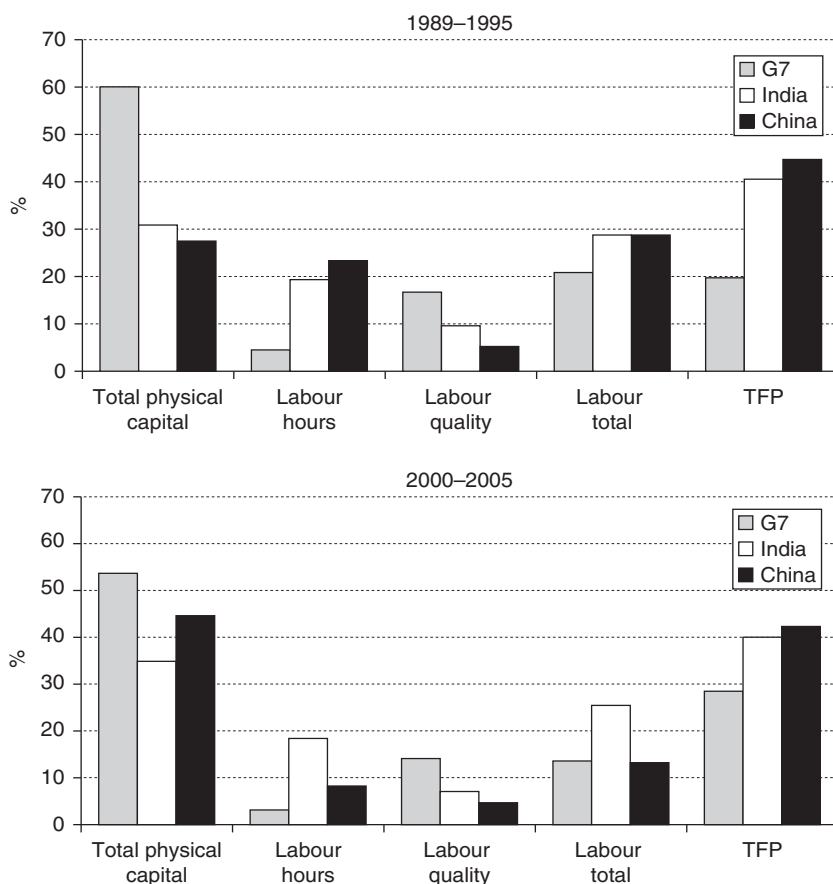
Note: Each entry in the table is the ratio of TFP growth to output growth in per cent. The figures given under 'Alternate estimates' have varying sources, as described in the corresponding rows. When a source reports only TFP growth but not output over the appropriate sample period, I calculated the latter from World Bank (2008) using constant (year 2000) US\$ GDP evaluated at market exchange rates.

countries and across time, I hereafter use the estimates given in Jorgensen and Vu (2005) and updates kindly provided by Khuong Vu.

1.3.1 Growth Decompositions

Figure 1.11 shows growth decompositions, before and after 1997, of three different large blocs: the G7, India and China. The focus is China; the G7 and India provide comparison examples. Before 1997 growth in China was driven heavily (over 23 per cent) by labour hours, certainly at a pace much greater than the G7 but also than India. After 2000, however, the principal factor-input driver for growth in China shifted to physical capital, from 27 per cent earlier up to 44 per cent. Throughout this time TFP growth was maintained. Compared to China's shift, changes in the G7 and India have been less readily observable.

Figure 1.12 shows similar decompositions, again before and after 1997, but now comparing the three largest economies in ESE Asia, that is, China, South Korea and Japan. China's shift from labour hours to physical capital, already noted, is notable even in comparison with these other

