August 2009

IIDE
research report:
200908-01

IIDE institute for international and development economics

RESEARCH REPORT

Trade Impact Assessment (Trade SIA) of an EU-ASEAN Free Trade Agreement

Joseph Francois
Miriam Manchin
Hanna Norberg
Annette Pelkmans

Prepared under support from the European Commission – DG Trade
TRADE07/C1/C01 – Lot 2

Stichting IIDE, Institute for International & Development Economics
www.i4ide.org

Executive Summary

TRADE IMPACT ASSESSMENT (TRADE SIA) OF AN EU-ASEAN FREE TRADE AGREEMENT

This study deals with the analysis of the effects of a potential Free Trade Agreement (FTA between EU27 and ASEAN. Towards this end, it employs the IIDE Computable Equilibrium (ICE) model of the global economy.

EU and ASEAN are seen as front-runners in regionalism, so it is worthwhile to consider the possible impact of an inter-regional FTA, especially in the context of the rapid proliferation of regional agreements in the last few years.

The baseline scenarios used in the analysis have three key features. First, the world economy is projected to 2014 in order to take ASEAN's increasing growth rates into account, and to be able to go beyond the immediate short term impact of the FTA. Second, it is taken as given that the trade and investment agreement negotiated is a WTO-compatible FTA for goods and services. Lastly, we assume a *FTA-plus* setting where agreements on non-tariff and regulatory areas are included.

The results on the whole, point to positive effects for most of ASEAN under all scenarios, and small but positive effects over the long-run for the European Union. Throughout the study, some negative results are observed for other ASEAN countries (Brunei, Cambodia, Laos, and Myanmar). As expected, income and trade gains increase as liberalization deepens and as more dynamic effects are taken into account. The latter is particularly important for ASEAN, whose growth is often constrained by insufficient capital resources.

In terms of income effects, the EU and Singapore gain the most, 51 and 78 percent of these gains, respectively, are due to the removal of the barriers to Services trade. It is Vietnam, however, that reaps the largest rise in GDP growth, while the EU, followed by Thailand, gains the most from the removal of non-tariff barriers. For the EU, about 87 percent of the income rise between these two scenarios is due to direct and indirect effects of trade facilitation alone.

The productivity effects of an EU-ASEAN FTA are also visible in the form of higher wages both for skilled and unskilled workers. This is particularly important for ASEAN as this would mean that the employment increase in key growth sectors will outstrip the reduction of employment in contracting sectors.

In terms of exports, the strong export performance of ASEAN projected here is largely driven by the export growth of ASEAN's new members, i.e., Vietnam (35%), Cambodia, Laos & Myanmar (13%).

There are negative effects for third countries, however. Indeed the net gains for most of ASEAN in the long-run are mirrored by comparable losses in third countries, much of which is carried by India and Pakistan. However, one must note that even in the scenario where the potential of trade diversion is the greatest, the effects are negative but rather trivial. Under the most ambitious trade liberalization scenario between the EU and ASEAN, it is Pakistan's exports that are largely affected, with its exports falling by 2.4 percent. For the rest of the world, exports fall by a mere 0.05 percent, so that trade diversion effects can indeed be considered minimal.

Table of Contents:

Chapter 1. Background

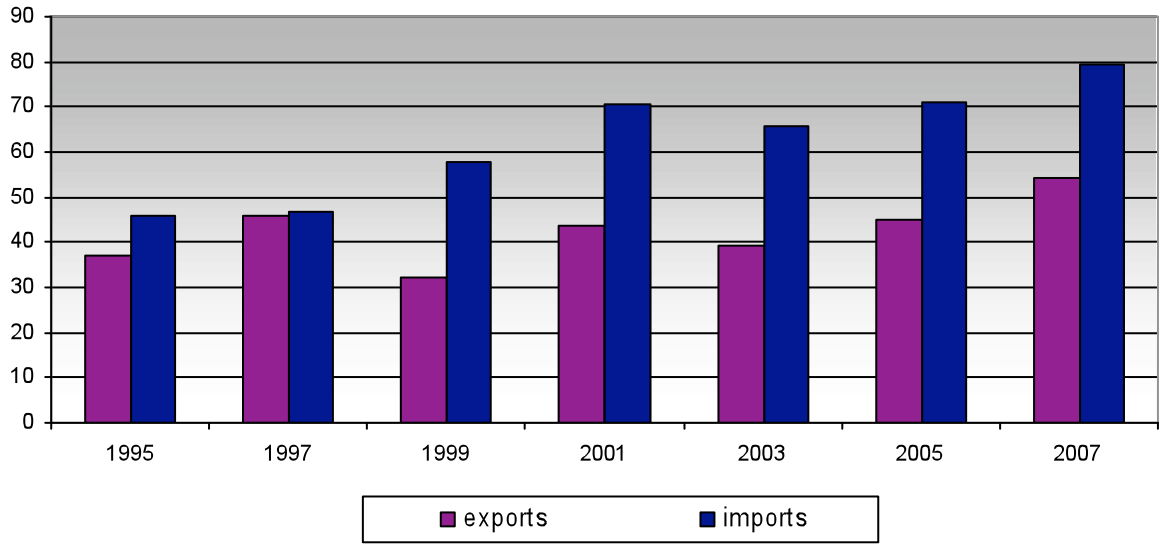
The EU and ASEAN are among the key players behind the surge in the formation of regional trade agreements worldwide, especially during the last decade. Both are also considered as 'pioneers' in regionalism, and are therefore seen as potential regional partners themselves. The current study is an attempt to simulate the economic effects of a free trade area between the EU and ASEAN, providing some estimates of the likely impact of the bloc formation on sectoral output, trade, employment, wages, and overall welfare.

1.1 Overall EU-ASEAN trade and output trends

The potential trade impact of an EU-ASEAN FTA can be substantial given the relative importance of their inter-regional trade. EU is ASEAN's 3rd largest trading partner, with exports to EU27 growing by 38%, from € 58 billion in 1999 to € 80 billion in 2007. EU's exports to ASEAN rose 70%, from €32 billion to €54 billion during the same period, making ASEAN its 5th most important partner.

Figure 1.1

EU27 trade with ASEAN (billion EUR)



Source: Eurostat
* 1995 - 1997 refers to EU15 trade

Table 1.1. shows the shares of EU and ASEAN trade relative to their total trade in 2004 and the shares projected to 2014 using the GTAP model.[1] While intra-EU trade is projected to slightly fall, the opposite applies to intra-ASEAN5 trade. It is worth noting, however, that EU and ASEAN5 become relatively more important export destinations for both regions. The EU is projected in 2014 to be a more important export market for ASEAN (with the exception of Singapore) than the ASEAN market itself.

Among the EU countries, Germany, UK and France account for a little more than half of total EU-ASEAN trade, while in ASEAN, trade is dominated by Singapore and Malaysia which

[1] See section 1.2 for details of the CGE model that produced these projections.

together account for around 52% of total. However, in ASEAN, it is Vietnam that witnessed the highest growth in trade, from 2,7% share in 1995 to 6,4% in 2007. In relative terms, it is the Germany-Singapore corridor which carried the largest bulk of intra-regional trade, although that share has fallen from 6,5% (of total EU-ASEAN trade) in 1995 to 5,7 in 2007.

Table 1.1
Relative Importance of EU-ASEAN trade, 2004 and 2014

destination	EU27		ASEAN		ROW	
	2004	2014	2004	2014	2004	2014
origin						
European Union	62.0	59.5	2.2	2.6	35.8	37.9
Indonesia	18.0	17.8	17.2	17.9	64.8	64.3
Malaysia	17.7	18.9	18.1	18.2	64.2	62.9
Philippines	19.7	22.2	16.2	17.3	64.1	60.5
Singapore	25.8	22.8	22.2	27.2	52.1	50.0
Thailand	21.4	27.0	15.6	18.0	63.0	55.1
Vietnam	32.0	29.2	9.3	9.3	58.7	61.5
Other ASEAN	23.1	20.6	18.1	11.9	58.8	67.5

Source: GTAP
* Other ASEAN includes: Brunei, Cambodia, Laos & Myanmar.

Table 1.1.1
Share of key EU and ASEAN countries in total EU-ASEAN trade, 1999 - 2007

	1999	2001	2003	2005	2007
EU					
Germany	20,9	22,5	23,2	21,8	22,2
UK	20,6	17,8	17,6	17,9	17,1
France	11,6	10,3	10,2	12,3	11,5
Netherlands	15,6	15,8	15,8	16,2	15,6
Italy	6,3	7,0	7,0	6,9	7,3
ASEAN					
Singapore	29,2	26,5	27,8	30,8	29,1
Malaysia	22,8	23,3	23,1	21,8	21,9
Thailand	17,1	18,3	17,5	18,1	18,3
Indonesia	14,1	14,1	14,1	13,5	13,6
Philippines	11,0	11,1	10,0	8,7	7,2

Source: Eurostat

For the EU, the most gains in trade liberalization can be expected to come from the opening up of trade in Services, given the dominant share of this sector in EU's total output. In 2004, 62,3 % of total EU production occurred in this sector, and the projections made in the study point to further increase in output, so that around 65% of overall production in 2014 will be accounted for by Services. For most of ASEAN, on the other hand, manufacturing and extraction sectors remain to be principal contributors to total output, although more than a third of the region's production is likewise projected to be concentrated on Services by 2014.

Table 1.1.2
EU27 and ASEAN Production structure (2004)

	Agri, Forestry, Fishing		Mfg & Extraction		Services	
	2004	2014	2004	2014	2004	2014
EU27	2,0	2,1	35,7	33,0	62,3	64,9
Indonesia	9,1	9,9	45,7	44,9	45,2	45,2
Malaysia	3,3	4,0	68,2	67,3	28,6	28,7
Philippines	12,4	12,6	52,1	54,1	35,5	33,3
Singapore	0,2	0,3	46,0	51,0	53,8	48,7
Thailand	5,8	8,1	48,3	45,3	45,9	46,7
Vietnam	13,5	12,0	49,9	52,2	36,5	35,8
Other ASEAN	14,8	15,1	42,1	44,0	43,2	40,9

Source: GTAP 7.3 , ICE model

As far as the composition of inter-regional trade is concerned, *Machinery & Transport equipment* accounts for an average of 52% of total trade during the 1999 - 2007 period. Once again, the Germany-Singapore two-way trade is the principal contributor, taking up 30% of total trade in the sector. However, German imports from Singapore registered a rather sharp decline of 35% between 2006 and 2007, while imports from Malaysia rose by 28% during the same period.

Table 1.1.3
Composition of EU-ASEAN trade, 1999 - 2007 (billion EUR)

	1999	2001	2003	2005	2007
Food & live animals	4	5	5	5	7
Beverages & tobacco	1	1	1	1	1
Crude mtls., inedible, except fuels	3	3	3	4	5
Mineral fuels, lubricants & related mtls.	1	1	1	2	3
Animals & vegetable oils, fats & waxes	2	2	2	2	3
Chemicals & related products, n.e.s	6	8	10	13	16
Manufactured goods classified chiefly by mtl.	8	10	9	10	12
Machinery & transport equipment	48	61	57	60	64
Miscellaneous manufactured articles	14	18	16	17	20
Commodities & transactions not class. elsewhere	1	1	1	1	2
TOTAL	**90**	**115**	**105**	**116**	**134**

Source: Eurostat

Structure of Protection in EU-ASEAN trade

The incidence of tariff protection has been steadily falling in the last decades as seen by the relatively low levels of tariffs displayed in Tables 1.3.1a/b.[2] However, some tariff peaks (e.g. shaded grids in tables 1.3.1a/b and table 1.3.2a/b) remain in ASEAN which may create

[2] The nature and derivation of the trade protection data below is discussed in more detail in section 1.4.

incentives for trade deflection in any FTA formation. Among ASEAN, Thailand's tariffs on *agricultural products* from the EU are the highest, followed by the Philippines and Malaysia. The latter imposes prohibitive tariffs on *Beverages and Tobacco products*, and Indonesia, Thailand and Vietnam likewise protect the sector through tariffs of 25% and higher. Imports of *textiles* have also been less sensitive in ASEAN, although Thailand and Vietnam still maintain high rates of protection. Tariffs are higher for *Clothing* across most of the ASEAN region. As mentioned earlier, machinery and transport equipment is responsible for the bulk of EU-ASEAN trade, but it is also in this sector where considerable tariff spikes can be found. It is therefore in this sector where significant trade and welfare gains can be expected under an EU-ASEAN FTA.

Table 1.3.1a

ASEAN tariffs against EU imports (pre and post Doha)

	Indonesia		Malaysia		Philippines	
	2004	*2014*	*2004*	*2014*	*2004*	*2014*
Cereal grains nec	1.5	1.5	0.0	0.0	2.5	2.5
Vegetables, fruit, nuts	3.9	3.9	5.4	4.8	21.3	14.6
Oil seeds	0.1	0.1	0.4	0.4	4.3	4.3
Livestock	0.0	0.0	0.0	0.0	1.0	1.0
Other agriculture	4.0	4.0	24.7	21.5	10.6	8.4
Forestry	2.1	2.1	0.4	0.2	2.6	2.6
Fishing	0.3	0.3	0.6	0.6	0.7	0.6
Coal	0.3	0.2	0.0	0.0	0.0	0.0
Oil	0.0	0.0	4.7	3.7	1.1	0.9
Gas	0.0	0.0	0.0	0.0	0.0	0.0
Minerals nec	4.2	4.2	0.4	0.2	3.0	2.8
Sugar	11.9	11.9	0.0	0.0	47.5	47.5
Processed foods	10.0	10.0	4.8	4.0	7.3	7.0
Beverages and tobacco products	37.5	24.9	163.6	117.6	7.4	7.4
Textiles	7.3	7.0	13.0	6.8	6.2	5.9
Wearing apparel	13.0	11.4	17.5	9.4	14.3	11.0
Leather products	3.2	3.1	3.9	2.3	7.0	5.4
Wood products	4.9	4.8	16.8	9.0	11.1	6.9
Paper products, publishing	5.0	5.0	5.7	4.0	5.4	4.7
Petroleum, coal products	2.7	2.7	11.8	7.0	2.3	2.0
Chemical,rubber,plastic prods	7.5	4.9	5.3	3.0	4.4	3.8
Mineral products nec	6.3	6.0	14.6	6.6	7.1	5.0
Ferrous metals	4.5	3.3	7.8	4.0	3.7	3.2
Metals nec	3.9	3.7	5.4	2.4	3.7	3.3
Metal products	9.3	8.2	11.6	6.9	7.1	6.1
Motor vehicles and parts	24.4	9.6	66.4	13.0	15.8	7.5
Transport equipment nec	0.2	0.1	2.1	1.3	3.2	3.0
Electronic equipment	2.6	2.1	1.9	1.0	0.1	0.1
Machinery and equipment nec	3.2	3.0	5.4	3.2	3.2	2.9
Manufactures nec	10.6	9.4	5.9	3.4	6.7	5.2

Table 1.3.1b

ASEAN tariffs against EU imports (pre and post Doha)

	Singapore		Thailand		Vietnam		Other ASEAN	
	2004	*2014*	*2004*	*2014*	*2004*	*2014*	*2004*	*2014*
Cereal grains nec	0.0	0.0	25.6	17.3	1.0	1.8	0.0	3.6
Vegetables, fruit, nuts	0.0	0.0	50.7	32.3	13.9	15.7	1.0	8.7
Oil seeds	0.0	0.0	30.8	20.0	8.7	8.7	0.0	0.0
Livestock	0.0	0.0	5.0	3.5	0.0	0.0	10.1	0.0
Other agriculture	0.0	0.0	10.4	7.7	8.3	8.4	5.8	0.3
Forestry	0.0	0.0	9.4	6.4	0.7	0.7	0.7	0.0
Fishing	0.0	0.0	37.2	12.4	0.3	0.5	0.0	1.6
Coal	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minerals nec	0.0	0.0	0.5	0.3	1.4	1.4	4.0	0.0
Sugar	0.0	0.0	31.4	26.7	15.1	16.0	0.3	81.3
Processed foods	0.0	0.0	21.6	13.7	25.2	25.3	6.9	8.7
Beverages and tobacco products	4.7	4.7	49.2	39.6	43.9	44.0	16.9	1.2
Textiles	0.0	0.0	22.6	10.8	33.5	33.5	13.0	0.9
Wearing apparel	0.0	0.0	39.1	12.2	39.4	40.1	11.2	3.0
Leather products	0.0	0.0	15.2	5.7	11.9	12.0	31.5	0.2
Wood products	0.0	0.0	17.7	9.0	7.4	7.5	7.8	0.8
Paper products, publishing	0.0	0.0	23.3	9.4	15.7	15.7	5.5	0.0
Petroleum, coal products	0.0	0.0	1.0	1.0	16.0	16.7	6.3	0.0
Chemical,rubber,plastic prods	0.0	0.0	12.5	7.3	6.6	6.6	3.9	0.2
Mineral products nec	0.0	0.0	15.0	8.7	16.8	16.8	6.1	1.1
Ferrous metals	0.0	0.0	9.2	7.7	3.4	3.4	5.0	0.0
Metals nec	0.0	0.0	4.9	3.8	1.0	1.0	3.7	0.0
Metal products	0.0	0.0	17.9	9.3	13.1	13.1	6.8	0.2
Motor vehicles and parts	0.0	0.0	41.6	13.5	37.0	37.2	54.2	0.1
Transport equipment nec	0.0	0.0	3.0	2.4	6.8	6.8	1.1	0.2
Electronic equipment	0.0	0.0	5.6	3.7	7.1	7.2	10.4	0.1
Machinery and equipment nec	0.0	0.0	7.3	5.7	4.1	4.1	9.5	0.0
Manufactures nec	0.0	0.0	8.6	5.1	24.5	24.6	17.1	0.0

