

# Uncoupling Asia: Myth and reality

## Introduction

Traditionally, developing Asia has been viewed as a region that relies heavily on exports for growth. As an important corollary of this, it has been considered vulnerable to external demand shocks. Developing Asia—more precisely the economies of East and Southeast Asia<sup>1</sup>—have registered average growth of 6.5% a year over the last decade. These economies now account for 9.9% of world gross domestic product (GDP) measured in real US dollar terms, compared with 30.6% for the United States (US), 14.0% for Japan, and 24.9% for the 25 countries of the European Union (EU-25). (The US, Japan, and EU are referred to henceforth as the G3 economies or simply G3.)

The fast-growing Asian region and its potentially large spending power raise the hope that its own growing demand may help it both weather the adverse consequences of a US slowdown and ease the impact of a global downturn. Indeed, the visible slowing in the US economy in the second half of 2006 notwithstanding, the continued strength of Asian exports has been marked. This has set off heated debate on whether or not the Asian economy is uncoupling from the global business cycle on the back of its rapidly growing domestic economy and the strengthening of intra-Asian economic ties.

“Uncoupling” can be defined as the emergence of a business-cycle dynamic that is relatively independent of global demand trends and that is driven mainly by autonomous changes in internal demand. Proponents of the “uncoupling Asia” view base their arguments on the emergence of a strong regional economy that is increasingly independent from changing economic conditions in the world’s major industrial countries.

A major reason, some believe, that Asia’s business cycle is uncoupling is the emergence of the People’s Republic of China (PRC) with a consumer market of 1.3 billion. Trade growth between the PRC and the countries of East and Southeast Asia has been extremely rapid in the last decade and this is also seen as possibly replacing industrial country consumer demand. (See the chapter, *Trade and structural change in East and Southeast Asia: Implications for growth and industrialization*, also in Part 1.)

Despite the emergence of the PRC economy and the increase in the Asian region’s share in global production and trade, evidence presented in this chapter of *Asian Development Outlook 2007* indicates that the rise in intra-Asian economic interdependence through investment and trade is being *driven* by the globalization process. For example, much

intra-Asian trade is conducted by multinational corporations (MNCs) and their affiliates in the form of intrafirm and intra-industry trade that involves fragmentation of production. The production networks in Asia respond to global demands from consumers outside the region rather than being independent of them. Therefore, the G3 economies are still an important source of external demand for Asia, and so the region remains vulnerable to shocks coming from this quarter. Analysis of business-cycle co-movements, both within Asia and between G3 and Asia, generally affirms the linkage between growth in G3 and Asia, indicating that the regional integration process in Asia is intimately linked to global economic activity.

The following sections investigate the structure of Asian trade both in terms of inter- and intraregional trade linkages. In the next section, *Is intra-Asian trade growth driven by independent regional demand?*, a close relationship between Asian exports and final demand from the G3 economies is demonstrated. Although Asia's direct exposure to G3 is on a decline, final demand from G3 plays an important role underneath the surface of rising intra-Asian trade. Much of this trade is dominated by intra-industry and intrafirm shipments of intermediate goods that are eventually consumed outside the region. Although production sharing arrangements across Asia have given a strong push to regional economic and trade integration since the 1990s, such integration is structurally linked to the international business networks of MNCs.

The PRC has a special role to play. At the center of MNCs' regional supply networks, it is important in boosting both intra- and interregional trade. But this nexus role has deepened economic interdependence between the PRC and the rest of Asia as well as between the PRC and G3.

The penultimate section, *Is Asia's business cycle gaining independence?*, examines whether, and to what extent, ongoing regional integration has affected the degree of dependence of the Asian economy on G3 business cycles. The patterns of Asian business cycles changed quite significantly before and after the Asian crisis of 1997–98, reflecting structural changes in the regional economy. Evidence based on correlation analysis of business cycles supports the view that Asia's increasing trade openness and economic integration, within itself and with G3, have led to higher degrees of both inter- and intraregional business cycle synchronization. There is clear evidence pointing to increasing business cycle co-movements among Asian economies, particularly between the PRC and the rest of Asia. But there is no mutual exclusivity between inter- and intraregional economic integration—it is not one or the other. In fact, deepening regional integration appears to reinforce Asia's integration into the world economy. For this reason, Asia remains exposed to cyclical downturns in the G3 economies.

In *Conclusions*, some policy issues are discussed in light of the global nature of Asia's regional integration. The Asian economy remains sensitive to business cycles in the G3 economies, giving rise to an important policy agenda for Asia's economies, both at the regional and national level. To the extent that regionalization is tied to globalization, Asia's economic activity is also exposed to global competition. Globalization of MNCs' production networks underlines the region's need

for greater economic flexibility to maintain strong productivity growth and global competitiveness.

## Is intra-Asian trade growth driven by independent regional demand?

### The final destination of intra-Asian trade

Asia is undergoing a process of rapid economic expansion accompanied by growing regional trade, investment, and financial linkages. Since the 1990s in particular, growth in intra-Asian trade has been remarkable (Figure 1.5.1). Trade is often an important channel through which economic shocks can be transmitted from one country to another, but it may not be the whole story. Indeed, export-driven growth tends to make a country's economy vulnerable to the cyclical movements in economic activity of major trading partners. The rapid expansion of intraregional trade may indicate that Asian countries are strengthening their mutual economic ties. At the same time, the relative decline in Asia's trade with the rest of the world suggests Asia's reliance on external trading partners might be diminishing.

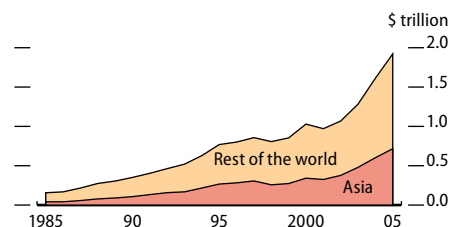
Overall, Asia's reliance on external demand remains strong. The export-to-GDP ratio has continued to trend upward, reaching nearly 55% of GDP in 2005 (Figure 1.5.2) compared with the world average of 28.5%. The incremental export-to-GDP ratio, measured by the year-on-year increment in exports over that in GDP, has also been on an upward trend. Steady increases of both ratios illustrate the importance of the export sector as the engine of growth in developing Asia.