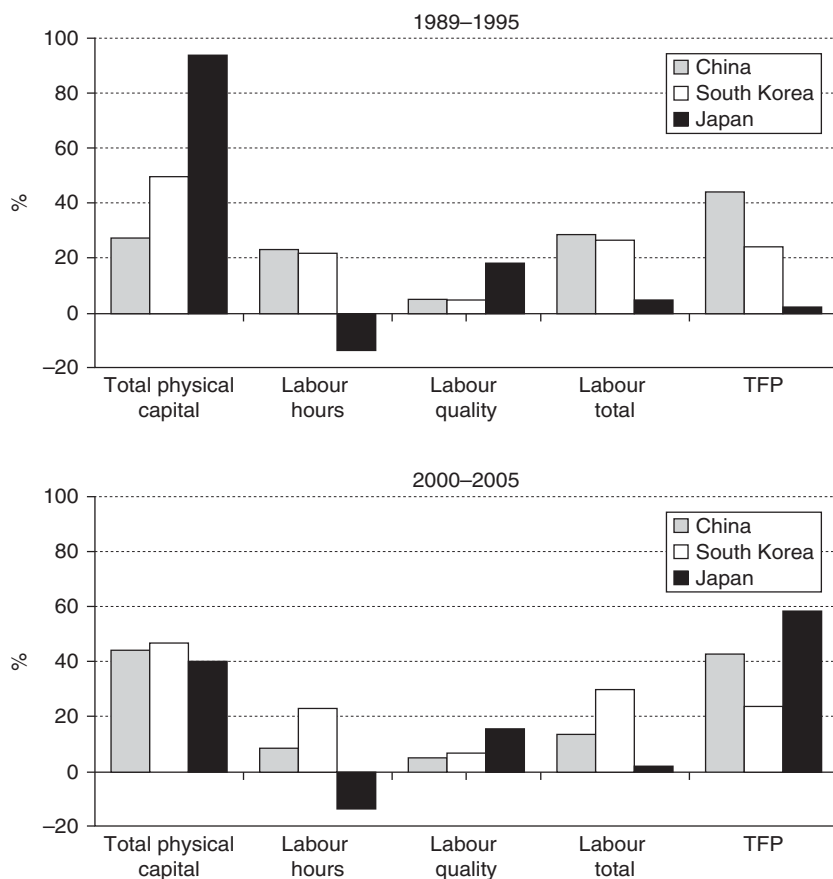


Note: The figures show the percentage contribution of each factor input and of productivity to output growth. The single largest change is China's shift from growth through labour hours to growth through physical capital. Labour total indicates the sum of the contribution from labour hours and labour quality; the latter takes into account formal education.

Source: The underlying data are from Jorgensen and Vu (2005) with subsequent updates kindly provided by Khuong Vu.

Figure 1.11 Growth accounting across the G7, India and China, before and after 1997

large Asian economies. The difference from Japan is most stark: in the latter physical capital's contribution more than halved from 94 per cent to 40 per cent, with the slack taken up entirely in TFP. South Korea's position, in contrast to both China and Japan, is remarkably invariant: before

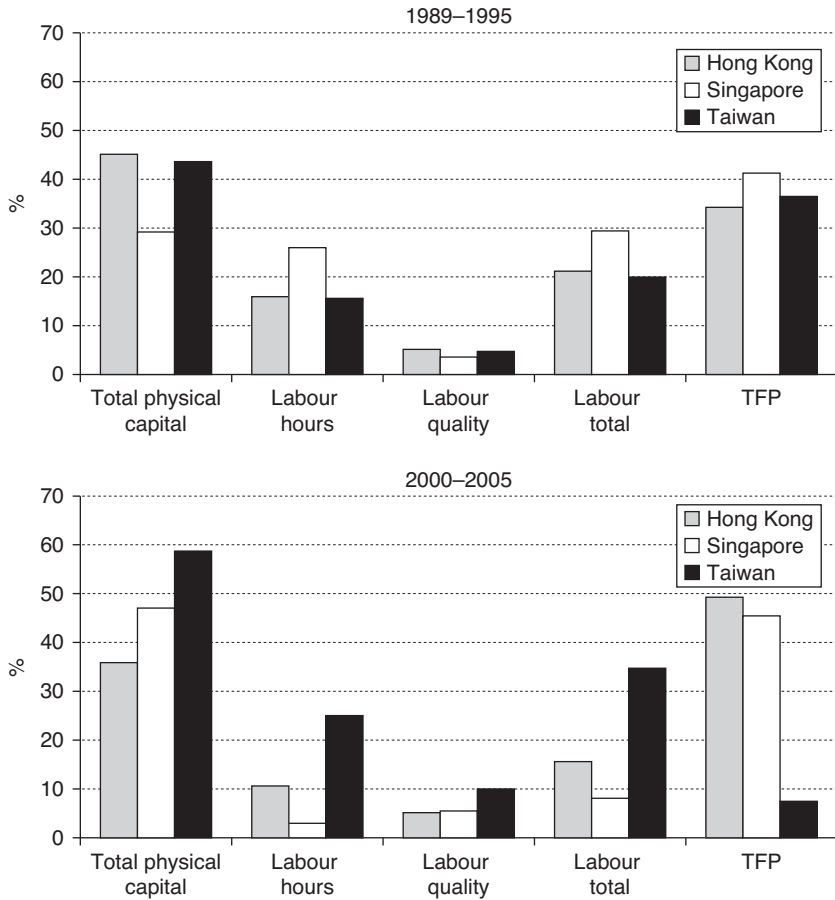


Note: See note to Figure 1.11.