Table 1.3.2a

EU tariffs against ASEAN imports (pre and post Doha)

	Indonesia		Malaysia		Philippines	
	2004	*2014*	*2004*	*2014*	*2004*	*2014*
Cereal grains nec	11.7	4.0	0.7	0.3	0.8	0.7
Vegetables, fruit, nuts	3.0	1.6	2.9	2.2	6.3	3.3
Oil seeds	0.0	0.0	0.0	0.0	0.0	0.0
Livestock	7.7	4.1	3.3	2.6	0.8	0.6

	Indonesia		Malaysia		Philippines	
Other agriculture	2.1	2.0	0.7	0.6	3.0	2.9
Forestry	0.1	0.1	0.1	0.1	2.4	2.4
Fishing	3.3	2.0	1.8	0.9	0.7	0.4
Coal	0.0	0.0	0.0	0.0	0.0	0.0
Oil	0.0	0.0	0.0	0.0	0.0	0.0
Gas	0.0	0.0	0.0	0.0	0.0	0.0
Minerals nec	0.0	0.0	0.4	0.4	0.1	0.0
Sugar	52.1	18.4	0.0	0.0	125.2	42.7
Processed foods	7.7	4.4	7.2	4.5	11.9	5.2
Beverages and tobacco products	21.8	14.9	19.7	12.5	14.7	12.4
Textiles	7.5	4.2	6.6	3.9	8.5	4.5
Wearing apparel	9.1	4.7	8.7	4.5	8.8	4.5
Leather products	9.6	4.0	8.3	4.4	6.5	3.9
Wood products	1.3	0.9	1.2	0.9	0.0	0.0
Paper products, publishing	0.0	0.0	0.0	0.0	0.0	0.0
Petroleum, coal products	0.0	0.0	0.0	0.0	0.0	0.0
Chemical,rubber,plastic prods	0.6	0.5	1.6	1.1	0.4	0.2
Mineral products nec	3.0	2.1	3.5	2.4	3.5	2.3
Ferrous metals	0.0	0.0	0.0	0.0	0.2	0.2
Metals nec	0.1	0.1	0.6	0.6	0.1	0.1
Metal products	0.6	0.6	0.8	0.6	1.0	0.6
Motor vehicles and parts	0.2	0.1	2.1	1.4	0.2	0.1
Transport equipment nec	2.4	1.3	0.8	0.7	2.2	1.1
Electronic equipment	3.4	2.2	1.2	0.6	0.1	0.1
Machinery and equipment nec	0.1	0.1	0.3	0.3	0.0	0.0
Manufactures nec	0.4	0.3	0.2	0.2	0.1	0.1

Table 1.3.2b

EU tariffs against ASEAN imports (pre and post Doha

	Singapore		Thailand		Vietnam		Other ASEAN	
	2004	*2014*	*2004*	*2014*	*2004*	*2014*	*2004*	*2014*
Cereal grains nec	60.2	30.4	78.2	27.8	67.4	27.7	13.4	4.0
Vegetables, fruit, nuts	3.9	2.3	6.5	5.7	0.7	0.6	8.2	2.3
Oil seeds	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Livestock	2.4	1.3	0.3	0.2	0.0	0.0	4.3	0.0
Other agriculture	2.7	1.8	6.7	5.2	0.5	0.3	0.0	0.0
Forestry	0.1	0.1	0.5	0.4	0.3	0.3	0.0	0.0
Fishing	4.0	2.6	5.7	3.0	3.9	2.0	3.5	1.4
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minerals nec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sugar	28.1	20.6	45.6	27.6	0.0	0.0	0.1	0.0
Processed foods	10.6	6.4	31.9	14.3	15.1	7.7	24.1	8.9

Beverages and tobacco products	10.7	7.7	21.1	9.9	6.4	3.3	6.4	2.1
Textiles	10.5	4.4	7.5	4.2	7.5	4.1	5.3	2.1
Wearing apparel	11.7	4.7	8.8	4.6	9.1	4.6	4.0	1.7
Leather products	9.8	4.1	10.1	4.2	7.3	4.4	3.5	2.1
Wood products	1.4	0.9	0.1	0.1	0.0	0.0	0.0	0.0
Paper products, publishing	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0
Petroleum, coal products	3.2	2.6	0.0	0.0	0.0	0.0	0.0	0.0
Chemical,rubber,plastic prods	1.2	1.0	2.1	1.4	0.3	0.3	0.0	0.1
Mineral products nec	4.1	2.6	2.6	2.0	1.4	1.3	0.2	0.2
Ferrous metals	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Metals nec	1.4	0.8	0.5	0.5	1.7	1.6	0.0	0.0
Metal products	2.4	1.8	0.4	0.4	0.7	0.7	0.5	0.4
Motor vehicles and parts	8.1	3.8	7.9	4.6	0.8	0.6	0.6	0.0
Transport equipment nec	1.3	1.1	1.2	0.9	9.0	4.5	0.5	0.2
Electronic equipment	0.3	0.2	1.9	0.9	0.4	0.2	0.1	0.0
Machinery and equipment nec	1.6	1.3	0.2	0.2	0.1	0.1	0.0	0.0
Manufactures nec	2.3	1.6	1.5	1.1	0.3	0.3	0.0	0.0

Source: Calculations supplied by the Johann Heinrich von Thunen Institut (vTI) Bundesforschungsinstitut fur Ländliche Räume, Wald und Fischerei. Institut fur Marktanalyse und Agrarhandelspolitik (MA), based on 2008 draft text and medium-range of formula coefficient, and including developing country exemptions and special provisions.

On the side of the EU, most protection can be found in Agricultural Products, especially *Sugar*. The country differentials in tariffs are worth noting, however. In 2004, for instance, sugar from the Philippines is confronted with tariffs of 125% while Malaysian and Vietnamese sugar can enter duty-free. The tariff variances can also be seen in *cereal grains*, where Singapore, Thailand and Vietnam face tariff rates of 60% and higher, while for Malaysia and Philippines, rates are lower than 1%. The question is therefore to what extent these higher tariffs will spill-over to other low-tariff countries in the negotiation of the final tariff schedule of the FTA.

It is clearly in the area of *Services* where most of the gains from an FTA can be expected. Table 1.3.3 reports the tariff equivalents of services barriers, which we estimate using a gravity-based analysis of bilateral trade flows in services for the period 1995-2005.[3] In both ASEAN and the EU, protection remains quite high, averaging 134.3 and 39.6, respectively.

[3] Details of the methodology for these estimates will be provided in the next section.

Table 1.3.3

Estimated trade restrictions (tariff equivalents) in services

Services sub-sector	ASEAN	EU27
Total	*134.3*	*39.6*
Transport	121.9	28.1
Travel	155.8	39.1
Communications	97.7	18.4
Construction	89.0	19.0
Insurance	87.9	35.8
financial services	81.6	42.3
Computer & information services	88.5	29.8
royalties and license fees	118.8	53.7
other business services	134.6	34.9
personal, cultural, and recreational services	65.4	27.6
public services, n.i.e.	67.1	18.3
other commercial services	140.8	37.0

Source: J. Francois, B. Hoekman, and J. Woerz (2007), “Does Gravity Apply to Nontangibles: Trade and FDI Openness in Services,” plenary paper at the 2007 ETSG meetings, and an unpublished 2008 updated version.

1.2 The CGE Model: The Multi-Region Trade Model

In this study we employ a computable general equilibrium (CGE) modelling to analyse the economic consequences of the trade measures negotiated in the Free Trade Agreement between the European Union and ASEAN. The CGE model used here offers several advantages and improvements over earlier studies on this topic. The model is based on the Francois, Van Meijl, and Van Tongeren model (FMT 2005)[4] and is implemented in GEMPACK – a software package designed for solving large applied general equilibrium models.[5] The model builds on Francois (2000),[6] and several of its versions have recently been employed for studies that analyze the effects for the EC of WTO negotiations, prospective EU-South Korea and EU-MERCOSUR FTAs, as well as a large-scale Asian Development Bank assessment of regional integration schemes in Asia (Francois and Wignarajan 2008).[7] For a detailed discussion of the basic algebraic model structure represented by the GEMPACK code, refer to Hertel (1996).

The model is solved as an explicit non-linear system of equations, through techniques described by Harrison and Pearson (1994). The core CGE model is based on the assumption of optimizing behaviour on the part of consumers, producers, and government. Consumers maximize utility subject to a budget constraint, and producers maximize profits by combining intermediate inputs and primary factors at least possible cost, for a given technology. It is a standard, multi-region computable general equilibrium (CGE) model, with important features related to the structure of competition (as described by Francois and Roland-Holst 1997).

The **general conceptual structure of a regional economy** in the model is as follows. Within each region, firms produce output by employing land, labour, capital, natural resources and intermediate inputs. Firm output is then purchased by consumers, government, the investment sector, by other firms and by foreign agents in the form of exports. Land is only employed in the agricultural sectors, while capital and labour (both skilled and unskilled) are mobile between all production sectors. Capital is fully mobile within regions. All demand sources combine imports with domestic goods to produce a composite good. Investment effects are also included, along the lines of Francois, McDonald, and Nordstrom (1996).[8] In constant returns sectors, these are Armington composites. In increasing returns sectors, these are composites of firm-differentiated goods. Relevant substitution and trade elasticities are available in Annex Table 1.

The production and consumption structure of the CGE model can be best understood by using a technology tree as shown in figure 1.2 and 1.2.1.

[4] Francois. J.F., H. van Meijl and F. van Tongeren (2005), “Trade Liberalization in the Doha Development Round,” Economic Policy April: 349-391.
[5] The full model code for Francois, van Meijl and van Tongeren can be downloaded from the internet at http://wwwi4ide.org/francois/data.htm/.
[6] Francois, J.F., THE NEXT WTO ROUND: North-South stakes in new market access negotiations, CIES Adelaide and the Tinbergen Institute, CIES: Adelaide, 2001. ISBN: 086396 474 5.
[7] Francois, J.F. and G. Wignarajan (2008), “Asian Integration: Economic Implications of Integration Scenarios,” Global Economy Journal, forthcoming..
[8] Francois, J.F., B. McDonald and H. Nordstrom (1996), "Trade liberalization and the capital stock in the GTAP model," GTAP consortium technical paper.
http://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=310)

Fig. 1.2
Nested production structure

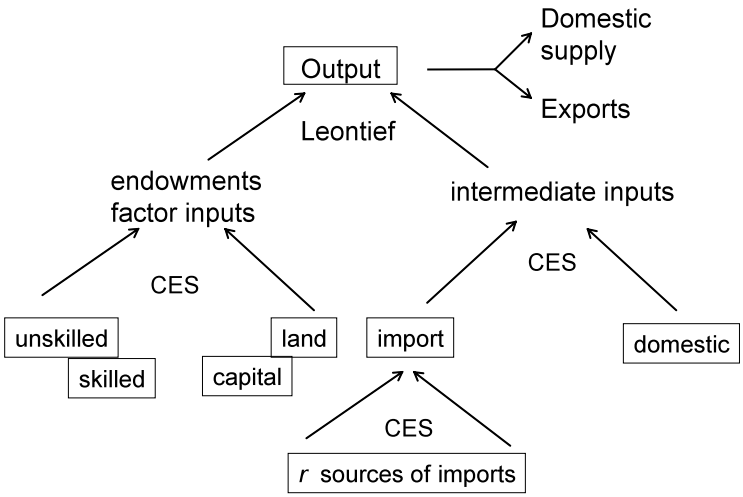
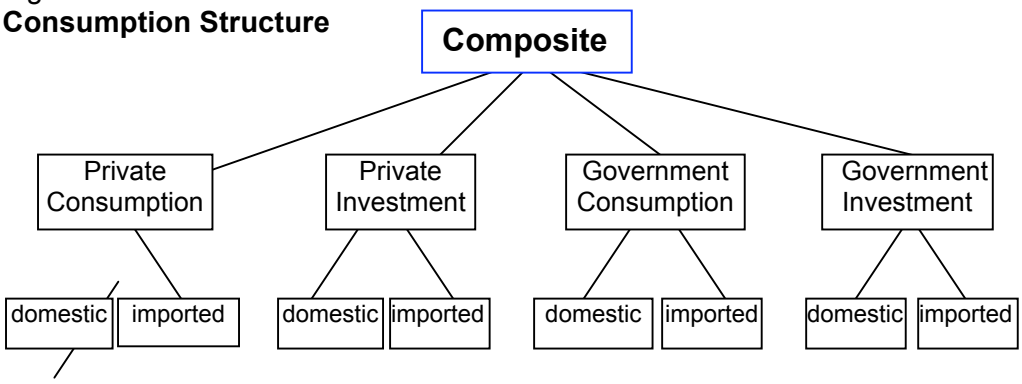


Fig. 1.2.1
Consumption Structure



Taxes and policy variables

Taxes are included in the theory of the model at several levels. Production taxes are either placed on intermediate or primary inputs, or on output. Some trade taxes are modelled at the border. There are also additional internal taxes that can be placed on domestic or imported intermediate inputs, and may be applied at differential rates that discriminate against imports. Where relevant, taxes are also placed on exports, and on primary factor income. Finally, where indicated by social accounting data as being relevant, taxes are placed on final consumption, and can be applied differentially to consumption of domestic and imported goods.

Trade policy instruments are represented as import or export taxes/subsidies. This includes applied most-favoured nation (MFN) tariffs, antidumping duties, countervailing duties, price undertakings, export quotas, and other trade restrictions. The major exception is service-

sector trading costs, which are discussed in the next section. The full set of tariff vectors are based on WTO tariff schedules, combined with possible Doha and regional initiatives as specified by the Commission during this project, augmented with data on trade preferences. The set up of services trade barrier estimates is described below.

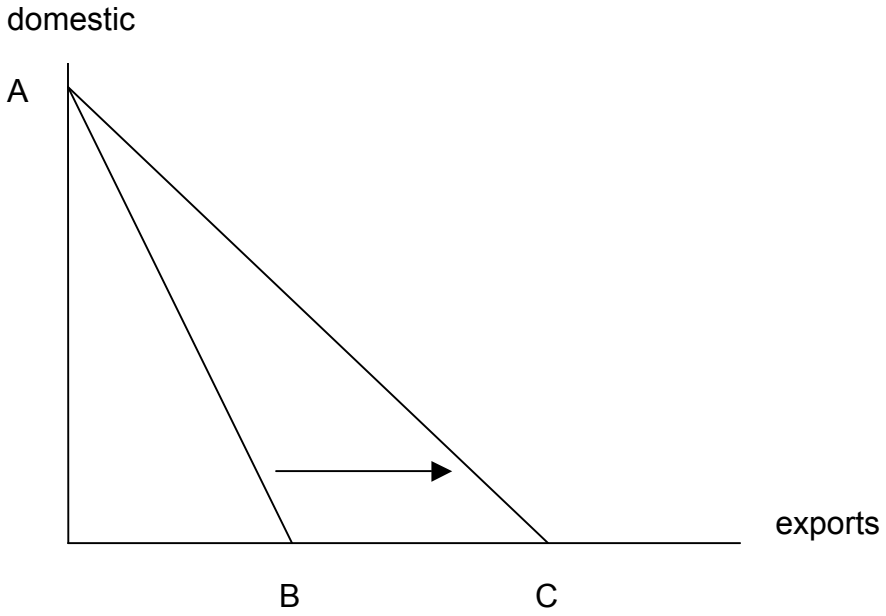
Trade and transportation costs and services barriers

International trade is modelled 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 costs of 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 7.1 of the GTAP dataset.

