ASEAN Economic Community: A General Equilibrium Analysis*

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The ASEAN Economic Community (AEC) is the largest integration effort attempted in the developing world; if realized, it will create a single market with the free movement of goods, services, foreign direct investment and skilled labor, and freer movement of capital encompassing nearly 600 million people. This study, a first attempt to evaluate the full benefits of the AEC, finds that the project could produce gains similar to those resulting from the European Single Market, amounting to 5.3 percent of the region's income. The benefits could be doubled if, as expected, regional integration also leads to new free trade agreements with key external partners. The whole region will share in these gains. There will be mild trade and investment diversion effects for some other countries, but the world will benefit too. Nevertheless, the AEC poses political challenges: the present study finds that the project will imply significant structural adjustments in several ASEAN economies.

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I. Introduction

In January 2007, 10 South-East Asian nations agreed to implement the ASEAN Economic Community (AEC) by 2015 (with some extra time for transitional-economy members), committing to the free movement of goods, services, foreign direct investment (FDI) and skilled labor, and freer flows of capital. In November 2007, the *ASEAN Economic Community Blueprint*, a detailed implementation plan, was signed (ASEAN, 2007).

Spanning a region of 591 million people and including many rapidly growing economies, the AEC is arguably the most ambitious and sophisticated initiative of its kind, save the European Single Market, and the only project on this scale in the developing world. Much hard work lies ahead: realizing deep integration will require overcoming huge technical and political obstacles. The region's leaders and citizens need to be convinced that the economic benefits make the project worthwhile.

This study provides early, comprehensive estimates of the impact of the AEC. We use a computable general equilibrium (CGE) model, as is usual in such work, but, given the scope of the AEC, attempt to model broader effects than other similar studies. Thus, we incorporate several 'new' channels of benefits from integration that have been identified in the literature. First, we take into account multiple policy measures encompassed in the AEC, including the elimination of tariffs and non-tariff measures, trade facilitation, and improvements in the investment climate. Second, we use a model specification that incorporates the implications of multiple product varieties, productivity gains associated with economies of scale, and the heterogeneity of firms in terms of productivity. Third, we explore an important second-order effect of the AEC project, the possibility that regional integration will make it easier to extend ASEAN's 'hub and spoke' network of free trade agreements (FTA) to other external partners.

Although the approach is unusually comprehensive (we believe appropriately, given the AEC's ambition), the parameter values that we use to implement it are set conservatively to avoid overstating welfare results. In other words, we try to estimate realistic (and perhaps even lower bound) magnitudes for likely gains. Even so, the results suggest substantial benefits from implementing the AEC, on the order of 5 percent of ASEAN income. Moreover, these benefits should grow over time as the region's economies mature and evolve to make economic integration still more productive. Thus, while our estimates are large compared to those typically projected, we believe that they reflect the benefits that policy-makers can reasonably expect if the AEC is implemented according to plan.

Not long after the AEC agreement was reached, the world economy plunged into deep and prolonged recession. Somewhat surprisingly, given the severe setbacks that the ASEAN economies suffered in the Asian financial crisis of 1997–1998, the region's economy has held up well up to this writing. Indonesia and some other countries grew throughout the recent crisis. Still others declined but bounced back quickly. Having entered the recession with strong fundamentals (low debt ratios, fiscal surpluses and ample foreign exchange reserves), ASEAN economies were well positioned to deploy fiscal and monetary responses. Investment, including foreign investment, held up, contributing to an early and robust rebound. Arguably, the expectation of regional integration mapped out by the AEC was already helping to build confidence in the region's prospects. Our estimates suggest substantial benefits from the AEC, providing solid foundations for long-term development; if the agreements are implemented, the region's

accelerated growth could take up some of the slack left by the relatively slow-growing markets of the USA and Europe.

The paper is organized as follows. Section I gives a brief overview of salient aspects of ASEAN trade that motivate gains from regional integration. Section II provides an overview of the model and simulations. Section III presents results for economic welfare, structural change at the sectoral level, and trade. Section IV concludes.

II. Economic Setting

ASEAN's 10 economies vary substantially in population, per capita income and economic structure. Their performance has been somewhat uneven, but strong on average; the region has grown at an annual rate of 5 percent over the past two decades, despite two major financial crises (see Table 1). Growth was rapid before the Asian financial crisis and, after slowing in its aftermath, has begun to accelerate again. The upswing is especially noteworthy in Indonesia, the region's largest economy, which has undertaken wide-ranging political and economic reforms.

Projections envision continued good performance in the future. The consensus centers on 6-percent growth in the intermediate term (Petri, 2010), but, barring a severe global setback, some observers foresee even faster growth, and include several ASEAN countries among the world's high performing emerging economies (Goldman Sachs, 2010). The region is also benefiting from competitive 'courting' by large economic and political partners, including China, Japan, the USA and the European Union (EU) (Chachavalpongpun, 2010).

II.1 Trade patterns

As Table 1 shows, virtually all ASEAN economies are open to trade and investment; the trade/GDP ratio is 131 percent for the region as a whole and exceeds

Table 1   ASEAN at a glance

	Population 2010 (million)	GDP 2010 (US$billion)	Real GDP growth rate 1990–2010	(Exports + Imports)/GDP 2010 (%)
ASEAN	591.4	1719.2	5.0	131
Brunei	0.4	12.0	1.8	127
Cambodia	14.1	11.5	7.3	121
Indonesia	239.9	670.4	4.6	45
Laos	6.2	6.3	6.6	37
Malaysia	28.40	213.1	5.7	192
Myanmar	48.06	28.7	8.7	27
Philippines	93.3	181.5	3.7	71
Singapore	5.1	194.9	6.0	421
Thailand	69.1	297.9	4.3	139
Vietnam	86.9	103.1	7.4	149

Source: IMF World Economic Outlook database and World Bank World Development Indicators database.

400 percent for Singapore. Over the past two decades, the region's exports and imports have shifted from natural-resource-intensive goods to electronics and other relatively sophisticated manufactures. Manufacturing exports account for almost three-quarters of total ASEAN exports (up from less than two-thirds in 1990), and machinery and transport equipment constitute almost half of both exports and imports (UN COMTRADE database).

Top ASEAN exports include not only labor-intensive products but also a variety of advanced manufactures, such as Standard Industrial Trade Classification 776 thermionic valves.[1] This sector's export value has increased 10-fold, from US$12.1 billion in 1990 to US$119.6 billion in 2006, accounting for 16 percent of total ASEAN exports (US$759 billion) and one-third of world exports (US$379 billion). Success in this sector reflects the region's integration into global production chains, which rely heavily on international exchange of goods, capital and expertise.

Trade in services constitutes roughly one-quarter of ASEAN's trade. The sector is important in its own right and also facilitates trade in goods and FDI. ASEAN service exports grew from US$29 billion in 1990 to US$130 billion in 2007. Travel, transport and other business services constitute 84 and 75 percent of ASEAN service exports and imports, respectively (UNCTAD, 2010). Imports of services grew even faster over this period. Hence, the balance of trade moved from a slight surplus in 1990 to a US$24 billion deficit in 2006.

The Asian Development Bank (2007) argues that ASEAN's development more or less conforms to the Kuznets process: the contribution of agriculture to GDP falls over time; the contribution of manufactures peaks; and the contribution of services rises. Thus, the service sector had become the dominant contributor to income growth in the late 1990s in all large ASEAN countries except Indonesia, where manufacturing was still slightly more important.[2] Because regional cooperation has progressed less in services than in other sectors, the sector is singled out as a particularly important priority in the AEC.