Figure 1.12 Growth accounting across China, South Korea and Japan, before and after 1997

1997 physical capital contributed 50 per cent of growth, labour 26 per cent, and TFP 24 per cent; after 1997, physical capital contributed 47 per cent, labour 30 per cent, and TFP 23 per cent. If growth in South Korea had been overly intensive in physical capital before 1997, little seems to have changed.

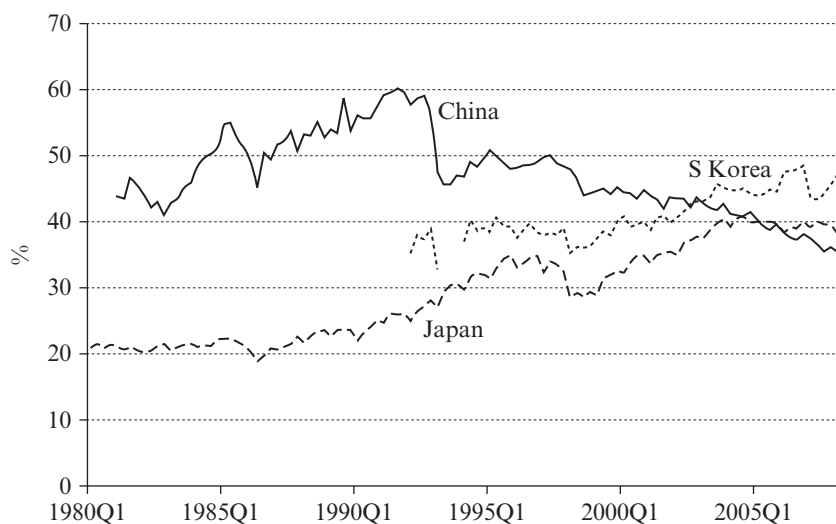
Finally, Figure 1.13 shows growth decompositions, before and after 1997, for Hong Kong, Singapore and Taiwan, whose growth performance in connection with productivity has been studied intensively (Hsieh 2002;



Note: See note to Figure 1.11.

Figure 1.13 Growth accounting across Hong Kong, Singapore and Taiwan, before and after 1997

Young 1995). Here, the interest is in how that performance has varied before and after the Asian Currency Crisis. The most striking feature in Figure 1.13 is the stability of TFP's contribution to growth in both Hong Kong and Singapore but its dramatic fall-away in Taiwan, where physical capital investment has surged after 1997. Singapore has reduced its reliance on labour hours and increased the growth contribution from physical capital: the two changes together kept TFP contribution to overall growth invariant.



Note: The figure shows bilateral trade (exports and imports) between each of China, Japan and South Korea, in turn, and the rest of ESE Asia, reported as a percentage of total trade between each named economy and the rest of the world.

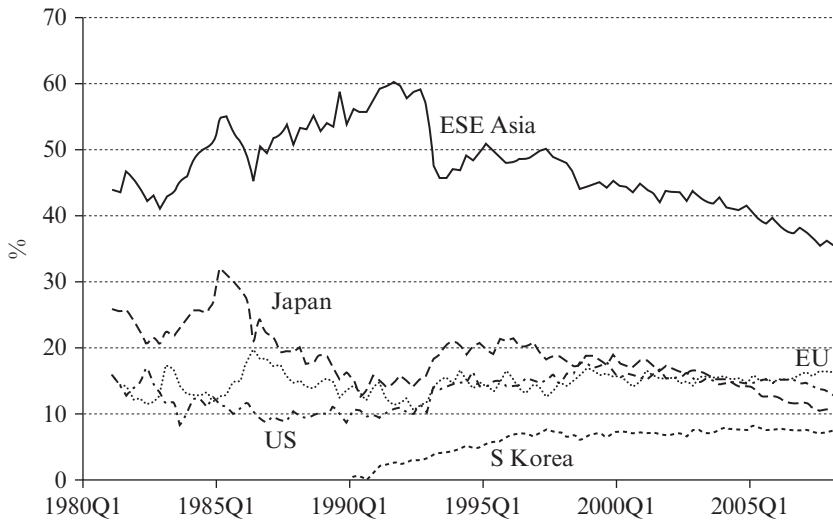
Source: Author's calculations based on International Monetary Fund (IMF), *Direction of Trade Statistics* (DOTS) October 2008, ESDS International, (Mimas) University of Manchester.