Frictional trading costs, is another form of trade costs known from the literature. These costs are implemented in the service sector. They represent real resource costs associated with producing a service for sale in an export market instead of the domestic market. Conceptually, we have implemented a linear transformation technology between domestic and export services. This technology is depicted in Figure 1.2.2 below. 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. This free-trade case is represented by the line AC. As we reduce trading costs, the linear transformation line converges on the free trade line, as indicated in the figure.

Figure 1.1.2

Linear transformation technology between domestic and export goods and services



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[9]). 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, we employ the following equation as basis for estimation:

(1) $$M_{i,j} = a_i + a_j + a_1 \ln(GDP)_j + a_2 \ln(PCI)_j + \varepsilon_j$$

where $M_{i,j}$ represents imports in sector *i* by country *j*, a_i and a_j are sector and country effect variables, GDP_j represents national GDP (taken in logs), PCI_j is per-capita income (again taken in logs) and ε is an error term[10]. 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) $$a_j = -\sigma \ln\left(T_j\right)$$

where, T_j is the power of the tariff equivalent $(1+t_j)$ such that in free trade $T_0 = 1$, and σ is the trade substitution elasticity relative to domestic production (taken to be the substitution elasticity reported in Annex Table 1). Regression results from this approach are reported in Annex Table 2, while the relevant estimates of tariff equivalents for this study are reported in the report and in Table XX in section 1.1.

The composite household and final demand structure

Final demand is determined by an upper-tier Cobb-Douglas preference function, which allocates income in fixed shares to current consumption, investment, and government services. This yields a fixed savings rate. Government services are produced by a Leontief technology, with household/government transfers being endogenous. The lower-tier nest for current consumption is also specified as a Cobb-Douglas. The regional capital markets adjust so that changes in savings match changes in regional investment expenditures[11].

Market Structure

Demand for imports: Armington sectors

The basic structure of demand in constant returns sectors is Armington preferences. In Armington sectors, goods are differentiated by country of origin, and the similarity of goods from different regions is measured by the elasticity of substitution. Formally, within a particular region, we assume that demand for goods from different regions is aggregated into a composite import according to the following CES function:

(3) $$q^M_{j,r} = \left[\sum_{i=1}^{R} \alpha_{j,i,r} M^{\rho_j}_{j,i,r}\right]^{1/\rho_j}$$

[9] Hong Kong and Singapore are chosen as numeraire as these countries have the most open trade regimes and the lowest barriers in service imports.

[10] For those familiar with previous studies of this kind, this approach is an improvement on the approach in Francois, ven Meijl and van Tongeren (2005) as under this approach we have several points for estimation of each national restriction index (the a_j coefficient).

[11] Note that the Cobb-Douglas demand function is a special case of the CDE demand function employed in the standard GTAP model code. It is implemented through GEMPACK parameter files.

In equation (3), $M_{j,i,r}$ is the quantity of imports in sector j from region *i* consumed in region *r*. The elasticity of substitution between varieties from different regions is then equal to σ^M_j, where $\sigma^M_j=1/(1-\rho_j)$. Composite imports are combined with the domestic good q^D in a second CES nest, yielding the Armington composite *q*.

(4) $$q_{j,r} = \left[\Omega_{j.M.r} \left(q^M_{j,r}\right)^{\beta_j} + \Omega_{j,D,r} \left(q^D_{j,r}\right)^{\beta_j} \right]^{1/\beta_j}$$

The elasticity of substitution between the domestic good and composite imports is then equal to σ^D_j, where $\sigma^D_j=1/(1-\beta_j)$. At the same time, from the first order conditions, the demand for import $M_{j,i,r}$ can then be shown to equal

(5) $$\begin{aligned} M_{j,i,r} &= \left[\frac{\alpha_{j,i,r}}{P_{j,i,r}}\right]^{\sigma^m_i} \left[\sum_{i=1}^{R} \alpha^{\sigma^M_j}_{j,i,r} P^{1-\sigma^M_j}_{j,i,r}\right]^{-1} E^M_{j,r} \\ &= \left[\frac{\alpha_{j,i,r}}{P_{j,i,r}}\right]^{\sigma^M_j} \left(P^M_{j,r}\right)^{\sigma^M_j - 1} E^M_{j,r} \end{aligned}$$

where $E^M_{j,r}$ represents expenditures on imports in region *r* on the sector *j* Armington composite. In practice, the two nests can be collapsed, so that imports compete directly with each other and with the corresponding domestic product. This implies that the substitution elasticities in equations (3) and (4) are equal. (These elasticities are reported in Annex Table 1).

Imperfect competition

As indicated in Annex Table 1, we model manufacturing sectors and service sectors as being imperfectly competitive. The approach we follow has been used in the Michigan and the WTO assessment of the Uruguay Round. Recent model testing work indicates that this approach works "best" vis-à-vis Armington models, when tracked against actual trade patterns (i.e. Fox (1999), uses the U.S.-Canada FTA as a natural experiment for model testing).

Formally, within a region *r*, we assume that demand for differentiated intermediate products belonging to sector *j* can be derived from the following CES function, which is now indexed over firms or varieties instead of over regions. We have

(6) $$q_{j,r} = \left[\sum_{i=1}^{n} \gamma_{j,i,r} X^{\Gamma_j}_{j,i,r}\right]^{1/\Gamma_j}$$

where $\gamma_{j,i,r}$ is the demand share preference parameter, $X_{j,i,r}$ is demand for variety *i* of product *j* in region *r*, and $\sigma_j = 1/(1-\Gamma_j)$ is the elasticity of substitution between any two varieties of the good. Note that we can interpret *q* as the output of a constant returns assembly process, where the resulting composite product enters consumption and/or production. Equation (6) could therefore be interpreted as representing an assembly function embedded in the production technology of firms that use intermediates in production of final goods, and alternatively as representing a CES aggregator implicit in consumer utility functions. In the literature, and in our model, both cases are specified with the same functional form. While we have technically dropped the Armington assumption by allowing firms to differentiate products, the vector of γ parameters still provides a partial geographic anchor for production. (Francois and Roland-Holst 1997, Francois 1998).

Firms in different regions/countries compete directly on a global level. Firms are assumed to exhibit monopolistically competitive behaviour. This means that individual firms produce unique varieties of good or service *j*, and hence are monopolists within their chosen market niche. Given the demand for variety, reflected in equation (6), the demand for each variety is less than perfectly elastic. However, while firms are thus able to price as monopolists, free entry (at least in the long-run) drives their economic profits to zero, so that pricing is at average cost. The joint assumptions of average cost pricing and monopoly pricing, under Bertrand behaviour, imply the following conditions for each firm f_i in region i:

(7) $$\zeta_{j,f_i} = \sum_{r=1}^{R} \frac{X_{j,f_i,r}}{X_{j,f_i}} \left(\sum_{k=1}^{n} \left(\frac{\alpha_{j,k,r}}{\alpha_{j,f_i,r}} \right)^{\sigma_j} \left(\frac{P_{j,k,r}}{P_{j,fr}} \right)^{1-\sigma_j} \right)^{-1}$$

(8) $$P_{fi} = AC_{fi}$$

The elasticity of demand for each firm f_i will be defined by the following conditions.

(9) $$\varepsilon_{j,fi} = \sigma_j + (1-\sigma_j)\zeta_{j,fi}$$

(10) $$\frac{P_{fi} MC_{fi}}{P_{fi}} = \frac{1}{\varepsilon_{fi}}$$

In a fully symmetric equilibrium, we would have $\zeta = n^{-1}$. However, the calibrated model includes CES weights γ, in each regional CES aggregation function, that will vary for firms from different regions/countries. Under these conditions, ζ is a quantity weighted measure of market share. To close the system for regional production, we index total resource costs for sector *j* in region *i* by the resource index *Z*. Full employment of resources hired by firms in the sector *j* in region *i* then implies the following condition.

(11) $$Z_{j,i} = \sum_{f=1}^{n_i} TC_{j,i,f}$$

Cost functions for individual firms are defined as follows:

(12) $$C(x_{j,i}) = (a_{j,i} + b_{j,i}\, x_{j,i})\, P_{Z_{j,i}}$$

This specification of monopolistic competition is implemented under the “large group” assumption, which means that firms treat the variable n as "large", so that the perceived elasticity of demand equals the elasticity of substitution. The relevant set of equations then collapses to the following:

$$q_{j,r} = \left[\sum_{i=1}^{R} \bar{\gamma}_{j,i,r} \, \bar{x}_{j,i,r}^{\Gamma_j} \right]^{\frac{1}{\Gamma_j}}$$

(13)
$$\bar{\gamma}_{j,i,r} = \alpha_{j,i,r} \, n_{j,i\,0}^{1-\Gamma_j}$$

$$\bar{x}_{j,i,r} = \left(\frac{n_{j,i}}{n_{j,i\,0}} \right)^{(1-\Gamma_j)/\Gamma_j} X_{j,i,r}$$

(14)
$$\bar{x}_{j,i} = \left(\frac{Z_{j,i\,1}}{Z_{j,i\,0}} \right)^{(1-\rho_j)/\rho_j} X_{j,i}$$

In equation (14), n_0 denotes the number of firms in the benchmark. Through calibration, the initial CES weights in equation (14) include the valuation of variety. As a result, the reduced form exhibits external scale effects, determined by changes in variety based on firm entry and exit, and determined by the substitution and scale elasticities.

Short-run and long-run effects

The long-run closure is based on Francois et al (1997) and links capital stocks to long-run (stead-state) changes in investment in response to changes in incomes and returns to investment. The long-run closure provides an assessment of the impact of FTA-induced policy changes on the capital stock, thereby capturing the induced expansion (or contraction) of the economy over a longer time horizon following FTA implementation. The long-run effects, which include those of the short-run, also incorporate other additional effects such as those resulting from capital accumulation.

Third country effects

The CGE model allows us to look at third country effects, through trade creation and trade diversion. The latter is largely expected in FTAs that involve countries with relatively higher levels of initial protection. Although post-Doha EU tariffs are low in general there remain pockets of high tariffs, the elimination of which could lead EU to divert trade from other Asian and developing countries and towards ASEAN. The EU have standing preferential agreements with South Asian countries, namely, India, Pakistan, Bangladesh, and other developing countries as well as LDCs (EBA agreement), and a deeper form of integration with ASEAN could result to the erosion of preferences enjoyed by these countries.

As agreed with the EU Commission, third country effects will be analyzed for the following countries and regions: India, the EU, Pakistan, Sri Lanka, Bangladesh, Rest of South Asia (including Nepal, Afghanistan, Bhutan and Maldives), rest of LDCs and rest of world.

Rules of Origin

One of the most difficult areas in FTA negotiations is the Rules of Origin (ROO). In theory, these rules must be applied for the sole purpose of preventing trade deflection. In practice, however, these are often used to either re-introduce some of the protection that has been removed through tariff cuts, or as additional measures to ensure that sensitive products are effectively shut out from liberalization. The types of ROOs chosen can therefore be associated with levels of trade restrictiveness, so that one can envisage different ROO regimes as corresponding to different levels of trade costs. In the CGE simulations

performed in this study, for instance, a liberal ROO regime (e.g. allowing for regional cumulation and alternative choice of rules) is incorporated in the most ambitious liberalization scenario, while ROOs used for protectionist intents are assumed in the limited liberalization scenario.

Even with the assumption that ROOs are used purely for trade deflection purposes, considerable problems pertaining to the determination of origin (especially for vertically-integrated goods produced in multiple locations), and additional administrative costs (e.g., for documentation, testing, etc..), remain. This largely explains why the whole issue of ROOs is considered as being part and parcel of trade facilitation[12].

1.3 The model data

The **social accounting data** used here are based on the most recent (unpublished 2008 pre-release) Version 7.5 of the GTAP dataset (www.gtap.org). This database is the best and most up-to-date source of internally consistent data on production, consumption and international trade by country and sector. For more information on the basic database structure, see Dimaran and McDougall (2006)[13].

The **tariff data** are based on HS tariff line data, which was sourced from MacMAPS, the WTO, and WITS. Post-Doha tariff estimates are based on the range of coefficients in the recent (2008) set of Doha modalities texts (NAMA and agriculture). The problems in defining the post-Doha baseline for tariffs relate to agriculture rather than NAMA. Sensitive and special products are one of the most complex issues in the WTO negotiations. WTO members are allowed to freely choose the products they classify as sensitive, which causes considerable uncertainty about the outcome of this selection process and makes them very difficult to handle in simulations. One solution to the problem would be to adopt the Groser text proposal of the WTO (2004) and assume that all commodities with TRQs (Tariff Rate Quotas) are treated as sensitive. But this procedure leads to a very high percentage of tariff lines selected as sensitive for some countries. Another method would be the approach of Martin and Wang (2004) who assume that the products with highest tariffs are chosen to be sensitive. This approach might include products that are particularly high in the tariffs, but more or less irrelevant for trade. Jean, Laborde and Martin (2006) overcome this problem by selecting sensitive products by ranking the products according to their importance with regard to the tariff revenues that would be forgone through the implementation of the formula. For simplicity the authors thereby assume that the import value will stay the same. The data we work with from the German Federal Agriculture Research Institute – the Johann Heinrich von Thünen Institute (vTI) – follows the procedure outlined by Brockmeier and Pelikan (2008) and updated to reflect current draft texts. The vTI procedures follow a similar approach to Jean, Laborde, and Martin. It involves ordering the current destination generic trade flows of WTO member countries according to their import trade values and selecting the top 5 percent of the dutiable tariff lines as sensitive. Following Jean, Laborde and Martin, the vTI data treat special products in the same way and also keep them at 5 percent of dutiable tariff lines in the prevailing developing country. This also involved working with the G5-list of tariff lines that might be declared sensitive by the G5 countries.

We work with the post-Doha set of tariffs, based on the vTI data which is then mapped to the GTAP model sector. We work with mid-range tariff cuts (i.e. based on the range of coefficients in the February text). Based on our own recent assessment (Francois et al 2008), the revised post-February 2008 text will have little impact on the tariff scenarios, as

[12] The CGE simulation in this study treats ROO as such, that is, as inherent component of trade facilitation.
[13] Dimaran, B, and McDougall, R., ed. (2007). The GTAP database -- version 7, Global Trade Analysis Center: Purdue University.

the major impact has been cushioned through added flexibilities for developing countries. In other words, assuming conclusion of Doha negotiations within the next 5 years, we work with estimated post-Doha rates of protection.

Markups

Scale elasticities, based on our average markup estimates, are reported in the Annex Table A1. The starting point for these is recent estimated price-cost markups from the OECD (Martins, Scarpetta, and Pilat 1996). These provide estimates of markups, based on methods pioneered by Hall (1988) and Roeger (1995). The Martins et al. (1996) paper provides an overview of the recent empirical literature. We have supplemented these with price-cost markups estimated, given our theoretical structure, from the set of GTAP Armington elasticities, and also from estimates reported in Antweiler and Trefler (2002).

1.4 Model inputs for trade liberalisation scenarios

Sector specification for model analysis

The analysis will also be conducted at the sectoral level. The GTAP database provides data for a total of 57 sectors. However, since some register rather trivial levels of output, we perform some aggregations, leading to a final total of 32 sectors to be studied (see table 1.4).

Table 1.4

CGE sector specifications

	Sector		Sector
1	Agriculture	17	Metal products
2	Forestry	18	Motor vehicles and parts
3	Fishing	19	Transport equipment nec
4	Mining	20	Electronic equipment nec
5	Processed foods	21	Machinery and equipment nec
6	Beverages and tobacco products	22	Manufactures nec
7	Textiles	23	Utilities
8	Wearing apparel	24	Construction
9	Leather products	25	Trade
10	Wood products	26	Air transport
11	Paper products, publishing	27	Communication and information services
12	Petroleum, coal products	28	Financial services nec
13	Chemical, rubber, plastic products	29	Insurance
14	Mineral products, nec	30	Business services nec
15	Ferrous metals	31	Recreation and other services
16	Metals nec	32	Other services

Scenario specifications: tariffs & non-tariff barriers

The levels of import protection vary greatly across the ASEAN Member States. EU tariffs are lower than the ASEAN and US average. The highest levels of import protection in the EU are

for agriculture and processed foods, most notably so for Beverages and Tobacco products, Sugar and Vegetables, Fruits and Nuts.

