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# Trade Facilitation and Regional Cooperation in Asia



Edited by  
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# Contents

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<i>List of contributors</i>	vii
1 Regional cooperation, infrastructure and trade costs in Asia <i>Douglas H. Brooks</i>	1
2 ASEAN open skies and the implications for airport development strategy in Malaysia <i>Tham Siew Yean</i>	23
3 Transforming trade competition into coordination with the People's Republic of China <i>Li Shantong and Wang Huijiong</i>	58
4 Regional integration and trade costs in South Asia <i>Nilanjan Banik and John Gilbert</i>	123
5 Transport infrastructure and trade facilitation in the Greater Mekong Subregion <i>Susan Stone and Anna Strutt</i>	156
<i>Index</i>	193



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# 1. Regional cooperation, infrastructure and trade costs in Asia

**Douglas H. Brooks**

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## 1.1 INTRODUCTION

The remarkable growth of developing Asia in recent decades owes much to the expansion of its international trade, including intraregional trade. To capitalize on the benefits of international trade, cooperative efforts in the region to lower transaction costs of international (and especially intraregional) trade and thereby contribute to greater growth, integration and poverty alleviation have become more vigorous in recent years. Notably, international trade played an especially critical role as Asian countries pursued regional cooperation to ensure recovery from the 1997–98 financial crisis and prevention or mitigation of similar crises in the future.

Infrastructure development has been a major factor in reducing Asia's trade costs and thereby facilitating trade expansion (Brooks and Hummels 2009). Expansion or improvement in quality of infrastructure services lowers marginal costs, raising the minimum efficient scale of production, transportation or marketing. Lower costs and greater economies of scale raise the potential for increased or new sales in export markets, as well as domestically, as efforts to take advantage of economies of scale in production, procurement or marketing lead firms to look beyond national borders for both trade and investment opportunities. Promoting efficient financial intermediation, coordinating regional public goods, reducing macroeconomic vulnerability to shocks and strengthening security ties offer governments similar incentives to design, develop and manage regional infrastructure cooperation and integration. In this context, infrastructure is one of the 'three I's', along with incentives and institutions, that are key determinants of overall growth and the magnitude and productivity of capital inflows to liberalizing economies (Hill 2004).

Infrastructure not only fosters economic growth, but can strengthen inclusiveness and reduce poverty, and a significant part of infrastructure's contribution to growth and poverty reduction in Asia comes through its facilitation of international and especially intraregional trade. Infrastructure



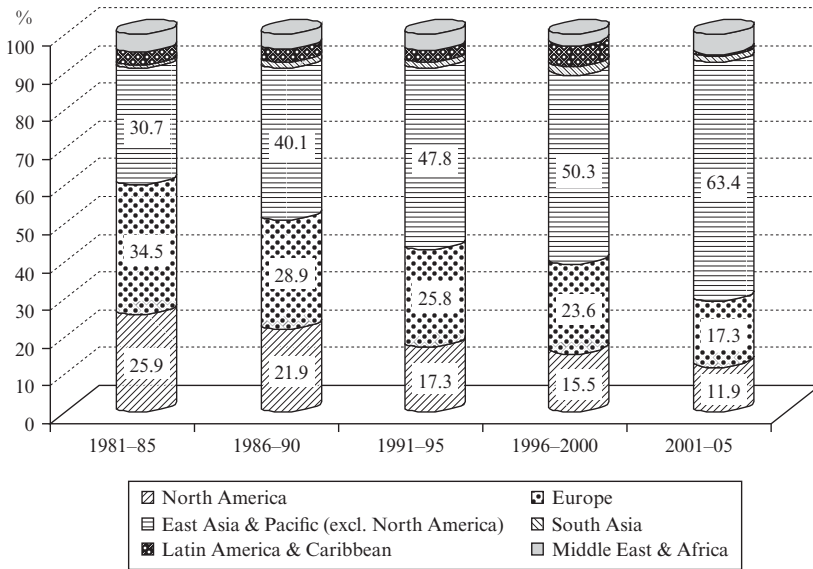
services expand the scope for both domestic absorption and supply to export markets, while stimulating linkages with and between different sectors and industries and providing incentives for innovation and regional cooperation to internalize externalities associated with trade flows.

Efficient infrastructure services increase and expand linkages to global supply chains and distribution networks for producers by lowering transaction costs, raising value added and increasing potential profitability. The more deeply a country is involved in global production networks the more likely it will benefit from trade-related infrastructure investment. In a study incorporating threshold effects, Francois and Manchin (2007) find that infrastructure is a significant determinant not only of export levels, but also of the likelihood of exporting at all. Transport and telecommunications infrastructure are particularly important in this regard.

Clearly, Asia's trade expansion has been facilitated and stimulated by the development of supporting infrastructure, including both physical (hard) and institutional (soft) infrastructure. From 1975 to 1995, developing Asia's port capacity increased from 3 million to 62 million TEU,<sup>1</sup> an average annual growth of over 15 percent, and Asia now accounts for the bulk of port container traffic (Figure 1.1). Airfreight shipments in the region increased roughly 14 percent annually during the same period, from less than 2 billion to more than 30 billion ton-kilometers.

Asia's large trade and foreign investment flows have resulted from infrastructure development, market-driven integration, outward-oriented policies and incorporation into international production networks and regional cooperation frameworks. Openness to foreign direct investment (FDI), often from within the region, has become the norm. As a result, investment in infrastructure to lower trade costs has been complemented and spurred by foreign and domestic investment in productive capacity as well as by structural and regional reforms that improve the environment for investment, production and trade. Both Asian and non-Asian multinational corporations have been active in developing international supply chains linking different parts of the region. Financial integration has supported these developments by increasing access to credit and innovative financial instruments.

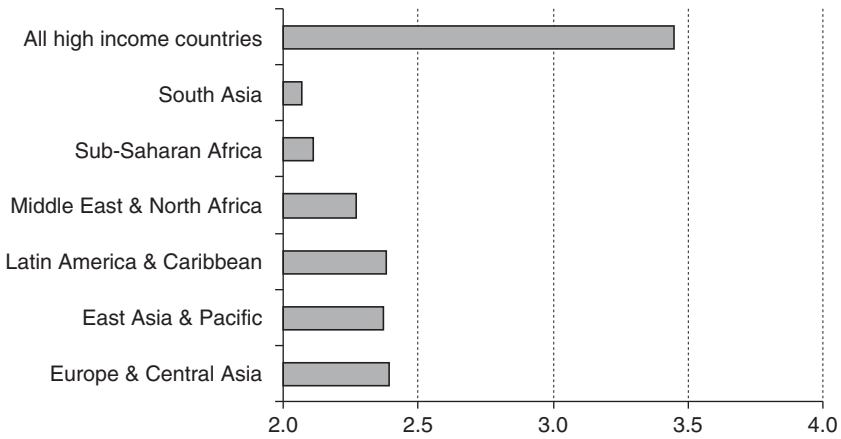
However, trade-related infrastructure in many Asian countries is still inefficient, if not inadequate. Inability to transport goods and people efficiently or an inadequate power supply to operate machinery and facilities smoothly leads to microeconomic as well as macroeconomic imbalances. While East Asia does relatively well in comparison of its infrastructure performance with that in other developing regions, comparison with high-income countries shows there is still marked room for improvement, and even more so in South Asia (Figure 1.2).



Notes: Shares are calculated using the container traffic (TEU) of the top 100 ports for the period 1981–2000 and the top 50 ports for the period 2001–05.

Sources: ISL (2006) and Containerisation International (2007).

Figure 1.1 Shares of port container traffic among regions (%)



Source: World Bank (2007b).

Figure 1.2 Infrastructure performance index

Tariffs and quotas have been reduced under successive rounds of multi-lateral negotiations under the General Agreement on Tariffs and Trade (succeeded by the World Trade Organization) and the recent plethora of bilateral and regional trade agreements, lowering a key component of trade costs. Anderson and van Wincoop (2004) suggest that such tariff barriers are on average between 10 percent and 20 percent of a traded product's factory-gate price in developed countries. In developing countries it may well be higher. Even so, in the current economic environment, infrastructure-induced reductions in trade costs have become relatively more important than direct policy barriers as potential sources of further cost savings (Brooks et al. 2005). However, the political economy of policies to reduce transportation and other non-policy trade costs is very complex, particularly when addressing cross-border externalities.

## 1.2 REGIONAL COOPERATION AND TRADE-RELATED INFRASTRUCTURE

Infrastructure services can yield a variety of externalities. For example, developing a new road infrastructure project to relieve congestion in accessing ports produces advantages not only for the direct users of the road project but also for users of other roads where congestion is lessened as a result of the new project. Even those who do not use the new road or alternatives can gain through reduction of pollution and improvement of the natural environment, and the country as a whole can benefit through reduction of oil consumption or oil imports as well as increased trade benefits.

Regional cooperation through international trade strengthens regional economic growth and integration, allowing greater regional investment in trade-related infrastructure projects. At the same time, the international externalities that arise as infrastructure services support cross-border trade flows indicate an important role for regional cooperation to incorporate those externalities and maximize social benefits (Maur 2008).

As infrastructure investment facilitates regional economic integration through trade and investment expansion, it motivates regional cooperation, including cooperation in infrastructure development, generating a virtuous cycle. The diversity of Asian economies, combined with infrastructure expansion and improvement to lower trade costs, has helped the region to benefit as a leader in global patterns of production fragmentation, expanding intraregional trade, and diversification of development opportunities.

As production services become increasingly fragmented and traded internationally, cooperation among the economies participating in those

production networks becomes more and more important to maintain or raise an individual host country industry's competitiveness in supplying those services. Regional coordination can lower infrastructure construction, maintenance and operating costs and limit resulting environmental and other negative social impacts while still contributing to trade expansion. This has been found to be the case in the Greater Mekong Subregion (GMS) where special forums have been established to coordinate transport, telecommunications and electric power infrastructure developments, particularly for the development of cross-country economic corridors (Asian Development Bank (ADB), 2006).

Weiss (2008) describes a framework for considering the role of infrastructure in regional cooperation. He utilizes a modified formulation of the effective rate of protection to quantify the empirical significance of a range of trade cost barriers that are broader than tariffs and quotas. Infrastructure investments and interventions are then seen to be instruments that reduce trade costs and thereby stimulate closer intraregional and interregional trading linkages. In this manner, the height of barriers posed by different types of trade costs offers a rough ranking of priorities for infrastructure development to reduce these barriers.

Factors like high freight costs, delays in customs clearance, unofficial payment solicitations, slow port loading or landing and handling, and poor governance create barriers to trade. Institutional bottlenecks (administrative, legal, financial, regulatory, and other logistics infrastructure), information asymmetries, and discretionary powers that give rise to rent-seeking activities by government officials at various steps of trade transactions also impose costs. These costs can be lowered through cooperation that facilitates merchandise and services trade logistics, for both inbound and outbound shipments.

At the international level, cooperation through preferential trade and investment agreements that strengthen structural reforms and increase the attractiveness of a destination for foreign investment can leverage domestic policy actions and impact on growth, equity and efficiency, and may help to reduce corruption. Cross-border cooperation in infrastructure policies and institutions can therefore lead synergistically to a reduction in trade costs and stimulate further investment, trade and growth.

### 1.3 SOFT INFRASTRUCTURE

While trade infrastructure often evokes images of large-scale physical projects, institutional (or soft) infrastructure is equally important. A supporting environment of predictable legal and judicial rights and

procedures, equitable and enforceable competition policy, and a sound but not unduly restrictive regulatory framework are crucial for physical infrastructure investment to be efficient. Financial services, including financial intermediation, risk management opportunities, and payment and clearing services, are especially important for international trade. International bond markets capable of supplying long-term finance in local currencies play a central role in infrastructure finance, but are still at an early stage of development in most of Asia. Cooperative efforts are under way to broaden, deepen and strengthen these markets throughout the region, in part to support greater trade.

Regional cooperation activities aimed at facilitating international trade work particularly well when targeted at soft infrastructure. These activities include (among others) enhancing the availability of adequate credit and foreign exchange at reasonable rates; a reliable system of legal recourse and dispute resolution; effective competition policy; and the capacity of existing human capital to process exchanges. Indeed, soft infrastructure may often be more important than physical infrastructure for increasing trade and its profitability, and equitably distributing the benefits. In the international context, the role of harmonizing and strengthening soft infrastructure stands out as an essential partner of expanded physical infrastructure.

Infrastructure improvements generally have the positive effect on competition of applying equally to both foreign and domestic entrants. This is particularly true when infrastructure improvements are complemented by effective competition policy that constrains monopoly power and removes barriers to entry within the region (Brooks 2005). Regional cooperation can help to maximize the benefits from balancing agglomeration effects with international competition's efficiency gains.

Exploiting complementarity of hard and soft infrastructure raises overall trade and economic performance. This is especially noticeable in the case of networks. Many infrastructure services that are important for economic development and trade expansion exhibit network externalities. Infrastructure networks exhibiting service externalities include telephones, railways and water supply systems (see Laffont and Tirole 2000). In the presence of such externalities, the maximum amount that consumers are willing to pay for a good or service depends in part on the number of other consumers who purchase the item in question. This interrelationship calls for consideration of these network systems' governance in competition policy. As one example, Republic of Korea has achieved one of the highest rates of broadband Internet penetration at competitive prices by balancing the technical advantages of network infrastructure with the efficiency advantages of competition.

In the case of Indonesia, Patunru et al. (2009) find that soft infrastructure

plays a vital role in relieving constraints on port efficiency, more so than hard infrastructure although the two are interlinked. The competitiveness of a seaport as a regional hub may suffer from poor physical infrastructure such as inadequate channel depth, shortage of berths and limited cargo handling equipment, storage and transit areas. But it may also suffer from limitations in soft infrastructure, such as weak labor skills, inadequate regulation, stifling bureaucracy and other institutional factors affecting port capacity utilization such as rigidities in existing patterns of regional shipping routes. Lack of direct competition between ports controlled by the same government authority is also a critical, related factor.

While difficult to quantify, governance is a critical aspect of soft infrastructure. Definitions vary, but governance can be thought of as the institutions and processes by which collective decisions are made and problems are solved. Khan (2008) provides a framework for considering how governance, and soft infrastructure in general, can contribute to lowering trade costs and strengthening regional cooperation in developing Asia, applying a modified form of the effective rate of protection. Comparing the height of different trade cost barriers with this formulation again allows a rough ranking of priorities for undertaking potential soft infrastructure interventions at both the national and regional level.

## 1.4 INFRASTRUCTURE AND TRADE COSTS

Both the quantity of infrastructure investment and the quality of infrastructure services influence trade performance (see, for example, Limao and Venables 2001; Clark et al. 2004). This occurs through infrastructure's impacts on monetary transaction costs, loss, damage and spoilage to goods in transit, and timeliness of delivery, among other factors.

Nordas and Piermartini (2004) delineate four dimensions of the relationship between infrastructure and trade transaction costs:

1. Direct monetary outlays for delivering traded goods are partly determined by the quality of infrastructure and the cost and quality of related services.
2. Timeliness, even more than freight rates, is likely to be influenced by geography and infrastructure.
3. Risk of damage, losses, or larger insurance costs is higher when infrastructure is of poor quality.
4. Lack of access to a good transport or telecommunication service can have a high opportunity cost, restricting market access and limiting the likelihood of participating fully in the benefits of trade.

An important component of transportation costs is the time cost involved. This is particularly critical for perishable or other time-sensitive goods. Hummels (2001) found that the time cost of one day in transit for US imports is equivalent to an *ad valorem* tariff rate of 0.8 percent, implying the equivalent of a 16 percent tariff on an average ocean shipment of 20 days. Clearly, improvements in infrastructure services that reduce delays in ports, border crossing procedures, or transit times will influence a country's propensity to trade. Developments in containerization and intermodal transport networks contribute to quicker delivery times and the growth in air shipments.

With the value of timeliness in delivery rising in recent decades, congestion is becoming increasingly costly. When growth is very rapid, congestion results as the increase in traffic induced by the economic growth outpaces the expansion of transportation infrastructure services. Ma and Zhang (2009) find this to be the situation in the People's Republic of China (PRC). Sea port congestion there results from the long neglect of access transport and port facilities infrastructure. Six percent of the world's rail lines struggle to move one-fourth of the world's rail freight turnover, and only 2 percent of the country's highway network is expressways.

Congestion has been rising, notably at the port of Shanghai, as overloading of the physical infrastructure is compounded by a lack of collaboration among different stakeholders at the port in achieving greater levels of supply chain efficiency. This reinforces the drive to increase port and modal competition for greater gains in efficiency by increasing both hard and, increasingly, soft infrastructure. In terms of soft infrastructure, reliability of trade facilitation and administrative procedures at customs are crucial, including rationalization of the customs transit system in order to reduce inspection time and simplify declarations and the documentation process. Meanwhile, Shanghai's congestion is reducing its competitiveness relative to nearby ports in neighboring economies, endangering its status as a hub and premier gateway to international markets and suppliers. In recent years, transshipped containers from Shanghai via Hong Kong, China have accounted for as much as 20 percent of the total container throughput of Shanghai.

The limited extent of infrastructure connections to western regions of the PRC results in high trade costs for inland regions and impedes regionally balanced growth. As land and labor costs rise near coasts, investors are looking to locate production facilities farther inland. However, they are hampered by poor infrastructure. This has led to a shift of emphasis in infrastructure policy that gives greater weight to hinterland access. In particular, railway construction is crucial for inland provinces, where a greater share of production is of bulk commodities.

The composition of freight charges can vary significantly across countries and commodity categories. De (2009a) finds that the share of Asia's total freight charges accounted for by inland freight may be less than that by ocean freight, but is frequently greater. The actual balance depends on country characteristics, suggesting an inland focus for trade-related infrastructure priorities in those countries where the inland share is greater and there is a role for regional cooperation in incorporating landlocked countries into international trade patterns. From 2000 to 2005, transport costs became relatively higher and shipping distance relatively lower, and a 10 percent rise in transport costs (expressed as an *ad valorem* tax equivalent) is found to lower Asia's trade by about 3–4 percent from what it would otherwise be. When trade is differentiated by commodity groups, the weight to value ratio is found to be the major determinant of transport cost, suggesting that road, rail and sea may be the increasing order of modal preference for transporting heavier cargos in Asia.

Hummels and Skiba (2004) similarly found that a 10 percent increase in the ratio of product weight to value leads to a 4 percent increase in *ad valorem* shipping costs, reflecting the demand for higher-value cargos. From the consumer's point of view, higher shipping costs can reflect a smaller *ad valorem* charge in the final price paid, so the consumer is more likely to use more expensive modes of shipping when the impact on the delivered price is smaller.

The relative weights of different categories of trade costs are often surprising. De (2009a) notes that in 2005 the ocean freight rate for importing a container to India was about two-thirds greater than for exporting. At the same time, in the PRC ocean freight for importing a container from six Asian countries was far lower than for exporting. Auxiliary shipping charges (documentation fees, container handling charges, government taxes and levies, and so on) may account for much of this difference and are sometimes greater than the ocean freight charges, particularly where shipments experience congestion at ports or borders. On average, auxiliary shipping charges outweigh terminal handling charges across countries and commodities in Asia, with variation in such charges contributing significantly to variations in trade costs. This highlights one crucial area of soft infrastructure's potential contribution to lowering trade costs.

Domestic infrastructure behind the border can have as much effect on the length and variability of time-to-market as freight services between countries. This is especially true in large or landlocked countries, and the proliferation of inland dry ports has evolved partly in response to this problem. Limao and Venables (2001) found that domestic infrastructure explains about 40 percent of transport costs for coastal countries, while domestic and transit country infrastructure together account for



an estimated 60 percent of transport costs for landlocked countries. Furthermore, land transport is about seven times more costly than sea transport over similar distances, and estimates of the elasticity of trade flows with respect to transport costs range from  $-2$  to  $-3.5$ , suggesting that lowering a country's trade costs by 10 percent through infrastructure development could increase its exports by over 20 percent.

De (2009b) finds that inland transport cost is the major component, accounting for about 88 percent of overall trade transportation costs in South Asia. Inland costs are very high across South Asian countries, except in Sri Lanka, and vary across goods and countries, being even higher when countries are landlocked. Land border crossings are overcrowded, and greater policy attention to efficiency concerns could easily reduce delays and monetary costs. Complex border-crossing requirements in trade expand possibilities for corruption and have encouraged sharp growth in informal trade. The magnitude of border effects in South Asia argues strongly for improvements in soft infrastructure, complemented by inland transportation infrastructure, to raise the competitiveness of the subregion's exporters.

## 1.5 EMPIRICAL ESTIMATES OF TRADE COSTS

Empirical assessments of trade costs are most frequently derived through estimation of a gravity equation, and an excellent survey of estimating trade costs can be found in Anderson and van Wincoop (2004). They estimated that the tax equivalent of representative international trade costs is as high as 74 percent for industrialized countries, including 21 percent transportation costs and 44 percent border-related costs.<sup>2</sup> Costs for developing countries can be much higher.

De (2008) estimates a modified gravity equation for eight sectors in ten Asian countries, controlling for distance, to examine the effects of both policy and non-policy barriers to trade. Infrastructure quality and transport costs, along with tariffs, are found to be the main determinants for cross-country variations in Asia's trade flows. Infrastructure interventions that reduce the costs of international transport and trade are therefore seen to be crucial for the region to realize fully the gains from recent and prospective trade policy liberalization reforms.

There is often skepticism as to whether the benefits of trade-related infrastructure investment in developing countries accrue proportionately to the poor. Large-scale infrastructure projects are frequently viewed as mainly benefiting large firms, whether those are domestically or foreign owned. The poor, who are often also the most deprived of infrastructure

services, are often considered to be secondary beneficiaries, if indeed any benefits extend to them at all.

Menon and Warr (2008) examine the impacts of road improvement in Lao People's Democratic Republic (Lao PDR), a poor, landlocked country. Lao PDR has a rugged, mountainous terrain and generally low-quality roads. The poorest people often reside far from urban centers and are the most disadvantaged by the high transport costs that result from bad roads. Since the 1980s Lao PDR has made substantial progress in reforming legal and administrative obstacles to market-based development and in opening to trade with the outside world, but these reforms in soft infrastructure may be of limited value for producers facing very high transport costs arising from inadequate market access due to physical infrastructure constraints. Inadequate or substandard roads remain a stubborn obstacle to realizing the potential benefits from international trade for rural residents.

In this context, Menon and Warr use a general equilibrium modeling approach to assess the impact of rural road improvement on the incidence of poverty. Differentiating rural villages into three categories according to the quality of road access available: (1) no vehicular access; (2) dry-season-only access; and (3) all-weather access, they find that although improvement in roads in all three categories reduces poverty, the type of road improvement is critical in determining the magnitude of the impact. For instance, when areas with no vehicle access are provided with dry-season access roads, the reduction in poverty incidence is about 17 times that which occurs when upgrading from roads suitable only for dry season access to all-weather access roads. And the effect on gross domestic product (GDP) is about six times as great. In this context, enabling transport of traded goods for households without initial road access is highly pro-poor compared with road improvement for households already having dry-season road access to markets. Extending the access from this landlocked economy further to overseas markets depends on the cooperative efforts in the GMS.

Edmonds and Fujimura (2008) investigate the impacts of infrastructure development on trade and foreign direct investment (FDI) in the GMS, focusing on both domestic and cross-border infrastructure. The way in which road infrastructure, whether domestic or cross-border, affects trade directly is clear and operates mainly through reductions in transport costs. These same reductions in transport costs also underlie the impacts on poverty. Furthermore, reductions in transport costs have an indirect positive effect on FDI inflows by reducing transaction costs in intrafirm vertical integration across countries designed to exploit comparative cost advantages. Increases in FDI, in turn, can further increase regional trade,

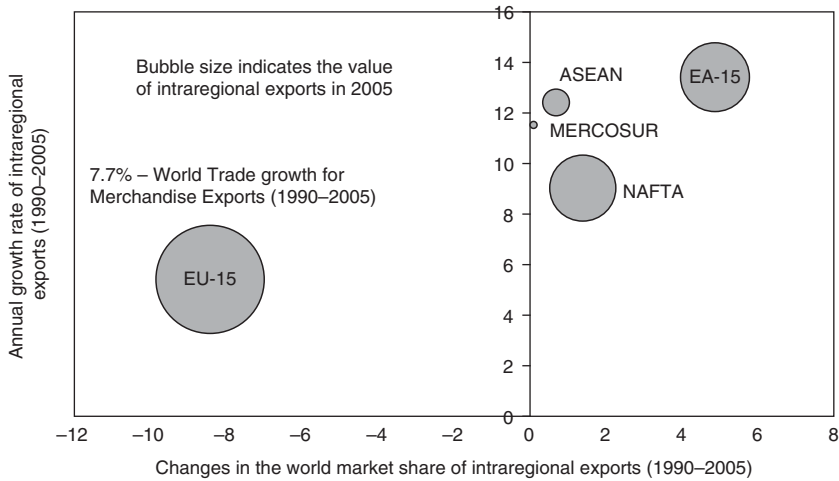
and add to the direct effect of reduced transport costs achieved through improvements in road infrastructure near border areas. When such gains are present, this reduces tendencies towards production agglomeration. If the advantages of production integration across economies outweigh those from agglomeration, then reductions in transport costs make FDI complementary to trade. This defines a virtuous cycle of trade and investment to lower trade costs that fosters increased trade and economic growth.

To explore this, Edmonds and Fujimura estimate gravity models using panel data from 1981 to 2003 for trade and FDI flows between each pair of the six GMS countries. The results show that the quality of road infrastructure in border areas between economies has a positive and statistically significant relationship with trade flows between them, and that this relationship is particularly strong when both cross-border and domestic road infrastructure are included in the estimates. They also find that cross-border road infrastructure has effects distinct from domestic roads, suggesting that investments in cross-border infrastructure have an independent and important role to play in the promotion of regional trade.

## 1.6 TRADE COSTS AND TRADE PATTERNS

A notable feature of developing Asia's intraregional trade is the growing volume of shipments of parts and components across national borders. Fragmentation of production supply chains and sourcing raw and intermediate inputs from wherever costs (including related trade costs) are lowest has yielded benefits for both producers and consumers, as well as tax revenues for government budgets. At the same time, the double (or triple) shipping it involves puts greater strain on existing trade-related infrastructure and raises the demand for timely delivery and greater information on shipping status en route. To compete for larger shares in these benefits, countries have been striving to lower their costs by increasing the quantity and quality of services to support the production, distribution and international trade of a widening array of intermediate goods and services.

As infrastructure expanded in Asia, particularly in East Asia, trade costs fell and altered the comparative advantages of countries in the region, making greater fragmentation of production supply chains possible and spurring the region's intraregional trade in intermediate products. The subsequent economic integration in East Asia is sharply higher than in other developing regions (Figure 1.3). When inputs are being sourced from wherever costs are lowest and the production process is increasingly dispersed geographically, then timeliness and reliability of delivery become critical factors and the influence of both physical and institutional



Source: IMF (2007) and United Nations Statistics Division (various years).

Figure 1.3 Intra-regional trade of major regions, 1990–2005

Table 1.1 Border trade costs

	Sub-Saharan Africa	East Asia & Pacific	South Asia	Latin America & Caribbean
Documents for export (number)	8.2	6.9	8.1	7.3
Time for export (days)	40	23.9	34.4	22.2
Cost to export (US\$ per container)	1561	885	1236	1068
Documents for import (number)	12.2	9.3	12.5	9.5
Time for import (days)	51.5	25.9	41.5	27.9
Cost to import (US\$ per container)	1947	1037	1495	1226

Source: World Bank (2007a).

infrastructure services at the regional level is even more apparent. In this context of production fragmentation, East Asia's performance in reducing border trade costs stands out again relative to other developing regions (Table 1.1).

Infrastructure influences not only absolute but also comparative advantage. Differences between countries in the quality of infrastructure services help to explain differences in total factor productivity. These impacts on productivity vary across sectors, depending on how intensively each sector uses infrastructure services and how reliant it is on the quality of infrastructure services (and the availability of technology for alternative production processes). Thus, patterns of specialization and trade are determined in part by the influence of infrastructure service quantity and quality on comparative advantage. Hummels and Skiba (2004) estimate that a 10 percent increase in product price leads to an 8.6 percent fall in the *ad valorem* transport cost. Thus, transportation costs alter the relative prices of different quality goods, indirectly changing the composition of trade.

Limitations in factor endowments may be mitigated by infrastructure services, also affecting the dynamics of comparative advantage. In different production processes, infrastructure services may serve either as complements to, or substitutes for, physical inputs. The significance of factor endowments in determining comparative advantage may thus be modified by infrastructure development (Brooks and Leuterio 1997; Yeaple and Golub 2002).

Hummels (2009) looks at four types of recent changes in the composition of trade and their effects on demand for transportation: (1) changes in the ratio of weight to value of traded goods; (2) demand for timeliness and the shift towards increased air shipping; (3) new trade flows (of both products and geographical routes) and variation in the size of shipments; and (4) production fragmentation. The relationships are complex since the developments are interlinked. For example, declining weight–value ratios and vertical specialization in the fragmentation of new production supply chains generate new trade flows and patterns which have spurred the rapid growth in Asian air cargo shipments.

When infrastructure development lowers the marginal cost of trade, there can be increases in exports at both the extensive and intensive margins. The expansion at the extensive margin (of new products, to new destinations), typically through small shipments from small firms, influences the types of infrastructure services demanded differently than does the deepening of existing trade flows. This is especially true for transportation infrastructure demand. When the new markets are inland, air transport may be a viable alternative to a combination of sea and land freight to avoid and reduce potential port congestion, noting that the shipping time savings are positively correlated with the shipping distances involved.

The surge in oil prices during 2008 raised shipping (and therefore import) costs, shifting the balance in favor of domestic producers and

inflation. Changes such as this can have a double or greater impact on products in international supply chains as both imported inputs and exported final products register higher prices. For example, Chinese steel produced with iron ore imported from Brazil and exported to the US was hit twice by higher fuel charges. The impact is obviously greater where the goods (or their imported components) are shipped by air or have a high weight-to-value ratio and therefore where fuel accounts for a higher share of freight costs. The demand for modal switching places a premium on interoperability, an area where smoother regional connections and harmonization of standards can make a large difference in competitiveness.

Malaysia is a prime example of a country where the government has actively promoted infrastructure development in order to strengthen its competitive and comparative advantage. Since the mid-1980s, Malaysia has pursued an FDI-led, export-oriented development strategy, with FDI contributing to the economy's integration into global production networks. As Tham et al. (2009) point out, foreign firms' interest in Malaysia as a key link in global and regional supply chains has been piqued by the country's competitive locational advantages, which in turn are closely linked to its infrastructure development and resulting high-quality services.

Tham et al. illuminate the role of infrastructure in attracting export-oriented FDI through observing FDI's sectoral and locational pattern and through interviews with managers of local subsidiaries of foreign firms involved in international trade. The location of FDI is found to be biased toward areas with relatively good infrastructure and amenities, as could be expected. Thus, infrastructure improvements increase the chances of attracting foreign direct investment – which in Malaysia as well as in other areas of Asia has frequently been directed toward export sectors – and therefore also influence patterns and quantities of imported raw materials and intermediate inputs.

Amiti and Javorcik (2008) find that market and supplier access are the most important factors affecting foreign investors' entry into an economy, and have about four times as great an effect on the choice of foreign investment location as do production costs. In particular they find that in the PRC, access to markets and suppliers within the province of entry matters more than access to those in the rest of the country, consistent with observed market fragmentation. An increase in trade-related infrastructure of one standard deviation in the number of sea berths is found to result in an increase of foreign entry by about 11 percent, while a one standard deviation increase in the length of rail lines increases it by 7 percent. This supports the observation that provinces with more developed ports, and to a lesser extent a more developed rail network, tend to attract greater FDI inflows. Over time, however, related factors such

as congestion, security concerns, connectivity of airports and delays in processing trade documentation may reduce the positive impact of infrastructure on lowering trade costs for foreign investors.

## 1.7 TRADE FACILITATION

Reductions in trade costs resulting from infrastructure improvements or expansion are one form of trade facilitation, but trade facilitation through cost reduction can take a variety of forms. In the context of the World Trade Organization, it primarily refers to simplifying or speeding up administrative documentation procedures at border crossings. In broader usage, it includes various measures taken by public and private sectors, reform of non-tariff measures, and physical efforts to facilitate trade by reducing time in transit.

Dee et al. (2008) include in the scope of trade facilitation all factors affecting the time and money cost of moving goods across international borders. Implementation options, including institutional arrangements and particularly regional agreements, can be usefully considered. The success of reforms to facilitate trade depends on their impact on reducing both rent-creating and cost-creating influences. These can be distinguished through use of the price–cost margin as a performance measure to help identify rent-creating barriers, and use of cost or productivity as performance measures to identify cost-creating barriers. The identification is important since the treatment effect (for rent-raising or cost-raising) can dominate other factors in the estimated height of trade barriers, with consequent policy implications. The extent to which non-tariff barriers, such as regulations, lead to vertical shifts in demand or supply curves with resulting effects on costs and prices can be quantified through antimonopoly estimation, in which a measure of economic performance is also estimated for the counterfactual case with no non-tariff barriers in a market.

The ability of a nation to finance trade-related infrastructure projects is complicated by the dynamics of trade balances, debt and reserve accumulation, among other factors, that constitute important feedback loops between trade and infrastructure. Demographics, government debt levels and intergenerational equity are all relevant concerns in the decision-making process for infrastructure expansion and financing. Consequently, the modality chosen for financing trade-related infrastructure can have macroeconomic implications which vary depending upon initial conditions (Brooks and Zhai 2008).

Most physical infrastructure outlays are accounted for by public investment, particularly where fixed network infrastructure has public good and

natural monopoly characteristics. Francois and Manchin (2007) illustrate the complementarity between greater government involvement, domestic transport and communications infrastructure, and export performance.

Interactions between changes in the composition of trade, mode of product packing (container or bulk, for example), and the capacity expansion effect of new port infrastructure all influence the potential profitability, and hence bankability, of port infrastructure investments. Ocean shipping constitutes 99 percent of world trade by weight and a majority of world trade by value (Hummels 2007). In planning projects for port expansion or improvement, both the capacity and efficiency effects need to be taken into account when projecting potential benefits. This is true for all modes of transport, through sea-, dry- and airports, and can have important implications for regional partners and competitors.

Among different indicators of infrastructure services' contributions to trade, port efficiency appears to have the largest influence, reflecting the fact that the vast bulk of developing countries' trade (by weight) goes through sea ports. For example, infrastructure improvements that raise port efficiency from the 25th to the 75th percentile can reduce shipping costs by more than 10 percent (Clark et al. 2004). The dominance of sea freight over land transport, and its associated cost savings, emphasizes the need to address, particularly through regional cooperation, the challenges faced by landlocked countries attempting to compete in global markets as well as the importance of improving port efficiency in countries with amenable coastal areas.

Haveman et al. (2009) confirm through econometric estimation for a subsample of Asian ports that specific types of infrastructure investments are highly correlated with reductions in port costs. While Penang (Malaysia) currently has the lowest costs of ports studied, between 1997 and 2005 Mumbai experienced the greatest improvement in relative costs. Operating with a new harbor, wharf or terminal is found to decrease port costs by 2 percent, while procurement of a new crane is found to decrease port costs by 1 percent. Increasing the number of berths and deepening channels at ports have less effect.

Not only do investments in port infrastructure, and especially the procurement of new cranes, lower costs and raise efficiency for current trade flows, but they can also increase port capacity to handle new flows and influence the composition of trade. Port costs vary significantly across products even at a single port and new infrastructure can, for example, differentially influence the costs for loading/unloading containers versus bulk commodities. Given the inherent advantages in containerization for certain product categories, relevant port infrastructure developments can reduce unit costs further as the container share of trade rises.



Information and communication technology (ICT) is a highly productive complement to physical transportation infrastructure. The quality of communication infrastructure services is not only strongly correlated with search costs, but also with costs of entering into contracts with suppliers and monitoring implementation of those contracts. Costs related to the time elapsed between the perception of demand and subsequent supply of products to the relevant retailer(s) can also figure prominently (Nordas and Piermartini 2004).

Fink et al. (2002) find that the cost of making a telephone call has a significant and negative impact on bilateral trade flows. In addition, the bilateral costs of telecommunications have a greater effect on trade of differentiated products than on trade of homogeneous products. This reflects the value of access to information and the importance of information technology infrastructure, as well as telecommunications, at the dynamic extensive margin of trade. In particular, as the number of smaller shipments of a wider variety of higher value-added products rises, demand for ICT infrastructure services also rises.

Telecommunications infrastructure is also especially important for trade in services, where the main services traded (banking and business services, communications, and so on) are highly dependent on well-developed infrastructure both in the exporting and importing countries, and linking the two (Nicoletti et al. 2003). Given the huge value of ICT infrastructure demanded, it is fortunate that ICT is an infrastructure sector that the private sector is especially adept at innovating, expanding and financing due to its pricing and cost-recovery characteristics, while the need for mutually interfacing logistics services at both ends of the trade route points to an area for regional cooperation to capitalize on externalities in enhancing trade.

## 1.8 CONCLUSIONS

Until at least 2030 developing Asian economies are likely to make up the lion's share of the fastest-growing markets in the world. An important part of this growth will come through trade expansion, regional integration through the fragmentation of production networks across national borders, and the broadening and deepening of international capital flows to support trade and production expansion. Already, close to a quarter of world trade takes place between countries sharing a common border, and half of world trade occurs between partners less than 3000 kilometers apart (Berthelon and Freund 2004).

The impacts of trade-related infrastructure are being leveraged by

coordination across borders. Supported by a conducive policy environment and capitalizing on regional externalities through cooperative arrangements, the expansion, improvement and maintenance of infrastructure services can reduce trade costs and facilitate trade expansion, economic growth and development, and regional integration.

The demand for information and related services (such as finance and telecommunications) can be expected to grow faster than the demand for transportation of goods and people. The telecommunications and Internet revolution has restimulated international integration, resulting in growing trade in information and ICT, in outsourcing services, and in migration of highly skilled labor. Similarly, as the density of economic activity increases with population and income growth, and modern flexible manufacturing practices spread, moving production closer to consumers, there may be an increasing demand for short-haul relative to long-haul transportation, at least in the domestic context.

Efforts to expand and enhance infrastructure services will reduce costs of doing business, of achieving economies of scale, and of international trade, helping to maximize growth and the benefits of regional trade and investment integration. At the same time, infrastructure improvements, complemented by trade expansion, will attract and facilitate greater investment in productive capacity, expand access to markets and employment opportunities for the poor, and broaden the range of consumer choice for Asia's billions.

## NOTES

1. TEU represents 'twenty-foot equivalent unit', a standard measure of shipping capacity based on a typical container size.
2. The costs are not simply additive. The total is  $1.44 * 1.21 - 1 = 0.74$ .

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## 2. ASEAN open skies and the implications for airport development strategy in Malaysia

**Tham Siew Yean**

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### 2.1 INTRODUCTION

'Open skies', in general, refers to the liberalization of aviation markets that can be pursued on a bilateral, regional, or multilateral basis. However, the depth of liberalization may differ from one open sky agreement to another as these agreements enhance the competition between airlines in different degrees. Capacity deregulation and the removal of price controls may also be treated differently in different agreements. Moreover, the geographic and functional dimensions covered may also differ from one agreement to another (Forsyth et al. 2004). In the case of the Association of South East Asian Nations (ASEAN), with the progressive implementation of the various ASEAN open skies agreements, it is envisaged that air traffic between member countries will be progressively liberalized by 2015. Ultimately, ASEAN seeks to build a unified aviation sector by 2015, whereby designated airlines from a member country in ASEAN will be able operate unrestricted flights to the designated airports of other member countries.

For ASEAN countries, increasing competition from the People's Republic of China and India has created a new impetus to enhance their competitiveness, including a renewed effort to improve their transportation and logistics support services, for several reasons. First, the declining importance of tariffs has increased the importance of other types of trade transactions costs. In particular, the rise of global and regional production networks and the increasing use of just-in-time logistics, intermodal transport and new security considerations since 9/11 have changed the face of the international economy and, with it, the type of trade transactions needed for exporting and importing goods. These transactions comprise a whole range of trade support services needed to send goods from a factory in an exporting country to the importing country. Transportation and

logistics support services play a key role in these transactions and therefore can be harnessed to enhance the export competitiveness of a country. In this way, these transactions costs also affect the competitiveness of a country as a host economy, since multinationals evaluate the viability of each new node in their global and regional production networks based in part on the cost and availability of transport and communications in a host economy for tying that node to others already in the network (Leinbach and Bowen 2004).

Second, ASEAN is an important export platform for electronics goods whose final markets are the US, Europe and Japan. Air cargo services and airports are particularly important because electronic products, and specifically semiconductors, have a high value-to-weight ratio, rapid product cycles and greater risk of damage associated with sea freight. Consequently, semiconductor firms have higher air cargo intensity, thereby rendering cargo services and airports as one of the key determinants of the competitiveness of each node in the production networks of multinational corporations (MNCs) in this sector. The significant variations in the quality and capacity of air cargo services in the region, including ground-based logistics services, further magnify the importance of these services as sources of competitive advantage to the firms that use them, and the national and regional economies where these firms are located (Leinbach and Bowen 2004).

Third, since tourism bears a particularly close relationship to the development of the aviation sector, the increasing demand for air travel has further heightened the importance of air services and airport development in each member country of ASEAN. Tourism statistics for the region show an upward trend in travel destinations in different parts of ASEAN as well as increasing domestic travel within each country due to increasing affluence.

However, air services and airports do not operate in a vacuum. Rather, their operations are contingent upon the aviation policies of each country and the region. While the objectives of aviation policy and the ability to implement these policies effectively differ significantly between the ASEAN member countries, they have in general relied on bilateral air services agreements (BASAs), although some have joined regional and multilateral arrangements (Forsyth et al. 2006). Studies have shown that the liberalization of air services can lead to new and better air services, thereby increasing trade in airlines services, gains in consumer welfare and, in the end, economic growth (InterVistas-ga n.d.; Forsyth et al. 2006).

Since airport development and the pace of liberalization of air services is determined by the government of each country, this chapter seeks to examine the implication of open skies agreements in ASEAN on the airport development strategy in Malaysia. In particular, it examines: (1)

the initiatives that were undertaken for positioning the main international airport in Malaysia, namely the Kuala Lumpur International Airport (KLIA), as a regional hub; (2) the achievements of KLIA to date; and (3) the potential impact of the impending liberalization of air services on KLIA's aspirations to be a regional hub.

## 2.2 OPEN SKIES IN ASEAN

ASEAN was established in 1967 initially with five member countries, namely Indonesia, Malaysia, the Philippines, Singapore and Thailand. Its membership increased over time with Brunei Darussalam joining in 1984, followed by Viet Nam in 1995, Lao People's Democratic Republic and Myanmar in 1997, and Cambodia in 1999. ASEAN was formed to promote regional peace, prosperity and stability. It has a total population of about 558 million as of 2006 with a combined gross domestic product of US\$1047 billion and a total trade of US\$1405 billion (Table 2.1). The importance of trade to the countries in the region can be seen from the same table where seven out of the nine countries shown (excluding Myanmar) have a trade to gross domestic product (GDP) ratio of more than 100 percent, with Singapore and Malaysia having the greatest dependency on trade in the region.

Given the importance of trade in ASEAN, member countries have recognized that transport is an important area for cooperation as it can contribute toward the reduction of trade transaction costs for member countries and the region as a whole. In this section, open skies in ASEAN is reviewed at three levels: (1) ASEAN-wide initiatives; (2) subregional initiatives within ASEAN; and (3) unilateral initiatives.

The initial focus as shown in the ASEAN Plan of Action in Transport and Communications 1994–1996 was on the development of multimodal transport and trade facilitation, improving ASEAN interconnectivity in telecommunications, harmonization of road transport laws, rules and regulations, the development of rules and regulations for the carriage of dangerous goods and industrial waste on land and sea, as well as human resources development in transport and communications (ASEAN Secretariat n.d. (b)). In the case of aviation, the improvement of air space management in ASEAN was emphasized with no initiatives then to liberalize air services in ASEAN.

Subsequently, the development of a competitive air services policy was included as one item of the integrated implementation program for the ASEAN Plan of Action in Transport and Communications in 1997 (ASEAN Secretariat n.d. (c)). This was targeted at the ASEAN



Table 2.1 ASEAN key economic indicators, 2006

Country ASEAN 10	Population (thousand)	GDP (current US\$ million)	GDP per capita (US\$)	Trade per capita (US\$ 2004-06)	Trade to GDP ratio (2003-05)	Merchandise exports f.o.b. (US\$ mil.)	Merchandise imports c.i.f. (US\$ mil.)
Brunei	381	6400	16798	22368 (2003-05)	147.6 (2003-05)	7700	1730
Darussalam							
Cambodia	14351	7193	501	516 (2003-05)	133.1 (2003-05)	3800	4900 (f.o.b.)
Indonesia	223042	364459	1634	562 (2001-03)	60.4 (2001-03)	103487	80333
Lao PDR	5765	3404	590	314 (2003-05)	69.7 (2003-05)	874	1060
Malaysia	25767	148940	5780	11603	221.5	160676	131152
Myanmar	50962	n.a.	n.a.	108	n.a.	4250	2460
Philippines	84590	116931	1382	1210	99.9	47037	51522 (f.o.b.)
Singapore	4393	132159	30084	124769	454.4	221772	238652
Thailand	64724	206247	3187	4052	143.5	130790	128636
Viet Nam	84108	60884	724	922	144.4	39605	44410

Note: n.a.: not available.

Source: World Trade Organization (WTO) (n.d.).

subregional groupings and growth areas. The development of an ASEAN open sky policy was also considered as another area of possible cooperation. An internal ASEAN Secretariat study on 'Preparing ASEAN for Open Sky' was commissioned.

Later in 2002, the ASEAN Memorandum of Understanding (MOU) on Air Freight Services was inked (Table 2.2). However, contracting parties are allowed to operate only all-cargo services up to 100 tons weekly based on a point-to-point route, with no limitations on frequency and aircraft type. Third and Fourth Freedom Rights are included in this agreement.<sup>1</sup> In 2007, the agreement was amended to increase the permitted capacity to 250 tons weekly.

Limited open skies agreements were also ratified within a small subset of ASEAN member countries as in the case of the Cambodia, Lao People's Democratic Republic, Myanmar and Viet Nam (CLMV) regional air services agreements and the Brunei Darussalam, Indonesia, Malaysia and the Philippines BIMP-EAGA Agreement (Forsyth et al. 2004). A roadmap was also developed for the Indonesia, Malaysia and Thailand Growth Triangle (IMT-GT). Singapore, together with Brunei Darussalam, Cambodia and Thailand, concluded a Multilateral Agreement on the Full Liberalization of All Cargo Air Services in 2003 that allows carriers from the four countries to operate unlimited all-cargo services between and via each of the countries that is party to the agreement (Geloso Grosso and Shepherd 2009). In 2004, Singapore, Brunei Darussalam and Thailand concluded a similar multilateral agreement for passenger services, providing for unlimited direct flights between any destination in the three countries.

In October 2003, the ASEAN leaders signed the Declaration of ASEAN Concord II (Bali Concord II) that aims at establishing an ASEAN Community by 2020. This Community is made up of three pillars, namely the ASEAN Security Community, ASEAN Economic Community and ASEAN Socio-cultural Community. Both liberalization and cooperation measures are used for the realization of a fully integrated economic community. A progressive approach is used for liberalization with the selection of 11 priority sectors, including air travel and tourism, for accelerated scheduled liberalization by 2010.