Asia's increasing trade openness has been accompanied by significant progress in the diversification of its export base. Figure 1.5.3 shows the composition of Asian exports by destination. The share of intraregional trade in total exports rose from 26.2% in 1985 to 37.3% in 2005. The geographic composition of Asia's export market has become much less concentrated, with the share of the single largest market, the US, at only 17.6% in 2005, down from 23.2% in 1985. Japan and the EU-25 now account for 25.8% of Asia's total export market, much larger than the US share. But taken together, the G3 economies (the major export destination of global exports) account for only 43.3% of Asia's total exports, down from 53.2% two decades ago.

Greater diversification in the geographic composition of Asian exports suggests that an external demand shock stemming from a downturn in G3 could be mitigated to some extent by stronger growth in the rest of Asia's export markets, including Asia itself. This increasing degree of trade diversification, along with strong growth in intra-Asian trade, is often taken as evidence of an increase in Asia's resilience to a slowing of growth in the world's major economies.

However, changing demand conditions in these economies—particularly the US—appear to remain a dominant factor in Asia's export growth. Figure 1.5.4 demonstrates a close relationship between US non-oil import growth and that of Asian exports. G3 non-oil imports are also included for the period where data are available. US non-oil

### 1.5.1 Destinations for Asian exports

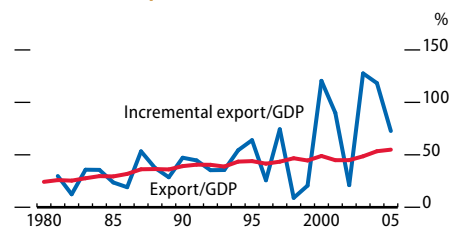


Note: Asia comprises People's Republic of China; Hong Kong, China; Indonesia; Republic of Korea; Malaysia; Philippines; Singapore; and Thailand.

Source: International Monetary Fund, *Direction of Trade Statistics* CD, January 2007.

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### 1.5.2 Asian export ratios

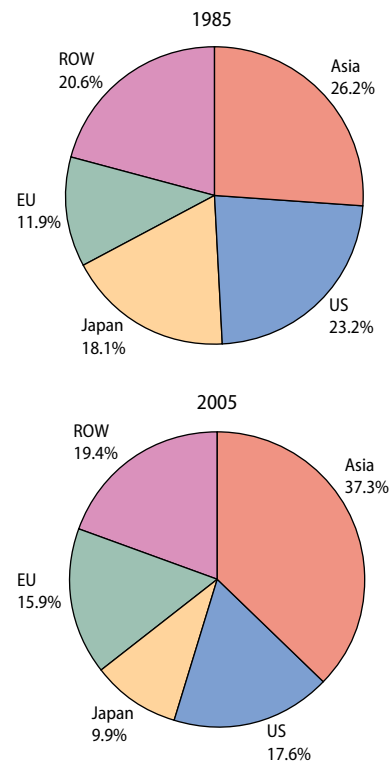


Note: Asia comprises People's Republic of China; Hong Kong, China; Indonesia; Republic of Korea; Malaysia; Philippines; Singapore; Taipei, China; and Thailand.

Source: Oxford Economics, *Quarterly Model*, February 2007.

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### 1.5.3 Composition of Asian exports



ROW = rest of the world.

Note: Asia comprises People's Republic of China; Hong Kong, China; Indonesia; Republic of Korea; Malaysia; Philippines; Singapore; and Thailand.

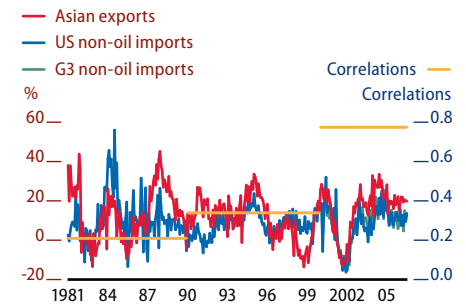
Source: International Monetary Fund, *Direction of Trade Statistics* CD, January 2007.

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imports account for nearly 50% of total G3 non-oil imports and are highly synchronized with movements of G3 non-oil imports. Consequently, the correlation between Asian exports and G3 non-oil imports is also quite significant. Although the share of G3 markets in terms of Asia's total export market is on a decline, the figure indicates that the relationship in growth rates rather than levels has strengthened over time. The decadal correlations between growth rates of US non-oil imports and Asian exports confirm that this linkage has been significant and tighter in the first years of this century.

Underlying this strong linkage is the nature of intra-Asian trade. A notable feature of such trade is that it is driven by vertical integration of production chains, whose final output is destined for final demand outside the region (see the chapter *Trade and structural change in East and Southeast Asia: Implications for growth and industrialization*). Figure 1.5.5 shows a breakdown of Asian exports in terms of exports that are destined for other countries within the region and of exports that leave the region, on the basis of the input-output structure of global

#### 1.5.4 Correlations between growth in Asian exports and G3 non-oil imports

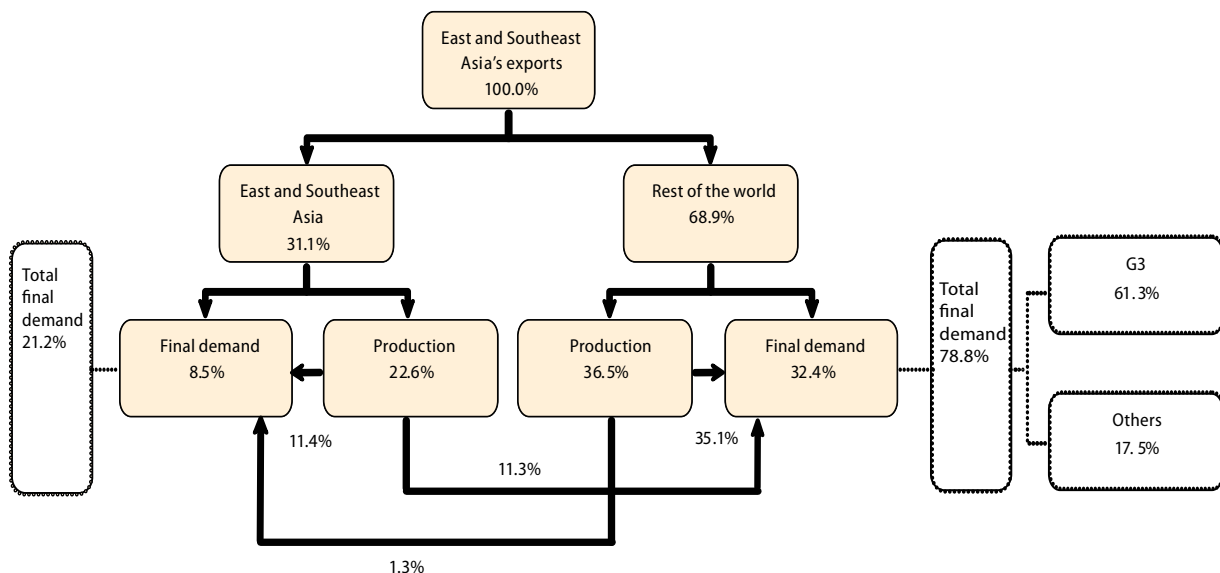


Note: Asia comprises People's Republic of China; Hong Kong, China; Indonesia; Republic of Korea; Malaysia; Philippines; Singapore; and Thailand.

