Economic Implications of Deeper Asian Integration

by

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Abstract: The Asian countries are once again focused on options for large, comprehensive regional integration schemes. In this paper we explore the implications of such broad-based regional trade initiatives in Asia, highlighting the bridging of the East and South Asian economies. We place emphasis on the alternative prospects for insider and outsider countries. We work with a global general equilibrium model of the world economy, benchmarked to a projected 2017 sets of trade and production patterns. We also work with gravity-model based estimates of trade costs linked to infrastructure, and of barriers to trade in services. Taking these estimates, along with tariffs, into our CGE model, we examine regionally narrow and broad agreements, all centered on extending the reach of ASEAN to include free trade agreements with combinations of the northeast Asian economies (PRC, Japan, Korea) and also the South Asian economies. We focus on a stylized FTA that includes goods, services, and some aspects of trade cost reduction through trade facilitation and related infrastructure improvements. What matters most for East Asia is that China, Japan, and Korea be brought into any scheme for deeper regional integration. This matter alone drives most of the income and trade effects in the East Asia region across all of our scenarios. The inclusion of the South Asian economies in a broader regional agreement sees gains for the East Asian and South Asian economies. Most of the East Asian gains follow directly from Indian participation. The other South Asian players thus stand to benefit if India looks East and they are a part of the program, and to lose if they are not. Interestingly, we find that with the widest of agreements, the insiders benefit substantively in terms of trade and income while the aggregate impact on outside countries is negligible. Broadly speaking, a pan-Asian regional agreement would appear to cover enough countries, with a great enough diversity in production and incomes, to actually allow for regional gains without substantive third-country losses. However, realizing such potential requires overcoming a proven regional tendency to circumscribe trade concessions with rules of origin, NTBs, and exclusion lists. The more likely outcome, a spider web of bilateral agreements, carries with it the prospect of significant outsider costs (i.e. losses) both within and outside the region.

keywords: regionalism, Asia FTAs, ASEAN, preferential trade, gravity model of services
              trade, trade costs and infrastructure
JEL codes: F13, F17

1. INTRODUCTION

In the wake of extended delay in the Doha Round of WTO trade talks, a myriad of possible bilateral and regional combinations is now on the table. Indeed, even if WTO talks conclude successfully, it is unlikely they would yield any substantive impact on the general pattern of Asia protection patterns. (See Francois, van Meijl and van Tongeren 2005.) This has added more fuel to the fire driving Asian negotiations.

In this paper, we offer a comprehensive examination of regional and sub-regional FTA pairings, inclusive not only of tariffs, but also of trade facilitation and services liberalization. This contrasts with the current literature, which is focused on goods. Both our facilitation and services experiments are built from gravity-based econometric estimates of trade costs. Because the collective impact of a set of FTAs can contrast sharply with what assessments of individual FTAs imply (Francois, McQueen and Wignaraja, 2005), the comprehensive approach offered here also provides insight into the differential impact of individual Asian FTAs, a collective wave of such FTAs, and a comprehensive regional approach to liberalization. We place emphasis on the alternative prospects for insider and outsider countries. Interestingly, we find that with a true Pan-Asian focus, the insiders benefit substantively in terms of trade and income while the aggregate impact on outside countries is negligible. Broadly speaking, an Asian regional FTA would appear to cover enough countries, with a great enough diversity in production and incomes, to actually allow for regional gains without a major price measured in substantive third-country losses. Realizing such potential though requires overcoming a proven regional tendency to circumscribe trade concessions with rules of origin, non-tariff barriers (NTBs), and exclusion lists. The more likely outcome, a spider web of bilateral agreements, carries with it the prospect of significant outsider costs both within and outside the region.

The paper is organized as follows. As background, in Section 2 we provide a summary of the existing literature on FTAs (actual and prospective) in the region. In Section 3 we offer an overview of the model and database. In Section 4 we spell out policy scenarios, linking them to the underlying patterns of production and trade. We conclude in Section 5.

2. BACKGROUND

There is a growing body of literature on the impact of FTAs in Asia using global computable general equilibrium (CGE) models. This interest can be attributed to the proliferation of bilateral and plurilateral FTAs in Asia in recent years. Table 1 provides a broad overview of this literature. From the table, it can be seen that the focus of this research has been devoted to FTAs covering East Asian economies

while the literature on FTAs involving South Asian economies or pan-Asian FTAs between East Asia and South Asian economies is more limited. This body of research raises question such as: will an East Asia FTA, or South Asian FTA or even a Pan-Asian FTA create gains for members or not? Will non-FTA members lose? And what sectors will gain or lose within members and non-members? There is currently intense debate in Asian policy circles on these questions and possible adjustment strategies needed to deal with countries and sectors that may lose though FTA formation.

By relying on a simulation approach that combines data and prospective scenarios in a structured manner to analyze the economic effects of policy changes on due to the formation of an East Asia FTA, CGE models have emerged as an important tool for shedding light on these issues. The CGE models used have varied somewhat in their underlying economic structure, behavior of agents and focus, but while the theoretical structure varies, commonly these models build on the Global Trade Analysis Project (GTAP) database. The primary focus of such policy scenarios has been on the removal of price distortions against imports that arise from existing trade barriers (in particular merchandise tariffs). Most studies have used the standard GTAP model[1] with constant returns to scale in production, perfect competition, and the Armington assumption (or some variant of GTAP) while a few have adopted CGE models with firm-level imperfect competition.

Four major findings from the formation of an East Asian FTA emerge from this literature (for a selection see Ballard and Cheong, 1997; Urata and Kyota, 2003; Gilbert *et al*. 2004; Lee *et al*., 2004; and Zhang and others, 2006): (a) all the East Asian countries involved would collect welfare gains; (b) the countries that are excluded are much more likely to suffer welfare losses; (c) production of sectors with a comparative advantage increases; and (d) an East Asian FTA is a step toward multilateral liberalization.

Studies, however, differ in their estimates of welfare gains to members and losses to non members from an East Asia FTA depending on the type of CGE model used, data source and baseline year. An early study by Ballard and Cheong (1997), using a CGE model with firm-level imperfect competition, indicated that both an APEC FTA and an East Asian FTA would generate gains for all members even without the participation of the USA and Japan. They also estimate that developing nations in Asia are expected to gain more when the USA joins the FTA than when Japan joins. Urata and Kyota (2003) estimate that an East Asia FTA will generate welfare gains for members from the highest of 12.5 % of GDP

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[1] See Hertel (1997). For more details about the current standard GTAP model see www.gtap.agecon.purdue.edu. For gravity-based analysis of Asian preferences, see Cabalu and Alfonso (2007) and Manchin and Pelkmans-Baloing (2007).

TABLE 1. Selected Studies on the Impact of Asian FTAs

Study	Model and Baseline	Parameters and Assumptions	Impact of FTA Scenarios
Ballard and Cheong (1997)	GTAP Model Base year of 1992	Uses 1994 GTAP database; data disaggregated into 9 regions and 5 sectors. Assumes removal of all tariffs and non-tariff barriers between all members of FTA. Uses two models with different assumptions: 1) perfect competition (costs explained by Armington assumption), and 2) firm-level imperfect competition. Notes: ASEAN countries include Indonesia, Malaysia, Philippines, and Thailand only. Newly Industrialized Economies (NIEs) include Hong Kong,PRC; Korea; Singapore; and Taipei,PRC. East Asia FTA includes ASEAN countries, PRC, NIEs, and Japan.	Welfare effects of East Asian FTA and APEC FTA, and global liberalization scenarios from perfectly-competitive model (EV as % of GDP under each scenario): • ASEAN (0.54, 0.92, 1.41) • PRC (0.45, 1.40, 1.72) • Japan (0.02, 0.97, 1.08) • Newly Industrialized Economies (1.12, 3.72, 3.75) • Rest of the world (-0.02, -0.06, 0.33) • USA (-0.03, 0.13, 0.15) Welfare effects of East Asian FTA, APEC FTA, and global liberalization scenarios from the imperfectly-competitive model (EV as % of GDP under each scenario): • ASEAN (3.49, 3.06, 2.36) • PRC (6.68, 3.07, 1.98) • Japan (-2.40, 2.71, 2.19) • Newly Industrialized Economies (7.58, 13.35, 12.78) • Rest of the world (-0.15, -0.29, 1.35) • USA (-0.13, 0.42, -0.04)

Study	Model and Baseline	Parameters and Assumptions	Impact of FTA Scenarios
Urata and Kiyota (2003)	GTAP Model Base year of 1997	Uses GTAP database (version 5); data disaggregated into 20 countries and 21 sectors. Assumes removal of tariff and non-tariff barriers among East Asian economies. Notes: East Asia FTA covers all East Asian countries and economies.	Estimated effects of an East Asian FTA (EV as % of GDP): • Thailand (12.54) • Viet Nam (6.61) • Singapore (3.69) • PRC (0.64) • Japan (0.19) • USA (-0.09) • EU (-0.02)
Gilbert, Scollay and Bora (2004)	GTAP Model Base year of 1997	Uses the pre-release version of GTAP database (version 5); data disaggregated into 26 regions and 20 commodities. Assumes removal of all import tariffs on a preferential basis between members, with each member maintaining its own initial extra-RTA tariffs. Notes: APEC FTA assumes MFN liberalization.	Welfare effects of PRC-Japan-Korea FTA, ASEAN+3 FTA, and APEC FTA (EV as % of GDP under each scenario): • Thailand (-0.2, 1.6, 1.0) • Viet Nam (-0.6, 3.1, 4.8) • Singapore (-0.2, 2.5, 1.9) • PRC (0.0, 0.0, 0.2) • Japan (0.1, 0.1, 0.4) • Korea (0.7, 0.7, 0.7) • USA (0.0, 0.0, 0.0) • EU (0.0, 0.0, 0.1)
Lee, Roland-Holst and van der Mensbrugghe (2004)	LINKAGE Model Base year of 1997	Uses the GTAP database (version 5.2); data disaggregated into 9 regions and 18 sectors. Assumes gradual removal of bilateral tariffs and export subsidies of the relevant sectors among the member countries over the period 2005-2010. Notes: ASEAN countries include Indonesia, Malaysia, Philippines, Singapore, Thailand, and Viet Nam only. ASEAN+3 does not include Taipei,China.	Welfare effects of ASEAN+3 FTA in 2015 (EV in $ Bn): • ASEAN countries (41.8) • PRC and Hong Kong,PRC (102.3) • Taipei,China (-5.4) • Japan (66.3) • Korea (30.1) • USA (-0.9) • EU-15 (6.8) • Rest of the world (-9.8)

Study	Model and Baseline	Parameters and Assumptions	Impact of FTA Scenarios
Zhang and others (2006)	GTAP Model Base year of 2001	Uses the GTAP database (version 6); data disaggregated into 87 regions and 57 sectors. Assumes elimination of all tariff and non-tariff barriers on trade in goods and some trade facilitation programs for the member countries. Notes: FTA scenarios assume tariff and NTB elimination for goods, and trade facilitation.	East Asian FTA would increase overall GDP of East Asian countries by 1.2% and economic welfare by $104.6 billion. Welfare effects of East Asian FTA (EV in $ Bn): • ASEAN countries (37.6) • PRC, Japan, and Korea (66.9) • ASEAN+3 (104.6)
Bandara and Yu (2003)	GTAP Model Base year of 1997	Uses 1997 GTAP database; data disaggregated into 12 regions and 17 industries. Performs two opposite policy simulations: 1) unilateral trade liberalization scenario assumes removal of all import tariff and export duties of all South Asian countries; and 2) preferential trade liberalization scenario assumes removal of all tariffs and export duties between South Asian countries but not between other regions. Notes: SAFTA scenario assumes 100% tariff cut as opposed to actual tariff concessions given by SAFTA members during the final round of tariff reductions in 1998. GTAP database disaggregates South Asia into four regions: India, Sri Lanka, Bangladesh, and rest of South Asia.	Welfare effects under unilateral trade liberalization scenario (EV in $ Mn): • ASEAN (94.6) • Japan (438.7) • India (2331.9) • Sri Lanka (83.9) • Bangladesh (173.9) • Rest of South Asia (-511.1) • NAFTA (2509.0) • EU (1125.1) Welfare effects under SAFTA, South Asia-ASEAN, and multilateral trade liberalization scenario (EV in $ Mn under each scenario): • ASEAN (-70.1, 3039.5, 7324.3) • Japan (-156.6, -33.3, 33638.1) • India (756.2, -1313.4, 3521.3) • Sri Lanka (4.1, -29.8, 274.4) • Bangladesh (-41.2, -151.9, 288.9) • Rest of South Asia (52.3, -791.1, 96.7) • NAFTA (-113.9, -42.2, -6091.5) • EU (-169.9, -396.4, 9097.4)