Figure 1.14 Changing trade patterns in ESE Asia

1.4 TRADE

The analyses in previous sections of this chapter have considered the growth performance of ESE Asian economies either individually or together as a bloc. However, to consider changing trade dynamics or to examine the role of China's growth on other economies in the region, we need to study bilateral or multilateral patterns of national engagement, where these interacting economies are explicitly identified.⁵

Figure 1.14 shows the evolving patterns of trade between the rest of ESE Asia and, in turn, China, Japan and South Korea – the three largest economies in ESE Asia. Figures 1.14–1.17 break down these trade patterns further: the figures display the changing trade relations for, respectively, China, Japan, and South Korea with each other and with the European Union and the US. The vertical axis in Figure 1.14 measures total trade (that is, the sum of exports and imports) that each of the named economies



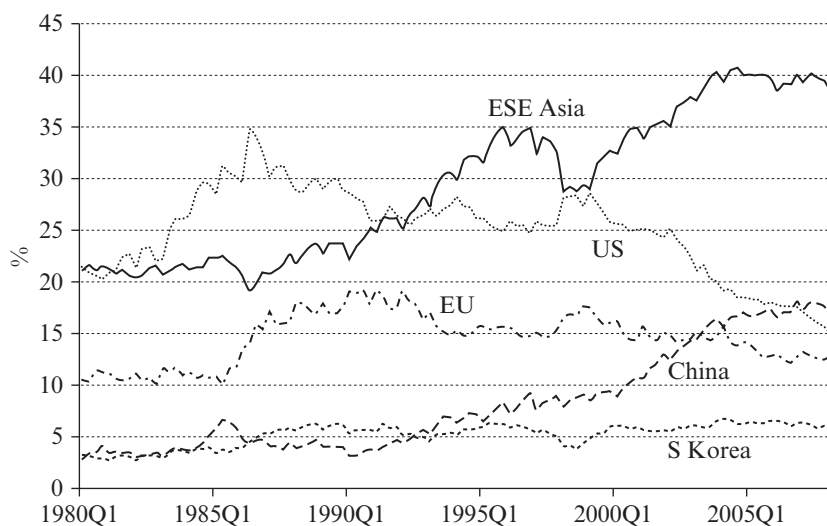
Note: The figure shows total trade (exports and imports) China undertakes with a particular trading partner – here the rest of ESE Asia, Japan, South Korea, the US and the EU in turn – as a percentage of total trade undertaken with the world. Trade with Japan has declined sharply; that with South Korea has risen markedly, although still remaining relatively small. Trade with both the US and EU has fluctuated but not trended significantly up or down.

Source: Author's calculations based on International Monetary Fund (IMF), *Direction of Trade Statistics (DOTS)* October 2008, ESDS International, (Mimas) University of Manchester.

Figure 1.15 China's changing trade patterns

undertakes with the rest of ESE Asia, as a percentage of that named economy's world trade. The vertical axis in Figures 1.15–1.17 measures total trade that the named economy undertakes with a specific trading partner, as a percentage of that named economy's world trade. Taken together, Figures 1.14–1.17 demonstrate that trade within ESE Asia has been large, and that for a range of measures that within-bloc integration has continued to rise relative to that with the rest of the world.

Figure 1.14 shows that trade for Japan and South Korea with ESE Asia have risen sharply, while that for China has remained consistently large. China's trade with the rest of ESE Asia grew to as high a share as 60 per cent of China's overall international trade: however, that ratio has fluctuated, rising from 40 per cent in the early 1980s to 60 per cent ten years after, and then falling gradually back down again to 35 per cent in 2008. By contrast, Japan and South Korea's trade with the rest of ESE Asia only



Note: The figure shows total trade (exports and imports) Japan undertakes with a particular trading partner – here China, South Korea, the US and the EU in turn – as a percentage of the total undertaken with the world.