The Roadmap for Integration of Air Travel Sector, 2004 covers the liberalization of both passenger and cargo air services. The ASEAN Multilateral Agreement on Air Services and the Multilateral Agreement on the Full Liberalization of Air Freight Services was signed in 2008 and enforced in 2009 (ASEAN Secretariat December 2009). The ASEAN Multilateral Agreement on the Full Liberalization of Passenger Air Services (MAFLPAS) and its Protocols, which will expand the scope of the ASEAN Multilateral Agreement on Air Services to include other

Table 2.2 Commitments (including proposed) for ASEAN open skies, as at January 2010

A.	Liberalization of air freight services	Designated cities, airlines	Limitations	Others	Freedom rights accorded
1	ASEAN MOU on Air Freight Services 2002	Designated airport and airlines	100 tons, with no limitations on frequency and aircraft type	Allows for code-sharing with designated airlines of other countries and on agreed routes	3rd and 4th freedom rights
2	Protocol to amend the ASEAN MOU on Air Freight Services 2002, signed in 2007	Designated airport and airlines	250 tons, with no limitations on frequency and aircraft type	Same	Same
3	Full liberalization of ASEAN air freight services by December 2008	Capital cities and designated airlines in 2008; all international airports in 2010; all ASEAN members will be included by 2015	No limitations on capacity, frequency and aircraft type	See Multilateral Agreement on the Full Liberalization of Air Freight Services	3rd, 4th and 5th freedom rights

B. Liberalization of scheduled passenger services	Designated cities, airlines	Limitations on frequencies, capacities and aircraft types	Others	Freedom rights
1 Liberalization of scheduled passenger services, December 2005–08	ASEAN subregions such as CLMV countries, IMT-GT (only a roadmap), BIMP-EAEG, Singapore, Thailand, Brunei and Cambodia	Depends on individual agreements	Depends on individual agreements	3rd and 4th freedom rights
2 Liberalization of scheduled ASEAN passenger services, December 2008	Capital cities in ASEAN, designated airlines	No limitations on frequency, capacity and aircraft type	See ASEAN Multilateral Agreement on Air Services	3rd, 4th in 2008 and 5th freedom rights in 2010
3 Full liberalization of scheduled ASEAN passenger services, December 2010, based on ASEAN-X principle; still being worked out	All international airports; designated airlines	No limitations on frequency, capacity and aircraft type	No information on details as yet	3rd, 4th and 5th freedom rights
4 ASEAN Single Aviation Market, 2015 (with all ASEAN members)	All international airports in ASEAN, designated airlines	No limitations on frequency, capacity and aircraft type	No information on details as yet	3rd, 4th and 5th freedom rights

Sources: ASEAN Secretariat (n.d. (a)), and MOT interview, 7 August 2008.

ASEAN cities, is expected to be signed in December 2010, probably based on the ASEAN-X principle.<sup>2</sup> Third, Fourth and Fifth Freedom Rights<sup>3</sup> are also expected to be granted to the member countries that ratify the agreement, while no restrictions on capacity, frequency and aircraft types are anticipated. Member countries that are most likely to ratify the agreement under the ASEAN-X principle are Malaysia, Singapore and Thailand, while other members, especially the CLMV countries, may delay liberalization until 2015.

By 2010, it is envisaged that air traffic will be liberalized for all the international airports of member countries that ratify the agreement, together with Third, Fourth and Fifth Freedom Rights.<sup>4</sup> All ASEAN members are expected to open up their international airports by 2015 under the ASEAN Single Aviation market.

Individual member countries have their own respective open sky arrangements with non-ASEAN countries. For example, Singapore has followed an open skies policy since the 1960s (Bowen 2000). The traffic rights secured for Singapore Airlines under Singapore's open skies strategy have been integral to the carrier's emergence as one of the world's largest airlines despite its very small domestic traffic base. Thailand, the Philippines and Indonesia also have limited or partially open skies. Malaysia has open skies agreements with the US; Taipei, China; New Zealand; Austria; the United Arab Emirates; Yemen and the Scandinavian countries apart from 86 bilateral air service agreements (BASAs).

## 2.3 POSITIONING MALAYSIA AS A REGIONAL HUB

Bowen (2000) highlighted the role of national governments in the development of airline hubs in Southeast Asia. In particular, two factors under the purview of national governments have frequently been used either to reinforce or to overcome prevailing patterns of centrality in regional airline networks and, in turn, to ease the access to hub airports. These two factors are the size and quality of airport infrastructure provided at the hub, and airline competition policy, including the privatization of national carriers and deregulation on domestic routes, which will be discussed in the following section. As tourism policies also impact air travel, it will also be reviewed in the following section.

### 2.3.1 Investing in Infrastructure Development

Kuala Lumpur International Airport (KLIA) was conceptualized in the early 1990s to be a world-class hub airport for the Asia Pacific region.

Table 2.3 Government expenditure on infrastructure development in Malaysia, 1991–2010 (in RM million)

Transport type	1991–95 6MP Expenditure	1996–2000 7MP Expenditure	2001–05 8MP Expenditure	2001–10 9MP Allocation
Total transport (RM million)	11 594.7	20 484.2	30 936.5	30 304.4
% of total development expenditure of the government	21.2	20.7	28.1	15.2
Roads	7 572.6 (65.3)	12 269.5 (59.9)	18 451.4 (59.6)	17 303.1 (57.1)
Urban transport	95.2 (0.8)	404 (2.0)	706.6 (2.3)	1 565.5 (5.2)
Rail	1 735.4 (15.0)	5 450.3 (26.6)	5 270.1 (17.0)	3 634.9 (12.0)
Ports	410.9 (3.5)	1 089.2 (5.3)	2 443 (7.9)	1 290 (4.3)
Airports	1 780.6 (15.4)	1 271.2 (6.2)	1 779.3 (5.8)	2 868.5 (9.5)
Rural roads	n.a n.a	n.a n.a	2 286.1 (7.4)	3 642.4 (12.0)

Notes:

1. MP: Malaysia Plan.
2. Numbers in parentheses shows percentage of total transport expenditure.
3. n.a.: not available.

Sources: Malaysia (1996, 2001, 2006a).

Its development is part of the country’s national development strategy whereby sustained investment in infrastructure is made to ensure the timely and adequate supply of facilities that can meet the development requirements of the country (Malaysia 1991; Malaysia 2001). In turn, this sustained investment in infrastructure has enabled Malaysia to be ranked ahead of most of its ASEAN neighbors and the People’s Republic of China, with the exception of Singapore, in terms of the overall quality of infrastructure in the country, by the World Economic Forum (as cited in ADB et al. 2005).

From 1991 until 2005, Malaysia spent a total of RM63 billion for the development of transport infrastructure in the country (Table 2.3). A further RM30.3 billion has been allocated for the period of the Ninth Malaysia Plan (9MP: 2006–10).<sup>5</sup> The amount spent constituted an average

of 21 percent of the total development expenditure of the country from 1991 until 2000. In the Eighth Malaysia Plan, the total expenditure on transport infrastructure amounted to 28 percent of total development expenditure, while in the Ninth Malaysia Plan, the amount allocated is 15 percent of total development expenditure.

Out of this total expended on infrastructure development, there are various competing demands. Road development has consistently taken the largest share (60–65 percent) of the amount spent or allocated for developing the transport infrastructure in the country. Besides government expenditure, the private sector also expended RM15.2, RM7.9 and RM4 billion, respectively, during the Sixth, Seventh and Eighth Malaysia Plans under the privatization program of the country.

The second-largest share in the amount expended for the development of transport infrastructure accrued to rail development, with the exception of the Sixth Malaysia Plan (6MP: 1991–95) when the amount spent on airport infrastructure took a slightly bigger share at 15.4 percent due to the development of KLIA. Port development took the second-smallest share in the amount spent on transport infrastructure during the Sixth and Seventh Malaysia Plans (7MP: 1996–2000) while urban transport development had the smallest share. However, during the Eighth Malaysia Plan (8MP: 2001–05), the amount spent on port development more than doubled from RM1.1 billion to RM2.4 billion due to expansion in capacity and upgrading of port and port-related facilities (Malaysia 2001). The development of rural roads has been increasingly emphasized since the 8MP, with the amount allocated increasing to RM3.6 billion in the 9MP, or a share of 12 percent of the total amount allocated for transport infrastructure development.

### **2.3.2 Airport Development**

The development of air transport is viewed as an important foreign exchange earner in the services sector, while the development of a comprehensive network of airports is deemed essential for facilitating trade, tourism, and to accelerate socio-economic development (Ministry of Transport 2008a). By 2007, Malaysia had 45 airports, including six international airports, 19 domestic airports and 20 STOLports<sup>6</sup> (Ministry of Transport n.d.). The six international airports are KLIA, Penang International Airport, Langkawi International Airport, Senai International Airport (in Johor state) in Peninsular Malaysia, Kota Kinabalu International Airport in Sabah, and Kuching International Airport in Sarawak in East Malaysia.

According to former Prime Minister Mahatir Mohamad (1995), the

Table 2.4 Summary of the development of KLIA

Phase	Year	Description
1	1993–98*	<ul style="list-style-type: none"> <li>● Initial capacity of 25 million passengers per annum (ppa); 1.2 million tons cargo; one main terminal, one satellite building.</li> </ul>
2	1998–2015	<ul style="list-style-type: none"> <li>● Addition of LCT, adding 10 million ppa by 2012.</li> <li>● Includes the expansion of current LCCT up to 15 million ppa by 2015. Total capacity of main terminal and upgraded LCCT will be 40 million ppa.</li> </ul>
3	2010–15 (forthcoming under the Tenth Malaysia Plan)	<ul style="list-style-type: none"> <li>● New LCCT (permanent) will be constructed to accommodate 25 million ppa, capacity of main terminal and new LCCT will be 50 million ppa.</li> <li>● Construction of second satellite terminal and increase in passenger capacity to possibly 75 million ppa.</li> </ul>
4	Dates not known	<ul style="list-style-type: none"> <li>● Construction of second terminal and increase in capacity to 100 million ppa.</li> </ul>

Sources: \* Mahatir (1995), and MOT interview 22 May 2008.

construction of KLIA was needed as Subang International Airport had experienced growth of 14–15 percent per annum from 1990 to 1995. This resulted in the airport reaching its designated capacity of 5454 passenger movements per hour by the mid-1990s (Mahatir 1995). Capacity at the old Subang International Airport was expanded while KLIA was being built. With the provision of 10 500 hectares of land, KLIA at a cost of US\$2.8 billion is designed to be a world-class airport and a regional hub for the Asia Pacific region. Its development spanned several phases; its first phase was completed on 30 June 1998, after seven years of conceptualization, with a capacity of 25 million passengers per annum and 1.2 million metric tonnes of cargo (Table 2.4).

During the second phase (1998–2015), a temporary Low Cost Carrier Terminal (LCCT) was constructed on a fast-track basis at the beginning of June 2005 and was fully operational in March 2006, at a cost of RM108 million ([www.lcct.com.my](http://www.lcct.com.my), accessed 7 May 2007). The LCCT is located about 20 kilometers from the KLIA Main Terminal Building and has the capacity of handling 10 million passengers a year. It is projected that this capacity will be exhausted by 2012. The current facilities will be upgraded



to handle up to 15 million passengers per year by 2015, thereby increasing the total capacity at KLIA to 40 million passengers per year.

In 2008, the government announced the construction of a new permanent LCCT in three to four years' time with a capacity of handling 25 million passengers a year, thereby increasing the capacity of KLIA to 50 million passengers per annum (ppa). The new terminal will be located closer to the main terminal than the existing one and an Express Rail Link service will be built to link the new LCCT with the main terminal. It is expected that this new facility will be built together with the second satellite terminal during the Tenth Malaysia Plan (2010–15). The new satellite terminal and new LCCT will probably increase the capacity of KLIA to 75 million ppa. There is, however, sufficient land and capacity to develop facilities to handle up to 100 million passengers and 5 million metric tonnes of cargo per annum, including four runways, by 2020.

Malaysia Airports Holdings Berhad (MAHB), a privatized entity, manages and operates all the airports in the country, with the exception of the Senai Airport in Johor and the Kerteh Airport in Terengganu. MAHB was incorporated in 1991 when the Malaysian parliament passed a bill to separate the Department of Civil Aviation (DCA) into two entities with different responsibilities. The DCA remains the regulatory body for the airports and aviation industry in Malaysia while MAHB focuses on the operation, management and maintenance of airports. MAHB was subsequently listed on the Kuala Lumpur Stock Exchange in November 1999. The major shareholder is Khazanah Nasional Bhd, a government investment holding company (73 percent), while the foreign share amounted to 2.6 percent in 2005 (MAHB 2006).

An aggressive marketing strategy was launched for the period 2006–10 to promote KLIA as part of its Five-Year Transformation Strategy (MAHB 2006). This included, among others, the extension of the Airline Incentive Program to the end of 2007 to attract more foreign airlines to fly into KLIA as well as the other four international airports managed by MAHB. Incentives given under the program include free landing and parking charges for new foreign airlines and existing airlines flying to new destinations and additional frequencies for a minimum period of three years (MOT interview 12 May 2008). New foreign airlines were also offered free office rental space for six months as well as a marketing support fund for new airlines operating in KLIA. MAHB is currently working on a new set of incentives that is expected to go into effect in 2010.

As part of its promotional strategy, MAHB also attends major aviation-related forums all over the world in its marketing and promotional efforts. In 2006, it participated in no less than 120 meetings with various airlines to present marketing proposals and route analysis (MAHB 2006). It hosted

the 14th World Route Development Forum or Routes KL in October 2008, making it the first Asian country to host this important airline-networking event, which is traditionally held annually in Europe. It is hoped that this event will attract some US airlines to operate from KLIA as there are so far no US airlines operating from it.

Commercial activities were stepped up with the establishment of a Commercial Management Department in September 2006 to oversee business development and to manage the related policies and procedures for MAHB's system of airports. This included, among others, the Retail Optimization Project to enhance the shopping-cum-dining experience of KLIA and other international airports managed by MAHB. MAHB has invested RM50 million in this project, which was completed in 2009 (*New Straits Times*, 21 May 2008). This project aims to expand the airport's commercial revenue by increasing the average spent per passenger through the maximization of retail space and improvement in retail placement.

In 2004 the government designated Senai Airport in Johor (and next to Singapore), the only independently operated airport in the country, as the regional air cargo hub in an attempt to overcome the leakage of cargo from Malaysia that is being exported through Singapore. In view of this, RM100 million was approved under the Ninth Malaysia Plan to upgrade the facilities at this airport to facilitate the export of goods that are produced in the southern part of Malaysia that have found it more efficient to export through Singapore instead of KLIA (MOT Interview 12 May 2008).

### **Road development**

Apart from airports, road development is also important as it facilitates the movement of goods and people within the country. The total road network, comprising federal and state roads, increased from a total of 53984 kilometers in 1990 to 77673 kilometers in 2005. The total amount spent for road development from 1991 to 2005 amounted to RM38.4 billion from the government and another RM27.1 billion from the private sector.

Road density has increased from 0.16 in 1990 to 0.24 kilometer of road per square kilometer in 2005, representing a 50 percent increase in road coverage and accessibility in any given area (Table 2.5). The road development index also showed improvement from 0.7 in 1990 to 0.85 in 2005 while the road service level improved from 2.96 kilometers per 1000 population to 3.02 from 1995 to 2005.

Generally, the road infrastructure is better on the west coast of Peninsular Malaysia compared with the east coast and East Malaysia, as the major cities and industries are located on the west coast of the peninsular side.

Table 2.5 Road development indicators, 1990–2005

Indicator	Level of development			
	1990	1995	2000	2005
Road Density <sup>1</sup>	0.16	0.19	0.20	0.24
Road Development Index <sup>2</sup>	0.7	0.74	0.75	0.85
Road Service Level <sup>3</sup>	n.a	2.96	2.98	3.02

*Notes:*

1. Road Density measures road length over the total area.
2. Road Development Index measures the level of road development taking into account both area and population size of the country.
3. Road Service Level measures total road length per 1000 population.

*Sources:* Malaysia (1996, p. 348; 2001, p. 270; 2006a, p. 377).

A major development during the period under study is the construction of highways and expressways to connect all major cities and towns on the west coast of Peninsular Malaysia. The development of these highways and expressways was guided by the Highway Network Development Plan (1993–2004). Major road networks were privatized following the passage of the Federal Roads (Private Management) Act in 1984 in order to accelerate the construction of major expressways or highways and to reduce the fiscal burden. During the 8MP (2001–05), 16 privatized highway projects were undertaken to construct an additional 604.5 kilometers of the national road network, involving a capital expenditure of RM18.0 billion (Malaysia 2006a). Most of these projects were implemented through the Built–Operate–Transfer (BOT) System, which requires the private sector to construct, operate and maintain the facility using its own funds and, in return, collect the toll from the road users during the concession period. At the end of the concession period, the facilities will be transferred at no cost to the government. PLUS Expressways Bhd is the biggest of the highway concessionaires, operating approximately 85 percent of the country's highways. As of 2006, the total length of these toll highways was 1238 kilometers. While some of the privatized highways are interstate in nature, quite a few are localized to Kuala Lumpur to ease the traffic congestion in the capital city.

The North–South Expressway, linking the northern tip of Peninsular Malaysia (Kayu Hitam in Kedah state<sup>7</sup>) to the southern tip (Johor Baru), was constructed progressively by sections from 1981 till 1994. It spans 847 kilometers and has reportedly lowered perceived vehicle operating and time saving costs by 25 percent per trip, after taking into account toll charges (Malaysia 1996). This expressway is also linked to KLIA via

the North–South Central Link expressway. It is also part of the Asian Highway Network, which also connects into Thailand and Singapore.

In the case of Penang, since the state is geographically and administratively divided between the island of Penang and Seberang Perai on the peninsular side, the Penang Bridge was constructed in 1982 and completed in 1985 to link the island with the hinterland. In 2007–08, due to the heavy volume of traffic, the bridge was broadened from two to three lanes. Penang is linked to the North–South Expressway on its Seberang Perai side. In 2006, the government announced that a second bridge would be built under the Ninth Malaysia Plan. Johor, the southernmost state in Malaysia, is linked to Singapore via the Johor Causeway and the Malaysia–Singapore Second Crossing. This second link cost RM1.6 billion and was ready in 1997 (Malaysia 1996).

The extensive and relatively good road network in Malaysia had two major impacts on air travel: first the completion of the North–South Expressway (NSE) in the 1990s rendered domestic air travel uneconomical as the expressway cut interstate road travel time by almost half (New Straits Times (NST) 5 December 2007). While the arrival of Low-Cost Carriers has restored the use of air travel to some extent, the relatively good highways continue to pose a challenge for domestic air travel in Malaysia. Second, the NSE also facilitated the movement of goods from different towns to the six international airports in the country. For example, although most electronic goods from the electronics hub in Penang in the north are exported through the Penang International Airport, some are trucked down to KLIA and even further south to Singapore for export, based on the flight availabilities at these airports (Tham et al. 2007). The road network has also been tapped for sea–air transshipment purposes as Malaysia is also well served with good ports such as Port Klang and Port of Tanjung Pelepas (PTP) where it was reported that electronic goods arriving from Shanghai were trucked up to the Advanced Cargo Centre at KLIA. These goods were later flown to Frankfurt (NST 11 August 2008).

### **2.3.3 Airlines Development**

#### **National carrier: Malaysian Airlines**

Malaysia Airlines (MAS), the national carrier, started as a company when it was incorporated under the Companies Act in 1971 (Khairiah 2008). Although totally owned by the government then, the company was termed an off-budget agency (OBA) as the day-to-day running of the company was outside the control of the government. It has its own employment policies and salary scheme and arranged its own funding and had no access to

government loans. However, the government did provide support to the company in terms of government guarantees.

It was the first government agency that was privatized in 1985 as it was already a body incorporated under the Companies Act. Upon listing, 30 percent of its equity was offered to the public while the government retained a 70 percent share, with a long-term strategy to eventually reduce it to 30 percent in order to enable the government to appoint directors, including the chairman and the managing director.

Although the government's share did fall over time, the carrier's poor financial performance and costly fleet expansion subsequently slowed the pace of further privatization through public offerings (Bowen and Leinbach 1995). In 1994, 32 percent of the government's shares in MAS were sold to a single individual, Tajudin Ramli, resulting in the government's share falling to just 10 percent.

In 2000, six years after the government had privatized its controlling stake to Tajudin Ramli, MAS incurred RM9.5 billion in debt and four consecutive years of losses. Consequently, the government renationalized MAS in 2000 by buying back Tajudin's shares at RM8 each, although the prevailing market price was RM3.62. Some of the losses incurred were attributed to artificially low domestic fares that were imposed by the government. Hence, it continued to suffer losses after renationalization until 2002/03 and 2003/04. In the year 2005, MAS reported a loss of RM1.3 million due to increasing fuel costs and high operating costs.

A new Chief Operating Officer was appointed in 2005 and MAS launched its Business Turnaround Plan in 2006. The turnaround plan contained a series of specific cost and revenue actions to curtail further losses due to low yields, inefficient networks and other factors such as poor pricing, rising cost structure, a mismatched fleet and weak operational performance, as well as significant social and political obligations (MAS 2006). Several new initiatives were implemented, including route rationalization, rescheduling all of its flight timing, diversifying its revenues and changing its mode of operations from point-to-point services to hub-and-spoke services.

As part of its domestic route rationalization, MAS initially relinquished 96 of its non-trunk routes to Air Asia, leaving it to operate 22 routes. It has subsequently reinstated some of the routes and now competes with Air Asia on 25 trunk routes (MAS 2007). International routes were also rationalized from 114 to 90. Since it is not a member of any of the global alliances, MAS has embarked on a plan to form a network that resembles an alliance, without joining an alliance. For example, Malaysia has code share arrangements with Northwest Alliance and KLM/Air France, which in turn are members of the Sky Team (Mahani et al. 2005). Based

on multiple code share agreements, MAS has a global network that comprised 16 domestic and 82 international destinations at the end of 2007. Of the international destinations, 24 are serviced together with other airline partners.

The company subsequently registered profits in 2007, ending a series of losses since 2005. In 2008, the improved profit performance of 2007 was being severely challenged by the huge jump in fuel costs, as in the case of other airlines.

### **Emergence of low-cost carriers: Air Asia and Firefly**

In 2001, the government approved the establishment of the first low-cost carrier based in Malaysia, namely Air Asia. The airline is not new, as a government-owned conglomerate established it in 1993, but it was heavily in debt when it was sold to Tony Fernandes' company Tune Air Sdn. Bhd for the token sum of 1 ringgit. Fernandes then proceeded to re-engineer the airline, turning in a profit in 2002.

Although it was initially established as a domestic carrier, it has since spread its wings to the international arena, with its first international inaugural flight to Bangkok (Table 2.6). With the rapid expansion of domestic and international routes, the number of passengers traveling by Air Asia has grown strongly, from 5.1 million in 2006 to 7.7 million in 2007 (Ministry of Transport 2007, unpublished data). It has received several awards since its establishment, notably Asia's Best Budget Airline under

*Table 2.6 Summary of the developments of Air Asia*

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2001	Air Asia sold to Tony Fernandes for the purpose of establishing a low-cost carrier based in Malaysia.
2003	Established a second hub at Senai Airport in Johor Baru, near Singapore. Established Thai Air Asia as a joint venture with Shin Corporation. Launched its first international flight to Bangkok.
2004	Acquired Awair, an Indonesian airline.
2005	Rebranded Awair as Indonesia Air Asia.
2006	As part of MAS route rationalization program, 96 non-trunk routes, in addition to 19 domestic trunk routes, were transferred to Air Asia.
2007	Long-haul services from Kuala Lumpur to Australia and People's Republic of China using Airbus A330 offered by Air Asia X.
2008	Vina Air Asia, to operate out of Hanoi, Viet Nam.

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the Best in Travel Poll 2007 by SmartTravel Asia.com, and the Best Low Cost Airline in Asia in 2007 by SkyTrax.<sup>8</sup>

Firefly, a wholly owned subsidiary of MAS, was established in 2007 as a community airline<sup>9</sup> to compete with Air Asia and to develop additional business streams to increase profit. With hubs in Penang and Subang, this airline flies to a few destinations in Malaysia, Indonesia and Thailand. The carrier is targeted to complement MAS by flying to destinations that are not financially viable for MAS so that both operations can match the needs of full service passengers and budget travelers.

### **Increasing competition between MAS and Air Asia**

As in the case of other countries, the introduction of second-tier airlines such as SilkAir, Eva Airways, Japan Asia Airways, All Nippon Airways, Asiana, Sempati and DragonAir has injected competition for established national carriers, some of which have long operated as a monopoly in their home countries (Chin 1997). Although Air Asia started out as an LCC in the domestic sector, it has since ventured beyond Malaysian shores and started to include long-haul services from 2007 onwards. Since then, competition has heightened between the full service carrier (FSC) and the low cost carrier (LCC). First, in February 2008, the virtual monopoly of MAS and SIA on the Kuala Lumpur–Singapore route was ended with entry of three budget carriers on this route. This lucrative route was served by 180 flights a week by MAS and SIA and 14 flights by Japan Airlines under Fifth Freedom rights prior to 2008. Air Asia from Malaysia, and Tiger Airways<sup>10</sup> and Jetstar Asia from Singapore have been allowed limited flights on this route. MAS and Singapore Airlines (SIA) terminated the 30-year-old Shuttle Agreement<sup>11</sup> (which let MAS and SIA fix fares) in June 2008 (NST Biz News Saturday 17 May 2008). This route was underserved prior to its liberalization, considering the strong bilateral economic ties between Malaysia and Singapore and as compared to the 375 weekly Singapore–Jakarta flights as well as 307 bilateral weekly flights between Singapore and Bangkok. The opening is viewed as a significant development in the history of ASEAN airline industry and an important first step toward the liberalization of air services in the ASEAN region.

In May the same year, MAS became the first FSC to offer ‘free seats’ or seats that charge only surcharges such as fuel, insurance, airport tax and administration fee for all domestic destinations. MAS subsequently extended this offer to all destinations within ASEAN countries, with the exception of Yangon. Its subsidiary is also offering zero fares for all its routes. Since the zero fare strategy is usually a model used only by LCCs, the new strategy of MAS to sell its unsold seats in the domestic and ASEAN routes has triggered a new fare scheme from Air Asia to better the offer of MAS.

### **2.3.4 Specific Policies**

In the case of Malaysia, besides investing in infrastructure and controlling airline competition, the government also implemented some specific policies to promote KLIA as a regional hub. For example, the KLIA Hubbing Development Committee was set up in December 2000 (Malaysia 2001). This committee is made up of one representative from MAHB, two representatives from the Ministry of Transport, and one representative from the Ministry of Finance. The committee meets once a year to examine three areas for the development of KLIA: traffic facilities, connectivity through MAS service and marketing (WTTC 2001). It also sets performance and services standards for KLIA based on world best practices. The KLIA Hubbing Unit was subsequently set up within the Aviation Department in the Ministry of Transport to liaise between the committee and MAHB in the implementation of the plans proposed by the committee. This unit oversees the utilization of the Trust Fund that was set up to attract airlines to KLIA. A budget of US\$131 579 over a three-year period was provided for promotional activities and incentives for new airlines introducing passenger or freighter services (Ahmad Husni 2004).

A Free Commercial Zone was also set up to facilitate the handling of cargo at KLIA. The FCZ uses the paperless environment concept with value-added activities such as trading, break bulking, grading, sorting, repacking and relabeling. A one-stop center is also provided to expedite the process of cargo clearance with additional support services such as multi-banking services, clinics, food and beverage, and also postal services.

Government-to-government promotional activities are also conducted through air talks with other countries. Joint-promotional activities with MAHB and the Ministry of Tourism are also used to market KLIA. Malaysia has not revised its airport tariffs since 1969 and KLIA has one of the lowest tariffs in the world.

### **2.3.5 Promoting Tourism**

Since tourism bears a close relationship with the development of the aviation sector, various incentives are given to encourage the development of the tourism sector in Malaysia. For example, the Promotion of Investment Act of 1986 promotes the establishment and development of industrial, agricultural and other commercial enterprises in Malaysia through tax incentives. For the tourism sector, these incentives are available to hotel accommodation projects and other tourist projects. They include pioneer status, investment tax allowances, industrial building allowances, duty exemptions, income tax exemptions and reductions in



service tax. For example, companies building luxury ships are eligible to apply for pioneer status. In addition, sector specific incentives were also granted (see Appendix for the list). It was reported that during the period 1996–2005, 360 hotel projects were granted tax incentives, as were 30 tourist projects, and 180 budget hotels were also given tax incentives to encourage domestic tourism (Malaysia 2006b).

Numerous tourism products were introduced over the years, such as eco-tourism, agro-tourism, home-stay programmes, cultural and heritage tourism, thematic events, meetings, incentives, conventions and exhibitions, sports and recreation tourism, education and health tourism. Malaysia My Second Home was also introduced to encourage foreigners, their spouses and their dependents to select Malaysia as their second home.

Following the relative success of the Visit Thailand Year in 1987, Malaysia also launched its own Visit Malaysia Year (VMY) campaigns. In 2007, Malaysia launched its third VMY campaign, after two previous campaigns in 1990 and 1994. The current VMY campaign has set as a target more than 20 million visitors and more than RM44 million in revenue. In January 2008, it was reported 20.9 million foreign visitors visited Malaysia in 2007 and the tourism industry generated RM46.1 billion in revenue in the same year (Ministry of Tourism n.d.).

The number of tourist arrivals more than doubled from 7.5 million in 1995 to 16.4 million in 2005 (Table 2.7). Total tourists receipts have grown from RM9.2 billion to RM31.0 billion over the same period. By 2020, tourist arrivals are expected to reach 24 million while tourist receipts are expected to reach RM59.4 billion (Malaysia 2006b). Employment in this sector has grown from 67 214 in 1995 to 451 000 in 2005. ASEAN, the traditional source of tourist visitors for Malaysia, remained the largest region of origin with a share of 77 percent in 2005 while the share of Japanese tourists has declined from 4.4 percent in 1995 to 1.9 percent in 2005. On the other hand, tourists from the People's Republic of China and West Asia have increased in numbers. The importance of this sector as a source of foreign exchange earnings can be seen in the increase in the net contribution by tourism from RM11.2 billion in 2000 to RM18.1 billion in 2005 (Malaysia 2006a). Spillovers from this sector to other sectors such as hotels can be seen in the increase in the number of hotels and hotel rooms as well as the average occupancy rate over time.

Long-term strategies include: the revival of long-haul markets (such as North Asia, Europe, North America and Oceania); maintaining the current focus on fast-growing markets such as the People's Republic of China, India and West Asia; and capitalizing the Malaysia Truly Asia campaign (Tengku Adnan Tengku Mansor 2006). New growth areas such as emerging markets, niche products and promotion of special events such as

Table 2.7 Selected tourism indicators, 1995, 2000, 2005 and 2010

Indicator	1995	2000	2005	2010
Number of tourist arrivals (million)	7.5	10.2	16.4	24
By country of origin (%)				
ASEAN	73.5	70.4	76.8	65.0
People's Republic of China	1.4	4.2	3.8	6.1
Japan	4.4	4.5	1.9	2.2
Australia	1.8	2.3	1.5	2.7
United Kingdom	2.2	2.3	1.5	2.8
Taipei, China	3.9	2.1	1.3	2.7
India	0.4	1.3	1.2	1.8
West Asia*	n.a.	0.5	1.0	2.7
Hong Kong, China**	2.0	n.a.	n.a.	n.a.
US**	1.3	n.a.	n.a.	n.a.
Others	9.1	12.4	11.0	14.0
Total tourist receipts <sup>1</sup> (RM billion)	9.2	17.3	31.0	59.4
Per capita expenditure* (RM)	n.a.	1 696	1 890	2 417
Average length of stay (nights)	4.8	5.8	7.2	8.7
Number of hotels	1 220	1 492	2 256	3 218
Number of hotel rooms	76 373	124 413	170 873	247 008
Average hotel occupancy rate (%)	65.5	59.2	63.5	66.4
Employment	67 214	390 600	451 000	520 700

Notes:

\* Not available in Eighth Malaysia Plan 2001–2005.

\*\* Not available in Ninth Malaysia Plan 2006–2010.

2010 are projected numbers.

1. Tourist receipts exclude excursionist receipts.

Sources: Malaysia (2001, 2006a).

F1 Grand Prix will also be promoted. The Ministry of Tourism is also keen to see that the economic and social benefits from international tourism are dispersed beyond the major cities and tourist regions in the country.

## 2.4 IMPLICATIONS FOR AIRPORT DEVELOPMENT IN MALAYSIA

### 2.4.1 Current Performance of KLIA

According to the Ministry of Transport, as of 2008, there were 50 foreign airlines and three full-freighters (UPS, Fedex and Cargolux) operating at

*Table 2.8 KLIA: number of passengers ('000)*

	Total passengers	Transit passengers	Transit passengers as % of total
2000	14 733	380	2.6
2001	14 539	333	2.3
2002	16 398	461	2.8
2003	17 455	519	3.0
2004	21 059	535	2.5
2005	23 214	487	2.1
2006	19 459	441	2.3
2007	18 753	356	1.9

*Source:* Ministry of Transport.

KLIA. Passenger traffic (excluding transit passengers) has grown almost fourfold since its inception in 1998 (6.4 million ppa) to 23.7 million ppa in 2006 (Ministry of Transport 2008b). Cargo handled increased (excluding cargo in transit) slightly more than fourfold from 159 741 tons in 1998 to 672 888 tons in 2006.

KLIA won the Airport Service Quality (ACI-ASQ) Award for the World's Best Airport in the 15–25 million ppa category for three consecutive years from 2005 to 2007. It was also voted the Best Airport Worldwide and Best Airport in the Asia Pacific region in the same award. Its Low-Cost Carrier Terminal-KLIA (LCCT-KLIA) was named by the Center for Asia Pacific Aviation (CAPA) as the Low Cost Airport of the Year in 2006.

Despite the improvement in the performance of KLIA as an international airport, it is by no means a regional hub. Table 2.8 shows transit passengers constitute a mere 2–3 percent of the total passengers utilizing the airport, while no transit cargo is handled at KLIA. The transit cargo in Malaysia utilizes mainly the international airports at Penang and Kuching.

Nonetheless, since KLIA is increasingly becoming more competitive, the attainment of a hub status will enable the country to capture gains from airport services as well as improve the returns to its investment in the airport. It is also possible that this is part of the risk management strategy of the country in order to reduce its reliance on others. However, in this endeavor the government faces severe challenges from its neighboring countries as shown in the section below.

#### **2.4.2 ASEAN Competitors**

The comparison here will be analyzed for Malaysia, Singapore and Thailand, as they are signatories to the ASEAN Multilateral Agreement on Air Services and, at the same time, they also have relatively well-established international airports at their capitals as well as relatively competitive national and low-cost carriers.

##### **Airports**

Government investment in infrastructure to boost the competitiveness of their airports is a strategy that is also used by the other major airports in ASEAN. Within ASEAN, the dominant airports have for a long time been Bangkok and Singapore as these two airports are strategically located geographically to capture the European and Northeast Asian traffic and inter-regional connections. Both Singapore and Thailand have also invested heavily in the infrastructure of their respective international airports to enhance their respective competitiveness as hubs in Southeast Asia.

Singapore, for example, completed a S\$240 million upgrade of its Terminal 2 just before Thailand opened its new international airport in 2006. Subsequently, Singapore opened its S\$1.75 billion Terminal 3 in January 2008, increasing its capacity to 64 million. It was reported in March 2008 that the city-state was already planning for a Terminal 4 (CNA 6 March 2008). This is in line with its strategy to use capacity expansion as a purposeful investment signaling strategy in order to capture new demand and to tilt the market share in the southeast region toward Changi Airport (Phang 2003; KPMG 2007). Its Budget Terminal, opened in March 2006 with a capacity of 2.7 million passengers, was expanded at a cost of S\$16 million in 2009. Changi also caters to the other end of the spectrum as 'commercially important people' are provided five-star services in JetQuay, a facility adjacent to the main terminals with dedicated customs, immigration, personal concierge and limousine transport to the aircraft (KPMG 2007). It further has nine cargo terminals with a total capacity of 3 million tons per year. Two express freight centers cater to the express cargo sector, with DHL using Singapore as its regional hub.

Thailand has also recently opened its new international airport, the Suvarnabhumi International Airport, in 2006, at a cost of US\$3 billion and with a capacity of 45 million passengers a year. A budget terminal is also planned and it is expected that this will increase the capacity of Suvarnabhumi by another 17 million, with a final target of 100 million. Airfreight facilities at the Suvarnabhumi airport are designed to handle up to 3 million tons of cargo per year. Thailand's airport sector has benefited

from the large tourism sector in the country with foreign tourists accounting for over 80 percent of visitors to Thailand (KPMG 2007).

Changi, Suvarnabhumi and KLIA are all departing from the traditional model of airport development whereby the main revenue is derived from airlines through charges for landing and parking. Instead, all three airports have increasingly tapped into non-aeronautical businesses such as retail outlets, restaurants, entertainment, and so on that can also cater to non-traveling visitors. Non-aeronautical revenues accounted for 60 percent, 35 percent, and 19 percent, respectively, of the airport revenues of Changi, Suvarnabhumi and KLIA (KPMG 2007).

Changi has often been acknowledged as one of the best airports in the world in surveys conducted by international aviation organizations as well as academic studies. For example, Park (2003) used a five core-factor groups,<sup>12</sup> multi-decision criteria model to analyze the competitive strengths of seven Asian airports (Park 2003). He found Changi, together with the new Hong Kong International Airport and Seoul Incheon International Airport, to be more competitive while KLIA, Kansai and Narita were less competitive.

Despite Changi's long-standing competitiveness, KLIA is catching up. In 2007, the Airports Council International (ACI) Airport Service Quality Awards nominated KLIA as the best for the 15–25 million passengers category while Changi, which handled 35 million passengers in 2006, finished second after Incheon Airport in the Republic of Korea in the category of 25–40 million passengers.

For the overall prize – Best Airport Worldwide – Incheon finished first, Hong Kong's Chek Lap Kok second, KLIA third, and Changi finished fourth. In another poll by *Smart Travel Asia*, an independent online travel magazine, Hong Kong International Airport, Singapore Changi and KLIA were the top three while Suvarnabhumi finished fourth.

### **Airlines**

As in the case of airports, the three main state-owned full-service carriers in Malaysia, Singapore and Thailand are competitive and have been ranked among the top ten airlines in the world since 2005, based on Skytrax's survey of air travelers. Singapore Airlines (SIA) was named the World's Airline of the Year in 2007 and 2008. SIA has in fact won this award on three occasions between 1998 and 2008. It was named the best airline for Asia and Southeast Asia. Malaysia Airlines (MAS) was ranked sixth worldwide in 2007 and 2008, while Thai Airways, ranked second in 2007, fell to fourth position in 2008.

Low-cost carriers (LCCs) have also proliferated in ASEAN since the financial crisis in 1997–98. Air Asia's arrival in 2001 led the way and since

then several regional rivals have emerged, including Tiger Airways and Jetstar Asia from Singapore; One Two Go and Nok Air from Thailand; and AirAsia and Lion Air from Indonesia. Competition is stiff, as in the case of full-service carriers. Despite AirAsia's first-mover advantage, its position as the leading LCC in Southeast Asia was taken over by Jetstar Asia in 2008, based on Skytrax's survey. Tiger Airways was ranked third in 2008, immediately behind AirAsia.

## **2.5 POSSIBLE OUTCOMES FOR KLIA WITH THE PROPOSED COMMITMENTS FOR ASEAN OPEN SKY**

The likely impact on KLIA will be different at different milestones in the proposed commitments. Prior to 2010, it is expected that KLIA will benefit from the anticipated increase in air traffic with the implementation of the agreement, since only capital cities are involved. But when all international airports in Malaysia are opened up in 2010, there is a possibility that air traffic may by-pass KLIA to pick up passengers and cargo at the other international airports in the country to feed hubs in both Singapore and Bangkok. However, since KLIA is the largest and has the most facilities compared with the other international airports in Malaysia, it is unlikely that traffic diversion will be substantial.

A more likely outcome is the use of KLIA to feed the hubs in both Singapore and Bangkok, with Singapore being the greater threat due to its proximity and status as a hub airport and the highly competitive logistics industry available there. This will have an adverse impact on KLIA's aspirations to be a hub airport for both passengers and cargo. Consequently, five crucial measures are recommended below to prevent this from happening and to facilitate KLIA to achieve its hub status.

### **2.5.1 Joining a Strategic Global Alliance for MAS**

Ohashi et al. (2005) found that connection time is the most important factor in choosing air cargo transshipment location and routing while landing fee is the second most important factor. They also found some marginal evidence that freight forwarders may try to avoid large and congested airports. Their study therefore suggests that the choice of an air cargo transshipment hub is more sensitive to time cost than monetary cost. Given the importance of connection time, improving the networks of airlines based at KLIA play a crucial role in enabling KLIA to be a hub.

In 2006, MAS was reported to have an intention to join Sky Team as

Table 2.9 Global alliance group market shares, 2000 and 2007 (%)

Alliance	Revenue passenger kilometers		Global passenger shares		Operating revenue shares	
	2000	2007	2000	2007	2000	2007
Star Alliance	21.3	26.1	18.8	25.1	20.9	27.2
Oneworld	16.4	20.7	12.8	17.9	15.0	20.0
Air France/ Delta, Wings and Qualifyer Skyteam	19.5	n.a.	17.6	n.a.	17.6	n.a.
Others	Just formed	22.3	Just formed	20.8	Just formed	20.2
	42.8	30.9	50.8	36.2	46.5	32.6

Sources: Oum (2001) and Star Alliance (2007).

part of its plans to rationalize its international destinations under the hub concept (Centre for Asia Pacific Aviation 2006). Subsequently, MAS launched its own MAS Overall Strategic Alliance Integration Concept (Project MOSAIC) together with its Business Turnaround Plan for the period 2006–12. This is essentially a code share alliance with other airlines so as to expand MAS's network. Nevertheless, the airline industry is dominated by global alliances that have been formed since the early part of the 1990s. As they are global in scope, these alliances are the most significant in terms of network expansion. Although it is possible to establish various partnerships with individual airlines across different global alliance groups, the number and extent of 'side alliance deals' will decrease over time as the global reach of each alliance network improves (Oum 2001).

In 2000, Oum reported that five alliance groups accounted for 57 percent of the world's total revenue passengers kilometers (RPK), a widely used measure of airline industry output (Table 2.9). Other indicators such as global passenger shares and operating revenue shares also show the substantial shares accruing to global alliance groups. This concentration of RPK, global passengers and operating revenues in the hands of global alliance groups has grown over time when the 2000 data is compared with the 2007 data. By 2007, the share of RPK in the hands of the top three alliance groups (Star Alliance, Oneworld and Skyteam) amounted to 59.1 percent, while the share of global passengers and operating revenue controlled by them were 63.8 percent and 67.4 percent, respectively. This shows clearly that the market is getting more and more concentrated. Within ASEAN, both Thai Airlines and Singapore Airlines are members of the leading alliance group, the Star Alliance.

Global alliances can also contribute to productivity enhancement, competitive pricing and profitability of partners as alliance partners generally increase traffic routing via their intercontinental alliance gateway airports after the strategic alliances are formed (Oum 2001). Bowen (2000) also showed that an airline that is more successful in forming alliances will draw more traffic feed from around the world to its primary hub. Given the trend shown in Table 2.8 and the generally positive impact of alliances on the performance of the airlines, it is imperative for MAS to join a global alliance to improve its market feed.

### **2.5.2 Accelerating the Construction of the New LCCT Terminal at KLIA**

Air Asia is well placed to gain from the liberalization, as it is the biggest LCC in Southeast Asia, measured by fleet size. It has already established a strong ASEAN presence with bases in Thailand and Indonesia as well as one planned for Viet Nam. Since Thai Air Asia and Indonesia Air Asia are designated to be the airlines of Thailand and Indonesia, Air Asia is in a vantage position to gain from open skies in ASEAN. Moreover, it is pressing ahead with an ambitious expansion program with the introduction of new destinations that include Hong Kong and southern India by the end of 2009.

Despite this advantage, Air Asia is facing congestion in its current LCCT and the planned new LCCT needs to be accelerated to avoid retarding the airline from taking advantage of the open sky opportunities. Air Asia's Chief Executive Officer (CEO) has in fact listed infrastructure support as the biggest challenge for managing the aviation industry in 2008, rather than the high oil price or the possibility of overcapacity with the proliferation of LCCs.

### **2.5.3 Reviewing the Policy to Establish a Regional Cargo Hub at Senai**

While it has been reported that that as much as 25–30 percent of airfreight throughput is channeled through Singapore (Malaysia 2006b), this does not imply that it is necessary to set up a separate air freight airport at Senai to stop the leakage. First, it is not necessarily the distance to KLIA that is the cause of the leakage. Intel, which is producing in the north of Malaysia, reported that some of its chips are exported through Singapore due to the flexibility of flight connectivity (Tham et al. 2007).

Second, the electronics hubs in Malaysia are in Penang in the north and the Klang Valley in the central part of Malaysia, and not in the southern state of Johor where Senai is located. Given the importance of time in the delivery cycle of these goods, electrical and electronics (E&E) goods are exported mainly through the Penang airport and KLIA.



Third, there is unutilized capacity as well as room to expand the capacity at KLIA. In 2007, the number of passengers per annum at the main terminal was 19 million while the LCCT contributed another 7.7 million (Ministry of Transport (MOT) interview 23 May 2008). Since the capacity of the main terminal is 25 million ppa, there is still excess capacity at the main terminal. Similarly, there is excess capacity in cargo as KLIA handled a total of 672 888 tons of cargo in 2006, which is well below its capacity of 1.2 million tons a year.

Fourth, although the air transport industry serves two heterogeneous markets, namely freighters and passengers, it uses the same technology for both. Moreover, most airlines carry both passengers and cargo. It is therefore better to focus on the development of KLIA as the regional hub for both passengers and cargo, as airlines serve these two types of customers. Dedicated air freighter airlines can also utilize the facilities that have been developed to serve both passengers and cargo transactions.

Lastly, maintaining Senai as a good secondary airport due to its proximity to Singapore may be a better strategy than changing its status, as this would complement Changi's development.

#### **2.5.4 Developing a Distinctive Product Appeal for Tourism**

Within ASEAN, Thailand is the acknowledged leader for long-haul tourists from Europe and North America. Both Singapore and Thailand have been able to tap into the tourist market through different strategies. Thailand, for example, offers diverse tourist attractions while Singapore, despite lacking many natural tourism products, has managed to sell itself as the gateway to nearby tourist destinations of the region as well as through its theme parks (Bowen 2000).

Malaysia has not been able to tap extensively into the long-haul visitors market from outside ASEAN, despite sharing many similar tourism features with Thailand such as sun and surf tourism, eco-tourism, heritage tourism, and medical, health and well-being tourism. The industry is still very much in its infancy since its contribution to GDP growth is only approximately 7.2 percent, implying that there is much scope for further growth. For example, although Malaysia was ranked below Singapore but above Thailand in the Travel and Tourism Competitiveness index for 2008,<sup>13</sup> 74.5 percent of its tourist arrivals in 2007 are from ASEAN countries, with Singapore contributing as much as 67 percent of the ASEAN arrivals (Ministry of Tourism n.d.). As noted by the World Travel and Tourism Council (2001), the main problem with Malaysia's tourism lies in its image and the development of a distinctive product appeal that will enable it to distinguish itself from its competitors within Southeast Asia.

Even its current tag line, 'Malaysia – Truly Asia' differentiates itself too little from its competitors in the region, namely Singapore's 'New Asia' and Indonesia's 'Endless Beauty of Diversity'.

### **2.5.5 Realizing the ASEAN Community**

As noted by Chin (1997), unlike London–Paris–Amsterdam, which are gateways to a large hinterland and great concentration of population and activities, Southeast Asia is both fragmented and insular. At the same time, the rapid development of major international airports such as Suvarnabhumi, Changi and KLIA within relatively short distances, through heavy investment in infrastructure, has raised concerns as to whether supply will outstrip demand, leading to underutilization of some of these airports.

