Infrastructure as a Catalyst for Regional Integration, Growth, and Economic Convergence: Empirical Evidence from Asia

Ifzal Ali[†]
Jean-Pierre Verbiest
Fan Zhai
Asian Development Bank

David Roland-Holst
UC Berkeley

June, 2005

1. Introduction

In a vast literature on trade facilitation, it is doubly unfortunate that investment in infrastructure has received only scant attention. After human nature, infrastructure is one of the oldest and most decisive determinants of trade patterns. Secondly, public infrastructure confers some of the most desirable benefits of trade facilitation, including open market access and relatively progressive growth and income effects. By lowering costs of market participation in a relatively non-discriminatory manner, improvements in infrastructure broaden the basis for growth and directly contribute to its sustainability. By reducing trade and transport margins, infrastructure promises a neat reconciliation of private interests, increasing producer prices while reducing purchaser prices.

In the Asian context, parallel emergence by China and India portend dramatic change in the economic landscape. Because of geographic realities, however, the full growth potential of these large economies for the region and beyond will depend critically on infrastructure. Although their boundaries are proximate in some areas, the Himalayan plateau is unlikely to sustain more than a small fraction of their bilateral trade in the foreseeable future. A much more attractive bridge between the emerging giants is Southeast Asia, already a robust trading environment and one that could capture many of the indirect benefits of intensified Indian and Chinese trade linkages. For these reasons, nearly all the Asian economies have an important stake in expanded Southeast Asian trade infrastructure. This is particularly true of many of the region's poorest economies, who would

[†] Paper presented at the Eighth Annual Conference on Global Economic Analysis, June 9 - 11, 2005. Lübeck, Germany. Opinions expressed here are those of the authors and should not be attributed to their affiliated institutions.

be directly in the path of many new transport axes under consideration. Myanmar, Laos, Cambodia, and (to a lesser extent) Viet Nam have long been on the periphery of East and South Asian growth, yet they could become central pillars of any comprehensive bridging infrastructure between China and India.

CGE modelling has already established itself as the preferred tool for empirical research on trade policy, and is ideally suited in the present context to demonstrate how infrastructure changes neoclassical fundamentals (market access costs) to amplify gains from trade and accelerate growth. Because we are looking at one of the world's most dynamic multilateral trading regions, this is also an ideal application of the GTAP dataset. Preliminary results indicate that determined commitments to infrastructure investment can sharply expand economic participation and leverage the superior growth rates in Asia's largest countries for the benefit of the entire region, with the largest proportionate gains for the poorest countries. In this way, integration will accelerate as regional supply chains are consolidated, and growth externalities can be substantial for all participants. In the absence of such commitments, trade will simply be intensified along established channels and its benefits dissipated over more distant trade routes to traditional markets.

2. Overview and Motivation

Economic theory recognizes the importance of infrastructure from two main perspectives, fiscal policy and distribution costs. We do not directly address the former in the present analysis, relying on the ample evidence from OECD countries regarding the long term social profitability of such investments to sustain the case for these commitments in emerging economies and regions like Asia. Having said this, we recognize the many institutional and economic challenges for a diverse region like Asia to achieve a more integrated regional economy.

At the more micro level, the role of infrastructure in reducing distribution margins is widely acknowledged in the policy and theoretical literature, but explicit treatments are relatively few and not easy to reconcile into a general treatment.

More policy oriented discussion emphasizes the obvious advantages of increased market participation, as infrastructure commitments reduce distribution margins expand the profitable horizon of market oriented investments, whether private or public. This is particularly the case in emerging economic environments, where distribution costs are an important source of price distortions that limit market access and reduce economic efficiency. These access barriers are particularly important in countries with rural poor majorities, or between economic zones (e.g. terrestrial South and East Asia) separated by more remote subsistence areas. Not only does

infrastructure facilitate integration between active zones, it also confers growth externalities across the networks so established. In this way, for example, parallel emergence of China and India could confer substantial growth externalities on Southeast Asia, especially among the latter's poorest countries. Mynamar, Laos, and Cambodia are among the areas ideally suited to become "pillars" of a growth "bridge" between Asia's two emergent giants.

Empirical evidence on the importance of distributions is more abundant and also quite diverse. This can generally be divided into four categories. The first deals with traditional and modern issues related to physical geography. Secondly, a large volume of work relates to direct transport costs, including means as well as distance. Third, institutional economics has examined trade margins arising from administrative, regulatory, and political conditions governing trans-boundary and international commerce. Finally, there is a special component of international finance that deals with exchange rate and PPP distortions and their influence on underlying commerce.

There is a large literature on geophysical (spatial, etc.) determinants of transportation costs, extending from the transport sector itself to general economic geography. This work has a very long history, going back to the founders of trade and microeconomic theory. Heckscher (1916) himself qualified many of his early arguments about the resource basis for trade with caveats about initial physical conditions that might facilitate or hinder trade relations. These were continued down to the present by a variety of authors (most recently Obstfeld and Taylor:2000). Samuelson (1952) made early contributions to economic and trade analysis from a spatial perspective, with many later contributions from regional analysis and location theory (e.g. Bergstrand (1990)). As Neary (2001) points out, contributions such as Fujita, Krugman, and Venables (1999) have initiated a new era of investigations that expand our understanding of the economics of location.

3. A Global CGE with Heterogeneous Firms

The complexities of today's global economy make it very unlikely that policy makers relying on intuition or rules-of-thumb will achieve anything approaching optimality in either the domestic or international arenas. Market interactions are so pervasive in determining economic outcomes that more sophisticated empirical research tools are needed to improve visibility for both public and private sector decision makers. The preferred tool for detailed empirical analysis of economic policy is now the Calibrated General Equilibrium (CGE) model. It is well suited to trade analysis because it can detail structural adjustments within national economies and elucidate their interactions in international markets. The model is more extensively discussed in an annex below and the underlying methodology is fully documented elsewhere, but a few general comments will facilitate discussion and interpretation of the scenario results that follow.

Technically, a CGE model is a system of simultaneous equations that simulate price directed interactions between firms and households in commodity and factor markets. The role of government, capital markets, and other trading partners are also specified, with varying degrees of detail and passivity, to close the model and account for economywide resource allocation, production, and income determination.