Sources: International Monetary Fund, *Direction of Trade Statistics* CD, January 2007; US Census Bureau, available: [www.census.gov](http://www.census.gov); CEIC Data Company Ltd.; Eurostat, available: <http://epp.eurostat.ec.europa.eu>; all downloaded 28 February 2007.

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#### 1.5.5 Share of exports from East and Southeast Asia



Source: Staff estimates.

production and trade. Intra-Asian trade is then factored into the region's final demand and what is used in the production process. A similar decomposition is made in the trade among the rest of the world. On both ends are reported total final demand by different regions, which take into account the trade in intermediate goods in the production process.

The decomposition, which is based on the latest release of the Global Trade Analysis Project database,<sup>2</sup> shows that more than 70% of intra-Asian trade consists of intermediate goods used in production, and of this, half is driven by final demand outside Asia. Consequently, about 61.3% of total Asian exports (instead of 43% of total exports as shown in Figure 1.5.3) is eventually consumed in G3 countries.

Within Asia, the PRC is the largest driver of regional exports, but its final demand accounted for only 6.4% of total Asian trade, which was

only half the contribution from Japan and slightly below a quarter of that from the US.<sup>3</sup> The results show that the G3 economies are still the main ultimate export destinations for final goods leaving Asia, when taking into account the share of intermediate goods trade that is for assembly and production within the region but that is eventually shipped out of the region.

This is confirmed by other sources. The Monetary Authority of Singapore (2003) estimates that only about 22% of total Asian exports are eventually absorbed by the region's domestic demand, based on the 1995 Asian Input-Output table (AIO table). According to Citigroup (2006), based on the newly released 2000 AIO table, only 11% of Asian exports are now destined for consumption within Asia. Meng et al. (2006) also conclude that, comparing the 2000 AIO table with the 1995 AIO table, the dependence of Asian production on overseas markets strengthened rather than weakened. Using a slightly different approach, Goldman Sachs (2002) estimates that Asia's domestic demand accounts for only one fifth of Asia's total export growth. Rough estimates based on these sources indicate that about 60% of Asia's total exports are ultimately headed for G3.

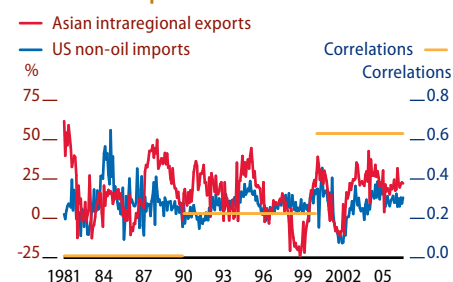
Figure 1.5.6 highlights the significance of G3 demand as final demand for intraregional trade by demonstrating that intraregional trade dynamics are tightly associated with the US non-oil import cycle. In the same vein, the relationship between Asia's private domestic demand and Asian imports has weakened, despite rising intraregional trade. Figure 1.5.7 shows that the correlation between Asia's private demand and its imports has trended downward.

As intra-Asian trade originates from demand outside the region, growth of intraregional trade's share in total Asian exports does not automatically lead to Asia's insulation from an external demand shock. On the contrary, the extent to which intraregional trade is dictated by intrafirm and intra-industry processing and assembly through vertically integrated production chains determines how vulnerable the Asian economy can be to a shock, particularly an industry-specific one emanating from major demand destinations. For example, the last US slowdown in 2001–2002 originated in the information technology (IT) industry, and its ripple effects through the global IT industry to Asian manufacturers was a vivid example of such vulnerability. The next section explores the structure of intra-industry trade within Asia.

### Vertical supply networks and the role of the People's Republic of China

Figure 1.5.8 shows that intra-industry trade has been rising in Asia's trade with the rest of the world, along with increasing intraregional trade since the 1990s.<sup>4</sup> Beneath this picture lie intricately interconnected supply chains among Asian economies. ADB (2006) reports that strong growth in intrafirm and intra-industry trade through MNCs' vertical supply networks has boosted intra- and interregional Asian trade. It suggests that regional production sharing networks established by MNCs to take advantage of specific local conditions and low-cost labor might have been an underlying force behind intraregional trade in intermediate goods destined for final consumption outside the region. Fukao et al. (2003) provide supporting evidence, namely that Asian affiliates of Japanese

### 1.5.6 Correlations between growth in Asian intraregional exports and US non-oil imports

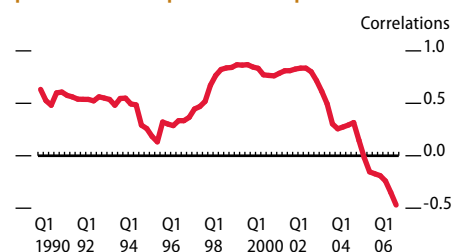


Note: Asia comprises People's Republic of China; Hong Kong, China; Indonesia; Republic of Korea; Malaysia; Philippines; Singapore; and Thailand.

Sources: International Monetary Fund, *Direction of Trade Statistics* CD, January 2007; US Census Bureau, available: [www.census.gov](http://www.census.gov), downloaded 28 February 2007.

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### 1.5.7 Correlations between Asian private consumption and imports



Note: Asia comprises People's Republic of China; Hong Kong, China; Indonesia; Republic of Korea; Malaysia; Philippines; Singapore; Taipei, China; and Thailand.

Source: Oxford Economics, *Quarterly Model*, February 2007.

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### 1.5.8 Asian intraregional exports and intra-industry trade



Note: Asia comprises People's Republic of China; Hong Kong, China; Indonesia; Republic of Korea; Malaysia; Philippines; Singapore; and Thailand.

Source: United Nations, *Commodity Trade Statistics* database, downloaded 28 February 2007.