ASEAN's intra-regional trade is still modest at one-quarter of the region's total trade, but its share rose by over 50 percent from 1990 to 2007 (UN COMTRADE). Given that the region consists of small and medium-sized developing countries with strong global production links, it is not surprising that most of its trade also involves extra-regional partners. However, controlling for the region's size, intra-ASEAN trade is four times as high as it would be if the region's trade flows were randomly distributed across partners.[3] Evidently, production chains and specialization are targeting regional partnerships. ASEAN markets are especially important for smaller member economies, including Vietnam, Laos and Brunei. Every ASEAN member now conducts at least one-fifth of its trade within the region, while a quarter of a century ago only a few did that much.

1   The data in this paragraph come from UN COMTRADE.
2   See Clemes and Gani (2002).
3   This type of normalization is done by dividing the intra-regional trade shares by the shares of ASEAN trade in global trade.

The region's trade pattern is essentially symmetric: the shares of ASEAN, the USA and the EU, China and Japan, and the rest of the world each account for approximately one-quarter of the overall ASEAN trade (UN COMTRADE). The continuing importance of trade with the rest of the world underscores the region's stake in global integration. Having a 'fortress ASEAN' would raise the cost of imports, undermine the region's role in global production chains, and alienate important external partners. Thus, the AEC Blueprint is externally focused: one of its four pillars calls for building stronger global relationships.

II.2   Commercial policy

Like much of East Asia, ASEAN economies have relied on outward-oriented trade and investment strategies.[4] Their policies have focused on macroeconomic stability, trade liberalization, infrastructure investments in ports and roads, human capital development and support for technology. The region's applied tariffs are relatively low (see Table 2). A more detailed view of the trade policy environment suggests that:

1 Protection is relatively high in agriculture and beverage products relative to manufactures (with the exception of chemicals, transport equipment and clothing for some countries).
2 Protection is reasonably symmetric otherwise; in any given country, tariffs are similar across most commodity categories. This limits distortion effects.
3 Protection tends to fall with income. The region's wealthiest economies (Singapore and Brunei) have essentially free-trade regimes; those with intermediate incomes (Indonesia, Malaysia, the Philippines and Thailand) have mostly low tariffs; and its low-income economies (Cambodia, Laos and Vietnam) have relatively high tariffs. (Myanmar is an anomaly with low tariffs.)

Data on non-tariff barriers (NTBs) is difficult to obtain. NTBs include import quotas and less well-defined impediments, such as licensing requirements, restrictive product standards and anti-dumping protection. Some studies measure NTBs by 'scoring' known impediments, whereas others impute barriers by estimating the shortfall in trade relative to expected levels (say, as predicted by gravity model estimates). The Uruguay Round replaced quotas with tariffs in agricultural products and phased out 'orderly-marketing arrangements' in textiles and clothing, but useful as these steps are, they made the measurement of remaining NTBs even more challenging.

Feridhanusetyawan (2005) estimates trade restrictiveness indices for Asia by categorizing the incidence of NTBs. His estimates suggest patterns similar to those observed in tariff data: the economies of Brunei and Singapore receive a clean bill of health for NTBs, whereas those of Indonesia, Malaysia, the

4   Asian Development Bank (2008) gives a survey of these studies.

Table 2   ASEAN tariff regimes (applied most favoured nation rates, 2008)

	Brunei	Cambodia	Indonesia	Laos	Malaysia	Philippines	Singapore	Thailand	Vietnam	Myanmar
Animal products	0.0	27.8	4.4	24.9	0.5	10.7	21.3	0.0	28.1	20.1
Dairy products	0.0	25.8	5.5	8.5	3.4	3.4	3.9	0.0	15.8	21.9
Fruit, vegetables, plants	0.0	14.0	5.9	30.3	4.2	11.5	9.4	0.0	27.6	30.6
Coffee, tea	1.5	26.7	8.3	24.2	9.0	14.0	15.8	0.0	23.1	37.9
Cereals and preparations	0.1	19.8	6.3	9.2	5.1	8.7	10.9	0.0	19.4	27.4
Oilseeds, fats and oils	0.0	9.1	4.0	12.0	1.7	1.7	5.6	0.0	19.1	13.4
Sugars and confectionery	0.0	7.0	10.4	12.5	2.8	5.4	16.0	0.0	32.2	17.7
Beverages and tobacco	138.1	33.1	51.8	31.3	136.6	23.2	8.2	2.1	33.4	66.6
Cotton	0.0	7.0	4.0	8.0	0.0	0.8	2.6	0.0	0.0	6.0
Other agricultural products	0.0	15.5	4.3	9.8	0.6	3.1	3.4	0.0	10.3	7.8
Fish and fish products	0.0	18.9	5.8	12.7	2.2	8.2	8.0	0.0	14.5	31.3
Minerals and metals	0.2	10.9	6.6	5.8	10.9	3.4	4.7	0.0	5.9	10.2
Petroleum	0.3	14.8	0.5	14.9	1.1	1.8	2.9	0.0	9.4	17.5
Chemicals	0.4	9.6	5.2	6.8	3.3	2.3	3.8	0.0	3.8	5.2
Wood, paper etc.	4.4	11.8	5.0	14.1	10.7	6.5	6.9	0.0	6.8	17.2
Textiles	0.9	9.6	9.3	8.9	10.5	8.4	9.3	0.0	8.1	30.4
Clothing	0.0	28.5	14.4	10.0	16.0	17.2	14.9	0.0	24.5	49.3
Leather, footwear etc.	3.4	18.0	9.0	11.0	13.9	5.3	6.7	0.0	12.7	19.0
Non-electrical machinery	7.0	14.6	2.3	6.0	3.6	1.7	2.3	0.0	4.7	5.4
Electrical machinery	14.4	24.2	5.8	6.8	6.5	4.3	3.8	0.0	8.3	12.8
Transport equipment	10.0	16.3	11.6	13.5	11.4	4.2	9.0	0.0	20.7	22.2
Other manufactures	5.0	14.6	6.9	10.3	4.9	6.5	4.8	0.0	11.0	15.2

Source: WTO Tariff Profiles 2008.

Table 3   Ad valorem equivalents in services (%)

	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam
Electricity, gas and water	—	—	—	—	—	—
Construction	6.0	4.0	15.0	—	13.5	6.0
Trade and Transport	12.0	4.5	17.0	2.5	17.0	7.5
Other Private Services	21.5	3.5	17.5	3.0	17.0	9.5
Government Services	10.5	5.5	10.5	5.5	13.0	10.5

Note: Data not available for other ASEAN countries.
Source: Michigan model.

Philippines and Thailand fall in the intermediate range; Vietnam, Laos and Myanmar fall in the restrictive range.

Bora et al. (2002) provide more disaggregated NTB tabulations for 7 ASEAN countries. In the aggregate, NTBs applied to a small percentage of product lines in ASEAN in 2001. Thailand and Brunei had the highest NTB coverage at approximately 3 percent, whereas others had 2.5 percent or less. NTBs were concentrated in agricultural products, with the salient exceptions of iron and steel in Vietnam and Malaysia, and textiles and clothing in Malaysia. NTBs have declined since that study, in part due to agreements achieved in the context of the accession of several economies to ASEAN and the WTO.