The role of markets is to mediate exchange, usually with a flexible system of prices, the most important endogenous variables in a typical CGE model. As in a real market economy, commodity and factor price changes induce changes in the level and composition of supply and demand, production and income, and the remaining endogenous variables in the system. In CGE models, an equation system is solved for prices that correspond to equilibrium in markets and satisfy the accounting identities governing economic behavior. If such a system is precisely specified, equilibrium always exists and such a consistent model can be calibrated to a base period data set. The resulting calibrated general equilibrium model is then used to simulate the economywide (and regional) effects of alternative policies or external events.

The distinguishing feature of a general equilibrium model, applied or theoretical, is its closed form specification of all activities in the economic system under study. This can be contrasted with more traditional partial equilibrium analysis, where linkages to other domestic markets and agents are deliberately excluded from consideration. A large and growing body of evidence suggests that indirect effects (e.g., upstream and downstream production linkages) arising from policy changes are not only substantial, but may in some cases even outweigh direct effects. Only a model that consistently specifies economywide interactions can fully assess the implications of economic policies or business strategies. In a multi country model like the one used in this study, indirect effects include the trade linkages between countries and regions which themselves can have policy implications.

A novel feature of the model we use for this work is the incorporation of firm heterogeneity and fixed cost of exporting, which enable us to investigate the intraindustry reallocation of resources and the exporting decision by firm. The empirical literature has emphasized the importance of extensive margin in trade expansion and economic growth.[1] However, as Hummels and Klenow (2004) argued, neither traditional CGE model with representative firm and Armington national product differentiation nor the "new trade theory" model with monopolistic competition and firm-level production differentiation can match the facts about extensive and intensive export margins. Recently, a number of new heterogeneous-firm models of international trade by Bernard et al. (2003), Melitz (2003), and Yeaple (2002) introduce the extensive margin as a result of the firms'

[1] See, for example, Kehoe and Ruhl(2002), Evenett and Venables (2002), Hummels and Klenow(2004).

self-selection to export markets. They emphasis the interaction of entry costs of exports and productivity differences across firms operating in imperfectly competitive industries. When trade costs decrease, new firms with lower productivity enter the export markets in response to the potential higher profits. Empirical evidences have largely supported the predictions by the new heterogeneous-firm trade models.[2]

The model presented here has a structure of production similar to that in Melitz (2003), which incorporates the firm productivity heterogeneity in Krugman (1979) monopolistic competition model. Agriculture and public administration sectors are assumed to be perfect competition. In each of these two sectors, there is a representative firm operated under constant return to scale technology. The other manufacturing and services sectors are characterized by monopolistic competition. Each of them consists a continuum of firms differentiated by the varieties they produce and their productivity. Firms face fixed production cost, resulting in increasing return to scale. There is also fixed cost and variable cost associated with the exporting activities. On the demand side, the agents are assumed to have Dixit-Stiglitz preference over the continuum of varieties. As each firm is a monopolist for the variety it produces, it set the price of its product at a constant markup over its marginal cost. Firm enters domestic or export markets if and only if the net profits generated from its domestic sales or exports in a given country are sufficient to cover the fixed costs. This zero cutoff profit condition defines the productivity thresholds for firm' entering domestic and exports markets, and in turn determines the equilibrium numbers of non-exporting firms and exporting firms, as well as their average productivities. Usually, the combination of fixed export cost and variable export cost ensures that the exporting productivity threshold is higher than that for production for domestic market, i.e. only a small fraction of firms with high productivity engages in exports markets. These exporting firms supply for both domestic and export markets.[3]

The model is calibrated to the GTAP (version 6) global database. It includes nineteen-country/region and twelve sectors. However, some information which are central to our model, such as the degree of returns to scale, the shape of productivity distribution, and the magnitude of the fixed and variable trade cost, are not available in the GTAP database. We set these parameters mainly based on the search of the relevant literature. Table 1 reports some major parameters we used in the model. The markup ratios are in the ranges of those chosen by Bchir et al. (2002),

[2] Chaney (2005) estimated the distorted gravity equations based on a simplified version of Melitz model, and found strong support for it in both sectoral trade data and the stylized facts on firm-level trade. Ruhl (2003) extended the Melitz model to the setting with aggregate uncertainty to explain the so called elasticity puzzle, i.e. the low Armington elasticity needed in international real business cycle models to match the quarterly fluctuations in trade balances and the terms of trade, and the high elasticity needed in CGE models to explain the growth in trade following trade liberalization. He found the high frequency temporary shocks will induce the adjustment only in intensive margin, while permanent tariff changes will induce both the extensive and the intensive margin adjustment.

[3] A detailed description of the model structure is provided in the appendix.

Forslid et al. (2002) and Francois et al. (2005). The choices of markup ratios, together with optimal pricing rule of monopolistic firms, imply that the substitution elasticity between differentiated varieties range from 5 to 9.3. The firm productivity is assumed to follow Pareto distribution, of which the scale parameter is calibrated to match the assumed profit ratio in gross output. The variable trade cost takes the so-called iceberg form[4]. We postulate that 25% of the goods or services will melt away during the export transit and 10% during the domestic trade for all sectors. This international trade cost is roughly in line with Obstfeld and Rogoff (2001) and Anderson and van Wincoop (2004)[5]. The fixed production cost and fixed trade cost are calibrated from the shares of non-exporting firms and exporting firms in total firms – we assume that for each sector there is 50% of its firms producing only for domestic markets and around 30% of firms producing for both domestic market and exports.

4. Scenario Analysis

As indicated in the discussion of Section 2 above, our basic approach is to examine the economic effects of infrastructure investments as these would arise from reductions of trade costs. Our survey of the economic literature indicates that there are three main ways in which these effects are propagated. Firstly, by reducing commercial margins, infrastructure can narrow the gap between producer and purchaser prices in the domestic economy. The direct effect of this is to benefit domestic agents, particularly those in proximity to the improved infrastructure. Indirect effects of course extend well beyond this however, as narrower margins between producer and purchaser prices increase the scope of profitable commerce and enlarge the domestic market.

A second category of indirect benefits relates to international trade. As border prices come closer to import purchaser prices and to export producer prices, this means net price reductions for the former and increases for the latter. In both cases, trade will be facilitated by expanding the scope for domestic absorption and supply to the export markets. Finally, a third effect of falling margins is on domestic returns to scale. Trade and transport margins are an important component of marginal cost, and reducing these will shift the minimum efficient scale of production to higher output levels, allowing firms that increase supply to realize greater scale economies.