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### 1.5.1 Sales by destination of foreign manufacturing subsidiaries of Japanese and US firms, by location, 1999 (share in total sales)

Destination	Location of operation					
	East Asia (excl. Japan)	PRC	Japan	Europe	US	All economies
US subsidiaries						
Local market	39.6	50.4	90.1	56.7	-	57.7
Exports	60.4	49.6	9.9	43.3	-	42.3
Japanese subsidiaries						
Local market	48.2	47.0	-	60.1	90.4	70.0
Exports	51.8	53.0	-	39.9	9.6	30.0

Source: Fukao et al. (2003).

and US firms export more than 50% of their products to destinations outside Asia, much higher than the export-sales ratios for other locations (Table 1.5.1). The subsidiaries of US firms in Japan export only about 10% of sales, similar to the share of exports in total sales by Japanese subsidiaries operating in the US.

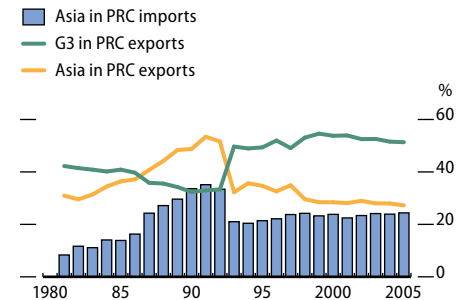
The PRC appears to be at the center of this growing intrafirm and intra-industry trade as the region's main production base. The country's accession to the World Trade Organization (WTO) in 2001 has also played a catalytic role in its emergence as a major player on the world trading scene. With its strong commitment to implementation of WTO agreements, the PRC has removed trade barriers in virtually all product markets and further opened its market to foreign companies. In just two decades between 1985 and 2005, the PRC's exports (imports) grew from \$27.3 billion (\$42.5 billion) to \$762.3 billion (\$660.2 billion).

During this period of rapid growth, the pattern of PRC trade changed significantly (Figure 1.5.9). In the 1980s, the share of Asian neighbors in the PRC's total exports rose steadily, while that of G3 markets declined (similar to the export pattern of the rest of Asia, as previously mentioned). However, since the 1990s, the share of G3 markets has started to increase in terms of total PRC exports, reaching over 50% by 2005. Meanwhile, the PRC continued to import more from the rest of Asia in the 1990s, even with the declining share of Asian neighbors in its total exports.

Figure 1.5.10 shows that the growth rates of PRC exports to G3 have been highly correlated with those of PRC imports from the rest of Asia since the late 1990s. The basic pattern of PRC trade can be characterized as increasing exports to the global economy, while importing more intermediate goods from the rest of Asia. This trend is particularly pronounced in the electronics and automobile industries. For example, 15.5% of the PRC's total exports consisted of machinery and transportation equipment in 1992. By 2005, this figure had risen to 46.2%. In the same period, the share of machinery and transportation equipment in the PRC's total non-oil imports increased from 39.7% to 48.4%.

There is little doubt that foreign direct investment (FDI) has played an important role in promoting Asian growth via encouraging intra- and interregional trade of host countries. Growth in FDI inflows to the region has been substantial, rising from \$21.3 billion in 1990 to \$151.3 billion in

### 1.5.9 Shares in PRC trade

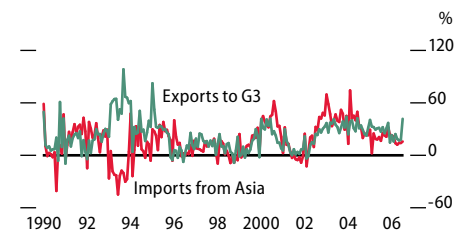


Note: Asia comprises People's Republic of China; Hong Kong, China; Indonesia; Republic of Korea; Malaysia; Philippines; Singapore; and Thailand.

Source: International Monetary Fund, *Direction of Trade Statistics* CD, January 2007.

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### 1.5.10 Growth in PRC trade



Note: Asia comprises People's Republic of China; Hong Kong, China; Indonesia; Republic of Korea; Malaysia; Philippines; Singapore; and Thailand.

Source: International Monetary Fund, *Direction of Trade Statistics* CD, January 2007.

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2005. But the pattern of FDI flows to Asia is quite different from those to the rest of the world. As noted previously, foreign affiliates in Asia established by FDI inflows tend to export a large share of sales, whereas FDI flows to other regions tend to serve local demand by getting around trade barriers protecting firms that compete in local markets.

This reflects the fact that the rapid expansion of FDI inflows to Asia has been closely associated with the establishment of regional production networks by MNCs (Fukao et al. 2003, Kawai and Urata 2004). Eichengreen and Tong (2005) also find that rapid growth in FDI inflows to the PRC has positive spillovers to other Asian economies, as these form part of the same global production networks. Indeed, the rise of the PRC as Asia's main assembly and production center appears to have influenced the region's cross-border investment flows as well. Growth in FDI inflows to the PRC has been marked and, more importantly, the share of FDI flows from regional economies to the PRC has been noteworthy (Figure 1.5.11).

As the PRC emerges as an important nexus between intra- and interregional trade and financial linkages for Asia, economic interdependence arises between the PRC and the rest of Asia as well as between the PRC and G3. To the extent that rapid growth in trade and investment has been a driving force behind PRC growth, a sharp fall in exports and a subsequent reduction in FDI may present a significant downside risk to the PRC economy, and thus to the rest of Asia. Because the PRC imports a large share of intermediate goods from the rest of Asia to serve final demand from G3, a slowdown in the G3 economies could have a negative impact on PRC exports and consequently PRC imports from the rest of Asia.

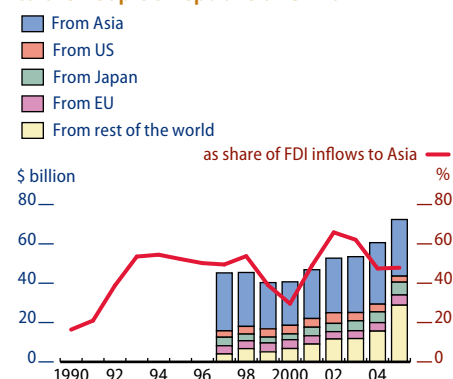
At the same time, to the extent that FDI flows are related to intrafirm and intraregional trade to serve external demand, FDI flows are likely to be responsive to the prospect of export growth. In turn, a sharp and prolonged reduction in external demand might also hold back FDI inflows to the region.