Protection in services is also hard to measure, partly because the delivery of services can require freedom for investment and the movement of people. Table 3 reports estimates of tariff equivalents for five service sectors in 6 ASEAN countries.[5] These rates are used in our model. Protection is estimated to be minimal in electricity, gas and water, high in other private services (including financial services) for all countries save Singapore, and high in trade and transport in the Philippines and Thailand. Thus, liberalization of trade in services with the AEC could have significant effects on services trade and other linkages that depend on services as inputs.

II.3   The ASEAN Economic Community project

ASEAN has steadily reformed its commercial policies, roughly in line with its rising per capita incomes. Moreover, most of the region's transition economies have now adopted market-oriented commercial policies, stimulated in part by accession to ASEAN. However, the data also suggest that significant tariff and NTBs remain. Given an increasingly competitive global context, their elimination has become the focus of the AEC project. Table 4 summarizes the principal initiatives of the Blueprint as well as the modeling methodologies we use to represent these initiatives in our modeling analysis.

5   These data were provided by the 'Michigan model', the trade model maintained at the University of Michigan. We thank Alan Deardorf, Robert Stern and Kozo Kiyoto for providing these data to us.

Table 4   Overview of the AEC Blueprint

Core elements	Actions	Model representation
A. Single market and production base		
1. Goods	Eliminate duties, non-tariff barriers	Lower tariffs
	Simplify rules of origin	Lower goods non-tariff barriers
	Trade facilitation, customs integration, single window	
	Harmonize standards and regulations	
2. Services	Remove restrictions on service trade	Lower service non-tariff barriers
	Allow at least 70% equity participation	
	Schedule commitments	Higher FDI flows
	Extend mutual recognition agreements, liberalize financial services	
3. Investment	Investment protection, facilitation, promotion, liberalization	Higher FDI flows
	Non-discrimination, national treatment	
4. Capital	Harmonize regulations	
	Promote cross-border capital raising	
5. Labor	Facilitate movement of skilled and professional labor in cross-border trade	Lower service non-tariff barriers
	Enhance movement of students	
	Work toward harmonizing qualifications	
6. Priority sectors	Projects in priority sectors	
7. Food, agriculture, forestry	Harmonize best practices, sanitary and phytosanitary measures, safety and quality standards, chemical use, regulation of products derived from biotechnology	Lower goods non-tariff barriers
	Promote technology transfer	
B. Competitive economic region		
1. Competition policy	Introduce competition policies and develop regional networks and guidelines	Lower goods non-tariff barriers
2. Consumer protection	Develop regional networks and guidelines	
3. Intellectual property rights	Implement ASEAN Intellectual Property	Higher FDI flows
	Rights Action Plan	
	Promote regional cooperation	
4. Infrastructure	Facilitate multimodal transport	Lower service non-tariff barriers
	Complete Singapore-Kunming rail link	
	Integrated Maritime Transport, open sky policies, single aviation market	
	High-speed information technology interconnections	
	ASEAN power grid, gas pipeline	
5. Taxation	Complete bilateral agreements	
6. E-commerce	Adopt best practices and harmonize legal infrastructure	Lower service non-tariff barriers
C. Equitable economic development		
1. Small and medium enterprises	ASEAN Blueprint of best practices	
2. Initiatives for integration	Technical assistance and capacity building in low-income countries	
D. Integration into the global economy		
1. Coherent approach	Review free trade area commitments	Free trade areas with other economies
	Establish coordination and possibly common external approaches	
2. Supply networks	International best practices and standards	
	Technical assistance	

Source: Based on ASEAN (2007).

The Blueprint targets four objectives: (i) a single market and production base; (ii) a highly competitive economic region; (iii) a region of equitable economic development; and (iv) a region integrated into the global economy. Within these areas, it identifies 17 core elements and 176 priority actions. For many actions, the Blueprint sets explicit implementation sub-periods and sometimes references more detailed plans and agreements. For example, much additional planning has already been completed on initiatives such as the Singapore–Kunming railway, the ASEAN Power Grid and the ASEAN Open Skies Agreement.

The implementation of such a comprehensive undertaking would be challenging under any circumstances, but in ASEAN it must proceed in the context of rapidly transforming national policy structures and wide regional gaps in development and capacity. Moreover, the principal coordinating mechanism of the integration effort, the ASEAN Secretariat, is very small; its operating budget in 2008 was only US$9 million and it was restricted by ASEAN's policy of funding common expenditures with equal contributions by all members. Although leaders recognize the implications of these constraints, they have yet to agree on relaxing them.

To stimulate progress in this setting, the Secretariat has drafted an 'AEC Scorecard' to assess implementation of the measures scheduled under the Blueprint at the end of each sub-period. The first Scorecard report released in March 2010 summarized progress until the end of 2009 and found that implementation of the scheduled measures (110 in all) had reached 82, 50, 100 and 100 percent in the four Blueprint areas. In addition, the project is supported by the relatively new Economic Research Institute for ASEAN and East Asia, which conducts fine-grained research on regional trade and investment barriers.

The effectiveness of implementation might not be clear for some time. The sub-period that ended in 2009 did not address the most difficult steps, yet it is already evident that the implementation of 'behind the border' reforms (many of which fall in the second Blueprint area, the 'competitive region' target) will be especially challenging. Some recent studies attempt to measure the full barriers remaining in each target area (Urata and Okabe, 2010). Monitoring such measures, in addition to the Scorecard's approach of measuring the percentage of scheduled measures implemented, will be important for assessing progress.

III.   Modeling Methodology

Designed to provide a comprehensive framework for economic integration, the AEC comprises initiatives ranging from lowering barriers to trade and investment to harmonizing regulations and policies. Such deep integration promises to generate gains well beyond what could be obtained through the tariff liberalization objectives of the ASEAN Free Trade Area (AFTA).

What ultimate benefits can ASEAN expect from these efforts? Despite the political and economic importance of this question, we are not aware of any study that has attempted to estimate the full effects of the implementation of the AEC

Blueprint. We begin with a brief summary of existing work and then present the CGE modeling approach used in the study to assess the potential impact of the AEC.

III.1 Previous studies of deep integration

Several CGE studies have examined eliminating tariffs and NTBs in AFTA. However, the measures articulated in the AEC Blueprint go well beyond the elimination of border barriers to create a 'single market', and also encompass initiatives in trade facilitation (such as the alignment of standards), improving the climate for foreign investment, liberalizing services trade and concluding new trade agreements with external partners. The example of European integration suggests that a single market created through such initiatives not only generates gains from trade based on comparative advantage, but also gives rise to new horizontal trade based on economies of scale. Hence, more comprehensive modeling approaches are needed to estimate the implications of deeper integration efforts such as the AEC.

An estimate of the differences between narrow measures of liberalization, such as the removal of tariff and obvious non-tariff barriers, and broad measures, such as improving customs clearance, aligning standards, lowering transaction costs and facilitating international market access, is provided by Brooks et al. (2005). They use simulations to compare the impact of narrow and broad liberalization efforts on real income, exports and terms of trade.[6] Under a narrow scenario limited to tariff changes, real income rises in the range of 0.9–2.9 percent for East Asia, 1.9–6.6 percent for South-East Asia and 0.3–0.6 percent for South Asia. Such magnitudes are typical of the published literature. In the broad scenario, they assume that non-tariff-related trade costs are approximately 120 percent and also cut these impediments in half over a 20-year period for East Asia, South-East Asia and South Asia.[7] These assumptions make the gains many times as large, in the ranges of 8.1–53.8, 35.5–116.6 and 10.4–22.4 percent for the three sub-regions, respectively. The AEC aims at efficiency increases similar to those in this broad scenario, and the comparison suggests that the gains could be a multiple of those obtained through AFTA.