While the liberalization of the transport sector will undoubtedly help to facilitate the movement of goods and services within ASEAN, an increase in demand will be greatly assisted by the early realization of the ASEAN Community. This includes not just the initiatives taken to liberalize the transportation sector, including air transport, but also the whole gamut of policies and initiatives that have been postulated for the realization of the ASEAN Community. Although ASEAN has made great efforts to liberalize trade under the ASEAN Free Trade Agreement (AFTA), as witnessed by the reduction in tariffs among member countries, progress on liberalization of the services sector is still slow. Despite five rounds of negotiations to liberalize the services sector since 1995, substantial barriers continue to limit the regional integration of this sector within ASEAN. Clearly, greater political will is needed for the realization of the ASEAN community. At the same time, the arrival of an ASEAN community will allow the region to tap into its extra-regional ties, leading to the possibility of the East Asian community, with ASEAN as the driver.

## **2.6 CONCLUSION**

ASEAN countries have adopted a policy of moving toward open skies in recognition of the important role played by transportation and in particular the aviation sector in linking these mostly export-oriented economies with the global economy. Given the region's history of planned development and cautious approach toward liberalization, it is not surprising that this liberalization is staged over several years, with 2015 as the deadline for the attainment of open skies in ASEAN.

Is Malaysia poised to gain from open skies in ASEAN? The review

of infrastructure development in this chapter shows that Malaysia has invested substantially in overall infrastructure development, including airports, in its pursuit of economic development. This overall focus on total infrastructure development places Malaysia well ahead of most of its regional neighbors on the competitive ladder, with the exception of Singapore. While investment in infrastructure also aids in the development of KLIA as a regional hub, other member countries within ASEAN, notably Singapore and Thailand, have also followed a similar investment-intensive strategy to develop their international airports, namely Changi and Suvarnabhumi, as regional hubs.

However, privatization of MAS has not yielded the textbook benefits of greater efficiency and competitiveness. Instead the huge losses sustained during its foray into privatized hands have caused the government to resort toward renationalization and a renewed effort to improve the competitiveness of the national carrier. The opening of an LCC in the country has forced MAS to be more competitive. Similarly, the liberalization of the lucrative Kuala Lumpur–Singapore route will also continue to increase the competitive pressures on MAS. Although the new management has managed to turn MAS operations back to profitability, it has still a long way to go in terms of competing against other national carriers such as Singapore Airlines and Thai Airways, as these two airlines have formed an alliance with the leading global airlines alliance group in the world.

Nevertheless, the dream of turning KLIA into a regional hub is not unfeasible despite the existence of two formidable hubs within ASEAN, as KLIA is improving in its performance. There are also examples of multi-hubs in other regions, such as the Tokyo, Seoul and Hong Kong hubs in Northeast Asia. In order to realize this dream, several measures are recommended.

First, it is imperative for the national carrier, MAS, to join a strategic global alliance group to improve its traffic feed. Second, the construction of a new LCCT at KLIA needs to be accelerated as Air Asia is in a vantage position to gain from the increased opportunities provided by the ASEAN open skies agreement. It will also require the government to review its strategy to build a regional cargo hub at Senai. Instead, it should refocus on the development of KLIA as a regional hub for both passenger and cargo traffic. However, although infrastructure investment is important, it is not sufficient to guarantee the realization of KLIA as a regional hub. Concurrently, the promotion of tourism in the country, especially to non-ASEAN countries, has to focus on a distinctive product appeal that will enable it to differentiate its tourism products from those of regional competitors.

Ultimately, it is not just the liberalization of the aviation sector alone

that is needed for the development of KLIA as a regional hub. Instead the jockeying for regional hub status from KLIA against established hubs in Singapore and Bangkok and the increase in supply in each of these airports implies a greater need than ever for an integrated ASEAN market, and this can only come about with the realization of the ASEAN community. Malaysia's dependence on the external economy and its relatively small domestic economy (26 million in 2006) as compared to some of its ASEAN neighbors such as Indonesia and Thailand makes it even more dependent on the region for scale economies than others. Consequently for Malaysia, it is the realization of the ASEAN Community that is of primary importance for its economic growth and for the attainment of its goal to be a regional hub for passenger and cargo traffic.

## NOTES

1. The Third Freedom of the Air or Third Freedom Right is the right or privilege, in respect to scheduled international air services, granted by one state to another state to put down, in the territory of the first state, traffic coming from the home state of the carrier. The Fourth Freedom Right is the right to take on, in the territory of the first state, traffic destined for the home state of the carrier.
2. This means that not all ASEAN countries will be party to the agreement. X represents the member country that is not party to the agreement.
3. Fifth Freedom Right refers to the right or privilege, in respect of scheduled international air services, granted by one state to another state to put down and to take on, in the territory of the first state, traffic coming from or destined to a third state.
4. India and the People's Republic of China, as ASEAN Dialogue partners, have been invited to join in the open skies agreement of ASEAN by 2010.
5. This refers to the latest of the five-year plans in the country that are used to guide the medium-term development of Malaysia (that is, the Ninth Malaysia Plan).
6. STOLports are 'short take-off and landing' airports, which serve communities in less accessible areas.
7. Malaysia is a federation of 13 states and three federal territories.
8. Skytrax is a United Kingdom-based consultancy that carries out international traveler surveys to determine the best airlines and other air travel-related matters.
9. Community airlines differentiate themselves from LCCS as they operate routes that are not served by LCCS or full-service airlines and they utilize turboprops instead of jets. Although Firefly also flies to Penang, the airline uses Subang instead of KLIA while the LCCT is located at KLIA.
10. Tiger Airways, established in 2003, is jointly owned by SIA (49 percent), Indigo Partners LLC (24 percent), Irelandia Investments Ltd (16 percent) and Temasek Holdings (11 percent), while Jetstar Asia, established in 2004, is a joint venture company by Australian airline company, Qantas which holds a 49 percent equity, Temasek Holdings (19 percent) and a group of Singaporean businessmen (32 percent) (Bernama 30 January 2008, Singapore).
11. Under the Shuttle Agreement, the carriers agree on a common fare to charge customers who turn up at the airport on standby for the next flight.
12. The five factors are spatial, facility, demand, service and managerial factors.
13. Singapore, Malaysia and Thailand were ranked 16, 32 and 42, respectively, out of a total of 130 countries worldwide. See Blanke and Chiesa (2008).

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## **APPENDIX: SPECIFIC INCENTIVES AND FUNDS FOR THE TOURISM SECTOR IN MALAYSIA**

1. Tour operators who bring in at least 500 foreign tourists in the assessed year through group inclusive tours certified by the Ministry of Tourism are also exempted from tax on income earned from the business of operating tours. The tour operators need to be licensed under the Tourism Industry Act 1992.
2. Double deduction for expenditure incurred by hotels and tour operators for overseas promotion is another incentive provided for this industry.
3. Double tax deduction is also allowed for expenses incurred in training of hotel staff and tour operators to upgrade their skills levels, as approved by the Tourism Ministry.
4. Organizers of international trade exhibitions and conferences in Malaysia are also eligible for tax exemption on income earned from organizing international exhibitions that are approved by MATRADE, and the organizers of the international exhibition have to bring in at least 500 foreign trade visitors per event.
5. Apart from preferred tourist goods that are exempted from import duties, import duty exemptions are also granted to branded ready-made clothes and leather goods with an import value of not less than RM200 per unit.
6. Service tax exemption is granted to two-star hotels and those of a lower category that have at least 20 rooms, except for hotels in Penang, Johor Baru and Kuala Lumpur which should have at least 50 rooms.
7. Two special funds, namely the Special Fund for Tourism and the Special Fund for Infrastructure, were launched in 2002 in order to stimulate private investment, and the upgrading of tourism products.



### 3. Transforming trade competition into coordination with the People's Republic of China

**Li Shantong and Wang Huijiong**

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#### 3.1 INTRODUCTION

The economy and external trade of the People's Republic of China (PRC) has experienced extremely rapid growth since the country began measures to reform and open itself to the outside world. The average annual growth rates of gross domestic product (GDP) and external trade were 9.8 percent and 17.4 percent, respectively, in 1978 and 2007.<sup>1</sup> The growth rates of exports and imports in this period were 18.1 percent and 16.7 percent, respectively. The total amount of foreign capital actually utilized from 1979 to 2005 was US\$745.3 billion, of which about 20 percent was foreign loans. The value of foreign direct investment (FDI) was approximately 75.4 percent, with the remaining 4.6 percent being comprised of other types of foreign investments. Mainland PRC and Hong Kong, China retained their positions as the largest FDI recipients in South, East and Southeast Asia in 2006. The structures of production and trade are also affected greatly by FDI. It is also necessary to point out the fact that the PRC is now becoming a source of FDI outflows from the region. It is pointed out in the *World Investment Report 2007* (United Nations Conference on Trade and Development, UNCTAD 2007b) that FDI outflows from the region as a whole rose by 60 percent to US\$103 billion. Outflows from Hong Kong, China, the largest source of FDI in the region, reached US\$43 billion in 2006, while the PRC consolidated its position as a major investor, and India proved it is rapidly catching up. In an increasingly globalized world with increasing integration of economic activity, trade and investment play a very important role in the growth of the national economy and the prosperity of global society. The major actors in this globalizing process are transnational corporations (TNCs), but national governments and international organizations should also play their proper roles. Although the World Trade Organization (WTO) was formally established in 1995 and has contributed greatly

to fair trade in the world, there has also been a proliferation of regional trade agreements (RTAs) since the 1990s. Another phenomenon has been the growth of South–South (S–S) trade and intraregional trade in many regions. Several studies on these trends have been done by international organizations such as UNCTAD, which has also recently conducted a collaborative study on this topic with the Japan External Trade Organization (UNCTAD 2008). These studies, and the data they have generated, provide a detailed, in-depth analysis of South–South trade in Asia and support the rationality of transforming trade competition into coordination. They also make it clear that promoting effective competition to achieve a more efficient allocation of resources is necessary for a properly functioning market. It should be pointed out that the theme of this chapter, an exploration of ‘competition’ and ‘coordination’, may necessitate reference to theories that are outside the scope of this study. Facts and data will be presented and conclusions drawn from studies by international organizations will be quoted to assist this chapter’s analysis of rationale for trade cooperation, rather than competition, with the PRC. Although the share of trade represented by services is increasing, only merchandise trade will be discussed here in order to limit the scope of this chapter.

## 3.2 THE PEOPLE’S REPUBLIC OF CHINA IN THE WORLD ECONOMY

### 3.2.1 General

The People’s Republic of China emerged as the fourth-largest economy in the world in 2007 after nearly six decades of industrialization since its establishment in 1949, and following three decades of reform and opening to the outside world since 1978. It can be said that the emergence of the PRC did not achieve global recognition until the 1990s. Exports of goods and non-factor services made up only 18 percent<sup>2</sup> of its GDP in 1990, while those of its Asian neighbors, such as Indonesia, the Philippines, Thailand and Malaysia, accounted for 26 percent, 28 percent, 30 percent and 79 percent, respectively. The growth experiences of the above four countries and four other economies: Singapore; Hong Kong, China; Republic of Korea; and Taipei, China, were studied in the well-known publication *The East Asian Miracle* by the World Bank (1993). The growth potential of the PRC and India was recognized in the 1997 Asian Development Bank study *Emerging Asia*, and the more recent study ‘Dreaming with BRICs: The Path to 2050’ by Goldman Sachs in 2003. World trade growth declined from 8.5 percent in 2006 to 5.5 percent in 2007. But the most

populous developing countries continued to report outstandingly high economic growth and good performance in external trade. The growth rates of exports in the PRC and India in 2007 were 19.5 percent and 10.5 percent, respectively, while the growth rates of imports were 13.5 percent and 13 percent, respectively. The high growth rates of these and other emerging economies partially offset the sharp economic and trade deceleration in key industrialized countries.

Although there is a large volume of international trade, world merchandise trade is characterized by intraregional flows due to distance and high transport costs. It was reported by the WTO that intraregional trade flows in North America, Europe and Asia represent 53 percent of world merchandise trade and almost two-thirds of the merchandise trade of these three regions (WTO 2007b). The experiences of members of the North American Free Trade Agreement (NAFTA), European Union (EU) and other RTAs provide some positive vision of regional cooperation. Given the size, population, and growth performance and potential of the PRC, 'transforming trade competition into coordination with the PRC' may be a rational strategy in the process of globalization and regionalization, especially for countries in the Asian region. In order to explore better the theme of this chapter, a brief overview of the PRC's economic status as of 2007 follows.

### **3.2.2 Growth Performance of the PRC's Economy and Industry**

#### **The PRC's economy in 2007**

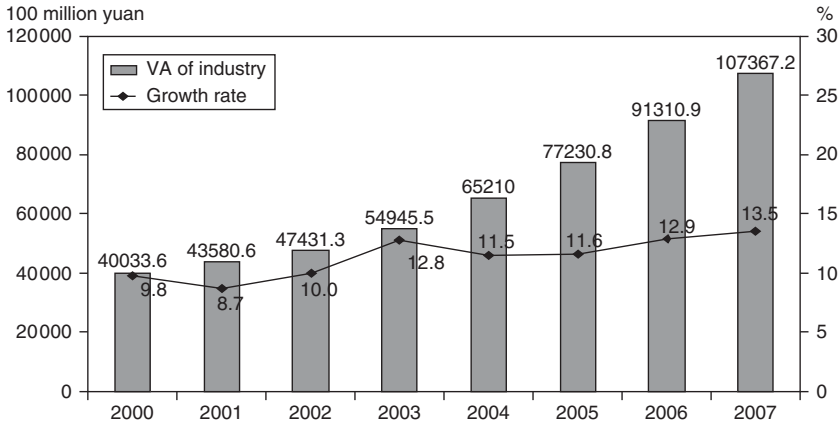
The GDP of the PRC in 2007 reached CNY24661.9 billion (approximately US\$3.3762 trillion based on the official exchange rate at the end of 2007 of US\$1 = CNY7.3046). The shares of GDP represented by primary, secondary and tertiary sectors were 11.7 percent, 49.2 percent and 39.1 percent, respectively, in the same year. The PRC's tertiary sector has a relatively low share of GDP compared to the average figure of low-income or middle-income economies.

#### **The PRC's industrial sector**

Industrial production comprises a large share of the PRC's GDP: 43.5 percent<sup>3</sup> in 2007. The value added of industry and its growth rate from 2000 to 2007 are shown in Figure 3.1.

#### **Features of the PRC's industrial sector**

During the half-century of industrialization since its establishment in 1949, and the three decades of reform and opening to the outside world, begun in the late 1970s, the PRC has created a complete system of industrial production (Appendix Table 3A.1), from a traditional textile industry, to



Source: National Bureau of Statistics of China (2008a).

Figure 3.1 Growth performance of PRC's industry, 2000–2007

a capital- and energy-intensive metallurgical sector, to relatively modern household electric appliance and information and communication technology (ICT) sectors. Some of the products of these sector ranked among the top of global production in 2006. Table 3.1 shows selected industrial products to illustrate. The high percentage of energy- and resource-intensive products such as steel, aluminum, cement and chemical fertilizer imposes serious environmental challenges on further growth in the PRC's economy. The PRC also produces a large amount of relatively modern household electric appliances, and technology for the ICT sector. As seen in Table 3.1, the PRC produced a large volume of TVs, but the growth rate for this product is fairly low because the market is already saturated. Conversely, the large-volume production of mobile phones and micro personal computers has resulted in a high growth rate.

### 3.2.3 Growth of International Merchandise Trade in 2007

#### Growth of the PRC's merchandise trade in 2003–07

The PRC's merchandise trade experienced a very high growth rate post mid-1990s. Figure 3.2 shows the growth pattern of the PRC's merchandise trade from 2000 to 2007.

#### The PRC's merchandise trade in 2007

The total value of the PRC's merchandise trade in 2007 was US\$2.1738 trillion, up 23.5 percent from 2006 (WTO 2007b). Of this amount, exports of

Table 3.1 Industrial output and growth rates of selected industrial products in 2007

Item	Unit	Amount	Growth rate compared to 2006 (%)	Rank (world production in 2006)
Cloth	100 million (mn) meters (m)	660	10.3	1
Color TV	10 <sup>4</sup> units	8433	0.7	1
Crude coal	100 mn tons (t)	25.36	6.9	1
Crude petroleum	100 mn t	1.87	1.1	6
Electricity generation	100 mn kilowatt-hours	32 777.2	14.4	2
Steel	10 <sup>4</sup> t	56 894.4	21.3	1
Aluminum	10 <sup>4</sup> t	1 228.4	32.6	n.a.
Cement	100 mn t	13.6	9.9	1
Chemical fertilizer	10 <sup>4</sup> t	5 786.9	8.3	1
Generating equipment	10 <sup>4</sup> kilowatts	12 991	11.1	n.a.
Automobile	10 <sup>4</sup> units	888.7	22.1	n.a.
Passenger car	10 <sup>4</sup> units	479.8	24.0	n.a.
Mobile phone	10 <sup>4</sup> units	54 857.9	14.3	n.a.
Micro personal computer	10 <sup>4</sup> units	12 073.4	29.3	n.a.

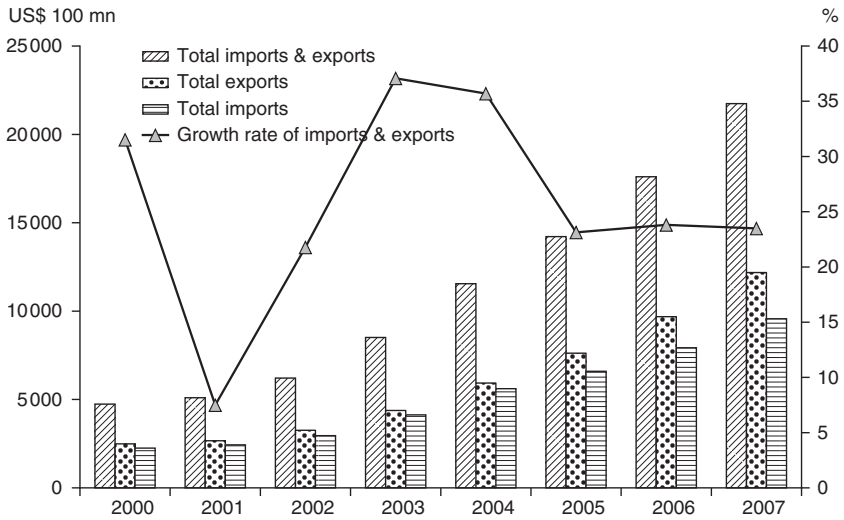
Sources: National Bureau of Statistics of China (2008a); China Statistics Press (2007).

goods made up US\$1.218 trillion, an increase of 25.7 percent; and imports of goods reached US\$0.9558 trillion, a growth of 20.8 percent. This represents a trade surplus of US\$0.2622 trillion in merchandise trade. The PRC was ranked the third-largest exporter in the world market in 2007. Merchandise trade and growth rates of various categories are shown in Table 3A.2 in the Appendix. It can be seen from Table 3A.2 that foreign-invested enterprises comprise a major share of merchandise trade in both imports and exports. Processing trade also represents a large share of exports of goods.

### Trade patterns

Table 3.2 presents the values and growth rate of the PRC's export trade to various destinations in 2007. This table shows that intraregional trade makes up the largest share of total trade.

It can be seen from Table 3.2 that while the EU has become the PRC's number one trade partner, with the total value of imports and exports reaching US\$356.2 billion in 2007, and the United States (US) at US\$302.1



Source: National Bureau of Statistics of China (2008a).

Figure 3.2 Growth of the PRC's imports and exports, 2000–2007

Table 3.2 Values and growth rates of the PRC's export trade to various destinations in 2007 (US\$100 million)

Country or region	Value of exported goods	Growth since 2006 (%)	Value of imported goods	Growth since 2006 (%)
EU	2452	29.2	1110	22.4
US	2327	14.4	694	17.2
Hong Kong, China	1844	18.8	128	18.9
Japan	1021	11.4	1340	15.8
ASEAN	942	32.1	1084	21.0
Republic of Korea	561	26.1	1038	15.6
Russia	285	79.9	197	12.1
India	240	64.7	146	42.4
Taipei, China	235	13.1	1010	16.0

Source: National Bureau of Statistics of China (2008a).

Table 3.3 Value of intra-regional trade with the PRC in 2006  
(US\$10 000)

Country/economy or region	Value of exported goods	Value of imported goods	Trade surplus
Asia total	45 572 692	52 536 718	-6 984 028
Japan	9 162 267	11 567 258	-2 404 991
Republic of Korea	4 452 221	8 972 414	-4 520 193
Hong Kong, China	15 530 907	1 077 976	14 452 931
Taipei, China	2 073 308	8 709 863	-6 636 555
India	1 458 130	1 027 745	430 385
Brunei Darussalam	9 963	21 531	-11 568
Myanmar	120 742	25 265	95 477
Cambodia	69 776	3 509	66 267
Indonesia	944 971	960 574	-15 603
Lao People's Democratic Republic	16 872	4 965	11 907
Philippines	573 813	1 767 456	-1 193 643
Singapore	2 318 529	1 767 262	551 267
Thailand	976 406	1 796 243	-819 837
Viet Nam	746 336	248 608	497 728
Malaysia	1 353 707	2 357 243	-1 003 536
ASEAN total	7 131 115	8 952 656	1 821 541

Source: China Statistics Press (2007).

billion ranks second, intraregional trade, representing US\$981.1 billion, far outweighs even the two combined. Trade between the Association of South East Asian Nations (ASEAN) and the PRC has also grown since the ASEAN–China Free Trade Area (ACFTA) came into effect in 2003.

Table 3.3 presents data pertaining to the PRC's 2006 trade with Japan; the Republic of Korea; Hong Kong, China; ASEAN member states; and India, which have a higher share of intraregional trade with the PRC. It can also be seen from Table 3.3 that the PRC has a trade deficit with Japan; the Republic of Korea; Taipei, China; and with most ASEAN member states (called newly industrializing countries – NICs – or second-tier NICs in international organization publications).

### 3.2.4 Foreign Direct Investment

FDI has contributed a great deal to the high growth rate of the PRC's economy and international trade since the country began its reform and opening up initiative. It can be seen from Table 3A.2 that foreign-invested

Table 3.4 Sectoral FDI inflow to the PRC in 2007

Sector	No. of enterprises (unit)	Growth rate compared to 2006 (%)	Money utilized (US\$100 mn)	Growth rate compared to 2006 (%)
Total	37 871	-8.7	747.7	13.6
Agriculture, Forestry, Husbandry, and Fishery	1 048	10.2	9.2	54.2
Mining	234	12.5	4.9	5.4
Manufacturing	19 193	-22.6	408.6	-4.6
Production and Supply of Electricity, Gas, and Water	352	-6.1	10.7	-16.6
Construction	308	-12.5	4.3	-36.9
Transport, Warehouse, and Postal Services	658	-1.1	20.1	1.1
Information Transmission, Computer Services, and Software	1 392	1.0	14.9	38.7
Wholesale and Retail Services	6 338	35.9	26.8	49.6
Hotel and Restaurant	938	-11.5	10.4	25.8
Financial Services	51	-1.9	2.6	-12.4
Real Estate	1 444	-39.8	170.9	107.3
Renting and Business Services	3 539	22.7	40.2	-5.2
Scientific Research, Technological Services, and Geological Surveys	1 716	65.8	9.2	81.8
Hydraulic, Environmental, and Management of Public Facility Services	154	16.7	2.7	39.8
Household and Other Services	270	14.4	7.2	43.0
Education	15	-44.4	0.3	10.4
Health Care, Social Security, and Social Welfare	13	-35.0	0.1	-23.7
Cultural, Athletic, and Entertainment Services	207	-14.1	4.5	86.9
Public Management and Social Organization	0	-	0.0	-

Source: National Bureau of Statistics of China (2008a).

enterprises have played a dominant role in the PRC's exports and imports. Table 3.4 presents foreign direct investment by sector in 2007.

Table 3.4 shows that the PRC's manufacturing sector receives the largest share of FDI (though its growth rate is declining), which explains



its influence on the country's industrial growth, as well as on the growth performance of its international trade. Real estate has the second-highest share, and it also had the highest growth rate in 2007. Renting and business services; wholesale and retail services; transport, warehouse and postal services; and information transmission, computer services and software ranked third to sixth, respectively, in utilization of FDI. While the remaining service sectors generally represented a lower share of FDI, the data show that the PRC needs a new strategy in appropriate utilization of FDI in its development and service sectors.

The cumulative inflow of foreign investment into the PRC in 1979–2006 was US\$882.673 billion, of which foreign loans accounted for US\$147.157 billion, FDI was US\$691.897 billion, and the remaining US\$43.619 billion comprised other types of foreign investments (National Bureau of Statistics of China 2008a).

#### **FDI and other outflows**

The PRC has also increased its FDI outflow in recent years. Outflow of non-financial FDI in 2007 was US\$18.7 billion, with a growth rate of 6.2 percent from 2006. By the end of 2006, the PRC's cumulative FDI abroad reached US\$90.6 billion, of which 82.8 percent was non-financial investment (National Bureau of Statistics 2008b). Sales of contracted engineering projects reached US\$40.6 billion over the same period, an increase of 35.3 percent, and sales of cooperative labor services abroad reached US\$6.8 billion, a growth of 26.0 percent.

### **3.2.5 Transport**

#### **Transport and tourism**

Transport and tourism are two major components of trade in commercial services in international trade statistics. The cost of transport is also a key factor in influencing domestic and international trade. Due to the PRC's size and the underdevelopment of its logistics sector, logistics costs claim a large percentage of the country's GDP, roughly estimated at 21.3 percent in 2003 (China Society of Logistics and China Federation of Logistics and Purchasing 2006). This figure is quite high when compared with 8.6 percent in the US for the same year. Table 3.5 provides freight data for various modes of transport in the PRC in 2007. This is for the purpose of providing an overall picture of freight transport in the PRC.

#### **Port performance**

The PRC's port system has had an extraordinary growth rate since the country's reform and opening up drive began in the late 1970s. The volume

Table 3.5 Modes of freight transport in the People’s Republic of China (2007)

Item	Unit	Amount	Growth rate compared to 2006 (%)
Total amount	100 million tons (mn t)	225.3	10.7
Railway	100 mn t	31.4	9.0
Highway	100 mn t	162.8	11.0
Water transport	100 mn t	27.3	9.7
Aviation	10 <sup>4</sup> t	401.8	15.0
Pipeline	100 mn t	3.8	17.9
Turnover of freight transport	100 mn ton-kilometers (t-km)	99 180.5	11.8
Railway	100 mn t-km	23 797.0	8.4
Highway	100 mn t-km	11 257.6	15.4
Water transport	100 mn t-km	62 182.2	12.1
Aviation	100 mn t-km	116.4	23.5
Pipeline	100 mn t-km	1827.3	27.4

Source: National Bureau of Statistics of China (2008a).

of freight handled by major Chinese ports reached 521 million tons in 2007, representing an increase of 13.4 percent from the previous year. Of this amount, the volume of freight for external trade reached 1.78 billion tons (an increase of 12.6 percent). The same year, container throughput at the PRC’s ports reached 117.9 million twenty-foot equivalent units (TEU); a growth rate of 21.5 percent from the year before. There are six ports in the PRC: Shanghai, Shenzhen, Qingdao, Ningbo, Guangzhou and Tianjin, which are ranked among the global top 20 container terminals in throughput for 2004–06 based on the *Review of Maritime Transport 2007* published by the United Nations Conference on Trade and Development (UNCTAD 2007a).

### 3.2.6 Impact of the PRC’s Emergence in the Global Economy

This section describes in detailed, quantitative terms the economic and trade growth performance of the PRC, especially its industrial performance since 1985. In 2007 the PRC was ranked fourth in the global economy and in the top third of global exporters. The country plays a major role in intra-Asian trade, and has a trade deficit with most countries in Asia. The emergence of the PRC, India and other developing countries has greatly

changed the landscape of the global economy and has, to a certain extent, contributed to its stability. In 1970, the contribution to global GDP growth (on a purchasing power parity basis) was 2.5 percent for advanced economies, and about 2.4 percent for the PRC and other emerging and developing economies (International Monetary Fund, IMF 2008). While in 2007 the contribution to global GDP growth by advanced economies had declined to 1.5 percent, the PRC, India and other emerging and developing economies increased their contributions to 3.3 percent, of which the PRC's contribution was approximately 1 percent. In an increasingly integrated global economy, the PRC's strong economic growth performance, large share of world trade, increasing FDI abroad, stage of development, and heavy reliance on energy and materials from other developing countries contributed to the growth of these countries in the generally pessimistic global economic environment of 2007. Therefore, it is rational for other countries, especially developing ones, to react by re-evaluating their coordination strategy with the PRC.

As the PRC's economic performance has now been described in quantitative terms, a more in-depth analysis of its industrial performance in terms of both quality and quantity will be conducted in the next part of the chapter.

### **3.3 INDUSTRIAL PERFORMANCE AND COMPETITIVENESS OF THE PEOPLE'S REPUBLIC OF CHINA AND ITS ASIAN NEIGHBORS**

#### **3.3.1 General**

This section will provide some basic information on the industrial production structure of the PRC and other major Asian countries. As production and transaction (trade) are two major interrelated components of economic activity, this will result in a better understanding of the conditions for competition and coordination in trade. The coordination will be discussed in section 3.4. Recent research and data on the industrial performance of major Asian countries will be quoted to provide a foundation for discussing the theme of this chapter.

#### **3.3.2 Measuring Industrial Performance**

Various measures of competitiveness have been used in different studies. The International Institute for Management Development has established

a system of indicators to evaluate a country's competitiveness. Eight major indicators are used: domestic economy, internalization, government, finance, infrastructure, management, science and technology, and people; within each major indicator there are also several subindicators. Because the competitiveness of industrial performance is addressed in this chapter, indicators and industrial data from the United Nations Industrial Development Organization (UNIDO) will be used here.

**UNIDO'S efforts to establish an index for measuring industrial performance**

Establishing an effective system of social indicators is by no means easy. Defining types of human and social activity and devising quantitative measurements for them is difficult. Further, compared with the natural sciences and engineering, the study of human and social activity in mathematical terms has a relatively short history. Currently, UNIDO is working to establish an appropriate index for measuring industrial performance. UNIDO's *Industrial Development Report 2002/2003*, *2004* and *2005* (UNIDO 2002, 2004, 2005) show the organization's efforts to date. The three publications also illustrate a continuous evolution of the index in the process of establishing social indicators.

**Competitive Industrial Performance (CIP) index for measuring industrial performance**

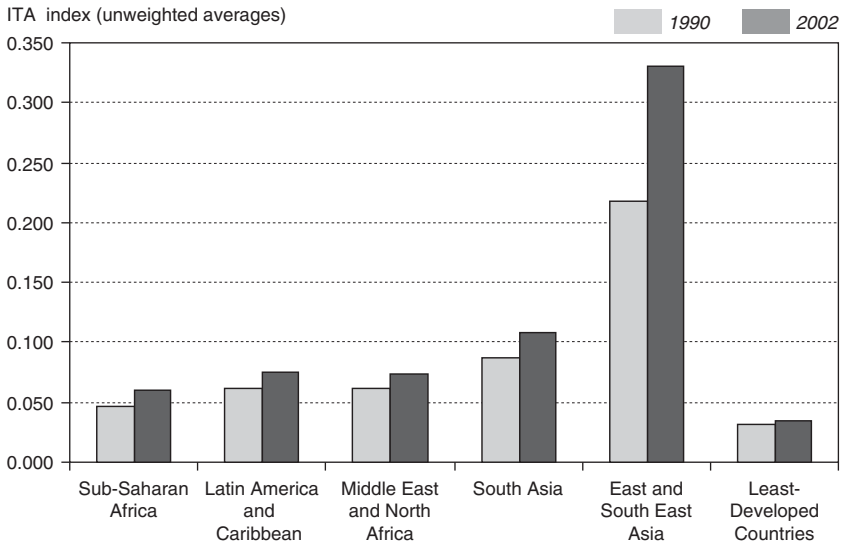
UNIDO established the CIP index in its *Industrial Development Report 2002/2003* (UNIDO 2002). This index is composed of four indicators: market value adjustment (MVA) per capita, manufacturing exports per capita, share of MVA accounted for by medium- and high-tech activities, and share of manufactured exports represented by medium- and high-tech products. The CIP index system has since expanded to include two additional indicators: MVA's share of GDP (percentage) and the share of total exports represented by manufactured goods (percentage).

**Ranking system**

UNIDO also established a ranking system for economies using drivers of industrial performance, including a skill index, research and development (R&D) spending per capita, FDI per capita, royalties per capita and the ICT infrastructure index.

**Industry-cum-Technological Advance (ITA) index**

The ITA index was established in UNIDO's 2005 publication and measures industrial and technological advancement. Figure 3.3 shows that East/Southeast Asia scored the highest among developing regions.



Source: United Nations Industrial Development Organization (UNIDO) (2005).

Figure 3.3 *Industrial-cum-technological advance, by developing region (1990 and 2002)*

### 3.3.3 Analysis of the PRC's Industrial Performance in the World

#### World MVA distribution is in a state of flux

Table 3.6 presents changes in worldwide distribution of MVA from 1995 to 2007. The share of world MVA held by most industrialized economies is declining; for example, the EU-15's share dropped from 25.9 percent in 1995 to 21.3 percent in 2007, and Japan's went from 20.4 percent to 15.5 percent in the same period. South and East Asia, however, increased its share of world MVA from 12.9 percent to 22.0 percent. Overall, the PRC showed the largest change. Its share of global MVA grew from 5.1 percent to 11.4 percent. This changing scenario is a result of the restructuring of the economic structure of developed countries in transition from an industrialized economy towards an information society dominated by the service sector, and there was a shift of manufacturing activities to developing countries. This also highlights the progress made by developing countries post-Second World War in the industrialization process, especially in South and East Asia and China.

Table 3.6 Distribution of world MVA, 1995–2007

Year	Industrialized economies						Developing economies									
	CIS		Europe		Japan	North America	Other	Regional groups			Development groups					
	EU-15	EU-12	Other	Africa	Latin America and Asia	South and East Asia	West and Asia	West and Asia	NICs	Second-generation NICs	Least developed countries	PRC	Other			
1995	1.3	25.9	1.2	1.2	20.4	26.5	1.8	0.8	6.9	12.9	1.1	9.7	3.2	0.3	5.1	3.4
1996	1.2	25.0	1.3	1.2	20.5	26.6	1.7	0.6	6.9	13.6	1.2	9.9	3.4	0.3	5.6	3.4
1997	1.1	24.7	1.3	1.2	20.1	27.0	1.7	0.8	7.1	13.8	1.2	9.9	3.4	0.3	5.7	3.6
1998	1.1	24.9	1.3	1.2	18.5	28.5	1.7	0.8	7.1	13.7	1.2	9.7	3.1	0.3	6.1	3.6
1999	1.1	24.5	1.3	1.2	18.0	29.0	1.7	0.8	6.7	14.5	1.2	9.9	3.1	0.2	6.4	3.6
2000	1.1	24.2	1.3	1.1	17.9	28.9	1.7	0.9	6.6	15.1	1.2	10.1	3.1	0.3	6.7	3.6
2001	1.2	24.6	1.4	1.1	17.2	27.9	1.7	0.9	6.7	15.9	1.2	10.1	3.2	0.3	7.4	3.7
2002	1.3	24.2	1.4	1.1	16.6	28.1	1.8	0.9	6.5	17.0	1.2	10.3	3.3	0.3	8.0	3.7
2003	1.4	23.3	1.4	1.0	16.9	27.6	1.8	0.9	6.4	18.0	1.3	10.3	3.4	0.4	8.8	3.7
2004	1.4	22.7	1.5	1.0	16.8	27.6	1.6	0.9	6.5	18.7	1.3	10.6	3.5	0.4	9.1	3.8
2005	1.4	22.1	1.5	1.0	16.6	27.4	1.6	0.9	6.4	19.7	1.4	10.8	3.5	0.4	9.8	3.9
2006	1.5	21.8	1.6	1.0	15.8	27.0	1.6	0.8	6.6	20.9	1.4	11.1	3.7	0.3	10.6	4.0
2007	1.5	21.3	1.6	1.0	15.5	26.7	1.5	0.8	6.6	22.0	1.5	11.3	3.7	0.4	11.4	4.1

Source: UNIDO (2008).

Table 3.7 Comparison and ranking of top six manufacturing sectors' share of total MVA among industrialized countries, developing countries and the People's Republic of China, 2006

International Standard of Industrial Classification (ISIC) Division		All industrialized economies		All developing economies		PRC	
		Share (%)	Rank	Share (%)	Rank	Share (%)	Rank
31	Electric Machinery	28.3	1	17.9	1	16.2	1
29	Non-electric Machinery	11.2	2	6.7	6	8.1	5
34/35	Transport Equipment	9.4	3	9.4	4	6.7	6
24	Chemical and Chemical Products	8.9	4	9.7	3	11.2	3
15	Food and Beverage	8.4	5	11.0	2	8.9	4
28	Fabricated Metal Products	5.4	6	n.a.	n.a.	n.a.	n.a.
27	Basic Metals	n.a.	n.a.	7.5	5	13.5	2

Source: UNIDO (2008).

### Structure of the PRC's manufacturing sector from an international perspective

Table 3.7<sup>4</sup> shows that the MVA structure of developing countries has nearly reached that of industrialized countries, but exhibits a different distribution among manufacturing subsectors. Industrialized countries have a higher share of high-end manufacturing, while developing countries and the PRC rank higher in energy-intensive sectors such as basic metals, chemicals and chemical products. Table 3.7 contains abstracted information from Table 3A.3 for illustrative purposes; it shows a comparison of the top six manufacturing sectors of industrialized countries, developing countries and the PRC. A detailed study of data in Table 3A.3 provides rich information on the identification of sectors in competition or in coordination among industrialized countries and developing countries, especially among developing countries themselves.

This comparison provides a pattern of development in the manufacturing sector of industrialized countries. It also provides a reference for how the industrialization process affects the manufacturing sector in developing countries. The PRC ranked first among developing economies in 21 ISIC manufacturing sectors. It also ranked in the top three in seven sectors when compared with industrialized economies.<sup>5</sup>

### **3.3.4 Analysis of the PRC's Industrial Performance in Terms of Both Quantitative and Qualitative Measurements**

In spite of evidence presented above that the PRC has nearly reached capacity in industrial performance in terms of quantity, when quality is taken into account, the PRC's industrial competitiveness is not as high. The industrial performance measurement described above will be used to study the PRC's industrial competitiveness.

#### **Comparison of industrial competitiveness: the PRC, its Asian neighbors and other selected countries**

Table 3.8 compares the Competitive Industrial Performance (CIP) rankings of selected countries, including the PRC.

Table 3.8 shows that the PRC's CIP index ranking was 24 in 2000. This was lower than many of its Asian neighbors, including even Malaysia and Thailand. This is more or less consistent with the PRC's trade deficit with most of the ASEAN member states described in section 3.2. Brazil, India, the US and Germany are listed in Table 3.8 for reference. The former two are members of the so-called BRICS (Brazil, Russia, India, China), while the latter two are industrialized countries. The PRC's low ranking is due to the qualitative aspect of its industrial competitiveness. Among the six components of the CIP index, 5 and 6 are more or less qualitative in nature and represent the share of medium- or high-technology production in MVA (percentage) and the share of medium- or high-technology products in manufactured exports (percentage), respectively. It can be seen from Table 3.8 that although the PRC's performance in these two categories improved between 1990 and 2002, its results were still quite low compared with other countries, including most of the ASEAN member states. In 2002, the share of MVA represented by medium- or high-technology production in the PRC was 42.6 percent, while it was 58.4 percent in India and 63.7 percent in the US. With respect to the share of medium- or high-technology products in manufactured exports in 2002, the PRC's figure was 60.3 percent, while it was 81.8 percent for the Philippines and 74.9 percent for Germany. This shows the urgent need for the PRC to upgrade the level of technology in its manufacturing sector and exports.

#### **Comparison of industrial performance drivers**

Table 3.9 presents the drivers of industrial performance in the world economy, and in the economies of various regions. The six components listed in Table 3.9 represent industry factor inputs such as skills, technological advances and FDI. If the data are compared for East Asia and East Asia excluding the PRC, the former scores lower for all six components.



Table 3.8 CIP index and its components for selected Asian countries

Economy	Rank in 2000	1. MVA per capita (US\$ at 1995 rates)		2. Manufactured exports per capita (US\$)		3. Share of Manufacturing in total output (GDP) (%)		4. Share of manufacturing in total exports (%)		5. Share of medium- or high-technology production in MVA (%)		6. Share of medium- or high-technology products in manufactured exports (%)	
		1990	2002	1990	2002	1990	2002	1990	2002	1990	2002	1990	2002
Singapore	1	4410	6582.5	16266	33106	28.6	28.2	93.2	96.8	78.8	87.6	62.3	78.9
Japan	6	9697	9850.9	2264	3595	26.5	25.0	97.5	93.0	66.5	68.1	83.9	86.3
Taipei,China	9	2842	4397.5	3149	6564	32.7	28.1	95.8	98.3	52.2	58.6	51.6	71.2
Republic of Korea	10	100.7	359.4	41.6	234.5	33.1	34.5	76.0	91.6	51.6	57.3	34.4	45.6
Malaysia	15	2238	4858.7	1455	3591	28.8	33.9	96.2	96.5	55.1	64.1	52.9	70.6
Thailand	23	757.5	1516.5	1287	4121	26.5	35.9	78.0	93.3	52.3	65.1	50.6	76.2
PRC	24	520.9	999.6	338.6	869.6	27.2	33.6	80.6	87.4	23.7	42.6	33.3	60.3
Philippines	25	252.4	269.5	69.8	482.4	24.8	24.2	52.7	96.2	31.2	38.3	30.0	81.8
Hong Kong, China	27	2043	1133	4843	3212	16.3	8.7	95.3	94.9	41.8	58.5	40.6	36.8
Brazil	31	913.6	865	159.3	221.9	22.5	18.8	75.1	76.8	51.6	54.1	40.0	51.5
Indonesia	38	162	278.7	82	224	20.7	27.0	58.6	76.9	30.0	43.4	10.5	31.3
India	40	49	77.6	16.8	38.5	16.6	15.8	79.6	85.8	55.3	58.4	17.9	19.7
US	11	4325	5567.7	1182	1948	18.1	17.6	81.1	88.1	63.0	63.7	73.4	76.7
Germany	7	6871	6649.1	4665	6512	30.6	27.2	93.2	90.6	66.5	63.2	68.7	74.9

Sources: Derived from UNIDO (2002, 2004, 2005).

Table 3.9 Drivers of industrial performance

Group or region	Skills		Technological Advances		FDI		Technology imports		ICT infrastructure	
	Tertiary technical enrollment (per 1000 population)	1985	1998	R&D per capita (US\$)	1985	1998	Royalties and technical fees per capita (US\$)	1985	1998	Telephone mainlines (per 1000 population)
World	11.1	14.6	22.9	71.4	13.3	63.4	2.6	14.2	152.5	64.9
Industrialized economies	34.3	40.1	122.3	402.4	54.8	241.6	12.0	66.2	571.1	316.5
Transition economies	–	26.3	–	8.8	–	40.8	–	2.5	214.0	42.7
Developing economies	6.3	8.7	0.6	4.6	4.3	26.9	0.6	3.9	62.6	14.2
East Asia	4.6	9.2	–	8.7	4.3	39.7	–	7.1	82.7	19.3
East Asia excl. PRC	12.3	21.9	3.2	31.0	14.5	63.3	2.7	26.6	119.3	48.6
South Asia	5.1	5.4	0.3	0.3	0.2	2.1	–	0.2	19.7	2.6
Latin America and the Caribbean	16.6	17.3	1.1	6.3	11.1	70.4	1.9	5.3	122.3	33.3
Sub-Saharan Africa	–	4.0	0.6	1.3	1.7	8.2	0.4	0.6	16.5	7.8
Sub-Saharan Africa excl. South Africa	1.7	2.7	–	–	1.9	5.3	–	0.2	5.7	3.4
Middle East and North Africa	13.6	20.5	0.4	1.4	16.9	14.1	0.1	3.0	115.0	14.8

Source: UNIDO (2004).

This does not mean that the PRC is lacking in skills, technology, FDI, technology imports or ICT infrastructure in absolute terms; it is well known that the PRC has maintained the highest inflow of FDI in the Asian region in recent years. But these indexes are calculated on a per capita basis, which puts the PRC at a disadvantage due to its huge population. As this table shows 1998 figures, the data are not up to date. However, as drivers tend to change very slowly, these data are still useful.

### **Integrated consideration of industrial competitiveness (quantity and quality)**

The Industrial and Technological Advancement (ITA) index was designed by UNIDO to integrate the quantitative and qualitative (that is, level of technological content) aspects of industrial production. Calculation of this index is relatively complicated; please refer to the original text for details (UNIDO 2005). Table 3.10 has been prepared for general reference.

As the ITA index is relatively new, proof of its validity may require more time. However, a preliminary analysis of the figures given in Table 3.10 shows its rationality to a certain extent. For example, the PRC is relatively low in the technology level, but it has a large amount of industrial production, therefore the PRC ranked sixteenth in the ITA index and came in fourth in industrial advances, higher than Singapore, which ranked first

*Table 3.10 ITA index of selected economies (2002)*

	ITA index		Industrial advances		Technological advances	
	Value	Rank	Value	Rank	Value	Rank
Singapore	0.52	1	0.625	6	0.832	1
Malaysia	0.457	2	0.646	2	0.707	3
Japan	0.456	3	0.59	13	0.772	2
Republic of Korea	0.439	4	0.652	1	0.674	7
Taipei, China	0.41	5	0.632	3	0.649	10
Germany	0.407	6	0.589	14	0.69	6
United States	0.371	11	0.529	27	0.702	4
Philippines	0.362	13	0.602	10	0.601	14
PRC	0.324	16	0.631	4	0.515	27
Thailand	0.311	19	0.605	8	0.514	28
Hong Kong, China	0.247	29	0.518	33	0.477	30
India	0.198	35	0.508	36	0.391	41
Indonesia	0.194	36	0.519	32	0.374	43

*Source:* Abstracted from UNIDO (2005).

in the CPI index (Table 3.8). The PRC also ranked 27th in technological advances, surpassing Thailand, which came in 28th. While the PRC's ITA index is higher than Thailand's, its CPI index is lower.

It seems that the ITA index is a better indicator of industrial competitiveness than the CPI index in terms of qualitative factors. In any case, both indexes are fairly new, so final judgment of their accuracy will require long-term application.

### **3.4 FEATURES OF TRADE IN MAJOR ASIAN ECONOMIES**

#### **3.4.1 General**

Trade is a common component of economic growth for nations, regions and global society. In this section, a comparison of the trade structures of the PRC, Japan and selected Asian economies will be given for the purpose of showing the competitive and complementary natures of their trade structure. A comparison of the PRC's levels of interaction with partner regions and economies will also be done to illustrate its growing role in trade with its Asian neighbors. Competition between Asian economies, including the PRC, for a share of the US market will then be presented and explored. In the final subsection, the increasing role of S-S trade, in which the PRC has played an important part, will be discussed.

#### **3.4.2 Trade Structures of the PRC, Japan, the Republic of Korea and Other Selected Asian Economies**

##### **Comparison of trade structures of the PRC, Japan and the Republic of Korea**

Table 3A.5 in the Appendix shows the total imports and exports for the PRC, Japan and the Republic of Korea in 1995 and 2005, respectively. The share of total exports and imports represented by various sectors is also given. This table provides information on the structural changes in trade in these three countries, as well as how they compete in various sectors. It can be seen from this table that Japan's share of exports in many sectors declined, but that its share of some exports, including chemical manufactures, road vehicles, and professional and scientific instruments, rose. The PRC increased its share of exports in eight sectors: general machinery, office and computing machinery, telecommunication machinery, other electric machinery, road vehicles, furniture, non-ferrous metals, and metal products. The Republic of Korea also experienced growth in its

share of exports in seven sectors (four of which are similar to those of the PRC: general machinery, office and computing machinery, telecommunication machinery, road vehicles), and its share of mineral fuel, chemical manufactures and other transport equipment increased. A lot of information can be derived from this table. It can also serve as a basis for studying RTAs among these three countries.