## Is Asia's business cycle gaining independence?

This section sets out to identify some stylized facts about Asian business cycles and examine their co-movements both within the region and with G3 business cycles. An interesting question is whether, and to what extent, the region's strong growth and tightening trade linkages have affected the dynamics of Asia's business cycles in relation to each other and to the rest of the world.

Traditionally, business cycles are characterized as periodic phases of expansion and contraction in economic activity (Burns and Mitchell 1946). In the traditional approach, the business cycle is defined over movements or changes in the level of an important economic variable, such as GDP or employment. Although recessions (defined as two consecutive quarters of contraction in GDP) have become less frequent, the business cycle approach may be used to examine changes in growth rates to understand turning points of an economy. Business cycles can be also defined as "movements about the trend" in output accompanied by "co-movements" of the deviations from the trend among different

**1.5.11 Foreign direct investment inflows to the People's Republic of China**



Note: Asia comprises People's Republic of China; Hong Kong, China; Indonesia; Republic of Korea; Malaysia; Philippines; Singapore; Taipei, China; and Thailand.

Sources: National Bureau of Statistics, *China Statistical Yearbook*, various issues; United Nations Conference on Trade and Development, *World Investment Report 2006*.

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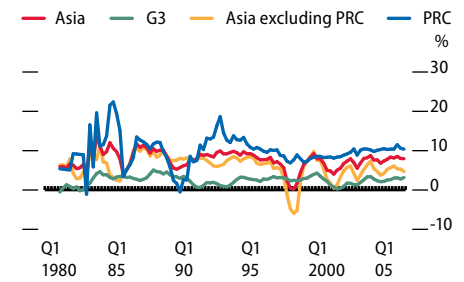
economic variables (Lucas 1977). Following modern business cycle theory, the cyclical components in economic activity can be extracted for the business cycles, using the appropriate statistical filtering techniques (Box 1.5.1).

### Changing patterns of Asian business cycles

Figures 1.5.12 and 1.5.13 illustrate the movements of real GDP of Asian and G3 economies in terms of, respectively, growth rates and cyclical components. Both figures show that Asian business cycles are generally the more volatile, but also that their amplitude has narrowed visibly over time.

Judging from the patterns of growth fluctuations, Asian business cycles tend to have longer expansionary periods followed by relatively shorter but much sharper contractions than those of G3. These patterns are much more pronounced in most of the 1990s, when Asia experienced an extended period of rapid growth prior to the crisis. Strong growth, accompanied by generally positive macroeconomic indicators, also made

1.5.12 GDP growth



Note: Asia comprises People's Republic of China; Hong Kong, China; Indonesia; Republic of Korea; Malaysia; Philippines; Singapore; Taipei, China; and Thailand.

Source: Oxford Economics, *Quarterly Model*, February 2007.

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### 1.5.1 Measuring business cycles

The appropriate measurement of business cycles is essential to establish stylized facts about cyclical movements. Empirically, however, separating the trend from the cyclical components of a series is highly controversial. The potential rate of trend growth is unobservable and has to be inferred from actual output data by adopting a detrending procedure. But there is no consensus on how best to decompose a series into its trend and cyclical components. Although business cycles are sensitive to the specific method adopted, no single methodology has been universally accepted as superior.

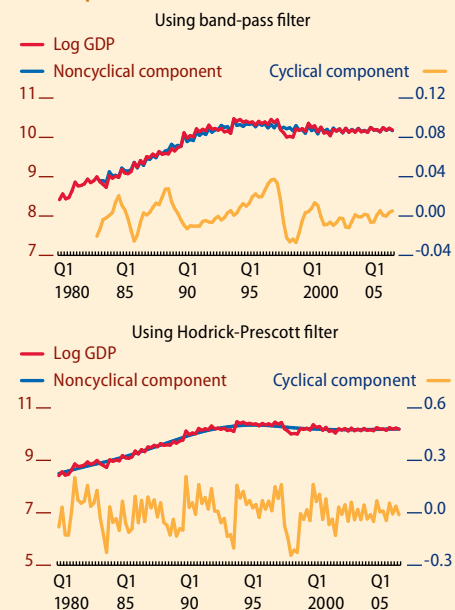
Typically, a decomposition methodology that is widely used applies time-series techniques to allow a stochastic (time-varying) trend. The most frequently used procedure is the method developed by Hodrick and Prescott (1981). The Hodrick-Prescott (HP) filter is a smoothing method that suppresses short-term fluctuations in a time series. Once the trend component is obtained, the residuals of the actual data from the smoothed series represent the business cycle.

Another popular method is the band-pass filter introduced by Baxter and King (1995). This is based on the idea that business cycles may be defined as movements of a certain periodic fluctuation. The band-pass filter eliminates both long-term trends (of more than 32 quarters) and high-frequency fluctuations (of less than 6 quarters) while retaining only the cyclical components of a series. This approach is often preferred to the HP filter, as the series is free of highly irregular short-term fluctuations (the residual series from the HP filter is not). The band-pass filter is also the filter of choice in this chapter. As its moving-average procedure produces no values for the

first and last 12 quarters, data series have been extended to 2009 using the latest short-term economic projections from the Oxford Economics Global Model to generate the business cycle up to 2006.

The box figure illustrates results of using these two filtering methods for the Asian economy.

Decomposition of Asian GDP



Note: Asia comprises People's Republic of China; Hong Kong, China; Indonesia; Republic of Korea; Malaysia; Philippines; Singapore; Taipei, China; and Thailand.

Source: Oxford Economics, *Quarterly Model*, February 2007.



Asia a magnet for foreign capital during this period. With more open capital markets since the early 1990s, capital inflows to the region have risen sharply, further boosting economic activity.

Interestingly, this period appears to present a case for Asia's uncoupling, since Asian business cycles seem fairly detached from those of G3 through most of the 1990s. Movements in the cyclical components paint broadly similar pictures. The relatively long span of expansion followed by a sharp contraction in the 1990s is even more visible in the cyclical component. It is also clear that the upturn phase was relatively unaffected by the G3 cycle.

These patterns of Asia's business cycles have changed quite significantly in the postcrisis period. Although exhibiting still higher volatility than those in G3, Asia's business cycles have become much more stable. Even more interestingly, they resemble those of G3 in that they become more periodic in terms of upturns and downturns. A notable exception to this new pattern is the PRC: it appears to beat the business cycle by continuing robust growth regardless of ups and downs of both regional and international economies.