Using the CGE model, we conduct two sets of comparative statics simulations to examine the effects of infrastructure improvement in Asia. The first three experiments assume that investments in infrastructure achieve a 20% reduction in domestic trade cost, variable export cost

[4] See e.g. Bergstrand (1985), Baliestieri and Hillberry (2002),Jones and Kierzkowski (2001ab).
[5] We neglect the heterogeneity of the trade costs among sectors. Anderson and van Wincoop(2004) argued that it could be huge.

and fixed export cost for ASEAN, respectively. The second set of simulations extends the reductions in trade costs to all Asian economies.

4.1. Aggregate impacts

Table 2-5 presents major aggregate results from the six experiments on real GDP, welfare, exports and imports. The results from the first set of simulations are reported in columns 3-5 and the second set are in column 6-8. It is not strange that almost all ASEAN counties gain from the three forms of trade cost reduction, in terms of both real GDP and welfare change. However, the patterns of their GDP and welfare changes are different across different forms of trade cost. In the two scenarios of reducing export costs, Singapore's GDP will increase most as it is the most trade dependent country in Asia. As the least open economy in ASEAN, Indonesia and Viet Nam will experience only modest gain in GDP. Malaysia's real GDP will slightly decline in the case of reducing variable export cost, reflecting more stiff for it from other ASEAN economies. In the experiment of domestic trade cost reduction, the GDP increments are larger and distributed more evenly across countries. For all the three experiments, the rest of Asia are hardly impacted by the trade cost reductions in ASEAN countries.

When the reductions of export costs are extended to all Asian economies, ASEAN still accounts for a large proportion of the GDP gain. Their benefits in GDP expansion are generally magnified by 2-3 times. In the case of reducing fixed exports, the GDP gains of Malaysia, Philippines, Thailand and Singapore range from 0.8% to 3.0%. Indonesia and Viet Nam's GDP will expand by 0.4%. While in East Asia the GDP gains range from 0.1% to 0.7%, and in South Asian they are only around 0.1%. The reduction of variable export cost in all Asia will further sharpen the competitiveness of some ASEAN countries, such as Singapore, Philippines, Thailand and Viet Nam – their GDP will increase by 1% to 7.7%. South Asia and China will also experience small output expansion from the reduction of variable export cost. However, the East Asian matured economies and Indonesia will lose in term of real GDP. The large gains of ASEAN highlight its strong dependence on external trade and its importance as a conduit of regional trade.

Table 3 reports household welfare changes, which are the equivalent variation (EV) as percentages of GDP. They generally follow the patterns of changes in real GDP. As the falling trade costs result in improvement in terms of trade for all Asian countries, their welfare gain are usually larger than GDP gain. The exceptional high welfare gains of Philippines and Viet Nam are mainly due to their high private consumption ratios to GDP.

The trade effects presented in Table 4 and 5 show that the trade costs reduction in ASEAN will result in slight trade diversion for East Asia and South Asia. Philippines and Singapore have the

largest potentials for trade expansion if export costs are reduced. Their exports will expand by 11.3% and 17.0% respectively in the case of reducing variable export cost in ASEAN, and expand by 28% if the variable export costs for all Asian economies are reduced. The simulation results indicate that falling domestic trade cost undermines the foreign trade. The exports and imports will decline if domestic trade cost is cut. However, this result is necessary to be explained with caution as the falling domestic trade cost has no impact on export costs. In reality, the infrastructure improvement which lowers the domestic trade costs can also contribute to the reduction of international trade cost.

Where do these efficiency and welfare gains come from? In comparison with the traditional CGE model with representative firm and national products differentiation, the model in this paper introduces two additional channels through which the trade cost reductions yield welfare gains. The first is the Dixit-Stiglitz "love-of-variety effect", i.e. the welfare gains from the entry of firms and associated increase in variety. In the cases of reducing export costs, new and less productive firms enter the export markets, resulting in a larger number of exporters. On the other hand, the number of domestic firms supplied to domestic markets decrease, because the higher exposure to imports make the less productive firms unable to survive. However, the domestic consumers still enjoy greater product variety as the losses in the number of domestic suppliers are typically more than offset by the number of new foreign exporters. The second channel, which is detailedly elaborated by Melitz (2003), is the productivity gains from intra-industry resource reallocation. The endogenous selection process in domestic markets drives out the least productive firms, enhancing the average productivity of firms. Similarly, the entry of new exporters may also increase average productivity if they are more productive than the average productivity level. Furthermore, the market shares and profits will be reallocated following the reduction of trade costs. All firms lose a portion of their domestic markets, but exporting firms can make up for their loss of domestic sales with increased export sales. As exporting firms are more productive, this reallocation of market shares can also boost the aggregate productivity.

These theoretic insights are illuminated by our simulation results. Table 6-8 reports the changes in the number of non-exporting firms, number of exporting firms, and the aggregate productivity of monopolistic competition sectors. In general, the reduction of fixed and variable export cost increases the number of exporting firms, but decreases the number of non-exporting firms. While the reduction of domestic trade cost induces the contrary effects: it increases the number of non-exporting firms, but decreases the number of exporting firms. Singapore and Philippines are two exceptions: the number of their non-exporting firms increases even in the cases of reducing the export costs. Usually the changes in fixed export costs result in large adjustment in the number of exporting firms, but only small changes in the number of non-exporting firms. Because the reduction of fixed costs does not change the prices set by individual firm, the price

declines enjoyed by the importing countries totally come from the variety effects of more foreign exporter. Therefore the changes in fixed export costs only exert small impacts on import prices and small competition pressures for domestic non-exporting firms. In the case of reducing variable trade costs, the changes in marginal cost of exporting firms directly reduce the import prices, resulting in larger adjustment in the number of domestic non-exporting firms. These different impacts on exporting firms and non-exporting firms also result in the difference in productivity gains. Because the reduction of fixed export cost induces fewer firms to exit from domestic market, it brings on less increase in aggregate productivity of non-exporting firms. Moreover, in the case of reducing fixed export cost, the export expansion mainly come from the new exporters, rather than the existing exporters. Therefore, there is few productivity gains from market share reallocation toward more productive firms in the case of fixed export cost reduction. Table 8 shows that the aggregate productivities decline when the fixed export costs are reduced, but increase slightly for most countries when variable export costs are reduced. Overall, the results on firm number and aggregate productivity suggest that "love-of-variety" effects dominate the welfare gains from trade cost reduction[6]. To better understand these aggregate results, we turn to the sectoral impacts.