In general, protection against ASEAN imports follows the same pattern as with the rest-of-the-world. The most protected sectors of the EU are Processed Foods, followed by Agricultural goods, and Manufacturing, while other primary sectors have less protection. The table below presents applied rates in 2004, and estimated post Doha rates.

Another important aspect of trade policy is non-tariff barriers in services. In the area of services, this includes not only restrictions on cross-border trade, but regulatory asymmetries, restrictions on foreign investment and foreign ownership, and market share limitations. Estimates of the net effect of these measures in the services sectors are summarized in table 1.4.1.

Table 1.4.1

Estimated trade restrictions (tariff equivalents) in services

Services sub-sector	ASEAN	EC27
Total	*134.3*	*39.6*
Transport	121.9	28.1
Travel	155.8	39.1
Communications	97.7	18.4
Construction	89.0	19.0
Insurance	87.9	35.8
financial services	81.6	42.3
Computer & information services	88.5	29.8
royalties and license fees	118.8	53.7
other business services	134.6	34.9
personal, cultural, and recreational services	65.4	27.6
public services, n.i.e.	67.1	18.3
other commercial services	140.8	37.0

Source: J. Francois, B. Hoekman, and J. Woerz (2007), "Does Gravity Apply to Nontangibles: Trade and FDI Openness in Services," plenary paper at the 2007 ETSG meetings, and an unpublished 2008 updated version.

Our estimates of services trade barriers are based on a gravity-based analysis of bilateral trade flows in services for the period 1995-2005. The tariff equivalents of services barriers as presented in **Error! Reference source not found.** 1.4.1 are based on bilateral trade data. Table 1.4.2 provides the summary data on sample size, and also estimates of intra-EU trade cost reductions for services trade. The intra-EU effect, discussed below, serves as the basis for the policy experiments for services. The table highlights the varied quality of bilateral trade data in services. For total services trade, the sample is relatively deep. At the same time, for individual sectors, we face more limited data availability. This also means that, beyond the total services trade data, our estimates of intra-EU trade effects drop in quality as the samples shrinks in size. For those data for which we have a deep enough sample, the average intra-EU trade effect (the increase in trade we observe relative to trade involving non-EU partners) is around 35 percent higher (35% = 100 * {exp(.3039)-1}.) In other words, the coefficient above (0.3039) implies a 35 percent greater trade volume when both partners

are EU partners. Note that we were unable to identify a similar effect for intra-NAFTA trade in our sample at any level of services trade aggregation.

Table 1.4.2

Summary of Panel Regressions and Intra-EU Volume Effects

BOP	description	trade cost estimates, % EU27 avg	EU effect	obs
200	total	39.6	0.3039	13,538
205	transport	28.1	0.4345	9,807
236	travel	39.1	0.0559	8,596
245	communications	18.4	0.2062	3,777
249	construction	19.0	0.4860	3,565
253	insurance	35.8	..	3,358
260	financial services	42.3	..	3,403
262	computer and information services	29.8	..	3,035
266	royalties and license fees	53.7	..	3,189
268	other business services	34.9	0.1027	7,138
287	personal, cultural, and recreational services	27.6	..	2,710
291	public services, n.i.e.	18.3	0.1868	4,559
981	other commercial services	37.0	0.2830	10,984

notes:
1) EU effect is the estimated log-deviation in trade linked to observed intra-EU trade flows vis-à-vis third countries.
2) means no significant estimate was found. Regressions are based on ICLS GEE bilateral panel estimates of a basic gravity equation, and trade costs are based on country effects.
3) trade costs are based on an assumed import demand elasticity of 5.

Finally, regulations and non-tariff measures, including customs clearance procedures, can also act as barriers to trade in goods. For example, Article XVIII (B) of the GATT allows import restrictions to be maintained on grounds of 'Balance of Payment' (BOP) problems. Presently only seven countries maintain import restrictions on account of BOP problems. In line with the recent literature, and as discussed below in the context of scenario definitions, we model improvements in this area as a reduction in trade costs.

Trade liberalisation scenarios applied in CGE modelling

Given the above information and pre-analysis of the current trends in the economies of ASEAN and the EU, we have developed three scenarios. A limited FTA agreement, an ambitious FTA agreement and an ambitious FTA agreement plus. The assumptions made in each scenario are presented in Table 1.4.3 below

Table 1.4.3

Trade liberalisation scenarios

	Description	Food	Non-food	Services	Trade facilitation
Scenario 1	Limited FTA Agreement	90 % bilateral tariff reductions	90% bilateral tariff reductions	25 % bilateral services reduction	1 % of the value of trade
Scenario 2	Ambitious FTA Agreement	97 % bilateral tariff reduction	97% bilateral tariff reductions	75 % bilateral services reduction	2 % of the value of trade
Scenario 3	Ambitious Plus FTA Agreement	97 % bilateral tariff reduction	97% bilateral tariff reductions	75 % bilateral services reduction	2% of value of trade + additional 1% reduction on certain sectors.

Note: On basis of bilateral service regressions, liberalization scenarios are based on full FTA liberalization yielding a 40% expansion on services trade. This means we model 10% trade expansion for the 25% liberalization scenario, and 30% expansion for the 75% scenarios.
The sectors referred to in Scenario 3, are those sectors where NTBs are high, as indicated by the TRAINS NTM database. We then assume a one percent improvement in trade facilitation which could stem from successful harmonisation, implementation and monitoring of NTBs. The sectors involved are: paddy rice, wheat, cereal grains nec, vegetables, fruit, nuts, oil seeds, sugar cane, sugar beet, plant-based fibers, crops nec, cattle, sheep, goats, horses, animal products nec, raw milk, fishing, meat: cattle, sheep, goats & horse, met products nec, vegetable oils and fats, dairy products, processed rice, sugar, food products nec, beverages and tobacco products, chemical, rubber, plastic products, motor vehicles and parts, transport equipment nec, electronic equipment, machinery and equipment nec, manufactures nec, air transport and public administration, defence, health & education.

The sectors referred to in Scenario 3, are those sectors where NTBs are high, as indicated by the TRAINS NTM database. We then assume a one percent improvement in trade facilitation which could stem from successful harmonisation, implementation and monitoring of NTBs. The sectors involved are: paddy rice, wheat, cereal grains nec, vegetables, fruit, nuts, oil seeds, sugar cane, sugar beet, plant-based fibers, crops nec, cattle, sheep, goats, horses, animal products nec, raw milk, fishing, meat: cattle, sheep, goats & horse, met products nec, vegetable oils and fats, dairy products, processed rice, sugar, food products nec, beverages and tobacco products, chemical, rubber, plastic products, motor vehicles and parts, transport equipment nec, electronic equipment, machinery and equipment nec, manufactures nec, air transport and public administration, defence, health & education.

The definition of our services trade liberalization experiment follows from the estimates in **Error! Reference source not found.**1.4.1. Full liberalization would imply, in the case of exports to the EU and based on the range of estimates above, a cost savings in the range of 40 percent , on average, for ASEAN service exports. However, for intra-EU trade, the estimated trade volume effects imply a cost savings, with elasticities in the 4 to 5 range, or between 6 and 8 percent within the EU itself. Basically, while the trade cost estimates above include many things, the EU has itself only addressed some of these successfully. This suggests that any EU-ASEAN agreement is likely to achieve, at best, a similar range of cost savings. For this reason, we define our services experiment on the basis of the estimated intra-EU trade effects. In addition, because of sample size issues and the relative robustness of the overall services trade regressions relative to the sub-sector results, we use the estimate for total services (BOP 200 above) to define our experiment. Finally, rather than select a particular elasticity to make trade cost calculations, we impose the trade volume effect directly, and solve for the implied cost savings. Estimated cost-savings for the ASEAN

experiments, with partial expansion of trade volumes in services, is summarized in the table below.

Table 1.4.4

Trade cost savings – services trade, %

Average Trade Cost Savings, EU27 exports to ASEAN			
	exp 1	*exp 2*	*exp 3*
utilities	2.6	9.1	8.7
construction	1.4	6.2	5.6
trade	0.5	4.6	3.7
transport	2.3	9.7	8.9
communications	3.3	12.0	11.3
other finance	2.0	9.9	9.0
insurance	2.8	12.8	11.9
other business	2.3	10.5	9.5
recreational services	3.0	12.5	11.8
other services	0.3	4.0	3.2
Average Trade Cost Savings, ASEAN exports to EU27			
	exp 1	*exp 2*	*exp 3*
utilities	3.7	9.6	9.9
construction	2.7	7.5	7.7
trade	4.9	12.1	12.7
transport	5.1	13.5	13.9
communications	4.3	11.8	12.1
other finance	4.7	13.0	13.4
insurance	4.1	10.0	10.4
other business	5.0	12.9	13.3
recreational services	4.2	10.6	11.0
other services	5.6	13.1	13.9

Chapter 2 Modelling results

2.1 Macroeconomic effects under various EU-ASEAN FTA scenarios

Recall that the baseline data are defined to be 2004, but then are projected to 2014 to include all changes in both the baseline and the three scenarios. The resulting baseline macroeconomic projections utilized in the model is shown in Table . In the overall changes we look at the limited scenario (scenario 1), the ambitious FTA scenario (scenario 2) and the ambitious plus FTA scenario (scenario 3) in line with table 1.4.3. For the limited and ambitious FTA scenarios we have looked at the long-run and short-run effects in order to

render visible the comparative-dynamic effects. Given the 2014 baseline, the short-run estimates provide an immediate impact assessment of imposing the FTA in 2014. The long-run estimates, in contrast, provide a longer-term view of a 2014 global economy where the FTA has already been in place, and dynamic linkages, particularly through investments and capital accumulation has had a chance to work through the economic system.

Table 2.1

Baseline Macroeconomic Projections

	nominal GDP 2004, bil $US	nominal GDP 2007, bill $US	projected annual growth 2007-2014, average %
European Union	12,895	16,624	2.55
Indonesia	255	410	5.88
Malaysia	115	165	5.63
Philippines	84	141	5.60
Singapore	107	153	6.95
Thailand	314	226	4.50
Viet Nam	43	69	8.28
Other ASEAN	21	35	9.07
India	641	1,090	9.00
Bangladesh	56	71	6.13
Pakistan	95	144	6.13
Sri Lanka	20	31	6.60
Other South Asia	14	22	7.12
Other Less Developed	267	468	4.50
Rest of World	26,196	33,781	4.16
WORLD	41,123	53,431	3.81

National Income Changes

The results as illustrated in Table 2., show that intra-regional trade liberalisation can be expected to deliver positive net income effects on all the economies involved under all the scenarios envisaged in this study. Throughout the study, some negative outcomes are registered for other ASEAN countries (i.e. Brunei, Cambodia, Laos & Myanmar) which are consistent with the results of other CGE studies in other trade liberalisation experiments.

As theory predicts, the income gains raises in tandem with the degree of liberalization, and also more in the long-run where capital accumulation effects are taken into account. There is, in fact, a significant leap in income effects as we move to different scenarios and between the short and long-run. The EU and Singapore gain the most, followed by ASEAN's biggest country, Indonesia. In GDP growth terms, however, the FTA is mostly beneficial for Vietnam. Even in the most conservative short-run scenario, Vietnam experiences almost a 2 percent GDP increase, over and above the 8 percent baseline growth (see Table). It is worth noting that most of ASEAN reaps considerable growth premiums in the long-run even in the most limited trade liberalisation experiment.

Table 2.1.1

National Income changes (mln Euro) and GDP percentage growth

Scenario / variable	EU-27	Indon	Mal	Phil	Sing	Thai	Viet	Other ASEAN
Limited FTA (short run)								
National income (change in mln €)	4,761	1,414	1,467	664	2,067	537	1,507	56
GDP (% change)	0.02	0.32	0.38	0.24	0.99	0.11	1.92	0.08
Limited FTA (long run)								
National income (change in mln €)	13,117	6,394	5,302	3,576	7,487	6,809	5,027	338
GDP (% change)	0.10	1.64	3.43	2.51	4.18	2.84	10.17	2.39
Extended FTA (short run)								
National income (change in mln €)	11,239	4,137	3,575	1.332	6,587	1,379	2,749	64
GDP (% change)	0.05	0.99	1.17	0.60	3.55	0.39	3.46	0.29
Extended FTA (long run)								
National income (change in mln €)	26,819	13,114	10,702	5 885	20,317	11,543	6,980	530
GDP (% change)	0.20	3.39	6.85	4.12	12.32	4.81	14.02	3.71
Extended FTA Plus (short run)								
National income (change in mln €)	12,021	3,706	3,852	1.530	7,125	1,490	2,621	154
GDP (% change)	0.06	0.88	1.22	0.63	3.66	0.36	3.22	0.27
Extended FTA Plus (long run)								
National income (change in mln €)	29,516	14,207	11,714	7 196	21,507	13,061	7,637	725
GDP (% change)	0.23	3.66	7.42	5.02	12.89	5.39	15.27	4.39

Source: ICE model simulations

To trace the underlying reasons for these gains from trade, these (long-run) income effects are further decomposed according to each trade liberalization measure, i.e., import protection in goods, barriers to trade in services, and other non-tariff barriers to trade. These are summarized in Table 2.1.2 below.

Table 2.1.2

Decomposition of Dynamic Real Income Effects (million EUR, 2007)

		Measure			
Scenario	Country	Tariffs	Services	NTB	Total
Limited FTA	EU	5,597	5,068	2,452	**13,118**
	Indonesia	3,038	2,343	1,014	**6,395**
	Malaysia	2,260	1,988	1,054	**5,302**
	Philippines	1,971	419	1,186	**3,576**

		Measure			
Scenario	Country	Tariffs	Services	NTB	Total
	Singapore	723	5,421	1,344	**7,488**
	Thailand	3,998	1,466	1,346	**6,810**
	Vietnam	4,007	449	572	**5,028**
	Other ASEAN	164	19	156	339
Ambitious FTA	EU	6,737	14,857	5,225	**26,820**
	Indonesia	3,377	7,716	2,022	**13,115**
	Malaysia	2,493	6,124	2,087	**10,703**
	Philippines	2,268	1,216	2,401	**5,885**
	Singapore	763	16,999	2,556	**20,317**
	Thailand	4,473	4,349	2,722	**11,543**
	Vietnam	4,414	1,423	1,143	**6,980**
	Other ASEAN	164	47	321	531
Ambitious Plus FTA	EU	6,973	14,963	7,580	**29,517**
	Indonesia	3,499	7,650	3,058	**14,207**
	Malaysia	2,546	6,068	3,100	**11,714**
	Philippines	2,356	1,198	3,642	**7,197**
	Singapore	781	16,842	3,884	**21,508**
	Thailand	4,610	4,321	4,130	**13,061**
	Vietnam	4,513	1,399	1,726	**7,637**
	Other ASEAN	188	46	491	726

As can be expected, the gains from pure tariff liberalization are largely exhausted in the limited FTA scenario. But especially for Singapore and the EU, it is the considerable reduction in the barriers to Services Trade that matters the most, as it account for 78 percent and 51 percent of the total income gains, respectively, for the most ambitious liberalisation experiment. After the EU, it is Thailand that gains the most from the removal of non-tariff barriers. Given the relative underdevelopment of Services in other ASEAN countries, it is not surprising that removal of protection leads to some income losses for the said economies.

The income gains accruing from trade facilitation is visible from the changes in the share of incomes due to NTB liberalisation under the ambitious FTA and ambitious plus FTA scenarios. For instance, for the EU about 87 percent of the income rise between these two scenarios is due to direct and indirect effects of trade facilitation alone.

Wage effects for low- and high-skilled workers

The productivity effects of intra-regional trade liberalization surface here in the form of rising wages for all economies involved. Given the significant wage differentials between the EU and ASEAN across all class of workers, the relatively higher wage effect for ASEAN is to be expected. This result is not trivial if one takes into account the weak presence of labour unions, and the relatively high unemployment rates in ASEAN. The more marked increase in Singapore wages, however, is likely a scarcity issue given its small labour market and its tight labour immigration policies especially for unskilled workers.