### **Comparison of trade structures of Hong Kong, China; Taipei,China; and Singapore**

Table 3A.6 in the Appendix has also been attached to serve as a basis for analyzing competition and coordination. It would be possible to prepare additional tables showing the trade structures of other Asian countries, such as Thailand, Malaysia, Indonesia and the Philippines, but Table 3A.6 and its preliminary analysis in the following is for illustrative purposes only.

It can be seen from Table 3A.6 that although the value of Hong Kong, China's exports has increased from US\$173.9 billion in 1995 to US\$292.1 in 2005, most of the products involved are in the 'not classified' category, in which the economy's share increased from 83.08 percent to 94.04 percent. The reason for this may require further study and may be due to Hong Kong, China being a free port city. But it can be concluded that there is no competition between Hong Kong, China and the PRC in merchandise trade. There is also not much competition in this sector between Hong Kong, China; Taipei,China; and Singapore.

In addition, it can be seen that Taipei,China increased its exports in seven sectors: chemical manufactures; telecommunications machinery and so on; other electrical machinery; textiles; apparel; non-ferrous metals; and iron and steel. Table 3A.5 shows that the PRC's chemical manufactures sector declined in its shares of both exports and imports from 1995 to 2005; Taipei,China may have a competitive advantage in that sector. The share of the PRC's exports represented by the telecommunications machinery sector increased from 1995 to 2005, and its share of imports decreased slightly. Therefore, the PRC and Taipei,China may be competitors in the telecommunications machinery sector in a third market.

Table 3A.6 shows that in Singapore, four sectors increased their shares of exports from 1995 to 2005: mineral fuel, chemical manufactures, office and computing machinery, and other electrical machinery. With the information on the PRC's trade structure from Table 3A.5, it can be seen that Singapore is in competition with the PRC in office and computing machinery and other electrical machinery. It is necessary to be aware that the PRC increased the share of its exports represented by other electrical machinery from 6.42 percent to 10.17 percent in 1995–2005; however, the

PRC also increased its share of imports in this sector from 7.38 percent to 20.95 percent in the same period. Therefore, Singapore and the PRC may not compete in this sector in a third market; exports of other electrical machinery from Singapore may be imported by the PRC. A more precise conclusion may require further sectoral information, including designations for import and export for each country. An analysis will be performed in coming sections using an additional source of data, but Tables 3A.5 and 3A.6 may provide data for a preliminary analysis of competition and coordination among countries.

### **3.4.3 Changes in the PRC's Trade Interaction with Partner Regions and Economies**

Tables 3.11–3.14 show changes in the PRC's trade interaction with partner regions and economies from 1995 to 2005. In each of these four tables, the boxed value is the designated country or economy's total imports and exports in billions of US dollars. The remaining figures in Tables 3.11 and 3.12 represent the share of total imports to the country designated in the row from the country designated in the column. The remaining figures in Tables 3.13 and 3.14 represent the share of total exports from the country designated in the row to the country designated in the column.

Analysis of Tables 3.11 and 3.12 shows that the shares of total imports to the PRC from Japan; industrial Europe; the US; and Hong Kong, China decreased from 21.96 percent, 16.98 percent, 12.2 percent, and 6.5 percent, respectively, in 1995 to 15.21 percent, 11.64 percent, 7.51 percent, and 1.85 percent, respectively, in 2005.

The shares of total imports to the PRC from the Republic of Korea, Malaysia, Thailand and the Philippines increased in the same period. There were also very minor changes in the shares of imports from Taipei, China; Singapore and Indonesia. Further analysis of Tables 3.11 and 3.12 shows that between 1995 and 2005 nearly all Asian economies decreased their shares of imports from three developed economies: Japan, industrial Europe and the US.

Analysis of Tables 3.13 and 3.14 shows that the shares of total exports from the PRC to industrial Europe and the US increased from 13.29 percent and 16.62 percent, respectively, in 1995 to 18.15 percent and 21.42 percent, respectively, in 2005. Shares of the PRC's exports to Japan and Hong Kong, China decreased over the same period from 19.13 percent to 11.02 percent, and from 24.19 percent to 16.34 percent, respectively. There were no significant changes in the shares of the PRC's total exports to other Asian neighbors such as the Republic of Korea, Singapore, Indonesia, Malaysia, Thailand, and the Philippines.

Table 3.11 Trade interaction between partner regions and economies, 1995 (imports)<sup>a</sup>

	PRC	Japan	Republic of Korea	Hong Kong, China	Taipei, China	Singapore	Indonesia	Malaysia	Thailand	Philippines	Industrial Europe	US
PRC	132.1	21.96	7.79	6.50	11.19	2.57	1.55	1.57	1.22	0.21	16.98	12.20
Japan	10.72	336.1	5.14	0.81	4.27	2.04	4.23	3.14	3.01	1.03	16.11	22.58
Republic of Korea	5.48	24.13	135.1	0.62	1.90	1.60	2.46	1.86	0.69	0.45	14.71	22.51
Hong Kong, China	35.57	14.65	5.18	196.1	8.52	5.15	0.83	1.90	1.39	0.44	12.12	7.87
Taipei, China	2.99	29.23	4.18	1.78	103.6	2.86	2.08	2.85	1.43	0.60	15.84	20.06
Singapore	3.25	21.15	4.34	3.30	4.11	124.5	—	15.48	5.16	0.88	14.83	15.05
Indonesia	3.43	21.14	5.62	0.63	4.18	5.43	43.6	1.76	1.69	0.19	19.87	10.91
Malaysia	2.23	27.49	4.13	2.17	5.13	12.47	1.58	77.0	2.66	0.60	17.43	16.28
Thailand	2.96	30.55	3.50	1.05	4.83	5.88	0.95	4.57	70.8	0.82	17.68	12.02
Philippines	2.32	22.13	5.02	4.86	5.42	5.74	2.18	2.19	1.50	28.5	11.31	18.91

Note: <sup>a</sup> [Number] is valued in billion US\$, the remaining figures represent share of total imports in %.

Source: Derived from International Center for the Study of East Asian Development (ICSEAD) (2007).

Table 3.12 Trade interaction between partner regions and economies, 2005 (imports)<sup>a</sup>

	PRC	Japan	Republic of Korea	Hong Kong, China	Taipei, China	Singapore	Indonesia	Malaysia	Thailand	Philippines	Industrial Europe	US
PRC	660.0	15.21	11.64	1.85	11.32	2.50	1.28	3.04	2.12	1.95	11.64	7.51
Japan	21.03	515.9	4.73	0.30	3.50	1.30	4.04	2.84	3.02	1.49	12.30	12.68
Republic of Korea	14.79	18.53	261.2	0.78	3.08	2.04	3.13	2.30	1.03	0.89	10.93	11.79
Hong Kong, China	44.96	11.01	4.42	300.2	7.21	5.80	0.64	2.45	2.02	1.71	8.74	5.16
Taipei, China	11.00	25.22	7.25	1.16	182.6	2.72	2.49	2.86	1.58	1.53	10.44	11.59
Singapore	10.26	9.61	4.30	2.10	6.66	200.1	5.22	13.66	3.76	2.32	12.45	11.72
Indonesia	8.38	9.90	4.11	0.42	1.92	13.58	69.7	3.08	4.94	0.46	8.76	5.56
Malaysia	11.50	14.52	4.96	2.49	5.53	11.71	3.82	114.6	5.27	2.81	12.54	12.91
Thailand	9.44	22.05	3.28	1.27	3.81	4.55	2.65	6.85	118.2	1.59	10.08	7.38
Philippines	6.50	17.10	4.85	4.25	7.34	7.94	2.31	3.77	3.53	47.0	8.26	17.49

Note: <sup>a</sup> [Number] is valued in billion US\$, the remaining figures represent share of total imports in %.

Source: Derived from ICSEAD (2007).



Table 3.13 Trade interaction between partner regions and economies, 1995 (exports)<sup>a</sup>

	PRC	Japan	Republic of Korea	Hong Kong, China	Taipei, China	Singapore	Indonesia	Malaysia	Thailand	Philippines	Industrial Europe	US
PRC	148.8	19.13	4.50	24.19	2.08	2.35	0.97	0.86	1.18	0.69	13.29	16.62
Japan	4.96	442.9	7.05	6.26	6.52	5.20	2.25	3.79	4.45	1.61	16.66	27.55
Republic of Korea	7.31	13.63	125.1	8.54	3.10	5.35	2.37	2.36	1.94	1.19	13.81	19.47
Hong Kong, China	33.28	6.09	1.62	173.9	2.67	2.84	0.61	0.90	0.93	1.16	15.84	21.77
Taipei, China	0.34	11.78	2.30	23.38	111.7	3.95	1.67	2.60	2.75	1.48	13.51	23.65
Singapore	2.33	7.80	2.74	8.57	4.07	118.3	—	19.18	5.77	1.63	13.83	18.26
Indonesia	3.83	27.06	6.42	3.65	3.85	8.29	45.4	2.17	1.55	1.30	15.08	13.92
Malaysia	2.65	12.68	2.79	5.35	3.14	20.32	1.32	73.8	3.92	0.91	14.39	20.71
Thailand	2.91	16.79	1.42	5.17	2.40	14.03	1.44	2.75	56.4	0.73	16.07	17.86
Philippines	1.23	15.75	2.54	4.72	3.26	5.71	0.74	1.81	4.58	17.4	17.82	35.79

Note: <sup>a</sup> [Number] is valued in billion US\$, the remaining figures represent share of total exports in %.

Source: Derived from ICSEAD (2007).

Table 3.14 Trade interaction between partner regions and economies, 2005 (exports)<sup>a</sup>

	PRC	Japan	Republic of Korea	Hong Kong, China	Taipei, China	Singapore	Indonesia	Malaysia	Thailand	Philippines	Industrial Europe	US
PRC	762.0	11.02	4.61	16.34	2.17	2.18	1.10	1.39	1.03	0.62	18.15	21.42
Japan	13.46	594.9	7.84	6.04	7.32	3.10	1.55	2.11	3.77	1.52	14.39	22.85
Republic of Korea	21.77	8.45	284.4	5.46	3.82	2.60	1.77	1.62	1.19	1.13	14.06	14.59
Hong Kong, China	44.65	5.24	2.24	292.1	2.32	2.07	0.43	0.83	1.03	0.90	14.75	15.92
Taipei, China	21.99	7.62	2.96	17.15	198.4	4.05	1.19	2.16	1.93	2.18	10.68	14.57
Singapore	8.60	5.46	3.51	9.37	3.91	229.7	9.62	13.23	4.09	1.82	11.89	10.39
Indonesia	7.78	21.07	8.27	1.74	2.89	9.15	85.7	4.01	2.62	1.66	11.75	11.52
Malaysia	6.60	9.35	3.36	5.85	2.78	15.61	2.36	141.0	5.38	1.40	11.33	19.69
Thailand	8.30	13.65	2.04	5.57	2.45	6.77	3.60	5.16	110.1	1.86	13.62	15.46
Philippines	9.89	17.47	3.37	8.10	4.58	6.56	1.16	5.96	2.83	41.2	16.52	18.02

Note: <sup>a</sup> [Number] is valued in billion US\$, the remaining figures represent share of total imports in %.

Source: Derived from ICSEAD (2007).

*Table 3.15 Competition between Asian economies and the PRC in the US market (selected years: 1990, 2000) (% overlap with the PRC's exports)*

Economy	1990	2000
Japan	3.0	16.3
Republic of Korea	24.0	37.5
Taipei, China	26.7	48.5
Hong Kong, China	42.5	55.9
Singapore	14.8	35.8
Indonesia	85.3	82.8
Malaysia	37.1	48.7
Philippines	46.3	46.1
Thailand	42.2	65.4

*Source:* Yusuf (2003).

#### **3.4.4 Competition between the PRC and its Asian Neighbors in the Markets of Industrialized Countries**

Despite the fact that the shares of the PRC's total exports represented by exports to industrial Europe and the US increased from 1995 to 2005, figures in Tables 3.13 and 3.14 also show that the shares of total exports to those economies from nearly every other Asian economy decreased in the same period. (The only exception was the Republic of Korea, whose share of total exports represented by exports to industrial Europe remained relatively stable from 1995 to 2005.) This decline was due to growing competition between those economies' exports in the industrialized market. Analyses done by other international studies have shown the percentage overlap of exports from several economies and those of the PRC in the US market (Table 3.15).

#### **3.4.5 The Growing Importance of Major Asian Economies in the Global Market**

In sections 3.4.2 and 3.4.3, the focus was on the trade structures of major Asian economies and the interactions between them. Their growing importance in the global market will be analyzed here.

Developing economies are increasing their share of the world market. The share of world merchandise exports claimed by developing economies grew from 19.2 percent in 1970 to 32.1 percent in 2003; during that

time their share of merchandise imports increased from 18.8 percent to 29 percent. As of 2003, major Asian economies including the PRC held a 60 percent share of both imports and exports.

Also significant is the rapidly growing South–South (S–S) trade; its growth rate is considerably higher than that of either world trade or trade among industrialized countries. Table 3.16 lists the top ten economies engaged in South–South trade in 2003; numbers in brackets show the percentage share of total.

Table 3.16 shows that in terms of S–S trade, the PRC ranked first in exports of all commodities, manufactures and agricultural products, and second in exports of fuel, minerals and metals. The PRC also ranked first in imports of all commodities and agricultural products, and second in imports of manufactures and fuel, minerals and metals.

Table 3.16 also shows that most major Asian economies are among the top ten leading exporting economies in total merchandise and manufactures. Brazil was the only non-Asian economy to rank in the top ten, coming in ninth in both total merchandise and manufactures.

Five non-Asian countries were among the leading exporting economies in fuel, minerals, and metals: Nigeria, Iran and Venezuela, which are oil-rich countries, and also India and Chile. Argentina, Brazil and Chile are on the list of the ten leading exporting economies in agricultural products, along with seven major Asian economies.

### **3.5 BOTH GLOBALIZATION AND REGIONALISM WILL DIRECT THE PROSPERITY OF GLOBAL SOCIETY**

#### **3.5.1 General**

Many studies on globalization and regionalism have been conducted in the 1980s and 1990s; some scholars study these concepts in a broad sense, while most studies focus only on economic globalization and regionalism. Discussion of these phenomena in this chapter will be limited to the latter. Theories of competition are well established and documented in abundant economic literature. But there is no real niche for theories on ‘coordination’. The long-term scenario for the world economy from 1990 to 2015 has been studied by the Central Planning Bureau of the Netherlands. In its publication, three possible scenarios are proposed: the free market perspective, the coordination perspective and the equilibrium perspective. The coordination perspective is based primarily on the views of John Maynard Keynes, that is, that it is in the public interest to

Table 3.16 Top ten economies engaged in South–South trade, 2003 (%)

Rank	Total merchandise	Manufactures	Fuel, minerals, and metals	Agricultural products
Leading exporting economies				
1	PRC (19.7)	PRC (22.4)	Singapore (9.8)	PRC (11.5)
2	Hong Kong, China (14.2)	Hong Kong, China (17.2)	PRC (9.7)	Argentina (10.6)
3	Republic of Korea (11.1)	Republic of Korea (13.2)	Indonesia (7.3)	Brazil (10.2)
4	Singapore (9.4)	Taipei, China (11.2)	Nigeria (6.4)	Malaysia (9.6)
5	Taipei, China (9.3)	Singapore (9.7)	Iran (6.2)	Thailand (8.2)
6	Malaysia (6.0)	Malaysia (5.6)	Venezuela (5.9)	Indonesia (6.5)
7	Thailand (4.1)	Thailand (3.9)	Malaysia (5.8)	India (5.5)
8	India (3.4)	India (3.0)	Republic of Korea (5.0)	Hong Kong, China (5.1)
9	Brazil (3.3)	Brazil (2.4)	India (4.4)	Chile (2.6)
10	Indonesia (3.1)	Indonesia (2.1)	Chile (3.6)	Singapore (2.5)
Share of top ten in total S–S exports	(83.5)	(90.7)	(64.2)	(72.3)
Leading importing economies				
1	PRC (21.0)	Hong Kong, China (23.3)	Republic of Korea (20.4)	PRC (17.9)
2	Hong Kong, China (17.7)	PRC (21.9)	PRC (19.1)	Hong Kong, China (7.4)
3	Republic of Korea (8.9)	Singapore (8.1)	Taipei, China (8.7)	Republic of Korea (7.2)
4	Singapore (7.7)	Republic of Korea (5.7)	Singapore (8.2)	India (6.1)
5	Taipei, China (5.9)	Taipei, China (5.4)	Thailand (5.2)	Malaysia (4.2)
6	Malaysia (4.6)	Malaysia (5.0)	Indonesia (4.1)	Brazil (3.9)
7	Thailand (4.0)	Mexico (4.4)	Brazil (4.0)	Thailand (3.6)
8	Mexico (3.5)	Thailand (3.6)	Hong Kong, China (3.3)	Saudi Arabia (3.6)
9	India (2.5)	India (2.3)	Turkey (3.2)	Singapore (3.4)
10	Brazil (2.2)	Philippines (1.9)	Malaysia (2.9)	Indonesia (3.0)
Share of top ten in total S–S imports	(77.8)	(81.7)	(79.2)	(60.4)

Source: UNCTAD (2005b).

correct a market failure, and that it is also rational for governments to intervene. This is generally true for management of the global economy. This argument will be useful in the exploration of the theme of this chapter, that is, that the RTAs which have proliferated rapidly since the 1990s are from the initiatives of the government rather than driven purely through market force. Therefore, RTAs can represent coordination among governments to a certain extent. A distinction should be made between the two words ‘regionalism’ and ‘regionalization’. The former is policy-driven regional integration which involves formal economic cooperation arrangements (that is, with the involvement of the government), while the latter is market-driven integration which is spurred on by regional growth dynamics, the emergence of international production networks, and related FDI flows. These two types of regional integration should work together. This view will be further elaborated upon and explored in this section.

The number of RTAs has grown rapidly since the 1990s, especially between developing economies, indicating an increasing recognition of the benefits of S–S trade as explored in section 3.4. Further information on S–S trade and the phenomenon of RTA proliferation will be analyzed in this section to illustrate the rationality of transforming ‘trade competition’ with the PRC into ‘trade coordination’ through RTAs.

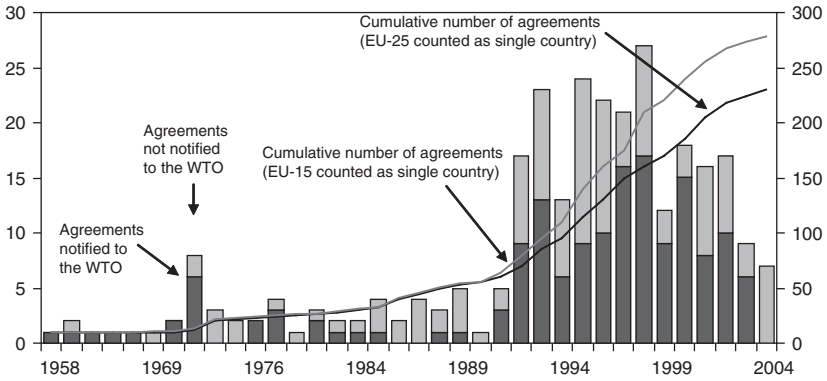
### **3.5.2 Proliferation of RTAs and the Evolution of Concepts of Regionalism**

#### **Proliferation of RTAs**

It seems that even international organizations have been unable to keep up with the rapid growth trend in RTAs since the 1990s, as different studies report different numbers. For example, in a 2005 publication by the World Bank, the number of RTAs in force was reported to have risen from 50 to nearly 230 from 1958 to 2004 (Figure 3.4).

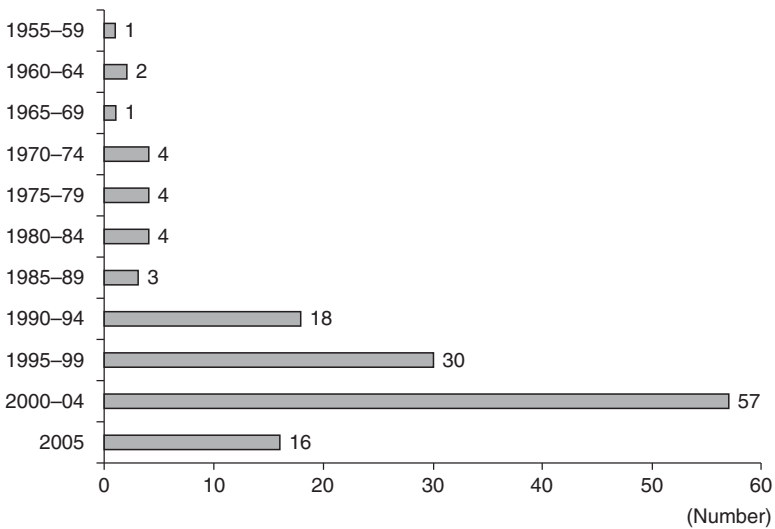
A more recent study, a joint effort by UNCTAD and the Japan External Trade Organization (UNCTAD 2008), gives a different picture of RTA growth. It states that: ‘as of July 2007, there were 140 regional trade agreements (RTAs) in effect worldwide. This stands in contrast with the situation in 1989 when there were only 19 RTAs.’ Figure 3.5 shows the growth trend of RTAs based on this report. Another international study reported that there were 159 RTAs in 2007.

In spite of differences in the numbers of RTAs reported, all three studies are in agreement regarding the trend of rapid growth since the 1990s, which continued even after formal establishment of the WTO in 1995.



Source: World Bank (2005).

Figure 3.4 Growth pattern of RTAs



Source: World Bank (2005).

Figure 3.5 Worldwide growth of RTAs

### Evolution of the concept of rationality of RTAs and the new regionalism

The effort to implement fair multilateral trade agreements has a history of more than half a century. The General Agreement on Tariffs and Trade (GATT) came into effect on 1 January 1948 and guided 11 major

multilateral rounds of trade negotiations. The last GATT round was the Uruguay Round in 1988. The PRC's re-entry into the GATT for the Uruguay Round greatly strengthened its role in the global market. The Uruguay Round concluded in 1994 by setting up the WTO to take over its function. It can be seen in Figures 3.4 and 3.5 that the earliest RTAs emerged in the late 1950s, after which there followed rapid proliferation. That this rapid growth of RTAs continued during the new multilateral round of trade negotiations overseen by the WTO represents an evolution of the concept of rationality of RTAs against multilateral trade negotiations, for the following reasons:

1. An increasing understanding of the benefits of other forms of cooperation linked to trade through RTA arrangements. Regional cooperation can often pay large dividends, while market solutions to problems are not necessarily as effective in the presence of economies of scale or intercountry externalities.
2. The rise of the concept of new regionalism. Since about 2000, a new regionalism concept and trend has grown out of a sense of frustration at the slow progress in multilateral trade negotiations made by some governments. Supporters of this new regionalism believe that a number of bilateral regional agreements could serve as a better vehicle for advancing laws and institutions aimed at promoting investment and production among countries.

### **3.5.3 Further Evolution of the RTA Concept: Rationality of South–South Trade Agreements**

#### **North–South FTA issues**

Due to the involvement of reciprocal commitments, North–South FTAs generally put developing countries at a disadvantage. Developing countries typically enter into the liberalized trade relationship at a less advanced stage of domestic industrial development, implying lower supply and marketing capacities. Also, the possibilities for developing countries to benefit from the provisions of these FTAs are limited. In order to comply with the principle of reciprocity, developing countries are forced to cut tariffs, especially on industrial products.

#### **Rationality of South–South trade agreements**

The patterns of global trade and the global economy have changed tremendously since the 1970s. The importance of developing countries in the global market is increasing all the time, especially of major Asian economies, as shown above, and in terms of S–S trade, as described briefly.



This phenomenon will be explored further here to provide evidence of the rationality of RTAs between economies in the South. The following trends are presented based on Tables 3A.7a–3A.7c in the Appendix.

There has been increasing trade interaction among developing countries and decreasing trade interaction between industrialized and developing countries since the 1970s; the trade patterns among developing countries have also changed. It can be clearly seen from Tables 3A.7a–3A.7c that the share of exports from developing countries to industrialized countries decreased from 68.9 percent (total merchandise trade) in 1965 to 53.8 percent (total merchandise trade) in 2003. Industrialized countries' share of primary product exports from developing economies decreased considerably during the same period, that is, from 71.7 percent to 52.6 percent, and there was generally a growth in their share of manufactured exports. The share of exports from developing countries to other developing countries increased significantly during that time, from 25.1 percent (total merchandise trade) to 43.4 percent; the share of primary products claimed by these economies experienced an especially dramatic increase from 21.8 percent to 40.8 percent. These tables also show the increasing role in global trade played by first-tier newly industrialized economies (NIEs)<sup>6</sup> and the PRC; a comparison of their numbers in the right column in 1965 and 2003 provides strong evidence of the growing importance of their role.

Table 3A.8 illustrates various factors contributing to the growing role of S–S trade in the global economy during four different periods. The abundance of data provided in Tables 3A.5, 3A.6, and 3A.7 support the following five trends, which have been derived from an analysis of Table 3A.8:

1. The total growth rate of S–S trade was highest in 1970–80, declined in 1980–90, and then rose again post-1990. Its dramatic growth in 1970–80 was due to the impact of the 'East Asia Miracle', that is, of the growth of the Republic of Korea; Taipei, China; Singapore; Hong Kong, China; Indonesia; Malaysia; Thailand and the Philippines. The slow growth in 1980–90 was due to their loss of growth momentum and to a certain trend toward saturation of the growth rate. The re-emergence of the growth rate post-1990 was due to the growth of the PRC, and later of India and other non-Asian economies.
2. The share of total world exports claimed by developing economies rose continuously from 1970 onwards: from 22.9 percent in 1970–80 to 40.9 percent in 2000–2003.
3. There was a steady increase of share of S–S trade of total exports of developing to industrialized countries, from 35.3 percent in the period

of 1970–80 to 74.3 percent in 2000–2003. There was also a steady increase of manufactured products in these two periods. It increased from 60.1 percent to 73.8 percent.

4. There was a steady increase in S–S trade’s share of the total imports of developing countries throughout the four periods from 26.1 percent in 1970–80 to 43.9 percent in 2000–2003.
5. There was a steady increase of share of S–S trade to total imports of developing countries from industrialized countries from 38.0 percent in 1970–80 to 85.1 percent in 2000–2003.

Analysis of trends 1 and 2 can prove the rationality of S–S trade agreements in general.

### **3.5.4 Role of Asia in South–South Trade**

Preliminary analysis showed that most major Asian economies were among the top ten in S–S trade. Further analysis of the features and natures will be done here.

#### **Asia is the engine of S–S trade**

Based on the analysis of trade in sections 3.4.5 and 3.5.3, and on recent data that show total exports from the South reached US\$4.5 trillion in 2006, or about 37 percent of world trade, it is evident that South–South trade exhibits a ‘hub-and-spoke’ pattern in terms of geographical trade flows, while Asia is the world’s most important trade hub. In 2006, intra-Asian trade accounted for approximately 90 percent of total S–S trade, and trade among East Asian and Southeast Asian countries made up more than half of S–S trade. It can be concluded that Asia has become the engine of S–S trade, and that this trend will continue for several decades with the emergence of the PRC and India.

#### **Factors influencing the expansion of S–S trade in Asia**

Tables 3A.7a–3A.7c and 3A.8 present the facts behind the expansion of S–S trade in numerical data. The expansion of S–S trade in Asia is driven by the following factors:

1. An increase in demand for natural resources from rapidly developing countries, such as the high demand for imported oil, iron ore and other minerals from the PRC.
2. A growing demand for new markets, particularly for exports of manufactured goods. For example, many developing countries depend heavily on the US market for their exports. (This phenomenon was

touched upon in section 3.4.) This dependency means these countries run the risk of being affected by a downturn in the US economy. There is a need to diversify the market for the exports of developing countries.

3. Transnational corporation (TNC) strategies for regional and global supply chains originating from the North and South. (The role of TNCs will be studied below.)
4. Growing interest across the South in integrating economies through new bilateral, regional or interregional trade agreements.
5. Increased access to market information networks due to the growth of the Internet.

#### **Role of the PRC in S–S trade and North–South (N–S) trade**

The PRC has experienced continuous, strong economic growth and trade growth since its reform and opening up in the late 1970s. Its GDP is ranked among the top four in the global economy in 2007, and its exports are among the top three. The PRC can contribute its positive role to promote further S–S and N–S trade.

The PRC will continue to contribute to S–S trade. Table 3.16 shows that the PRC is ranked first or second in four subcategories of S–S trade. The ASEAN–China FTA, which went into effect in 2003, may further promote its role in S–S trade.

It is shown in Tables 3.13 and 3.14 that the PRC is one of the only countries for which the share of its exports going to industrial Europe and the US increased in 1995–2005; for almost all Asian economies, the opposite was true. Competition between overlapping exports from the PRC and other Asian economies was illustrated in Table 3.15, where it was shown that the primary overlap was in industrial products. If a coordinated industrial policy can be included in RTAs, the PRC may be able to contribute its positive role to promoting S–S trade and N–S trade. The PRC is negotiating FTAs with New Zealand and Australia. FTAs between the PRC, Japan and the Republic of Korea are also under exploration. A very brief description of the initial exploration of this subject by the PRC's Development Research Center will be provided below. In short, we can see that there is no conflict between RTAs and multilateral arrangements, and that the two are complementary.

Dr Supachai Panitchpakdi, currently the Secretary General of UNCTAD, has expressed his expectation that South–South agreements can help the Doha Round to deliver on its promise. It is necessary to note that S–S RTAs, including bilateral, regional and intraregional FTAs, are important instruments for trade creation, investment promotion and regional development.

### **3.5.5 Rationality of Transforming Trade Competition with the PRC into Coordination**

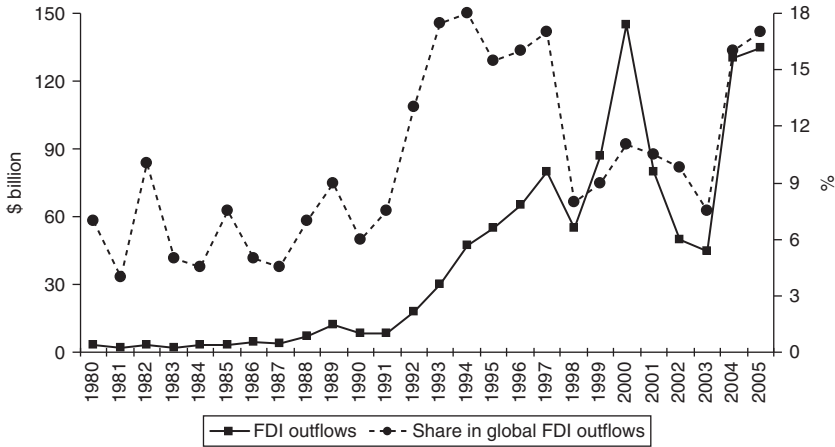
The state of the PRC's economy in 2007 was described in section 3.2. Although the PRC is still a developing country, its GDP and exports currently rank fourth and third in the world economy, respectively. The PRC's industrial performance has been analyzed in depth in section 3.3. In 2006, the PRC was ranked the leading producer among developing countries in 21 categories of manufactured goods out of a total of 36 ISIC Revision III categories. Many economies in Asia have increased their trade interaction with the PRC. With the size of the Chinese market, its established manufacturing capabilities in many sectors, and its growth potential for the coming decades, transforming trade competition with the PRC into coordination will create a win-win solution for both the PRC and its trade partner countries.

The PRC is a developing country in the South. Transforming trade competition with the PRC into coordination is rational on the following bases:

1. The PRC and other countries in the South still rely on trade with industrialized countries, as can be seen in Tables 3.13 and 3.14, where the values of the share of those developing countries is higher in the markets of industrial Europe and the US. Some products of the PRC and other countries in the South are in competition with each other in those markets. This issue can be solved through appropriate coordination of industrial policy. Industrial policy should be looked upon as a regional endeavor to avoid excessive competition of products in a third market. It can also involve coordination of major investment projects to avoid costly overcapacities in very capital-intensive industries.
2. Trade cooperation with the PRC should not consist only of a reduction in tariffs and a lowering of technical and bureaucratic barriers; there is also a need for dissemination of critical trade-related information and promotion of business contacts. Cooperation can also extend to collaborative research, training schemes and other aspects to upgrade the level of industrial production among trade partners.

### **3.5.6 Role of TNCs in Globalization and Regionalization**

It is generally accepted that TNCs have played a dominant role in the process of globalization and are also an important factor in regionalization. It played its role mainly through FDI. The total assets and sales of TNC foreign affiliates reached US\$51.18 trillion and US\$25.17 trillion,



Source: UNCTAD (2006b).

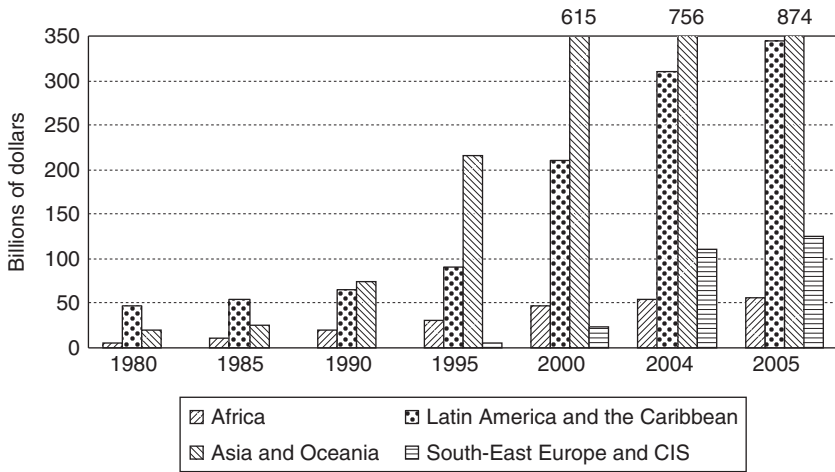
Figure 3.6 FDI outflows from developing and transitional economies, 1980–2005

respectively, in 2006. Exports of these foreign affiliates reached US\$4.7 trillion in the same year, about 42 percent of the global total of exported goods. In 2004, the sales of Japanese TNCs in all industries reached US\$3.1 trillion, or approximately 67 percent of the country's GDP. In 2003, the sales of ten Japanese East Asian affiliates were US\$367 billion, which far exceeded their merchandise trade exports to those ten East Asian economies (valued at US\$214.3 billion). The impact of the TNCs on national and regional economic development and trade should therefore not be underestimated.

### Growth of TNCs in the South and developing Asia

FDI has had a large influence on national development and trade, and the PRC has been the largest recipient of FDI in the Asian region. Its exports are dominated by processed goods and foreign-invested enterprises. But the PRC has also invested abroad in recent years, which has become a trend among developing countries. In the early 1980s, the bulk of FDI from developing countries originated in Latin America; now it is Asian economies that dominate the outflow. Figure 3.6 shows FDI outflows from developing and transitional economies in 1980–2005.

The geographical composition of FDI from developing and transitional economies has changed over time, reflecting the growing importance of Asia as a source region since the mid-1980s. In 2004, companies from the



Source: UNCTAD (n.d.).

Figure 3.7 Outward FDI stock by source region, 1980–2005

Asian region controlled more than two-thirds of the US\$1 trillion stock of FDI from developing countries. Among the top 100 TNCs from the developing world, as many as 78 were based in Asia. This change in the geographical composition of FDI from the South is shown in Figure 3.7. Table 3.17 shows the top 15 developing and transitional economies in terms of their stock of outward FDI in four different years, and Table 3.18 shows the number of South, East and Southeast Asian parent corporations and foreign affiliates. These tables provide a general idea of the rate of growth of the South’s TNCs in these regions.

**Cooperation with the PRC at the TNC level**

Generally speaking, TNCs are the major force driving globalization. They are generally market driven, but many TNCs from developing countries are state owned or closely affiliated with the government. Due to their large impact on investment and trade, TNCs should be fully taken into consideration in any discussion of trade coordination.

**3.5.7 Preliminary Exploration of RTAs between the PRC, Japan and the Republic of Korea**

There are ongoing studies and preliminary discussions about an RTA between the PRC, Japan and the Republic of Korea. A lot of in-depth

Table 3.17 Top 15 developing and transitional economies in terms of stock of outward FDI in 1980, 1990, 2000 and 2005 (million US\$)

Rank	Economy	1980	Economy	1990	Economy	2000	Economy	2005
1	Brazil	38 545	Brazil	41 044	Hong Kong, China	388 380	Hong Kong, China	470 458
2	Taipei, China	13 009	Taipei, China	30 356	Taipei, China	66 655	British Virgin Islands	123 167
3	Argentina	5 970	South Africa	15 004	British Virgin Islands	64 483	Russian Federation	120 417
4	South Africa	5 541	Hong Kong, China	11 920	Singapore	56 766	Singapore	110 932
5	Mexico	1 632	Singapore	7 808	Brazil	51 946	Taipei, China	97 293
6	Kuwait	1 046	Argentina	6 057	South Africa	32 319	Brazil	71 556
7	Libya	870	PRC	4 455	PRC	27 768	PRC	46 311
8	Panama	811	Panama	4 188	Republic of Korea	26 833	Malaysia	44 480
9	Bermuda	727	Kuwait	3 662	Malaysia	22 874	South Africa	38 503
10	Singapore	623	Mexico	2 672	Argentina	21 141	Republic of Korea	36 478
11	Bahrain	598	Malaysia	2 671	Cayman Islands	20 553	Cayman Islands	33 747
12	Botswana	440	Republic of Korea	2 301	Russian Federation	20 141	Mexico	28 040
13	Bahamas	285	Saudi Arabia	1 873	Bermuda	14 942	Argentina	22 633
14	Saudi Arabia	239	Bermuda	1 550	Chile	11 154	Chile	21 286
15	Malaysia	197	Libyan Arab Jamahiriya	1 321	Mexico	8 273	Indonesia	13 735
	All developing and transitional economies	72 307	All developing and transitional economies	148 913	All developing and transitional economies	893 102	All developing and transitional economies	1 399 963

Source: UNCTAD (2006b).

Table 3.18 Number of South, East and Southeast Asian parent corporations and foreign affiliates (latest year available)

Region/economy	Year	Parent corporations based in economy	Foreign affiliates located in economy	Region/economy	Year	Parent corporations based in economy	Foreign affiliates located in economy
South, East and Southeast Asia		13 681	345 851	South Asia		655	4142
East Asia		12 708	307 844	Afghanistan	2006	n.a.	5
PRC	2005	3 429	280 000	Bangladesh	2006	7	40
Hong Kong, China	2005	1 167	9075	Bhutan	1997	n.a.	2
Republic of Korea	2006	7 460	13 311	India	2006	587	1 796
Macau	2004	46	1024	Maldives	2006	2	6
Mongolia	1998	n.a.	1 400	Nepal	2006	n.a.	18
Taipei, China	2005	606	3034	Pakistan	2001	59	582
				Sri Lanka	2004	n.a.	1 693

Source: UNCTAD (2007b).



Table 3.19 Trade share of major trade blocs

	Share of exports within blocs (%)			Share of global exports (%)
	1995	2000	2005	2005
EU 25	65.7	67.5	66.8	39.4
NAFTA	46.0	55.6	55.8	14.5
Southern Common Market (Mercosur)	20.5	21.0	12.9	1.6
ASEAN	25.5	24.0	24.9	6.4
PRC, Japan, Republic of Korea	16.0	17.0	20.2	16.2

Source: Zhang et al. (2007).

study should be done before committing to such an RTA. The following is a very minor part of the preliminary studies done by the Development Research Center of the State Council, PRC, and shows the competitiveness of PRC, Japan and Republic of Korea.

#### **Rationality of studying FTAs between the PRC, Japan and the Republic of Korea**

It can be seen from Table 3.19 that exports from the PRC, Japan and the Republic of Korea make up a higher share of the global market compared with trade blocs such as NAFTA. The PRC's share of Japan and the Republic of Korea's export markets has also seen a significant increase, as shown in the tables in section 3.4.

#### **International competitiveness of major industries in the PRC, Japan and the Republic of Korea**

The international competitiveness of major industries can be calculated and compared using the Revealed Comparative Advantage (RCA) index.

$$RCA = \frac{x_g^k / x_w^k}{x_j / x_w}$$

In the above formula,  $x$  refers to exports,  $k$  to category of exported goods,  $j$  to country concerned, and  $w$  to global total (data based on HS' 2002). Table 3.20 presents the RCA index for the major industrial sectors of the three countries.

Table 3.20 International competitiveness of major industrial sectors of the three countries (RCA index 2002–05)

	PRC		Japan		Republic of Korea	
	2002	2005	2002	2005	2002	2005
Agriculture	0.46	0.38	0.05	0.05	0.15	0.13
Fisheries	1.42	1.44	0.19	0.26	0.66	0.47
Petrochemicals	0.50	0.52	0.76	0.83	0.74	0.84
Textiles	3.05	3.09	0.31	0.30	1.72	1.05
Iron and Steel	0.85	1.03	1.33	1.31	1.35	1.40
Machinery	1.27	1.38	1.35	1.41	1.14	0.95
Electronics	1.41	1.59	1.50	1.45	1.88	1.99
Automobile	0.18	0.23	2.16	2.26	1.02	1.42

Source: Zhang et al. (2007).

Table 3.21 Comparison of trade competitiveness of three East Asian countries

	2002			2005		
	PRC	Japan	Republic of Korea	PRC	Japan	Republic of Korea
Agriculture	1.95	0.12	0.60	2.03	0.11	0.49
Fisheries	1.82	0.13	0.85	2.03	0.16	0.44
Petrochemicals	0.47	1.31	1.54	0.54	1.31	1.33
Textiles	1.72	0.35	0.67	1.80	0.31	0.43
Iron and Steel	0.55	1.71	0.67	0.92	1.56	1.22
Machinery	0.77	1.13	1.24	0.85	1.18	0.86
Electronics	0.95	1.33	0.53	0.82	1.01	1.13
Automobile	0.58	1.92	0.24	0.50	1.15	1.20

Source: Zhang et al. (2007).

**Analysis of comparative advantage in East Asian intraregional trade**

To simplify the calculation, the comparative advantages in intraregional trade of different industrial sectors in each country within the north-east Asian region were studied. The Regional Revealed Comparative Advantage (RRCA) index was used for measurement. The results of these calculations are shown in Table 3.21.

Results from Tables 3.20 and 3.21 show that the PRC’s international competitiveness in the iron and steel, machinery, electronics and

automobile sectors is lower than that of Japan or the Republic of Korea. Similar conclusions have been drawn from an analysis of RRCA in intra-regional trade. All sectors should be studied in detail to prepare for a possible RTA. The above is a very minor sample and is shown for illustrative purpose only.

The analysis done in this section has shown that competition is unavoidable, even within a framework of regional cooperation. While RTAs are one aspect to consider in regional trade cooperation, and while tariff reduction is a key goal of many RTAs, they can cover a broad array of topics, including services, rule of origin, contingency measures (for example, anti-dumping, countervailing duties and safeguards), intellectual property rights, trade facilitation, competition, investment, government procurement, dispute settlement, labor standards, environmental standards, labor mobility, standards-related measures (for example, technical barriers to trade), technology transfer and capacity building. The rationality of cooperation on trade in a broader sense has been explored in an earlier part of this chapter.

## 3.6 ROLE OF TRANSPORT IN TRADE

### 3.6.1 The Impact of Transport Costs on Trade

Studies conducted by the WTO and other international organizations have found that transport costs are, in many cases, higher than the cost of tariffs. A study by the World Bank (2001) shows this to be true for 168 of the US's 216 trading partners. The study concludes that in many Latin American, Caribbean and African countries, the importer pays more for transport than for tariffs.

Transport costs vary across regions and products. Table 3.22 shows that freight costs in developing countries are on average 70 percent higher than in industrialized countries. Furthermore, countries differ greatly in their share of international trade for various modes of transport. It was mentioned previously that in 2003, logistical costs accounted for 8.6 percent of GDP in the US and about 21.3 percent of GDP in the PRC. With the logistic cost, the US has a share of transport cost around 5.5 percent, while the PRC has a share of transport cost around 12 percent of GDP. The high share of transport costs may not only be an issue for the PRC, but may also affect many developing countries. This is a subject requiring serious, in-depth study. While the subject will be touched upon in this chapter, only two topics relating to trade cooperation with the PRC will be addressed here. The first will be a general discussion of marine

Table 3.22 Freight costs by region (% of import value)

World	6.1
Industrialized countries	5.1
Developing countries	8.7
Africa	12.7
Latin America	8.6
Asia	8.4
Pacific	11.7

Source: UNCTAD (2005a).

Table 3.23 Merchandise trade by transport mode, US and Japan (% share of value and weight)

Mode	US				Japan			
	Import		Export		Import		Export	
	Value	Weight	Value	Weight	Value	Weight	Value	Weight
Water	45.5	78.7	27.2	75.1	70.7	99.8	74.8	99.2
Air	23.4	0.3	34.4	0.6	29.3	0.2	29.3	0.8
Land	26.2	20.8	29.5	23.9	0.0	0.0	0.0	0.0
Miscellaneous	5.0	0.2	8.9	0.8	0.0	0.0	0.0	0.0

Note: Land transport includes transport by rail, truck, and pipeline.

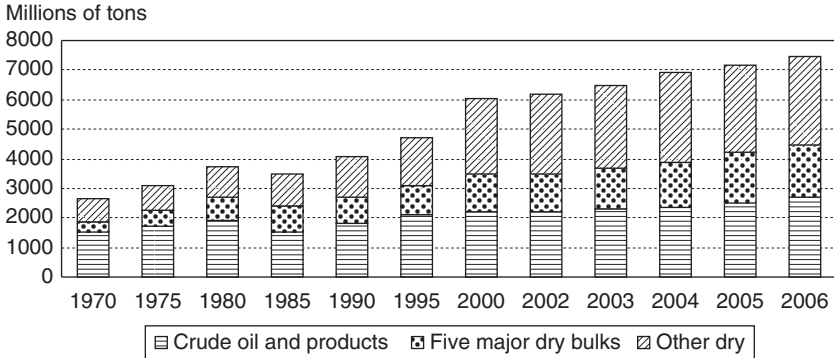
Source: USDOT (2002).

costs involved in trade. This will provide further justification for regional coordination with the PRC. The other will focus on current competition and cooperation among sea ports in order to illustrate the rationality of cooperation. As obtaining accurate data on the costs of various modes of transport is difficult, Tables 3.22 and 3.23 will be quoted as general reference for future study.

### 3.6.2 Rationality of Trade Coordination with the PRC: Reduction of Transport Costs in Seaborne Trade

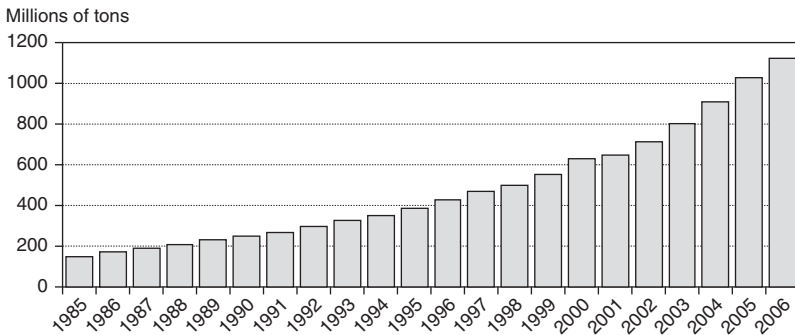
As can be seen in Figure 3.8, seaborne trade experienced rapid growth between 1970 and 2006; Figure 3.9 shows the growth of containerized trade from 1985 to 2006. Developing countries dominate in terms of goods loaded, as shown in Figure 3.10.