4.2. Sectoral results

Table 9-11 present the changes of output, exports, imports by sector. For expression simplicity, we report the sectoral results only for two scenarios: the reduction of fixed export cost in all Asia and the reduction of variable export cost for all Asia. The output, exports and imports reported here are those measured "at the factory gate", i.e. they are not variety scaled. One key finding arising from these sectoral results is that two sectors, electronics & electrical equipment and fuels, dominate the changes of output and trade in these Asian economies. The reductions of export costs, especially that in variable export cost, significantly boost the intra-regional, intra-industry trade in the two sectors. In some ASEAN countries, resources are diverted to the two sectors, causing relatively large output contraction in other sectors.

These sectoral patterns of output and trade adjustment are mainly driven by the self-reinforcing forward and backward linkages, which are emphasized by the "new economic geography" literatures and have been used to explain the industrial concentration and agglomeration[7]. These linkages stem from the interaction of trade cost, love of variety and the input-output linkage in production. When trade across borders incur costs, a larger number of

[6] The small gain from the improvement of aggregate productivity may be the results of the relatively high scale parameters of Pareto productivity functions used in our model. In a one-sector stochastic general equilibrium model calibrated to the US plant and trade data, Ghironi and Melitz (2005) set the scale parameters to be 3.8. Lower scale parameter represents larger productivity heterogeneity across firms.

[7] See e.g. Fujita et al.(1999). Forslid et al. (2002) use an empirical "new economy geography" model to study the economic integration and industry location in Europe.

upstream firms in a region implies a lower price level for intermediate inputs to downstream firms in same region. This mechanism constitutes the forward link. More downstream firms also imply a larger home market for upstream firms, which increases their sales and profits. This constitutes the backward link. The backward and forward linkages create a positive feedback for industrial agglomeration.

Our simulation results on fuels and electronics & electrical equipment reflect a kind of regional agglomeration for these two sectors. In Asia, due to the rapid rise of regional production chains, the trade in electronics is dominated by the intra-industry trade in intermediate goods, including parts, components and semi-finished products. The electronic products produced in Asian countries typically comprise a high proportion of value-added produced by other regional countries. For example, in Philippines and Singapore, the own industry input accounts for around 70% of the values of their electronic outputs, and more than 95% of these own industry inputs are imported. The fuels sector in Philippines and Singapore have even higher shares of own industry input and higher dependence on imports. In these two sectors, as the reduction of export costs substantially lower their production costs, and the process of cost reduction and demand expansion is self-reinforcing through backward and forward linkages, infrastructure investment can essentially act as a catalyst to promote the development of their regional production networks.

5. Concluding Remarks

Infrastructure can potentially play a significant role in promoting growth and integration to the world economy for many emerging market economies. Using a newly developed global CGE model which features monopolistic competition, firm productivity heterogeneity and fixed export cost, we analyse the economic impacts of infrastructure investment in Asia. Our basic approach is to examine the effects as these would arise from reductions of trade costs. A series of simulations focusing on reductions of different forms of trade cost indicate that infrastructure investment can facilitate the regional integration and economic growth, but its effects on different economy are quite diversified. A country that have already deeply involved in global production network may gain more from the reduction of regional trade costs. The investment in domestic infrastructure is quite important for less opened low-income countries. A well designed plan for regional infrastructure development need put more emphasis on the low-income countries to ensure an inclusive and equitable regional economic growth and integration.

It needs to be pointed that our model is quite stylized and the simulations are just indicative. More data work on the magnitude of trade costs and better understanding on the linkage between infrastructure and trade costs will be essential for developing solid policy suggestions.

6. References

Anderson, James E., and Eric van Wincoop, 2004, "Trade Costs." Journal of Economic Literature,42(3), pp 691-751.

Bchir, Hedi, Yvan Decreux, Jean-Louis Guerin and Sebastien Jean, 2002, "MIRAGE, a Computable General Equilibrium Model for Trade Policy Analysis", CEPII Working Paper, No. 17

Bergstrand, Jeffrey H. (1990), "The Heckscher-Ohlin-Samuelson Model, the Linder Hypothesis and the Determinants of Bilateral Intra-Industry Trade," The Economic Journal, 1990, 100, pp. 1216-29.

Bernard, Andrew B. and J, Bradford Jensen (2004), "Why Some Firms Export," Review of Economics and Statistics, 86(2).

Bernard, Andrew B., Jonathan Eaton, J. Bradford Jensen, and Samuel S. Kortum (2003), "Plant and Productivity in International Trade", American Economic Review, 2003, 93(4), pp. 1268-1290.

Thomas Chaney, 2005, "Distorted Gravity: Heterogeneous Firms, Market Structure and the Geography of International Trade." MIT, mimeo (January 2005)

Dixit, Avinash and Joseph Stiglitz (1977): "Monopolistic Competition and Optimum Product Diversity," American Economic Review, 67, pp. 297-308.

Evenett, Simon J. and Anthony Venables, (2002), "Export Growth in Developing Countries: Market Entry and Bilateral Trade Flows," working paper, London School of Economics.

Forslid, Rikard, Jan I. Haaland and Karen Helene Midelfart Knarvik, 2002, "A U-shaped Europe?: A Simulation Study of Industrial Location", Journal of International Economics, 57, 273-297.

Francois, Joseph, Hans van Meijl and Frank van Tongeren, 2005, "Trade Liberalization in the Doha Development Round", Economic Policy, 20(42) 349-391

Fujita, Masahisa, Paul Krugman and Anthony Venables (1999): The Spatial Economy: Cities, Regions and International Trade (MIT Press).

Heckscher, E.F. "V¨axelkursens Grundval vid Pappersmyntfot, Ekonomisk Tidskrift, October, 1916, 18, 309-312.

Hummels, David and Peter Klenow (2004), "The Variety and Quality of National Exports.", American Economic Review,

Hummels, David (2001a), "Toward a Geography of Trade Costs", working paper, Purdue University.

Krugman, Paul, (1979), "Increasing Returns, Monopolistic Competition and International Trade", Journal of International Economics, 9, pp. 469 – 479.

Ng, Francis and Alexander Yeats, (2001), " Production Sharing in East Asia: Who Does What for Whom and Why?" in Cheng and Kierzkowski (2002).

Obstfeld, Maurice and Alan M. Taylor. "Nonlinear Aspects of Goods-Market Arbitrage and Adjustment: Heckscher's Commodity Points Revisited," Journal of the Japanese and International Economies, December 1997, vol. 11, 441-479.