Other studies of trade facilitation also show large gains. De Dios (2006) estimates that a 10-percent savings in transport costs will increase trade by approximately 6 percent. Wilson and Shepherd (2008) show that the gains from improvements in trade facilitation in ASEAN will yield far greater gains than comparable tariff reforms. For example, improving port facilities alone in ASEAN should expand trade by 7.5 percent, or US$22 billion. Infrastructure

6 Brooks et al. (2005, p. 4) model the second scenario liberalization as an 'iceberg effect', in which a fraction of goods and services 'melt away in transit due to the trade costs'.
7 It is important to note that this value is a guesstimate and is not derived systematically or empirically.

improvements noted in the AEC Blueprint for Indonesia, Malaysia, the Philippines and Thailand should increase per capita income by 2–12 percent.[8]

A natural experiment for gauging the benefits of AEC is the European Community's (EC's) Single Market program. At the time this program was adopted, the EC was already a customs union, but it did not have a common commercial policy[9] and its markets were still segmented in various ways. The 'Cecchini Report' (Cecchini, 1988) estimated that the single market would increase the EC's income by up to 6.5 percent. This gain would come on top of integration measures already in place after 30 years of regional cooperation. Economies of scale, seen as a key motivation for the single market and production base, accounted for a 2-percent increase in income. A direct comparison is not possible; the European project included measures that go beyond those incorporated in the AEC, and the AEC envisions steps that were not required in Europe. ASEAN has further to go, and potentially more to gain, in integration than Europe did when the EC was formed. The AEC also places more emphasis on best practices than national treatment, and its effects might well be larger for some countries and areas.

Hertel et al. (2001) analyze the potential gains from the Japan–Singapore FTA, a 'new age', deep-integration initiative that includes many of the measures outlined in the Blueprint. Moreover, because Japan's average tariff is less than 2 percent in manufactures and Singapore has a zero average tariff, all of the effects come from other dimensions of liberalization, making the exercise comparable to moving from AFTA to the AEC.[10] Hertel et al. develop a dynamic CGE model using an *ex ante* simulation but with some *ex post* features to estimate dynamic policy changes associated with a deep-integration accord. These include the harmonization of e-commerce standards, the liberalization of services, automating customs services in Japan (to be consistent with Singapore) and an improved climate for investment flows. Interestingly, this 'new age' agreement leads to gains in all regions of the world, not only Japan and Singapore.

III.2 Modeling approach

The CGE model used in the present study is based on a global general equilibrium model developed by van der Mensbrugghe (2005) and Zhai (2008). The model has

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8   As is discussed at length in Chapter 5, this assumes convergence to the level of efficiency of the best performing ASEAN countries in this regard, which is Singapore. While 2–12% is a wide range (which is to be expected, given the difficulties associated with measuring efficiency in this context), even the most conservative results are large: a 2-percent increase in per capita income is greater than estimates of the effects of AFTA, for example.

9   The European Community did have a Common External Tariff, but NTBs and other controls varied widely across member countries. For example, while Italy and Germany applied the same tariff on Japanese auto imports, Italy only allowed in 3000 Japanese cars per year. In contrast, Germany had no quantitative restrictions at all. This kind of diversity leads to significant market segmentation.

10   Of course, this does not make them completely comparable, as external tariffs are greater than zero in the post-AFTA commercial policy regimes of the ASEAN Member States. Still, the point here is that tariff changes are insignificant for the simulation results.

its intellectual roots in a long tradition of multi-country applied general equilibrium models (Shoven and Whalley, 1992). A novel feature of the model is its incorporation of recent innovations in heterogeneous firm trade theory into an empirical global CGE framework. The model features intra-industry firm heterogeneity in productivity and fixed cost of exporting, which enables us to investigate the intra-industry reallocation of resources and the exporting decision by firms, and, thereby, capture both the intensive and extensive margin of trade.

This model is especially appropriate for assessing the implications of deep integration efforts. Because the AEC addresses market impediments ranging from border barriers and restrictions on foreign investment to the harmonization of standards and policies across the economies, its successful implementation should bring major changes in the region's industrial structure. The model's monopolistically competitive industrial structure enables it to track how these changes will lead to additional varieties of goods becoming available to consumers in each market. Its scale-sensitive production function allows it to track productivity gains associated with the growth of the average firm. Its treatment of productivity variations among firms enables it to track how increased competitive pressures shift production from relatively unproductive firms to relatively productive ones. Thus, the model reflects gains associated with several recent advances in trade theory, including gains from adding varieties, achieving greater scale and changing intra-industry distributions of firm productivity.

The full specification of the model is described in Appendix I. It is calibrated to the GTAP Version 7 database (released in November 2008) and the 2004 base year of that dataset is projected to 2015 (the scheduled implementation date of the AEC) in the baseline using IMF growth projections. The provisions of the AEC, as earlier described, are modeled in terms of the following five effects:

1 Elimination of all remaining tariffs on goods trade. This objective was adopted in AFTA and has been reinforced by new AEC provisions that accelerate tariff reductions by progressively limiting the number of 'excluded' categories.
2 Reduction of non-tariff measures in goods. This effect is simulated by eliminating trade barriers implicit in disaggregated trade restrictiveness indexes (which express barriers as tariff equivalents) estimated by the World Bank.[11]
3 Improvements in the climate for investment. These effects are initially modeled outside the CGE framework, by estimating how upgrading the investment climate to regional 'best practices' is likely to increase FDI inflows into each ASEAN economy. The methodology is described in Appendix II. The estimated FDI effects are then introduced in the CGE model, where the investment leads to increases in capital stocks, production and exports.
4 Liberalization of trade in services. Estimated barriers are reduced in five sectors: utilities, construction, trade transport, private services (including

11   http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/0,,contentMDK: 21085342~pagePK:64214825~piPK:64214943~theSitePK:469382,00.html.

financial services) and government services. Initial levels of protection are based on tariff equivalents in service trade estimated by the Michigan model team, as reported in Table 3.[12]

5 Trade facilitation to reduce trade costs. Trade costs are assumed to fall by 5 percent of the value of trade as a result of the AEC. This is a substantial reduction, but some other studies cite larger estimates. It is generally consistent with the goal of generating 'lower bound' estimates. The reduction in trade costs is modeled using an 'iceberg' approach.

IV. Implications of the ASEAN Economic Community

The scenarios show, in a sequential manner, how the components of the AEC contribute to overall benefits. The relationship of Blueprint target areas to modelling representations are reported in Table 4.

IV.1 Scenarios

We conduct the analysis by comparing five scenarios that introduce the elements of the Blueprint and new international agreements with external partners. An important objective of the AEC is to make the region more attractive as a partner for other countries and regions and the benefits of these efforts will be fully realized if ASEAN concludes additional FTAs. This possibility is addressed in scenarios that explore FTAs between ASEAN and 'plus six' partners,[13] the USA and the EU. Negotiations with most of these partners (except for the USA) have been concluded or are under way. The USA signed a Treaty of Amity and Commerce with ASEAN in 2009 and recently joined the East Asia Summit.

The five scenarios are summarized in Table 5. They were implemented relative to an estimated 2015 baseline, which incorporates the general expansion of ASEAN economies (based on IMF estimates) but freezes trade policy at 2004 levels. The results of the simulations are reported in the following sections, focusing in turn on welfare benefits, trade effects and the structure of output by sector.