Study	Model and Baseline	Parameters and Assumptions	Impact of FTA Scenarios
Mohanty and Roy (2004)	GTAP Model Base year of 1997	Uses GTAP database (version 5); data disaggregated into 14 regions and 26 sectors. Simulates three scenarios: 1) removal of tariff and non-tariff barriers between Japan, ASEAN, PRC, India, and Korea (JACIK) countries; 2) free movement of investments within JACIK countries; and 3) free movement of investments and skilled labor within JACIK countries. Notes: GTAP database disaggregates South Asia into two regions: India and rest of South Asia. ASEAN includes Indonesia, Malaysia, Philippines, Singapore, and Thailand only.	Welfare effects under Scenario 1, 2, and 3 (EV in $ Mn): • Thailand (4409.8, 4594.7, 5799.7) • Singapore (2292.5, 1786.7, 1741.4) • Indonesia (3760.3, 3993.9, 6968.1) • PRC (6326.5, 7100.0, 16327.7) • Japan (107625.7, 111807.0, 150695.2) • Korea (13042.9, 13317.4, 14075.7) • India (6971.3, 7378.6, 9937.0) • JACIK (147417.6, 153155.7, 210440.9) • Rest of South Asia (*not shown*)
Plummer and Wignaraja (2006)	GEMAT Model Base year of 2001	Uses GTAP database (version 6); data disaggregated into 19 countries and 14 sectors. Assumes removal of tariff barriers between FTA members. Notes: ASEAN includes Indonesia, Malaysia, Philippines, Singapore, Thailand, and Viet Nam only.	Welfare effects of multiple bilateral FTAs in Asia, Asia-wide FTA, and APEC FTA scenarios (EV in $ Mn under each scenario): • ASEAN (8869, 10907, 8341) • Northeast Asia (-1219, 35713, 56734) • Rest of Asia (-101, 1355, -1560) • USA (-1371, 3263, 12035) • EU (-1021, -1413, -3047)

Study	Model and Baseline	Parameters and Assumptions	Impact of FTA Scenarios
Siriwardana (2003)	GTAP Model Base year of 1997	Uses GTAP database (version 5); data disaggregated into 11 regions and 20 sectors. Performs two liberalization scenarios: 1) assumes removal of all bilateral tariffs between South Asian countries but not between other countries; 2) creation of customs union by eliminating all tariffs between South Asian regions and adopting common external tariff against all other countries in the world. <u>Notes</u>: GTAP database disaggregates South Asia into four regions: India, Sri Lanka, Bangladesh, and rest of South Asia.	Welfare effects under South Asia FTA and South Asia Customs Union scenarios (EV in $ Mn): • PRC (-680.55, -743.40) • Japan (-4008.51, -4111.84) • India (3046.62, 4995.84) • Sri Lanka (261.96, 1466.11) • Bangladesh (90.47, 1043.15) • Rest of South Asia (579.83, 4062.39) • NAFTA (-6434.40, -24333.60) • EU (-6434.40, -18950.50)
Bchir and Fouquin (2006)	MIRAGE Model	Uses GTAP database (version 6). Performs two policy experiments: 1) assumes that ASEAN removes its tariffs bilaterally with PRC, India, Japan, and Korea (with and without exclusion of sensitive products); and 2) assumes removal of tariffs between ASEAN, PRC, India, Japan, and Korea (with or without exclusion of sensitive products).	Welfare effects under bilateral agreements between ASEAN and PRC, India, Japan, and Korea in 2015 (EV as % change): • ASEAN (2.18) • PRC (-0.12) • Japan (0.18) • Korea (-0.40) • India (-0.32) • South Asia (-0.05) • USA (0.00) • EU-25 (-0.01) Welfare effects under a single global agreement between ASEAN and PRC, India, Japan, and Korea in 2015, (EV as %): • ASEAN (1.43) • PRC (-0.27) • Japan (0.41) • Korea (1.64) • India (-0.37) • South Asia (-0.12) • USA (0.00) • EU-25 (-0.02)

for Thailand and 6.6% for Vietnam to the lowest of 0.19% for Japan and 0.64% for the PRC. They find modest welfare loses for non-members of -0.02% for the EU, -0.09% for the USA and -0.29% for Australia/New Zealand. Also using a GTAP-based model, Gilbert *et al*. (2004) find that an East Asia FTA will produce higher welfare gains for members than a narrower PRC-Japan-Korea FTA indicating that broadening FTAs brings benefits. They report lower welfare gains from an East Asia FTA for Vietnam (3.1%) and Thailand (1.6%) than Urata and Kyota (2003). Most recently, Zhang and others (2006) report GTAP simulations confirming the common results that all members gain from an East Asian FTA. They estimate that such and FTA would increase the overall GDP of East Asian countries by 1.2% and economic welfare by $104.6 billion. From their LINKAGE CGE model, Lee *et al*. (2004) show significantly higher welfare gains from an East Asia FTA for PRC+Hong Kong (4%) and Japan (1.6%), notable gains for Korea (3.7%) and ASEAN as a group (4%) and welfare losses for the rest of the world of under -0.2%.

By comparison, the available studies suggest mixed views about the impact of an FTA involving only South Asian economies and one between selected East Asian and South Asia countries. Using GTAP, Siriwardena (2003) compares the effects of an FTA and a customs union for South Asian countries. He finds that the South Asian FTA scenario (with full trade liberalization internally) brings gains to all members and loses to non-members but that the customs union entails bigger gains for members as well as bigger loses to non-members. Not surprisingly perhaps, the region's largest and most competitive economy, India gains the most ($3.1 billion in the FTA scenario). However, Bandara and Wu (also using GTAP) find lower gains for India ($756 million) from a South Asia FTA scenario, negligible gains for Sri Lanka and the rest of South Asia, and losses for Bangladesh. Likewise, Bandara and Yu (2003) provide a pessimistic assessment of an ASEAN-South Asia FTA. ASEAN as a whole is likely to see modest gains ($3 billion) and all the South Asian economies including India incur welfare loses. Non-members (e.g. EU and USA) also lose.

With an opposite result, Mohanty, Pohit and Roy (2004) argue that an East Asia-India FTA (i.e., ASEAN+3 and India FTA which they call JACIK) will bring gains to members of between $147.4 billion (liberalization of trade barriers only scenario) to $210.4 billion (liberalization of barriers to trade, investment and labor). In their scenarios all members benefit, with Japan witnessing the largest gains ($108 billion), PRC and India (under $7 billion each) and Philippines the least ($1 billion). Interestingly, the authors do not provide details of how the normally technically difficult barriers to investment and labor are incorporated into their model. Nor do they provide estimates for the effects of JACIK on non-members. The work of Bchir and Fouquin (2006) on an East Asia-India FTA, relying on the MIRAGE CGE (also built around GTAP), suggest that non-

members see small loses ranging from -0.02% for the EU -0.12 for the rest of South Asia and -0.16 for Russia. Interestingly, they also find that Asia's giant economies lose from an East Asia-India FTA while ASEAN, Japan and Korea gain. The losers include both the PRC (-0.27%) and India (-0.37).

Finally, drawing on a GEMAT CGE model (a variant of the LINKAGE model), Plummer and Wignaraja (2006) investigate the relative economic effects of various possible FTA scenarios – a fragmented scenario of bilateral FTAs and ASEAN to depict the current East Asian policy reality, an Asia-wide FTA (including Northeast Asia, ASEAN and South Asia) and an APEC FTA. Compared to the others, the fragmented FTA scenario leads to lower welfare for all. An Asia-wide FTA generates gains of $48 billion for the region and all members gain but Northeast Asian economies gain disproportionately. Meanwhile, the APEC FTA generates larger gains of 64 billion for Asia. As expected, Northeast Asia and US members gain but non-members like South Asia and the EU lose.

3. THE MODEL AND DATA

We turn to a brief overview of the global CGE model used here. As is standard in the literature, the model is characterized by a global input-output structure (based on regional and national input-output tables) that explicitly links industries in a value added chain from primary goods, over continuously higher stages of intermediate processing, to the final assembling of goods and services for consumption. Inter-sectoral linkages are direct, like the input of steel in the production of transport equipment, and indirect, via intermediate use in other sectors. The model captures these linkages by modeling firms' use of factors and intermediate inputs. In terms of structure, the model is a version of the basic one employed by Francois, van Meijl, and van Tongeren (2005) to assess the Doha Round. The data, however, reflect a more current (and projected) economic landscape. The most important aspects of the model can be summarized as follows: (i) it covers all world trade and production; (ii) it includes intermediate linkages between sectors; (iii) and it allows for trade to affect capital stocks through investment effects. The last point means we model medium to long-run investment effects. (See Francois, McDonald and Nordstrom 1999.)

3.1 MODEL DATA AND THE BENCHMARK

Our data come from a number of sources. Data on production and trade are based on national social accounting data linked through trade flows (see Reinert and Roland-Holst 1997). These social accounting data are drawn directly from the GTAP dataset, version 6.3. (Dimaranan and McDougall, 2002). The GTAP

version 6 dataset is benchmarked to 2001, and includes detailed national input-output, trade, and final demand structures. The basic social accounting and trade data are supplemented with trade policy data, including additional data on tariffs and non-tariff barriers. We have projected the database to 2007, and through to 2017, using macroeconomic projections from the World Bank (circulated through the GTAP consortium) combined with macroeconomic outlook data from the IMF.[2]

The 2007 projection includes the phase-out of the Agreement on Textiles and Clothing (ATC) quotas in 2005, as well as remaining WTO commitments under the Doha Round and the enlargement of the EU from 15 to 27 Members. The data on tariffs are taken from the WTO's integrated database, with supplemental information from the World Bank's recent assessment of detailed pre- and post-Uruguay Round tariff schedules and from the UNCTAD/World Bank WITS dataset. All of this tariff information has been mapped to activity (GTAP) sectors. Services trade barriers are based on the gravity model estimates described in the annex. These estimates are also discussed in the next section. We also work with the schedule of PRC WTO accession commitments. While the basic GTAP dataset is benchmarked to 2001, and reflects applied tariffs actually in place in 2001, we of course want to work with a representation of a post-Uruguay Round world. We also want to include the accession of PRC, the enlargement of the EU, as part of the baseline. Our 2017 projection is based on the 2007 policy baseline. The social accounting data have been aggregated to 35 sectors and 36 regions. The sectors and regions for the 35x36 aggregation of the data are given in Table 2.

3.2 THEORETICAL STRUCTURE

We turn next to the basic theoretical features of the model. In all regions there is a single representative, composite household in each region, with expenditures allocated over personal consumption and savings (future consumption) and over government expenditures. The composite household owns endowments of the factors of production and receives income by selling them to firms. It also receives income from tariff revenue and rents accruing from import/export quota licenses (when applicable). Part of the income is distributed as subsidy payments to some sectors, primarily in agriculture.

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[2] Projection involves imposing changes in labor force and capital stocks, as well as World Bank/IMF projections for national income growth. A set of Hicks-neutral productivity parameters are then solved for, consistent with these macroeconomic projections. Relevant policy changes (like tariff changes linked to China's accession to the WTO, and the ATC phaseout) are also included in the database projections.

TABLE 2.

Model sectoring scheme

Regions	Sectors
Australia	Grains
New Zealand	Horticulture
Other Oceania	Oil Seeds
PRC	Sugar
Hong Kong, China	Cotton
Japan	Beef
Korea	Dairy
Taipei,China	Vegetable Oils
Other East Asia	Other Primary Agriculture
Indonesia	Other Processed Foods
Malaysia	Beverages & Tobacco
Philippines	Forestry
Singapore	Fisheries
Thailand	Mining
Vietnam	Textiles
Other Southeast Asia	Clothing
Bangladesh	Leather
Cambodia	Paper, Pulp, Printing
India	Petrochemicals
Pakistan	Chemicals, Rubber, Plastics
Sri Lanka	Iron and Steel
Other South Asia	Non-Ferrous Metals
Central Asia	Motor Vehicles
Canada	Electrical Machinery
United States	Other Machinery
Mexico	Other Manufactures
Latin America	Utilities
EU27	Construction
EFTA	Trade Services
Turkey	Transport Services
Russia	Communications
Other Europe	Financial Services
North Africa & Middle East	Insurance
South Africa	Other Business Services
Sub-Saharan Africa	Other Services

On the production side, in all sectors, firms employ domestic production factors (capital, labor and land) and intermediate inputs from domestic and foreign sources to produce outputs in the most cost-efficient way that technology allows. Perfect competition is assumed in production sectors, where products from different regions are assumed to be imperfect substitutes in accordance with the so-called "Armington" assumption.