Obstfeld, Maurice and Kenneth Rogoff (2000), "The Six Major Puzzles in International Macroeconomics. Is There a Common Cause?", in B.S. Bernanke and K. Rogoff, eds., NBER Macroeconomics Annual 2000. Cambridge, MA: MIT Press, 2000, pp. 339-390.

Ohlin, Bertil, Per-Ove Hesselborn and Per Magnus Wijkman (eds.), (1977): The International Allocation of Economic Activity (The Nobel Foundation).

Ruhl, Kim, 2003, "Solving the Elasticity Puzzle in International Economics," University of Minnesota, Mimeo (November 2003).

Samuelson, Paul A. (1952): "Spatial Price Equilibrium and Linear Programming," American Economic Review, 42, 3, pp. 283-303.

Samuelson, Paul A. (1954): "The Transfer Problem and transport Costs: The Terms of Trade when Impediments are Absent," Economic Journal, 62, pp. 278-304.

Yeaple, Stephen R. (2002), "A Simple Model of Firm Heterogeneity, International Trade and Wages." University of Pennsylvania, mimeo

Table 1: Major Parameters in the Model

	Markup ratio	Substitution elasticity between varieties	Scale parameter in productivity Pareto distribution	Share of non-exporting firms	Share of exporting firms
Fuels	12%	9.3	13.9	75%	15%
ProcFood	12%	9.3	13.9	75%	15%
TexApprl	12%	9.3	13.9	75%	15%
Vehicles	17%	6.9	11.8	75%	17%
ElecEqp	15%	7.7	11.1	75%	20%
OthMfg	15%	7.7	11.1	75%	20%
Trade	25%	5.0	6.7	75%	18%
TransCom	25%	5.0	6.7	75%	18%
PrvServ	25%	5.0	6.7	75%	18%

Table 2: Effects of Infrastructure Development on Real GDP (% change from base year)

		1. Reducing trade cost in ASEAN			2. Reducing trade cost in Asia		
Region	**Country/Economy**	**Fixe export cost**	**Variable export cost**	**Domestic trade cost**	**Fixe export cost**	**Variable export cost**	**Domestic trade cost**
E Asia	**China**	-0.01%	-0.03%	0.00%	0.25%	0.35%	5.48%
	Japan	0.00%	0.00%	0.00%	0.07%	-0.02%	3.82%
	Korea	-0.01%	-0.04%	0.00%	0.28%	0.08%	4.05%
	Hong Kong, China	0.00%	-0.01%	0.00%	0.52%	-0.11%	4.33%
	Taipei,China	0.00%	-0.02%	0.00%	0.32%	-0.12%	3.54%
ASEAN	**Indonesia**	0.12%	0.09%	3.56%	0.35%	-0.02%	3.55%
	Malaysia	0.44%	-0.25%	2.46%	1.10%	0.06%	2.44%
	Philippines	0.39%	1.35%	3.85%	1.06%	3.60%	3.64%
	Singapore	1.19%	3.35%	3.51%	2.50%	6.53%	3.34%
	Thailand	0.24%	0.39%	3.66%	0.63%	0.86%	3.61%
	Viet Nam	0.11%	0.22%	3.58%	0.46%	1.09%	3.49%
S Asia	**Bangladesh**	0.00%	-0.01%	0.00%	0.07%	0.27%	4.13%
	India	0.00%	-0.02%	0.00%	0.07%	0.16%	3.81%
	Sri Lanka	0.00%	-0.02%	0.00%	0.12%	0.22%	2.35%

Table 3: Welfare Changes from Infrastructure Development
(EV as % of base year GDP)

		1. Reducing trade cost in ASEAN			2. Reducing trade cost in Asia		
Region	Country/Economy	Fixe export cost	Variable export cost	Domestic trade cost	Fixe export cost	Variable export cost	Domestic trade cost
E Asia	China	0.00%	0.00%	0.00%	0.01%	0.04%	0.14%
	Japan	0.00%	0.00%	0.00%	0.00%	0.00%	0.04%
	Korea	0.00%	-0.01%	0.00%	0.03%	0.16%	0.41%
	Hong Kong, China	0.01%	0.06%	0.00%	0.33%	1.59%	1.58%
	Taipei,China	0.00%	-0.01%	0.00%	0.05%	0.25%	0.53%
ASEAN	Indonesia	0.04%	0.22%	1.22%	0.11%	0.60%	1.19%
	Malaysia	0.06%	0.33%	0.27%	0.12%	0.57%	0.25%
	Philippines	0.90%	5.11%	8.34%	2.40%	12.23%	7.71%
	Singapore	0.68%	3.45%	1.91%	1.31%	5.86%	1.75%
	Thailand	0.13%	0.72%	1.84%	0.32%	1.63%	1.77%
	Viet Nam	0.83%	5.04%	11.30%	2.72%	14.22%	10.53%
S Asia	Bangladesh	-0.01%	-0.03%	0.00%	0.22%	1.35%	5.45%
	India	0.00%	0.00%	0.00%	0.01%	0.06%	0.55%
	Sri Lanka	-0.05%	-0.13%	-0.02%	1.39%	8.19%	11.32%

Table 4: Effects of Infrastructure Development on Exports
(% change from base year)

		1. Reducing trade cost in ASEAN			2. Reducing trade cost in Asia		
Region	Country/Economy	Fixe export Cost	Variable Export cost	Domestic trade cost	Fixe export Cost	Variable Export cost	Domestic trade cost
E Asia	China	-0.04%	-0.22%	-0.02%	0.48%	6.47%	-2.51%
	Japan	-0.04%	-0.20%	-0.04%	0.36%	6.00%	-3.21%
	Korea	-0.05%	-0.31%	-0.01%	0.24%	5.64%	-2.69%
	Hong Kong, China	-0.01%	-0.08%	0.01%	-0.71%	2.24%	-0.82%
	Taipei,China	-0.03%	-0.19%	0.00%	0.31%	5.95%	-2.87%
ASEAN	Indonesia	0.06%	2.34%	-1.64%	-0.09%	5.45%	-1.88%
	Malaysia	-0.02%	2.24%	-0.87%	-0.33%	3.51%	-1.02%
	Philippines	1.35%	9.73%	-0.44%	3.35%	24.59%	-1.71%
	Singapore	2.16%	14.40%	-0.27%	3.77%	24.61%	-0.88%
	Thailand	0.41%	3.80%	-1.84%	0.61%	7.37%	-2.17%
	Viet Nam	0.32%	3.00%	-1.58%	1.02%	8.60%	-2.23%
S Asia	Bangladesh	-0.03%	-0.15%	-0.01%	0.93%	6.42%	-2.01%
	India	-0.03%	-0.14%	-0.04%	0.20%	3.58%	-2.79%
	Sri Lanka	-0.03%	-0.17%	0.00%	0.17%	2.31%	-2.08%