IV.2 Welfare gains from regional integration

The welfare effects of the five scenarios are presented in Table 6. The table reports effects in terms of equivalent variations (EVs); that is, the income changes that would have been required to achieve welfare changes equivalent to those caused by the policy shocks, expressed in US$ billions and as percentages of GDP.[14] The estimated benefits are substantial and similar in magnitude to those estimated for

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12 We are grateful to Alan Deardorff, Robert Stern and Kozo Kiyota for supplying these data.
13 These are Australia, China, India, Japan, Korea and New Zealand.
14 All numbers are based on an 'equivalent variation' approach to estimating the changes in welfare.

Table 5   Scenario definitions

Scenario	Name	Description
A	AFTA	Completion of the AFTA agreement through the elimination of remaining intra-ASEAN tariffs. Because the base year of the data is 2004, these effects might include changes that have been already implemented by the time of this writing.
B	AFTA+	Intensification of AFTA through the removal of NTB, including regulatory barriers, such as diverging standards and testing requirements. In the absence of detailed information on such barriers, they are modeled by assuming a horizontal reduction in trade costs of 5 percent of trade values.
C	AEC	Reforms that improve the investment climate. They are modeled by increasing FDI inflows to levels expected in 'model' countries with a strong investment climate (the methodology is described in Appendix II).
D	AEC+	Bilateral FTA between the AEC and East Asian Summit countries (Australia, New Zealand, India, Japan, China and South Korea). Barriers remain in place among the non-ASEAN partner economies (these too would be eliminated under the proposed Comprehensive Economic Partnership of East Asia).
E	AEC++	Further bilateral FTA between the AEC and the USA and the European Union. Barriers remain in place among non-ASEAN partners.

the European Single Market,, but in this case are derived from real integration alone, without the macroeconomic dimensions of European integration.

We begin by examining the effects of the AEC absent any of the 'knock on' effects that would derive from strengthening relations with extra-regional partners. These initial effects, based solely on simulating the effects of intra-regional integration initiatives, are summarized in the first three columns of Table 6. As noted in our discussions of the model, these gains combine several effects, including standards gains from trade, increased access to product varieties and productivity improvements due to increases in the relative size of more productive, export-oriented firms.

The full implementation of the AEC (the middle column of Table 6) would raise ASEAN real incomes by US$69.4 billion, or 5.3 percent over 2004 baseline income. Compared to the studies reviewed in Section III.1, these are large magnitudes compared to those usually estimated in studies of free trade areas due to the comprehensive ambitions of the AEC project. The benefits are relatively large in percentage terms for those economies that are relatively heavily protected initially by tariffs and non-tariff barriers, such as Cambodia and Indonesia. General equilibrium studies typically show that protected economies benefit most from eliminating their own trade barriers, because such policies allow resources to move from less to more productive sectors. The benefits are also large for open economies that have very intensive trade relations with the region, and, hence, gain from the removal of regional trade barriers. For example, Singapore's trade is more than four times its output and approximately one-quarter of this trade is

Table 6   Welfare gains relative to the baseline (2015)

	AFTA	AFTA+	AEC	AEC+	AEC++
A. US$billions, 2004 price, EV					
ASEAN	10.1	38.0	69.4	115.6	151.0
Cambodia	0.3	0.5	0.6	0.7	1.2
Indonesia	1.0	6.2	27.6	36.5	43.2
Laos	0.0	0.1	0.2	0.2	0.2
Myanmar	0.0	0.2	0.6	0.7	1.4
Malaysia	2.7	2.9	5.7	21.1	27.9
Philippines	0.9	2.2	4.5	4.4	5.9
Singapore	2.6	14.0	15.1	18.1	19.0
Thailand	1.6	9.8	12.2	19.5	25.8
Vietnam	0.9	1.6	2.4	13.8	25.7
Brunei	0.2	0.4	0.5	0.6	0.7
Partners					
China	0.4	−4.6	−7.8	−6.5	−12.2
Japan	0.1	−1.3	−1.6	9.2	7.3
Korea	−0.2	−1.4	−2.7	10.6	9.1
India	0.8	0.1	−0.8	23.9	23.5
Australia	0.0	−0.2	0.2	0.3	0.1
New Zealand	−0.1	−0.1	−0.1	−0.1	−0.2
USA	0.2	−2.8	−1.8	−3.7	−3.6
Europe	−0.3	−7.1	−2.3	−5.4	−6.2
World	11.4	19.4	52.7	143.4	166.8
B. EV as percentage of baseline GDP					
ASEAN	0.8	2.9	5.3	8.9	11.6
Cambodia	2.7	5.4	6.3	7.2	12.3
Indonesia	0.2	1.4	6.2	8.2	9.7
Laos	0.6	2.5	3.6	3.8	4.6
Myanmar	0.3	1.2	4.4	4.8	9.3
Malaysia	1.4	1.5	3.0	11.2	14.7
Philippines	0.6	1.6	3.2	3.2	4.3
Singapore	1.6	9.0	9.7	11.6	12.2
Thailand	0.6	3.9	4.9	7.8	10.4
Vietnam	1.1	1.8	2.8	16.0	29.8
Brunei	2.6	5.4	7.0	9.3	10.6
Partners					
China	0.0	−0.1	−0.2	−0.1	−0.3
Japan	0.0	0.0	0.0	0.2	0.1
Korea	0.0	−0.1	−0.3	1.1	0.9
India	0.1	0.0	−0.1	1.7	1.6
Australia	0.0	0.0	0.0	0.0	0.0
New Zealand	0.0	−0.1	−0.1	0.0	−0.1
USA	0.0	0.0	0.0	0.0	0.0
Europe	0.0	0.0	0.0	0.0	0.0
World	0.0	0.0	0.1	0.3	0.3

with ASEAN partners. The reduction of regional barriers thus provides large direct as well as terms-of-trade benefits for Singapore.[15]

Most of the increase in real incomes would be derived from aspects of regional integration that go beyond tariff reductions. The benefits gained from eliminating all remaining intra-regional tariffs, that is, completing regional tariff liberalization under AFTA, are estimated to be US$10.1 billion. The benefits that would come from trade facilitation that reduces NTBs is estimated to be US$27.9 billion (calculated as the difference between the AFTA and the AFTA+ results). The largest increment, US$31.4 billion, would come from investment facilitation that increases FDI inflows into liberalizing economies (the difference between the AFTA+ and the AEC). Such effects would be especially important for economies such as Indonesia, which have inward FDI stocks well below the levels that might be expected given their size and level of development. If we assume that AEC provisions will reduce the gap between the current investment climate and the frontier in all member economies, substantial additional inward investment could be expected in those countries that are now below regional norms (Appendix II). Altogether, the non-tariff components of the project would generate six times the benefits of remaining tariff liberalization.

Most economies that are not part of ASEAN would experience losses due to the AEC's trade and investment diversion effects. However, these losses are estimated to be small (US$16.7 billion) compared to ASEAN's gains and, on the whole, the AEC would generate substantial net global benefits (US$52.7 billion). In effect, 76 percent of ASEAN's total benefits would be derived from trade and investment creation rather than diversion. Among non-ASEAN economies, Australia would benefit; ASEAN's improved productivity and expanding import demands would improve Australia's terms of trade. China, Korea and Europe would experience losses, because the exports of these economies to the region are more easily replaced by intra-regional sources. Even so, the largest of these losses is small: only 0.3 percent of income. Given the overall benefits generated by the AEC project, there should be ample resources to compensate partner economies that are adversely affected by regional integration: for example, by lowering most-favoured-nation trade barriers that provide broad global gains.