Table 2.1.3

Real wage effects on EU and ASEAN Unskilled Workers (% change)

	Short run/ Static effects			Long Run/ Dynamic Effects		
	Limited FTA	*Ambitious FTA*	*Ambitious Plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious Plus FTA*
EU 27	0.04	0.07	0.08	0.1	0.17	0.19
Indonesia	0.63	1.17	1.15	1.52	2.75	3.01
Malaysia	1.84	3.44	3.72	3.43	7.98	8.7
Philippines	0.93	1.23	1.35	1.72	2.44	2.86
Singapore	1.12	3.66	3.86	3.14	8.94	9.36
Thailand	0.59	1.04	1.06	2.85	4.7	5.23
Viet Nam	3.68	5.6	5.5	9.22	12.28	13.3
Other ASEAN	0.65	0.69	1.08	1.46	2.03	2.72

Source: ICE Model simulations

Table 2.1.4

Real wage effects on EU and ASEAN Skilled Workers

	Short run/ Static effects			Long Run/ Dynamic Effects		
	Limited FTA	*Ambitious FTA*	*Ambitious Plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious Plus FTA*
EU 27	0.05	0.1	0.1	0.11	0.19	0.21
Indonesia	0.53	1.18	1.09	1.45	2.76	3.02
Malaysia	1.61	3.05	3.31	4.15	7.83	8.56
Philippines	0.85	1.3	1.56	2.51	3.9	4.84
Singapore	1.23	4	4.29	3.61	10.3	10.84
Thailand	0.48	0.88	0.91	3.22	5.34	6.02
Viet Nam	3.59	4.87	4.78	9.06	11.48	12.61
Other ASEAN	0.13	0.08	0.46	0.75	1.13	1.73

Source: ICE Model simulations

Change in value of Exports

ASEAN exports will register a significant increase, with Vietnam seeing a 10 percent rise in exports even under a limited short-run scenario. On average, exports will rise in the long-run by about 14 percent, fuelled by the performance of ASEAN's new Member States, i.e., Vietnam (35 percent), and Laos & Myanmar (15 percent). The EU likewise benefits from higher exports, albeit to a more modest degree.

Table 2.1.5

Change in Export values (in %)

	Short run/ Static effects			Long run / Dynamic Effects		
	Limited FTA	*Ambitious FTA*	*Ambitious Plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious Plus FTA*
EU 27	0.48	0.78	0.85	0.59	0.99	1.09

	Short run/ Static effects			Long run / Dynamic Effects		
Indonesia	4.23	7.72	8.35	6.28	11.96	13.07
Malaysia	1.75	3.04	3.49	4.07	7.45	8.32
Philippines	0.87	2.45	3	3.84	7.22	8.95
Singapore	1.99	5.77	6.09	4.79	12.79	13.82
Thailand	4.11	6.35	7.15	5.83	9.2	10.29
Vietnam	10.28	15.37	16.1	22.84	31.84	34.86
Other ASEAN	6.11	7.94	8.89	8.17	11.38	13.02

Global (third country) Effects

As earlier mentioned, a free trade area that includes countries with high initial protection typically generates a net result of trade diversion. In the EU-ASEAN FTA case, however, the generally negative third-country effects portrayed in Table 2.1.6 is largely the effect of the reduction of EU protection vis-à-vis ASEAN exports, and more especially in the range of products where ASEAN directly competes with South Asian goods. However, one must note that even in the scenario where the potential of trade diversion is the greatest, the effects are negative but rather trivial. Under the most ambitious trade liberalization scenario between the EU and ASEAN, it is Pakistan's exports that are largely affected, with its exports falling by 2.4 percent. The extent of trade diversion for the rest-of-the world is indeed minimal, as exports fall by a mere 0.05 percent.

Table 2.1.6

Summary of Macro Economic Changes, Rest-of-the-World (ROW)

Scenario / variable	India	Bang	Pak	Sri Lanka	Other South Asia	Other LDCs	ROW
Scenario 1: Limited FTA (short run)							
Nat'l. income (change in mln €)	-283	-31	-114	-14.6	-5.69	-17.06	-3,142
GDP (% change)	-0.01	-0.02	-0.04	0.00	-0.01	0.0	0.0
Skilled Real Wage (% change)	-0.02	-0.03	-0.09	-0.04	-0.02	-0.01	-0.01
Unskilled Real Wage (% change)	-0.02	-0.04	-0.05	-0.04	-0.01	-0.02	-0.01
Value of exports (% change)	0.02	-0.35	-0.30	-0.02	-0.36	-0.03	-0.04
Scenario 1: Limited FTA (long run)							
Nat'l. (change in mln €)	-1.717	-62	-499	-35	-10	-56	-13.519
GDP (% change)	-0.11	-0.06	-0.34	-0.07	-0.03	-0.04	-0.04
Skilled Real Wage (% change)	-0.12	-0.06	-0.36	-0.10	-0.06	-0.05	-0.05
Unskilled Real Wage (% change)	-0.10	-0.07	-0.31	-0.09	-0.06	-0.04	-0.06
Value of exports (% change)	-0.12	-0.63	-1.11	-0.29	-0.35	0.08	0.01
Scenario 2: Extended FTA (short run)							
Nat'l. income (change in mln €)	-799	-54	-232	-30	-11	-61	-5 499
GDP (% change)	-0.04	-0.04	-0.08	-0.02	-0.01	-0.01	-0.01
Skilled Real Wage (% change)	-0.08	-0.08	-0.20	-0.11	-0.09	-0.03	-0.03
Unskilled Real Wage (% change)	-0.05	-0.07	-0.10	-0.10	-0.07	-0.03	-0.03
Value of exports (% change)	0.02	-0.52	-0.52	-0.16	-0.61	-0.06	-0.04

Scenario / variable	India	Bang	Pak	Sri Lanka	Other South Asia	Other LDCs	ROW
Scenario 2: Extended FTA (long run)							
Nat'l. income (change in mln €)	-3.469	-110	-963	-60	-21	-144	-27 076
GDP (% change)	-0.23	-0.11	-0.66	-0.13	-0.07	-0.08	-0.08
Skilled Real Wage (% change)	-0.25	-0.14	-0.71	-0.19	-0.15	-0.11	-0.11
Unskilled Real Wage (% change)	-0.19	-0.14	-0.57	-0.18	-0.13	-0.08	-0.10
Value of exports (% change)	-0.25	-1.02	-1.99	-0.55	-0.55	0.15	0.06
Scenario 3: Extended FTA Plus (short run)							
Nat'l. income (change in mln €)	-864	-71	-278	-34	-12	-69	-6.524
GDP (% change)	-0.04	-0.06	-0.10	-0.02	-0.01	-0.01	-0.01
Skilled Real Wage (% change)	-0.08	-0.10	-0.24	-0.12	-0.10	-0.04	-0.03
Unskilled Real Wage (% change)	-0.05	-0.10	-0.12	-0.12	0.08	-0.03	-0.03
Value of exports (% change)	0.0	-0.68	-0.70	-0.19	-0.67	-0.08	-0.06
Scenario 3: Extended FTA Plus (long run)							
Nat'l. income (change in mln €)	-3.926	-135	-1.125	-72	-24	-177	-30 686
GDP (% change)	-0.26	-0.14	-0.77	-0.15	-0.08	-0.10	-0.09
Skilled Real Wage (% change)	-0.28	-0.17	-0.83	-0.23	-0.17	-0.12	-0.12
Unskilled Real Wage (% change)	-0.21	-0.17	-0.67	-0.21	-0.15	-0.09	-0.11
Value of exports (% change)	-0.31	-1.25	-2.4	-0.66	-0.61	0.14	0.05

2.2 Sectoral effects

EU-27

The detailed impact on sectors for the EU is provided in the set of Tables in the Annex. For this section we limit the analysis to sectors were changes in output, prices, exports, imports, and employment appear to be significant.

The sectors that matter for the EU are those in the area of Services, and these sectors all expand under all possible scenarios. Although the changes in percentage terms appear small, their large shares in total output translate these changes into more significant revenues for EU Service providers. This is particularly true for trade services, other business services, which each take up about 10 percent of total EU27 output.

Under manufacturing sectors, the reduction in output is evident in leather products (-24 percent), clothing (-3 percent), and electronic equipment (-4 percent). These effects are expected as trade liberalisation unleashes the dynamic effects of competition, (negatively) positively affecting sectors of comparative (dis)advantage. Hence, EU Services and ASEAN (more labour-intensive) Manufacturing sectors expand as a result of free intra-regional free trade.

Table 2.2

Change in Sectoral Output for EU 27

	Static/Short Run			Dynamic/Long Run			
	Limited FTA	*Ambitious FTA*	*Ambitious Plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious Plus FTA*	*% share, total value-added**
Processed Foods	0.4	0.5	0.5	0.6	0.9	0.9	4.1
Textiles	-0.9	-1.0	-1.3	-0.8	-0.7	-1.0	0.8
Wearing apparel	-1.5	-2.0	-2.3	-1.7	-2.2	-2.6	0.6
Leather products	-13.7	-17.6	-18.7	-17.3	-21.4	-23.7	0.3
Chemical, rubber, plastic products	0.0	0.0	0.0	0.1	0.2	0.2	4.8
Metal products	0.1	0.1	0.1	0.2	0.2	0.3	2.1
Motor vehicles and parts	0.5	0.6	0.7	0.7	0.9	1.0	3.3
Electronic equipment	-1.1	-2.5	-3.0	-1.3	-3.1	-3.8	1.7
Machinery and equipment nec	0.2	0.3	0.4	0.3	0.4	0.6	4.7
Manufactures nec	0.1	0.1	0.1	0.2	0.2	0.2	1.3
trade services	0.0	0.0	0.1	0.1	0.2	0.2	11.1
Business services, nec	0.0	0.1	0.1	0.1	0.2	0.3	10.2
Other services	0.0	0.0	0.0	0.1	0.2	0.2	15.8

Source: Tariffs for merchandise: GTAP database, version 7. Trade cost equivalents for services: own regressions as reported in the Appendix. Output changes: ICE model simulations.

The employment effects are divided for the effects on unskilled labour and skilled labour per sector separately and the detailed tables can be found in Annex B. For the unskilled and skilled labour, the largest percent changes in employment are found in the leather sector, with around 17 percent decrease in employment for both labour groups. However, leather production is rather small in the EU, so the total decrease in employment is not that large. The sector is relatively regionally concentrated though.

In addition to leather sector, employment of both unskilled and skilled labour in the electronic equipment, wearing apparel and textiles sectors diminished slightly. Very small positive employment effects are found in motor vehicles and beverages and tobacco sectors. However, the positive employment changes in percentage terms are trivial relative to the negative effects.

ASEAN

The detailed impact on sectors for the ASEAN is provided in the set of Tables in Annex B. For this section we limit the analysis to sectors were changes in output, prices, exports, imports, and employment appear to be significant.

Indonesia

In Indonesia, electronic equipment sees the largest rise in output due to regional trade liberalisation. At the minimum, output increase by 15 percent, but potentially, it can expand by almost 60 percent under an ambitious plus FTA. Such expansion can translate to a rise in GDP of close to 2 percent. Output of wearing apparel also increases, although we notice here that the reallocation of resources following free trade leads to a slightly less increase in output compared to an environment were trade liberalization is more limited.

Table 2.2.1

Changes in Sectoral Output Indonesia (percentage change)

	Static/Short Run			Dynamic/Long Run		
	Limited FTA	*Ambitious FTA*	*Ambitious Plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious Plus FTA*
Gas	-2.72	-3.94	-4.35	-2.98	-4.46	-4.99
Textiles	7.67	4.26	6.38	9.01	7.36	9.12
Wearing apparel	13.37	7.88	11.2	13.44	9.27	11.6
Metal products	0.89	3.19	3.06	2.3	5.53	5.89
Motor vehicles & parts	-6.51	-9.29	-10.29	-4.52	-5.64	-6.34
Electronic equipment	14.17	38.65	38.85	22.93	55.2	58.72
Transport nec	0.47	1.6	1.95	2.14	5.24	5.53
Business services nec	-4.75	-15.15	-15.1	-2.06	-9.58	-8.81

For Indonesia, there are adverse employment effects in the business services nec sector, but positive impact on the electronics equipment sector. These effects correlate strongly with the output outcomes, so that the negative employment effects are dampened and the positive effects are magnified in the long run.

Malaysia

The contraction of leather output in the EU is matched by significant expansion of output of Malaysia and Vietnam. Although leather products constitute a small share of Malaysia's value-added, export of this sector are projected to increase in the range of 95 percent (conservative scenario) to 132 percent (most liberal). Textiles and wearing apparel also perform well, with maximum potential expansion of 35 percent and 32 percent, respectively. However, it is the growth in electronic equipment output which is interesting given that it accounts for around a quarter of Malaysia's value-added. The 10 percent expansion in the most ambitious scenario translates into an increase of 2 percent of GDP.

Table 2.2.2

Changes in Sectoral Output Malaysia, (percentage change)

	Static/Short Run			Dynamic/Long Run		
	Limited FTA	*Ambitious FTA*	*Ambitious Plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious Plus FTA*
Oil seeds	0.94	0.7	0.56	2.98	4.27	4.44

Gas	-2.39	-4.95	-6.17	-2.35	-5.43	-6.77
Minerals nec.	-18.19	-21.69	-22.25	-15.78	-17.36	-17.48
Textiles	27.08	28.26	29.77	30.23	32.51	34.37
Wearing apparel	23.07	26.33	28.8	24.68	29.49	32.06
Leather products	95.74	121.97	156.08	81.64	109.27	132.25
Chemical, rubber, plastic products	0.97	0.45	0.16	5.36	8.31	8.71
Motor vehicles and parts	10.28	13.36	16.78	10.17	12.83	15.9
Electronic equipment	1.43	3.44	4.26	4.15	8.87	10.34
Machinery and equipment nec	-12.39	-18.71	-22.16	-4.47	-4.65	-7.03
Manufactures nec	1.15	1.35	1.58	3.73	6.51	7.23
Construction	1.9	3.48	3.98	4	7.61	8.46
Trade	0.06	0.51	0.63	2.89	6	6.53
Recreational and other services	1.02	1.61	1.53	3.37	6.17	6.56

Similar to the trend observed in output changes, the highest employment increases is found in the leather products sector and in textiles and wearing apparel. The largest negative effects, on the other hand, are on the beverages and tobacco sector (which is rather small in terms of size), in machinery and equipment sector and in ferrous metals. Also in business services, employment decreases slightly. The effects are rather similar in percentage change for unskilled and skilled labour, although sectors such as processed food and business services, unskilled labour employment decreases slightly more.

The Philippines

The Philippines will see most expansion in motor vehicles and parts (85 percent), although the domestic content adds only about a third in the value-added of the sector, and the whole sector contributes only a little above 1% of total economy-wide value added. The 5 percent growth in electronic equipment will have a more substantial impact on incomes given its 18-21percent share in total Philippine output. The overall effect of the 5 percent contraction in grains, on the other hand, may not be substantial since the sector contributes only 2-3 percent to total output.

Table 2.2.3

Changes in Sectoral Output Philippines, (percentage change)

	Static/Short Run			Dynamic/Long Run		
	Limited FTA	*Ambitious FTA*	*Ambitious Plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious Plus FTA*
Cereal grains nec.	-1.31	-1.89	-2.28	-2.78	-4.28	-5.28
Gas	-2.86	-3.87	-4.64	-4.13	-6.11	-7.54
Textiles	21.99	19	17.07	21.48	17.7	16.31
Wearing apparel	17.95	14.04	11.76	16.55	11.57	9.38

Leather products	25.53	23.32	22.54	20.49	15.49	13.68
Motor vehicles and parts	34.62	49.52	70.34	39.86	69.53	84.92
Transport equipment nec.	3.07	0.74	-0.86	6.58	5.4	5.09
Electronic equipment	-3.04	-1.43	-1.35	0.15	3.36	5.04
Machinery and equipment nec	-4.09	-6.37	-8.26	4.51	6.01	7.11
Trade	0.42	0.88	1.54	2.74	4.96	6.17
Transport nec	0.4	0.7	1.02	2.28	3.91	4.73
Communication	1.04	3.38	3.32	2.49	5.68	6.1

In Philippines unskilled and skilled labour is expected to experience up to 65 percent change in employment in the motor vehicles and parts sector. Leather products, wearing apparel and textiles grow significantly as well. Sectors where employment is diminishing include, e.g. machinery and equipment, processed foods and cereals and grain. Given the large employment shares of the latter, the small percent change in employment could translate to sizeable impact.

Singapore

The output of electronic equipment production in Singapore is projected to increase by 28.8 percent under the most ambitious experiment. Other machinery and equipment, on the other hand, contracts by 18 percent which suggests that trade liberalization triggers the reallocation of resources along the lines of comparative advantage. The positive net effect is explained by the much larger contribution of the expanding sectors to value-added. Electronic equipment, for instance, constitutes about 27 percent of total value-added, which means that the projected expansion under ambitious plus FTA makes the sector responsible for the additional 8 percent GDP growth. The strong performance of Services, in particular construction and financial services, is also worth noting, given the relative significance of these sectors to overall output.