Table 5: Effects of Infrastructure Development on Imports
(% change from base year)

		1. Reducing trade cost in ASEAN			2. Reducing trade cost in Asia		
Region	Country/Economy	Fixe export Cost	Variable Export cost	Domestic trade cost	Fixe export Cost	Variable Export cost	Domestic trade cost
E Asia	China	-0.07%	-0.35%	-0.05%	0.45%	8.69%	-3.09%
	Japan	-0.07%	-0.37%	-0.09%	0.58%	6.94%	-3.18%
	Korea	-0.08%	-0.45%	-0.06%	0.51%	6.96%	-2.73%
	Hong Kong, China	0.01%	0.09%	0.01%	-0.47%	3.29%	-0.67%
	Taipei,China	-0.06%	-0.34%	-0.03%	0.54%	7.94%	-3.15%
ASEAN	Indonesia	0.36%	4.26%	-2.00%	0.70%	10.12%	-2.70%
	Malaysia	0.50%	5.40%	-1.27%	0.56%	8.28%	-1.83%
	Philippines	1.14%	8.23%	-0.19%	2.52%	20.28%	-1.43%
	Singapore	1.91%	13.33%	-0.17%	3.32%	22.36%	-0.86%
	Thailand	0.64%	5.45%	-1.89%	0.99%	10.50%	-2.54%
	Viet Nam	-0.07%	1.60%	-0.67%	-0.22%	4.76%	-1.17%
S Asia	Bangladesh	-0.04%	-0.18%	-0.02%	-0.50%	3.87%	-1.29%
	India	-0.04%	-0.22%	-0.08%	0.13%	3.71%	-2.29%
	Sri Lanka	-0.05%	-0.28%	-0.02%	-0.65%	1.68%	-1.77%

Table 6: Changes of Number of Non-exporting Firms
(% change from base year)

		1. Reducing trade cost in ASEAN			2. Reducing trade cost in Asia		
Region	Country/Economy	Fixe export cost	Variable export cost	Domestic trade cost	Fixe export cost	Variable export cost	Domestic trade cost
E Asia	China	-0.01%	-0.02%	0.00%	-0.20%	-1.14%	1.16%
	Japan	0.00%	0.02%	0.00%	-0.12%	-0.63%	0.39%
	Korea	0.00%	-0.02%	0.01%	-0.33%	-1.63%	1.16%
	Hong Kong, China	0.00%	0.01%	0.00%	-0.18%	-0.78%	0.92%
	Taipei,China	0.00%	0.00%	0.00%	-0.49%	-2.46%	1.47%
ASEAN	Indonesia	-0.07%	-0.57%	1.70%	-0.33%	-2.24%	1.79%
	Malaysia	-0.46%	-2.47%	2.85%	-0.84%	-4.14%	2.94%
	Philippines	0.04%	0.23%	1.21%	0.00%	-0.02%	1.18%
	Singapore	0.37%	1.43%	1.70%	0.61%	1.71%	1.60%
	Thailand	-0.14%	-0.78%	2.16%	-0.43%	-2.26%	2.19%
	Viet Nam	-0.16%	-0.93%	1.58%	-0.44%	-2.22%	1.67%
S Asia	Bangladesh	0.01%	0.04%	0.00%	-0.20%	-1.07%	0.70%
	India	0.00%	-0.01%	0.00%	-0.12%	-0.59%	0.72%
	Sri Lanka	0.02%	0.08%	0.00%	-0.32%	-1.59%	1.48%

Table 7: Changes of Number of Exporting Firms
(% change from base year)

		1. Reducing trade cost in ASEAN			2. Reducing trade cost in Asia		
Region	Country/Economy	Fixe export cost	Variable export cost	Domestic trade cost	Fixe export cost	Variable export cost	Domestic trade cost
E Asia	China	-0.06%	-0.30%	-0.02%	10.84%	7.41%	-2.41%
	Japan	-0.06%	-0.30%	-0.05%	11.84%	7.12%	-3.93%
	Korea	-0.08%	-0.42%	-0.01%	12.70%	6.56%	-3.00%
	Hong Kong, China	-0.02%	-0.13%	0.01%	11.13%	3.30%	-1.02%
	Taipei,China	-0.04%	-0.25%	0.01%	12.97%	7.20%	-3.19%
ASEAN	Indonesia	4.88%	3.05%	-0.86%	14.39%	5.58%	-1.15%
	Malaysia	6.25%	2.95%	-0.86%	13.77%	4.24%	-1.08%
	Philippines	6.40%	12.21%	-0.46%	18.74%	30.80%	-2.04%
	Singapore	10.30%	23.01%	0.39%	22.26%	39.48%	-0.58%
	Thailand	4.96%	5.34%	-2.14%	13.68%	10.09%	-2.63%
	Viet Nam	2.80%	2.98%	-1.36%	12.29%	11.98%	-2.14%
S Asia	Bangladesh	-0.04%	-0.18%	-0.02%	3.30%	7.68%	-1.80%
	India	-0.05%	-0.22%	-0.06%	7.12%	4.41%	-2.86%
	Sri Lanka	-0.05%	-0.25%	-0.01%	3.81%	3.24%	-2.45%

Table 8: Changes of Aggregate Productivity
(% change from base year)

		1. Reducing trade cost in ASEAN			2. Reducing trade cost in Asia		
Region	Country/Economy	Fixe export cost	Variable export cost	Domestic trade cost	Fixe export cost	Variable export cost	Domestic trade cost
E Asia	China	0.00%	0.00%	0.00%	-0.09%	0.09%	-0.13%
	Japan	0.00%	0.00%	0.00%	-0.05%	0.05%	-0.06%
	Korea	0.00%	0.00%	0.00%	-0.17%	0.09%	-0.11%
	Hong Kong, China	0.00%	0.00%	0.00%	-0.33%	0.02%	-0.09%
	Taipei,China	0.00%	-0.01%	0.00%	-0.22%	0.16%	-0.15%
ASEAN	Indonesia	-0.09%	0.01%	-0.20%	-0.29%	0.18%	-0.21%
	Malaysia	-0.26%	-0.02%	-0.19%	-0.62%	0.06%	-0.19%
	Philippines	-0.10%	-0.01%	-0.09%	-0.32%	-0.06%	-0.10%
	Singapore	-0.39%	-0.96%	-0.12%	-0.83%	-1.60%	-0.09%
	Thailand	-0.10%	0.01%	-0.20%	-0.29%	0.08%	-0.20%
	Viet Nam	-0.03%	0.04%	-0.14%	-0.13%	0.09%	-0.15%
S Asia	Bangladesh	0.00%	-0.01%	0.00%	0.01%	0.12%	-0.06%
	India	0.00%	0.00%	0.00%	-0.04%	0.05%	-0.08%
	Sri Lanka	0.00%	-0.01%	0.00%	-0.09%	0.09%	-0.14%