IV.3   Welfare gains from external partnerships

An important goal of the AEC is to accelerate the region's integration into global markets. Creating a larger market and more efficient production systems should

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15   To give an insight into the model's operation, Singapore's large projected gains derive from three factors: (i) given the openness of the Singaporean economy, the reduction in trade costs generates a large benefit, roughly 40 percent of the country's total gain; (ii) Singapore's NTBs in agriculture are reasonably high (13.2) and their elimination produces significant benefits; and (iii) comprehensive tariff removals under AFTA provides Singaporean exporters with a significant terms of trade improvement.

strengthen ASEAN's trade relationships in Asia and elsewhere and make the region a more attractive partner for trade agreements with other countries. These benefits are explored in two 'external trade agreements' scenarios that envision new or more fully implemented FTA agreements with two groups of partners. The first scenario envisions deepening the process of integration with the 'plus six' economies (AEC+), while the second envisions concluding agreements also with the USA and Europe (AEC++). Both scenarios assume 'hub and spoke' arrangements around ASEAN so that external partners grant preferential access to ASEAN without granting such access to each other.

The overall results show that such new agreements with major partners would more than double the benefits of the AEC to US$151.0 billion, or 11.6 percent of ASEAN GDP. Of the US$81.6 billion additional gains (relative to the basic AEC scenario), slightly more than half would derive from agreements with Asian partners and slightly less than half from agreements with the USA and Europe. Altogether, these results suggest that approximately 46 percent of the potential benefits associated with the AEC project would be derived from deeper intra-ASEAN integration, 31 percent from integration with 'plus six' economies, and 23 percent from integration with advanced economies.

The benefits from deeper external integration are, as expected, larger for member economies with the strongest linkages outside the region (e.g. Malaysia, Thailand and Vietnam) and smaller for those that are mainly regionally oriented (e.g. Brunei and Laos). The specific external connections of the member economies help to explain the relative sizes of these effects. For example, because Malaysia and Thailand participate extensively in regional production networks, they tend to benefit more from the wider Asian linkages (AEC+), whereas Cambodia and Vietnam, which export final products to the USA and Europe, tend to have especially large gains from agreements that improve access to those markets (AEC++).

Some partners that conclude agreements with ASEAN in these scenarios now also show benefits instead of losses associated with trade and investment diversion. Japan and Korea, for example, receive sufficient benefits from preferential access to ASEAN markets to offset the diversion effects in other markets. However, this is not the case for China, Europe and the USA (countries that mainly focus on global markets) because preferential access to ASEAN markets does not provide sufficient gains to offset losses in third country markets. Still, overall global gains rise to US$166.8 billion, an amount that exceeds the gains of ASEAN alone. In other words, leveraging regional integration into new external partnerships would benefit the rest of the world as well as ASEAN. Moreover, ASEAN integration could generate competitive reactions elsewhere, leading perhaps to broader Asia-Pacific or global liberalization initiatives.

These findings underscore the wisdom of making the AEC an open, outward-looking effort. Turning regional integration into a platform for building stronger connections with the global economy would roughly double the value of the AEC project.

IV.4   Implications for international trade

The benefits of intra-regional and broader integration are confirmed by estimates of the trade consequences of alternative scenarios. These results are summarized in Table 7, which reports percentage changes for exports and imports.

ASEAN exports will expand by 42.6 percent with the implementation of the AEC, whereas imports will expand by 35.4 percent. The difference between export and import expansion yields a small increase in the region's steady-state trade surplus, sufficient to cover additional income outflows from foreign investments. Those flows, in turn, represent profits earned on the additional FDI inflows that will be induced by the investment liberalization provisions of the AEC.

Among ASEAN countries, those with relatively high initial barriers, and, hence, subject to the largest impacts from the AEC, are projected to have the largest trade increases. For example, Cambodia, Laos, Myanmar and Vietnam are estimated to have trade increases in the 55.4–101.1-percent range. At the opposite extreme, the region's most open and outward-oriented economies (Brunei, Malaysia, Thailand and Singapore) register smaller export increases, in the 10.4–43.7-percent range.

As in the case of welfare gains, leveraging the AEC into new or deeper trade agreements with extra-regional partners would roughly double the effects: in this case, trade increases. However, this result varies substantially among member economies. For relatively small economies that are primarily regionally oriented, such as Laos and Brunei, trade agreements with large external partners would add relatively little to exports: 9 and 31 percent above AEC levels, respectively. Economies with substantial international market presence, such as Thailand and Vietnam, would see much larger effects, increasing exports to 154 and 334 percent above AEC levels, respectively.

The positive interaction between regional liberalization and trade with third countries is an important feature of the AEC project. These linkages are illustrated by the example of Vietnam, which would experience solid export growth under the AEC alone, but even greater export growth if further external agreements were concluded. Much of this growth would come in Vietnam's apparel sector, which is also a significant importer of textiles from other ASEAN countries and China. The expansion of this sector would be spurred by two mechanisms: reductions in Vietnam's own barriers on intermediate textile imports, which would make apparel production less costly and more competitive internationally, and reductions in protection in third markets, such as the EU, Japan and the USA, which have relatively high barriers against Vietnam's labor-intensive exports. As these mechanisms begin to expand Vietnam's production, they will be joined by a third mechanism: the scale effects of sharply increased output. The model suggests that these reinforcing effects would lead to unusually large gains: a tripling of Vietnamese exports.

The market orientation of economies also affects which agreements would matter the most. For most ASEAN members, agreements with 'plus six' countries would be more important than agreements with developed economies, because

Table 7   Effects on international trade (2015)

	AFTA	AFTA+	AEC	AEC+	AEC++
A. Change in exports (% from baseline)					
ASEAN	6.5	31.2	42.6	70.9	88.9
Cambodia	37.0	70.3	77.6	86.8	113.9
Indonesia	6.5	22.5	53.6	84.0	109.5
Laos	41.0	85.0	101.1	103.6	110.3
Myanmar	8.7	43.9	65.8	100.7	163.2
Malaysia	4.5	26.4	35.6	56.3	65.4
Philippines	2.9	25.4	45.4	67.3	82.4
Singapore	4.5	39.7	43.7	61.1	64.9
Thailand	8.8	27.8	33.6	63.5	85.5
Vietnam	15.4	49.0	55.4	160.1	239.5
Brunei	2.1	9.8	10.4	8.6	13.7
Partners					
China	0.0	−0.7	−0.8	7.5	6.9
Japan	−0.1	−0.6	−0.5	8.4	7.6
Korea	−0.2	−1.1	−1.5	7.1	6.6
India	0.1	−0.1	−0.3	57.4	57.0
Australia	−0.1	−0.5	−1.0	5.3	4.4
New Zealand	−0.3	−0.5	−0.6	6.1	5.1
USA	0.0	−0.3	−0.8	−1.4	2.9
Europe	−0.1	−0.3	−0.9	−1.3	0.6
World	0.4	1.8	2.1	6.4	8.4
B. Change in imports (% from baseline)					
ASEAN	7.0	32.7	35.4	67.8	86.4
Cambodia	39.5	76.5	82.0	93.4	135.3
Indonesia	7.1	24.3	17.6	60.0	86.0
Laos	32.8	70.0	73.3	75.7	82.3
Myanmar	7.8	39.7	45.1	78.9	132.9
Malaysia	6.0	34.2	40.6	70.9	81.4
Philippines	3.0	27.2	34.0	55.8	69.9
Singapore	4.4	34.5	38.1	54.5	58.1
Thailand	9.8	31.5	34.7	72.2	97.8
Vietnam	14.3	43.1	47.1	129.8	197.4
Brunei	6.1	28.1	30.1	27.2	41.8
Partners					
China	0.0	−0.8	−0.8	7.7	6.9
Japan	0.0	−0.5	0.1	10.8	9.9
Korea	−0.1	−0.9	−1.2	8.1	7.6
India	0.1	0.0	−0.2	40.8	40.8
Australia	−0.1	−0.4	0.3	7.5	6.6
New Zealand	−0.4	−0.5	−0.3	8.4	7.3
USA	0.0	−0.1	0.2	0.3	3.3
Europe	0.0	−0.1	0.1	0.4	2.4
World	0.4	1.8	2.2	6.6	8.6

their trade involves Asian networks and they face higher rates of protection in Asia than in developed markets. For Vietnam, the effects would be similar. However, in the case of Cambodia, agreements with developed economies would be more important because exports are mainly destined for those markets and involve products (such as clothing and footwear) that are relatively protected.