The cost of marine transport is huge. Shipping costs differ greatly and



Source: UNCTAD (2007a).

Figure 3.8 International seaborne trade for selected years (millions of tons loaded)



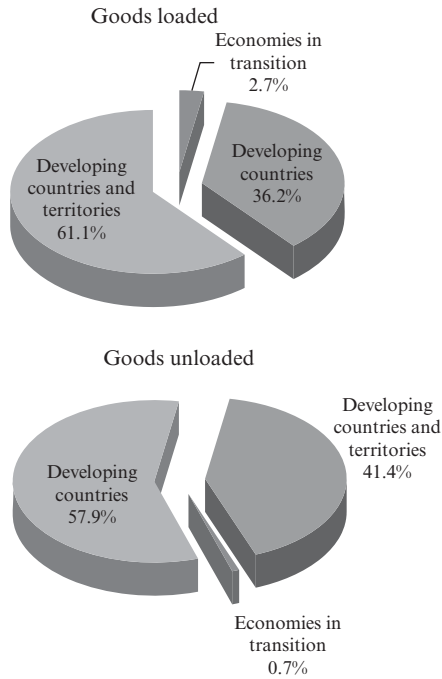
Source: UNCTAD (2007a).

Figure 3.9 International containerized trade growth, 1985–2006 (millions of tons)

are affected by type of goods, type of transport (tankers, bulk shipping or containers), ship size, transport route and time of year. For containers, yet another factor is whether they are fully loaded or empty.

#### Transport costs for containers along three major routes

In the case of the PRC, for example, the total number of containers handled in 2007 was about 120 million TEUs. Assuming 65 percent of them were fully loaded, the shipping cost from the PRC to the US would have been between US\$120 billion and US\$150 billion.



Source: UNCTAD (2007a).

Figure 3.10 World seaborne trade, by country group (% share in tonnage)

Table 3.24 Freight rates (range) along three major liner trade routes, 2004–06 (US\$/TEU)

Transpacific		Europe–Asia		Transatlantic	
Asia–US	US–Asia	Europe–Asia	Asia–Europe	US–Europe	Europe–US
1529–1923	781–838	704–825	1430–1838	778–983	1269–1762

Source: UNCTAD (2004, 2005a, 2006a, 2007a).

**Transport costs for bulk shipping**

The freight rate for bulk shipping also varies greatly throughout the year, and is dependent upon trade route and ship size. The round-trip cost of transatlantic transport of bulk shipping varied between US\$38 725/day and US\$92 500/day in the period 2004–07.

**Transport costs for tankers**

As with bulk shipping, the freight rate for tankers is dependent upon time of year, route, and ship size. The freight rate for a small tanker such as the Aframax (50 000–99 999 dWt) varies from US\$31 000/day to US\$52 000/day.

The above figures provide a general picture of transport costs for different types of goods. UNCTAD estimates that marine freight may account for 5–6 percent of the import value of developing countries. According to an UNCTAD study: ‘developing countries in Asia accounted for 67.5% of import value and 61.5% of freight payments of all developing countries as compared with 66.4% for 2003’ (UNCTAD 2006a).

Although it is inevitable that developing countries in Asia will have some trade flow with industrialized countries, such as transatlantic trade with the US and Europe, if regional cooperation with the PRC is further enhanced, there will be a reduction in transatlantic trade to the US and Europe, which will result the reduction of transportation cost. This may be one rationale for strengthening intraregional cooperation between Asia and the PRC.

The study outlined in Box 3.1, conducted by the BPA of the Republic of Korea, makes a strong case for cooperating with the PRC in port development, in part as it will reduce the share of overall trade costs associated with transport. A managing director of Hutchison Port Holdings has commented that there are quite a few countries with spare port capacity. Many of those ports are not making returns off their investment. They concluded that overexpansion and overcapacity is going to be the result.

**3.6.3 Transport Facilitation to Become One Essential Element of Regional Cooperation**

It has been said that intraregional cooperation in Asia will reduce transport costs associated with seaborne trade. If an import value of 8.4 percent is used to calculate the PRC’s transport costs, they may reach approximately US\$80 billion<sup>8</sup> in 2007, a huge amount. Rising transport costs are also an issue for other developing countries in Asia.

Studies by UNCTAD show that transport facilitation is an indispensable aspect of regional cooperation for most countries. Improving trade logistics and transport connectivity is an important element of any policy that seeks to improve trade opportunities in order to accelerate growth and structural change. It is clear that tariff barriers or quantitative constraints pose formidable obstacles to trade, but unlike the absence of an appropriate regional infrastructure, they do not render trade exchanges completely impossible. The scope of regional infrastructure covers more

### **BOX 3.1 RATIONALITY OF COOPERATION WITH THE PRC ON PORT DEVELOPMENT**

1. The emergence of the PRC has resulted in competition between ports in Asia. The PRC's ports have experienced extraordinary growth due to increased trade. In 2006, Shanghai reported a total cargo throughput of 537 million tons, firmly establishing its position as the world's busiest port, a title previously held by Singapore. As of 1998, only one port in the PRC ranked among the top 20 container terminals in throughput: Shanghai ranked tenth, while Kaohsiung (Taipei, China) and Busan (Republic of Korea) were ranked third and fifth, respectively. By 2006, 13 of the PRC's ports reported more than 1 million TEU of container throughput, six of them ranking among the top 20 container terminals in throughput. Shanghai ranked third, and Shenzhen came in fourth on the top 20 list; Busan and Kaohsiung dropped to fifth and sixth, respectively.

The rise of the PRC's ports has caused increased competition among Asian ports. It was reported that in 2008, Kaohsiung was to receive an investment of approximately US\$740 million in new basic infrastructure to strengthen its transshipment center. Malaysia is seeking to tap into Chinese trade volumes and there is rapid rise of its port Tanjung Pelepas. Shanghai has invested heavily in its largest container port. The Japanese government has cut costs at its main port by up to 40 percent in order to strengthen its competitiveness; Busan has also struggled heavily to be a hub port. There is serious competition between ports at the international and domestic levels. There is also competition among terminals within the same port area.

2. The study by Busan Port Authority of the Republic of Korea studied the growing competition among port facilities. New port projects in Shanghai and Busan were examined in detail. Connections between changes in maritime logistics and the emergence of very large and ultra-large container vessels were analyzed. The study concluded that there will be a shift in port logistics from the current hub-and-spoke system to a mega-hub-plus-major-ports system.



3. Four reasons for establishing a new paradigm of co-prosperity of Northeast (NE) design ports:
  - (a) Diversified customer needs;
  - (b) A change from Alliance/Mega-carriers to diversified, specialized service routes with optimal vessel sizes;
  - (c) Increased cargo volume in medium-to-small ports, resulting in direct calling by mother vessel; and
  - (d) A change of liner service and port status from hub-and-spoke to mega-hub-plus-major-ports.
4. Establishing a new paradigm of ports cooperation should:
  - (a) Move away from competition, combat strategy, and an exclusive and closed approach, toward competition and cooperation, win-win strategies, co-existence, and an open approach
  - (b) Set expectations for short, medium, and longer term.
    - i. Reduce costs of port logistics operation and marketing in the short term
    - ii. Prevent excessive port investment by facility and ensure an efficient distribution of resources in logistics infrastructure in the medium term
    - iii. Respond efficiently to non-Northeast Asian economic bloc partners and establish a stable cooperation system for Northeast Asian ports.
  - (c) Define a concrete area of cooperation

This may include regional cargo volume projections, port expansion plans, addressing environmental issues, waterfront development, and emergency cooperation (e.g., in response to natural disasters).

*Source:* Busan Port Authority (BPA) (2006).

than simple transport. It also includes institutional infrastructures such as telecommunications, and other elements too numerous to include here.

Some sentences in the conclusion of a WTO study will be quoted to show the importance of transport infrastructure on trade:

Infrastructure and related services interact with trade in goods and services in a complex way. First, the cost and quality of infrastructure services are important determinants of the volume and value of international trade through the impact they have on cross-border transactions costs. Second, because sectors differ in

terms of how intensively they use infrastructure services, the quality and cost of such services also affect matters of comparative advantage. (WTO 2007a)

Therefore, it can be concluded that every country should focus on the improvement of transport facilities to promote regional cooperation.

### 3.7 CONCLUSIONS

Economists have traditionally seen trade cooperation as a means to avoid trade wars. It has been argued that the rationale behind government decisions to cooperate on trade policy may include such strategic reasons as wanting to increase market size, seeking scarce resources, and insuring against unfavorable trade policy developments in partner countries.

Although trade cooperation can be studied at various levels and among different parties, this chapter has focused primarily on South–South cooperation. This selection was made because the People’s Republic of China is a developing country in the South, the South accounts for 84.7 percent of the world population, and as of 2006 this region’s share of global exports of goods and services was approximately 32.7 percent. The rationality of trade cooperation with the PRC has been analyzed from the macro side. Many tables with recent data have been provided. This will assist readers to study further the theme of this chapter. To limit the scope of discussion, only merchandise trade has been discussed.

Section 3.2 of this chapter presented essential information on various aspects of the PRC’s economy. Section 3.3 examined the rapid evolution and progress of the PRC’s industrial performance. (The PRC has become the leading producer in nearly all manufacturing sectors based upon the very recent ISIC Revision III classification.) Section 3.4 discussed the increasing influence of the PRC in international trade. (The PRC has become the leading trading country in S–S trade.) The contents of the above three sections show that with the growth potential of the PRC, the size of its market, and its full range of manufacturing capabilities, it can provide complements in trade with nearly all countries, and that it is rational to cooperate with the PRC to achieve a win–win solution.

Section 3.4 presented the concepts of globalization and regionalization. The multilateral trade arrangement is focusing globally while the proliferation of regional trade agreements (RTAs) in recent years can remedy the slow progress of multilateral negotiations. The PRC is a developing country but has already engaged in RTAs with several other developing countries. A free trade agreement arrangement with the Republic of Korea and Japan is under exploration. The ASEAN–China FTA went into effect

in July 2003. This is a successful example of regional cooperation. This chapter has sought to suggest that regional cooperation can be extended beyond tariff reduction and trade liberalization, to facilitation of transport, promotion of investment flow and coordination at the policy level of industry. Increased liberalization of service may also further promote the welfare of the countries involved. The PRC is looking for ASEAN+3, that is, with ASEAN as the core, and the involvement of PRC, Japan and the Republic of Korea, the Asian region will be strengthened greatly.

The PRC's governmental policy on international and regional economic cooperation will be cited to conclude this report. The following section is quoted from China's 11th Five Year Plan authorized by the 10th China's People's Congress in March 2006. It is described in Section 2 of Chapter 37 of that document (China People's Congress 2006), titled 'Actively Develop Economic Cooperation', as follows:

It is necessary to have an overall planning to promote the facilitation of trade, investment, and transport. Participate actively in the international and regional cooperative institutions, enhance the dialogue and negotiation. Develop the bilateral and multi-lateral economic and trade cooperation with all countries. Participate actively in the preparation of regulations related to multi-lateral trade and investments; promote the establishment of a new international economic order. Increase the development assistance to other developing countries, further strengthen the economic and technological cooperation with developing countries.

China is a developing country in the global society. We must participate actively in both multi-lateral and regional trade agreements to contribute to the prosperity of the global society as a whole.

## NOTES

1. In the People's Republic of China, 1978 is the base year for counting the starting period of opening and reform.
2. Comparison of the PRC's exports with those of its four Asian neighbors is based on the World Bank (1992).
3. The value here differs from the share of the secondary sector of GDP (49.2 percent) described in the previous paragraph because the latter includes the added value of construction.
4. Refer to Table 3A.3 in the Appendix for more details.
5. Please refer to Table 3A.4 in the Appendix.
6. First-tier NIEs are defined by UNCTAD to be Hong Kong, China; the Republic of Korea; Singapore; and Taipei, China.
7. HS is the abbreviation of Harmonized Commodity Description and Coding System.
8. This value of US\$80 billion does not contradict the previous calculation of US\$120–150 billion because 8.4 percent is a very general figure.

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## APPENDIX

Table 3A.1 Volume and growth rates of major industrial products

Item	Unit	Amount	Growth rate since 2006 (%)
Cotton yarn	10 <sup>4</sup> tons	2000	14.7
Cloth	100 mn meters	660	10.3
Chemical fiber	10 <sup>4</sup> tons	2390	15.3
Sugar	10 <sup>4</sup> tons	1271.4	34
Tobacco	100 mn. pieces	21413.8	5.9
Color TV	10 <sup>4</sup> units	8433	0.7
Household refrigerator	10 <sup>4</sup> units	4397.1	24.5
Household air conditioner	10 <sup>4</sup> units	8014.3	17
Primary energy	100 mn. SCE	23.7	7
Crude coal	100 mn. tons	25.36	6.9
Crude oil	100 mn. tons	1.87	1.1
Natural gas	100 mn. m <sup>3</sup>	693.1	18.4
Electricity generation	100 mn. kWh	32777.2	14.4
Steel	10 <sup>4</sup> tons	56894.4	21.3
Refined copper	10 <sup>4</sup> tons	344.1	14.6
Aluminum	10 <sup>4</sup> tons	1228.4	32.6
Cement	100 mn tons	13.6	9.9
Sulfuric acid	10 <sup>4</sup> tons	5500	9.3
Ethylene	10 <sup>4</sup> tons	1047.7	11.4
Chemical fertilizer	10 <sup>4</sup> tons	5786.9	8.3
Generating equipment	10 <sup>4</sup> kW	12991	11.1
Automobile	10 <sup>4</sup> units	888.7	22.1
Passenger car	10 <sup>4</sup> units	479.8	24
Tractor	10 <sup>4</sup> units	20.3	1.9
Integrated circuit	100 mn chips	411.6	22.6
Programmed controlled exchange	10 <sup>4</sup> lines	5387.1	-27.2
Mobile phone	10 <sup>4</sup> units	54857.9	14.3
Micro personal commuter	10 <sup>4</sup> units	12073.4	29.3

Source: National Bureau of Statistics of China (2008a).

*Table 3A.2 Volume of merchandise trade in the PRC: various categories and their growth rates in 2007*

Item	Value (million US\$)	Growth rate since 2006 (%)
Total amount of imports and exports	21 738	23.5
Export of goods:	12 180	25.7
General trade	5 386	29.4
Processing trade	6 177	21.0
Electric and mechanical products	7 012	27.6
High and new technological products	3 478	23.6
State-owned enterprises	2 248	17.5
Foreign invested enterprises	6 955	23.4
Other	2 977	39.2
Import of goods:	9 558	20.8
General trade	4 286	28.7
Processing trade	3 684	14.6
Eclectic and mechanical products	4 990	16.7
High and new technological products	2 870	16.0
State-owned enterprises	2 697	19.8
Foreign invested enterprises	5 594	18.4
Other	1 267	35.1
Trade surplus:	2 622	47.7
General trade	1 099	32.2
Processing trade	2 493	32.0
Other	-970	2.6

*Source:* National Bureau of Statistics of China (2008a).

Table 3A.3 Structure of MVA in selected country groups (%)

ISIC Division	Industrialized countries					Developing countries						
	All Countries 2006	EU-15 2006	Germany 2004	US 2004	Japan 2005	All Countries 2006	NICs 2006	Least developed countries 2006	Republic of Korea 2005	Malaysia 2004	India 2004	PRC 2005
15 Food and beverage	8.4	11.1	8.2	12.8	9.8	11.9	10.7	26.4	6.1	7.6	7.3	8.9
16 Tobacco products	0.4	0.4	0.4	1.6	0.7	2.9	0.7	8.0	0.5	0.3	1.7	3.6
17 Textiles	1.1	2.0	1.1	1.6	0.7	4.6	3.0	17.5	2.8	1.3	6.5	5.7
18/19 Apparel, fur, leather, footwear	1.0	1.6	0.8	0.9	1.2	3.9	2.1	14.6	2.5	1.6	2.2	4.1
20 Wood products (excl. furniture)	1.8	2.0	1.5	2.1	0.8	1.1	1.2	1.2	0.5	3.4	0.2	0.9
21 Paper and paper products	2.6	3.1	2.2	4.1	2.7	2.2	2.2	1.3	1.7	1.6	1.5	2.0
22 Printing and publishing	4.1	5.6	4.4	3.0	4.8	1.7	2.2	2.1	2.3	1.8	1.2	0.8
23 Coke, refined petroleum products, nuclear fuel	2.3	1.5	1.7	2.9	5.5	5.9	6.5	1.9	3.5	11.7	11.4	3.5
24 Chemicals and chemical products	8.9	12.4	9.9	14.5	7.8	9.7	11.1	9.9	8.7	11.9	16.6	11.2
25 Rubber and plastics products	2.6	4.3	4.8	4.5	1.1	3.7	3.4	1.5	4.7	6.3	3.0	3.3
26 Non-metallic mineral products	2.9	4.5	3.1	3.2	2.6	4.1	3.7	4.7	3.4	4.2	5.0	4.9



Table 3.A.3 (continued)

ISIC Division	Industrialized countries					Developing countries						
	All Countries 2006	EU-15 2006	Germany 2004	US 2004	Japan 2005	All Countries 2006	NICs 2006	Least developed countries 2006	Republic of Korea 2005	Malaysia 2004	India 2004	PRC 2005
27 Basic metals	4.1	3.9	4.4	3.7	6.6	7.5	6.5	2.2	8.2	3.9	19.0	13.5
28 Fabricated metal products	5.4	8.6	8.8	6.5	4.1	3.6	4.1	2.3	5.1	3.4	2.3	3.0
29/30 Non-electrical machinery	11.2	12.2	16.0	9.4	12.8	6.7	7.7	1.5	9.7	10.5	5.6	8.1
31/32 Electrical machinery	28.3	9.3	9.8	8.4	20.5	17.9	20.3	1.8	23.9	21.7	4.6	16.2
33 Medical, precision, and optical instruments	2.6	3.0	4.1	5.7	1.6	0.9	1.1	0.1	1.2	1.0	0.9	1.3
34/35 Transport equipment	9.4	11.7	16.5	11.6	12.4	9.4	12.0	1.5	13.8	5.1	9.7	6.7
36 Furniture; manufacturing n.e.c.	2.9	2.8	2.3	3.7	4.3	2.3	1.5	1.5	1.4	2.6	1.4	2.4
37 Recycling	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D Total manufacturing	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: UNIDO (2008).

*Table 3A.4 Summary table showing the People's Republic of China's rank among leading producers in various manufacturing sectors*

Item (ISIC)	PRC's rank among world leading countries		PRC's rank among developing countries	
	2000	2006	2000	2006
Food and beverage (ISIC15)	3	3	1	1
Tobacco products (ISIC16)	1	1	1	1
Textiles (ISIC17)	1	1	1	1
Wearing apparel (ISIC18)	3	1	1	1
Leather, Leather products, and footwear (ISIC19)	1	1	1	1
Wood products (excl. furniture) (ISIC20)	8	4	2	1
Paper and paper products (ISIC21)	4	3	1	1
Printing and publishing (ISIC22)	10	6	1	1
Coke, refined petroleum products, nuclear fuel (ISIC23)	3	2	1	1
Chemicals and chemical products (ISIC24)	4	3	1	1
Rubber and plastic products (ISIC25)	3	2	1	1
Non-metallic mineral products (ISIC26)	3	3	1	1
Basic metals (ISIC27)	3	1	1	1
Fabricated metal products (ISIC28)	1	4	1	1
Machinery and equipment. n.e.c. (ISIC29)	4	4	1	1
Office, accounting, and computing machinery (ISIC30)	8	5	2	1
Electric machinery and apparatus (ISIC31)	3	1	1	1
Radio, television, and communication equip (ISIC32)	3	3	1	1
Medical, precision, and optical instruments (ISIC33)	9	6	2	1
Motor vehicles, trailers, semi-trailers (ISIC34)	–	–	13	11
Other transport equipment (ISIC35)	2	1	1	1
Furniture; Manufacturing. n.e.c. (ISIC36)	3	3	1	1

*Source:* National Bureau of Statistics of China (2008a).

Table 3A.5 Comparison of trade structures of People's Republic of China, Japan and Republic of Korea

Item	Exports						Imports						
	Japan		PRC		Republic of Korea		Japan		PRC		Republic of Korea		
	1995	2005	1995	2005	1995	2005	1995	2005	1995	2005	1995	2005	
Total Amount (billion US\$)	442.9	594.9	148.8	762	125.1	284.4	336.1	515.9	660	132.1	660	135.1	261.2
Sector share of total (%)													
Agricultural products	n.a.	n.a.	7.9	3.14	2.25	1.06	15.35	9.91	6.9	2.05	5.06	4.25	4.25
Crude materials excluding fuel	n.a.	1.14	2.92	n.a.	1.43	1	10.2	6.36	7.47	10.62	8.55	5.83	5.83
Mineral fuel	n.a.	n.a.	3.59	2.32	1.99	5.54	16.06	25.81	3.92	9.76	14.17	25.89	25.89
Chemical manufactures	6.67	8.59	6.09	4.62	7.09	9.62	7.11	7.29	13	11.58	9.55	9.21	9.21
General machinery	18.43	17.52	3.2	5.48	5.78	7.06	3.92	5.01	20.65	10.25	16.29	8.81	8.81
Office and computing machinery	8.46	4.1	3.23	14.53	3.97	6.24	4.84	5.37	2.16	5.42	2.64	2.7	2.7
Telecommunications machinery, etc.	6.39	5.66	5.65	12.45	7.1	13.27	2.72	3.49	5.77	4.45	2.26	2.56	2.56
Other electrical machinery	16.74	13.76	6.42	10.17	22.79	15.09	6.39	8.13	7.38	20.95	10.77	14.99	14.99
Road vehicles	17.63	20.74	1.81	2.85	8.09	13.12	3.73	2.66	2.03	1.86	1.41	1.52	1.52
Other transport equipment	2.66	2.45	n.a.	n.a.	4.74	6.19	n.a.	n.a.	2	1.14	3.21	1	1
Textiles	1.62	1.16	9.45	5.45	9.85	3.65	1.89	1.17	8.46	2.36	3.07	1.4	1.4

Apparel	n.a.	n.a.	16.27	9.75	3.98	5.59	4.38	n.a.	n.a.	1.12
Leather products	n.a.	n.a.	n.a.	n.a.	1.45	n.a.	n.a.	1.75	n.a.	n.a.
Footwear	n.a.	n.a.	4.22	2.42	1	n.a.	n.a.	n.a.	n.a.	n.a.
Wood products	n.a.	n.a.	n.a.	n.a.	n.a.	1.1	n.a.	n.a.	n.a.	n.a.
Furniture	n.a.	n.a.	1.18	2.19						
Paper products	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.68	n.a.	n.a.
Rubber products	1.2	1.24	n.a.	n.a.	1.21	n.a.	n.a.	n.a.	n.a.	n.a.
Non-metallic mineral manufactures	1.2	1.09	2.3	1.79	n.a.	1.8	1.05	n.a.	n.a.	1.28
Iron and steel	3.79	4.39	3.71	2.62	4.43	1.76	1.43	4.95	3.95	5.81
Non-ferrous metals	n.a.	1.12	1.3	1.44	n.a.	3.17	2.5	2.03	2.59	3.01
Metal products	1.63	1.52	3.03	3.47	2.93	1.65	1.32	1.33	1.13	1.14
Professional and scientific instruments	2.48	3.3	n.a.	2.22	n.a.	3.48	2.48	1.64	6.26	3.16
Photographic & optical, watches	3.01	3.05	2	n.a.	n.a.	1.23	1.2	1.44	1.13	1.55
Miscellaneous manufactures	2.36	2.52	11.81	7.94	3.9	4.46	4.3	2.1	1.56	1.94
Not classified	2.14	4.64	n.a.	n.a.	1.99	n.a.	1.83	n.a.	n.a.	2.26

Source: ICSEAD (2007).

Table 3A.6 Comparison of trade structures of selected NICs

Item	Exports						Imports					
	Hong Kong, China		Taipei, China		Singapore		Hong Kong, China		Taipei, China		Singapore	
	1995	2005	1995	2005	1995	2005	1995	2005	1995	2005	1995	2005
Total Amount (billion US\$)	173.9	292.1	111.7	198.4	118.2	226.3	196.1	300.2	103.5	182.6	124.4	197.1
Sector share of total (%)												
Agricultural products	n.a.	n.a.	3.45	1.11	1.2		5.35	2.93	4.76	3.21	4.5	2.81
Crude materials excluding fuel	n.a.	n.a.	1.81	1.32			2.09		6.29	3.94	1.18	
Mineral fuel	n.a.	n.a.		4.46	8.19	13.8	1.9	2.68	6.89	15.39	8.06	17.75
Chemical manufactures	n.a.	n.a.	6.76	10.19	3.36	9.02	7.34	6.09	13.3	12.57	6.46	6.23
General machinery	n.a.	n.a.	8.43	7.33	40.44	2.69	5.65	4.67	11.53	10.57	10.48	55.82
Office and computing machinery	1.33	n.a.	14.51	7.84	2.3	9.09	4.53	10.72	2.38	3.04	10.59	8.77
Telecommunications machinery, etc.	n.a.	n.a.	5.62	6.01	20	2.57	9.62	12.67	1.91	2.62	7.39	9.82
Other electrical machinery	2.37	n.a.	14.93	26.37	6.02	9.84	12.54	22.77	18.56	21.16	24.48	6.5
Road vehicles	n.a.	n.a.	4.42	3.15	11.47		3.04	n.a.	4.44	2.14	2.16	26.58
Other transport equipment	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.07	n.a.	1.35	1.66	2.79	1.95
Textiles	1.04		10.66	31.14	n.a.	n.a.	8.65	35.01	1.73	22.2	1.69	2.2

Apparel	5.52	2.48	2.92	4.78	n.a.	n.a.	6.5	4.6	n.a.	n.a.	1.32	15.47
Leather products	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.41	6.16	n.a.	n.a.	n.a.	n.a.
Footwear	n.a.	n.a.	1.26	n.a.	n.a.	n.a.	3.28	1.43	n.a.	n.a.	n.a.	1.07
Wood products	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.7	n.a.	n.a.	n.a.	n.a.
Furniture	n.a.	n.a.	1.57	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Paper products	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.69	n.a.	1.32	n.a.	n.a.	n.a.
Rubber products	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Non-metallic mineral manufactures	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2.89	3.71	1.16	1.35	1.51	1.49
Iron and steel	n.a.	n.a.	1.96	4.44	n.a.	n.a.	1.91	1.28	6.35	4.72	2.22	1.79
Non-ferrous metals	n.a.	n.a.	1.21	1.53	n.a.	n.a.	1.6	1.6	4.6	3.55	2.05	1.34
Metal products	n.a.	n.a.	5.56	4.01	n.a.	n.a.	1.6	1.14	1.09	1.7	1.7	1.41
Professional and scientific instruments	n.a.	n.a.	n.a.	6.41	n.a.	n.a.	n.a.	1.71	2.92	3.92	1.98	2.43
Photographic & optical, watches	1.17	n.a.	1.27	n.a.	n.a.	n.a.	4.07	2.72	1.09	2.65	1.89	1.28
Miscellaneous manufactures	1.64	n.a.	8.08	5.08	1.52	2.27	9.25	7.56	2.12	1.86	4.11	2.82
Not classified	83.08	94.04	n.a.	n.a.	41.53	46.13	2.04	n.a.	3.22	1.52	1.18	1.27

Source: Derived from ICSEAD (2007).

Table 3A.7(a) Global trade matrix (1965)

Exporter	Importer					
	Industrialized countries		Developing countries		Within developing countries: first tier NIEs and PRC	
	Total (billion US\$)	Share (%)	Total (billion US\$)	Share (%)	Total (billion US\$)	Share (%)
Industrialized countries						
All goods	87.0	67.2	29.3	22.6	2.8	2.2
Manufactured goods	55.3	64.5	22.6	26.4	2.0	2.3
Primary products	30.4	75.2	6.2	15.2	0.8	2.0
Developing countries						
All goods	17.6	68.9	6.4	25.1	1.1	4.3
Manufactured goods	2.0	53.4	1.6	43.8	0.2	5.1
Primary products	15.6	71.7	4.7	21.8	0.9	4.1
Within developing countries: first tier NIEs and PRC						
All goods	1.5	53.7	1.3	47.1	0.2	7.7
Manufactured goods	0.9	55.5	0.7	47.2	0.1	6.7
Primary products	0.6	51.9	0.5	46.3	0.1	9.3

Source: UNCTAD (2005b).

Table 3A.7(b) Global trade matrix (1985)

Exporter	Importer					
	Industrialized countries		Developing countries		Within developing countries: first tier NIEs and PRC	
	Total (billion US\$)	Share (%)	Total (billion US\$)	Share (%)	Total (billion US\$)	Share (%)
Industrialized countries						
All goods	851.3	67.5	279.0	222.1	79.1	6.3
Manufactured goods	616.9	67.0	221.2	24.0	63.6	6.9
Primary products	213.8	71.6	50.5	16.9	13.8	4.6
Developing countries						
All goods	217.8	60.3	97.0	26.9	38.3	10.6
Manufactured goods	74.3	58.3	43.0	33.7	17.0	13.3
Primary products	131.9	59.4	40.3	18.2	12.7	5.7

Table 3A.7(b) (continued)

Exporter	Importer					
	Industrialized countries		Developing countries		Within developing countries: first tier NIEs and PRC	
	Total (billion US\$)	Share (%)	Total (billion US\$)	Share (%)	Total (billion US\$)	Share (%)
Within developing countries: first tier NIEs and PRC						
All goods	59.5	54.7	45.7	42.0	23.3	21.4
Manufactured goods	42.5	58.0	24.8	33.8	12.2	16.6
Primary products	6.7	25.5	7.9	30.1	2.8	10.7

Source: UNCTAD (2005b).

Table 3A.7(c) Global trade matrix (2003)

Exporter	Importer					
	Industrialized countries		Developing countries		First tier NIE and PRC within developing countries: first tier NIEs	
	Total (billion US\$)	Share (%)	Total (billion US\$)	Share (%)	Total (billion US\$)	Share (%)
Industrialized countries						
All goods	3555.1	74.71	1033.4	21.7	418.0	8.8
Manufactured goods	2829.7	74.0	864.3	22.6	349.7	9.1
Primary products	614.3	78.0	136.2	17.3	53.9	6.8
Developing countries						
All goods	1141.7	53.8	921.4	43.4	510.4	24.1
Manufactured goods	879.1	54.4	714.3	44.2	429.2	26.5
Primary products	258.3	52.6	200.2	40.8	79.1	16.1
Within developing countries: first tier NIEs and PRC						
All goods	545.4	47.5	586.0	51.0	385.1	33.5
Manufactured goods	511.6	48.6	526.8	50.1	350.6	33.3
Primary products	31.6	35.6	54.6	61.6	33.7	37.9

Source: UNCTAD (2006b).



Table 3A.8 S-S trade within world trade, 1970–2003

	1970–80	1980–90	1990–2000	2000–2003	Memo- randum item 1970–2003
<b>Growth rate of S-S trade (%)</b>					
Total	26.7	5.8	10.9	7.9	13.3
Agricultural products	20.5	4.9	7.9	7.3	9.4
Fuel, minerals, and metal	30.2	-8.8	7.8	-0.9	7.6
Manufactured products	26.4	16.9	12.1	9.6	18.3
<b>S-S trade: Share of total exports of developing countries (%)</b>					
Total	22.9	29.5	39.1	40.9	31.6
Agricultural products	22.3	30.6	39.6	43.1	32.0
Fuel, minerals, and metal	20.1	21.1	30.7	36.2	25.2
Manufactured products	34.5	36.5	41.6	41.9	37.9
<b>S-S trade: share of total exports of developing to industrialized countries (%)</b>					
Total	35.3	48.0	71.2	74.3	53.8
Agricultural products	34.5	52.5	71.6	80.9	55.5
Fuel, minerals, and metal	30.9	32.4	60.9	71.5	44.4
Manufactured products	60.1	64.4	74.3	73.8	66.8
<b>S-S trade: share of total imports of developing countries (%)</b>					
Total	26.1	32.4	37.8	43.9	33.1
Agricultural products	37.9	36.3	42.0	44.9	39.4
Fuel, minerals, and metal	74.1	72.9	67.2	66.8	70.9
Manufactured products	11.6	20.1	33.1	39.8	23.3
<b>S-S trade: share of total imports of developing countries from industrialized countries</b>					
Total	38.0	51.5	64.7	85.1	54.4
Agricultural products	65.7	62.2	76.8	87.1	70.4
Fuel, minerals, and metal	394.2	396.2	261.3	327.9	344.3
Manufactured products	13.8	27.4	51.8	69.6	34.7
<b>Growth rate of global exports (%)</b>					
Total	20.2	6.7	7.4	4.5	9.2
Agricultural	17.1	4.6	3.9	6.7	6.6
Fuel, minerals, and metal	27.1	-3.7	6.7	-1.6	6.5
Manufactured goods	19.0	10.1	7.9	5.2	10.3

Source: UNCTAD (2005b).

## 4. Regional integration and trade costs in South Asia

**Nilanjan Banik and John Gilbert**

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### 4.1 INTRODUCTION

The beneficial effect of free and fair trade is well known.<sup>1</sup> Trade affects growth in three primary ways. First, trade encourages flow of resources from low-productive sectors to high-productive sectors, leading to an overall increase in output. Export growth may affect total productivity growth through dynamic spillover effects on the rest of the economy (Feder 1983). The possible sources of this positive dynamic spillover include more efficient management styles, better forms of organization, labor training, and knowledge about technology and international markets (Chuang 1998). Second, with unemployed resources, an increase in export sales leads to an overall expansion in production and a fall in unemployment rate. As production increases, because of increase in scale of operation (economies of scale) firms become more efficient (Helpman and Krugman 1985). Third, international trade also allows for the purchase of capital goods from foreign countries and exposes an economy to technological advances of industrialized countries. Recent theoretical work suggests that capital goods imported from technologically advanced countries may increase productivity and thereby growth, since knowledge and technology are embodied in equipment and machinery and therefore transferred through international trade (Chuang 1998). In other words, trade plays an important role for economic growth of a region.

Despite these positive aspects, free trade is opposed mainly because workers and producers associated with the inefficient industries stand to lose out. There is considerable lobbying pressure by inefficient producers demanding more protection. As raising tariff barriers is not allowed under the World Trade Organization (WTO) framework, individual governments try to protect their respective economies by imposing non-tariff barriers (NTBs), like anti-dumping measures, import license, sanitary standards, and so on.

Besides these policy-induced reasons, trade flow can also be affected

by other reasons such as transportation costs – both freight costs and time costs (Baier and Bergstrand 2001; Rose and van Wincoop 2001); information costs (Rauch and Trindade 2002); contract enforcement costs (Evans 2001); use of different currencies (Rose and van Wincoop 2001); lack of trade facilitation measures such as inadequate logistics for moving goods through ports, inefficient handling of customs documentation, lack of harmonization of regulation standards, and so on (Wilson and Otsuki 2007); language barriers (Eaton and Kortum 2002); and local distribution costs – wholesale and retail (Feenstra 1998). In fact, these other factors can be more important than price factors like tariffs and exchange rates in affecting trade flows. Anderson and van Wincoop (2004) observe that direct policy instruments such as tariffs and quotas are less important compared to barriers such as lack of infrastructure, informational institutions, law enforcement and local distribution costs.

Hence, success of trade liberalization can be fully realized if trading partners can control for these above-mentioned ‘non-price factors of trade’ which are also known as trade costs.<sup>2</sup> Researchers can form an idea about trade costs by trying to account for all additional costs incurred in moving goods to the final consumer other than the marginal cost of producing the goods. For example, of the US\$2 export value for Barbie dolls when they leave Hong Kong for the United States, about 35 cents covers Chinese labor, 65 cents covers the cost of materials, and the remainder covers transportation and overheads, including profits earned in Hong Kong. The dolls sell for about US\$10 in the United States, of which Mattel (the retailer of Barbie dolls in the US) earns at least US\$1, and the rest covers transportation, marketing, wholesaling and retailing in the United States (Feenstra 1998).

According to Anderson and van Wincoop (2004) trade costs for industrialized countries are 170 percent. This number breaks down as follows: 21 percent transportation costs, 44 percent border-related trade barriers, and 55 percent retail and wholesale distribution costs ( $2.7 = 1.21 \times 1.44 \times 1.55$ ). Further breakdown of the 44 percent border-related trade barriers shows 8 percent because of policy barriers, 7 percent because of language barriers, 14 percent because of currency barriers (from the use of different currencies), 6 percent because of information barriers and 3 percent because of security barriers.

Given the importance of trade costs in affecting trade flow among nations, it makes sense to understand and to the extent possible identify trade costs in South Asia. Such an exercise will have important policy relevance in the context of South Asian Association of Regional Cooperation (SAARC).<sup>3</sup> In 1995, the SAARC Preferential Trading Arrangement

(SAPTA) was formed with the idea of hastening trade flow in the region. In the mission statement of the SAARC ministerial meeting held during 1999 policy-makers called for greater economic integration. A tentative roadmap suggested goals of forming a South Asian Customs Union (SACU) as early as 2015, followed by a South Asian Economic Union as early as 2020.<sup>4</sup> Therefore, at least at the political level, there seems to be some willingness to increase trade flow in the region.

Against this backdrop, the present chapter tries to do the following: (1) examine whether SAARC nations actually share economic characteristics favorable for a deeper economic integration; (2) identify trade costs that are getting in the way of deeper integration of South Asian trade; (3) quantify the sources of trade costs using an augmented gravity panel framework; and finally (4) make policy recommendations.

## 4.2 SAPTA, SAFTA AND THE STORY SO FAR

The South Asia Free Trade Agreement (SAFTA) is one of the many regional trading agreements (RTAs) that have been formed during the 1980s and 1990s. Repeated failures of multilateral negotiations, especially at various ministerial WTO meetings, have led to an increase in the number of RTAs.<sup>5</sup> Also, increased internationalization of markets (that is, globalization), and the fear of losing out to other inefficient producers, have put pressure on individual countries to become part of any RTA. The answer to a successful RTA therefore lies in controlling the factors that act against the RTA, and nurturing the factors that help to form and sustain an RTA. Some of the factors that affect formation of an RTA are considered below.

### **Extent of Trade**

Countries trading more among themselves are likely to form an RTA. In fact, an RTA is more likely to be formed when trade takes place in similar commodities, that is, intra-industry trade. The likelihood that an industry association will demand more protection is lower in the case of intra-industry trade. In the presence of intra-industry trade (for example, India exporting Tata Indica cars to the US and at the same time importing Ford Fiesta cars from the US), adjustment costs associated with removing trade barriers are lower. In this case jobs lost due to customers shifting to more efficient foreign suppliers may to a large extent be offset by the job-enhancing expansion in foreign demand for similar, differentiated goods produced domestically. The political opposition to liberalizing and

expanding intra-industry trade tends to be far less when compared to trade involving dissimilar items, that is, interindustry trade.

### **Country Characteristics**

Economies that are similar in terms of size are better candidates for forming an RTA. Similarities are measured in terms of economic development and geographical proximities. The more similar the economies, the higher the likelihood of intra-industry trade. Similarity is often measured in terms of per capita gross domestic product (GDP). This is because geographically adjacent economies with a similar level of economic development have access to similar kinds of technology. Consequently they tend to produce more or less similar items and tend to trade in similar commodities (closely differentiated products as in the monopolistic competition type market structure). As the literature on the gravity model on trade demonstrates, similarities in economic structure and geographical distance between respective economies are powerful determinants of trade (Tinbergen 1962; Linneman 1966; and Frankel 1997).<sup>6</sup> Trade increases with economic size and proximity of the trading partners.

### **Prices**

Low-technology-intensive items, like leather footwear, garments, gems and jewelry, textile products, and so on, which are typical of any developing country's export profile, are very sensitive to movement in prices, that is, are price elastic. When it comes to forming an RTA, countries analyze whether such an arrangement will enable them to realize a greater demand for their exports. From the demand-side perspective, it can be argued that sustained demand growth cannot be maintained in a small domestic market, since any economic impulse based on expansion of domestic demand is bound to be exhausted. However, export markets do not exhaust quickly. An RTA not only provides a platform for a greater market share but also enables countries to produce efficiently. As the literature on monopolistic competition suggests, a way to produce exports competitively is to take advantage of economies of scale in production which can be realized from a greater market share resulting from an RTA (Helpman and Krugman 1985; Leamer 1984).

### **Government Policies and Symmetric Economic Activities**

A more liberal government policy is likely to be beneficial for an RTA. There is a general consensus in the literature that trade volume, both

exports and imports, increases following external sector liberalization (Agosin 1991; Bertola and Faini 1991; Kohli 1991; Clarke and Kirkpatrick 1992; Joshi and Little 1996). Both the imports and exports of a country tend to increase with external sector liberalization. Under small-country assumptions, a fall in tariff barriers reduces the price of imports and causes imports to rise. Exports also increase, and this is true whether the economy has a fixed or flexible exchange rate regime. Under flexible exchange rate regimes when the economy opens up, first its imports rise. An increase in imports causes a relative increase in the supply of domestic currencies vis-à-vis the foreign currencies. This happens because foreign currencies are used to finance imports. With flexible exchange rates the value of domestic currency is market determined; an excess supply causes its values to depreciate. This means the price of exports for this economy falls, causing exports to rise. Under fixed exchange rate regimes, increase in exports happens in a different way. First, due to liberalization, imports increase. However, the market price of domestic currency does not fall as it is now fixed. An increase in imports releases resources from the import-competing sectors. A considerable portion of these resources finds use in the export sectors. As a result, production of exports increases. The price of exports falls, partly because of increased production and partly because inputs prices are cheaper, with more coming from the import competing sectors. Exports increase. Higher trade volume, resulting from external sector liberalization, is expected to increase the likelihood of an RTA formation.

Similarly, symmetric economic activities among member nations also have a complementary effect towards forging deeper economic integration such as customs and economic union. Symmetric economic activity implies that long-run movements in real output are synchronized. Such co-movements of outputs may be due to dependence on common factors such as geographical proximity and countries sharing a similar industrial profile. When countries share a similar industrial profile and are located in close proximity, the demand shocks in one country may affect other countries in the region. This could also arise if these economies all share a common trade linkage with major import markets. For example, if all of these countries engage in trade with the European Union, then changes in the European Union's economic performance would have a similar effect on all the countries concerned and cause them to behave synchronously. In this case, economic trends would become more similar because all the sectors and therefore all the countries would be affected in a similar way. Symmetry in economic activity implies that there is a lesser contradiction in terms of formulating internal and external macroeconomic policies – something which is prerequisite for forming an economic union.

Against this background, we analyze how well SAARC member nations fulfill these desirable criteria for forming an RTA.

### **Extent of Trade**

Trade in the SAFTA region is currently low (Table 4.1 and Table 4.2). According to Newfarmer and Pierola (2006) South Asia's intraregional trade as a percentage of its total trade volume has barely changed from around 2 percent in 1980 to 3 percent in 2004. Exports from South Asia have increased from only US\$17 billion in 1980 to US\$120 billion in 2004, in contrast to exports in East Asia growing from US\$80 billion to nearly US\$1 trillion within the same period (Newfarmer and Pierola 2006). Considering factors other than trade costs (something we will be dealing with later), lower intra-SAFTA trade is due to a number of reasons.

First is the factor of low purchasing power resulting in a smaller regional market. Although one of the fastest-growing regions in the world (GDP growth rate averaging around 7 percent in 2006 and 2007), measured in terms of per capita GDP (that is, purchasing power) these economies are quite small. For instance, until 2001, South Asia housed one-fifth of the world's population but contributed less than one-twentieth of the world income in terms of GDP (Panagariya 2003). There might not be enough demand for major Indian exports like transport and machinery, gems and jewelry, leather products, garments, and so on, because of the lower purchasing power of other SAARC nations. On the other hand, from a supply-side perspective, some of the economies like Nepal, Bhutan and Bangladesh are small, and suffer from supply constraints to meet demand generated by big economies like India.

The second reason for low trade can be attributed to the presence of high tariff barriers. A reflection of high tariff barriers is a lower trade-GDP ratio in many of these SAFTA member countries. In terms of their openness criteria – measured in terms of trade as a percentage of GDP – Maldives and Sri Lanka are more open compared to India and Pakistan (Table 4.3). On the whole, after the Middle East and North Africa, South Asia as a region is least integrated with the world economy. This is particularly true in the case of agricultural products, where tariffs levied on developing-country exports were frequently twice as high as those on the industrialized countries. The simple average of the applied duties in non-agricultural goods ranges from 10 percent in Sri Lanka to 21 percent in Bangladesh. In India, this tariff is approximately 20 percent. In agriculture, the level of protection is even higher and ranges from 25 percent in Pakistan to 100 percent in India (Panagariya 2003).<sup>7</sup> Higher tariffs within the region have neutralized the benefit of common cultural affinity,

Table 4.1 Intra-regional total trade, 2004 (US\$ 000s)

	Bangladesh	Bhutan	India	Nepal	Maldives	Pakistan	Sri Lanka
Bangladesh		229.394 (143.784)	105 206.068 (1 278 712.080)	66.590 (129.410)	17.20 (402.80)	44 663.08 (142 378.96)	10 212.71 (9567.14)
Bhutan <sup>1</sup>	486.870 (692.744)		109 509.078 (135 943.023)	596.070 (557.922)	n.a. n.a.	n.a. n.a.	2.941 (2.364)
India	1 593 313.764 (58 754.536)	83 880.161 (70 402.860)		736 905.688 (342 882.634)	42 177.575 (573.767)	505 070.219 (91 952.757)	1 344 050.070 (361 306.620)
Nepal <sup>2</sup>	6 106.596 (4854.636)	1 366.282 (568.456)	341 798.923 (954 908.121)		n.a. n.a.	994.245 (3 301.730)	1 189.394 (1 990.622)
Maldives	n.a. (6.193)	n.a.	457.965 (65 833.279)	n.a.		n.a. (2 200.953)	15 120.671 (68 464.407)
Pakistan	197 650.475 (45 077.822)	351.615 (379.499)	158 335.039 (454 408.247)	3 036.545 (3 710.456)	1 936.187 (61.079)		134 693.623 (45 657.907)
Sri Lanka	13 378.370 (7 704.451)	11.803 (0.050)	385 800.500 (1 360 084.49)	275.269 (78.113)	60 084.021 (19 838.733)	39 250.282 (108 059.31)	

Notes:

1. Figures are for year 1999.
2. Figures are for year 2003. Numbers in brackets are net imports while those without brackets are net exports.

Source: Comtrade Database, United Nations Commodity Trade Statistics Database.



*Table 4.2 Total trade (in US\$) of South Asian countries, 2004*

Bangladesh	Import	11 372 744 850
Bangladesh	Export	8 267 482 023
Bhutan <sup>1</sup>	Import	182 077 408
Bhutan	Export	115 950 052
India	Import	108 247 954 259
India	Export	79 834 064 105
Maldives	Import	641 816 856
Maldives	Export	169 740 947
Pakistan	Import	17 948 583 563
Pakistan	Export	13 379 014 624
Sri Lanka	Import	7 880 453 497
Sri Lanka	Export	5 485 135 246
Nepal <sup>1</sup>	Import	1 347 482 240
Nepal	Export	524 294 592

Notes: 1. Figures are for 1999.

Source: Comtrade Database, United Nations Commodity Trade Statistics Database.