Table 9: Changes of Sectoral Output
(% change from base year)

	Agric	Fuels	ProcFood	TexApprl	Vehicles	ElecEqp	OthMfg	Trade	TransCom	PrvServ	PubAdmin
Reducing fixed export cost in Asia											
China	0.0	0.1	0.1	-0.1	0.1	1.8	-0.1	-0.2	0.0	0.3	0.0
Japan	-0.1	-0.6	-0.1	-0.5	0.1	-0.7	0.2	0.0	0.0	0.0	0.0
Korea	-0.1	2.3	0.0	0.3	-0.4	0.7	-0.2	0.1	-0.2	0.1	0.1
Hong Kong, China	-0.1	-2.8	-0.9	-1.1	-3.4	4.7	-0.9	0.9	0.1	0.2	-0.1
Taipei,China	-0.4	-1.2	-0.2	0.1	-0.6	1.9	-0.4	0.1	-0.3	0.1	0.1
Indonesia	-0.1	0.0	0.1	-1.1	-0.8	1.8	0.6	-0.1	0.0	0.3	-0.1
Malaysia	-1.1	-0.6	-0.3	-0.9	-2.0	2.8	-0.5	-0.1	-1.0	0.1	-0.4
Philippines	-0.2	-1.7	-0.1	-4.1	0.9	11.5	-1.6	0.6	-0.2	0.5	0.0
Singapore	-2.1	5.1	-0.8	-4.6	-4.1	17.5	-1.7	0.4	-1.1	0.2	0.3
Thailand	-0.5	-2.1	-0.3	-2.1	0.2	8.4	-0.4	0.0	-0.2	0.3	0.0
Viet Nam	0.0	0.1	0.4	3.8	-1.2	0.1	-0.6	-0.5	0.3	0.0	-0.3
Bangladesh	0.1	-1.5	0.0	0.5	-2.6	-6.0	-1.0	-0.1	0.1	0.1	0.0
India	0.0	-0.4	0.1	0.0	-0.2	-1.9	0.0	0.0	0.0	0.1	0.0
Sri Lanka	0.0	-0.8	0.0	0.2	-1.1	4.9	-0.4	-0.1	0.1	0.3	0.0
Reducing variable export cost in Asia											
China	0.3	-0.3	0.6	-1.2	0.1	7.7	-1.2	-0.5	-0.1	1.4	0.1
Japan	-0.9	-4.2	-0.5	-3.5	-0.1	-4.6	0.7	0.2	0.0	0.2	0.0
Korea	-0.9	17.3	0.5	1.5	-3.0	0.7	-2.4	0.7	-0.9	0.7	0.4
Hong Kong, China	-3.2	-16.7	-4.7	-4.7	-13.0	24.2	-3.5	1.6	0.0	0.8	-0.7
Taipei,China	-2.0	-5.9	-1.1	0.1	-3.8	6.9	-3.0	0.5	-2.0	0.3	0.3
Indonesia	-0.2	0.6	0.4	-6.5	-3.3	2.1	0.0	-0.7	-0.7	1.4	0.0
Malaysia	-4.3	-3.7	-0.9	-0.9	-9.4	7.7	-3.0	-1.6	-4.8	-0.1	-1.7
Philippines	-1.0	-4.2	-0.7	-20.2	-1.1	61.7	-11.0	3.6	-1.7	2.5	0.1
Singapore	-5.1	68.5	-3.0	-20.9	-22.5	78.9	-11.2	1.7	-5.4	0.3	1.4
Thailand	-1.4	-8.8	-2.1	-11.0	0.0	38.6	-4.0	-0.2	-2.0	1.2	-0.1
Viet Nam	0.1	-1.2	-0.1	14.5	-2.6	2.4	-2.6	-1.9	0.8	0.0	-1.8
Bangladesh	0.3	-17.4	0.1	2.4	-8.2	-26.4	-4.8	-0.5	0.2	0.6	-0.1
India	0.2	-3.3	0.3	-0.3	-0.8	-9.9	-0.4	0.2	0.2	0.3	0.0
Sri Lanka	-0.2	-7.5	-0.1	0.9	-5.0	20.9	-3.1	-0.3	0.1	1.0	-0.2

Table 10: Changes of Sectoral Exports
(% change from base year)