Prices on goods and factors adjust until all markets are simultaneously in (general) equilibrium. This means that we solve for equilibriums in which all markets clear. While we model changes in gross trade flows, we do not model changes in net international capital flows. Rather our capital market closure involves fixed net capital inflows and outflows.   This does not preclude changes in gross capital flows.[3] To summarize, factor markets are competitive, and labor and capital are mobile between sectors but not between regions. All primary factors, labor, land and capital are fully employed within each region.

We also include a dynamic link, whereby changes in investment, following from policy changes, lead to changes in installed capital stocks and hence ultimately to production and trade volumes. This is based on the Solow model-based approach as outlined in Francois, McDonald, and Nordstrom (1999). Conceptually, as we are working with a projected baseline, these dynamic effects can be though of as including induced investment effects along an alternative path to the 2017 benchmark, wherein we have implemented the policy changes in time for investment effects to be realized in the 2017 equilibrium.

4. POLICY LANDSCAPE, SCENARIOS, AND DISCUSSION

We next turn to our analysis of regional integration initiatives between East Asia and South Asia.   This includes a broad overview of trade structure and policy in the region, our scenarios, and the impact of those scenarios on our baseline.

4.1 TRADE AND TRADE POLICY IN THE REGION

The regional share of international trade in Asia varies widely across regions. This was true in 2001, and also holds in our projected 2007 and 2017 benchmarks. Figure 1 provides a picture of this pattern for the countries of the region, while more detailed information is provided in Tables 3 and 4. The countries of East Asia (including Northeast and Southeast Asia) are in general much more integrated, in a regional sense, than are the countries of South Asia. Indeed, the difference is striking. For most countries in the region, more than 40% of their exports are destined for Asian markets (see Figure 1). From Table 3, it is clear that most of this trade is destined for East Asia. Indeed, for many countries in the region, this share is projected to rise. Oceania (primarily Australia and New Zealand), while not technically part of the region geographically, is closely tied economically, with the vast majority of its exports going to the region. With projected economic growth through 2017, this dependence only increases.

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[3] See the Hertel el al (1997) discussion on macroeconomic closure, especially in this class of model. The present approach facilitates welfare analysis.

TABLE 3

Direction of Exports

	2001		2007		2017	
	East Asia	South Asia	East Asia	South Asia	East Asia	South Asia
Australia	0.460	0.029	0.499	0.037	0.614	0.059
New Zealand	0.336	0.013	0.372	0.019	0.440	0.029
Other Oceania	0.336	0.008	0.360	0.008	0.425	0.008
China	0.365	0.014	0.348	0.013	0.336	0.012
Hong Kong, China	0.389	0.014	0.422	0.013	0.447	0.012
Japan	0.379	0.010	0.388	0.009	0.402	0.009
Korea	0.409	0.019	0.418	0.017	0.413	0.015
Chinese Taipei	0.431	0.016	0.446	0.016	0.463	0.016
Other East Asia	0.267	0.015	0.293	0.015	0.354	0.012
Indonesia	0.482	0.038	0.460	0.036	0.491	0.040
Malaysia	0.470	0.034	0.486	0.035	0.510	0.045
Philippines	0.472	0.004	0.478	0.004	0.461	0.004
Singapore	0.470	0.039	0.491	0.035	0.506	0.029
Thailand	0.434	0.021	0.442	0.019	0.459	0.016
Vietnam	0.417	0.005	0.438	0.005	0.465	0.004
Cambodia	0.145	0.006	0.165	0.006	0.155	0.006
Other Southeast Asia	0.527	0.075	0.548	0.060	0.596	0.041
Bangladesh	0.068	0.014	0.083	0.016	0.073	0.015
India	0.206	0.039	0.216	0.037	0.249	0.032
Pakistan	0.165	0.042	0.126	0.032	0.110	0.028
Sri Lanka	0.100	0.031	0.104	0.033	0.079	0.030
Other South Asia	0.127	0.205	0.120	0.222	0.122	0.309

Note: "East Asia" in the table includes both Northeast Asia (PRC, Japan, Taiwan, Korea) and Southeast Asia.

In contrast to East Asia, South Asia economies are much less closely tied to their own region. Trade shares with Asia are generally well below 30 percent. From Tables 3 and 5, it is also clear that most of this trade is not actually with South Asia. Ironically, while there have been regional initiatives in South Asia, and not so much between South and East Asia, the bulk of South Asian regional exports go to East Asia rather than to South Asia. These results point to both a relatively low degree of integration within the region, and also to the potential for gains from liberalization initiatives that span the two sub-regions.

Table 5 provides a breakdown of MFN protection as of 2004/5 (from the WITS database[4]) on a trade-weighted basis. This provides a sense of the scope for gains from liberalization in merchandise trade. In general, import protection is higher in South Asia than in East Asia. This explains part of why East Asian trade relationships are deeper, and also why South Asian trade is also biased to

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[4] Available at http://wits.worldbank.org.

TABLE 4

Source of Imports

	2001		2007		2017	
	East Asia	South Asia	East Asia	South Asia	East Asia	South Asia
Australia	0.391	0.011	0.415	0.013	0.468	0.018
New Zealand	0.266	0.011	0.291	0.011	0.366	0.016
Other Oceania	0.303	0.010	0.326	0.012	0.398	0.016
China	0.537	0.010	0.532	0.011	0.516	0.015
Hong Kong, China	0.634	0.013	0.639	0.016	0.651	0.024
Japan	0.380	0.010	0.407	0.011	0.453	0.012
Korea	0.400	0.011	0.404	0.011	0.409	0.012
Chinese Taipei	0.511	0.007	0.528	0.007	0.567	0.010
Other East Asia	0.618	0.026	0.619	0.027	0.628	0.034
Indonesia	0.491	0.021	0.493	0.022	0.504	0.025
Malaysia	0.574	0.015	0.587	0.017	0.614	0.021
Philippines	0.534	0.010	0.531	0.010	0.561	0.017
Singapore	0.542	0.013	0.585	0.015	0.656	0.023
Thailand	0.527	0.017	0.545	0.018	0.575	0.026
Vietnam	0.518	0.016	0.521	0.017	0.536	0.021
Cambodia	0.844	0.011	0.847	0.012	0.832	0.015
Other Southeast Asia	0.755	0.020	0.768	0.022	0.775	0.026
Bangladesh	0.502	0.137	0.501	0.140	0.498	0.160
India	0.278	0.013	0.281	0.014	0.286	0.016
Pakistan	0.280	0.033	0.278	0.031	0.258	0.031
Sri Lanka	0.437	0.115	0.440	0.118	0.457	0.139
Other South Asia	0.353	0.187	0.347	0.193	0.359	0.217

Note: "East Asia" in the table includes both Northeast Asia (PRC, Japan, Taiwan, Korea) and Southeast Asia.

East Asia. Of course, the relative size of the economies in the two regions also helps to explain this regional bias.

Table 6 provides a similar picture, only for services. This is based on our estimates of services trade barriers for cross-border trade, as discussed in the annex. Unlike goods, in services there is not that much regional difference in the pattern of protection. In general, our estimates are that protection is much higher for goods than for services, and that this holds for countries in East Asia as well as South Asia.

The broad picture that emerges from this overview of the trade and trade protection data is that East Asia is more integrated than South Asia, that South Asia itself has deeper trade ties with East Asia than with itself, and that import protection for merchandise explains part of this pattern. We now turn to an assessment of a set of stylized regional integration schemes.

FIGURE 1

**Exports to Asia as a Share of Total Exports
goods and services -- baseline projections**
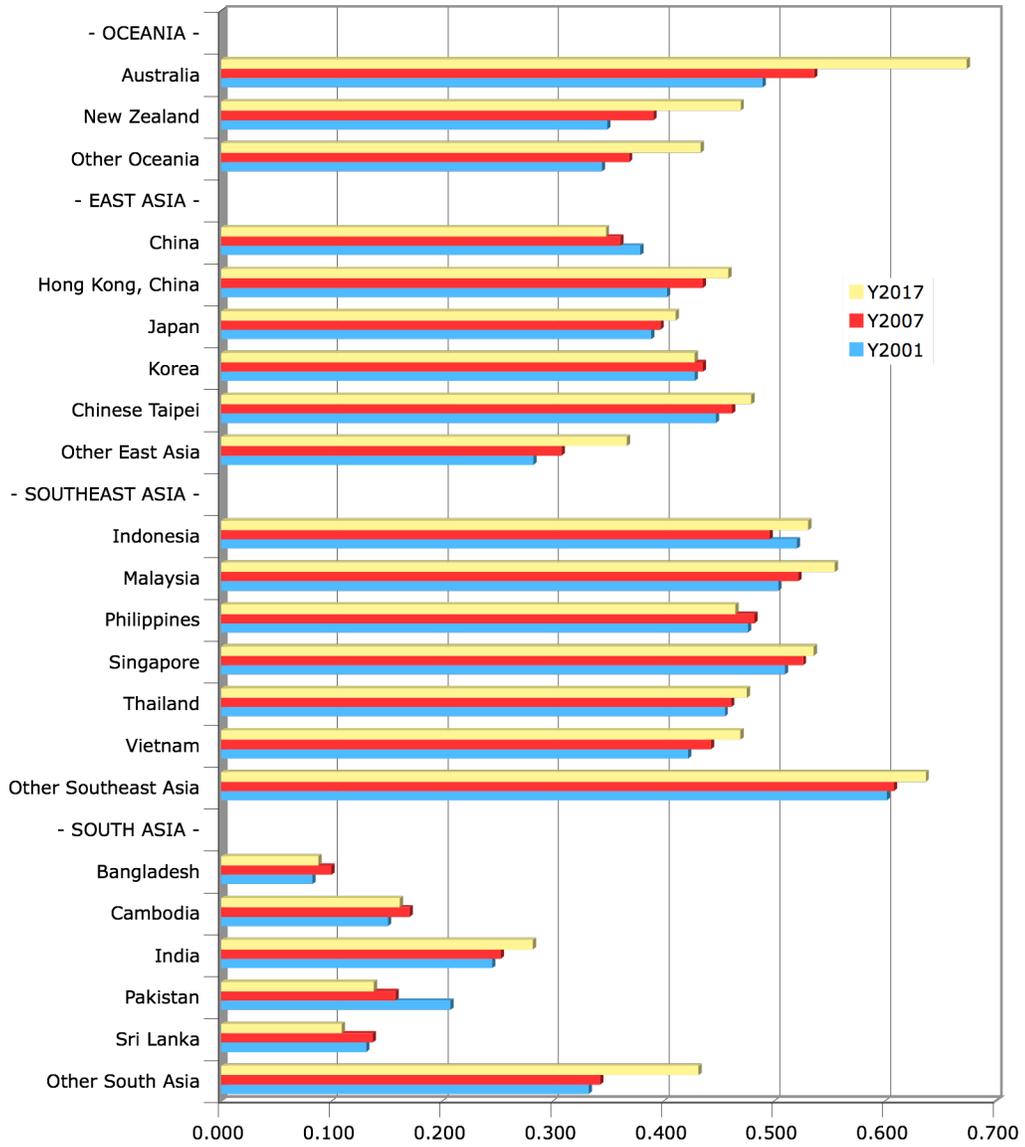
TABLE 5

MFN protection, 2004-5

	Average MFN tariff	MFN tariff (less energy)	Energy share of imports
Bangladesh	55.8	54.9	0.1
China	4.9	5.3	0.1
India	13.9	15.4	0.3
Sri Lanka	7.3	7.9	0.1
Nepal	14.6	14.7	0.2
Pakistan	12.2	13.1	0.2
Singapore	0.0	0.0	0.2
Thailand	5.4	6.5	0.2

source: WITS integrated database.

TABLE 6

Services Trade Barriers

	PRODUCER SERVICES	OTHER NON-TRADE SERVICES
China	25.2	11.2
Hong Kong, China	0	0
Japan	27.0	20.6
Korea	15.7	20.6
Chinese Taipei	14.3	10.7
Other East Asia	11.9	10.8
Indonesia	12.5	12.2
Malaysia	8.3	9.3
Singapore	0.0	0.0
Philippines	8.3	12.8
Thailand	6.6	5.6
Vietnam	20.8	36.1
Cambodia	20.8	36.1
Other Southeast Asia	46.3	46.4
Bangladesh	25.2	29.0
India	26.0	32.6
Pakistan	30.0	34.5
Sri Lanka	22.0	20.9
Other South Asia	7.4	9.4

source: author estimates

4.2 SCENARIOS

In most of what follows we examine three cores scenarios as follows:

- **Scenario 1 – An ASEAN+3 FTA** - involves a regional free trade agreement between the members of the ASEAN block and PRC, Japan, and Korea (i.e. an East Asia FTA).
- **Scenario 2 – ASEAN+3 and India-FTA** – extends Scenario 1's free trade agreement to include India (i.e an East Asia and India FTA). Hence, South Asia's largest economy is included but the rest of South Asia is excluded.
- **Scenario 3 – ASEAN+3 and South Asia FTA** extends Scenario 2's free trade agreement further to include the rest of South Asia and implements full free trade across South Asia itself (i.e. an East Asia-South Asia FTA).