Table 2.2.4

Changes in Sectoral Output Singapore (percentage change)

	Static/Short Run			**Dynamic/Long Run**		
	Limited FTA	*Ambitious FTA*	*Ambitious Plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious Plus FTA*
Oil	-6.01	-13.82	-15.04	-4.14	-8.49	-9.31
Gas	-11.88	-27.01	-29.47	-9.91	-21.21	-23.18
Textiles	10.76	10.4	10.46	12.7	17.03	17.56
Wearing apparel	10.26	0.65	1.01	3.78	-11.28	-11.64
Leather products	8.87	-9.18	-7.66	4.4	-10.23	-9.92
Wood products	-2.55	-7.69	-10.26	-2.98	-7.92	-10.34
Petroleum, coal products	0.1	-1.84	-2.46	5.06	9.71	9.86
Metal products	-3.71	-11	-12.49	-2.19	-5.59	-6.61

	Static/Short Run			Dynamic/Long Run		
Motor vehicles and parts	-3.55	-19.83	-21.63	-2.95	-14.09	-15.75
Transport equipment nec.	-5.26	-17.69	-18.91	-7.47	-19.7	-21.13
Electronic equipment	4.03	14	14.77	9.25	26.45	28.8
Machinery and equipment nec	-4.62	-11.57	-13.94	-6.72	-15.87	-18.19
Manufactures nec	7.01	46.9	45.69	1.76	16.65	12.78
Construction	0.98	2.86	3.2	4.89	13.69	14.61
Trade	-0.26	-0.24	-0.37	2.64	7.68	8.07
Communication	-0.65	-1.79	-1.86	2.02	5.66	6.02
Financial services nec	0.94	2.96	2.95	2.26	6.53	6.69
Insurance	1.29	-0.8	5.48	4.68	16.32	16.13
Recreational and other services	1.4	5.81	6	4.02	11.95	12.45

In Singapore the employment in the manufactures nec sector increases the most for both the unskilled and skilled labour. Employment in electronic equipment and textiles sectors increase, while those in the processed foods sector and motor vehicles see the most significant decrease percentage wise.

Thailand

Electronic equipment again delivers a strong output growth, this time for Thailand. The projected rise in output is 14.6 percent, and since it accounts for 11 percent of the total contribution of manufacturing to overall output, this expansion can have significant income effects. In the long-run all Services are also expected to expand. Analysis shows that the short-term output contraction that Thailand could experience could be altered towards positive growth in the long-run. This is understandable given that the share of capital inputs in Thailand (63 percent of total factor income) is the highest among all ASEAN. The additional assumption of capital accumulation in the long-run thus enhances the efficiency of production across all sectors.

Table 2.2.5

Changes in Sectoral Output Thailand (percentage change)

	Static/Short Run			Dynamic/Long Run		
	Limited FTA	*Ambitious FTA*	*Ambitious Plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious Plus FTA*
Wearing apparel	0.46	0.21	0.18	2.51	3.59	3.92
Leather products	0.09	-0.41	-0.77	2.92	4.23	4.43
Wood products	-5.24	-7.1	-8.45	-2.98	-3.6	-4.59

	Static/Short Run			Dynamic/Long Run		
Mineral products, nec.	-0.21	-0.08	-0.2	2.15	3.7	4.11
Motor vehicles and parts	1.79	2.27	2.25	4.62	6.83	7.4
Transport equipment nec.	3.01	6.64	6.61	6.72	13.88	14.65
Electronic equipment	2.64	4.16	5.02	7.75	12.84	14.57
Construction	0.79	1.32	1.45	3.46	5.77	6.53
Trade	-0.05	-0.17	-0.19	2.88	4.64	5.27
Transport nec	0.55	1.71	1.75	2.39	4.89	5.19
Recreational and other services	0.03	0.28	0.28	2.65	4.59	5.17
Other services	-0.11	-0.02	-0.01	2.43	4.16	4.74

Employment in wood products, insurance and textiles sectors are projected to fall, while for transport equipment, electronic equipment, processed foods and motor vehicles sectors, the opposite applies. In the short-run, the negative effects on unskilled labour tend to be larger while the positive effects, smaller. But once, again, these effects are reversed in the long run, with unskilled labour gaining more than their skilled counterparts.

Vietnam

For Vietnam, what is note-worthy is the 154 percent output expansion of the leather goods sector, under the most liberal scenario. It is ASEAN's largest manufacturer of leather, and the rise in its production covers about 53 percent of the output loss of the EU in the same sector. Thus, while the rise in exports is large at 165 percent, the increase in the exports destined for the EU is even bigger at 241 percent. There is a marked shift in specialization towards leather products as output and employment for most of its other manufacturing sectors fall. The income and GDP growth gains of Vietnam remain considerable. Unskilled labour is the largest contributor of value-added in the country, so that the shift of output towards labour-intensive manufacturing generates sizeable income benefits. In fact, among all ASEAN countries, it is in Vietnam where unskilled wages rises the most (13 percent).

Table 2.2.7

Changes in Sectoral Output Vietnam (percentage change)

	Static/Short Run			Dynamic/Long Run		
	Limited FTA	*Ambitious FTA*	*Ambitious Plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious Plus FTA*
Cereal grains nec.	-11.74	-15.68	-16.36	-18.85	-24.47	-26.76
Oil seeds	-1.52	-2.77	-2.78	-3.81	-5.21	-5.9
Live Stock	3.88	5.67	5.68	8.52	11.33	12.38
Other Agriculture	3.11	3.96	4.15	3.63	4.5	4.82

	Static/Short Run			Dynamic/Long Run		
Sugar	-6.57	-8.48	-8.98	-7.75	-9.23	-10.38
Oil	-0.46	-0.05	-0.15	2.5	3.7	4.11
Gas	-14.99	-19.9	-20.81	-23.33	-30.27	-33.05
Textiles	-31.95	-37.4	-38.7	-16.22	-15.32	-16.99
Wearing apparel	-13.23	-11.87	-11.35	3.85	12.52	14.63
Leather products	86.62	109.07	110.43	117.65	143.25	154.19
Wood products	-10.05	-12.69	-13.49	-12.12	-14.27	-16.07
Chemical, rubber, plastic products	-17.25	-22.7	-24.66	-6.19	-6.99	-9.05
Ferrous metals	-18.22	-23.97	-25.01	-19.66	-23.92	-25.94
Metal products	-30.23	-34	-35.83	-24.72	-24.1	-26.71
Motor vehicles and parts	-35.07	-44.05	-47.37	-28.05	-34.4	-37.59
Transport equipment nec.	-14.27	-19.61	-19.22	-16.03	-19.12	-20.8
Electronic equipment	-40.68	-44.3	-45.36	-34.17	-31.9	-32.65
Machinery and equipment nec	-32.98	-39.13	-41.76	-28.18	-30.86	-33.89
Manufactures nec	-34.07	-39.92	-40.06	-21.65	-21.69	-21.43
Construction	4.88	7.17	7.18	8.31	11.2	12.22
Trade	6.69	7.07	8.9	15.63	20.16	21.85
Transport nec	-1.36	-3.94	-3.84	4.39	4.11	4.73
Communication	0.32	-0.79	-0.81	6.26	6.93	7.73
Financial services nec	-1.92	-14.85	-14.04	10.04	2.29	4.17
Insurance	-18.93	-31.23	-32.44	-8.87	-17.79	-17.77

As the output in the leather sector in Vietnam rises, so does employment. A remarkable increase of up to 125 percent could be expected. In addition, employment of unskilled and skilled labour in the trade and construction sectors rises as well. Among the losing sectors are electronic equipment, motor vehicles, machinery and textiles.

Rest of ASEAN

For Other ASEAN Countries (Brunei, Cambodia, Laos, Myanmar), while it is true that textiles and wearing apparel are projected to see some output growth, the share of these sectors in overall output is not that significant. On the other hand, they are the main export sectors. Most manufacturing sectors again seem to be unable to withstand a more competitive environment as shown by the output contraction figures in the table below. The share of these sectors of total output of employment is not very high though. Earlier, it was shown in section 2.1, how the removal of the barriers to services trade leads to some reduction in incomes. This can be explained by the fall in Trade Services and Other Business Services, which combined, account for 12 percent of total Other ASEAN output.

Table 2.2.8

Changes in Sectoral Output Other ASEAN Countries (percentage change)

	Static/Short Run			Dynamic/Long Run		
	Limited FTA	*Ambitious FTA*	*Ambitious Plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious Plus FTA*
Cereal grains nec	-1.28	-1.33	-2.05	-3.03	-4.20	-5.59
Vegetables, fruit, nuts	-0.44	-0.65	-0.68	-0.23	-0.31	-0.32
Oil seeds	-0.63	-0.90	-1.14	-0.73	-1.09	-1.37
Livestock	0.94	1.16	1.59	1.81	2.58	3.27
Other agriculture	0.25	0.27	0.20	0.21	0.17	0.15
Forestry	-0.47	-0.61	-0.75	-0.38	-0.51	-0.58
Fishing	-0.12	-0.11	-0.13	-0.03	0.04	0.05
Coal	-0.03	-0.04	-0.05	-0.02	-0.03	-0.02
Oil	-0.07	-0.09	-0.14	-0.03	-0.04	-0.06
Gas	-0.05	-0.06	-0.09	-0.04	-0.05	-0.08
Minerals nec	-0.36	-0.47	-0.50	-0.29	-0.37	-0.37
Sugar	-0.55	0.02	-0.52	-0.66	-0.46	-0.96
Processed foods	-1.46	-1.04	-2.05	-4.01	-5.32	-7.32
Beverages and tobacco products	-0.37	2.50	2.60	-3.56	-6.21	-6.29
Textiles	22.37	26.56	31.20	27.00	34.48	41.06
Wearing apparel	9.19	9.41	9.79	12.43	14.69	16.06
Leather products	-7.19	-7.97	-8.38	-7.52	-8.61	-8.70
Wood products	-4.65	-5.84	-6.02	-3.85	-4.30	-4.12
Paper products, publishing	-2.32	-2.92	-3.15	-1.51	-1.91	-1.49
Petroleum, coal products	-0.88	0.27	0.10	-0.58	-0.27	0.09
Chemical,rubber,plastic prods	1.56	0.84	-1.61	2.52	1.02	1.34
Mineral products nec	-2.49	-3.26	-3.44	-2.94	-4.00	-4.12
Ferrous metals	-19.30	-24.03	-25.57	-16.99	-20.67	-21.63
Metals nec	-4.76	-6.57	-7.69	-4.16	-5.11	-6.18
Metal products	-12.76	-15.66	-16.81	-11.35	-13.63	-14.13
Motor vehicles and parts	-53.85	-66.80	-68.93	-51.85	-64.14	-66.03
Transport equipment nec	-8.05	-9.13	-12.73	-4.50	-2.59	-5.33
Electronic equipment	-13.74	-17.77	-18.97	-11.97	-15.60	-16.12
Machinery and equipment nec	-26.51	-31.56	-34.60	-23.28	-26.65	-28.66
Manufactures nec	-16.23	-21.68	-22.67	-14.91	-18.37	-18.96
utilities	-1.63	-2.14	-2.33	-0.87	-1.00	-0.70
construction	0.49	0.64	1.12	1.25	1.67	2.41
trade	-2.06	-2.08	-2.51	-0.69	-0.43	0.12
transport	-0.19	1.71	1.48	0.99	3.44	3.74
communications	-0.16	1.34	1.09	1.20	3.33	3.56
financial services	-1.37	-1.69	-1.75	-0.61	-0.59	-0.21
insurance	-0.79	-1.17	-1.36	0.19	0.26	0.64
business services	-1.63	-2.72	-2.86	-0.96	-1.76	-1.51
consumer services	0.24	0.48	0.57	0.92	1.58	1.94
other services	-0.24	-0.31	-0.41	0.54	0.91	1.22

	Static/Short Run			Dynamic/Long Run		

In line with the above results, textiles, wearing apparel, construction and livestock face the largest employment increases in the short and long run. However, the increases are slightly higher for skilled labour. Negative employment effects occur in industrial sectors, such as motor vehicles and machinery and equipment, although total employment in those sectors is not very high in the combined other ASEAN region.

2.3 Environmental Effects

The impact of the new production structure and output levels following an EU-ASEAN FTA, on the environment, in particular on CO2 emissions, is projected in the model as well. Summary measures are supplied in an elaborate table in Annex C, which provides estimates of changes in carbon dioxide emissions in thousands of metric tons, and global increase in percentage terms. Given the relatively small impact on the EU, and the relatively small share of ASEAN in global output and emissions, the impact on global CO_2 emissions is negligible. Impacts range, between the various scenarios and time frames, from 0.02 to 0.21 percent of baseline emissions. Effects on the CO2 emissions for each sector (based on the output changes of the sector) are listed in Annex table 3. The overall change in CO_2 emissions due to greater trade between the EU and ASEAN ranges from 0.06% in the short-run to 0.21% in the long-run under the most ambitious FTA scenario.

3.0 Conclusions

This IIDE study quantifies the economic impacts of a possible EU-ASEAN FTA. This is done with a global CGE model projected through 2014. Overall, there are positive effects for most of ASEAN under all scenarios, and small but positive effects over the long-run for the European Union. Throughout the study, some negative results are observed for other ASEAN countries. It should be noted, however, that these results are consistent with the findings of other CGE studies involving the newer members of ASEAN in other trade liberalization experiments, even those pertaining to the deepening of ASEAN integration. Even ASEAN policymakers acknowledge the potential adverse income effects of the removal of protection especially in manufactures, thereby allowing a more moderate transition for new members, from status quo protection towards the agreed upon end liberalisation targets.

As expected, income and trade gains increase as liberalization deepens and as more dynamic effects are taken into account. The latter is particularly important for ASEAN, whose growth is often constrained by insufficient capital resources. The difference between the static and dynamic scenario is starkest with Thailand, where the relative importance of capital inputs (63 percent of total factor income) is greatest among ASEAN.

In terms of income effects, the EU and Singapore gain the most, 51 percent and 78 percent of these gains, respectively, are due to the removal of the barriers to Services trade. It is Vietnam, however, that reaps the largest rise in GDP growth. After the EU, it is Thailand that gains the most from the removal of non-tariff barriers. For the EU, about 87 percent of the income rise between these two scenarios is due to direct and indirect effects of trade facilitation alone.

The productivity effects of an EU-ASEAN FTA are also visible in the form of higher wages both for skilled and unskilled workers. This is particularly important for ASEAN as this would mean that the employment increase in key growth sectors will outstrip the reduction of employment in contracting sectors.

On exports, it is worth noting that the strong export performance of ASEAN projected here is largely driven by the export growth of ASEAN's new members, i.e., Vietnam (35 percent), and Cambodia, Laos & Myanmar (13 percent).

There are negative effects for third countries, however. Indeed the net gains for most of ASEAN in the long-run are mirrored by comparable losses in third countries, much of which is carried by India and Pakistan. These estimates build on a baseline scenario that includes a representative set of Doha Round tariff reductions. With failure in Geneva, baseline protection in the EU will be larger, and so overall economic gains for ASEAN and the EU (and losses for 3rd countries) will also be larger. However, one must note that even in the scenario where the potential of trade diversion is the greatest, the effects are negative but rather trivial. Under the most ambitious trade liberalization scenario between the EU and ASEAN, it is Pakistan's exports that are largely affected, with its exports falling by 2.4 percent. The extent of trade diversion for the rest-of-the world is indeed minimal, as exports fall by a mere 0.05 percent.

References:

Brockmeier, M. and J. Pekikan (2008), "Agricultural market access: A moving target in the WTO negotiations?" *Food Policy* 33 250–259.

Chakraborty C. and P Basu (2002) Foreign Direct Investment and Growth in India: a Cointegration Approach", Applied Economics 34, 1061-1073.

Decreux, Yvan and Cristina Mitaronna (2007), *Economic Impact of a Potential Free Trade Agreement (FTA) between the European Union and India* (Study commissioned by the Directorate-General for Trade of the Commission of the European Union).

Dimaran, B. and MacDougall, R. ed (2007) *The GTAP database- version 7*, Global Trade Analysis Center, Purdue University.

EU Commission (2006), Global Europe: Competing in the World.

Eurostat (2007), *EU25 Foreign Direct Investment in Brazil, Russia, India and China*. Statistics in Focus, Economy and Finance No. 111/2007.

Francois, J. F, B. Hoekman and J. Woerz (2007) "Does Gravity Apply to Nontangiables: Trade and FDI Openness in Services", Plenary Paper at the 2007 ETSG meeting and an unpublished version (2008).