	Agric	Fuels	ProcFood	TexApprl	Vehicles	ElecEqp	OthMfg	Trade	TransCom	PrvServ	PubAdmin
Reducing fixed export cost in Asia											
China	-0.7	4.2	-0.1	-0.3	1.2	2.6	0.1	-0.2	-0.5	0.0	-0.7
Japan	-0.4	6.1	0.7	1.7	0.0	-0.2	0.8	-0.1	-0.2	-0.1	-0.3
Korea	-0.4	8.0	0.1	0.1	-0.6	0.5	0.4	-1.0	-1.0	-1.0	-1.3
Hong Kong, Chin	-1.3	-	-1.0	-0.6	-0.9	5.1	2.1	-1.1	-1.3	-1.0	-1.5
Taipei,China	-1.6	4.4	-0.9	-0.6	-0.1	1.7	-0.1	-2.0	-1.9	-2.2	-2.1
Indonesia	-1.1	-0.7	-0.8	-1.2	2.5	1.2	0.5	-1.2	-1.0	-0.7	-1.6
Malaysia	-2.1	-0.9	-1.2	-1.2	-0.9	0.8	-0.9	-3.4	-2.6	-1.6	-3.5
Philippines	-5.1	-2.4	-5.5	-3.7	3.7	8.0	-2.2	-4.7	-3.1	-3.9	-5.4
Singapore	-2.4	4.0	-1.5	-4.6	-4.7	13.2	-2.8	-5.1	-3.7	-4.4	-6.7
Thailand	-0.8	-1.0	-1.4	-3.3	1.5	6.4	-0.5	-3.4	-1.8	-1.8	-1.5
Viet Nam	-1.4	0.2	-0.1	3.2	2.1	4.2	1.0	-1.6	0.3	-1.2	-2.0
Bangladesh	-0.2	-	-0.1	1.1	0.8	0.6	1.5	0.0	0.0	0.2	-0.4
India	-0.2	1.5	0.4	-0.2	0.3	1.6	0.4	0.1	0.0	0.1	-0.4
Sri Lanka	-0.6	0.7	-0.3	0.4	1.2	4.2	0.4	-0.7	-0.6	-0.2	-0.9
Reducing variable export cost in Asia											
China	4.2	42.5	6.4	3.7	6.0	17.6	3.3	0.9	-1.4	1.9	-1.8
Japan	2.4	57.7	11.6	19.4	0.3	4.2	9.6	2.7	1.0	1.1	0.2
Korea	12.3	70.6	10.9	6.9	-3.4	6.3	7.1	-2.1	-3.7	-3.8	-5.1
Hong Kong, Chin	2.6	-	2.0	3.7	-3.5	34.9	19.8	1.2	-4.0	-2.4	-5.6
Taipei,China	3.1	42.5	2.7	3.5	-1.5	12.2	4.6	-7.5	-7.3	-8.8	-7.7
Indonesia	0.3	15.0	1.2	-3.9	9.9	7.2	7.2	-4.9	-4.7	-2.3	-4.1
Malaysia	-2.5	16.2	1.0	2.5	-4.6	7.4	3.1	-11.4	-9.8	-5.5	-13.4
Philippines	-18.0	42.9	-23.7	-17.0	12.8	51.8	-9.1	-21.9	-15.5	-18.3	-25.3
Singapore	-3.1	67.5	2.3	-16.7	-21.5	66.1	-8.0	-20.0	-14.9	-18.4	-27.6
Thailand	3.4	16.7	-3.0	-13.8	6.4	38.5	1.7	-14.1	-7.6	-7.4	-6.6
Viet Nam	-2.9	8.6	1.7	15.5	11.0	32.2	14.4	-5.7	1.8	-5.9	-9.2
Bangladesh	3.6	-	1.3	7.2	3.6	6.8	10.2	0.9	1.5	3.1	-1.3
India	3.1	15.8	6.8	0.2	2.0	13.0	5.2	3.9	1.8	2.7	-0.8
Sri Lanka	-1.5	28.4	2.7	3.2	2.2	26.6	3.6	-1.2	-0.8	1.1	-4.6

Table 11: Changes of Sectoral Imports
(% change from base year)

	Agric	Fuels	ProcFood	TexApprl	Vehicles	ElecEqp	OthMfg	Trade	TransCom	PrvServ	PubAdmin
Reducing fixed export cost in Asia											
China	0.7	2.2	0.4	0.9	0.6	0.4	0.7	-1.6	0.1	0.2	0.5
Japan	0.0	0.0	0.0	0.1	0.7	2.7	0.7	-0.7	0.0	0.0	0.3
Korea	0.3	0.6	0.3	0.5	0.8	0.4	0.6	-0.2	0.2	0.5	1.0
Hong Kong, China	0.5	-1.3	0.0	-0.5	0.3	-1.5	-0.7	0.4	0.9	0.8	0.9
Taipei,China	0.9	-0.2	0.8	1.0	0.6	0.7	0.4	0.3	0.7	1.3	1.6
Indonesia	0.9	3.8	0.6	0.3	0.5	1.5	0.3	-0.1	0.4	0.4	1.1
Malaysia	0.7	3.9	0.0	-1.0	0.4	0.4	0.2	1.5	1.0	1.3	2.2
Philippines	3.7	0.1	3.7	-0.8	-0.9	4.5	1.1	2.2	2.2	2.7	3.8
Singapore	-0.1	1.5	-0.2	-1.4	0.5	7.3	0.4	3.4	1.7	3.7	5.5
Thailand	0.4	1.4	0.9	1.6	0.9	2.9	0.0	1.2	1.1	1.2	1.1
Viet Nam	1.1	0.3	0.1	0.5	-2.3	-0.2	-1.0	-0.1	-0.4	0.7	1.3
Bangladesh	0.2	0.4	-0.1	-0.2	-0.9	-1.6	-0.9	-1.6	-0.1	-0.2	0.3
India	0.1	0.1	-0.4	0.6	0.8	1.6	0.2	-0.9	-0.2	-0.3	0.3
Sri Lanka	0.4	-0.7	0.2	-0.8	-1.6	-1.0	-0.9	-0.9	0.2	0.0	0.6
Reducing variable export cost in Asia											
China	5.3	21.0	5.6	15.1	4.7	9.2	9.4	3.0	2.5	2.9	3.2
Japan	1.6	2.4	2.9	8.7	4.1	21.7	7.4	1.9	1.6	1.8	1.9
Korea	1.9	6.6	3.5	10.3	5.2	8.0	8.3	5.4	3.8	5.3	5.8
Hong Kong, China	1.5	-4.1	3.3	4.4	4.7	1.0	3.4	5.2	5.1	5.2	4.5
Taipei,China	5.6	0.8	6.9	13.0	5.5	10.2	7.6	9.1	7.1	9.6	9.3
Indonesia	6.6	42.5	8.1	10.9	7.9	14.3	7.9	5.9	5.0	5.0	4.8
Malaysia	6.7	47.2	4.3	3.2	6.8	7.6	6.9	14.4	7.2	8.5	10.4
Philippines	24.6	3.9	26.7	4.1	2.5	30.7	13.7	23.7	15.7	18.5	23.5
Singapore	-2.9	31.2	3.5	-1.4	5.2	40.0	6.9	24.9	10.9	21.7	30.0
Thailand	4.4	9.5	8.2	17.5	8.5	22.3	5.7	13.7	8.0	8.8	6.5
Viet Nam	11.4	7.7	6.5	8.1	-1.3	7.3	3.5	5.8	1.1	6.4	7.4
Bangladesh	3.7	9.8	2.7	8.7	1.3	-1.9	2.6	2.4	2.0	1.2	2.0
India	2.8	3.7	2.9	11.0	5.6	14.0	3.4	1.4	1.4	1.0	2.0
Sri Lanka	5.0	-4.0	4.9	2.8	-0.9	0.2	1.0	4.2	3.1	2.6	3.4