We will also (in less detail) look at sub-regional scenarios involving South Asia. All three of the core scenarios involve free trade in merchandise goods (i.e. tariffs as represented in Table 5), free trade in services (based on estimates in Table 6), and trade cost reductions equal to 2.5 percent of the cost of trade. Trade cost reductions can follow from trade facilitation measures that streamline the administrative cost of clearing goods across borders. Recent estimates place these costs at anywhere from 6 percent to 30 percent of the costs of goods traded (Francois, Hoekman and Manchin 2006; Manchin and Pelkmans 2007: Manchin 2006). They can also follow from improvements to trade-related infrastructure. Indeed, recent estimates suggest that for North-South trade, variations in trade-related infrastructure explain more of the sample variations in goods trade than does trade policy itself (Francois and Manchin 2007). Table 7 reports estimates of the trade cost savings that would follow from a 1% and 5% improvement in the general quality of trade-related infrastructure, based on Francois, Manchin, and Pelkmans (2007). From the estimates in the table, a 5% improvement would yield a 2.5% trade cost savings, on average. Broadly speaking, the 2.5% trade cost reduction in our scenarios is meant to capture a regional trade initiative that includes both administrative improvements (so that goods move more quickly and with less paperwork) and some investment in physical infrastructure in the poorer countries in the region. Japan, in particular, has emphasized the infrastructure potential of regional schemes. From Manchin and Pelkmans (2006), this seems a conservative estimates of the benefits from a simple streamlining of administrative barriers in the region, let alone other trade cost reduction measures.

TABLE 7

Trade cost impact of infrastructure improvement

	trade cost elasticities,		Total: for improvement of	
	commun-ications	transport	1%	5%
Full sample	0.19	0.19	0.37	1.87
North-South Sample	0.15	0.28	0.43	2.15
country estimates				
Australia	0.25	0.06	0.32	1.58
Bangladesh	0.18	0.55	0.73	3.65
Cambodia	0.18	0.55	0.72	3.62
China	0.19	0.48	0.67	3.36
Hong Kong, China	0.25	0.06	0.31	1.55
India	0.18	0.53	0.71	3.56
Indonesia	0.20	0.43	0.62	3.12
Japan	0.27	-0.02	0.25	1.23
Korea, Rep.	0.24	0.14	0.38	1.90
Lao PDR	0.18	0.53	0.71	3.57
Malaysia	0.22	0.26	0.48	2.40
New Zealand	0.25	0.09	0.34	1.70
Pakistan	0.18	0.50	0.69	3.45
Philippines	0.20	0.41	0.61	3.04
Singapore	0.25	0.05	0.31	1.54
Thailand	0.21	0.31	0.53	2.63
Vietnam	0.18	0.57	0.74	3.71

source: Francois, Manchin, and Pelkmans-Baloing (2007)

4.3 BROAD WELFARE AND TRADE EFFECTS

Tables 8-17 summarize the results of our three core experiments. All results are reported relative to the 2017 baseline simulation. Broadly speaking, the scenario with the widest regional FTA coverage implies global income gains of $260.9 billion in 2001 dollars, or approximately 0.5 percent of global income. This follows from a $263.9 billion gain for insiders, and a loss of $3 billion for outsiders. Interestingly, for the narrower FTAs there are losses for South Asian economies in the range of -0.3 to -0.5 percent of GDP, while for regional outsiders in all cases the extra-regional losses are generally quite small. This suggests a pattern that we will see in the sections on sector effects and on regional direction of trade, of apparent dominance of the results by trade creation and gains from trade, rather than trade diversion and losses, under our broad FTA scenario.

TABLE 8

National Income Effects,
compared to 2017 baseline in millions of constant 2001 dollars, and in percent

	ASEAN +3		ASEAN +3, India		ASEAN+3, SASIA	
	millions of dollars	percent	millions of dollars	percent	millions of dollars	percent
Australia	-2,376	-0.4	-2,946	-0.5	-2,987	-0.5
New Zealand	-216	-0.3	-183	-0.2	-169	-0.2
Other Oceania	-8	0.0	13	0.1	7	0.0
PRC	41,502	1.3	43,289	1.3	43,454	1.3
Hong Kong, China	-1,051	-0.3	-1,713	-0.5	-1,811	-0.6
Japan	74,825	1.5	78,080	1.6	78,650	1.6
Korea	49,393	6.2	51,545	6.5	52,100	6.5
Taipei,China	-10,493	-2.0	-10,770	-2.1	-10,997	-2.1
Other East Asia	-105	-0.2	-115	-0.3	-161	-0.4
Indonesia	7,884	2.6	8,818	2.9	9,090	3.0
Malaysia	10,391	5.5	12,014	6.4	12,376	6.6
Philippines	3,177	2.6	3,521	2.9	3,495	2.9
Singapore	7,943	4.8	9,285	5.6	9,717	5.9
Thailand	26,728	12.1	28,220	12.8	28,534	12.9
Vietnam	5,293	7.4	5,449	7.6	5,428	7.5
Other Southeast Asia	661	0.6	483	0.4	374	0.3
Bangladesh	-297	-0.3	-355	-0.3	1,874	1.7
Cambodia	107	1.2	106	1.2	79	0.9
India	-2,371	-0.3	17,779	2.2	18,240	2.3
Pakistan	-824	-0.5	-862	-0.6	298	0.2
Sri Lanka	-117	-0.4	-123	-0.4	631	2.0
Other South Asia	-12	0.0	-240	-0.6	1,380	3.7
Central Asia	-159	-0.1	-165	-0.1	-181	-0.1
Canada	1,796	0.2	2,137	0.2	2,295	0.2
United States	-4,966	0.0	-3,214	0.0	-1,924	0.0
Mexico	2,935	0.3	3,982	0.4	4,116	0.4
Latin America	-2,082	-0.1	-1,423	-0.1	-1,905	-0.1
EU27	6,786	0.1	9,248	0.1	10,300	0.1
EFTA	1,089	0.2	1,211	0.2	1,309	0.3
Turkey	-538	-0.2	-468	-0.2	-652	-0.2
Russia	-197	0.0	-165	0.0	-126	0.0
Other Europe	-52	-0.1	-61	-0.1	-74	-0.1
North Africa & Middle East	-1,083	-0.1	-1,275	-0.1	-2,016	-0.1
South Africa	-44	0.0	-284	-0.2	-330	-0.2
Sub-Saharan Africa	396	0.1	544	0.1	493	0.1
TOTAL	213,919	0.4	251,363	0.5	260,907	0.5

TABLE 9

Export Effects, % of 2017 baseline exports

	ASEAN +3	ASEAN +3, India	ASEAN+3, SASIA
Australia	-0.91	-1.03	-1.06
New Zealand	-0.43	-0.45	-0.47
Other Oceania	-0.93	-1.03	-1.11
PRC	12.38	13.14	13.19
Hong Kong, China	-0.80	-0.96	-1.00
Japan	7.08	7.31	7.34
Korea	12.87	13.32	13.38
Taipei,China	-2.70	-2.72	-2.74
Other East Asia	-1.67	-1.74	-2.18
Indonesia	7.37	8.15	8.42
Malaysia	6.04	6.79	6.95
Philippines	7.56	8.41	8.43
Singapore	2.64	2.89	3.03
Thailand	22.31	23.57	23.85
Vietnam	34.07	35.28	35.36
Other Southeast Asia	4.10	5.30	4.78
Bangladesh	-0.89	-1.14	51.65
Cambodia	7.55	7.62	6.80
India	-1.01	21.36	22.73
Pakistan	-1.26	-1.34	7.03
Sri Lanka	-0.45	-0.44	5.84
Other South Asia	-0.25	-2.16	19.86
Central Asia	-0.34	-0.39	-0.42
Canada	0.02	0.04	0.04
United States	-0.90	-0.95	-0.95
Mexico	0.58	0.74	0.76
Latin America	-0.34	-0.33	-0.38
EU27	-0.08	-0.08	-0.08
EFTA	-0.27	-0.27	-0.27
Turkey	-0.19	-0.16	-0.20
Russia	-1.05	-1.12	-1.15
Other Europe	-0.22	-0.25	-0.28
North Africa & Middle East	-0.87	-0.99	-1.10
South Africa	-0.38	-0.69	-0.75
Sub-Saharan Africa	-0.43	-0.49	-0.56
TOTAL	2.62	3.09	3.26

TABLE 10

Terms of Trade Effects, % change in export/import price ratio

	ASEAN +3	ASEAN +3, India	ASEAN+3, SASIA
Australia	-0.79	-1.19	-1.21
New Zealand	-0.17	-0.15	-0.12
Other Oceania	0.71	0.81	0.83
China	-1.29	-1.18	-1.17
Hong Kong	-0.21	-0.28	-0.33
Japan	2.86	2.95	2.95
Korea	1.65	1.75	1.79
Chinese Taipei	-1.78	-1.88	-1.93
Other East Asia	-0.28	-0.31	-0.52
Indonesia	-0.16	0.22	0.27
Malaysia	-0.20	0.11	0.16
Philippines	-1.06	-1.14	-1.16
Singapore	0.60	0.78	0.86
Thailand	-0.89	-0.91	-0.91
Vietnam	-1.87	-1.98	-2.07
Other Southeast Asia	0.01	0.50	0.66
Bangladesh	-0.64	-0.82	-6.18
Cambodia	-0.90	-1.04	-1.48
India	-0.90	-2.08	-2.29
Pakistan	-1.64	-1.82	-2.20
Sri Lanka	-0.49	-0.65	-0.18
Other South Asia	-0.08	-1.98	7.85
Central Asia	-0.03	-0.03	-0.03
Canada	0.24	0.26	0.27
United States	-0.44	-0.45	-0.43
Mexico	0.17	0.11	0.09
Latin America	-0.02	-0.09	-0.11
EU27	-0.06	-0.09	-0.09
EFTA	0.29	0.29	0.32
Turkey	-0.26	-0.29	-0.37
Russia	0.38	0.40	0.41
Other Europe	0.10	0.09	0.08
North Africa & Middle East	0.41	0.40	0.38
South Africa	0.02	-0.11	-0.14
Sub-Saharan Africa	0.48	0.53	0.52

In other words, while the narrower scenarios imply losses for the (South Asian) outsiders, a broad Pan-Asia initiative appears to imply only minimal third-country effects and substantial gains across the regional participants.

SCENARIO 1 – ASEAN+3 FTA. From Table 8, the ASEAN+3 FTA yields the bulk of the gains realized across all the scenarios for East Asia. This should not surprise us, given the trade shares reported earlier. In absolute terms, the primary winners from the ASEAN+3 scenario are Japan ($74.8 billion, or 1.5% of baseline 2017 GDP), Korea ($49.4 billion, or 6.2 percent), PRC ($41.5 billion, or 1.3%), and Malaysia ($10.4 billion, or 5.5%). Expressed as a percent of baseline income, the greatest gains under this scenario are realized in Thailand (12.1 percent), Vietnam (7.4 percent), and Korea (6.2 percent). The ASEAN+3 scenario also has negative implications, linked to trade diversion, for Australia (-0.4 percent of GDP), New Zealand (-0.3 percent) and Taipei,China (-2.0 percent of GDP).

Broad effects on trade can be seen in Tables 9-10. These tables report the impact on overall exports, as well as the impact on terms of trade. There are dramatic increases in exports for China (12.4 percent), Korea (12.9 percent), and Japan (7.1 percent). These results relate to a mix of improved market access and an opening up of own markets. In addition to the benefits to the biggest three East Asian economies, reductions in trade costs and services liberalization also benefit exporters across Southeast Asia, including Vietnam (34.1 percent), Thailand (22.3 percent), the Philippines (7.6 percent), and Indonesia (7.4 percent). The impact on the terms of trade is mixed across the region. The impact on outsider countries is mixed and generally negative, with India and Pakistan both seeing a drop in exports of over 1 percent and a worsening terms of trade. This also implies a drop of income of -0.3 percent in India and -0.5 percent in Pakistan.