Francois,J., Baughman, L. M. Brockmeier, and R. Klepper (2008), "A Quantification of the Economic Effects of the February 2008 Draft NAMA Text: Summary of Results." report for the German Marshall Fund.

Gasiorek, Michael, Peter Holmes, Sherman Robinson, Jim Rollo and Anirudh Shigal (2007), *Qualitative analysis of a Potential Free Trade Agreement Between the European Union and India*. Centre for the Analysis of Regional Integration at Sussex (Study commissioned by the Directorate-General for Trade of the Commission of the European Union).

OECD (2006), OECD's FDI Regulatory Restrictiveness Index: Revision and Extension to More Economies. OECD Working Papers on International Investment No.2006/4.

OECD (2006), *Trends and Recent Developments in Foreign Direct Investment*. In International Investment Perspectives, 2006 Edition.

OECD (2006), OECD's FDI Regulatory Restrictiveness Index: Revision and Extension to More Economies and Sectors. International Investment Perspective: Freedom in a Changing World, 2007 Edition.

Rollo, Jim (2007*), Spice Route to Europe? Prospects for a India-EU Free Trade Area*, Chatham House Briefing Paper 07/02, October 2007.

WTO (2007), Trade Policy Review, India, April 2007.

Antweiller, W. and D. Trefler (2002), "Increasing Returns and All That: A View from Trade," American Economic Review, 96: March.

Ethier, W. (1982), "National and International Returns to Scale in the Modern Theory of International Trade," *American Economic Review*, 72 (June), 950-959.
Finger, J.M., U. Reincke, and M. Ingco (1996*), The Uruguay Round: Statistics on Tariff Concessions Given and Received*, World Bank: Washington.

Fox, Alan K. (1999), "Evaluating the Success of a CGE Model of the Canada-U.S. Free Trade Agreement," presented at The Second Annual Conference in Global Economic Analysis, June 20-22.

Francois. J.F., H. van Meijl and F. van Tongeren (2005), "Trade Liberalization in the Doha Development Round," *Economic Policy* April: 349-391.

Francois, J.F., THE NEXT WTO ROUND: North-South stakes in new market access negotiations , CIES Adelaide and the Tinbergen Institute, CIES: Adelaide, 2001. ISBN: 086396 474 5.

Francois, J.F. (1998), "Scale economies and imperfect competition in the GTAP model," GTAP consortium technical paper.
http://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=317

Francois, J.F., B. McDonald and H. Nordstrom (1996b), "Trade liberalization and the capital stock in the GTAP model," GTAP consortium technical paper.
http://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=310)

Francois, J.F. and D.W. Roland-Holst (1997), "Scale economies and imperfect competition, in Francois,J.F. and K.A. Reinert, eds. (1997), *Applied methods for trade policy analysis: a handbook*, Cambridge University Press: New York.

Hall, R.E. (1988), "The relation between price and marginal cost in U.S. industry", *Journal of Political Economy*, Vol. 96, No. 5, pp. 921-947.

Hertel, T. and M. Tsigas (1996), "The Structure of GTAP," in Hertel, T., ed., (1996), *Global Trade Analysis*, Cambridge University Press: Cambridge MA.
http://www.gtap.agecon.purdue.edu/models/current.asp

Martins, J.O., Scarpetta, S. and D. Pilat (1996), " Mark-Up Ratios In Manufacturing Industries Estimates For 14 OECD Countries," OECD Economics Department Working Paper No. 162.

McDougall, R., ed. (2001). *The GTAP database -- version 5*, Global Trade Analysis Center: Purdue University.

Roeger, W. (1995), "Can Imperfect Competition explain the Difference between Primal and Dual Productivity Measures? Estimates for US manufacturing", *Journal of Political Economy*, Vol. 103, No. 2, pp. 316-330.

Annexes

Table A.1

Model Paramaters and Market Structure by Sector1/

	elasticity of substitution in value added	trade substitution elasticity	elasticity of scale	market structure
SECTORS				
agriculture and processed foods				
1 grains	0.35	5.82	0.00	PC
2 horticulture	0.24	3.70	0.00	PC
3 oil seeds	0.24	4.90	0.00	PC
4 sugar	0.73	5.40	0.00	PC
5 natural fibers	0.24	5.00	0.00	PC
6 beef	0.65	6.92	0.08	IRTS/AC
7 dairy products	0.69	7.30	0.08	IRTS/AC
8 vegetable oils	1.12	6.60	0.08	IRTS/AC
9 other prinary agriculture	0.24	5.82	0.00	PC
10 other processed foods	1.12	10.91	0.11	MC
11 beverages and tobacco	1.12	10.91	0.11	MC
other primary				
12 forestry	0.20	5.00	0.00	PC
13 fisheries	0.20	2.50	0.00	PC
14 mining	0.20	13.44	0.05	IRTS/AC
manufacturing				
15 textiles	1.26	7.50	0.00	PC
16 clothing	1.26	7.40	0.00	PC
17 leather	1.26	8.10	0.00	PC
18 lumber	1.26	6.80	0.00	PC
19 paper, pulp, publishing	1.26	5.90	0.20	MC
20 petrochemicals	1.26	4.20	0.31	MC
21 chemicals, rubber, and plastics	1.26	6.60	0.18	MC
22 iron and steel	1.26	6.85	0.17	MC
23 non-ferrous metals	1.26	6.85	0.17	MC
24 motor behicles	1.26	9.85	0.11	MC
25 electrical machinery	1.26	9.85	0.11	MC
26 other machinery	1.26	9.85	0.11	MC
27 other manufactures	1.26	9.33	0.12	MC
services				
28 utilities	1.26	7.60	0.00	PC
29 construction	1.40	7.60	0.29	IRTS/AC
30 trade	1.68	7.60	0.00	PC
31 transport	1.68	7.60	0.00	PC
32 communications	1.26	7.60	0.15	MC
33 financial and banking services	1.26	7.60	0.15	MC
34 insurance	1.26	7.60	0.15	MC
35 other business services	1.26	7.60	0.15	MC
36 other services	1.26	7.60	0.00	PC

source: GTAP (2006), Antweiller and Trefler (2002),
1/ Francois (2001), and Inui and Kwan (2004).

PC: perfect competition, with Armington-based trade.
MC: monopolistic competition.
IRTS/AC industry-wide scale economies, average cost pricing, and Armington trade.

Table A.2 **Service Sector Regression Results**

Sector dummies	country values and dummies	Coefficient	t-ratio
utilities		-0.82	-2.14
trade		2.74	7.96
transport		3.81	10.70
communications		1.47	4.00
other financial services		1.37	3.60
insurance and real estate		1.37	3.50
other business services		3.54	8.81
other services		3.05	7.39
	GDP		
	GDPsquared	13.60	1.95
	PCI	-0.47	-1.87
	Australia	0.08	0.54
	New Zealand	-2.47	-2.29
	Other Oceania	-0.34	-0.26
	China	6.30	1.74
	Japan	-3.14	-2.36
	Korea	-2.96	-3.32
	Taiwan	-2.87	-2.48
	Other East Asia	-2.41	-2.48
	Indonesia	2.79	1.27
	Malaysia	-1.60	-2.28
	Philippines	0.83	1.09
	Thailand	-0.14	-0.15
	Vietnam	-0.44	-0.65
	Other Southeast Asia	2.50	1.24
	Bangladesh	-1.65	-1.84
	India	12.20	1.70
	Pakistan	-3.92	-3.24
	Sri Lanka	-1.35	-1.15
	Other South Asia	3.80	1.13
	Other Central Asia	3.67	1.51
	Canada	-0.22	-0.31
	Mexico	-2.12	-1.63
	Other Americas	-3.22	-2.53
	EU25	-2.51	-1.91
	EFTA	-1.21	-2.50
	Turkey	-1.10	-0.96
	Russia	-1.09	-1.56
	Other Europe	-2.63	-2.55
	North Africa and ME	0.74	1.02
	South Africa	-2.20	-1.66
	Sub-Saharan Africa	-0.90	-1.32
		-1.36	-1.58
R-squared:			0.74

Singapore and Hong Kong and the US are taken as the benchmark.
The US is included because it was not statistically different from the other two.

Summary results tables

Table A.3 Summary of Macro Economic Changes, EU and ASEAN

Scenario / variable	EU-27	Indon	Mal	Phil	Sing	Thai	Viet	Other ASEAN
Scenario 1: Limited FTA (short run)								
National income (change in mln €)	4,760	1,414	1,467	664	2,067	537	1,507	56
GDP (% change)	0.02	0.32	0.38	0.24	0.99	0.11	1.92	0.08
Skilled Real Wage (% change)	0.05	0.53	1.61	0.85	1.23	0.48	3.59	0.13
Unskilled Real Wage (% change)	0.04	0.63	1.84	0.93	1.12	0.59	3.7	0.65
Value of exports (% change)	0.48	4.23	1.75	0.87	1.99	4.11	10.28	6.11
Scenario 1: Limited FTA (long run)								
National income (change in mln €)	13,117	6,394	5,302	3,576	7,487	6,809	5,027	338
GDP (% change)	0.10	1.64	3.43	2.51	4.18	2.84	10.17	2.39
Skilled Real Wage (% change)	0.11	1.45	4.15	2.51	3.61	3.22	9.06	0.75
Unskilled Real Wage (% change)	0.10	1.52	3.43	1.72	3.14	2.85	9.22	1.46
Value of exports (% change)	0.59	6.28	4.07	3.84	4.79	5.83	22.84	8.17
Scenario 2: Extended FTA (short run)								
National income (change in mln €)	11,239	4,137	3,575	1,332	6,587	1,379	2,749	64
GDP (% change)	0.05	0.99	1.17	0.60	3.55	0.39	3.46	0.29
Skilled Real Wage (% change)	0.10	1.18	3.05	1.30	4.00	0.88	4.87	0.08
Unskilled Real Wage (% change)	0.07	1.17	3.44	1.23	3.66	1.04	5.60	0.69
Value of exports (% change)	0.78	7.72	3.04	2.45	5.77	6.35	15.37	7.94
Scenario 2: Extended FTA (long run)								
National income (change in mln €)	26,819	13,114	10,702	5,885	20,317	11,543	6,980	530
GDP (% change)	0.20	3.39	6.85	4.12	12.32	4.81	14.02	3.71
Skilled Real Wage (% change)	0.19	2.76	7.83	3.90	10.30	5.34	11.48	1.13
Unskilled Real Wage (% change)	0.17	2.75	7.98	2.44	8.94	4.70	12.28	2.03
Value of exports (% change)	0.99	11.96	7.45	7.22	12.79	9.20	31.84	11.38
Scenario 3: Extended FTA Plus (short run)								
National income (change in mln €)	12,021	3,706	3,852	1,530	7,125	1,490	2,621	154
GDP (% change)	0.06	0.88	1.22	0.63	3.66	0.36	3.22	0.27
Skilled Real Wage (% change)	0.10	1.09	3.31	1.56	4.29	0.91	4.78	0.46
Unskilled Real Wage (% change)	0.08	1.15	3.72	1.35	3.86	1.06	5.5	1.08
Value of exports (% change)	0.85	8.35	3.49	3.00	6.09	7.15	16.1	8.89
Scenario 3: Extended FTA Plus (long run)								
National income (change in mln €)	29,516	14,207	11,714	7,196	21,507	13,061	7,637	725
GDP (% change)	0.23	3.66	7.42	5.02	12.89	5.39	15.27	4.39
Skilled Real Wage (% change)	0.21	3.02	8.56	4.84	10.84	6.02	12.61	1.73
Unskilled Real Wage (% change)	0.19	3.01	8.70	2.86	9.36	5.23	13.30	2.72
Value of exports (% change)	1.09	13.07	8.32	8.95	13.82	10.29	34.86	13.02

Table A.4 Summary of Macro Economic Changes, ROW

Scenario / variable	India	Bang	Pak	Sri Lanka	Other South Asia	Other LDCs	ROW
Scenario 1: Limited FTA (short run)							
National income (change in mln €)	-283	-31	-114	-14,6	-5,69	-17,06	-3.142
GDP (% change)	-0,01	-0,02	-0,04	0,00	-0,01	0,0	0,0
Skilled Real Wage (% change)	-0,02	-0,03	-0,09	-0.04	-0,02	-0,01	-0,01
Unskilled Real Wage (% change)	-0,02	-0,04	-0,05	-0,04	-0,01	-0,02	-0,01
Value of exports (% change)	0,02	-0,35	-0,30	-0,02	-0,36	-0,03	-0,04
Scenario 1: Limited FTA (long run)							
National income (change in mln €)	-1.717	-62	-499	-35	-10	-56	-13.519
GDP (% change)	-0,11	-0,06	-0,34	-0,07	-0,03	-0,04	-0,04
Skilled Real Wage (% change)	-0,12	-0,06	-0,36	-0,10	-0,06	-0,05	-0,05
Unskilled Real Wage (% change)	-0,10	-0,07	-0,31	-0,09	-0,06	-0,04	-0,06
Value of exports (% change)	-0,12	-0,63	-1,11	-0,29	-0,35	0,08	0,01
Scenario 2: Extended FTA (short run)							
National income (change in mln €)	-799	-54	-232	-30	-11	-61	-5.499
GDP (% change)	-0,04	-0,04	-0,08	-0,02	-0,01	-0,01	-0,01
Skilled Real Wage (% change)	-0,08	-0,08	-0,20	-0,11	-0,09	-0,03	-0,03
Unskilled Real Wage (% change)	-0,05	-0,07	-0,10	-0,10	-0,07	-0,03	-0,03
Value of exports (% change)	0,02	-0,52	-0,52	-0,16	-0,61	-0,06	-0,04
Scenario 2: Extended FTA (long run)							
National income (change in mln €)	-3 469	-110	-963	-60	-21	-144	-27.076
GDP (% change)	-0,23	-0,11	-0,66	-0,13	-0,07	-0,08	-0,08
Skilled Real Wage (% change)	-0,25	-0,14	-0,71	-0,19	-0,15	-0,11	-0,11
Unskilled Real Wage (% change)	-0,19	-0,14	-0,57	-0,18	-0,13	-0,08	-0,10
Value of exports (% change)	-0,25	-1,02	-1,99	-0,55	-0,55	0,15	0,06
Scenario 3: Extended FTA Plus (short run)							
National income (change in mln €)	-864	-71	-278	-34	-12	-69	-6.524
GDP (% change)	-0,04	-0,06	-0,10	-0,02	-0,01	-0,01	-0,01
Skilled Real Wage (% change)	-0,08	-0,10	-0,24	-0,12	-0.10	-0,04	-0,03
Unskilled Real Wage (% change)	-0,05	-0,10	-0,12	-0,12	0,08	-0,03	-0,03
Value of exports (% change)	0,0	-0,68	-0,70	-0,19	-0,67	-0,08	-0,06
Scenario 3: Extended FTA Plus (long run)							
National income (change in mln €)	-3 926	-135	-1125	-72	-24	-177	-30.686
GDP (% change)	-0,26	-0,14	-0,77	-0,15	-0,08	-0,10	-0,09
Skilled Real Wage (% change)	-0,28	-0,17	-0,83	-0,23	-0,17	-0,12	-0,12
Unskilled Real Wage (% change)	-0,21	-0,17	-0,67	-0,21	-0,15	-0,09	-0,11
Value of exports (% change)	-0,31	-1,25	-2,4	-0,66	-0,61	0,14	0,05

Sectoral results tables

Table A.5 Change in Annual CO_2 Emissions 2014, thousands of metric tons

Change in Annual CO_2 Emissions 2014, thousands of metric tons			
short-run	*exp1*	*exp2*	*exp3*
European Union	1,833	4,889	5,500
Indonesia	2,817	8,724	8,178
Malaysia	1,945	6,246	7,405
Philippines	728	1,476	1,831
Singapore	1,286	6,634	4,026
Thailand	655	1,651	1,834
Viet Nam	4,127	8,170	7,588
Other ASEAN	-58	-138	12
India	-417	-1,252	-1,669
Bangladesh	-28	-43	-57
Pakistan	-145	-289	-405
Sri Lanka	-11	-28	-28
Other South Asia	-2	-3	-4
Other Less Developed	0	-25	-25
Rest of World	-3,527	-3,527	-7,054
TOTAL	**9,202**	**32,485**	**27,134**
long-run	*exp1*	*exp2*	*exp3*
European Union	6,112	12,834	14,057
Indonesia	14,267	29,987	32,350
Malaysia	12,679	27,564	30,182
Philippines	5,118	8,603	10,611
Singapore	5,492	15,322	16,368
Thailand	8,622	14,807	16,799
Viet Nam	17,143	24,261	26,670
Other ASEAN	-21	215	500
India	-4,590	-10,432	-11,684
Bangladesh	-57	-100	-121
Pakistan	-838	-1,706	-1,966
Sri Lanka	-25	-42	-50
Other South Asia	-3	-6	-7
Other Less Developed	-51	-101	-127
Rest of World	-14,108	-28,217	-31,744
TOTAL	**49,740**	**92,990**	**101,837**
Global increase, %			
short-run	0.02	0.07	0.06
long-run	0.10	0.19	0.21