*Table 4.3 Trade as a percentage of GDP*

Year	India	Bangladesh	Nepal	Pakistan	Sri Lanka	Maldives	Bhutan
1995	23.13165	28.20949	59.49052	36.13276	81.63505	170	79
1996	22.18716	29.77754	58.45777	38.33013	78.87396	165	80
1997	22.888	30.01163	64.03554	36.85226	80.13755	170	81
1998	23.98499	31.6062	56.7096	34.01173	78.49499	168	81
1999	25.27612	31.8524	52.56698	32.31996	78.75148	170	80
2000	27.38089	33.20734	55.71059	28.1296	88.63646	161	76
2001	26.3828	36.88216	55.8	30.37153	80.89863	157	71
2002	29.92318	33.32301	46.23067	30.53763	78.89409	152	62
2003	30.77938	34.24911	44.24786	32.84449	78.04928	153	62
2004	38.22035	36.27827	46.1473	30.30013	81.72526	178	93
2005	43.61438	39.62709	44.06298	35.25329	76.27002	n.a.	87
2006	48.77868	44.21832	45.289	38.60547	74.78382	n.a.	77

Source: World Bank (2008c).

common geography and the advantage of common borders that India shares with other SAARC nations.

The third reason is low-technology, labor-intensive tradable items (Table 4.4). With regard to these products – items such as textiles, animals, leather, and so on – not too much disintegration in production is possible.

Table 4.4 Main tradables in the context of SAARC nations<sup>1</sup>

Textiles (India)	Textiles (Sri Lanka)	Animals (Bangladesh)
Gems and Jewelry (India)	Vegetables (Sri Lanka)	Leather (Bangladesh)
Chemicals (India)	Plastics (Sri Lanka)	Textiles (Bangladesh)
Textiles (Pakistan)	Animals (Maldives)	Textiles (Nepal)
Vegetables (Pakistan)	Textiles (Maldives)	Metal (Nepal)
Leather (Pakistan)	Foodstuffs (Maldives)	Chemicals (Nepal)

Notes: 1. Commodities represent top three exports for the year 2002. Name of respective SAARC member countries are reported in parenthesis.

Source: United Nations (2004).

Disintegration of production itself leads to more trade, as intermediate inputs cross borders several times during the manufacturing process (Feenstra 1998). For example, automobile parts and finished autos are both included in trade between the United States and Canada – something clearly missing in the present context.

Hence, going by the metric of extent of trade, South Asian nations might not qualify for a successful RTA. In fact because of this low intra-region trade factor, Panagariya (2003) commented that forming an RTA in South Asia would result in more trade diversion than trade creation. Trade creation happens when a more efficient producer of one country displaces the less efficient producers of another member country within the free trade area (FTA). On the other hand, trade diversion results in displacement of more efficient producers outside the FTA – losing market share to less efficient producers within the FTA. For example, when Bangladesh allows Indian cement to be imported duty-free and this leads to the more efficient Indian cement industry outcompeting the less efficient Bangladesh cement industry, it results in trade creation. On the other hand, duty-free access for Indian television manufacturers to Bangladesh, resulting in displacement of more efficient Japanese television manufacturers who remain subject to duty, results in trade diversion. As these economies in South Asia previously had a relatively high tariff structure, the extent of trade diversion was expected to be high. However, with falling tariffs there is a lesser chance of trade diversion.

### Country (Economic) Characteristics

When comparing in terms of economic structure, namely, savings as a percentage of GDP, demographic profile and labor mobility, SAFTA member countries have many similarities (Table 4.5). The industrial

*Table 4.5 Socio-economic characteristics of SAARC member nations, 2006*

Country	Bangladesh	Bhutan	India	Nepal	Pakistan	Maldives	Sri Lanka
GDP per capita (constant 2000 US\$)	419	1086	634	242	635	3251	1070
GDP growth (annual %)	7	8	9	3	7	9	7
Agriculture, value added (% of GDP)	20	22	18	34	19	–	16
Industry, value added (% of GDP)	28	38	28	16	27	–	27
Fertility rate, total (births per woman)	3	2	3	3	4	3	2
Foreign direct investment, net inflows (% of GDP)	1	1	2	0	3	1	2
Rural population (% of total population)	74	89	71	84	65	70	85
Gross domestic saving (% of GDP)	18	41	31	8	14	–	17
Services, etc., value added (% of GDP)	52	40	55	49	53	–	56
Mortality rate, infant (per 1000 live births)	52	63	57	46	78	26	11
Population ages 0–14 (% of total)	35	32	33	38	36	33	24
Population ages 15–64 (% of total)	62	64	62	58	60	63	70
Population ages 65 and above (% of total)	4	5	5	4	4	4	7

*Source:* World Bank (2008c).

sector constitutes roughly a fourth of GDP in all countries, while the share of agriculture varies from 16 percent in Sri Lanka to almost 34 percent in Nepal. Although a majority of the population still lives in rural areas, all of these countries are becoming increasingly urbanized. Except for the Maldives, savings as a proportion of GDP are also similar

across these countries. These countries also share a similar demographic profile: in all these nations, age 65 and above is a small percentage of the population (varying between 4 percent in Bangladesh and 7 percent in Sri Lanka); that is, these economies have a much younger working population. The more similar the economies, the more similar their export profile. Greater economic cooperation among SAFTA members holds important implications in the form of larger markets and economies of scale in production. These factors might act as further incentives for a successful RTA.

### **Government Policies and Symmetric Economic Activity**

The encouraging point is that most of the SAARC economies have started to open up and have also registered healthy GDP growth. During the period 2006–07, all SAFTA countries, except for Nepal, have witnessed strong economic growth in the range of 7–9 percent (Table 4.5).<sup>8</sup> Similarly, despite low intraregional SAARC trade – accounting for less than 5 percent of the region’s overall foreign trade – it is rising. The upward trend in trade is likely to continue, with SAARC economies further reducing tariffs because of their commitment at WTO, and per capita GDP in the region continues to grow. Currently, because of restrictions on legitimate trade, there exists a considerable amount of extra-legal trade. For example, Taneja (2004) estimates that the magnitudes of legal and extra-legal trade between Bangladesh and India are roughly the same, while extra-legal trade is estimated to be nearly one-third of the value of legal trade between India and Sri Lanka. Sarvanathan (1994) put the estimate of India’s informal exports to Sri Lanka at US\$142 million and India’s informal exports from Sri Lanka at US\$121 million. Estimates of the magnitude of extra-legal trade between India and Pakistan vary from US\$100 million to US\$1 billion per year (RIS 2004; Nabi and Nasim 2001).

As McCombie and Thirlwall (1997) and Paulino and Thirlwall (2004) have pointed out, robust economic growth encourages a more liberalized trade regime. In their study covering Organisation for Economic Co-operation and Development (OECD) countries between 1958 and 1988, Baier and Bergstrand (2001) observed that the average level of bilateral trade grew twice as fast as a country’s GDP. About two-fifths of the growth of trade relative to income is explained by the combined effect of falling tariffs and transport costs. Of these, falling tariffs were twice as important as falling transportation costs. A more open economy in the South Asia region will lessen trade diversion – a concern raised by Panagariya (2003).

More importantly, South Asian countries exhibit symmetric economic

activity. There is evidence of long-term co-movement in supply-side components of output in the SAARC region (Banik et al. 2006). This means that an economic boom (recession) in one of these nations is likely to reverberate throughout the region. In fact, this aforementioned economic characteristic of South Asian countries will enable them to go beyond the FTA framework and work for deeper economic integration, such as forming a common market and economic union.

Intra-SAARC trade can flourish, taking advantage of geographical proximity, rising income and falling tariffs. As shown by McCallum (1995), in the presence of borderless trade (that is, with minimal trade-related disruption), Ontario and Quebec provinces in Canada are expected to export about ten times as much to California as to British Columbia.

### 4.3 TRADE COSTS

Having ended the last section on a positive note, it makes sense to reflect on key areas of concern inhibiting trade flow in the South Asian region. As is evident from the literature (as discussed above), success of trade liberalization (that is, controlling for the policy variables like tariffs and non-tariffs barriers) can be attained only when countries can control for trade costs. In the context of in South Asia, in its 2005 report, the US Trade and Development Agency identified major components of trade cost. Much of the source of trade costs results from lack of trade facilitation and lack of availability of physical infrastructure in South Asia. For instance, logistics costs in India are among the highest in the world (at 13 percent of GDP), and inadequate infrastructure is responsible for holding back GDP growth by roughly 2 percent, or an annual hit of approximately US\$20 billion to economic progress (*Economic Times* 2008).

Issues regarding trade facilitation have been discussed at length by Wilson and Ostuki (2007). They pointed out that the South Asian region needs to build upon four areas of trade facilitation: port efficiency, customs environment, regulatory environment and service sector infrastructures (like electronic documentation, harmonizing regulations, and so on). For instance, port congestion because of inefficient handling of goods or lack of adequate capacity affects turnaround time of feeder vessels. Then there are environmental (that is, hygiene) related issues. For instance, Indian exporters of edible items like rice, tea, and so on, find it difficult to ship their product from the nearest port of exit. Exporters in eastern India are forced to transport edible items by road to Kakinada – a port in Andhra Pradesh which offers mid-water loading facilities – to avoid contamination. The congested Kolkata port handles export of iron

ore and other metal scrap, items which cause pollution (dust particles) and thereby expose edible items to the risk of contamination (Banik 2008). The loss in time adds on cost for the exporters. As Hummels (2001) points out, for each day saved in shipping time it is equivalent to saving 0.5 percent on *ad valorem* tariff.

Coming back to another key element of trade facilitation, complex and non-transparent administrative requirements (often pertaining to documentation) create space for corruption. Some of these administrative requirements can also be qualified as non-tariff barriers (Box 4.1). At the India–Bangladesh border a consignment needs at least 22 documents, more than 55 signatures and a minimum of 116 copies for final approval (RIS 2004). Paying bribes is a common phenomenon. Across South Asia the size of a bribe was reported to be between 2.2 percent and 2.5 percent of firm sales (Ahmed and Ghani 2007). In the context of South Asia, the size of bribe payments is relatively less in India, Sri Lanka and Bhutan in comparison to Bangladesh, Pakistan and Nepal. According to Wilson and Ostuki (2007), if countries in South Asia raise capacity-building in trade facilitation halfway to that of East Asia’s capacity, average trade is estimated to increase by US\$2.6 billion. This is approximately 60 percent of the regional trade in South Asia. The areas that will provide the greatest gains are service sector infrastructure and efficiency in airtime and maritime ports (Table 4.6).

With regard to the availability of physical infrastructure, South Asia is facing a major problem. The lack of proper infrastructure facilities indirectly raises the costs of exports. Some studies have already commented on the importance of infrastructure in explaining variations in income and export growth among countries (Hall and Jones 1999; Stiglitz 1989). Deteriorating infrastructure due to poor physical conditions (for example, periodic flooding, soil erosion, poor soil conditions) has resulted in higher transport costs in South Asia (De 2008). For example, the average transport cost on the India (Kolkata)–Bangladesh (Petrapole) route is 2543 Indian rupees, which is about 40 percent higher than for other highways in the East Asian region (Das and Pohit 2004). A carpet manufacturer in Kathmandu reported that because of poor road conditions he has to spend around 100 000 Nepalese rupees for vehicle maintenance (Biggs et al. 2000). The transport cost is higher for landlocked countries like Nepal while it is least for Sri Lanka (De 2008). The trade-weighted *ad valorem* transportation costs are illustrated in Figure 4.1. Higher transport cost is a negative factor. As pointed out by Limao and Venables (2001), doubling of transport costs can lead to a drop in a country’s trade by about 80 percent.

Another area of concern is the lack of electricity. For example,

**BOX 4.1 CONSTRAINTS FOR EXPORTS**

- In India, each state has its own set of rules with regard to interstate movement of goods. Goods moving across the states are also subject to further inspection and even taxes and fees. For example, the Nepalese vegetable ghee is subjected to canalization, state-wise quota system and some discriminatory taxes (such as luxury tax, state sales tax, entry tax, and so on) in the importing country.
- Prospective exporters are required to obtain a license from the Bureau of Indian Standard (BIS) besides the application and processing charges, which require payment of costs of inspection visits from India to the exporting countries.
- India continues import licensing of about 600 items on the grounds that restrictions are needed to ensure protection for 'human, animal or plant life or health'. Imports of nearly all livestock, agricultural and food products require some kind of phyto-sanitary certificate. All consignments of imported food products are required to be tested by the Port Health Officer (PHO). At the Customs Clearance Offices where PHOs are not available, various samples are drawn and forwarded for clearance to some other laboratory, which results in loss of valuable time. Furthermore, the warehouses are not equipped to cater for the preservation of perishable goods.
- Rule 32 of the Prevention of Food Adulteration Rules (PFA) 1955 deals with packing and labeling of foods. This rule alone has 30 provisos and provisos within provisos. In addition, there are cross-references to other rules.
- The results of the laboratory tests cannot be challenged. In some cases, even certificates by EU-accredited labs on this account have been rejected by Indian customs and such consignments are subjected to repeat tests in India.

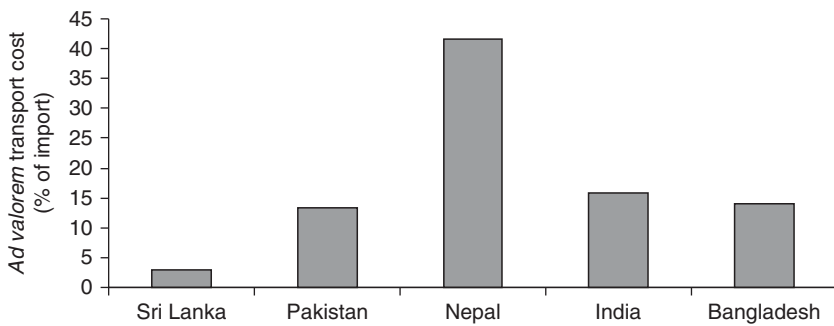
*Source:* Compiled by authors on the basis of various complaints submitted by exporting firms to Ministry of Commerce, Government of India.

manufacturers in India on average face almost 17 significant power outages per month, versus one in Malaysia and fewer than five in China. Similarly, in Pakistan, the typical business loses 5.6 percent in annual sales revenue because of power shortages (Newbery 2007). According to data

Table 4.6 Trade gains from capacity building by each South Asian country and entire South Asia region in trade facilitation (in US\$ millions)

Country	Port efficiency (air and maritime)	Customs	Regulation	Service sector infrastructure	All
Bangladesh	228	144	71	339	782
India	314	193	123	519	1149
Pakistan	74	29	42	191	336
Sri Lanka	97	63	41	175	377
South Asia	712	429	278	1224	2644

Source: Wilson and Ostuki (2007).



Source: De (2008).

Figure 4.1 Higher transport costs in Asia (estimated ad valorem transportation costs by country in 2005)

from the World Bank Enterprise Surveys, private businesses in lower- and middle-income countries worldwide estimate that they lose on average 7.5 percent of their sales due to electricity and telephone outages and insufficient water supply.<sup>9</sup> This is quite high in comparison to losing 3.8 percent average sales in high-income countries.

Factors like poor institutions and government regulation have certainly contributed to South Asian countries not faring well when it comes to ranking countries in terms of 'ease of doing business'. It also takes time to enforce contracts (Tables 4.7 and 4.8). The World Bank, in its annual exercise, ranks countries in terms of ease of doing business. In its *Doing*



Table 4.7 Doing Business Report, 2008

Year	Country	Ease of doing business rank	Starting a business			
			Rank	Procedures (number)	Time (days)	Cost (% of income per capita)
2008	Bangladesh	107	92	8	74	46.2
2008	Bhutan	119	52	8	48	10.4
2008	India	120	111	13	33	74.6
2008	Maldives	60	34	5	9	13.4
2008	Nepal	111	60	7	31	73.9
2008	Pakistan	76	59	11	24	14.0
2008	Sri Lanka	101	29	5	39	8.5

Source: World Bank (2008a).

Table 4.8 Enforcing contracts

Region or economy	Procedures (number)	Duration (days)	Cost (% of claim)
East Asia & Pacific	37.3	549.8	47.8
Eastern Europe & Central Asia	35.9	443	22.7
Latin America & Caribbean	39.3	699.9	30.7
Middle East & North Africa	43.5	699	24
OECD	31.3	443.3	17.7
South Asia	43.5	1047.10	27.2
Sub-Saharan Africa	39.4	643	48.7
Bangladesh	41	1442	63.3
Bhutan	47	275	0.1
India	46	1420	39.6
Maldives	41	665	16.5
Nepal	39	735	26.8
Pakistan	47	880	23.8
Sri Lanka	40	1318	22.8

Source: World Bank (2008a).

*Business Report* (World Bank 2008a), the sample size involved 178 countries. Ease of doing business is measured in terms of procedures (Box 4.2), time, and cost involved in launching a commercial or industrial firm with up to 50 employees and start-up capital of ten times the economy's per capita gross national income (GNI).

## BOX 4.2 LIST OF PROCEDURES FOR STARTING A COMPANY

### Screening procedures

- Certify business competence.
- Certify a clean criminal record.
- Certify marital status.
- Check the name of uniqueness.
- Notarize company deeds.
- Notarize registration certificate.
- File with the Statistical Bureau.
- File with the Ministry of Industry and Trade, Ministry of the Economy, or the respective ministries by line of business.
- Notify the municipality of start-up date.
- Obtain certificate of compliance with company law.
- Obtain business license (operation permit).
- Obtain permit to play music to the public (irrespective of line of business).
- Open a bank account and deposit start-up capital.
- Perform an official audit at start-up.
- Publish notice of company foundation.
- Register at the Companies Registry.
- Sign up for membership in the Chamber of Commerce or Industry or the Regional Trade Association.

### Tax-related requirements

- Arrange automatic withdrawal of the employees' income tax from the company payroll funds.
- Designate a bondsman for tax purpose.
- File with the Ministry of Finance.
- Issue notice of start of activity to the Tax Authorities.
- Register for corporate income tax.
- Register for VAT.
- Register for state tax.
- Register the company bylaws with the Tax Authorities.
- Seal, validate, rubricate accounting books.

#### Labor/social security-related requirements

- File with the Ministry of Labor.
- Issue employment declarations for all employees.
- Notarize the labor contract.
- Pass inspections by social security officials.
- Register for accident and labor risk insurance.
- Register with pension funds.
- Register with social security.
- Register with unemployment insurance.
- Register with the housing fund.

#### Safety and health requirements

- Notify the health and safety authorities and obtain authorization to operate from the Health Ministry.
- Pass inspections and obtain certificates related to work safety, building, fire, sanitation and hygiene.

#### Environmental-related requirements

- Issue environmental declaration.
- Obtain environment certificate.
- Obtain sewer approval.
- Obtain zoning approval.
- Pass inspections from environmental officials.
- Register with the water management and water discharge authorities.

Source: Djankov et al. (2002).

Clearly there is a need for building physical infrastructure and capacity-building in terms of trade facilitation. High public debt and a shift in focus of development more towards social sector infrastructure like health and education is creating a government resource crunch. There is a need to tap private sector funds, especially when there are many billionaires in corporate India.<sup>10</sup> Unfortunately, not too much private funding is forthcoming, due mainly to regulatory reasons (Banik 2007). The government often uses the *force majeure* clause and hence does not fulfill the promises it makes to private providers at the beginning of infrastructure projects.<sup>11</sup> For example, if upon the completion of a road the projected number of

vehicles is not realized, the government can alter the agreement. Even appealing at court is a lengthy procedure and may take several years to settle. Some sector-specific recommendations are as follows:

Firstly, in the power sector, there is a need to create a market for power and this is particularly true in the context of India where the power-surplus states can trade with the power-deficient states. Although private participation is allowed in power generation in India, not many responses have been forthcoming because of lower power tariffs. Private investors are expected to produce electricity for sale to the state electricity boards, which would control transmission and distribution. These boards are financially very weak, however, partly because electricity tariffs for many categories of consumers, like farmers, are too low and also because very large amounts of power are lost in the transmission and distribution. There is a need to privatize distribution in the hope that this will overcome the corruption that leads to the enormous distribution losses.

Secondly, in railways, there is a need to correct the tilted fare structures, in which freight rates have been set excessively high to subsidize passenger fares. There is also a need to increase operational efficiency as there are problems with project execution. For example, in India, among the 300 projects in the 1 billion Indian rupees and above cost category, more than 130 projects are encountering time overruns of up to 160 months. A comprehensive review of 78 such railway projects has revealed that all suffer huge time and cost overruns due to various problems related to land acquisition, litigation, rehabilitation, contractors and labor (Kumar 2005). In Bangladesh, railways have a serious problem with maintenance, especially in those areas prone to floods.

Thirdly, like railways, there are problems with project execution in the road sector. National highway development programs in India are progressing slowly, hampered by time overruns and budgetary constraints (Table 4.9).

Fourthly, both civil aviation and ports have problems related to labor issues. Individual governments need to introduce labor market reforms, something that is yet to happen in South Asia. In India, the government also needs to address the problems associated with encroachments, where unutilized ports and aviation authorities' lands are gradually being taken over by local settlers.

Addressing these concerns will certainly increase cross-border trade in South Asia, especially in a period of falling tariffs and rising income. The region will definitely gain through complementary investment in infrastructure and continued regulatory reform. As there is considerable evidence of trade costs it makes sense to try to test the hypothesis of how the presence of trade costs affects trade flow in the South Asian region. We do this using an augmented gravity model, where we try to estimate

Table 4.9 Status of India's road infrastructure

	Length (km)	Already 4-laned (%)	Being implemented (%)
NHDP-GQ	5 846	94.1	5.9
NS-EW	7 300	12.1	73.3
NHDP-IIIA	4 000	0.8	32.4
NHDP-V	6 500	0.0	2.3
Total NHDP	23 646	27.1	30.2
Port Connectivity	380	35.5	58.9
Others	945	30.4	67.5
Total by NHAI	24 971	27.4	32.0

*Notes:*

NHDP-III: Involves four lanes of about 10 000 km of those stretches of national highways connecting the state capitals.

NHDP-IIIA refers to the first phase of this construction where building of 4 000 km has been taken up.

NHDP-GQ: Connecting four metros, namely, Chennai, Kolkata, Delhi, and Mumbai, with a four-lane highway.

NHDP-V: Six lanes of NHDP-GQ.

NS-EW: Four lane highway connecting Srinagar to Kanyakumari, and Silchar in the east to Porbandar in the west.

*Source:* National Highway Authority of India, Government of India.

the effect of trade costs on exports from India to neighboring countries in South Asia. This is done in the following section.

#### 4.4 MODEL

The original application of the Newtonian law of gravity in the field of economics goes back to the work of Tinbergen (1962), Poyhonen (1963) and Linnemann (1966), suggesting that bilateral trade between two nations is positively related to their national income and inversely related to the distance between them. Although backed by little economical underpinning, these early models became popular because of their prognostic nature in explaining trade flow. Later, however, economists have worked on building a theoretical (microeconomic) foundation for the gravity model (Anderson 1979; Bergstrand 1985; Deardorff 1998).<sup>12</sup>

In the context of South Asia, Srinivasan and Canonero (1993) include tariffs and exchange rates in the basic gravity model and conclude that, under SAFTA, potential gains for India's trade with its regional partners would increase by 13 times. Considering the time period between 1968 and

1991, and ten composite commodities, the study suggests that the effect of the removal of tariffs would lead to an increase in trade that is 3 percent of GNI for India, 7 percent for Pakistan, 21 percent for Bangladesh, 36 percent for Sri Lanka and 59 percent for Nepal. This study considered five countries in South Asia and their major trading partners, spanning North America, Europe and Asia. Since the objective of this chapter is to look at trade cost in the context of the South Asian region only, we have considered trade flow within South Asia. In addition, working with a more recent data set, we have also incorporated trade costs as an additional variable in our gravity equation.

### Methodology and Data

Following Anderson and van Wincoop (2004), most estimated gravity equations in the literature take the following form:

$$x_{ij} = \alpha_1 y_i + \alpha_2 y_j + \sum_{m=1}^M \beta_m \ln(z_{ij}^m) + \epsilon_{ij}$$

where  $x_{ij}$  is the log of exports from country  $i$  to country  $j$ ,  $y_i$  and  $y_j$  are the log of GDP of the exporting and importing country and  $z_{ij}^m$  ( $m = 1, \dots, M$ ) is a set of observables to which bilateral trade barriers are related.  $\epsilon_{ij}$  is the disturbance term.

For the purpose of our study, following Frankel and Wei (1993), we will estimate a variant of the above equation which takes the following form:

$$x_{ij}^t = \alpha_1 (py_i^t \times py_j^t) + \alpha_2 (I_i^t \times I_j^t) + \alpha_3 T_{ij}^t + \alpha_4 ER_{ij}^t + \alpha_5 TC_{ij}^t + \alpha_6 D_{ij} + e_{ij}^t$$

where  $py_i^t$  and  $py_j^t$  are the per capita income (that is, per capita GDP) of country  $i$  and  $j$ ;  $I_i^t$  and  $I_j^t$  are the state of infrastructure captured through infrastructure index in country  $i$  and  $j$ ;  $T_{ij}^t$  and  $ER_{ij}^t$  are the bilateral tariff rates (weighted average) and exchange rates between country  $i$  and  $j$ ;  $TC_{ij}^t$  denotes the transaction cost of trade, measured as a function of the difference between weighted average c.i.f. (cost, insurance, freight) and f.o.b. (free on board) price; and finally  $D_{ij}$  ( $j = 1, \dots, 4$ ) stands for country-specific dummy variables. All the variables (except for the dummy variables) are expressed in log form with the estimated coefficients interpreted in terms of elasticity.

The expected signs for  $\alpha_1$  and  $\alpha_2$  are assumed to be positive. Trade between countries is expected to increase with a higher per capita income and with a better state of infrastructure. Likewise, intercountry trade is likely to fall with higher tariffs, higher price of exports, and trade costs. Accordingly,  $\alpha_3$ ,  $\alpha_4$  and  $\alpha_5$  are expected to be negative.

As we are considering a panel framework, the term  $e_{ij}^t$  captures both country-specific (cross-sectional) and temporal effects at time  $t$ . A general expression for  $e_{ij}^t$  is:  $e_{ij}^t = \gamma + \beta_j + \mu_t + \eta_{i,j,t}$ , where  $\gamma + \beta_{j-1}$  can be thought of as a country-specific intercept;  $\mu_t$  is a capture time effect, and  $\eta_{i,j,t}$  the overall purely random disturbance term.<sup>13</sup> The combined, time and country-specific fixed effect terms eliminate an omitted variables bias arising both from unobserved variables that are constant over time and from unobserved variables that are constant across countries.

If  $\gamma + \beta_{j-1}$  is observed for all countries, then the entire model can be treated as an ordinary linear model and is estimated by least squares. For the purpose of estimation we consider the classic pool, least square dummy variable model (LSDV), and the within transformation model. If  $\gamma + \beta_{j-1}$  contains only a constant term, then the ordinary least squares estimation provides consistent and efficient estimates of the common intercept terms and the slope vectors. This is a classic pool model where modeling is done without dummy variables. However, not considering country-specific time-invariant characteristics seems unscientific, and hence country-specific dummies to capture such effect are used. This is the LSDV model. However, the problem with modeling in this fashion is a loss in degrees of freedom arising from estimating dummy coefficients. A more efficient way is to use the within transformation model. Here the pooled regression is reformulated in terms of deviation from the series means leading to disappearance of the intercept terms and the dummies. This model is more efficient than models with dummy variables as it gives  $j$  degrees of freedom (corresponding to relevant dummies and the intercept term) back with the same parameter estimates. Finally, we consider the random effect model. Unlike in the fixed effect, where the country specific intercept  $\gamma + \beta_{j-1}$  is assumed to be fixed, in the random effect model we assume that it is a random variable with a mean value  $\gamma + \beta = \lambda$  (say), which does not vary across cross-section. The intercept value for each cross-section can be expressed as  $\lambda_{ij} = \lambda + \varepsilon_i$ , where  $\varepsilon_i$  is a white noise process.

For each one of these variables superscript  $t$  stands for the time period 1995–2006. This is the period when a considerable amount of the reforms process has been undertaken or accomplished in the South Asian region. Country  $i$  is India (the base country) and country  $j$  stands for India's trading partners in South Asia. The reason for treating India as the base country is because it is the largest economy in the region, representing 80 percent of the total GDP in South Asia (IMF 2007). The dummy variable is expected to capture India's trade relation with partner countries in South Asia.

For deriving the infrastructure index, we have used Principal Component Analysis (PCA) methodology. PCA involves finding the relationship between the variables that explains the maximum possible variation in the

total data. An attempt has been made here to construct a single composite index of infrastructure involving all five subcategories of infrastructure – roads, railways, air, electricity and telephones – at each point in time. In the PCA approach, the first principal component is that linear combination of weighted indicators which explain the maximum of variance across the observations at a point in time. To the extent one component index of infrastructure has a different variance than another, assigning equal weights, or doing a simple average of different component indexes, seems unscientific, hence the importance of assigning different weights to different component indexes of infrastructure. Each factor is nothing but a linear weighted combination of the various variables used. In all the indices calculated, we used the first factor only. The first factor in all the cases explained more than 60 percent of the variation. Before multiplying by the respective weights, individual infrastructure variables are converted into ‘unit-free’ values. This is done by dividing the country-wise (that is, column-wise) standard deviation to neutralize the heterogeneity due to varied units. Standardization also eliminates unnecessary weights given to some measures on account of their high unit values.

Therefore, Infrastructure index ( $I_{it}$ ) is a linear combination of the unit free values of the individual facilities such that:

$$I_{it} = \sum W_{kt} X_{kit}$$

where  $I_{it}$  = Infrastructure index of the  $i$ -th country in  $t$ -th time,  $W_{kt}$  = weight of the  $k$ -th type infrastructure in  $t$ -th time, and  $X_{kit}$  = unit free value of the  $k$ -th type infrastructure for the  $i$ -th country in  $t$ -th time point.

Finally,  $TC_{ij}^t$  corresponds to the ratio ( $cif/fob - 1$ ), which, as pointed out by Limao and Venables (2001), contains a cross-sectional variation in transport costs, and calculating transaction cost in this fashion is quite consistent with the figures obtained from the shipping cost data.

Some comments about the methodology issue follow. The single-equation way of estimation might raise issues relating to endogeneity. However, intra-SAARC trade is low. In addition, if one considers bilateral trade flow as a percentage of GDP, it is actually very low. Endogeneity is therefore ignored and not expected to result in any biased estimates. Similarly, as is observed in Table 4.10, robustness of the model has increased, moving from a classic pool to LSDV and finally to within the transformed fixed effect. This is because the consistency problem specific to the time-invariant factors does not arise in the case of the within transformed fixed effect. For almost the same reason we have not considered the dynamic panel. When the number of time periods  $T$  is finite and the number of cross section  $N$  approaches infinity, LSDV estimators are



Table 4.10 Results from the model

Variables	Classic Pool	LSDV	Within transformed	Random effect
Constant	-7.755976 <sup>1</sup> (3.173088)	-7.297177 <sup>1</sup> (3.352789)	-0.050417 (0.095005)	6.403701 <sup>2</sup> (0.794306)
Income	0.369434 <sup>2</sup> (0.071397)	0.395761 <sup>2</sup> (0.075602)	0.590614 <sup>3</sup> (0.208238)	0.326190 <sup>3</sup> (0.181170)
Infrastructure	0.414557 (0.325230)	0.403931 (0.363619)	0.786731 <sup>3</sup> (0.412413)	–
Tariffs	0.003329 (0.057281)	0.031918 (0.086118)	-0.208075 <sup>1</sup> (0.085632)	-0.480811 <sup>2</sup> (0.065634)
Exchange rates	0.057627 (0.760277)	-0.062918 (0.770023)	-2.822734 <sup>1</sup> (0.653376)	–
Trade costs	-0.794491 <sup>3</sup> (0.444075)	-0.714065 <sup>1</sup> (0.331285)	-0.561384 (0.358354)	-0.498930 <sup>3</sup> (0.276431)
Dummy 1	–	-2.613576 <sup>2</sup> (0.298627)	–	–
Dummy 2	–	-0.272008 (0.449774)	–	–
Dummy 3	–	-2.903105 <sup>2</sup> (0.265469)	–	–
Adjusted R <sup>2</sup>	0.870151	0.874951	0.893442	0.825819

*Notes:*

1. Indicates significance at 5% level;
2. Indicates significance at 1% level;
3. Indicates significance at 10%. Standard errors are in parenthesis.

inconsistent for the dynamic panel. Although we worked with finite  $N$  in the present case, considering applicability of the present model, and more importantly to compare our results with other studies for other geographical areas, we stick to the static panel framework. As  $N$  in our case is small, generalized method of moments (GMM) estimation techniques, which are expected to yield more consistent estimates in presence of infinite  $N$ , are also not considered.<sup>14</sup> Accordingly, we have used and report results from the classic pool, LSDV, within transformed fixed effect, and random effect model.

**Data Source**

Trade between countries is from the United Nations Comtrade database. Trade figures are reported in current US dollars for each country and all

its trading partners. The data are available annually and are deflated with the GDP deflator. Due to insufficient data on respective variables considered for our study, we have dropped Bhutan, Nepal and the Maldives from our analysis. In total we have 48 observations where we considered India's exports (in value terms) to Bangladesh, Nepal, Pakistan and Sri Lanka for the period between 1995 and 2006. Regarding tariffs, the figures are effective tariffs.<sup>15</sup> These are average tariffs and include import and export duties. The data on tariffs come from the Comtrade database.

Exchange rate data are bilateral exchange rates between India and its trading partners. We measured the exchange rate as foreign currencies per unit of domestic currency. Exchange rates data are collected from *International Financial Statistics Yearbook* (IMF 2007).

For constructing the infrastructure index, we considered railway lines (in kilometers) as a proportion of total surface area; road length (in kilometers) as a proportion of total surface area; air transport, passengers carried (normalized with respect to number of airports with paved runways for each country); fixed line and mobile phone subscribers (per 100 people) and electric power consumption (in kilowatt per capita). Normalizing respective variables in this fashion (that is, in per capita terms or with respect to country size) is expected to avoid possible heteroskedasticity in the error term. The variables on infrastructure are collected from World Development Indicators Database (World Bank n.d.).

## Results

The results have come out with the expected sign (except perhaps for the dummy variables) and the significance of the estimates have increased (that is, are more robust) as we have moved from the classic pool towards more efficient methodology of LSDV and within transformed LSDV (Table 4.10). Importantly, the trade costs variables have statistically significant coefficients in three out of four cases. Based on our estimates, we find the income elasticity of India's exports varied between 0.369434 and 0.590614. That is, if we take the income coefficient to be 0.369434, we are saying that for a 100 percent increase in combined per capita GDP, exports from India will increase by 29 percent (that is,  $2^{0.369434} - 1 = 29$ ). Similarly, coefficients with respect to trade cost vary between  $-0.794491$  to  $-0.498930$ , which is to say, for a 100 percent increase in trade cost, exports from India to neighboring Asia are expected to fall by 73 percent and 42 percent, respectively. Our estimates of income and trade cost are slightly lower than the estimated values by Baier and Bergstrand (2001) and Anderson and van Wincoop (2004). One reason is that we deal with gross exports figures and not commodity-specific data. There may be a measurement error. As

pointed out by Hummels and Lugovskyy (2006), the measure of trade cost can become biased if high transport cost countries systematically import lower transport cost goods (see also De 2008). However, the main objective of this chapter was to identify the importance of trade costs, among other factors like price, infrastructure, income and tariffs, more from a macro perspective. We have already documented various elements of trade costs and through our empirical results it becomes evident that it is indeed one of the important variables affecting trade flow among South Asian nations. Indian exports are also quite price sensitive. An expected increase in the price of Indian exports by 100 percent will reduce demand by a whopping 600 percent (see 'within transformed' column). A realistic way to interpret this number is that in the case of a monopolistic, or perfect competitive market condition, buyers generally neglect the sellers who charge marginally higher prices compared to their competitors. For example, in the context of US small-size (with engine sizes under 1000cc) and medium-size (with engine sizes between 1000cc and 1500cc) automobile markets, competition has prevented market players like Toyota, Kia, Hyundai, and so on to increase their price relative to their competitors (Banik and Biswas 2007). This kind of argument is valid more in the context of a perfectly competitive market. For example, during 2006 and 2007 Assam tea (a product of the State of Assam, India) has been losing market share to its Kenyan counterpart because of a higher relative price. As most export items in the context of South Asia are typically comprised of low-technology-intensive (price-sensitive) items, a small increase in price will therefore have a huge impact on demand. Considering exchange rates, in general this data does not come out to be very robust. The dummy variables capturing country-specific trading relations with India have come with negative signs which in some way reflect the no-trade pact attitude between India and Pakistan. Finally, one of the coefficients on the infrastructure variable has also turned out to be significant, reiterating the need for building physical infrastructure in the region.

#### 4.5 POLICY RECOMMENDATIONS AND CONCLUSION

As is evident from the above analysis, income and trade costs are important factors so far as the intra-flow of SAARC trade is concerned. Since income in the region is increasing, and SAARC member nations are also depicting symmetric economic activities, it makes sense to reduce trade costs. However, unlike tariff measures which are easy to lower, controlling for trade costs will take time and requires some commitments at policy

level. The benefit of falling tariffs, geographical proximity and similarities in economic factors can be leveraged more if some steps are taken at the policy level. The following measures need to be considered for enhancing trade flow in the region.

Firstly, the granting of transit facilities for movement of goods, services and energy through their own territories but originating from neighboring countries. At present, Bangladesh does not allow use of its territory for transporting goods from North Eastern Indian states to mainland India. Similarly, despite having huge reserves of natural gas, Bangladesh does not trade in energy with India because of a lack of adequate infrastructure, and political unwillingness. Again, there is no simple way to transfer goods from Kolkata in India to neighboring Dhaka in Bangladesh. In the border towns in Bangladesh, the trains run on meter-gauge, while in India they run on broad-gauge. Similarly, India had an issue with Pakistan to allow shipment of gas from Iran through Afghanistan.

Secondly, there is a need to liberalize trade and investment measures in services. Because of lack of adequate physical infrastructure services, exports in the South Asian region (which are less dependent on infrastructure) are performing well compared to its manufactured exports (which are more dependent on infrastructure). While commenting on the sources of growth, Ahmed and Ghani (2007) found that for the period between 1995 and 2003 exports of services from South Asia grew at 14 percent per annum compared to less than 8 percent for East Asia. India and Bangladesh have performed well in areas of selling computers and information and communication technology (ICT), while Pakistan has excelled in the area of transport services and Sri Lanka in travel services. These nations can therefore further build on areas of competitive strength by liberalizing investment and trade in services.

Thirdly, transfer of funds from economically advanced regions to economically poor regions, to help the laggard regions modernize and diversify their economies. A reason that the European Union (EU) became a success story is not only that the member countries removed tariff and quota restrictions, but also because they transferred funds to less-developed countries in the region. For example, Poland was allocated a sum of US\$27 billion from 2004 to 2007 to modernize and diversify its economy. In this way, India can aid by releasing some supply-side constraints that smaller economies in South Asia are currently facing. On a similar note, India also stands to gain by extending unilateral duty-free and quota-free access to its market for products from less-developed countries like Bangladesh.<sup>16</sup> The ability to sell in the Indian market will give these countries necessary purchasing power which in turn can be spent on purchasing Indian goods.

Fourthly, Reducing the number of negative lists. India's negative list in the context of SAFTA is larger than that in some of its bilateral free trade agreements, and almost four times as large as its latest offer in the negotiation for a free trade area with the Association of South East Asian Nations (ASEAN). For instance, India subjects 15 out of Sri Lanka's top 20 exports to either a tariff rate quota (meaning the tariff preferences apply only up to a prespecified quantity of imports) or negative list (Baysan et al. 2004). Similarly, out of 319 items on which Sri Lanka offered concessions of zero duty to India, only three items are actually exported to Sri Lanka (Weerakoon 2001).

And lastly, further easing of political differences with respect to India and Pakistan. Issues relating to Kashmir always come to the forefront whenever some economic decisions need to be taken. Because of political differences, member countries have simply refused to participate in mutually gainful situations, much less try to give any unilateral concession.

The analysis in this chapter is built on documenting the existence of trade costs in South Asia. We found that factors such as lack of infrastructure – both physical (roads, rail, airports, and so on) and services-related infrastructure (proxied by Internet use by business and ministries), government regulations (pertaining to documentation and investment in infrastructure), port inefficiency (higher shipping turnaround time), corruption in customs, and so on, all contribute to the existence of higher trade costs in South Asia. From the perspective of trade, and also to forge greater regional integration in South Asia, there is a need to reduce these elements of trade costs. Part of the lower intra-South Asian trade can be explained because of trade costs. Despite a paradigm of falling tariffs, geographical proximity and similarities in economic factors, trade in South Asia is not growing because of the presence of higher trade costs. This proposition of trade cost leading to lower South Asian trade is validated using an augmented gravity model in a panel data framework. Our results suggest that for a 100 percent increase in trade costs, the value of exports from India to neighboring Asia is expected to fall by between 42 percent and 7 percent. Higher trade costs not only restrict trade but can also downplay political will for forming a greater regional cooperation in South Asia.

## NOTES

1. In the static sense we think of benefit accruing to countries trading on the basis of comparative advantage (Ricardian theory), or on the basis of different factor endowments (Heckscher–Ohlin–Vanek model). The dynamic effects of trade on growth depend crucially on the extent of technology transfers or knowledge spillovers through

- foreign direct investment (FDI) across countries (endogenous growth models and Helpman–Grossman models).
2. In literature, trade liberalization is also known as external sector liberalization. It means reduction in tariff barriers, phasing out of NTBs like quotas, import license and so on, export promotion, and a move towards a market-determined exchange rate.
  3. SAARC was formed in 1985 with Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan and Sri Lanka as its members. Initially SAARC focused on areas such as health, population activities and child welfare, culture, and sports. However, with each passing year, the member countries have been working on increasing economic cooperation.
  4. Some initial steps were taken in this direction with the establishment of Saarcfinance, a network of SAARC central bank governors and finance secretaries and its subsequent formal recognition as a SAARC body at the 11th SAARC summit held in Kathmandu, Nepal in 2002. Beginning on 1 January 2006, the South Asian Free Trade Area (SAFTA) came into effect. SAFTA strengthens the relationships defined under SAPTA and is envisaged as the next step towards formation of the SACU.
  5. Around 205 RTAs notified under the General Agreement on Tariffs and Trade (GATT) and the WTO are in force as of September 2008 (WTO 2008).
  6. Another major relevance of the gravity model is that it provides the main linkage between trade barriers and trade flow – something we have used for this chapter.
  7. Sometimes policy-makers find it difficult to reduce tariffs for domestic reasons. A good example is that of India. The average land holding size for the Indian farmer is around 1.4 hectares or 10000 square meters (Press Trust of India 2007). These marginal farmers work on the land of big farmers. Under the condition of lower tariffs, large-scale farmers take a loss and may stop production. That leaves marginal farmers jobless, further worsening an already unequal income distribution. Recognizing the need to lower tariff barriers, Indian policy-makers are currently putting emphasis on educating the rural population to enable a smooth transition (in terms of contribution to national income) from agriculture to the manufacturing and services sectors.
  8. Nepal witnessed political turmoil during the period beginning with the takeover of power by King Gyanendra on 1 February 2005 until 29 May 2008, when the king was finally dethroned by an Act of the Nepalese Parliament.
  9. For more on the Enterprise Surveys visit: <http://www.enterprisesurveys.org/ExploreTopics/?topicid=8> (World Bank 2008b).
  10. India has the highest numbers of billionaires in Asia (NDTV 2008).
  11. The *force majeure* clause refers to exceptional matters or events beyond the control of either party, that is, the government and the providers. For example, while building the Bangalore–Mysore highway in India, the promoter (Nandi Infrastructure Corridor Enterprises) was promised free land alongside the expressway to recoup its investment cost. This promise was never fulfilled because of political factors. Delays in land acquisition, red tape and a five-year legal battle have raised the estimated cost by 6 billion rupees (KPMG 2005).
  12. For more discussion on the theory of the gravity model, see Anderson and van Wincoop (2004).
  13. The use of  $\beta_{j-1}$  is to avoid dummy variable trap.
  14. For more on the application of GMM techniques in the context of gravity equation see Arellano and Bond (1991) and Blundell and Bond (1998). This is a widely acknowledged use of GMM techniques in the presence of a lower number of  $N$  which may increase the finite sample bias.
  15. In economics, the effective rate of protection is a measure of the total effect of the entire tariff structure on the value added per unit of output in each industry, when both intermediate and final goods are imported. This statistic is used by economists to measure the real amount of protection afforded to a particular industry by import duties, tariffs or other trade restrictions.
  16. India already has free trade arrangements with Bhutan and Nepal.

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## 5. Transport infrastructure and trade facilitation in the Greater Mekong Subregion

**Susan Stone and Anna Strutt**

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### 5.1 INTRODUCTION

The rise in international trade in the world economy is a well-documented phenomenon, with total exports of goods and services rising from 13 percent of world gross domestic product (GDP) in 1970 to 27 percent by 2005 (World Bank 2008b). Successive rounds of trade liberalization under first the General Agreement on Tariffs and Trade (GATT), then the World Trade Organization (WTO), have led to deeper and broader tariff reductions. However, as tariff reduction and reform have entered increasingly sensitive areas, leading to more protracted and contentious negotiations, attention has turned to reform in the rules of trade. Harmonization and simplification became recognized as sources of potential gains even as tariff reductions stalled. Indeed, recent studies have postulated that the potential gains from reforms in expanded access or trade facilitation may be even greater than those from tariff reduction (Organisation for Economic Co-operation and Development, OECD 2003).

This move toward greater emphasis on process was demonstrated through the inclusion of trade facilitation to the Doha Round negotiations. These negotiations did not attempt to target the entire logistical supply chain but rather focused on how nations control the way in which goods move across their borders through various inspection and approval stages. Improving existing rules, providing less-developed countries with technical assistance and support, and improving coordination between customs authorities were identified as priority areas in these negotiations.

With further multilateral tariff reductions at a standstill, firms' access to international markets depends more and more on their ability to obtain efficient and low-cost trade services and logistics, including transparent and harmonized rules and regulations among markets. The crux of the trade and transport facilitation agenda is to maximize efficiency while

safeguarding legitimate regulatory objectives. This is a challenge, given that the concept of trade facilitation covers a broad range of obstacles, both deliberate and unintended, limiting market access.<sup>1</sup> These obstacles may comprise human and physical infrastructure, along with institutions including customs and trade-related services. Physical infrastructure, especially transport infrastructure, is a fundamental piece of this puzzle.

As trade is an important driver of growth and infrastructure is a necessity for trade, infrastructure development has a key role to play in economic development. This has long been recognized in the Greater Mekong Subregion (GMS).<sup>2</sup> The transport sector was one of the first areas of cooperation under the GMS Cooperation Program which began in 1992.<sup>3</sup> At the time, national boundaries in the region were, for all practical purposes, closed and most of the region's infrastructure was of a very poor quality (Ishida 2007). The program set out to open borders and improve connections to make trade easier, spur development and strengthen the region's ability to compete in the face of globalization.

To further the Cooperation Program, in 1995, the GMS adopted the Transport Master Plan which identified priority transport links – mostly road projects – designed to generate the greatest and most immediate improvements in connectivity. This was seen as an important step in economic development, with improvements in transportation infrastructure boosting economic opportunities in the region by, for example, significantly reducing travel times and costs. As the GMS countries have moved away from a strategy of self-sufficiency to one of regional cooperation, major efforts have been made to develop the infrastructure linking the GMS and beyond.

Once priority road networks were identified, the GMS turned its attention to other issues of trade facilitation. In 2003, the economies entered into a Cross-Border Transport Agreement (CBTA) which was developed to set up agreements between GMS countries to ease the movement of people and goods across borders. The CBTA covers facilitation of border-crossing formalities, the exchange of commercial traffic rights, establishment of transit traffic regimes, and also the setting of infrastructure standards and requirements for road vehicles in cross-border traffic. As of March 2007, all GMS countries had signed the agreement. The CBTA, in conjunction with the transport corridor development, has the potential to significantly improve time and costs of goods transportation throughout the region.