Thus, the AEC, as intended, would stimulate trade and the integration of member economies with each other and with the global economy. Importantly, its effects would be relatively strong for the trade of ASEAN's newest (and poorest) members. Therefore, the deepening of regional and global linkages could also help to address the political goal of reducing regional inequalities. However, the results also show that the importance of external markets varies among member economies, generating potential differences in priorities attached to future agreements that could, in turn, generate disagreements about external initiatives.

IV.5   Implications for sectors

The AEC project will have important structural implications. Table 8 shows changes in sectoral output under each scenario for ASEAN as a whole. The changes are large enough to suggest significant adjustments in employment and

Table 8   Effects on sectoral output, 2015 (% change from baseline)

	AFTA	AFTA+	AEC	AEC+	AEC++
Primary materials					
Paddy rice	−1.2	−3.5	−4.6	−3.8	−1.6
Grains, other	−2.7	0.7	−5.0	−13.4	−24.5
Crops, other	0.0	−1.0	−2.8	4.3	1.6
Livestock	1.8	0.1	−0.2	5.8	6.5
Natural resources	−0.3	−2.5	−3.1	−4.1	−5.3
Mining	0.1	−0.5	−1.1	−2.3	−2.8
Manufacturing					
Food	8.6	9.8	12.8	53.7	50.8
Textiles	5.8	8.2	27.3	35.4	81.4
Wood products	1.8	−4.7	3.0	−11.1	−16.7
Apparel	5.7	9.0	18.4	90.0	194.3
Chemicals	2.0	4.1	12.6	13.8	13.4
Metals	1.1	18.2	31.9	4.1	9.2
Electrical equipment	−1.9	23.4	35.9	47.0	51.8
Machinery	1.2	21.3	34.3	39.2	37.7
Vehicles	3.6	13.9	22.8	−5.7	−6.8
Other manufactures	0.3	2.3	10.3	7.3	7.0
Services					
Utilities	0.4	1.4	8.6	4.9	5.7
Construction	0.2	3.6	7.3	13.0	14.5
Trade, transport	−0.7	−3.2	1.9	0.3	0.3
Private services	−1.5	−7.7	1.7	−3.9	−9.4
Government services	0.0	−0.6	−0.9	−1.0	−1.0

investment patterns. They also provide insight into the types of political challenges that are likely to be involved in implementation.

An important driver of the results is the potential for developing a stronger manufacturing sector in the fully integrated ASEAN. The products of this sector are highly tradable and benefit from scale effects associated with greater regional production and trade. In addition, relatively high initial levels of protection provide room for improving productivity, increasing specialization and creating wider access to product variety. All these factors will help to make manufacturing the principal beneficiary of the integration project. The productivity gains associated with these developments will affect the region's intra-regional trade, trade with other countries and resource allocation.

Productivity increases in the manufacturing sector as a whole will reinforce ASEAN's comparative advantage in several important manufacturing subsectors, resulting in more intra-regional trade as well as more exports to third markets. In the absence of additional external trade agreements, the basic AEC project (shown in the three left-most columns of Table 8) will stimulate all manufacturing sectors. Tariff cuts will do much of the work in the case of labor-intensive industries: for example, tariff cuts will increase food production by 8.6 percent compared to 12.8 percent under the implementation of all AEC provisions.

The growth of the more advanced manufacturing sectors will depend on the two other components of the AEC: the removal of NTBs (AFTA+ column) and improvements in the investment climate (AEC column). In metals, for example, output would increase by 1.1 percent if tariffs were fully eliminated, by 18.2 percent if non-tariff barriers were also removed and by 31.9 percent if investment were also fully liberalized. Similar patterns emerge in other industries, with full implementation yielding growth in the 20–30 percent range for the apparel, metal products, electrical equipment, machinery, and vehicles sectors. These sectors are relatively capital-intensive and technology-intensive, and increased inward investment reduces capital costs as well as improves access to foreign technologies. Because these sectors are relatively trade-dependent, an increase in exports generates a larger increase in output than would be the case in more domestically-oriented industries. Of course, there are substantial variations in the results across countries, with Vietnam and other low-wage economies leading the apparel sector, and Malaysia and Thailand spearheading production increases in machinery and vehicles.

In general, rising manufacturing productivity will shift ASEAN's comparative advantage toward manufacturing and, consequently, away from primary materials and services. In the basic AEC scenario (without further external agreements) primary materials output will shrink relative to the baseline at rates ranging from 0.2 percent for livestock to 5 percent for other grains. (To be sure, because the baseline projects growth and the AEC will be implemented gradually, these negative values imply less rapid growth rather than actual output declines.) Services will also grow less rapidly than manufacturing, but they will not all shrink. There will be strong demand for services because they account for a relatively large

share of rising consumption, and also figure significantly as inputs into manufacturing. Because services tend to be domestically produced, these demand effects will outweigh declining comparative advantage in some service industries. Thus, utilities and construction are projected to rise by approximately 8 percent, while other service sectors are projected to be essentially unchanged relative to the baseline.

The external FTA examined in the last two scenarios (AEC+ and AEC++) would amplify and also modify these patterns. Given strong productivity gains in manufacturing, the additional trade opportunities created by external agreements would amplify the shift of resources into most manufacturing sectors, including textiles, apparel, electrical and other machinery. In turn, imports of other grains and natural resources would increase. However, other shifts would vary more subtly by country and partner. For example, agreements with more advanced economies would open markets to greater ASEAN imports of motor vehicles, in exchange for more labor-intensive exports. Agreements with Asian partners (but not with North America) would generate additional exports of food manufactures and construction services, and more ASEAN imports of metals.

These allocation effects have an important common denominator: they improve the productivity of ASEAN resources and raise incomes. Yet, they also imply significant structural adjustments within the region and within countries. We have not examined the distributional implications of these adjustments in detail, but the slow growth of traditional sectors (agriculture, raw materials and services) and the fast growth of manufacturing normally tend to benefit younger, more mobile and better educated workers relative to those who have less human capital. These differences, in turn, could adversely affect income distributions. Such effects should not be viewed as an argument against the AEC, but they do call for careful monitoring and, as necessary, compensation and offsetting social policies.