SCENARIO 2 – ASEAN+3 AND INDIA FTA. When our ASEAN+3 FTA scenario is expanded to include India, some additional gains are visible for East Asia. Interestingly, China, Korea, and Japan collectively witness a $7.2 billion gain from the inclusion of India compared to an East Asia FTA. ASEAN economies also gain roughly $5.7 billion more than under the first scenario, with Thailand, Malaysia, and Singapore, benefiting somewhat more than others as a percent of 2017 baseline GDP (12.8 percent, 6.4 percent, and 5.6 percent). India gains strongly -- $17.8 billion per annum, or 2.2 percent of baseline income. Furthermore, the negative effects on its South Asian neighbors (like Pakistan and Sri Lanka) are magnified relative to the first scenario. For example, in "other South Asia," primarily Nepal, the loss is 0.6% of GDP. India's exports see a tremendous boost, equal to 21.3 percent of baseline exports, while again there is a negative impact on other sub-regional exporters. Again, the results illustrate the

consistent pattern of gains for insiders, and losses for Asian outsiders, and minimal negative effects outside (with the except of Australia and New Zealand).

Scenario 3 –ASEAN+3 and South Asia FTA. Finally, our broadest scenario includes a scenario bridging ASEAN+3 and all the South Asian Economies. Under this scenario, unlike the previous two, we see substantial gains for Sri Lanka (2.0 percent of base income), Bangladesh (1.7 percent of base income), India (2.3 percent of base income), and other South Asia, including Nepal (3.7 percent of base period income). Pakistan, with a trade pattern more oriented outside Asia, realizes smaller income gains (0.2 percent). Trade gains are comparable, from Tables 9 and 10. India and Pakistan are projected to see exports rise by 22.7 percent and 7.0 percent respectively. Bangladesh and Other South Asia see exports rise by 51.7 ands 19.9 percent, respectively. With the Other South Asia, there is also a slight deterioration in terms of trade under this last scenario.

In comparing the last scenario with the previous two, it is clear that while the broad FTA is the only one to consistently generate gains for South Asia, it matters little for most of the East Asian economies. With a few exceptions (Malaysia, Singapore, Thailand) their interests are in integration within the region. For the East Asian countries that geographically bridge the two regions, the gains are more substantial. As such, South Asian inclusion in the last scenario benefits not only South Asia, but also the countries that share the Malay Peninsula -- Malaysia, Singapore, and Thailand. It is also clear that to the East Asian parties in these scenarios, it is India component of the East Asia-South Asia scenario that really matters. This is true for both trade and income effects.

4.4 WAGE EFFECTS

The estimated wage effects for unskilled workers (see Table 11) can be taken as a rough measure of the distributional impacts of the three scenarios. The gains for unskilled workers are more or less linked to the welfare gains for members under the three scenarios. Accordingly, in the ASEAN+3 FTA scenario, Korea, Malaysia and Thailand - with relatively large income effects - witness relatively large unskilled wage increases. For fast growing poor countries like Cambodia and Vietnam, the effects are mixed – gains for Vietnam, losses for Cambodia. As a mature developed economy with limited unskilled labor, Japan experiences an increase in unskilled worker wages in line with income effects. The inclusion of India in the basic scenario sees a significant increase in the wages for unskilled Indian workers (in excess of 2.5%) compared to the ASEAN+3 scenario. In the ASEAN+3 and South Asia FTA scenario, India sees an improvement in wages for unskilled workers while Pakistan and Sri Lanka record drops. This is reversed in

TABLE 11

Labor Wage Effects in Asia-Pacific, % change

	ASEAN +3	ASEAN +3, India	ASEAN+3, SASIA
unskilled workers			
Australia	-0.69	-0.74	-0.75
New Zealand	-0.60	-0.56	-0.57
Other Oceania	-0.49	-0.50	-0.55
China	1.83	1.78	1.75
Hong Kong	-0.62	-0.80	-0.87
Japan	1.79	1.86	1.87
Korea	9.33	9.66	9.74
Chinese Taipei	-1.97	-2.05	-2.10
Other East Asia	-0.44	-0.51	-0.69
Indonesia	1.67	1.47	1.43
Malaysia	4.91	4.99	5.08
Philippines	0.65	0.68	0.64
Singapore	4.64	5.41	5.69
Thailand	11.07	11.84	12.00
Vietnam	7.96	8.19	8.27
Other Southeast Asia	-0.53	-1.45	-1.63
Bangladesh	0.44	0.18	3.01
Cambodia	-1.07	-1.09	-1.13
India	-0.19	2.67	2.78
Pakistan	-0.15	-0.15	0.66
Sri Lanka	-0.26	-0.37	1.91
Other South Asia	0.00	-0.32	-2.54
skilled workers			
Australia	-0.54	-0.62	-0.63
New Zealand	-0.39	-0.37	-0.37
Other Oceania	-0.31	-0.29	-0.32
China	1.42	1.37	1.34
Hong Kong	-0.37	-0.56	-0.59
Japan	1.87	1.94	1.95
Korea	9.24	9.56	9.63
Chinese Taipei	-1.98	-2.05	-2.08
Other East Asia	-0.23	-0.32	-0.42
Indonesia	1.65	1.39	1.37
Malaysia	4.70	4.66	4.71
Philippines	0.99	1.06	1.04
Singapore	4.74	5.51	5.78
Thailand	9.00	9.73	9.90
Vietnam	4.51	4.57	4.61
Other Southeast Asia	-0.55	-1.67	-1.80
Bangladesh	0.58	0.32	1.59
Cambodia	-2.48	-2.53	-2.37
India	-0.03	1.98	2.06
Pakistan	-0.01	-0.03	0.63
Sri Lanka	-0.16	-0.31	1.87
Other South Asia	0.07	0.00	-3.30

the broadest FTA scenario. As the membership base widens, we have gains for unskilled workers in India, Pakistan, Sri Lanka, and Bangladesh. These are in a range of 2 percent to 3 percent increases in real wages. Workers in other South Asia (i.e. Nepal) lose with the increased orientation of South Asia toward East Asia.

4.5 Trade and Production Effects by Sectors

We turn next to trade and output effects by sector. We will focus here on discussing our broadest scenario, though the tables include the narrower scenarios as well. The output and sector export results are reported in Tables 12-17. On the output side, it is worth noting that we consistently see increases in service sector output across the region for all FTA insiders. Indeed in some cases this expansion is quite dramatic – Vietnam (15.9 percent), Thailand (13.1 percent), Singapore (4.9 percent), Malaysia (4.7 percent), Philippines (4.0 percent). In some cases this follows a general increase in economic activity. From Table 8 this is clearly the case for Thailand, Vietnam, Singapore, and Malaysia. In other cases, especially India, this appears to follow from increased exports in services. Hence, we see service sector expansion across the region, driven by a mix of increased overall economic activity and also increased export opportunities for firms in the sector.

On the manufacturing side, the greatest positive effects are seen in Cambodia (59.3 percent increase in output), Vietnam (48.7 percent), and Sri Lanka (21.6 percent). In all these cases the expansion involves a mix of electrical machinery and metals production. There is overall contraction of manufacturing in Pakistan; Hong Kong, China; Bangladesh; and the regional outsiders (Taipei,China and other Northeast Asian economies). For the politically sensitive motor vehicle sector, there is some contraction (in the 2% to 5% range) in three of the four big Asian economies -- PRC, India, and Japan -- and expansion in the fourth – Korea. Thailand also sees a dramatic increase in production for export.

4.6 The Direction of Trade

We turn next to the impact of FTA implementation on the direction of trade. This is summarized in Tables 18 and 19. These tables summarize the Asia-orientation of exports both for insider countries (those that benefit from improved market access under the various scenarios) and the pure outsiders (those that are left out of market access gains.)   The first, fourth, and seventh column provide export shares in the 2017 baseline. The corresponding right-hand columns report the same shares after the experiments. This is followed in the third, sixth, and ninth columns by changes in these shares. The insider-outsider picture in the table provides a broad sense of the extent to which countries outside the region lose

TABLE 12

ASEAN+3 (PRC, Japan, Korea) FTA Experiment
Changes in Output Across Broad Sectors, %

	China	Hong Kong, China	Japan	Korea	Taipei,China
AGRICULTURE & FOOD	0.0	0.1	-0.9	11.4	0.5
OTHER PRIMARY	0.1	0.2	1.1	0.7	1.7
MANUFACTURES	2.1	-9.6	0.3	5.0	-2.2
textiles & clothing	1.3	-12.7	5.5	24.9	-16.5
metals	-1.6	-5.4	5.9	9.4	2.7
electrical machinery	13.0	-21.4	-8.6	2.8	-5.0
motor vehicles	-5.5	1.9	-0.6	1.1	0.4
SERVICES	2.3	0.5	1.1	5.5	-1.4

	Other East Asia	Bangladesh	Cambodia	India	Pakistan
AGRICULTURE & FOOD	-0.1	0.3	-4.4	0.2	2.3
OTHER PRIMARY	0.3	0.4	0.2	0.1	0.3
MANUFACTURES	-1.1	-0.6	52.3	-2.4	-0.8
textiles & clothing	-3.5	0.4	-2.3	-1.7	-1.7
metals	-0.7	0.3	-0.3	-0.9	2.9
electrical machinery	-7.4	-6.2	-18.1	-5.1	-1.6
motor vehicles	1.2	-2.0	-7.4	0.2	2.0
SERVICES	0.0	-0.1	2.8	-0.1	-0.1

	Sri Lanka	Other South Asia	Indonesia	Malaysia	Philippines
AGRICULTURE & FOOD	0.2	-0.1	-0.3	-1.5	0.1
OTHER PRIMARY	0.3	0.2	0.3	0.4	0.5
MANUFACTURES	-6.7	-0.9	2.2	2.5	10.4
textiles & clothing	-2.1	-3.3	1.8	-1.5	12.3
metals	1.0	2.4	-1.2	13.0	-2.5
electrical machinery	-23.3	-4.0	8.7	0.3	1.5
motor vehicles	0.8	0.3	-5.6	-3.8	-19.7
SERVICES	0.0	0.1	3.0	4.4	3.6

	Singapore	Thailand	Vietnam	Other S.East Asia
AGRICULTURE & FOOD	21.3	-0.4	-4.3	0.4
OTHER PRIMARY	0.1	0.4	0.3	0.2
MANUFACTURES	-3.1	7.3	48.6	-0.9
textiles & clothing	-17.3	1.3	61.3	-1.8
metals	-8.8	12.9	12.3	-5.1
electrical machinery	1.7	25.0	10.7	6.3
motor vehicles	-28.0	8.6	-28.6	-1.4
SERVICES	3.9	12.3	15.6	0.7

TABLE 13

**ASEAN+3 (PRC, Japan, Korea) FTA Experiment
Changes in Exports Across Broad Sectors, %**

	China	Hong Kong, China	Japan	Korea	Taipei,China
AGRICULTURE & FOOD	191.1	-1.6	71.8	170.7	6.1
OTHER PRIMARY	13.5	2.5	15.1	-14.7	16.7
MANUFACTURES	12.7	-18.5	6.1	10.0	-3.7
textiles & clothing	21.0	-18.2	82.3	37.6	-18.8
metals	12.5	-9.4	21.3	20.6	1.7
electrical machinery	18.3	-22.4	-5.7	3.9	-5.4
motor vehicles	21.9	-1.7	-1.0	0.9	-0.1
SERVICES	3.3	2.0	-4.2	-8.9	8.5

	Other East Asia	Bangladesh	Cambodia	India	Pakistan
AGRICULTURE & FOOD	3.7	10.5	-23.7	2.3	6.1
OTHER PRIMARY	1.7	-10.1	0.3	1.3	7.7
MANUFACTURES	-4.4	-2.3	47.9	-7.0	-7.8
textiles & clothing	-4.5	0.7	-0.2	-3.1	-5.8
metals	-7.7	2.9	-1.0	-4.4	3.5
electrical machinery	-13.3	-9.8	-10.1	-10.8	-10.2
motor vehicles	2.2	-14.6	-1.7	-1.1	4.1
SERVICES	3.2	2.7	-3.0	2.9	5.2

	Sri Lanka	Other South Asia	Indonesia	Malaysia	Philippines
AGRICULTURE & FOOD	-13.1	0.3	-9.2	-13.9	59.7
OTHER PRIMARY	20.8	0.9	-0.1	-8.5	-3.9
MANUFACTURES	-10.1	-4.7	4.7	3.2	13.1
textiles & clothing	-2.5	-5.2	3.9	1.1	13.6
metals	5.2	5.9	0.8	15.1	15.4
electrical machinery	-24.7	-11.7	10.9	0.3	1.4
motor vehicles	1.3	-1.4	-14.8	35.0	-32.0
SERVICES	3.6	1.0	1.9	-2.6	2.8