The purpose of this chapter is to quantify the potential benefits of the development of the economic transport corridors, along with the implementation of the CBTA in the GMS. Some of the key linkages between the upgraded infrastructure, economic growth and sectoral responses will

be explored with a computable general equilibrium (CGE) framework. This framework is particularly well suited to this task, since it explicitly accounts for all sectors within an economy, as well as the interactions between them. This framework can be used to quantify how the costs and benefits of improved infrastructure are transmitted between markets and how they impact on different sectors within markets. As well as highlighting trade-offs for particular sectors, CGE models can quantify the anticipated overall economic impact of infrastructure improvement.

We begin by outlining key economic and infrastructure issues in the GMS (section 5.2), followed by discussion of currently available estimates of how the infrastructure development is likely to impact the region (section 5.3). We then introduce a global trade model that will be used to generate insights into some of the likely impacts of improved trade facilitation and infrastructure development on GMS countries (section 5.4). This is followed by development and analysis of some specific scenarios that explore the potential impact of the improved infrastructure and trade facilitation measures (section 5.5). We discuss some potential adverse impacts of the infrastructure development, before drawing some tentative conclusions (section 5.6).

## 5.2 INFRASTRUCTURE AND DEVELOPMENT IN THE GMS

Almost 320 million people live in the GMS which is strategically located, bridging South, Southeast and East Asia. While the Mekong region is widely considered to have the potential to be one of the world's fastest-growing areas, economic development continues to elude some of the countries in the region and alleviating poverty remains a significant challenge.<sup>4</sup> Thus, the GMS has outlined an ambitious program of infrastructure investment and trade facilitation. Infrastructure investment has been shown to be an important mechanism to facilitate growth and development in a developing economy.<sup>5</sup>

Table 5.1 presents summary data for the GMS. Populations range from under 6 million people in Lao People's Democratic Republic (Lao PDR) to over 90 million in the combined Yunnan–Guanxi region of the People's Republic of China (PRC). Likewise the economies range widely in size, with Lao PDR's GDP value at US\$3.4 billion while Thailand's GDP is around 60 times as large, at over US\$206 billion. Gross national income (GNI)/GDP per capita ranges from US\$500 or under in Cambodia, Lao PDR and Myanmar, to over US\$3000 in Thailand.<sup>6</sup> While there is some variation across the GMS, overall it remains a relatively poor region.

Table 5.1 Selected aggregate indicators for the GMS and PRC, 2006<sup>1</sup>

	Population (mn)	GDP (US\$bn)	GNI per capita (US\$)	Intra-GMS share of total exports <sup>1</sup>		Intra-GMS share of total imports <sup>1</sup>	
				No PRC (%)	PRC (%)	No PRC (%)	PRC (%)
Cambodia	14.2	7.3	490	2.5	3.6	2.5	3.9
Lao PDR	5.8	3.4	500	17.9	20.7	19.6	22.6
Myanmar	48.4	–	281 <sup>2</sup>	36.3	43.2	35.9	43.1
Thailand	63.4	206.3	3050	3.0	13.8	3.1	14.0
Viet Nam	84.1	61.0	700	1.7	10.3	1.8	10.6
PRC Total	1311.8	2644.7	2000	2.1		2.2	
PRC GMS <sup>3</sup>	92.3	75.4	702	n.a.		n.a.	

Note: n.a.: not available.

Source: World Bank (2008b), except the following:

1. GTAP Database V7 base year 2004, without PRC/with PRC.
2. ADB (2008a).
3. Yunnan and Guangxi: Population 2003, GDP 2004, GDP per capita 2005 (Akrasanee 2006).

There is also variation across the region in terms of intraregional trade dependence and the degree to which the PRC plays a role in that dependence (last two columns of Table 5.1).<sup>7</sup> The highest dependency rate is found in Myanmar where over 35 percent of its imports and exports are sourced within the GMS. The PRC appears to play a small but significant role, increasing those shares by about 7 percent. Cambodia and Lao PDR do not appear to be overly dependent on the PRC. Indeed, their intra-GMS trade shares change little whether the PRC is included or not. The two economies most dependent on the connection with the PRC appear to be Thailand and Viet Nam. The share of Thailand’s imports sourced from GMS changes by a factor of 4.6 depending on whether the PRC is included. For Viet Nam it is even higher, increasing 5.5 times. This closer link with the PRC in terms of trade is apparent in the results shown later in the paper.

In terms of physical measures, such as population density and land area, again GMS countries vary. Land area ranges from under 180 million km<sup>2</sup> in the case of Cambodia to over 650 million km<sup>2</sup> for Myanmar (Table 5.2). Population density ranges from 25 people per square kilometer in Lao PDR to over ten times this density in Viet Nam, at 271 people per square kilometer. It is notable from Table 5.2 that the poorest countries – that is, Cambodia, Lao PDR and Myanmar – all have limited road networks

Table 5.2 Selected geographic, population, and infrastructure indicators for the GMS, 2006

	Land area (mn km <sup>2</sup> )	Population density (per km <sup>2</sup> )	Rural pop. (% tot)	Roads (mn km) <sup>1</sup>	Paved roads (% tot) <sup>1</sup>	Rail lines (mn km) <sup>1</sup>
Cambodia	176.52	80.4	79.7	38.3	6.3	0.7
Lao PDR	230.80	25.0	79.0	31.2	14.4	–
Myanmar	657.55	73.6	68.7	28.0	11.4	–
Thailand	510.89	124.2	67.4	57.4	98.5	4.0
Viet Nam	310.07	271.3	73.1	222.2	25.1	2.7
PRC	9327.49	140.6	58.7	1930.5	81.6	62.2
PRC GMS <sup>2</sup>	630.80	150.4		288.8		5.0

*Notes:*

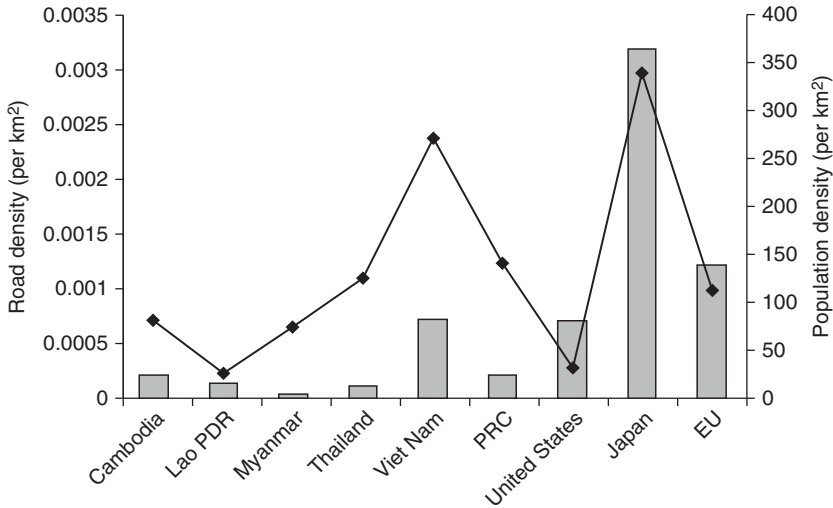
1. PRC 2005; Cambodia 2004; Lao PDR 2003; Viet Nam Roads and Rail lines 2004, paved roads 1998, PRC GMS sourced from National Bureau of Statistics of China (2007), Table 16.14.
2. Yunnan and Guanxi, source UNESCAP (2008), average population density calculated from 2000 data.

*Source:* World Bank (2008b).

with less than 15 percent of roads paved. These are also countries with relatively low population densities and limited resources to provide rural populations with access to markets and the accompanying opportunities. Movement by rail in the region is also fairly limited.

Looking at the land area and road coverage, an indication of road density can be calculated; that is, the kilometers of road per square kilometer of land. As a basis for comparison, we have shown this road density figure with population density and have included the United States (US), Japan and the European Union (EU). The results are shown in Figure 5.1 with the bars referring to the road density and the line to population density. As the figure shows, the population density for all GMS countries is well above road density (the exception being Lao PDR). While the US and Viet Nam have very similar road density figures (roughly 0.0007 km of road for every square kilometer of land), their population densities are very different (254 for Viet Nam and 31 for the US). If one assumes that the developed world has a roughly appropriate level of road networks for a given level of economic activity, the substantial differences between the level of service in the GMS countries and the US, Japan and the EU provide an indication of the great need to expand transport networks within the GMS.

This gap in road networks has a direct impact on the GMS's ability to



Source: Table 5.2 and authors' calculations.

Figure 5.1 Road vs population density

attract investment. The changing nature of global production patterns has affected economic development both within and outside the GMS depending on, among other things, transport service availability and quality. Variations in the logistics costs among countries stem from differences in the quality and cost of infrastructure services, including customs procedures and institutional quality. Opportunities for trade expansion and foreign investment depend on improving trade facilitation and road transport services.

There are several sources of comparison data among economies for trade facilitation. The World Bank's (2008a) Doing Business database provides measures on regulation and other business costs for 178 economies. Tables 5.3 and 5.4 present some summary statistics for trading costs in the GMS. Table 5.3 shows the main trade indicators for the region along with the OECD average. What is immediately apparent from the table is the discrepancy between the costs of handling a container, both importing and exporting, and the time involved in conducting trade. The export and import container costs, with the exception of Lao PDR, are all less than the OECD average. However, the time involved for each is considerably higher. While the cost to export a container from the GMS (excluding Lao PDR) averages about 34 percent less than the OECD average, the time needed for exporting from the GMS region (again, excluding Lao PDR)



Table 5.3 Main indicators for trading across borders, GMS

Region or Economy	Documents for export (number)	Time for export (days)	Cost to export (US\$ per container)	Documents for import (number)	Time for import (days)	Cost to import (US\$ per container)
Cambodia	11	37	722	11	46	852
Lao PDR	9	50	1750	10	50	1930
Thailand	7	17	615	9	14	786
Viet Nam	6	24	669	8	23	881
PRC	7	21	390	6	24	430
Avg. OECD	5	10	905	5	10	986

Source: World Bank (2008a).

Table 5.4 Time taken for procedures to trade across borders, GMS (in days)

	Cambodia	Lao PDR	Thailand	Viet Nam	PRC	High-income OECD <sup>1</sup>
<i>Exports</i>						
Documents preparation	29	33	9	12	14	
Customs clearance	3	3	1	5	2	1.9
Ports	3	4	4	3	2	1.1
Inland transportation	2	10	3	4	3	2.1
Total	37	50	17	24	21	
Total without document preparation	8	17	8	12	7	5.1
<i>Imports</i>						
Documents preparation	34	33	8	12	15	
Customs clearance	3	8	2	5	4	1.4
Ports	5	2	2	4	2	2.5
Inland transportation	4	7	2	2	3	1.6
Total	46	50	14	23	24	
Total without document preparation	12	17	6	11	9	5.5

Note: 1. Average of high-income/OECD economies.

Source: World Bank (2008a).

Table 5.5 Selected variables from enabling trade index<sup>1</sup>

	Overall ranking <sup>2</sup>	Market access <sup>3</sup>		Border administration <sup>4</sup>	
		Rank	Score	Rank	Score
Cambodia	113	108	2.62	107	2.74
PRC	48	71	4.07	43	4.51
Thailand	52	62	4.25	56	4.07
Viet Nam	91	112	2.50	76	3.60
Hong Kong, China	1	1	6.66	7	5.99

Notes:

1. No statistics were reported for Lao PDR or Myanmar.
2. Out of 118.
3. Based on tariff and non-tariff barriers and proclivity to trade measures. Score is out of 7.
4. Based on efficiency of customs administration, import/export procedures and transparency. Score is out of 7.

Source: WEF (2008).

is 250 percent higher than the OECD average. This is a significant matter in global competition as time costs for trade are an important factor for most businesses.<sup>8</sup>

Table 5.4 provides some details as to where these time delays can be found. Document preparation is a large stumbling block, taking as long as 33 days for exports from Lao PDR but still as many as nine days for Thailand and 14 days for the PRC. Inland transport and customs clearance are also sources of delay. Shepherd and Wilson (2008) show that Association of South East Asian Nations (ASEAN) countries in general have much to gain from improved trade facilitation, in particular from improved transport infrastructure and information technology that affect timing issues like document preparation and inland transport. In addition to work done by the World Bank, the World Economic Forum (WEF) has turned its attention to trade facilitation through the Global Enabling Trade Report (WEF 2008).

The report's aim is to measure the extent to which countries have in place factors and policies that enable trade. Several indices contained in the report measure these factors, along with policies and services facilitating the movement of goods over borders. Tables 5.5 and 5.6 present some of these statistics for the GMS.

Of the 188 economies examined in the WEF report, the regional economies of Singapore and Hong Kong, China rank numbers 1 and 2, respectively, on the list. Not surprisingly, GMS countries do not rate nearly as highly. Even the PRC, while considered a powerhouse of trade, ranks

Table 5.6 *Transport and communication infrastructure*<sup>1</sup>

	Transport and communication total		Availability and quality of transport infrastructure		Availability and quality of transport services		Availability and use of ICT	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Cambodia	105	2.48	98	2.81	101	2.94	112	1.69
PRC	36	4.15	36	4.42	17	5.10	55	2.92
Thailand	41	3.93	29	4.62	30	4.47	64	2.70
Viet Nam	75	3.08	100	2.81	48	3.89	71	2.54
Hong Kong, China	4	5.66	14	5.18	4	5.96	6	5.84

Note: 1. No data were reported for Lao PDR or Myanmar.

Source: WEF (2008).

fairly low due to time-consuming border administration, including a lack of transparency and high tariff and non-tariff barriers. Market access and border administration are well below average for all GMS countries reported.

Specifically looking at transport and communications, the areas cited by Shepherd and Wilson (2008) as offering the most promise from reform, rankings for GMS economies were slightly better than the overall rank shown in Table 5.5. The best performance for the GMS generally came in the category of availability and quality of transport services, suggesting that the GMS transport strategy is having a positive effect.

Finally, in a study examining the logistics performance for the ASEAN region as a whole, Nathan Associates (2007) found that transporting goods by road between Lao PDR and the Thai border, for instance, cost shippers four times more than the international norm (including Asia). While the national logistics costs relative to GDP were approximately 8 percent for Singapore, they were found to be closer to 20 percent for Viet Nam and Thailand. Across ASEAN, the report found that export logistics costs expressed on a free on board (f.o.b.) basis were as high as 25 percent for some products. A breakdown of logistics costs are as follows: procurement, 17 percent; inventory holding, 10 percent; warehousing, 11 percent; transport, 28 percent; and export processing, 34 percent. The largest categories are transport and export processing, two that have been directly targeted through the GMS Transport Strategy and the CBTA.

The GMS regional economic corridors program was undertaken to

address problems such as those identified in the reports and studies outlined above. The goal is to stimulate the effective and efficient growth of direct investment and production facilities through the identification of corridors for major transport infrastructure development. This economic corridor approach to subregional development was adopted as a fundamental strategy to accelerate the pace of GMS cooperation and to help realize the region's potential. Three corridors were identified as flagship programs under this approach: the North–South Economic Corridor (NSEC), East–West Economic Corridor (EWEC) and Southern Economic Corridor (SEC) (Figure 5.2). In 2007, the GMS ministers agreed to expand the program to a total of nine economic corridors.

### 5.3 ESTIMATION OF IMPACTS OF THE GMS ECONOMIC CORRIDORS

Economic corridors are meant to attract investment and generate economic activities along a region, usually with the aim toward development. They are meant to provide two fundamental attributes for development: lower distribution costs and improved land supply for economic activities. However, physical links and logistics facilitation must be in place in the corridors for them to achieve these aims. Therefore, the GMS adopted the CBTA and the economic corridor development strategy. We move now to examine a range of studies that attempt to estimate and quantify the benefits of these programs and the associated trade facilitation developments.

A study of the SEC's impact on Cambodia conducted by the Mekong Institute found an increase in living standards of those along the corridor (Phyrum et al. 2007). The study reported improved access to healthcare, education and markets as well as the development of additional public service facilities. It also reported an improvement in trade routes and reduced trade costs at cross-border points.<sup>9</sup> The tourism sector was said to have added more than 560 000 jobs in light of the SEC, representing over 8 percent of total employment in 2004. The authors of the study also estimated that this sector added almost five percentage points to GDP in direct economic activity and another 10.5 percent in indirect economic activity.

The Japan International Cooperation Agency (JICA), along with the ALMEC Corporation, has undertaken a series of studies on cross-border infrastructure. Phase 2 was conducted in 2007 and focused on the GMS (JICA 2007). The study estimated expected regional GDP growth as a result of the cross-border transport initiatives, including the CBTA and the three original economic corridors. Under varying assumptions the



Source: ADB (2008b).

Figure 5.2 GMS economic corridors

Table 5.7 JICA/ALMEC projections for regional GDP growth<sup>1</sup>

	Case 1	Case 2	Case 3	Case 4	Case 5
Cambodia	2.4	55.7	126.5	149.9	137.1
Lao PDR	55.8	0.6	234.3	266.8	231.4
Myanmar	2.8	2.8	4.5	111.0	91.5
Thailand	23.5	19.1	81.6	97.7	89.4
Viet Nam	8.1	10.2	37.7	110.9	104.1
PRC	0.2	0.1	1.7	4.5	4.1

Note: 1. Demand forecasts were made based on various scenarios of cross border linkages including abolishing all border-crossing procedures in the region, essentially creating a common market (Case 4). See report for details.

Source: JICA (2007).

study estimated that potential GDP growth in each country ranges from 0.2 percent in the PRC, under relatively conservative assumptions on road development, to an almost threefold increase for Lao PDR under more ambitious assumptions (Table 5.7).

A 2006 Japan External Trade Organization (JETRO) study found that with improvements in the land transport network of Thailand, Lao PDR and Viet Nam, including completion of the Second Mekong International Bridge linking Lao PDR and Thailand (part of the EWEC), transit times could be reduced by 25 percent (JETRO 2005). These findings were based on surveys of Japanese firms operating in the region.

Banomyong (2007) analyzed the impact of the NSEC on logistics in the GMS region. He found major improvements in both time savings and shipping costs with the full implementation of the economic corridor. Table 5.8 outlines the results for the two case studies examined. The projected reduction in shipping costs varies between 17 percent and 60 percent. Time savings estimates are in a tighter range, averaging under 40 percent. The author states that while the NSEC may lead to substantial savings, the institutional framework is still weak, leading to an uncertain environment for shippers and consignees. The report concludes that with improved border crossings, the NSEC will evolve into a true logistics corridor.

The immediate benefit of the EWEC was the improved connectivity and integration with the neighboring countries – Thailand, Lao PDR, and Viet Nam – resulting in reduced travel time and transport costs. A 75 percent reduction in travel time between Dansavahn in Lao PDR and Khanthabouly in Viet Nam over values reported in 2001 was found by Luanglatbandith (2007). From 2001 to 2006 growth in this transport

Table 5.8 *Estimated costs along the North–South economic corridor*

Bangkok–Kunming	US\$ per Ton	% Change	Transit time (hours)	% Change	Perception of reliability (based on a 5 pt scale)
R3W (via Myanmar)					
2000	639		77		2.2
2006	470	26.5	46	40.3	3.0
2015	269	42.8	30	34.8	3.5
R3E (via Lao PDR)					
2000	563		78		2.6
2006	392	30.4	51	34.6	3.3
2015	210	46.4	30	41.2	4.0
Via Mekong					
2000	406		128		2.7
2006	271	33.3	88	31.7	3.4
2015	107	60.5	70	24.5	3.7
Hai phong–Kunming					
2000	105		85		2.4
2006	87	17.0	58	32.0	2.7
2015	43	50.5	26.5	54.3	3.8

Source: Banomyong (2007).

sector was substantial, with the number of passenger buses along the corridor increasing 160 percent and the number of freight operators doubling between 2000 and 2005 (Luanglatbandith 2007).

Following the opening of the Second International Mekong Bridge at the end of 2006, the first two months of 2007 alone saw an 8 percent increase in tourists compared to the same period in 2006. With the improvement in Route 9 (also part of the EWEC), the province of Savannakhet in Lao PDR saw the number of tourist arrivals increase almost 145 percent, rising to 222 063, compared with 1999 levels (Luanglatbandith 2007). More than half of such tourism is regionally based, originating in Thailand, Lao PDR and Viet Nam. According to the study, easier access to new farming technology and cheaper inputs from Thailand and Viet Nam has increased the productivity of the agricultural center in Savannakhet. Annual growth in this sector averaged 7.2 percent, well above the national average of 3.4 percent.

In a country-specific study, Menon and Warr (2006) estimated the impact of improvement in road conditions for Lao PDR of the kind

Table 5.9 Selected variables for logistics costs

	Cost to shipper (\$)		Time to shipper		Overall rating
	Actual	Norm <sup>1</sup>	Actual	Norm <sup>1</sup>	
<b>Vientiane–Laem Chabang Corridor</b>					
Port and terminal operations	70	50–150	3.5 days	3–5 days	Good
Seaport customs	0	0–50	0.5 hrs	0.5–1.5 hrs	Good
Rail transport	35	0–50	3.5 hrs	2.5–3.5 hrs	Good
Inland clearance operations	62.5	10–30	2.5 days	1–2 days	Fair
Road transport	845	200–300	16 hrs	12–15 hrs	Fair–Poor
Transloading	50	50–150	2 hrs	2–4 hrs	Good
Inland customs	180	100–300	3 hrs	2–4 hrs	Good
Export formalities	120	50–150	12 days	3–5 days	Poor
<b>Total<sup>2</sup></b>	1362	820 avg.	18.5 days	10.5 days	Fair
<b>Danang–Mukdaharn Corridor</b>					
Import formalities	200	50–150	10 days	2–3 days	Poor
Port and terminal operations	107	50–150	0.5 days	0.5–2 days	Good
Seaport customs	262	50–150	1 day	1–3 days	Fair
Road transport	581	120–180	10.5 hrs	0.5–1 day	Fair–Poor
River crossing	132	50–100	3.5 hrs	2–4 hrs	Fair
Transloading	316	50–150	2 hrs	2–4 hrs	Fair
Inland customs	28	100–300	1 hr	2–4 hrs	Good
<b>Total<sup>2</sup></b>	1626	825 avg.	18.5 days	7 days	Fair–Poor

Notes:

1. Based on international standards for given task/distance.
2. Total does not add as reporting selected components of total logistics costs.

Source: Nathan Associates (2007).

covered in the GMS Transport Strategy. They found that vehicle operating costs (VOC) would be reduced by anything from 16 percent to 65 percent depending on the type of road initially in place (including no road) and the type of upgrade performed on the road in question.

A broader, more indicative approach to the determination of the potential gains of the GMS economic corridor programs can be found using the Nathan Associates report on ASEAN logistics (Nathan Associates 2007). Table 5.9 presents the costs and time to shippers along two corridors in the GMS, versus international norms as reported in the study. As shown, most measures for the corridors are rated fair to poor.



The report cites that a lack of funding for road maintenance on international routes, a low standard for international truck facilities at border crossing and transloading areas, and a lack of agreements allowing trucks to travel easily from one country to another with transit goods as chief reasons for the corridors' poor performance. All these measures are covered under the recently signed CBTA. Notably, customs were cited as standing out for good performance for both corridors examined.

If full implementation of the CBTA and the economic transport strategy were to bring the transport network in the GMS on par with well-performing roads in the Asian region, according to these numbers, costs would be reduced by between 40 percent and 50 percent for both corridors. Total costs to shippers along the Vientiane–Laem Chabang corridor would be reduced 40 percent and along the Danang–Mukdaharn corridor by almost 50 percent. Time savings would be 43 percent and 63 percent, respectively.

Several ADB studies were also consulted. The first (ADB 2007a), a detailed study of part of the EWEC, analyzes the effects of the Second Mekong International Bridge, Mekong Bridge access roads, Road 9 rehabilitation, Highway 1 periodic maintenance, and Da Nang port improvement on Lao PDR and Viet Nam. The report found that VOC were reduced between 2 percent and 32 percent with a median of 16 percent and that transit times were reduced by around 25 percent. The value of trade across the border of the two countries was found to increase by 41 percent between 2003 and 2006. The report concludes that these projects were successful in achieving their primary objectives of increasing the movement of people and goods, reducing the VOC and travel time while increasing the level of traffic achievable in the region.

The second study (ADB 2007b) examined the impacts of improvements in the highway links between Phnom Penh in Cambodia and Ho Chi Minh City in Viet Nam. It estimated that VOC were reduced 10 percent for passenger cars and by 15 percent for trucks and buses. In Cambodia, travel time from Phnom Penh to the border was reduced by 30 percent, with similar reductions achieved in Viet Nam. The value of trade along the border increased by over 40 percent per annum between 2003 and 2006.

Finally, some preliminary work evaluating the entire EWEC by ADB (ADB 2008c) has shown that while Thailand is relatively efficient in its trade-facilitating environment, compared with 'best-practice' countries such as Singapore it is still far behind almost all of the national logistics performance indicators. The study estimated that time needed to export averaged 17 days in Thailand while in Singapore it averaged just five days. Importers experience a smaller but still significant gap: nine days in Thailand and three days in Singapore. Once the EWEC corridor is

completed, and policies have been implemented, estimates suggest that the travel time along the corridor will be cut in half.

The evidence suggests that improvements in transport infrastructure and trade facilitation in the GMS can bring substantial gains to the region. The studies reviewed above report cost-saving values ranging from 16 percent to 65 percent with the median value being around 45 percent. The last three studies report time savings between 25 percent and 50 percent.

Benefits from the economic corridor project and the CBTA can manifest themselves in two ways: reductions in the direct cost of operating vehicles on roads, and reductions in the cost of trading goods across borders. Some estimates suggest that indirect costs from time delays can have a greater impact on trade volumes than direct costs (OECD 2003). Within the model, we can adjust the direct costs of transport through the international transport margins and the trade costs of trade facilitation through technology changes. Both approaches are applied in this work.

## 5.4 THE GTAP MODEL

The Global Trade Analysis Project (GTAP) model draws on a set of economic accounts for each country or region, with detailed interindustry links (GTAP n.d.). Using a global CGE model such as GTAP enables interactions between regions and sectors to be captured within a fully consistent framework. Although it is a very comprehensive global trade model, simplifications and abstractions from the real world still have to be made.

The model we used for this study is comparative, static and assumes perfectly competitive markets with constant returns to scale, as in the standard version of the GTAP model (Hertel 1997). Other standard features of the model are also retained, for example the behavior of private individuals, firms and governments is modeled, along with responses to changing resource and market conditions. Consumers maximize welfare, subject to their budget limitations, with a relatively sophisticated representation of consumer demand, allowing for regional differences in the price and income elasticities of demand. Firms maximize profits using the limited resources available in the economy. In particular, five primary factors of production (land, natural resources, physical capital, and skilled and unskilled labor) are combined with intermediate inputs, including imports, to produce final output. Armington elasticities allow differentiation between imports from different countries in the GMS and elsewhere, specifying the extent to which substitution is possible between imports from various sources, as well as substitution between imports and domestic production. When the

impact of the infrastructure improvement is simulated, prices and quantities of marketed commodities, along with impacts on incomes and GDP, are all endogenously determined within the model.<sup>10</sup>

#### **5.4.1 The GTAP Database**

For this chapter, we used version 7 of the GTAP database, covering 113 countries and regions and 57 sectors, with a base year of 2004 (GTAP n.d.). This version of the GTAP database includes Cambodia, Lao PDR, Myanmar, Thailand and Viet Nam. While the PRC is available in the GTAP database, Yunnan Province and Guangxi Zhuang Autonomous Region are not available separately, therefore we included the PRC in the analysis.<sup>11</sup> We aggregated the GTAP 7 database to cover available GMS regions and incorporate relatively heavy disaggregation of sectors of key importance to the region. Details of the regional and commodity aggregation used are in Tables 5A.1 and 5A.2.

The GTAP model includes international transportation margins for air, water and other transportation (which is primarily land transport). Table 5A.4 in the Appendix shows the cost of bilateral GMS land transport margins as a proportion of the value of exports as calculated from the GTAP database. Cross-border land transport costs are likely to be relatively significant for poorer economies with less-developed infrastructure. This appears to be reflected to some extent in the database, with cross-border land transport margins appearing most significant for the relatively poor countries of Cambodia, Myanmar and Lao PDR.<sup>12</sup>

## **5.5 SCENARIOS AND RESULTS**

This section presents the results of three scenarios. Scenario 1 examines the impact of reducing transport costs in the GMS region by 45 percent. This was the median value found by many of the studies outlined above. The margins for the PRC were also reduced, but by 25 percent to reflect that a smaller amount of trade by land transport takes place in the two provinces associated with the GMS versus the country as a whole. The effect is to lower the costs of the land transport of goods within the GMS.

The second scenario explores the effects of an improvement in trade facilitation and time costs reducing overall trade costs. We implemented an approach introduced in Hertel et al. (2001) and further refined in Minor and Tsigas (2008). The approach allows for region-specific shift in the Armington demand function, effectively lowering the foreign market price. The market price reduction is simulated by a technical change.

Again, based on the studies of expected time savings if the CBTA were to achieve improved facilitation to world standards, we assume a reduction in costs of 25 percent. We need to differentiate the shock for the PRC to take account of the fact that the entire economy is represented in the model while only the Yunnan Province and Guangxi Zhuang Autonomous Region are part of the GMS. According to Chinese national statistics, these two regions account for about 5 percent of the trade and economic activity of the country (National Bureau of Statistics of China 2007). Therefore, we reduced costs in the PRC by 5 percent to proxy a reduction on the relevant regions.

The third and final scenario combines the two scenarios outlined above. The first scenario is an attempt to capture the improvements in the physical connectivity associated with the GMS Transport Strategy and three economic corridors in the region. Estimates of the cost savings through reduced VOC, improved efficiency of trucks, and drivers and other cost savings are proxied by a reduction in the international land transport costs in the GTAP model. The second scenario attempts to capture the benefits of the time savings from these road improvements, but more importantly, the implementation of the CBTA. Through improved border crossing, harmonization of registration and other bureaucratic matters, trade facilitation should be improved throughout the GMS. As previously cited, these cost savings have the potential to surpass cost savings in tariff reductions over time.

We have based the estimated cost reductions for first two scenarios on studies which have attempted to quantify such savings in the region. However, it is likely these savings estimates include aspects of each process; that is, the physical road improvements and the trade facilitation aspects embodied in the CBTA. By applying a straight combination of the two scenarios there is no attempt to account for any potential redundancies. However, given the dynamic effects observed in the anecdotal studies reported here (for example, Luanglatbandith 2007; Phyrum et al. 2007; JICA 2007), we believe that the cost reductions we have applied may be an understatement of the true effects. Thus, combining the two may provide a better indication of the potential benefits available to the region. We believe this provides some partial indication of the types of potential benefits from the dynamic changes likely to take place in the region.

Table 5.10 presents the results of the 45 percent reduction in the land transport margin on each of the GMS economies, including the PRC (at 25 percent). Welfare has improved in each economy with Viet Nam benefiting the most in dollar terms. Viet Nam has higher land transport margins on its exports than any other GMS country with significant trade flows, thus it has the most to gain from a reduction in these costs (Table

Table 5.10 Results scenario 1: transport cost reduction

	Cambodia	Lao PDR	Myanmar	Thailand	Viet Nam	PRC <sup>1</sup>
Welfare, equivalent variation (US\$m)	7.22	20.04	49.61	85.79	168.94	109.25
GDP (%)	0.08	0.06	0.06	0.01	0.10	0.00
GDP (US\$m)	4.02	1.50	4.33	10.33	42.71	13.00
Change in imports (%)	0.22	1.97	1.61	0.13	0.69	0.04
Change in imports (US\$m)	6.92	17.51	53.77	134.05	229.18	212.31
Change in exports (%)	0.12	-1.47	0.13	-0.08	-0.04	0.02
Change in exports (US\$m)	4.83	-8.65	4.06	-101.52	-11.21	121.81

Note: 1. Individual results for Yunnan Province and Guangxi Zhuang Autonomous Region are not available so the PRC is included.

A5.4). Lao PDR and Myanmar, which have the largest trade-weighted land transport costs, have smaller dollar value gains due to their smaller trade base (Table 5A.3).

GDP increased in every country, albeit by small amounts. These small changes can be attributed to the relatively small level of economic activity being affected by the cost reductions applied.<sup>13</sup> Imports increase at a greater rate with dollar value trade expanding for every economy. Exports expand to a much lesser extent and even decrease in Lao PDR, Thailand and Viet Nam, though for the latter two by very small amounts.

As the trade in the GMS expands and markets open up due to the full implementation of the CBTA and economic corridors program, gains from reduced transport margins will certainly increase. While CGE models provide abundant insights to the interconnections and detailed workings of the global economy, they do not capture the benefits of the dynamic synergies expected to arise from the investment in the economic corridors in the region. As noted above, our third scenario is an attempt to capture some of this potential.

Table 5.11 presents the results from the second scenario, measuring the effects of improvements in trade facilitation in the GMS. The gains here are much larger than the first scenario as they impact a much larger share of economic activity. Thailand and Viet Nam gain the most in terms of overall welfare. As shown in Table 5A.3, these two economies have the largest dollar value trade flows in the region.<sup>14</sup> GDP growth is strong across

Table 5.11 Results scenario 2: trade cost reduction

	Cambodia	Lao PDR	Myanmar	Thailand	Viet Nam	PRC <sup>1</sup>
Welfare, equivalent variation (US\$m)	355.29	236.26	613.44	3286.30	1809.91	1189.74
GDP (%)	6.71	6.32	4.22	0.87	3.15	0.06
GDP (US\$m)	327.69	154.99	325.96	1411.09	1355.66	1051.75
Change in imports (%)	3.63	10.86	10.22	4.43	5.76	0.26
Change in imports (US\$m)	114.23	96.63	340.96	4524.43	1925.43	1524.00
Change in exports (%)	0.18	-15.48	1.26	-3.22	0.14	0.25
Change in exports (US\$m)	7.57	-91.30	38.00	-3863.77	40.57	1614.13

Note: 1. Individual results for Yunnan Province and Guangxi Zhuang Autonomous Region are not available so the PRC is included.

all economies, as is import growth. While Thailand has the highest dollar value increase in imports, Lao PDR has the largest percentage increase. Lao PDR also have the largest percentage decrease in exports. Thailand is the only other economy to experience a decline in exports in this scenario.

Lao PDR’s major exports are wood and paper (to Thailand) and textiles and apparel (to Europe). While exports to Thailand in wood and paper increase in this scenario, sales in textiles and apparel to Europe decline. The price differential resulting from improved trade facilitation in the GMS expands regional trade at the expense of trade outside the GMS. Sales to other GMS members such as Thailand and Viet Nam help the overall state of the Lao PDR economy (as evidenced by improvements in welfare and GDP growth), but overall exports do fall.

Thailand experiences much the same effect in its export sales in electronics and other manufacturing. Regional sales increase but sales to traditional markets in North America and Europe fall, leading to a small overall decline in exports.

These results highlight the potential benefits of improved trade facilitation to development within the region. Right now trade within the region is small compared with trade outside. When trade increases within the region, even by large amounts, it is not as yet a significant enough proportion to offset losses in larger markets outside the region. Despite these export declines, GDP and welfare in the region rise due to gains through improved import pricing. This implies that as the share of trade within

*Table 5.12 Results scenario 3: transport and trade cost reduction*

	Cambodia	Lao PDR	Myanmar	Thailand	Viet Nam	PRC <sup>1</sup>
Welfare, EV (US\$m)	379.31	264.21	677.81	3416.51	2021.12	1306.13
GDP (%)	7.01	6.43	4.35	0.89	3.29	0.06
GDP (US\$m)	342.31	157.75	336.38	1436.78	1415.07	1068.63
Change in imports (%)	4.41	14.19	12.15	4.62	6.62	0.30
Change in imports (US\$m)	139.30	126.27	405.23	4723.20	2211.91	1747.25
Change in exports (%)	0.66	-16.53	1.39	-3.35	0.14	0.27
Change in exports (US\$m)	27.16	-95.56	41.94	-4012.58	41.47	1747.75

*Note:* 1. Individual results for Yunnan Province and Guangxi Zhuang Autonomous Region are not available so the PRC is included.

the GMS countries increases, the gains from improved trade facilitation within the region will translate into much larger impacts on welfare and GDP and subsequently to larger potential export markets.

Taking the two scenarios and putting them together, the results from the third scenario are presented in Table 5.12. Here, gains in welfare and GDP are significant but only slightly more than those reported in scenario 2 (Table 5.11). A possible explanation could be differentiating the gains from ‘soft’ infrastructure versus ‘hardware’ alone. In the first scenario, when physical transport infrastructure costs are reduced, total trade, welfare and GDP within the region all increase. In the second scenario, costs are reduced due to technological changes owing to improvements in time and other facilitation measures; that is, the software aspects and all measures increase by even greater amounts. When these are both are combined, we do not see a distinct increase over the ‘software’ analysis alone. Rather, trade increases, GDP growth and welfare gains are somewhat more than trade facilitation alone. These results provide some insight into the value of facilitation over physical infrastructure improvements alone.

We have argued that a clear benefit of trade facilitation is the expansion of interregional trade and the development force which that could be for the GMS. It has also been noted that there is the potential for increases in foreign investment and improved market access to outside the region. Given the small base of intraregional trade and foreign investment reflected in the base numbers relied upon in this chapter, it can be expected

that the benefits to the GMS economies of trade facilitation and improved transport facilities will only increase.

That is not to say, however, that physical infrastructure improvements are not as important. Reductions in the costs of operating land transport due to improvements in the GMS's physical infrastructure showed real gains in the region's welfare. Total welfare increased by over US\$330 million, and when the PRC is included, that grows to over US\$440 million. It is important to keep in mind that these numbers are generated based on cost reduction that affects a small margin of a small proportion of economic activity. If more pervasive measures of land transport infrastructure were available, it is a reasonable assumption that even larger numbers would be generated.

What may be inferred from this result is that once the physical infrastructure is in place, diminishing returns set in rather quickly. Physical infrastructure is a necessary but not sufficient condition for an economy to obtain benefits from trade expansion. Marginal benefits from a physical base are highest when policy programs include trade facilitation.

As a means for estimating the potential increase in regional trade, a base from which synergies and investment benefits can grow, we looked at the change in intraregional trade flows as a result of the three scenarios. Tables 5.13–5.15 present the changes in intraregional GMS trade from each scenario. Due to low reported initial values, Myanmar's results are not reported.

As shown in Tables 5.10–5.12, overall trade within the region expands under all scenarios. Intraregionally the pattern is more diverse. The PRC experiences a decline in exports to Cambodia and Lao PDR, but an expansion in Thailand and Viet Nam (Table 5.13). Lao PDR experiences a slight decline in trade with Cambodia, Viet Nam and the PRC, but these are a reflection of trade diversion to Thailand. All are very small movements and can be expected to improve as trade with Cambodia and Viet Nam grows. Viet Nam experiences the greatest increase in intraregional imports, while it follows the PRC in export gains.

Examining the second scenario (Table 5.14) we see much larger increases in intraregional trade, with all trading partners increasing the size of their trade in the region. Thailand's exports and imports experience the largest gains in dollar value terms, again being the largest trading partner in the region. Viet Nam also exhibits substantial import gains with trade from Cambodia, nearly doubling over its previous levels. Exports from other GMS members to Viet Nam expand by over US\$4 billion while Thailand alone increases its exports by over US\$7 billion, almost half of it going to Viet Nam. The PRC also expands its trade in the region, the vast majority with Thailand.

Examining the effects of both a reduction in land transport costs and improved trade facilitation, we see significant increases in trade flows but



Table 5.13 Change in the value of intra-GMS exports (US\$mn), scenario #1

From/To	Cambodia	Lao PDR	Thailand	Viet Nam	PRC	Total
Cambodia	–	–0.01	22.39	7.08	–0.39	29.06
Lao PDR	–0.03	–	18.87	–0.01	–0.22	18.60
Thailand	2.81	21.79	–	26.50	–14.65	36.46
Viet Nam	–0.02	0.00	14.52	–	117.81	132.31
PRC	–1.08	–0.81	147.62	409.90	–	555.64
Total	1.68	20.98	203.40	443.47	102.54	

Table 5.14 Change in the value of intra-GMS exports (US\$mn), scenario #2

From/To	Cambodia	Lao PDR	Thailand	Viet Nam	PRC	Total
Cambodia	–	1.51	119.18	82.94	9.62	213.26
Lao PDR	0.07	–	103.63	0.20	–4.36	99.55
Thailand	543.74	220.58	–	3590.68	2928.84	7283.84
Viet Nam	61.80	0.70	1701.36	–	691.13	2554.98
PRC	–52.54	–41.67	2451.48	638.02	–	2995.29
Total	553.07	181.12	4375.64	4311.85	3625.23	

Table 5.15 Change in the value of intra-GMS exports (US\$mn), scenario #3

From/To	Cambodia	Lao PDR	Thailand	Viet Nam	PRC	Total
Cambodia	–	1.46	194.77	100.32	8.17	304.74
Lao PDR	0.03	–	128.39	0.18	–4.80	123.80
Thailand	559.48	249.82	–	3641.14	2895.31	7345.76
Viet Nam	61.91	0.73	1753.84	–	818.84	2635.32
PRC	–55.34	–42.39	2635.13	1079.77	–	3617.16
Total	566.08	209.61	4712.12	4821.43	3717.51	

not the same level of increase as seen between the first and second scenarios. Thailand and Viet Nam continue to dominate the results, in addition to the PRC. Half of Thailand's increase in exports go to Viet Nam and the majority of Viet Nam's go to Thailand, although the PRC continues to play a large role in Viet Nam's trade. Cambodia and Lao PDR also substantially increase their exports to Thailand, while Cambodia doubles its exports to Viet Nam over initial levels.

Total trade (imports plus exports) within the GMS expands in all three scenarios. Thailand and Viet Nam expand the most in the two scenarios involving trade facilitation, and the PRC in the land-transport-only scenario. The increasing trade flows for the rest of the GMS are quite large

relative to initial values. For example, the US\$123.8 million increase in exports from Lao PDR in scenario 3 represents an 82 percent increase in exports to the region (almost exclusively to Thailand). The trade between Viet Nam and Cambodia alone increases by a factor of three.

To examine in more detail the nature of this intraregional increase in trade, Table 5.16 presents changes in exports in selected sectors for all three scenarios. These sectors generally have high land transport margins or are significant items of trade within the GMS. Changes for the selected export sector for each scenario are presented by bilateral partners for the GMS economies where such information is available.

A general trend to note is that the change in total exports for each of the countries listed is less than that for intraregional trade changes. In all sectors there are scenarios where total exports decline while intraregional exports rise substantially. For example, fruit and vegetable trade in Cambodia, Thailand and Viet Nam all decline in scenarios 2 and 3 and increase only marginally in scenario 1. In contrast, intraregional exports increase substantially. Lao PDR experiences a general decline in exports from trading partners other than Thailand. However, exports in textiles and other manufacturing increase substantially across the region for Lao PDR in scenarios 2 and 3.

As noted earlier, Lao PDR exports 84 percent of its wood and paper to Thailand at a relatively high cost in land transport: 18 percent of export value (Table 5.A3). In scenario 1 in which land transport margins are reduced, this trade expands nearly 15 percent. However, when both trade facilitation and margins are reduced, trade increases over three times that amount, by 46 percent.

An example of the potential of trade facilitation can be seen in Viet Nam's exports of fruit and vegetables. These exports incur very high land transport costs: 28 percent for the PRC and 11 percent for trade going to Thailand. When land transport costs are reduced, not unexpectedly, Viet Nam's exports to the PRC increase more than twice as fast as those to Thailand: 15.7 percent versus 6 percent (Table 5.16). However, when trade facilitation is added, all else equal, Viet Nam begins to export fruit and vegetables to Thailand at nearly four times the rate as it does to the PRC: 74 percent increase versus 18 percent.

## 5.6 MITIGATING FACTORS AND CONCLUSIONS

The gains from improvements in transport and trade facilitation presented above must be tempered by the potential negative impacts of improved transport networks in the region. These impacts include:

Table 5.16 Change in intra-GMS exports for selected sectors (%)

Exports from:	Fruit and vegetables			Other crops			Wood and paper			Textile			Other manufacturing		
	Scen1	Scen2	Scen3	Scen1	Scen2	Scen3	Scen1	Scen2	Scen3	Scen1	Scen2	Scen3	Scen1	Scen2	Scen3
<b>Cambodia</b>															
Lao PDR	-3.42	22.41	16.45	0.62	184.01	177.09	-8.66	40.58	20.13	15.77	20.54	37.21	-2.60	60.47	52.57
Myanmar	-6.62	47.23	35.11	-1.14	159.44	148.51	-5.24	107.72	85.24	-5.00	193.34	171.88	-3.18	158.34	142.53
Thailand	21.10	50.82	76.49	13.87	117.92	138.41	32.33	170.34	242.56	17.67	324.66	392.79	67.88	264.72	508.48
Viet Nam	27.46	43.10	75.84	7.26	97.42	103.72	34.54	143.49	210.47	19.37	282.42	348.61	12.47	205.95	239.38
PRC	-2.06	-11.17	-14.98	-1.98	-3.53	-8.43	-1.48	8.41	3.61	-0.51	41.82	39.37	-0.72	44.08	41.12
World total	0.28	-14.33	-15.20	4.15	34.96	40.20	8.88	44.07	61.40	-0.55	4.73	2.95	14.05	96.04	144.48
<b>Lao PDR</b>															
Cambodia	-6.25	-6.67	-11.99	-7.91	9.08	-0.81	-13.59	-2.47	-16.34	-6.00	80.09	62.96	-2.00	64.37	57.32
Myanmar	-12.07	-11.97	-22.92	-7.69	35.99	22.74	-18.98	-6.18	-27.65	-9.84	74.44	50.93	-5.15	100.19	79.44
Thailand	25.19	3.75	22.37	8.70	21.01	25.24	14.91	36.51	46.65	21.78	165.90	209.94	11.41	192.15	212.05
Viet Nam	-16.57	-19.75	-33.89	-9.81	1.84	-10.53	-17.85	6.23	-15.91	-7.66	127.54	103.07	-4.40	137.42	117.71
PRC	0.15	-42.99	-44.19	-2.29	-47.19	-50.06	2.91	-45.34	-46.43	1.53	-13.47	14.93	4.86	12.72	13.74
World total	12.29	-19.05	-9.85	-2.90	-33.98	-35.64	10.93	22.87	30.62	-5.04	-34.73	-39.19	-1.34	1.23	-2.14
<b>Thailand</b>															
Cambodia	1.46	81.09	87.16	0.81	155.12	160.05	1.58	111.35	118.34	-0.49	143.27	139.41	0.62	71.58	74.60
Lao PDR	4.68	42.13	49.72	11.96	249.22	291.20	9.49	50.00	58.49	-0.07	-3.06	4.10	4.76	31.15	35.56
Myanmar	5.41	71.34	81.21	15.93	219.78	270.44	15.87	120.99	148.43	6.69	135.16	146.68	7.96	111.06	123.35
Viet Nam	6.74	57.77	67.38	0.39	138.33	138.60	10.82	152.20	174.98	2.90	207.91	214.04	0.62	150.40	150.99
PRC	-0.18	4.67	4.44	0.16	17.74	17.83	0.23	11.95	12.06	-0.16	14.07	13.68	-0.05	17.72	17.56
World total	0.05	-0.58	-0.54	0	-0.59	-0.63	0.34	-6.36	-5.85	-0.11	-6.30	-6.45	0.02	1.93	1.95

<b>Viet Nam</b>															
Cambodia	0.85	80.71	84.72	0.22	162.33	165.34	0.55	116.48	121.13	-0.37	171.42	167.62	-0.02	73.24	74.84
Lao PDR	-3.44	38.92	34.86	2.11	256.06	263.38	-7.69	50.82	34.66	-7.82	7.68	-1.53	-5.99	31.36	21.77
Myanmar	-6.64	67.08	56.45	0.32	225.25	225.92	-4.23	122.83	107.64	-4.65	160.93	145.47	-3.20	111.79	100.87
Thailand	6.03	65.67	74.31	14.60	169.89	207.64	11.14	185.45	214.97	7.84	280.57	308.67	4.76	208.25	221.20
PRC	15.72	2.88	18.42	7.75	19.98	28.82	13.92	14.21	29.43	16.77	27.41	148.40	6.74	18.77	26.30
World total	1.44	-5.75	-4.43	-0.43	-3.11	-3.54	-0.66	-10.09	-10.78	0.46	-1.79	-1.17	0.13	0.92	1.20
<b>PRC</b>															
Cambodia	0.80	20.69	23.60	0.70	19.21	21.49	1.06	-4.00	-1.20	-0.50	-6.21	-7.55	0.46	-26.93	-25.69
Lao PDR	13.77	-5.32	8.58	8.65	62.65	77.16	6.07	-31.68	-29.72	-2.96	-62.51	-63.87	-1.09	-44.05	-45.27
Myanmar	9.95	13.86	25.90	9.03	48.58	62.30	9.97	0.95	8.29	2.96	-9.51	-7.63	2.66	-9.79	-8.99
Thailand	9.12	11.66	21.50	3.72	21.89	26.21	8.19	27.23	37.32	3.80	31.54	36.22	2.68	30.31	33.55
Viet Nam	7.49	3.84	30.78	8.48	11.26	20.48	15.29	14.30	30.14	9.40	18.51	28.86	8.89	6.99	16.19
World total	0.45	0.36	0.84	0.15	0.16	0.33	0.02	-0.16	-0.13	0.11	0.39	0.51	0.14	0.29	0.44

1. increasing income disparities (international, regional and ethnic);
2. a deterioration in regional economy in some areas and countries along the border crossing routes;
3. spread of HIV and AIDS,<sup>15</sup> avian flu, and other infectious diseases;
4. human and drug trafficking, a potential spread of terrorism;
5. deterioration of traffic safety.