The visibly reduced amplitude of Asian business cycles in the postcrisis period may be attributed to the resumption of strong growth and development reinforced by a strengthened institutional framework and reforms to establish efficient financial markets in the crisis-afflicted countries. Although reforms have yet to be completed in some areas, significant progress has been made in banking supervision and regulation. Countries have made efforts to introduce more market discipline in the overall financial system, through enhanced governance and market transparency.

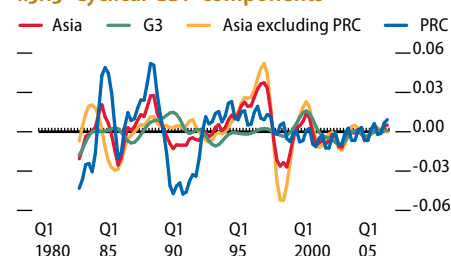
Better economic policies in the crisis countries may have also contributed to macroeconomic stabilization, while underpinning strong growth. Four of the five economies have adopted inflation targeting since the crisis. The first mover in this direction was the Republic of Korea in 1998, followed by Indonesia in 1999, Thailand in 2000, and the Philippines in 2001 (see Cavoli and Rajan 2006). Inflation targeting has increased the degree of freedom in foreign exchange policies to mitigate the impact of external shocks, while enhancing the effectiveness of monetary policy responding to cyclical fluctuations.

Improved fiscal positions with more effective public debt management since the crisis have also allowed room for appropriate fiscal policies. To this end, fiscal reforms are under way in many countries, especially the strengthening of institutional frameworks for public debt management and taxation, which will further enhance the functioning of automatic stabilizers.

### Regional and international business cycle synchronization

Tables 1.5.2 and 1.5.3 report the correlation coefficients of the Asian business cycles with each other and with G3 for the precrisis (1983–1996) and postcrisis (1999–2006) periods. The crisis period is omitted intentionally. The previous analysis on business cycles suggests significant differences in co-movements both within Asia, and between Asia and G3, before and after the crisis. The Asian crisis is also perhaps the most significant common shock for Asia, leading to positive correlations for

1.5.13 Cyclical GDP components



Note: Asia comprises People's Republic of China; Hong Kong, China; Indonesia; Republic of Korea; Malaysia; Philippines; Singapore; Taipei, China; and Thailand.

Source: Oxford Economics, *Quarterly Model*, February 2007.

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the crisis period. But the same event is also likely to damp the correlation between the Asian and G3 business cycles. In order to see clearly the synchronicity of Asian business cycles without the crisis effect, the correlations for the pre- and postcrisis periods are reported separately.

The correlation analysis of the cyclical components shows that the correlations of Asian business cycles increased markedly, both with each other and with the G3 cycle, between the pre- and postcrisis periods. Table 1.5.2 presents the average of the bilateral correlations between all the pairs of nine Asian economies in the sample over the two periods. If the Asian business cycles co-move, the average of the bilateral correlations would be high. A similar approach is taken to calculate the average correlations for the Asian economies excluding the PRC.

For both Asia and Asia excluding the PRC, the average correlations rose significantly. This may reflect greater intraregional integration. In both periods, the average correlation for Asia excluding the PRC is higher than that for Asia, reflecting the PRC's independent cyclical behavior from the rest of the region. Interestingly, however, the average correlation grew much faster among the Asian economies including the PRC than excluding the PRC. This clearly indicates that the PRC business cycle is increasingly moving in tandem with the rest of Asia.

Similarly, Table 1.5.3 reports the correlations between Asia and G3. Asian business cycles are much more synchronized with those of G3 in the postcrisis period. Again, the correlation between Asia excluding the PRC and G3 is higher than that between Asia and G3, and may be attributed to a generally independent business cycle of the PRC relative to G3.

In view of the PRC's generally independent dynamics, its business cycle correlations with the rest of Asia and G3 are shown in Table 1.5.4. As expected, the correlations of the PRC cycle with both regional and international economies are low, although both correlations have become positive in the postcrisis period, pointing to an increasing synchronization with those economies. This reflects the fact that the PRC's rapid growth has been driven so far largely by domestic factors: the major force has been intensive capital accumulation combined with the release of massive amounts of labor from the agriculture sector (see Woo 1998). Nevertheless, the results also suggest that the PRC is rapidly integrating with the region, while using its regional economic ties as a platform for global integration.

Figure 1.5.14 illustrates the evolution of the average correlation coefficients for Asia and for Asia excluding the PRC, using 5-year rolling windows. For example, the correlation average in 2006 is calculated as the average of the bilateral correlations for each pair of all the Asian economies over a 5-year period ending in 2006. The average correlation among the Asian economies rose sharply from nearly zero in 1991 (for the period 1987–1991) to over 0.5 in 1996 (for the period 1992–1996). The latter period largely coincides with the expansion phase of the Asian economy in the 1990s, prior to the crisis. It is noteworthy that this phase was also accompanied by strong growth in intraregional trade (Figure 1.5.8 above), reflecting rapid regional economic integration.

The correlation trend for international business cycle co-movements also confirms generally high synchronicity between the Asian business cycle and the G3 cycle in the postcrisis period (Figure 1.5.15). What is

#### 1.5.2 Intraregional business cycle correlation (nine Asian economies)

	Precrisis	Postcrisis
Asia	0.33	0.48
Asia excluding PRC	0.43	0.54

Source: Oxford Economics, *Quarterly Model*, February 2007.

#### 1.5.3 Interregional business cycle correlation

	Precrisis	Postcrisis
Asia–G3	0.06	0.62
Asia excluding PRC–G3	0.09	0.68

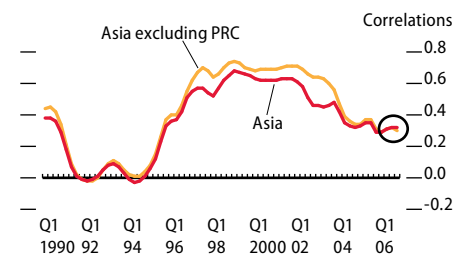
Source: Oxford Economics, *Quarterly Model*, February 2007.

#### 1.5.4 Business cycle correlation with the People's Republic of China

	Precrisis	Postcrisis
Asia excluding PRC	-0.03	0.27
G3	-0.07	0.14

Source: Oxford Economics, *Quarterly Model*, February 2007.

#### 1.5.14 Average intraregional business cycle correlations



Note: Asia comprises People's Republic of China; Hong Kong, China; Indonesia; Republic of Korea; Malaysia; Philippines; Singapore; Taipei, China; and Thailand.