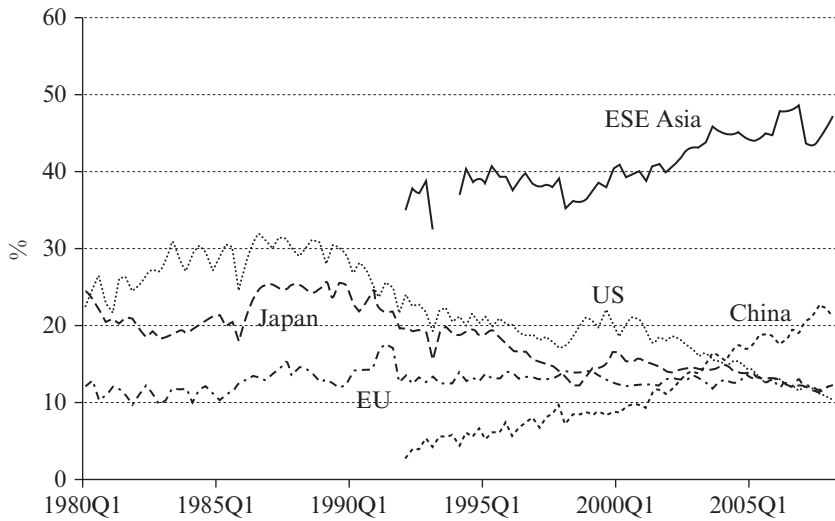
Source: Author's calculations based on International Monetary Fund (IMF), *Direction of Trade Statistics* (DOTS) October 2008, ESIS International, (Mimas) University of Manchester.

Figure 1.16 Japan's changing trade patterns

increased steadily. The share of ESE Asia in Japan's international trade doubled from 20 per cent in the early 1980s to 40 per cent in the mid-2000s. In South Korea's international trade the share of ESE Asia rose from 35 per cent in the early 1990s to almost 50 per cent in 2006.

Even after the decline in ESE Asia's share in China's international trade, however, Figure 1.15 shows that it remains double that of both the EU and US shares. China trades far more with ESE Asia than it does with either the EU or the US: this has consistently been so since 1980. Evident in the figure is also how South Korea has seen a marked rise as a trading partner for China, its share rising from only 0.5 per cent in 1990 to over 7 per cent in 2007. At the same time Japan's share has declined sharply, from a high of 31 per cent of China's world trade in 1985 to only 11 per cent in 2007.

In Figure 1.16 and Figure 1.17 the looming importance of China becomes apparent. Japan's trade with China rose from under 3 per cent of Japan's world trade in 1980 to nearly 20 per cent in 2006. By 2007 Japan was trading more with China than it was with the US, even though the



Note: The figure shows total trade (exports and imports) South Korea undertakes with a particular trading partner – here China, Japan, the US and the EU in turn – as a percentage of the total undertaken with the world.

Source: Author's calculations based on International Monetary Fund (IMF), *Direction of Trade Statistics* (DOTS) October 2008, ESIS International, (Mimas) University of Manchester.

Figure 1.17 South Korea's changing trade patterns

latter had accounted for over one-third of Japan's world trade in the mid-1980s.

In the early 1990s China accounted for 3 per cent of South Korea's trade; by 2006 that ratio had risen to exceed 20 per cent. In 2003Q3 South Korea's trade with China exceeded that with the US for the first time. This difference has grown larger ever since, even though the US share of South Korea's trade had been as high as one-third in the mid-1980s.

1.5 CONCLUSION

This chapter has provided a large-scale, global perspective on growth in East and Southeast Asia since the 1990s. It has traced, in particular, the importance of the rise of China and changes in the region since 1997, when the Asian Currency Crisis appeared to diminish economic prospects following decades of rapid economic growth.

Many of the important conclusions have already figured in the introduction. But they are numerically memorable and so might be useful to repeat here. Even with 1997 having dramatically perturbed growth in ESE Asia, the region has more than doubled its share of world GDP at market exchange rates. Much of that has been due to China alone.

Over periods of short sharp slowdowns in the rest of the world, ESE Asia has continued to grow in sufficient absolute volume of goods and services, and thus has stabilized the world against yet sharper downturns. China by itself has brought over 600 million people out of extreme poverty in the last quarter-century, accounting for pretty much the entire reduction in extreme poverty in the world.

Productivity growth in the region overall varies, but in the main is neither consistently better nor worse than that elsewhere; according to one view productivity growth has improved since 1997. The data here, however, vary considerably across different sources.

In trade, ESE Asia has become ever more tightly integrated. Both Japan and South Korea used to have one-third of their international trade with the US alone. However, since the mid 2000s, their trade with China has consistently exceeded that with both the US and the EU. In all three of these – ESE Asia's largest economies – trade with the rest of ESE Asia has become by far the largest meaningful share of their trade with the rest of the world.