As transit countries with fewer resources and low economic competitiveness, Lao PDR and Cambodia may suffer from worsening traffic safety and deterioration of the natural environment as a result of growing flows of transit cargo. There is also a concern among the people that only foreign multinational companies will reap the benefits of cross-border trade expansion (JICA 2007).

The spread of HIV and AIDS has been known to follow closely the progress of economic integration in the GMS. For instance, it was reported that the number of HIV-positive persons and AIDS patients rose sharply in Savannakhet during and after the construction of the Second Mekong International Bridge (Takao 2007).<sup>16</sup>

Human trafficking and illegal trade in narcotics are also deeply rooted in the problem of poverty. According to a report on Laotian villages, those who wanted to work outside their own countries were often victimized (ADB 2006). This report stated that a third of those obtaining such outside work were given false information about their earnings or forced to work in a job different from the initial promise (often prostitution in the case of women).

Traffic accidents are a concern across the developing world. Indeed, the World Bank has instituted a road safety program whose purpose is to raise awareness and understanding of road safety problems, including monitoring and evaluation of the effectiveness of road safety activities.<sup>17</sup> A World Bank study (Kopits and Cropper 2003) found that while most other forms of death rates fall with development, traffic accidents are a notable exception. The report found road traffic death per capita increasing across the developing world, including Southeast Asia. If historical trends continue, fatality rates in the region are expected to climb from 10.9 (deaths per 100 000 persons) to 16.8.

An ADB (2005) study provided estimates of annual economic loss from road accidents for GMS countries to be over US\$4.7 billion, or over 2 percent of annual GDP. This value is substantiated by EU estimates which state that road crashes cost approximately 1 percent to 3 percent of a country's GDP (Ministry of Road Transport and Highways, India 2008). Lost time, damaged cargo and vehicles, lack of insurance, injuries and even death all add to the high costs of traffic accidents.

### **5.6.1 Conclusions**

There are clear gains, albeit with some drawbacks, in the region from improvements in land transport costs and improved trade facilitation. Gains in regional trade reported here are even greater than those found in earlier ADB studies of approximately 40 percent (ADB 2007a, 2007b). This study takes a more comprehensive view of the GMS CBTA and economic corridor strategies when examining impacts. While there was some trade diversion of exports, overall impacts were still positive. One of the policy implications arising from this study is the impact of focusing on improving the so-called ‘soft’ aspects of trade facilitation which improve transit times and trade service costs.

The results also provided a glimpse into the potential gains as the region develops. Trade between the GMS countries currently tends to be in favor of importing, while exports go outside the region. The results presented here show the gains to intraregional trade, highlighting the potential markets within the GMS. As the region develops, it is reasonable to assume that the welfare and GDP gains reported here will increase significantly.

Thus, the results presented here must be seen for what they are: a static view of one-off gains from a conservative estimate in a reduction in transport costs and improvements in trade facilitation. They do not adequately capture the synergies developed by businesses starting along the economic corridors, the foreign investment likely to be attracted as facilities improve, or the spillovers from these types of investments throughout the economy. Finally, the degree to which trade flows are understated in the underlying database will impact the size of the results presented here.

What the study does show are the clear gains from improvements in physical land transport and the more substantial gains from improved trade facilitation. The implications of these results are that physical infrastructure must be in place for trade to take place. However, once in place, attention should turn to soft aspects of trade facilitation. Based on the results presented here, once a sufficient physical system is in place, additional benefits are marginal compared with improvements in policy initiatives under the heading of trade facilitation.

While the GMS does not have the level of physical infrastructure that would be considered truly adequate for its desired level of economic activity, the results show that investing in soft aspects now still has substantial payback. In future, as a greater physical base is put in place, the region should enjoy further benefits from expanded markets having a solid trade facilitation system in place.

## NOTES

1. For a definition of trade facilitation see: [http://www.wto.org/english/thewto\\_e/glossary\\_e/glossary\\_e.htm](http://www.wto.org/english/thewto_e/glossary_e/glossary_e.htm) (accessed 26 August 2008).
2. The GMS comprises Cambodia, Lao People's Democratic Republic (PDR), Myanmar, Thailand and Viet Nam, as well as Yunnan Province and Guangxi Zhuang Autonomous Region of the People's Republic of China (PRC).
3. The GMS Economic Cooperation Program is an Asian Development Bank (ADB)-supported comprehensive program of economic cooperation among the countries of the Greater Mekong Subregion.
4. For more information about the GMS, see [www.adb.org/GMS/about.asp](http://www.adb.org/GMS/about.asp).
5. For a review of infrastructure and growth in developing countries, see Straub (2008).
6. Gross national income (GNI) per capita is the measure now favored by the World Bank; it used to be known as gross national product (GNP) per capita.
7. Table 5A.3 presents detailed intra-GMS export flows. The variation in intra-GMS exports is substantial for some industries as shown in the table.
8. See Djankov et al. (2010) for a discussion of time costs in trade in general and Brooks and Hummels (2009) for Asia in particular.
9. Empirical estimates were not provided.
10. The model is solved using GEMPACK software (Harrison and Pearson 1996), using the RunGTAP interface.
11. Further details of the full GTAP 7 database are available at [www.gtap.agecon.purdue.edu/databases/contribute/iotables.asp](http://www.gtap.agecon.purdue.edu/databases/contribute/iotables.asp).
12. In the absence of available actual transportation cost data to produce a complete set of bilateral margins for the GTAP dataset, these transport margins are estimates (Gehlhar and McDougall 2006).
13. There is a high probability that trade flows in the GMS region are underreported due to informal or unofficial trade in the region. Athukurola (2007) estimated this could be as high as 20–30 percent of trade. However, in the absence of validated estimates of these flows, we have not attempted to include them in this exercise.
14. While the PRC has the largest absolute amount, only a fraction of the trade flows is attributable to the two regions belonging to the GMS.
15. HIV is human immunodeficiency virus; AIDS is acquired immunodeficiency syndrome.
16. From a series of articles titled 'Facing AIDS: Laos Thailand Report' published in the *Mainichi Shimbun* between 26 February and 1 March 2007.
17. See <http://www.worldbank.org/transport/roads/safety.htm> for more details on the road safety program.

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## APPENDIX

*Table 5A.1 Regional aggregation*

Region	Detailed description
Cambodia	Cambodia
Lao PDR	Lao PDR
Myanmar	Myanmar
Thailand	Thailand
Viet Nam	Viet Nam
PRC	PRC
Other ASEAN	Indonesia, Malaysia, Philippines, Singapore
High-income Asian economies	Japan; Korea; Hong Kong, China; and Taipei, China
South Asia	Bangladesh, India, Pakistan, Sri Lanka, rest of South Asia
ANZ	Australia and New Zealand
Europe	EU25, EFTA, rest of Europe
NAFTA	Canada, US, Mexico
CAREC	Central Asia Regional Economic Cooperation
ROW	Rest of the world

*Table 5A.2 Commodity aggregation*

Sector	Detailed description
Rice	Paddy and processed rice
FruitVeg	Vegetables and fruit
OtherCrops	Other crops
Forestry	Forestry
Fishery	Fisheries
CoalOilGas	Coal, oil, gas, other minerals
Animal Products	Animal products
Other Foods	Other processed foods
WoodPaper	Wood and paper products
Textiles	Textiles
WearingApp	Wearing Apparel
Leather	Leather products
Electronics	Electronic equipment and machinery
Other Manufactures	Other manufactures
Land Transport	Other transport
Water Transport	Water transport
Air Transport	Air transport
Services	Other services

Table 5A.3 *Intra-GMS exports and exports to the world (US\$m)*

Exports from	Rice	Fruit & Veg	Other Crops	Forest	Fishery	Coal Oil/Gas	Animal Prods	Other Foods	Wood Paper	Textile Apparel	Leather	Elec- tronic	Other Mfg.	Total
<b>Cambodia</b>														
Lao PDR	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.01	0.00	0.22	0.15	0.57
Myanmar	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.00	0.11	0.00	0.01	0.03	0.36
Thailand	0.06	0.21	3.08	0.50	1.29	0.91	1.14	1.00	3.76	0.16	0.12	3.14	29.11	49.78
Viet Nam	0.01	0.14	0.72	0.03	0.02	0.00	0.07	0.86	6.50	1.19	0.06	0.22	32.81	43.86
PRC	0.26	0.12	0.10	0.15	1.48	2.04	0.35	0.96	14.15	9.40	0.44	0.30	4.13	55.38
World total	11.4	5.7	9.1	3.1	10.1	43.0	12.1	67.8	34.5	813.3	209.2	14.4	164.0	4133.9
<b>Lao PDR</b>														
Cambodia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.27	0.00	0.00	0.00	0.01	0.31
Myanmar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Thailand	0.14	2.54	6.56	3.98	0.00	4.77	1.98	0.10	71.74	0.61	0.34	4.76	2.11	101.24
Viet Nam	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.38
PRC	0.30	0.79	0.36	7.04	0.00	0.14	0.05	0.24	1.74	0.09	0.01	0.00	1.51	16.24
World total	6.6	4.5	21.4	14.6	0.0	24.6	3.9	8.4	84.1	58.3	6.3	5.8	32.6	572.6
<b>Myanmar</b>														
Cambodia	0.00	0.17	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.24
Lao PDR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Thailand	0.10	6.37	8.26	59.56	45.70	848.83	13.59	10.93	15.26	0.10	0.02	1.20	78.04	1089.4
Viet Nam	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.01	0.44
PRC	0.46	4.65	9.53	96.98	0.40	23.79	0.30	7.41	37.00	0.85	0.10	0.22	18.77	206.04
World total	21.7	213.8	57.9	444.7	59.5	888.4	17.2	195.1	153.7	183.3	30.2	14.0	142.5	2999.8

<b>Thailand</b>																
Cambodia	3.7	0.1	0.8	0.0	0.0	3.2	4.2	17.1	87.7	16.7	55.8	2.1	6.7	64.6	291.0	555.8
Lao PDR	2.1	6.3	0.2	0.2	0.0	0.6	0.6	9.0	64.3	9.2	52.3	2.9	3.2	92.6	211.3	454.2
Myanmar	0.1	3.2	0.4	0.0	0.1	0.5	18.0	135.4	11.5	41.1	6.0	6.0	6.7	60.9	327.7	613.4
Viet Nam	0.5	1.7	18.5	0.3	1.5	10.7	3.5	77.6	60.4	87.0	5.6	65.9	269.8	1345.8	1978.0	
PRC	193.4	399.6	17.3	2.9	8.2	48.4	10.2	248.7	380.5	360.1	20.5	129.7	6680.3	3823.4	12786.0	
World total	2779.4	1044.5	510.0	39.2	186.3	514.9	980.9	8444.4	3339.8	4448.1	3295.1	1788.9	41489.0	33863.0	118252.0	
<b>Viet Nam</b>																
Cambodia	0.2	0.0	1.0	0.0	0.1	0.2	0.0	4.2	4.2	1.3	17.5	0.3	1.1	1.8	22.9	51.1
Lao PDR	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Myanmar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Thailand	0.1	3.4	8.7	0.0	2.3	58.2	4.8	26.1	5.2	9.3	1.3	1.3	7.3	236.3	71.2	451.7
PRC	5.4	70.6	8.7	18.8	1.6	1734.6	6.1	83.4	21.5	43.8	4.8	47.3	176.0	224.8	2516.1	
World total	524.1	459.7	909.9	26.2	80.1	5502.9	132.2	2360.9	1696.7	1351.9	3735.2	4766.9	2369.6	2508.0	29249.0	
<b>PRC</b>																
Cambodia	0.0	1.2	2.5	0.0	0.0	1.6	0.3	31.9	8.0	412.2	9.0	11.7	50.4	83.4	624.3	
Lao PDR	0.0	0.4	0.2	0.0	0.0	0.1	0.0	0.6	1.4	10.6	0.5	0.2	46.1	25.6	86.1	
Myanmar	0.0	11.1	4.7	0.0	0.0	0.7	7.1	27.9	7.8	157.5	8.2	9.7	287.3	434.9	959.8	
Thailand	1.2	62.0	13.5	0.9	3.4	46.3	23.8	165.5	81.8	505.6	55.8	77.9	3222.4	2472.0	7148.2	
Viet Nam	11.6	96.8	61.5	0.7	0.5	8.3	6.4	76.0	71.4	673.4	81.2	167.3	754.3	2760.0	4863.4	
World total	467	2815	2612	114	1119	6877	3599	13533	20364	47649	53865	28365	256004	154572	637506	

Source: GTAP version 7 Database.

Table 5A.4 Ratio of land transport margins to bilateral export value (%)

Exports from	Rice	Fruit & Veg	Other Crops	Forest	Fishery	Coal Oil	Animal Prods	Other Foods	Wood Paper	Textile	Wear Apparel	Leather	Electronic	Other Mfg.	Total
<b>Cambodia</b>															
Lao PDR	0.00	0.00	0.00	0.00	12.93	0.00	0.00	0.00	0.00	12.05	0.00	0.00	0.42	1.86	0.97
Myanmar	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.00	0.02	0.00	0.00	0.00	0.01	0.11
Thailand	0.00	25.79	9.16	36.19	21.32	0.00	5.34	6.69	18.08	8.07	5.36	1.70	3.49	34.57	23.70
Viet Nam	0.00	42.72	6.07	13.41	9.25	0.00	5.36	31.03	19.86	9.48	0.00	6.36	4.08	7.58	9.77
PRC	0.00	0.00	0.04	0.01	0.09	0.00	0.01	0.22	0.27	0.04	0.02	0.01	0.00	0.02	0.08
World total	1.79	5.96	5.98	6.25	3.88	0.00	0.60	1.13	6.90	1.46	0.40	1.42	0.99	7.97	0.99
<b>Lao PDR</b>															
Cambodia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.22	0.00	0.00	0.00	0.00	0.00	0.19
Myanmar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Thailand	11.33	36.98	10.29	12.33	24.12	20.26	4.50	6.78	17.98	12.21	5.50	3.52	3.90	7.28	16.33
Viet Nam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRC	6.79	11.38	5.68	9.92	0.00	1.33	0.00	0.00	16.93	4.92	2.57	0.00	0.00	6.12	7.54
World total	0.65	22.74	4.95	8.33	6.05	6.03	2.39	0.68	16.03	1.45	1.36	2.08	3.55	4.32	3.94
<b>Myanmar</b>															
Cambodia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lao PDR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Thailand	0.96	40.93	8.88	13.13	23.86	4.58	4.20	7.33	16.54	7.63	6.39	4.60	4.59	4.35	6.27
Viet Nam	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRC	0.22	12.50	7.83	8.47	7.54	2.85	9.26	5.11	15.29	17.85	1.55	6.65	1.46	6.19	8.56
World total	0.96	4.20	3.22	3.83	18.51	4.45	3.63	1.78	10.28	1.62	2.06	0.54	0.71	3.31	3.81

<b>Thailand</b>															
Cambodia	0.58	0.46	0.04	0.01	0.06	0.18	0.14	0.12	0.24	0.08	0.05	0.07	0.04	0.12	0.11
Lao PDR	19.65	6.14	5.31	1.66	3.29	1.03	4.56	7.77	9.28	3.74	2.87	4.12	2.34	5.70	5.16
Myanmar	21.56	10.20	8.80	2.44	4.03	1.57	7.53	8.12	10.21	5.19	3.34	4.28	2.89	5.63	5.99
Viet Nam	14.41	19.12	1.05	1.68	2.16	0.18	2.60	4.38	7.31	2.47	1.06	0.70	0.87	1.35	1.61
PRC	0.29	0.94	0.18	0.01	0.02	0.00	0.11	0.22	0.19	0.05	0.01	0.02	0.01	0.04	0.06
World total	6.99	13.36	1.93	1.03	2.53	0.11	1.85	2.68	3.02	1.34	0.57	0.79	0.39	1.32	1.18
<b>Viet Nam</b>															
Cambodia	0.85	1.14	0.05	0.00	0.04	0.00	0.04	0.20	0.19	0.09	0.05	0.05	0.04	0.08	0.09
Lao PDR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Myanmar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Thailand	0.00	10.88	9.84	2.13	1.16	1.10	3.47	4.62	7.08	3.94	1.57	2.65	1.05	3.02	1.96
PRC	22.96	28.09	7.55	7.51	8.60	1.92	5.52	21.59	12.41	11.75	3.98	5.28	4.07	6.00	4.22
World total	11.49	7.57	2.20	5.72	0.94	0.76	1.85	2.20	5.23	1.49	0.67	1.57	0.77	2.26	1.70
<b>PRC</b>															
Cambodia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lao PDR	0.00	26.29	5.28	0.00	0.00	0.68	0.00	4.44	11.72	3.59	2.84	4.00	0.98	3.68	2.45
Myanmar	0.00	25.54	7.33	0.00	0.00	2.10	3.21	6.78	11.62	5.43	3.73	4.03	1.76	4.38	4.12
Thailand	0.00	21.92	3.79	2.04	1.38	0.53	3.76	6.67	7.92	3.26	1.91	1.97	0.76	2.46	1.92
Viet Nam	9.15	31.33	8.88	41.77	6.16	12.76	3.67	8.80	14.44	8.02	5.26	5.88	4.19	8.64	8.09
World total	4.76	10.25	3.23	2.17	3.52	0.51	1.39	2.96	3.23	1.85	1.36	1.33	0.53	1.71	1.19

Source: Authors' calculations from GTAP version 7 Database.



# Index

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- ad valorem* tariffs 8, 9, 14, 135  
agglomeration effects 6, 172, 187  
Agosin, M. 127  
Ahmad Husni Mohamad Hanadzlah 41  
Ahmed, S. 135, 149  
AIDS 182  
Air Asia 38, 39–40, 46–7, 49, 52  
air passengers 27, 29, 44, 48, 50  
airfreight 2, 14, 15, 28–9, 49–50  
airlines 30, 34, 37–40, 46–9, 52  
airport development (Malaysia) 23–53  
air services, Thailand 39, 45–6, 48–51, 52, 53  
Akrasanee, N. 159  
All Nippon Airways 40  
ALMEC Corporation 165, 167  
Amiti, B. 15  
Anderson, J.E. 4, 10, 124, 142, 143, 147  
Armington elasticity 171, 172  
ASEAN, *see* Association of South East Asian Nations (ASEAN)  
Asian countries  
  features of trade 77–85  
  growth of TNCs 94–5  
  infrastructure development 1–5, 7–10  
  neighbours of PRC 68–77  
  regional cooperation 1, 4–5, 6, 18  
  role (South–South trade) 91–2  
  trade costs 1, 4, 7–16, 19  
  *see also* individual countries  
Asian Development Bank 5, 31, 59, 159, 166, 170, 182–3  
Asian Highway Network 37  
Asiana 40  
Assam tea 148  
Association of South East Asian Nations (ASEAN) 13, 150, 163  
  ASEAN–China FTA (ACFTA) 64, 92, 107–8  
  ASEAN–X principle 29, 30  
  Community 27, 51  
  Free Trade Agreement (AFTA) 51  
  key economic indicators 25–6  
  logistics sector 23, 24, 164, 169  
  Memorandum of Understanding 27–9  
  open skies agreements 23–53  
Awair 39, 47  
  
Baier, S.L. 124, 133, 147  
Bali Concord II 27  
Bangkok Airport 47, 53  
Banik, N. 134, 135, 140, 148  
Banomyong, R. 167–8  
barriers to trade 6, 10  
Bergstrand, J.H. 124, 133, 142, 147  
Berthelon, M. 18  
Bertola, G. 127  
Biggs, T. 135  
bilateral trade 89, 92, 133, 142–3, 145, 150  
BIMP-EAGA Agreement 27, 29  
Biswas, B. 148  
border trade costs 13, 124  
Bowen, J.T. 24, 30, 38, 49, 50  
bribes 135  
BRICS countries 59, 73  
Brooks, D.H. 1, 4, 6, 14, 16  
Built–Operate–Transfer (BOT) system 36  
bulk shipping (costs) 103  
Bureau of Indian Standards (BIS) 136  
Busan Port Authority 104, 105–6  
  
Canonero, G. 142  
capacity-building 135, 137, 140  
capital goods 123  
Cargolux 43  
Central Planning Bureau of the Netherlands 85



- Center for Asia Pacific Aviation 44, 48  
 Changi Airport 45, 46, 47, 50, 51–3  
 Chin, A.T.H. 51  
 China, *see* Hong Kong, China; People's Republic of China; Taipei, China  
 China Federation of Logistics and Purchasing 66  
 China Society of Logistics 66  
 China Statistics Press 62, 64  
 Chuang, C. 123  
 Clark, X. 7, 17  
 Clarke, R. 127  
 CLMV countries 27, 29, 30  
 commodity aggregation 172, 187  
 communication 18, 164; *see also* information and communication technology (ICT)  
 Companies Act (Malaysia) 37, 38  
 comparative advantage 11, 14, 15, 99–100, 107  
 competition 6, 7, 8  
   air travel 40, 45–7  
   monopolistic 126  
   PRC 58–122  
 competitive advantage 15, 24, 78  
 Competitive Industrial Performance (CIP) index 69, 73, 74, 77  
 competitiveness  
   industrial 73, 74, 98–100  
   of PRC 68–77  
 computable general equilibrium model 158, 171, 174  
 Comtrade Database 129–31, 146–7  
 containerized trade 2–3, 67  
   transport costs 8, 17, 101–2, 105  
 contract enforcement 124, 137–8  
 coordination perspective (PRC) 58–122  
 corruption 5, 10, 135, 141, 150  
 costs  
   distribution 124, 165  
   infrastructure 5, 7–10, 14, 16–17  
   search 18  
   trade, *see* trade costs  
   transaction 1, 2, 7–16, 23–4, 106  
   transport, *see* transport costs  
 country characteristics (South Asia) 126, 131–3  
 credit 2, 6  
 Cropper, M. 182  
 cross-border infrastructure 11–12, 13  
 Cross-Border Transport Agreement (CBTA) 157, 164–6, 170–71, 173–4, 183  
 customs systems 8, 127, 136–7, 161, 163, 164, 170  
 Das, S. 135  
 De, P. 9, 10, 135, 137, 148  
 Deardorff, A. 142  
 Dee, P. 16  
 Department of Civil Aviation (DCA) 34  
 DHL 45  
 distribution costs 124, 165  
 Djankov, S. 139–40  
 Doha Round 92, 156  
*Doing Business Report* 137–8, 161–2  
 domestic infrastructure 9–10, 12  
 DragonAir 40  
 'ease of doing business' 137–8  
 East–West Economic Corridor 165–8, 170  
*East Asian Miracle, The* 59  
 Eaton, J. 124  
 economic activities, symmetric (South Asia) 126–8, 133–4, 148  
 economic characteristics, country (South Asia) 126, 131–3  
 economic corridors, GMS 5, 164–71, 183  
*Economic Times* 134  
 economic union 127, 134  
 economies of scale 1, 19, 89, 123, 126, 133  
 Edmonds, C. 11–12  
 electricity supply 5, 135–7, 141  
 electronic goods 24, 49  
*Emerging Asia* (ADB) 59  
 European Union 60, 127, 149  
 Eva Airways 40  
 Evans, C.L. 124  
 exchange rates 124, 127, 147, 148  
 exports  
   GMS 161–2, 172, 174–81, 183, 188–91  
   infrastructure and 2, 10, 13, 15, 135  
   PRC 58, 59, 61–4, 73, 74, 77–9, 82–5, 86, 90–92, 94, 98, 116–17, 120–21  
   South Asia 123, 126–7, 133, 135–6

- externalities 2, 4, 6, 18, 19, 89  
 extra-legal trade 133
- factor endowments 14
- Faini, R. 127
- Feder, G. 123
- Federal Roads (Private Management) Act 36
- Fedex 43
- Feenstra, R.C. 124, 131
- Fernandes, Tony 39
- financial services 6
- Fink, C. 18
- Firefly 39–40
- force majeure* clause 140
- Ford Fiesta 125
- foreign affiliates (in PRC) 95, 97
- foreign direct investment (FDI) 2, 15  
   in GMS 176, 177  
   in PRC 58, 64–6, 73, 75, 93–6  
   role of TNCs 93–5, 96  
   transport costs and 11–12
- Forsyth, P. 24, 27
- Francois, J.F. 2, 17
- Frankel, J.A. 126, 143
- Free Commercial Zone (FCZ) 40, 41
- Free Trade Areas (FTAs)  
   ACFTA 64, 92, 107–8  
   AFTA 51  
   NAFTA 13, 60, 98  
   North–South 89, 92  
   SAFTA 125–34, 142, 150
- freight transport  
   airfreight 2, 14, 15, 28–9, 49–50  
   containerization 2–3, 8, 17, 67, 101, 102, 105  
   in PRC 66, 67, 100, 101, 103–4  
   sea freight 2–3, 8, 9–10, 17, 101–4
- Freund, C. 18
- Fujimura, M. 11–12
- full service carriers (FSCs) 40
- Geloso Grosso, M. 27
- General Agreement on Tariffs and Trade (GATT) 4, 88–9, 156
- general equilibrium modeling 11, 158
- generalized method of moments (GMM) techniques 146
- Ghani, E. 135, 149
- global alliances (airlines) 48–9, 52
- global economy/market  
   impact of PRC's emergence 67–8  
   importance of Asian economies 84–5  
   role of South–South trade 89–92, 122
- Global Enabling Trade Report 163
- Global Trade Analysis Project (GTAP)  
   model 159, 171–2, 173, 187–91
- global trade matrix 90, 120–21
- globalization 125, 157  
   prosperity of global society 85–100, 107–8
- Goldman Sachs 59
- Golub, S.S. 14
- governance 7
- government policy (South Asia) 126–8, 133–4
- gravity model 10, 12, 125, 126, 142–8, 150
- Greater Mekong Subregion (GMS) 156–91  
   Cooperation Program 157  
   economic corridors 5, 164–71, 183  
   GTAP model 159, 171–2, 173, 187–91  
   infrastructure/development 5, 158–65  
   mitigating factors 179, 182–3  
   trade costs 11, 12, 161, 162, 174–6  
   Transport Strategy 157, 164, 169, 173
- gross domestic product (GDP) 11  
   ASEAN 26  
   deflator 147  
   GMS 174–5, 176, 183  
   PRC 58, 60, 68, 92  
   South Asia 126, 128, 132–3
- gross national income (GNI) 158–9
- GTAP model 159, 171–2, 173, 187–91
- Hall, E.R. 135
- hard infrastructure, *see* infrastructure
- Haveman, J. 17
- Helpman, E. 126
- Hertel, T.W. 171, 172
- Highway Network Development Plan 36
- Hill, H. 1
- HIV 182

- Hong Kong, China 58, 59  
 trade structure (comparison) 78–9,  
 80–84, 118–19
- Hong Kong International Airport 46
- Hummels, D. 1, 8, 9, 14, 17, 135, 148
- Hutchison Port Holdings 104
- Hyundai 148
- imports  
 GMS 161, 162, 171, 174–7, 183  
 infrastructure and 13, 14–15  
 Malaysia 57  
 PRC 58, 62–4, 74, 77–81, 85, 91,  
 116  
 South Asia 127, 136
- IMT-GT 27, 29
- India 59, 60  
 regional integration 135–6, 140–42,  
 144, 147–50
- Indonesia 39, 49, 53
- Indonesia Air Asia 39, 49
- Industrial Development Reports*  
 (UNIDO) 69
- industrial performance (of PRC)  
 60–62, 68–77, 107, 111
- industrial policy (in PRC) 93
- Industrial and Technological  
 Advancement (ITA) index 69–70,  
 76–7
- information and communication  
 technology (ICT) 18, 19, 61, 75,  
 76, 149, 164
- infrastructure  
 costs 5, 7–10, 14, 16–17  
 cross-border 11–12, 13  
 domestic 9–10, 12  
 in GMS 5, 156–91  
 hard (physical) 2, 5, 6–7, 8, 11–13,  
 16–17, 134–5, 140, 148–50, 157,  
 176–7, 183  
 investment 4, 6, 10, 17, 45, 158  
 performance index 2–3  
 soft (institutional) 2, 5–7, 8, 9–13,  
 150, 176–7  
 trade-related 1–5, 16, 18–19  
*see also* transport infrastructure
- Infrastructure Index 144–5, 147
- inland transport costs 9–10, 14
- institutional infrastructure, *see*  
 infrastructure
- Intel 49
- International Center for the Study of  
 East Asian Development 80–83,  
 116–19
- International Financial Statistics*  
*Yearbook* (IMF) 147
- International Institute for Management  
 Development 68–9
- International Monetary Fund 13, 68,  
 144, 147
- InterVistas-ga Consulting Inc. 24
- intra-industry trade 125–6
- investment 1  
 airport infrastructure 30–32, 45, 51,  
 52  
 infrastructure 4, 6, 10, 17, 45, 158  
*see also* foreign direct investment  
 (FDI)
- Ishida, M. 157
- Institute of Shipping Economics and  
 Logistics (ISL) 3
- Japan  
 PRC and 95, 98–100, 108  
 trade structure (comparison) 77–8,  
 116–17
- Japan Airlines 40
- Japan External Trade Organization 59,  
 87, 167
- Japan International Cooperation  
 Agency (JICA) 165, 167, 173,  
 182
- Javorcik, B.S. 15
- Jetstar Asia 40, 47
- Jones, I.C. 135
- Joshi, V. 127
- Kansai Airport 46
- Kerteh Airport 34
- Keynes, J.M. 85
- Khan, H.A. 7
- Kia 148
- Kirkpatrick, C. 127
- KLM/Air France 38
- Kohli, U. 127
- Kopits, E. 182
- Kortum, S. 124
- Kota Kinabalu Airport 32
- KPMG 45, 46
- Krugman, P. 126

- Kuala Lumpur International Airport (KLIA)  
 current performance 43–4  
 Hubbing Unit 41, 47  
 infrastructure development 30–31, 32–5, 52–3  
 new LCCT terminal 49, 52  
 outcomes of liberalization 47–51  
 road links/development 35–7  
 Kuching Airport 32, 44  
 Kumar, S. 141
- labor/labor market 123, 141  
 skills 7, 57, 73, 75–6
- Laffont, J. 6
- land area (in GMS) 159–60
- land transport  
 costs 9–10, 14  
 GMS 172, 177, 182–3, 190–91  
 PRC 101  
*see also* rail transport; roads/road transport
- Langkawi Airport 32
- Lao PDR (roads in) 11, 168–9
- Leamer, E.A. 126
- least square dummy variable (LSDV)  
 model 144, 145–6, 147
- Leinbach, T.R. 24, 38
- Leuterio, E.E. 14
- Limao, N. 7, 9, 135, 145
- Linneman, H. 126, 142
- Lion Air 47
- Little, I.M.D. 127
- logistics 23, 24, 66, 100, 124, 164, 169
- low-cost carriers 37, 40, 46–7  
 LCCT terminal (at KLIA) 33–4, 44, 49–50, 52
- Luanglatbandith, R. 167–8, 173
- Lugovskyy, V. 148
- Ma, L. 8
- McCallum, J. 134
- McCombie, J. 133
- Mahatir, Mohamad 32–3
- Malaysia 15  
 airport development strategy 23–53  
 regional hub 30–43, 49–50, 52–3  
 tourism 24, 41–3, 50–51, 52, 57  
 Malaysia Airports Holdings Berhad (MAHB) 34–5, 41  
 Malaysia Plans 31–3, 34, 35, 37, 43  
 Malaysian Airlines (MAS) 37–9, 40, 41, 46, 47–9, 52  
 Manchin, M. 2, 17  
 manufacturing sector (in PRC) 72, 113–14, 115  
 market access 7, 11, 15, 19, 156–7, 163, 164, 176  
 market value adjustment (MVA)  
 69–72, 70–72, 73, 74, 113–14  
 MATRADE 57  
 Mattel 124  
 Maur, J.-C. 4  
 Mekong Institute 165  
 Menon, J. 11, 168  
 merchandise trade (in PRC) 61–4, 112  
 MERCOSUR 13, 98  
 Ministry of Finance (Malaysia) 41  
 Ministry of Road Transport and Highways (India) 182  
 Ministry of Tourism (Malaysia) 41, 42–3, 50, 57  
 Ministry of Transport (Malaysia) 32, 34, 35, 39, 41, 43–4, 50  
 monopolistic competition 126  
 monopoly power 6  
 multilateral trade agreements 27–9, 45, 87, 89, 92  
 multinational corporations 2, 24, 182;  
*see also* transnational corporations
- Nabi, I. 133
- Narita Airport 46
- Nasim, A. 133
- Nathan Associates 164, 169
- National Bureau of Statistics of China 61–3, 65–7, 111–12, 115, 173
- National Highways Authority of India 142
- networks 2, 6, 8, 16–17  
 regional airlines 30–43
- Newbery, D. 136
- Newfarmer, R. 128
- newly industrialized countries (NICs)  
 64, 90, 118–21
- Nicoletti, G. 18
- Nok Air 47
- non-tariff barriers 16, 123, 134–5, 164
- Nordas, H.K. 7, 18

- North–South Economic Corridor 165–8
- North–South Expressway 36–7
- North–South FTAs 89, 92
- North American FTA (NAFTA) 13, 60, 98
- Northwest Alliance 38
- off-budget agency (OBA) 37
- Oneworld 48
- open skies agreements 23–53
- Organisation for Economic Co-operation and Development (OECD) 133, 156, 161–2, 171
- Ostuki, T. 124, 134, 135, 137
- Oum, Tae Hoon 48–9
- Panagariya, A. 128, 131, 133
- Panitchpakdi, Supachai 92
- parent corporations (in PRC) 95, 97
- Park, Yonghwa 46
- Patunru, A. 6–7
- Paulino, A. 133
- Penang Airport 32, 37, 40, 44, 49
- Penang Bridge 37
- People's Republic of China (PRC) 158
  - Development Research Center 92, 98
  - economic status (2007) 60–68, 111
  - features of trade 77–85
  - foreign direct investment 58, 64–6, 73, 75, 93–6
  - global market 84–5
  - globalization and regionalism 85–100
  - industrial performance 68–77
  - manufacturing sector 72, 113–15
  - merchandise trade 61–4, 112
  - regional trade agreements 59, 60, 78, 87–92, 95, 98–100, 107–8
  - trade competition/coordination 58–122
  - trade interaction 79–83
  - transport role 8, 9, 100–107
  - in world economy 59–68
- performance
  - index (infrastructure) 2–3
  - industrial (PRC) 60–62, 68–77, 107, 111
  - port (PRC) 66–7
- Phang, Sock-Yong 45
- Phyrum, K. 165, 173
- physical infrastructure, *see* infrastructure
- Piermartini, R. 7, 18
- Pierola, M. 128
- PLUS Expressways Bhd 36
- Pohit, S. 135
- population density (in GMS) 159–61
- ports/port development 136
  - container traffic 2–3, 8, 9, 67, 101
  - infrastructure 2, 3, 7, 8, 9–10, 17
  - Malaysia 31, 32, 37
  - PRC 8, 9, 66–7, 101–2, 104–6
- poverty 1, 11, 158, 182
- Poyhonen, P. 142
- Prevention of Food Adulteration (PFA) rules 136
- prices 14, 126
- Principal Component Analysis 144–5
- privatization 30, 32, 38, 52, 141
- production 4–5, 8, 12, 13, 14
  - industrial performance (PRC) 68–77
- productivity 14, 15, 123
- profitability 2, 6, 17
- Project MOSAIC 48
- Promotion of Investment Act (Malaysia) 41
- quotas 4, 5, 124, 149
- rail transport 8
  - in GMS 160
  - Malaysia 31, 32
  - South Asia 141
- Rauch, J.E. 124
- regional aggregation 172, 187
- regional airline networks (Malaysian role) 30–43
- regional cooperation 1
  - trade-related infrastructure 4–6, 18
  - transport facilitation 104–7
- regional integration (South Asia)
  - policy recommendations 148–50
  - South Asia Free Trade Agreement (SAFTA) 125–34, 142, 150
  - trade costs and 19, 123–5, 134–48, 150
- Regional Revealed Comparative Advantage (RRCA) index 99–100

- regional trade agreements (RTAs) 4, 125
  - global trade matrix 120–21
  - growth trends 87–91
  - Japan and Republic of Korea 95, 98–100
  - PRC 59–60, 78, 87–92, 95, 98–100, 107–8
  - proliferation 87–8, 107
  - rationality of 88–91
  - South–South 59, 85–7, 89–92, 107, 122
  - see also* Free Trade Areas (FTAs)
- regionalism
  - new 88–9
  - prosperity and 85–100, 107–8
- rent-creating barriers 16
- Republic of Korea 59
  - Busan Port Authority 104, 105–6
  - PRC and 95, 98–100, 108
  - trade structure 77–8, 116–17
- Research and Information System 135
- Revealed Comparative Advantage (RCA) index 98–9
- revenue passengers kilometers (RPK) 48
- Roadmap for Integration of Air Travel Sector 27
- roads/road transport development
  - GMS 157, 159–61, 167–70, 173, 182
  - infrastructure 4, 8, 11–12, 141, 142
  - Malaysia 31, 32, 35–7
- Rose, A.K. 124
- Routes KL 35
- rural roads 11
  
- SAARC Preferential Trading Agreement (SAPTA) 124–34, 150
- Sarvanathan, M. 133
- sea transport
  - costs 9–10, 17, 101–4
  - see also* ports/port development
- search costs 18
- Second International Mekong Bridge 168, 170, 182
- Sempati 40
- Senai Airport 32, 34, 35, 39, 49–50, 52
- Seoul Incheon Airport 46
- Shanghai 8, 37, 67, 105
- Shepherd, B. 27
- Shepherd, S. 163, 164
- Shin Corporation 39
- Shuttle Agreement 40
- SilkAir 40
- Singapore 59
  - Airport 45, 46, 47, 50, 51–3
  - open skies strategy 30, 35, 40, 45–6, 52
  - trade structure 78–9, 80–84, 118–19
- Singapore Airlines 30, 40, 46, 48, 52
- Skiba, A. 9, 14
- skills 7, 57, 73, 75–6
- Sky Team 38, 47–8
- SkyTrax 38, 40, 46, 47
- SmartTravel Asia.com 40
- soft infrastructure, *see* infrastructure
- South–South RTAs 59, 85–6, 87, 89–92, 107, 122
- South Asia (regional integration and trade costs) 19, 123–50
- South Asia FTA (SAFTA) 125–34, 142, 150
- South Asian Association of Regional Cooperation (SAARC) 145, 148–9
- PTA (SAPTA) 124–34, 150
- South Asian Customs Union (SACU) 125
- South Asian Economic Union 125
- Southern Common Market (Mercosur) 13, 98
- Southern Economic Corridor (SEC) 165–6
- Special Fund for Infrastructure (Malaysia) 57
- Special Fund for Tourism (Malaysia) 57
- specialization 14
- Srinivasan, T. 142
- Star Alliance 48
- start-up procedures 138–40
- Stiglitz, J. 135
- Subang Airport 33, 40
- supply chain 2, 8, 12, 14, 15, 92, 156
- Suvarnabhumi Airport 45–6, 51, 52
- symmetric economic activities (South Asia) 126–8, 133–4, 148
  
- Taipei, China 59
  - trade structure 78–9, 80–84, 118–19
- Tajudin Ramli 38

- Takao, T. 182  
 Taneja, N. 133  
 tankers (transport costs) 104, 105–6  
 tariffs 5, 10, 104, 164  
   *ad valorem* 8, 9, 14, 135  
   GATT 4, 88–9, 156  
   reduction 4, 51, 89, 93, 127, 133, 149, 156, 173  
   regional integration (South Asia) 123, 124, 127–8, 133–4, 143, 147, 149–50  
 Tata Indica 125  
 taxation 12, 57, 136, 139  
 technological advances 73, 75, 76–7, 123  
 technology imports 75–6  
 telecommunications 2, 5, 7, 18, 19  
 Tengku Adnan Tengku Mansor 42  
 Thai Air Asia 39, 49  
 Thai Airlines 48  
 Thai Airways 46, 52  
 Tham Siew Yean 15  
 Thirlwall, A.P. 133  
 Tiger Airways 40, 47  
 time factor 7, 8, 161–3, 167, 168, 170  
 Tinbergen, J. 126, 142  
 Tirole, J. 6  
 total factor productivity 14  
 tourism  
   in GMS 165  
   in Malaysia 24, 41–3, 50–51, 52, 57  
   in PRC 66  
 Tourism Industry Act 57  
 Toyota 148  
 trade  
   barriers 6, 10  
   creation/diversion 131, 133, 183  
   extent (South Asia) 125–6, 128–31  
   extra-legal 133  
   features of (Asian economies) 77–85  
   intra-industry 125–6  
   merchandise (PRC) 61–4, 112  
   patterns 12–16, 62–4  
   role of transport (PRC) 100–107  
   structures (comparison) 77–9, 116–19  
   *see also* regional trade agreements (RTAs)  
 trade costs 1, 4  
   empirical estimates 10–12  
   in GMS 11, 12, 161, 162, 174–6  
   infrastructure and 5, 7–10, 14, 16–17, 19  
   regional integration and 19, 123–5, 134–48, 150  
   South Asia 134–48  
   trade patterns and 12–16  
 trade facilitation 16–18  
   in GMS 156–91  
   South Asia 134–5, 137–40  
 trade liberalization 123–4, 126–7, 134, 156; *see also* Free Trade Areas (FTAs); regional trade agreements (RTAs); trade facilitation  
 traffic accidents 182  
 transaction costs 1, 2, 7–16, 23–4, 106  
 transnational corporations 58, 92–5, 97; *see also* multinational corporations  
 transport  
   in PRC 60, 66–7, 100–107  
   *see also* airlines; airport development (Malaysia); ports/port development; rail transport; roads/road transport; sea transport  
 transport costs 4, 7–8  
   in GMS 169, 170, 172–4, 177, 182–3  
   impact on trade (PRC) 60, 100–104  
   inland 9–10, 14  
   in South Asia 124, 133, 135, 137  
   vehicle operating costs 169, 170, 173  
 transport infrastructure 14, 106–7  
   airports 30–35, 45, 51, 52–3  
   in GMS 5, 156–91  
   ports 2, 3, 7, 8, 9–10, 17  
   roads 4, 8, 11–12, 141, 142  
 Trindale, V. 124  
 Tsigas, M. 172  
 Tune Air Sdn. Bhd 39  
 unemployment 123  
 United Nations Commodity Trade Statistics Database 129–31, 146–7  
 United Nations Conference on Trade and Development (UNCTAD) 58–9, 67, 86–7, 94–7, 101–4, 120–22

- United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) 160
- United Nations Industrial Development Organization (UNIDO) 75, 113–14  
 CIP index 69, 73, 74, 77  
*Industrial Development Reports* 69  
 ITA index 69–70, 76–7
- United Nations Statistics Division 13
- UPS 43
- Uruguay Round 89
- US Department of Transportation 101
- US Trade and Development Agency 134
- vehicle operating costs 169, 170, 173
- Venables, A.J. 7, 9, 135, 145
- vertical integration 11
- vertical specialization 14
- Vina Air Asia 39
- Visit Malaysia Year 42
- Visit Thailand Year 42
- Warr, P. 11, 168
- Weerakoon, D. 150
- Wei, S.J. 143
- weight–value ratios 9, 14, 15, 17, 24
- Weiss, J. 5
- Wilson, J.S. 124, 134, 135, 137, 163, 164
- Wincoop, E. van 4, 10, 124, 143, 147
- World Bank 3, 13  
 GMS and 156, 159–60, 163, 182  
 PRC and 59, 87–8, 100  
 South Asia and 130, 132, 137–8, 147
- World Bank Enterprise Surveys 137–8, 161–2
- World Economic Forum 31, 163–4
- world economy, PRC in 59–68
- World Route Development Forum 35
- World Trade Organization 4, 16, 26  
 GMS and 156  
 PRC and 58–61, 87, 89, 100, 106–7  
 South Asia and 123, 125, 133
- World Travel and Tourism Council 41, 50
- Yeaple, S. 14
- Yusuf, Shahid 84
- Zhai, F. 16
- Zhang, J. 8
- Zhang Xiaoji 98, 99



# Trade Facilitation and Regional Cooperation in Asia

*'As we emerge from the worst global economic setback in two generations, the momentum of Asian economies suggests that this region will redefine the geography of trade and growth even more quickly and decisively than expected. Because Asia offers the largest emerging markets, superior growth rates, and new patterns of trade diversification, this region is becoming the leading edge of the global economy for the next generation. This volume addresses the essential issues related to Asian trade and regionalism with intellectual authority and essential timeliness. Brooks and Stone have assembled leading experts, distilled evidence, and synthesized policy lessons on the salient issues and trends that will drive the world's most dynamic economic region. Their book should be a desk reference for policy-makers and leading private sector players who want to respond effectively to the momentous challenges and opportunities presented by the Asian century.'*

– David Roland-Holst, University of California, Berkeley, USA

This insightful book collects empirical analyses and case studies to clarify issues and draw policy recommendations for facilitating greater regional trade through increased cooperation.

Asia's rapid development has been heavily dependent on markets external to the region. However, given the unlikely timely recovery of the United States or Europe there is an urgent need to develop domestic and regional markets. While greater integration has long been a regional goal, its importance has never been more pressing. To facilitate trade and promote growth and regional integration, and to counteract declining markets in other regions, Asian countries have announced large expenditures for developing infrastructure. Thus, a look at how investment in regional infrastructure promotes and supports interregional trade growth has never been timelier. While the focus is on informing policy-making in Asia, the findings also have relevance for other regions.

The detailed studies in this book will be of particular interest to academic economists, policy-makers, and the broader development community.

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