Source: Oxford Economics, *Quarterly Model*, February 2007.

[Click here for figure data](#)

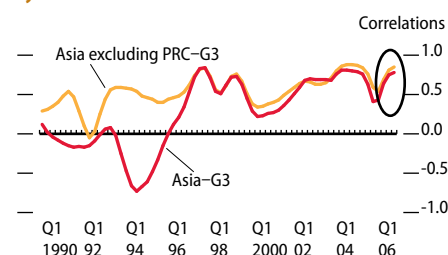
interesting here is that the correlations between Asian and G3 cycles were negative between 1993 (for the period 1989–1993) and 1995 (1991–1995). The latter period again largely coincides with the strong expansion phase in Asia. As suggested in the previous section, Asian business cycles seemed to have experienced an “uncoupling” from those of G3 during the precrisis period of rapid growth in the 1990s. Robust economic expansion and strengthening regional ties may have contributed to the region’s resilience through ups and downs of the G3 business cycles.

Is this “uncoupling” in the 1990s repeating itself in the recent period? It is unclear if the same pattern is emerging on the basis of these figures. There are similarities in general economic conditions. Although registering slightly slower growth compared to the fast precrisis expansion phase in the 1990s, most Asian economies have resumed relatively strong growth since then. More importantly, it has become much more stable (as seen in the previous section). There have also been renewed increases in intra-Asian trade and regional integration. However, cyclical co-movements between Asia and G3 have visibly strengthened since the crisis, while business cycle synchronicity among Asian economies has weakened.

A simple causality test<sup>5</sup> between G3 and Asian business cycles shows that G3 cyclical movements precede Asia’s. Table 1.5.5 reports the results of a Granger causality test between G3 and Asian business cycles for the precrisis (1983–1996) and postcrisis (1999–2006) periods. The test has been performed for both directions between G3 and Asian business cycles using quarterly data with different lags from 4 quarters (or 1 year) to 12 quarters (or 3 years). Test results are often sensitive to the number of lags used. Here the reported results are for the tests using at least a 1-year lag, because domestic factors tend to dominate business cycles in periods shorter than 1 year. Thus the transmission effect of external shocks may be offset by spurious common domestic factors.

The test results suggest that, in the postcrisis period, movements in the G3 cycle “Granger-cause” movements in the Asian business cycle at 2- and 3-year lags (but not the other way round). The results also show

**1.5.15 Average interregional business cycle correlations**



Note: Asia comprises People’s Republic of China; Hong Kong, China; Indonesia; Republic of Korea; Malaysia; Philippines; Singapore; Taipei, China; and Thailand.

Source: Oxford Economics, *Quarterly Model*, February 2007.

[Click here for figure data](#)

### 1.5.5 Granger causality test results

	Precrisis period null hypothesis		Postcrisis period null hypothesis	
Number of lags (years)	G3 business cycles do not Granger-cause Asian business cycles	Asian business cycles do not Granger-cause G3 business cycles	G3 business cycles do not Granger-cause Asian business cycles	Asian business cycles do not Granger-cause G3 business cycles
1	1.75	4.73*	3.83*	3.69*
2	2.18	1.39	11.18*	1.62
3	3.90*	1.65	10.95*	2.25

\* Indicates significance of F-statistics at the 5% level for a rejection of the null.

Note: The results report F-statistics, which form the basis for which the null hypothesis is accepted or rejected. In terms of the actual numbers reported, a higher number represents greater statistical significance, thus leading to rejection of the null. For example, in column 2 with a 1-year lag, the test statistic (F-stat) is 1.75, which is statistically insignificant, thus leading to non-rejection of the null that G3 business cycles do not Granger-cause Asian business cycles. However, in column 3 with a 1-year lag, the test statistic is 4.73, which is statistically significant, thus implying a rejection of the null that Asian business cycles do not Granger-cause G3 business cycles.

Source: Staff calculations.

dramatic increases in the explanatory power and statistical significance for the direction of cyclical influence from G3 to Asia when the pre- and postcrisis periods are compared. This suggests that Asian business cycles have become more responsive to the cyclicality of G3 in the postcrisis period.

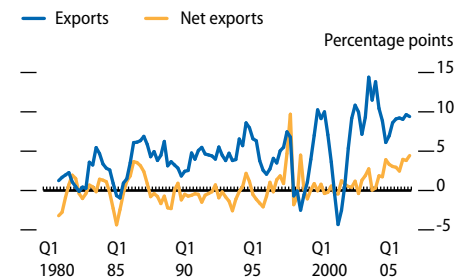
A significant departure from the 1990s' pattern may be explained by Asia's renewed export-led growth since the crisis. Despite some notable efforts to strengthen domestic demand in the postcrisis period, evidence suggests that Asia's reliance on exports for growth remains significant. Figure 1.5.16 illustrates the contribution of exports and net exports to GDP growth since the 1980s. ADB (2005) also finds that Asia's export-oriented growth strategy is sustained, if not further strengthened, in the postcrisis period, based on demand-side growth accounting. As intraregional trade is to serve external demand, not regional demand, Asia's export-led growth should result in greater interdependence between Asia and its G3 trading partners.

The dynamics of regional economic and trade integration are also evolving. To the extent that the PRC functions as an assembly and production center for the rest of Asia, the trade linkages would be more direct and stronger between the PRC and each member of the rest of Asia than the cross-relationships among the rest of Asia. Indeed, for the 5-year period 2002–2006, the average correlation for Asia including the PRC is higher than that for Asia excluding the PRC (Figure 1.5.14 above). This reflects the PRC's integration into the regional economy, facilitated by vertical specialization in the rest of Asia. With rapid technological advances, production processes can be further divided and taken up by different countries based on their comparative advantages. While vertical specialization and scale economies will continue to help raise the region's productivity, this may also leave the individual countries exposed to different subsector shocks, as well as to economic shocks originating within the region, particularly the PRC.

The correlation analysis presents positive evidence for greater synchronization among Asian business cycles. There is also clear evidence pointing to increasing business cycle synchronization between the PRC and the rest of Asia. However, a marked feature of Asia's regional integration is its global nature. In many respects, Asia's regionalization is a force behind its globalization, just as its successful integration with the global economy has been a key driver of regional integration through stimulating the region's trade and financial flows.