	Singapore	Thailand	Vietnam	Other S.East Asia
AGRICULTURE & FOOD	12.0	55.6	-32.5	10.7
OTHER PRIMARY	0.1	-40.4	-28.9	1.6
MANUFACTURES	-4.4	13.5	85.2	29.7
textiles & clothing	-21.3	10.5	85.0	1.4
metals	-11.3	14.9	-4.1	-7.2
electrical machinery	1.7	25.8	11.3	246.3
motor vehicles	-31.9	24.3	49.6	10.3
SERVICES	-0.5	0.2	3.3	4.9

TABLE 14

ASEAN+3+1 (PRC, Japan, Korea, India) FTA Experiment
Changes in Output Across Broad Sectors, %

	China	Hong Kong, China	Japan	Korea	Taipei,China
AGRICULTURE & FOOD	0.0	0.0	-0.9	11.6	0.5
OTHER PRIMARY	0.3	0.4	1.3	0.8	1.8
MANUFACTURES	2.2	-9.9	0.3	5.3	-2.2
textiles & clothing	1.6	-12.6	5.6	26.2	-17.4
metals	-1.2	-6.1	6.5	11.7	2.6
electrical machinery	13.1	-21.1	-8.8	2.3	-4.5
motor vehicles	-5.6	1.9	-0.6	1.3	0.5
SERVICES	2.3	0.2	1.1	5.8	-1.5

	Other East Asia	Bangladesh	Cambodia	India	Pakistan
AGRICULTURE & FOOD	-0.1	0.5	-4.1	0.7	2.3
OTHER PRIMARY	0.4	0.3	0.2	0.3	0.3
MANUFACTURES	-1.2	-1.2	-3.3	4.6	-0.6
textiles & clothing	-3.4	0.4	-2.4	-1.5	-1.5
metals	-1.2	-0.8	6.7	13.6	2.7
electrical machinery	-7.2	-6.4	-17.7	0.8	-1.1
motor vehicles	1.2	-1.9	-7.2	-2.7	2.2
SERVICES	-0.1	-0.1	2.9	3.9	-0.1

	Sri Lanka	Other South Asia	Indonesia	Malaysia	Philippines
AGRICULTURE & FOOD	0.3	0.1	-0.3	-1.9	0.2
OTHER PRIMARY	0.3	0.2	0.4	0.6	0.5
MANUFACTURES	-7.0	-6.0	2.6	6.4	7.3
textiles & clothing	-1.6	-3.0	2.5	3.8	12.4
metals	-20.1	-35.7	-1.8	25.1	-60.1
electrical machinery	-21.3	1.1	7.3	-0.2	-75.0
motor vehicles	0.7	1.3	-5.6	-3.4	-85.0
SERVICES	-0.2	0.4	2.9	4.6	4.0

	Singapore	Thailand	Vietnam	Other S.East Asia
AGRICULTURE & FOOD	21.7	0.5	-4.6	1.0
OTHER PRIMARY	0.3	0.5	0.4	0.2
MANUFACTURES	1.7	8.8	49.2	-2.7
textiles & clothing	-14.3	3.0	61.8	-3.4
metals	17.0	21.9	12.9	-7.6
electrical machinery	1.3	25.6	11.6	5.8
motor vehicles	-26.6	10.5	-28.1	-1.7
SERVICES	4.6	12.9	15.9	0.3

TABLE 15

**ASEAN+3+1 (PRC, Japan, Korea, India) FTA Experiment
Changes in Exports Across Broad Sectors, %**

	China	Hong Kong, China	Japan	Korea	Taipei,China
AGRICULTURE & FOOD	189.1	-1.5	72.7	171.3	6.1
OTHER PRIMARY	37.3	2.9	18.3	-14.8	16.6
MANUFACTURES	13.1	-18.6	6.3	10.4	-3.7
textiles & clothing	21.6	-18.2	82.9	39.5	-19.8
metals	22.0	-10.0	23.5	25.0	1.5
electrical machinery	18.3	-22.1	-6.2	3.4	-4.9
motor vehicles	21.6	-1.3	-1.0	1.1	-0.1
SERVICES	3.2	1.9	-4.2	-9.4	8.7

	Other East Asia	Bangladesh	Cambodia	India	Pakistan
AGRICULTURE & FOOD	4.4	8.3	-23.1	7.3	5.5
OTHER PRIMARY	1.6	-27.5	-3.4	17.0	6.7
MANUFACTURES	-4.5	-3.2	48.8	35.5	-7.9
textiles & clothing	-4.5	0.4	-0.3	6.7	-5.7
metals	-8.5	-43.3	54.3	58.5	1.8
electrical machinery	-13.0	-10.1	-9.7	41.5	-9.8
motor vehicles	2.1	-14.5	-1.5	17.9	4.4
SERVICES	3.2	2.9	-2.9	8.6	5.4

	Sri Lanka	Other South Asia	Indonesia	Malaysia	Philippines
AGRICULTURE & FOOD	-14.0	6.0	2.3	-8.7	61.4
OTHER PRIMARY	21.6	1.5	3.4	-11.7	-5.1
MANUFACTURES	-12.9	-10.3	4.8	5.5	13.4
textiles & clothing	-2.1	-3.1	5.0	3.6	13.8
metals	-84.1	-96.6	-3.7	26.0	18.8
electrical machinery	-22.6	2.8	9.4	-0.2	1.9
motor vehicles	-99.2	8.3	-14.3	35.7	-26.8
SERVICES	4.1	8.2	0.8	-3.9	2.8

	Singapore	Thailand	Vietnam	Other S.East Asia
AGRICULTURE & FOOD	14.6	53.0	-11.2	27.3
OTHER PRIMARY	0.3	-41.5	-27.7	1.8
MANUFACTURES	-1.0	15.9	85.6	23.5
textiles & clothing	-21.6	12.9	84.7	-0.8
metals	21.4	29.3	5.7	-9.7
electrical machinery	1.3	26.4	12.4	247.8
motor vehicles	-30.4	30.4	50.0	10.7
SERVICES	-1.3	-0.2	3.8	4.1

TABLE 16

Full East Asia – South Asia FTA Experiment
Changes in Output Across Broad Sectors, %

	China	Hong Kong, China	Japan	Korea	Taipei,China
AGRICULTURE & FOOD	-0.1	0.1	-0.9	11.6	0.5
OTHER PRIMARY	1.4	0.4	1.3	0.8	1.9
MANUFACTURES	2.0	-10.4	0.3	5.3	-2.3
textiles & clothing	0.8	-14.0	5.7	28.3	-20.8
metals	-1.5	-6.0	6.4	11.4	2.9
electrical machinery	12.9	-20.9	-8.8	2.1	-4.1
motor vehicles	-5.7	2.0	-0.7	1.1	0.5
SERVICES	2.3	0.3	1.2	5.8	-1.5
	Other East Asia	Bangladesh	Cambodia	India	Pakistan
AGRICULTURE & FOOD	0.0	-6.3	-3.3	0.1	2.9
OTHER PRIMARY	0.4	-3.0	0.2	0.3	0.5
MANUFACTURES	-1.3	-14.0	59.3	4.9	-4.9
textiles & clothing	-4.9	16.4	-2.8	-3.7	1.6
metals	-1.0	-7.2	69.5	14.2	2.8
electrical machinery	-6.4	-42.8	-14.2	1.3	-9.3
motor vehicles	1.5	-16.3	-5.5	-2.3	2.6
SERVICES	0.0	0.2	2.8	3.9	0.9
	Sri Lanka	Other South Asia	Indonesia	Malaysia	Philippines
AGRICULTURE & FOOD	-2.2	3.0	-0.3	-1.5	0.3
OTHER PRIMARY	0.9	0.0	0.4	0.7	0.5
MANUFACTURES	21.6	5.9	2.7	7.7	7.8
textiles & clothing	4.9	-9.0	1.7	5.6	8.7
metals	53.5	155.9	-1.1	24.9	-2.1
electrical machinery	51.1	-29.3	7.1	-0.6	2.1
motor vehicles	-3.9	-31.9	-5.5	-3.4	-16.1
SERVICES	3.4	2.1	3.0	4.7	4.0
	Singapore	Thailand	Vietnam	Other S.East Asia	
AGRICULTURE & FOOD	193.9	0.9	-4.6	1.0	
OTHER PRIMARY	0.4	0.5	0.4	0.3	
MANUFACTURES	3.2	9.5	48.7	-3.1	
textiles & clothing	-7.8	3.9	60.8	-4.5	
metals	18.4	22.4	13.0	-6.8	
electrical machinery	1.1	25.6	11.8	5.8	
motor vehicles	-26.6	10.8	-28.0	-1.9	
SERVICES	4.9	13.1	15.9	0.2	

TABLE 17

**Full East Asia – South Asia FTA Experiment
Changes in Exports Across Broad Sectors, %**

	China	Hong Kong, China	Japan	Korea	Taipei,China
AGRICULTURE & FOOD	-6.6	-1.4	-0.4	0.5	0.7
OTHER PRIMARY	-1.2	2.7	-6.6	0.2	-1.4
MANUFACTURES	-2.1	-19.6	-0.6	0.0	-0.4
textiles & clothing	-2.3	-20.3	-1.7	-2.2	-2.0
metals	-3.3	-9.9	-2.2	-0.2	-2.5
electrical machinery	-1.8	-21.9	0.1	0.5	0.3
motor vehicles	-1.1	-1.1	0.2	0.2	0.7
SERVICES	0.5	2.0	0.1	0.2	0.1
	Other East Asia	Bangladesh	Cambodia	India	Pakistan
AGRICULTURE & FOOD	-1.1	10.7	-19.9	19.6	70.5
OTHER PRIMARY	-8.0	214.6	-3.0	21.4	17.0
MANUFACTURES	-20.4	4.5	55.4	36.4	-2.5
textiles & clothing	-21.3	45.9	-1.1	3.9	4.6
metals	-11.9	203.1	69.1	64.6	9.3
electrical machinery	-23.8	-26.2	-4.3	42.5	-5.9
motor vehicles	-1.8	40.8	1.4	19.9	11.7
SERVICES	2.7	-18.0	0.0	8.6	8.3
	Sri Lanka	Other South Asia	Indonesia	Malaysia	Philippines
AGRICULTURE & FOOD	19.2	21.5	7.8	-10.8	62.4
OTHER PRIMARY	2.3	-3.4	3.3	-12.6	-4.9
MANUFACTURES	33.1	21.0	4.4	3.4	10.3
textiles & clothing	6.9	-1.0	4.4	1.3	10.1
metals	264.9	452.3	-3.5	26.0	18.7
electrical machinery	54.7	-16.2	9.2	-0.6	2.1
motor vehicles	2.3	52.6	-13.9	35.5	-26.0
SERVICES	1.8	-16.5	0.7	-4.1	3.0
	Singapore	Thailand	Vietnam	Other S.East Asia	
AGRICULTURE & FOOD	18.1	53.0	-11.2	33.6	
OTHER PRIMARY	0.4	-41.5	-27.7	2.1	
MANUFACTURES	0.6	15.9	85.6	23.3	
textiles & clothing	-19.1	12.9	84.7	-3.5	
metals	22.9	29.3	5.7	-8.4	
electrical machinery	1.1	26.4	12.4	249.5	
motor vehicles	-30.4	30.4	50.0	12.0	
SERVICES	-1.7	-0.2	3.8	4.7	

TABLE 18

Full East Asia -- South Asia FTA Experiment
Insider Impact: Direction of Trade, shares in %