V. Conclusions

The AEC is a highly ambitious effort to enhance ASEAN's global competitiveness. Through the free flow of goods, services and skilled labor, the project intends to establish an efficient 'single market and production base' encompassing nearly 600 million people and US$2 trillion in production. The project is comparable in scale and difficulty to that of European integration. Although the AEC does not involve the macroeconomic cooperation attempted in Europe, it faces other large challenges associated with its diversity and varied levels of development

Estimating the economic effects of such a comprehensive project is difficult and speculative. Although the implications of liberalizing explicit barriers to goods trade are relatively well understood, the effects of easing regulatory and other impediments to flows of goods, services and investment are less so. Other aspects of the AEC project (the free movement of skilled labor, extended cooperation in capital market development and the implications of ASEAN increased clout for international negotiations) are even more difficult to assess. This study

is based on a more comprehensive model than is the case with most other studies of regional integration, but the results are still best viewed as rough lower-bound estimates of an enormously complex undertaking.

The central conclusion of this study is that the value of the AEC is likely to be large. Real incomes of ASEAN economies could rise by 5.3 percent. Most of these benefits would result from the deeper integration effects of the AEC; that is, from initiatives that go beyond the full elimination of intra-regional tariffs. The benefits could be still larger if, as expected, regional integration enhances ASEAN's clout and enables it to negotiate attractive agreements with major trade partners. These effects could more than double the gains to 11.6 percent of income. Somewhat more than half of the additional gains would come from deeper FTA with East Asian neighbors and the rest from agreements with the USA and Europe.

The benefits would be widely spread across ASEAN members. Although there is no simple income pattern to these gains, some results suggest an acceleration of the integration of low-income countries into the region's economy. Despite some trade and investment diversion effects, the world would benefit from the AEC too, especially if its results include new external agreements. Most scenarios suggest robust growth in trade both within the region and with third countries.

Regional integration is likely to have the most salient effects on manufacturing, where diminished barriers to trade and investments should generate greater inter-dependence, stronger production networks, larger economies of scale and wider access to product varieties. Deeper integration would enable ASEAN to combine and exploit more fully the production advantages offered by its diverse member-ship. This should lead to significant productivity gains and greater consumer satisfaction everywhere. As manufacturing productivity rises, resources are likely to shift toward manufacturing, leading to greater imports of primary materials and services from the rest of the world. Some ASEAN primary materials producers could benefit from these trends, but others are likely to expand slowly or not at all. This implies costly adjustments for sub-regions and individuals, and argues for policies that support adjustment and mitigate potential hardships. Such resource shifts (and, of course, their corresponding economy-wide benefits) would be amplified if regional integration were complemented by new trade agreements with extra-regional partners.

Overall, the AEC would yield benefits similar to those of the EU. This might seem surprising because the ASEAN economies are less closely integrated today (and are arguably less complementary) than were those of Europe at the outset of their integration initiative, and their integration program is more limited. Howver, given ASEAN's relatively early stage of development, existing barriers to trade are greater and their elimination could yield larger productivity gains relative to current trade. These benefits appear to outweigh the effect of lower initial integration.

As the ASEAN economies continue to mature and work more closely together, the benefits of integration will grow. With rising incomes and trade, the region is also likely to develop the horizontal, inter-industry linkages that have come to

characterize the European single market effort. This promises further benefits in the future, in addition to those captured in our modeling.

There is little doubt that the AEC is a highly complex undertaking that will require great political commitment to complete. In addition, the project will involve significant structural adjustments. Yet, the results of this study show high returns to overcoming these challenges. In today's difficult global environment, few policy alternatives could promise benefits on a similar scale.

Appendix I

Computable general equilibrium model

Agriculture, mining and government services sectors are assumed to exhibit perfect competition and constant returns to scale, and their trade is modeled using the Armington assumption. Manufacturing and private services are assumed to be characterized by monopolistic competition and the production and trade structure proposed by Melitz (2003). Each sector consists of a continuum of firms differentiated by the varieties they produce and their productivity. Firms face fixed production costs, resulting in increasing returns to scale. There are also fixed costs and variable costs associated with exporting activities. Demand is represented by Dixit–Stiglitz preferences over the continuum of varieties. As a monopolist for the variety it produces, each firms sets its price at a constant markup over marginal cost. The firm enters domestic or export markets only if the net profit generated from such sales covers fixed cost.

Production technologies are modeled using nested constant elasticity of substitution functions. At the top level, output is produced as a combination of intermediate demand and value added. At the second level, intermediate demand is split into commodities according to a Leontief technology and value added is split into a capital–land bundle and aggregate labor. At the third level, labor is decomposed into unskilled and skilled labor, and the capital–land bundle is decomposed into capital and land (for agriculture) and capital and resource endowments (for natural resources). Factor endowments are fixed and all markets clear through price adjustment.

Incomes generated from production accrue to a household that maximizes utility using an extended linear expenditure system. Savings enter as a good with a price equal to the average price of consumer goods. Investment demand and government consumption are specified as Leontief functions. Final and intermediate demand are decomposed into domestic and imported varieties using Dixit–Stiglitz preferences.

There are three macro closures: the net government balance, the trade balance, and the investment and savings balance. Government consumption and saving are set exogenously.

Current account balances (net foreign savings) are also set exogenously. The price index of OECD manufacturing exports is the numéraire, and equilibrium is

achieved by changing relative prices, or the real exchange rate, across regions. Domestic investment is the endogenous sum of household savings, government savings and foreign savings.

Appendix II

Effects of the ASEAN Economic Community on foreign direct investment

How much additional foreign direct investment (FDI) will be stimulated by the AEC? An empirical estimate is developed by moving ASEAN FDI stocks closer to 'frontier' levels; that is, to those that prevail among successful FDI-attracting economies. Three different measures of the frontier are used:

- The average of the three highest years of FDI/GDP ratios experienced in the past;
- The 75th percentile of the global distribution of FDI/GDP ratios; and
- The average of the economy's current FDI/GDP ratio and the global 90th percentile.

Economies with ratios above these estimates were assumed to remain unaffected. Results are reported in Table A1. The FDI effects range from 28 to 63 percent of baseline stocks, yielding additional FDI stocks of US$117–$264 billion relative to the 2006 baseline. All economies, except Singapore, would gain FDI; Singapore's stocks are already near the top of the global distribution.

Table A1   Effects of the ASEAN Economic Community on FDI Stocks ($ millions)

	Actual FDI stock (2006)	Alternative estimated stocks (2006) Top 3 years	75th percentile	1/2 to 90th
ASEAN	420 025	536 993	684 178	643 649
Brunei	9 861	19 057	15 312	15 312
Cambodia	2 954	3 245	3 481	3 969
Indonesia	19 056	77 545	178 794	134 655
Lao	856	1 209	1 686	1 599
Malaysia	53 575	90 704	73 067	78 074
Myanmar	5 005	7 165	6 378	7280
Philippines	17 120	17 849	57 364	48 757
Singapore	210 089	211 070	210 521	210 521
Thailand	68 058	68 928	101 180	104 599
Vietnam	33 451	40 221	36 395	38 883

Notes: The welfare gains associated with these FDI increases will accrue to foreign investors as well as the host economy (through higher tax collections, technology transfers, human capital investments, connections to foreign markets and a wage premium paid by foreign companies). Overall, these annual host-economy benefits could be on the order of 5 percent of foreign direct investment (FDI) stocks. Thus, benefits associated with the FDI increases calculated in Table A1 could be in the annual US$6–13 billion range, or 0.5–1.0 percent of annual ASEAN GDP. The dynamic effects might be still greater if FDI helps to raise the economy's rate of productivity growth.
Source: UNCTAD and simulations described in text.

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