APPENDIX

This appendix details sources and construction for the data used in this chapter. As explained in note 1, 'East Asia' in this chapter means China, Hong Kong China, South Korea, Taiwan, and Japan, while Southeast Asia denotes Cambodia, Indonesia, Malaysia, the Philippines, Singapore, Thailand and Vietnam. The term 'G7' refers to the collection comprised of Canada, France, Germany, Italy, Japan, the UK and the US.

Wherever possible, for consistency, data are taken from World Development Indicators (WDI) (World Bank 2008). Thus, GDP and population data are from World Bank (2008), augmented by data on Cambodia, Taiwan and Vietnam from Jorgensen and Vu (2005) and Asian Development Bank (2008). The World Bank does not report data on Taiwan separately; nor are Taiwan's numbers added to those for China, although they are put back in to make up world GDP.⁶ WDI contains no GDP data for Cambodia and Vietnam prior to 1993. Trade statistics are from IMF (2008). Like the World Bank the International Monetary Fund

(IMF) does not report data on Taiwan and so the latter's trade statistics have not been available to use in this chapter.

In 1960 East and Southeast Asia (or ESE Asia), with 33 per cent of the world's population, generated at market exchange rates 12 per cent of world GDP. That year the region's per capita income was 35 per cent of the world average. By 2006 per capita income in ESE Asia had risen to 79 per cent of the world average. Holding then 31 per cent of the world's population, ESE Asia produced at market exchange rates over 24 per cent of world GDP. In 2006 world GDP, measured in constant year 2000 US dollars, was \$37.9 trillion, while the world's population comprised 6.54 billion people.

Over this period, 1960–2006, per capita income in ESE Asia grew at 3.7 per cent per year, exceeding the annual growth rate in overall world per capita income by 1.8 percentage points. Indeed, taking out ESE Asia, the rest of the world had per capita income growing at only 1.5 per cent per year over 1960–2006. In Figures 1.6–1.9 EAP stands for East Asia and the Pacific region; in Figure 1.6 ECA stands for Eastern Europe and Central Asia, LAC for Latin America and the Caribbean, MENA for the Middle East and North Africa, SA for South Asia, and SSA for sub-Saharan Africa. The poverty data are taken from Chen and Ravallion (2008), with some minor calculations added by this author. The PPP income data are from WDI (World Bank, 2008). Both variables use PPP constant year 2005 US dollars. PPP income data for Eastern Europe and Central Asia are unavailable before 1989, and so the ECA bubble does not appear until 1990.

The GIF animation <http://econ.lse.ac.uk/staff/dquah/p/2008.09-wpdyn-2005.gif> has first each underlying image generated in Microsoft Excel and printed as a collection of Postscript files. Then the entire sequence is strung together in LaTeX, emitted as PDF, and finally converted to animated GIF by ImageMagick (of course, alternatives to achieve the same outcome are available at each step: the piped Unix commands shown simply provide a particularly compact summary of the procedure).

NOTES

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1. These are incomes at market exchange rates and measured in constant year 2000 US dollars. All numerical calculations in this section are the author's, except where explicitly

described otherwise. By East Asia I mean China, Hong Kong China, South Korea, Taiwan and Japan. By Southeast Asia I mean Cambodia, Indonesia, Malaysia, the Philippines, Singapore, Thailand and Vietnam. These correspond to Asian Development Bank (ADB) (2008) terminology, except: (1) Japan is added to East Asia, because the interest in this chapter lies primarily in a geographical dimension, rather than a division across developing and developed economies; and (2) Brunei, Laos, Mongolia and Myanmar are excluded altogether because of insufficient data. Section 1.2 provides details on these and other statements about the underlying data.

2. See Balassa (1964) and Samuelson (1964), and Penn World Tables (Heston et al. 2006). ADB (2008) discusses how it matters greatly which PPP – that for GDP, household final consumption expenditure, government final consumption expenditure, gross fixed capital formation, or a poverty-specific PPP – is used and to what end.
3. By construction the accumulated underperformance over the fitted sample period is approximately zero. It is the out-of-sample outcome that is informative. Jones (1995) had previously used this technique to argue that the US economy had been on the same stable growth path from even before the Great Depression.
4. These numbers use PPP indexes from the 2005 International Comparison Project (Asian Development Bank 2008). In this time the world's population rose from 4.51 to 6.46 billion (World Bank, 2008).
5. Explicit identification of trading partners featured prominently in convergence clusters discussed in Quah (1997).
6. <http://go.worldbank.org/44YJTN9WY0> (accessed September 2008).

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