	Export Share to E Asia			Export Share to S Asia			Total share S&E Asia			
	2017 base-line	post-experi-ment	change	2017 base-line	post-experi-ment	change	2017 base-line	post-experi-ment	change	Total Export % change
PRC	33.6	37.3	3.7	1.2	3.2	2.0	34.8	40.5	5.7	13.19
Hong Kong, China	44.7	48.3	3.7	1.2	1.0	-0.2	45.9	49.3	3.4	-1.00
Japan	40.2	52.5	12.4	0.9	1.9	1.0	41.1	54.5	13.4	7.34
Korea	41.3	59.1	17.9	1.5	3.4	1.8	42.8	62.5	19.7	13.38
Indonesia	49.1	53.6	4.5	4.0	6.8	2.8	53.1	60.4	7.3	8.42
Malaysia	51.0	52.3	1.3	4.5	6.1	1.6	55.5	58.3	2.9	6.95
Philippines	46.1	53.3	7.1	0.4	0.7	0.4	46.5	54.0	7.5	8.43
Singapore	50.6	56.1	5.4	2.9	3.7	0.7	53.5	59.7	6.2	3.03
Thailand	45.9	54.8	8.9	1.6	2.7	1.2	47.5	57.5	10.0	23.85
Vietnam	46.5	56.1	9.6	0.4	0.5	0.1	46.9	56.6	9.7	35.36
Other Southeast Asia	59.6	46.0	-13.6	4.1	7.7	3.7	63.7	53.8	-9.9	4.78
Bangladesh	7.3	5.4	-1.9	1.5	2.3	0.8	8.8	7.7	-1.1	51.65
Cambodia	15.5	15.1	-0.5	0.6	0.8	0.2	16.2	15.9	-0.2	6.80
India	24.9	32.6	7.7	3.2	3.8	0.6	28.2	36.4	8.3	22.73
Pakistan	11.0	20.2	9.2	2.8	7.2	4.4	13.8	27.4	13.6	7.03
Sri Lanka	7.9	11.7	3.8	3.0	7.7	4.7	10.9	19.4	8.5	5.84
Other South Asia	12.2	11.1	-1.1	30.9	49.8	18.9	43.2	61.0	17.8	19.86
TOTAL, percent										11.28
TOTAL, value (million 2001 dollars)										364,083

TABLE 19

Full East Asia -- South Asia FTA Experiment
Outsider Impact: Direction of Trade, shares in %

	Export Share to E Asia			Export Share to S Asia			Total share S&E Asia			
	2017 base-line	post-experi-ment	change	2017 base-line	post-experi-ment	change	2017 base-line	post-experi-ment	change	Total Export % change
Australia	61.4	56.5	-4.9	5.9	12.5	6.6	67.4	69.0	1.6	-1.06
New Zealand	44.0	47.8	3.8	2.9	6.0	3.1	47.0	53.8	6.8	-0.47
Other Oceania	42.5	36.4	-6.1	0.8	0.6	-0.3	43.3	37.0	-6.3	-1.11
Taipei,China	46.3	42.2	-4.1	1.6	0.9	-0.7	47.9	43.1	-4.8	-2.74
Other East Asia	35.4	31.4	-4.1	1.2	0.7	-0.5	36.7	32.1	-4.5	-2.18
Rest of Central Asia	9.7	9.5	-0.3	1.2	0.9	-0.3	10.9	10.3	-0.6	-0.03
Canda	10.8	7.8	-2.9	0.7	0.5	-0.2	11.4	8.3	-3.1	0.27
United States	26.0	26.0	-0.1	1.0	0.8	-0.2	27.0	26.7	-0.3	-0.43
Mexico	3.0	2.2	-0.8	1.9	0.3	-1.6	4.9	2.5	-2.4	0.09
Other Americas	16.8	14.4	-2.3	4.3	0.9	-3.4	21.1	15.4	-5.7	-0.11
EU27	11.1	11.2	0.1	0.9	0.6	-0.2	11.9	11.8	-0.2	-0.09
EFTA	11.3	12.0	0.7	0.9	0.6	-0.3	12.1	12.6	0.4	0.32
Turkey	8.0	9.2	1.3	0.8	0.6	-0.2	8.7	9.8	1.1	-0.37
Russia	11.5	19.9	8.3	0.6	0.7	0.1	12.1	20.5	8.4	0.41
Other Europe	9.6	9.7	0.2	0.6	0.4	-0.1	10.2	10.2	0.0	0.08
North Africa & Middle Eas	43.0	27.8	-15.2	5.5	2.7	-2.7	48.5	30.6	-17.9	0.38
South Africa	25.4	20.8	-4.6	4.3	2.5	-1.8	29.7	23.3	-6.4	-0.14
Sub-Saharan Africa	21.9	18.3	-3.6	3.6	3.3	-0.3	25.5	21.6	-3.9	0.52
TOTAL, percent										-0.15
TOTAL, value (million 2001 dollars)										-10,437

market access, and the extent to which those inside the region re-orient exports away from third countries and toward Asia. Combined with the income effects above, these direction of trade estimates indicate the extent to which the diversion of trade away from third countries has led to a destruction of overall trade (and gains from trade), and alternatively the extent to which new trade opportunities may have boosted income and overcome these diversion effects.

From Table 18, there is a significant re-orientation of trade shares away from third-countries and toward the region. For example, Thailand sees a full 10 percentage point increase (from 47.5 percent to 57.5 percent) in the share of goods and services exports destined for Asia. Korea's regional exports increase substantially as well. In the baseline, 42.8 percent of goods and services exports go to Asia. In the full East-South FTA scenario, this increases a full 19.7 percentage points, to 62.5 percent. PRC shifts a full 5.7 percent of exports away from third-countries, and back toward Asia. Some countries are actually projected to re-orient away from the region slightly – Bangladesh, Cambodia, and other Southeast Asian countries. Overall though, under the widest FTA scenario we have Asian exports estimated to rise by 11.3 percent, with this export growth generally being targeted within the region.

What happens to third countries? Our clues are provided in Tables 8 and 19. From Table 8, third country income effects are relatively small. In fact, the losses amount to -0.01 percent of baseline national income, or $3.0 billion. This is fully consistent with the estimated trade effects. From Table 19, under the widest FTA scenario, the rest of world is virtually unaffected, with trade volumes falling by -0.15 percent in total. For individual countries there is a varied pattern of trade re-orientation, but there is not a consistent, discernable global drop in trade and incomes. Rather, the widest of our FTA scenarios implies broad-based trade and income growth across Asia, with little effect in aggregate, positive or negative, for the rest of the world. Indeed exports from some middle and low-income countries and regions (Africa, Turkey, Russia) benefit slightly as they fill the gap that is left to supply third-country markets as Asia turns itself more inward.

4.7 SUB-REGIONAL SCHEMES: -- THE EXAMPLE OF SOUTH ASIA

Finally, in Table 20 we turn to impacts on South Asia of alternative bilateral agreements between ASEAN and the China, Japan, and Korea. We also highlight the impact of a geographically limited sub-regional (i.e. South Asia) agreement. The table demonstrates the point that, depending on trade orientation, a sub-regional scheme is not necessarily of equal interest to all economies in the sub-region. For Sri Lanka and Nepal (other South Asia), for example, it is indeed sub-

TABLE 20

South-Asian effects, alternative sub-regional schemes
Real income effects, percent

	ASEAN-China	ASEAN-Japan	ASEAN-Korea	South Asia FTA	ASEAN+3 and India
Bangladesh	-0.1	-0.1	0.0	0.3	-0.3
India	-0.1	-0.1	0.0	0.1	2.2
Pakistan	-0.1	-0.1	-0.1	0.4	-0.6
Sri Lanka	-0.1	0.0	-0.1	1.1	-0.4
Other South Asia	0.1	0.0	0.0	3.4	-0.6

regional integration, or the sub-regional component of broad agreements, that matter most. For India, the regional scheme offers relatively little compared to the implications of initiatives targeting East Asia. The varied regional impacts in the table illustrate why, overall, it is the broader approach under our core experiments that leads to the most balanced result across countries. This is because the different countries in the region have different trade orientations vis-à-vis East Asia and South Asia.

5. CONCLUSIONS

In this paper we have examined the economic implications of pan-Asian integration schemes. We have examined three core scenarios – ASEAN+3, ASEAN+3 and India, and ASEAN+3 and South Asia. The results of the scenarios follow from the underlying patterns of Asian protection. What matters most for East Asia is that PRC, Japan, and Korea be brought into any scheme for deeper regional integration. This alone drives most of the income and trade effects in the East Asia region across all our scenarios. Of secondary importance is the inclusion of India, as this brings some gains, focused on the countries that share the Malay Peninsula and effectively bridge East Asia and South Asia.

For South Asia, the results again reflect relative trade and protection patterns. The economies of South Asia already have trade patterns directed toward East Asia. This reflects the higher incomes in East Asia, and the greater absolute size of the export markets in East Asia. This means that for most of the economies of South Asia, deeper integration with East Asia has the potential to bring modest income gains (roughly 2 percent to 4 percent of GDP) along with associated export growth.

Interestingly, the one regional player in South Asia that seems to matter, in terms of benefits of improved market access, for East Asian exporters is India.

Most of the East Asian gains from a South Asian initiative follow directly from Indian participation. The other players in the region have only a limited impact on East Asia. Yet for the South Asian economies themselves, it is clear that if India looks East, they need to be part of the program as well. Hence, the politics of any regional scheme will be complex with the East Asian countries gaining most from access to India, while the South Asian economies standing to gain if India makes sure the full region is included.

Finally, our results also provide a lesson on third-country effects. As long as Asia throws a broad net and aims to include all countries in the various sub-regions, an Asian FTA has the potential to actually boost regional trade and incomes without substantive adverse terms of trade effect. This may follow partially from our emphasis on trade costs and services barriers reduction, both of which involve relatively large savings on deadweight transaction costs. Recent experience, though, suggests that the institutional barriers to any real progress (like rules of origin, failure to implement trade facilitation agreements that that have already been agreed, and NTBs) can be substantial. They pose a formidable challenge, though the potential benefits in their defeat appear to be substantial. Less ambitious outcomes, like the growing spider web of bilateral agreements, carry with them the prospect of significant outsider costs both within and outside the region.
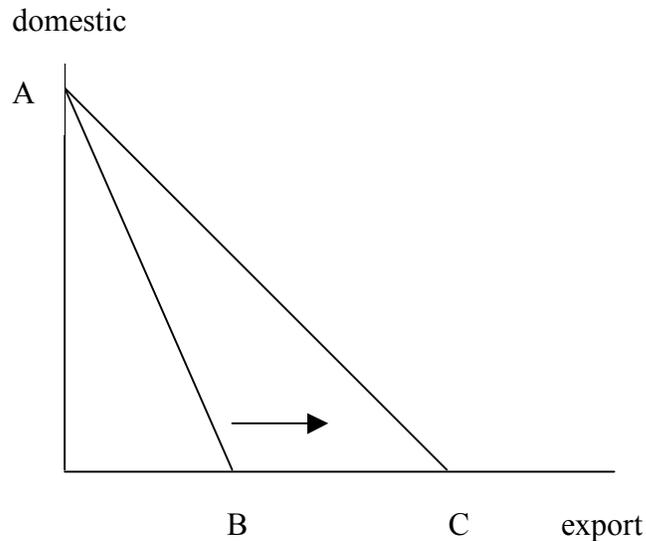
6. ANNEX

TRADE AND TRANSPORTATION COSTS AND SERVICES BARRIERS

International trade is modeled as a process that explicitly involves trading costs, which include both trade and transportation services. These trading costs reflect the transaction costs involved in international trade, as well as the physical activity of transportation itself. Those trading costs related to international movement of goods and related logistic services are met by composite services purchased from a global trade services sector, where the composite "international trade services" activity is produced as a Cobb-Douglas composite of regional exports of trade and transport service exports. Trade-cost margins are based on reconciled f.o.b. and c.i.f. trade data, as reported in version 6.2 of the GTAP dataset.

A second form of trade costs is known in the literature as frictional trading costs. These are implemented in this paper in the service sector, following Francois (1999, 2001), as a Samuelson iceberg- or frictional-type trade cost. Trade costs are also implemented in this way for traded goods, so that we can examine the impact of trade facilitation. Such costs represent real resource costs

associated with producing a good or service for sale in an export market instead of the domestic market. Conceptually, we have implemented a linear transformation technology between domestic and export goods and services. This technology is represented in Annex Figure 1.[5] The straight line AB indicates, given the resources necessary to produce a unit of services for the domestic market, the feasible amount that can instead be produced for export using those same resources. If there are not frictional barriers to trade in services, this line has slope -1. The free-trade or no trade cost case is represented by the line AC. As we reduce trading costs, and/or frictional barriers, the linear transformation line converges on the free trade line, as indicated in the figure.

domestic

Annex Figure 1

The basic methodology for estimation of services barriers involves the estimation of an equation where import demand is a function of the size of the economy (GDP) and its income level (per-capita income). We have also included dummy variables by sector, and country-specific dummies (with Hong Kong and Singapore being the base case). Our import data are on a sector basis by country with respect to the world, and are at the same level of aggregation as the CGE model data. Formally, our estimating equation is

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[5] The Francois (1999) GEMPACK implementation in the form of a technical change parameter in production for export has since been added to the standard GTAP model with version 6.0 (2001).

$$(1) \qquad M_{i,j} = a_i + a_j + a_1 \ln(pop)_j + a_2 \ln(PCI)_j + a_3 \ln(Dist)_j + \varepsilon_{i,j}$$

where $M_{i,j}$ represents imports in sector i by country j, a_i and a_j are sector and country effect variables, pop_j represents national population as a proxy for size (taken in logs), PCI_j is per-capita income (again taken in logs) and ε is an error term. We also include GDP-weighted distance from the world. This is an improvement on the approach in Francois, van Meijl and van Tongeren (2005) as under this approach we have pooled sectors and so have several points for estimation of each national restriction index (the a_j coefficient). Adjusted by the import substitution elasticity, these national coefficients provide an estimate of the trade-cost equivalent of existing barriers in services, as an average across service sectors.

$$(2) \qquad a_j = -\sigma \ln\left(T_j\right)$$

Here, T_j is the power of the tariff equivalent ($1+t_j$) such that in free trade $T=1$, and σ is the trade substitution elasticity relative to domestic production (taken to be the substitution elasticity used in the CGE model).