Recent years have thrown up no evidence pointing to Asia's uncoupling from G3 cycles. In the postcrisis period, strengthening regional ties appear to reinforce business cycle co-movements between Asia and G3. Underlying this interdependence is the structure of rising intra-Asian trade, which is centered on the PRC as a production base. The tighter intra-industry trade linkages between the PRC and each of the other Asian economies might have contributed to the higher business cycle synchronization between the PRC and the rest of Asia. But the cyclicality of the Asian economy remains sensitive to movements in G3.

**1.5.16 Contributions to Asian GDP growth**



Note: Asia comprises People's Republic of China; Hong Kong, China; Indonesia; Republic of Korea; Malaysia; Philippines; Singapore; Taipei, China; and Thailand.

Source: Oxford Economics, *Quarterly Model*, February 2007.

[Click here for figure data](#)

## Conclusions

Exactly a decade after the financial crisis, the Asian economy is enjoying rapid growth. Over the past decade, Asia has maintained an annual average growth rate of 6.5%. Underpinning this performance has been the strength of the emerging PRC, adding more than two full percentage points to Asian growth during the period. This remarkable economic performance has elicited much enthusiasm for rising regionalization and related optimism for the region's independent business cycle dynamics.

The findings of this chapter may surprise those who believe that stronger intraregional trade integration is evidence of uncoupling. There is no evidence pointing to Asia's uncoupling—structurally or cyclically. A renewed process of rapid economic growth and development has been accompanied by increasing economic integration, both within Asia and between G3 and Asia.

Regionalization of economic activities has gained strong momentum through progress in sharing of production processes across the region. Increased vertical specialization and the rise in intra-industry trade have led to strong ties among Asian economies, but this regional integration remains structurally linked to final demand from major industrial countries.

However, regionalization that is tied to globalization is potentially a transmission channel for a global shock. Increased trade openness and economic integration with the global economy could induce greater business cycle synchronization among the regional economies by exposing them all to a common global shock. Further, strong regional economic integration could propagate a shock rapidly across regional economies.

To the extent that Asian business cycles are sensitive to the vagaries of external demand, it is important for Asian economies to maintain sound macroeconomic conditions and ensure coherent policy management. A stable macroeconomic environment—of low inflation and prudent fiscal balances with modest levels of debt—provides an important backdrop for sustaining high growth. It also allows room for policy makers to take measures of macroeconomic stabilization when necessary.

Greater economic interdependence and tighter trade linkages between Asian economies also require greater cooperation in trade, finance, and exchange rate policies at the regional level. As economic and financial shocks travel rapidly from a country to its trading partners through increased trade and financial linkages, it is to all Asian economies' benefit that, nationally, they maintain sound macroeconomic conditions with prudent economic management. Synchronization of real growth and inflation in the region should also generate regional common interests to ensure close cooperation in macroeconomic and exchange rate policies.

Globalization, including the rapid relocation of production networks across borders, underscores the region's need for greater economic flexibility. Along with increasing openness to trade, globalization has allowed greater factor mobility, particularly MNCs that can choose the most cost-efficient locations, facilitating both vertical specialization and a tightly webbed regional production network across borders. The rise in intra-industry trade and trade integration has a positive impact on economic growth by promoting efficiency and productivity growth.



But easier relocation of production and greater factor mobility imply that Asian economies should ensure a high degree of flexibility in both product and factor markets to maintain their regional and global competitiveness. Further structural reforms will have to move forward to improve overall economic flexibility and competitiveness.

Such reforms should include the successful completion of corporate and financial sector restructuring by deepening the reforms on governance and legal infrastructure, creating an investment-friendly environment through minimizing unnecessary regulatory barriers in business activities, encouraging private incentives toward more dynamic market economies, opening domestic markets to international competition, and creating a level playing field across all sectors. This will also help attract FDI.

Continued rapid growth of the PRC, and its deeper integration with the regional and global economies, will continue to shape opportunities and challenges for other countries. For those competing head to head with the PRC, and who are now seeing their market shares (and/or terms of trade) eroded, sustaining growth will depend on their success in promoting economic agility and carving out new areas of competitive advantage (see Part 3, *Growth amid change*). For primary commodity producers that sell to the PRC, or for those countries that can profitably manufacture the consumer durables demanded by the PRC's quickly expanding middle class or the equipment needed to support its industrialization, the PRC's growth is likely to prove directly beneficial. Likewise, further fragmentation and refinement of supply chain activities should ultimately strengthen complementarities among the economies of East and Southeast Asia, though the gains are unlikely to be automatic and will depend on the capacity to adjust and to develop new capabilities. Finally, the logic of fast growth in a country as vast as the PRC, as well as a rebalancing of spending towards domestic consumption, foreshadows not just a more prominent role for regional incomes in forging closer regional integration but also the emergence of developing Asia as an additional engine of global demand.

## Endnotes

- 1 “Asia” generally refers to nine economies in East and Southeast Asia, namely: People’s Republic of China (PRC); Hong Kong, China; Indonesia; Republic of Korea; Malaysia; Philippines; Singapore; Taipei, China; and Thailand.
- 2 The latest Global Trade Analysis Project database (version 6.2) corresponds to the world economy in 2001. The database provides “detailed bilateral trade characterizing economic linkages among regions, together with individual country input-output databases which account for inter-sectoral linkages within regions” (Hertel 1998, p. 2). The latest version disaggregates the world economy into 87 regions (including all the nine economies in East and Southeast Asia in this chapter) and 57 sectors.
- 3 The role of PRC’s final demand in Asia’s exports would likely be bigger if more recent data were used.
- 4 The intra-industry trade index is based on the Grubel-Lloyd methodology, using SITC 2-digit data from the United Nations *Commodity Trade Statistics* database. Using the share of industry  $i$  in terms of total industry trade as a weight, the intra-industry trade between countries A and B is calculated as (see OECD 2002):

$$ITT_{AB} = \sum_i \left[ \frac{(X_i + M_i) - |X_i - M_i|}{(X_i + M_i)} \right] \cdot \left[ \frac{(X_i + M_i)}{\sum_i (X_i + M_i)} \right] \cdot 100$$

While the ratio takes a value between 0 and 100, with a higher number associated with greater intra-industry trade in theory, this ratio tends to increase with the level of aggregation in terms of both the number of countries and product classes in the sample.

- 5 The Granger causality test is simply to see if lagged values of one variable (X) have any statistically significant information on future values of the other variable (Y) given the lagged values of Y. If it does, X is said to “Granger-cause” Y.

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