Regression results from this approach are reported in Annex Tables 1 and 2. This involves a two-stage regression. In the first stage we estimate equation (1) without the dummy term a_j that captures trade barriers. We work with trade data from the benchmark dataset (i.e. 2001 services trade from IMF BOP statistics). The second stage then involves regression of error terms against country dummies (with several sectors pooled) to estimate average barriers across a set of service sectors, as identified in the Tables. Resulting barrier estimates for the model application are reported in Table 6. For further discussion of the resulting estimator (which is operationally identical to random effects or population averaged fixed effects with groups defined by countries and pooled across sectors rather than time) and a more recent application see Francois, Hoekman, and Woerz (2008).

ANNEX TABLE A-1

First Stage Regression Results

	All Services	Producer Services	Other non-Trade
ln(population)	.84	.84	.86
	(44.48)	(27.3)	(26.93)
ln(per-capita income)	1.00	1.02	.93
	(44.21)	(27.48)	(24.12)
ln(distance)	-.63	-.53	-.79
	-(5.48)	-(2.8)	-(4.02)
electricity	-2.10		
	-(14.33)		
gas distribution	-10.86		
	-(74.03)		
water	-5.34		
	-(36.41)		
construction	-3.25		-2.22
	-(22.13)		-(15.91)
trade	-.72		.34
	-(4.89)		(2.45)
water transport	-2.48		
	-(6.8)		
air transport	-1.20		
	-(8.08)		
other transport	-1.47		
	-(9.27)		
communications	-2.18	-2.17	
	-(14.86)	-(16.12)	
other financial services	-2.14	-2.14	
	-(14.6)	-(15.88)	
insurance and real estate	-1.86	-1.85	
	-(12.64)	-(13.73)	
personal services	-1.37		-.30
	-(9.35)		-(2.17)
public services	-1.06		
	-(7.21)		
intercept	1.82	.70	2.67
	(1.59)	(0.37)	(1.38)
Observations, first stage	1165	364.0	364
F, (Pr>F), first stage	770.72, (0)	280.28, (0)	263.00, (0)
R2 from OLS regression	0.750	0.839	0.807

Note: default case is business services

A<small>NNEX</small> T<small>ABLE</small> A-2

Second Stage Regression results

	All Services	Producer Services	Other non-Trade Services
Australia	-.64 -(2.47)	-1.03 -(2.21)	-1.10 -(2.33)
New Zealand	-.58 -(2.22)	-.79 -(1.69)	-0.86 -(1.83)
Other Oceania	-2.56 -(9.78)	-2.28 -(4.87)	-2.66 -(5.65)
China	-1.51 -(5.76)	-1.71 -(3.66)	-0.80 -(1.71)
Japan	-1.32 -(5.05)	-1.82 -(3.89)	-1.43 -(3.03)
South Korea	-.97 -(3.72)	-1.11 -(2.37)	-1.42 -(3.03)
Taiwan	-.81 -(3.11)	-1.02 -(2.17)	-0.78 -(1.65)
Other East Asia	-.67 -(2.55)	-.86 -(1.83)	-0.78 -(1.65)
Cambodia	-1.54 -(5.88)	-1.44 -(3.08)	-2.34 -(4.98)
Indonesia	-0.81 -(3.11)	-0.90 -(1.92)	-0.87 -(1.85)
Malaysia	-.03 -(0.13)	-.61 -(1.3)	-.68 -(1.44)
Philippines	-.52 -(1.93)	-.61 -(1.3)	-.91 -(1.94)
Thailand	-.38 -(1.46)	-.48 -(1.04)	-.41 -(0.88)
Other Southeast Asia	-2.75 -(10.23)	-2.89 -(6.19)	-2.90 -(6.16)
Bangladesh	-1.50 -(5.73)	-1.71 -(3.65)	-1.93 -(4.11)
India	-1.67 -(6.41)	-1.75 -(3.75)	-2.15 -(4.56)
Pakistan	-1.65 -(6.32)	-2.00 -(4.27)	-2.25 -(4.79)

	All Services	Producer Services	Other non-Trade Services
Sri Lanka	-1.01 -(3.77)	-1.51 -(3.24)	-1.44 -(3.06)
Other South Asia	-0.34 -(1.29)	-0.54 -(1.16)	-0.68 -(1.45)
Canada	-1.10 -(4.22)	-.80 -(1.7)	-1.56 -(3.32)
United States	-1.66 -(6.37)	-1.92 -(4.12)	-2.10 -(4.46)
Mexico	-1.28 -(4.77)	-.95 -(2.03)	-1.80 -(3.82)
Other North America	-2.09 -(7.57)	-2.25 -(4.82)	-2.08 -(4.41)
Bolivia	-1.49 -(5.7)	-1.29 -(2.77)	-2.22 -(4.72)
Columbia	-1.00 -(3.84)	-.85 -(1.83)	-1.81 -(3.85)
Ecuador	-1.39 -(5.32)	-1.43 -(3.07)	-1.15 -(2.44)
Peru	-1.14 -(4.35)	-.93 -(1.99)	-2.06 -(4.37)
Venezuela	-1.45 -(5.55)	-1.72 -(3.68)	-1.85 -(3.93)
Argentina	-1.02 -(3.9)	-1.45 -(3.11)	-1.43 -(3.05)
Brazil	-.95 -(3.63)	-1.10 -(2.36)	-1.57 -(3.34)
Chile	-.98 -(3.83)	-1.41 -(3.01)	-1.23 -(2.63)
Paraguay	-.75 -(2.78)	-2.18 -(4.67)	-1.28 -(2.72)
Uruguay	-1.21 -(4.62)	-1.28 -(2.74)	-1.57 -(3.33)
Other South America	-2.14 -(8.17)	-2.47 -(5.28)	-2.24 -(4.76)
Other Central America	-0.68 -(2.6)	-0.70 -(1.5)	-1.08 -(2.3)
Other Americas	0.13 (0.51)	0.07 (0.15)	-0.34 -(0.73)

	All Services	Producer Services	Other non-Trade Services
Other Caribbean	-0.28 -(1.06)	-0.47 -(1.00)	-0.57 -(1.22)
Austria	-0.23 -(0.9)	-0.21 -(0.46)	-0.54 -(1.14)
Denmark	-0.45 -(1.75)	-0.25 -(0.54)	-0.63 -(1.33)
Finland	-1.28 -(4.91)	-1.85 -(3.96)	-1.51 -(3.21)
France	-1.13 -(4.33)	-1.37 -(2.94)	-1.19 -(2.54)
Germany	-0.60 -(2.31)	-0.86 -(1.84)	-0.61 -(1.31)
Great Britain	-0.80 -(3.07)	-0.98 -(2.11)	-1.24 -(2.64)
Greece	-0.56 -(2.21)	-1.14 -(2.43)	-0.68 -(1.44)
Ireland	-0.56 -(2.13)	-0.29 -(0.63)	-1.38 -(2.93)
Italy	-0.89 -(3.39)	-1.21 -(2.58)	-0.96 -(2.04)
Luxemburg	-0.66 -(2.52)	-0.67 -(1.43)	-0.91 -(1.93)
Netherlands	-0.32 -(1.24)	-0.45 -(0.97)	-0.53 -(1.13)
Portugal	-1.08 -(4.03)	-1.48 -(3.17)	-1.27 -(2.7)
Spain	-1.01 -(3.75)	-.91 -(1.95)	-1.69 -(3.59)
Sweden	-0.52 -(2)	-0.67 -(1.44)	-0.96 -(2.05)
Switzerland	-1.01 -(3.85)	-1.32 -(2.83)	-1.64 -(3.48)
Norway	-1.00 -(3.9)	-1.27 -(2.73)	-1.43 -(3.05)
Albania	-0.73 -(2.81)	-1.03 -(2.2)	-1.18 -(2.52)
Bulgaria	-0.60 -(2.28)	-0.71 -(1.51)	-1.19 -(2.53)

	All Services	Producer Services	Other non-Trade Services
Bosnia	-1.30 -(4.96)	-2.37 -(5.07)	-1.80 -(3.83)
Cyprus	-0.92 -(3.51)	-1.49 -(3.18)	-1.28 -(2.72)
Czech Republic	-0.48 -(1.8)	-0.69 -(1.48)	-0.95 -(2.01)
Hungary	-0.26 -(0.96)	-0.75 -(1.62)	-0.31 -(0.66)
Malta	-0.98 -(3.74)	-0.90 -(1.92)	-1.36 -(2.88)
Poland	-1.29 -(4.82)	-0.97 -(2.07)	-2.24 -(4.76)
Slovenia	-1.03 -(3.84)	-1.38 -(2.96)	-1.21 -(2.57)
Estonia	-.76 -(2.89)	-1.00 -(2.14)	-0.79 -(1.68)
Latvia	-0.78 -(2.89)	-0.95 -(2.04)	-1.11 -(2.36)
Lithuania	-1.35 -(5.04)	-1.65 -(3.54)	-1.60 -(3.39)
Russia	-0.45 -(1.72)	-0.89 -(1.9)	-0.67 -(1.42)
Former Soviet Union	-1.52 -(5.67)	-1.62 -(3.46)	-2.14 -(4.55)
Turkey	-1.08 -(4.03)	-1.68 -(3.59)	-1.29 -(2.75)
Iran	-2.20 -(7.96)	-2.21 -(4.73)	-2.72 -(5.79)
Other Middle East	0.64 (2.44)	0.27 (0.58)	0.33 (0.71)
Egypt	-1.00 -(3.84)	-0.98 -(2.1)	-1.79 -(3.81)
Morocco	-1.53 -(5.87)	-1.82 -(3.9)	-2.46 -(5.24)
Tunisia	-1.37 -(5.1)	-1.46 -(3.13)	-1.34 -(2.85)
Other North Africa	-1.04 -(3.97)	-1.29 -(2.75)	-1.29 -(2.74)

	All Services	Producer Services	Other non-Trade Services
Botswana	-1.22 -(4.55)	-1.34 -(2.87)	-1.37 -(2.92)
South Africa	-0.92 -(3.52)	-1.46 -(3.13)	-1.32 -(2.81)
Othe SACU	-1.33 -(5.08)	-1.41 -(3.02)	-1.40 -(2.97)
Malawi	-0.75 -(2.80)	-0.87 -(1.87)	-1.14 -(2.43)
Mauritius	-0.48 -(1.84)	-0.55 -(1.18)	-0.87 -(1.86)
Mozambique	-0.64 -(2.45)	-0.65 -(1.4)	-0.69 -(1.46)
Tanzania	-0.14 -(0.55)	-0.59 -(1.25)	-0.62 -(1.32)
Zambia	-1.88 -(7.37)	-1.94 -(4.15)	-1.98 -(4.2)
Zimbabwe	-1.23 -(4.69)	-1.35 -(2.88)	-1.43 -(3.03)
Other SADC	-0.72 -(2.75)	-1.06 -(2.27)	-0.32 -(0.68)
Madagascar	-0.64 -(2.43)	-1.37 -(2.94)	-0.14 -(0.3)
Nigeria	-0.45 -(1.73)	-1.01 -(2.17)	-0.76 -(1.61)
Senegal	-0.97 -(3.73)	-0.87 -(1.87)	-1.65 -(3.5)
Uganda	-0.74 -(2.83)	-0.95 -(2.03)	-1.33 -(2.83)
Rest of Sub-Saharan Africa	-0.06 -(0.23)	-0.13 -(0.29)	-0.59 -(1.26)
Observations, second stage	1165	364	364
F, (Pr>F), second stage	7.14, (0)	2.65, (0)	2.89, (0)
R2 from corresponding OLS regression	0.153	0.480	0.467

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