Change in Annual CO_2 Emissions 2014, thousands of metric tons			

Table A.6 Unskilled labour employment effect per sector, % change, EU27

EU		Static/Short Run			Dynamic/Long Run	
Unskilled labour	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*
Leather products	-13,7	-17,56	-18,63	-17,32	-21,49	-23,72
Electronic equipment	-1,05	-2,47	-3,01	-1,32	-3,11	-3,81
Wearing apparel	-1,52	-1,93	-2,3	-1,77	-2,28	-2,66
Textiles	-0,88	-0,94	-1,29	-0,83	-0,8	-1,08
Coal	-0,1	-0,09	-0,09	0	0,03	0,04
Other agriculture	0,31	0,39	0,4	0,48	0,66	0,73
Sugar	0,41	0,5	0,53	0,6	0,82	0,9
Processed foods	0,41	0,52	0,53	0,56	0,78	0,86
Motor vehicles and parts	0,54	0,62	0,68	0,65	0,81	0,9
Beverages and tobacco products	0,54	0,68	0,71	0,51	0,62	0,65

Table A.7 Skilled labour employment effect per sector, % change, EU27

EU		Static/Short Run			Dynamic/Long Run	
Skilled labour	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*
Leather products	-13,71	-17,58	-18,65	-17,33	-21,51	-23,74
Electronic equipment	-1,06	-2,5	-3,04	-1,33	-3,14	-3,83
Wearing apparel	-1,53	-1,96	-2,33	-1,79	-2,3	-2,69
Textiles	-0,89	-0,96	-1,31	-0,84	-0,82	-1,1
Coal	-0,1	-0,1	-0,1	0	0,03	0,04
Other agriculture	0,31	0,38	0,4	0,47	0,66	0,72
Sugar	0,41	0,48	0,51	0,59	0,81	0,89
Processed foods	0,4	0,5	0,51	0,55	0,76	0,84
Motor vehicles and parts	0,53	0,59	0,65	0,63	0,78	0,88

EU		Static/Short Run			Dynamic/Long Run	
Skilled labour	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*
Beverages and tobacco products	0,53	0,66	0,69	0,5	0,6	0,63

Table A.8 Unskilled labour employment effect per sector, % change, Indonesia

Indonesia		Static/Short Run			Dynamic/Long Run	
Unskilled labour	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*
Business services nec	-4,64	-14,82	-14,78	-3,2	-11,48	-10,89
Motor vehicles and parts	-6,38	-8,9	-9,93	-5,73	-7,8	-8,68
Chemical, rubber, plastic prods	-4	-5,9	-6,74	-3,47	-5,09	-5,81
Manufactures nec	-2,65	-5,84	-5,88	-2,15	-3,45	-3,25
Ferrous metals	-3,06	-4,05	-4,61	-2,86	-3,8	-4,33
Construction	1,1	2,81	2,77	0,72	1,59	1,72
Metal products	1,01	3,58	3,43	1,14	3,39	3,55
Textiles	7,8	4,65	6,75	7,8	5,21	6,73
Wearing apparel	13,49	8,25	11,57	12,28	7,26	9,36
Electronic equipment	14,34	39,3	39,48	21,2	51,32	54,39

Table A.9 Skilled labour employment effect per sector, % change, Indonesia

Indonesia		Static/ Short run			Dynamic/Long run	
Skilled labour	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*
Business services nec	-4,55	-14,82	-14,73	-3,13	-11,49	-10,91
Motor vehicles and parts	-6,29	-8,91	-9,87	-5,67	-7,81	-8,69
Chemical, rubber, plastic prods	-3,91	-5,91	-6,68	-3,4	-5,11	-5,83
Manufactures nec	-2,55	-5,85	-5,82	-2,08	-3,46	-3,27
Ferrous metals	-2,96	-4,06	-4,55	-2,8	-3,81	-4,34
Construction	1,21	2,8	2,84	0,8	1,57	1,7
Metal products	1,11	3,57	3,49	1,22	3,38	3,54
Textiles	7,9	4,64	6,82	7,88	5,2	6,72
Wearing apparel	13,6	8,24	11,64	12,36	7,24	9,34
Electronic equipment	14,45	39,29	39,56	21,29	51,3	54,36

Table A.9 Unskilled labour employment effect per sector, % change, Malaysia

Malaysia		Static/Short Run			Dynamic/Long Run	
Unskilled labour	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*
Beverages and tobacco products	-18,29	-21,84	-22,42	-18,36	-21,97	-22,47
Machinery and equipment nec	-12,49	-18,86	-22,31	-6,75	-8,81	-11,44
Ferrous metals	-4,95	-7,05	-8,25	-4,55	-6,63	-7,78
Processed foods	-2,5	-5,12	-6,37	-5,03	-10,17	-11,85
Business services nec	-1,46	-4,13	-4,26	-1,57	-4,12	-4,21
Construction	1,8	3,31	3,79	1,87	3,6	4,07
Motor vehicles and parts	10,17	13,18	16,57	7,82	8,43	11
Wearing apparel	22,94	26,12	28,55	21,54	23,55	25,5
Textiles	26,95	28,05	29,53	27,24	26,96	28,26
Leather products	95,53	121,6	155,61	77,22	100,04	121,19

Table A.10 Skilled labour employment effect per sector, % change, Malaysia

Malaysia		Static/Short Run			Dynamic/Long Run	
Skilled labour	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*
Beverages and tobacco products	-18,11	-21,56	-22,11	-18,27	-21,86	-22,37
Machinery and equipment nec	-12,28	-18,53	-21,98	-6,64	-8,67	-11,32
Ferrous metals	-4,72	-6,68	-7,86	-4,43	-6,49	-7,65
Processed foods	-2,3	-4,8	-6,03	-4,94	-10,06	-11,74
Business services nec	-1,22	-3,75	-3,85	-1,45	-3,97	-4,07
Construction	2,07	3,76	4,27	2,01	3,77	4,23
Motor vehicles and parts	10,43	13,63	17,06	7,95	8,59	11,15
Wearing apparel	23,23	26,61	29,09	21,69	23,73	25,67
Textiles	27,25	28,55	30,08	27,39	27,14	28,43
Leather products	95,99	122,44	156,64	77,42	100,32	121,48

Table A.11 Unskilled labour employment effect per sector, % change, Philippines

Philippines		Static/Short Run			Dynamic/Long Run	
Unskilled labour	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*
Machinery and equipment nec	-4,1	-6,11	-7,88	2,36	2,88	3,39
Processed foods	-2,87	-3,67	-4,34	-5,61	-8,2	-9,96
Wood products	-2,31	-3,33	-4,79	-3,3	-5,17	-6,73
Ferrous metals	-2,1	-2,97	-3,59	-1,24	-1,8	-2,15
Cereal grains nec	-1,66	-2,39	-2,88	-3,35	-5,13	-6,32
Communication	1,03	3,66	3,74	0,45	2,67	2,55
Wearing apparel	17,94	14,3	12,14	14,57	8,85	6,23
Textiles	21,98	19,25	17,44	19,58	15,06	13,23
Leather products	25,52	23,55	22,89	18,83	13,2	11,03
Motor vehicles and parts	34,61	49,83	70,86	37,8	65,99	80,42

Table A.12 Skilled labour employment effect per sector, % change, Philippines

Philippines		Static/Short Run			Dynamic/Long Run	
Skilled labour	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*
Machinery and equipment nec	-4,02	-6,18	-8,09	1,52	1,33	1,3
Processed foods	-2,8	-3,73	-4,52	-6,27	-9,37	-11,51
Wood products	-2,24	-3,4	-5	-4,09	-6,6	-8,62
Ferrous metals	-2,02	-3,04	-3,81	-2,06	-3,29	-4,13
Cereal grains nec	-1,65	-2,4	-2,93	-3,52	-5,43	-6,72
Communication	1,11	3,58	3,51	-0,38	1,12	0,48
Wearing apparel	18,03	14,22	11,89	13,63	7,21	4,09
Textiles	22,08	19,16	17,18	18,6	13,34	10,96
Leather products	25,61	23,46	22,62	17,86	11,51	8,8
Motor vehicles and parts	34,71	49,72	70,49	36,69	63,56	76,88

Table A.13 Unskilled labour employment effect per sector, % change, Singapore

Singapore		Static/Short Run			Dynamic/Long Run	
Unskilled labour	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*
Processed foods	-11,72	-26,66	-29,04	-11,42	-24,84	-26,89
Motor vehicles and parts	-3,3	-19,29	-20,98	-5,25	-19,65	-21,46
Transport equipment nec	-5,1	-17,31	-18,45	-8,81	-22,92	-24,43
Sugar	-5,88	-13,51	-14,66	-5,39	-11,75	-12,69
Beverages and tobacco products	-6,98	-11,96	-14,07	-5,95	-8,31	-10,06
Construction	1,21	3,48	3,98	2,71	7,24	7,82
Recreation and other services	1,57	6,26	6,56	2,76	8,22	8,55
Textiles	11,05	11,13	11,37	9,95	9,28	9,43
Electronic equipment	4,34	14,86	15,84	6,25	17,13	18,88
Manufactures nec	7,18	47,53	46,46	0,33	12,18	8,26

Table A.14 Skilled labour employment effect per sector, % change, Singapore

Singapore		Static/Short Run			Dynamic/Long Run	
Skilled labour	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*
Processed foods	-11,8	-26,88	-29,31	-11,78	-25,69	-27,79
Motor vehicles and parts	-3,41	-19,58	-21,33	-5,7	-20,72	-22,6
Transport equipment nec	-5,2	-17,61	-18,81	-9,25	-23,95	-25,53
Sugar	-5,95	-13,69	-14,88	-5,66	-12,43	-13,42
Beverages and tobacco products	-7,08	-12,24	-14,41	-6,36	-9,41	-11,23
Construction	1,09	3,09	3,48	2,17	5,7	6,14
Recreation and other services	1,45	5,89	6,1	2,27	6,81	7
Textiles	10,92	10,75	10,89	9,43	7,85	7,87
Electronic equipment	4,22	14,46	15,34	5,74	15,6	17,2
Manufactures nec	7,07	47,02	45,83	-0,16	10,72	6,72

Table A.15 Unskilled labour employment effect per sector, % change, Thailand

Thailand		Static/Short Run			Dynamic/Long Run	
Unskilled labour	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*
Wood products	-5,23	-7,08	-8,42	-5,07	-6,98	-8,31
Insurance	-1,57	-4,29	-4,44	-1,27	-3,82	-3,77
Chemical, rubber, plastic prods	-2,61	-4,12	-5,48	-2,89	-4,81	-6,28
Beverages and tobacco products	-3,31	-3,73	-3,89	-3,88	-4,69	-4,89
Textiles	-1,58	-3,46	-4,24	-1,68	-3,66	-4,64
Livestock	1,37	1,76	2,64	2,03	2,72	3,69
Motor vehicles and parts	1,8	2,28	2,29	2,23	2,87	2,98
Processed foods	2,27	2,97	4,21	-0,01	-0,87	-0,21
Electronic equipment	2,65	4,19	5,06	4,89	7,99	9,13
Transport equipment nec	3,01	6,64	6,63	4,93	10,79	11,2

Table A.16 Skilled labour employment effect per sector, % change, Thailand

Thailand		Static/Short Run			Dynamic/Long Run	
Skilled labour	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*
Wood products	-5,12	-6,92	-8,27	-5,44	-7,6	-9,04
Insurance	-1,45	-4,12	-4,28	-1,65	-4,45	-4,54
Chemical, rubber, plastic prods	-2,5	-3,96	-5,32	-3,26	-5,44	-7,03
Beverages and tobacco products	-3,2	-3,59	-3,74	-4,22	-5,26	-5,58
Textiles	-1,46	-3,3	-4,08	-2,06	-4,3	-5,41
Transport	0,7	1,95	2	-0,89	-0,58	-0,98
Motor vehicles and parts	1,91	2,45	2,45	1,84	2,19	2,16
Processed foods	2,37	3,12	4,36	-0,34	-1,42	-0,88
Electronic equipment	2,77	4,36	5,23	4,49	7,29	8,26
Transport equipment nec	3,13	6,82	6,8	4,53	10,07	10,31

Table A.17 Unskilled labour employment effect per sector, % change, Vietnam

Vietnam		Static/Short Run			Dynamic/Long Run	
Unskilled labour	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*
Electronic equipment	-40,11	-43,6	-44,62	-37,98	-37,07	-38,14
Motor vehicles and parts	-34,43	-43,32	-46,63	-32,3	-39,52	-42,84
Manufactures nec	-33,28	-38,95	-39,02	-27,2	-28,94	-29,24
Machinery and equipment nec	-32,32	-38,34	-40,95	-32,46	-36,28	-39,48
Textiles	-31,29	-36,6	-37,86	-21,08	-21,75	-23,78
Other agriculture	1,88	2,38	2,5	1,44	1,79	1,87
Livestock	2,59	4,05	3,97	6,47	8,81	9,62
Construction	6,13	8,86	8,99	0,58	0,82	0,98
Trade	8,17	9,02	11,04	6,05	7,15	7,69
Leather products	88,48	111,82	113,4	104,72	124,42	133,08

Table A.18 Skilled labour employment effect per sector, % change, Vietnam

Vietnam		Static/Short Run			Dynamic/Long Run	
Skilled labour	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*
Electronic equipment	-40,05	-43,17	-44,2	-37,88	-36,57	-37,72
Motor veh & parts	-34,37	-42,89	-46,23	-32,2	-39,04	-42,45
Manufactures nec	-33,21	-38,48	-38,56	-27,09	-28,38	-28,76
Machinery & equipt nec	-32,25	-37,87	-40,5	-32,36	-35,77	-39,07
Textiles	-31,22	-36,11	-37,39	-20,95	-21,14	-23,27
Other agriculture	1,9	2,53	2,65	1,48	1,95	2,01
Livestock	2,61	4,21	4,13	6,51	8,98	9,77
Construction	6,24	9,74	9,85	0,75	1,67	1,7
Trade	8,3	10,04	12,06	6,25	8,19	8,58
Leather products	88,65	113,32	114,88	105,02	126,05	134,51

Table A.19 Unskilled labour employment effect per sector, % change, Rest of ASEAN

Other ASEAN	Static/Short Run			Dynamic/Long Run		
Unskilled labour	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*
Motor vehicles and parts	-55.28	-68,53	-70,69	-54,10	-67,02	-69,13
Machinery and equipment nec	-26,14	-31,36	-34,33	-24,11	-28,19	-30,52
Ferrous metals	-19,65	-24,39	-25,90	-18,51	-22,72	-24,12
Electronic equipment	-13,81	-17,76	-18.88	-13,44	-17,62	-18,66
Metal products	-13,02	-16,04	-17,17	-12.42	-15,16	-16,13
Other agriculture	0,12	0,13	-0,04	-0,01	-0,15	-0,31
Livestock	0,90	1,10	1,49	1,70	2,41	3,04
Beverages and tobacco products	-0,31	2,63	2,80	-4,46	-7,45	-8,00
Wearing apparel	10,05	10,92	11,44	10,96	12,60	13,49
Textiles	23,35	27,99	32.76	25,76	32,44	38,21

Table A.20 Skilled labour employment effect per sector, % change, Rest of ASEAN

Other ASEAN		Static/Short Run		Dynamic/Long Run		
Skilled labour	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*
Motor vehicles and parts	-55.10	-68.51	-70.70	-53.84	-66.87	-68.99
Machinery and equipment nec	-25.72	-30.86	-33.83	-23.62	-27.58	-29.85
Ferrous metals	-19.28	-24.04	-25.57	-18.02	-22.21	-23.55
Electronic equipment	-13.41	-17.34	-18.45	-12.93	-17.04	-18.01
Metal products	-12.51	-15.36	-16.48	-11.85	-14.39	-15.27
Construction	0.98	1.32	1.88	0.56	0.60	0.83
Livestock	0.98	1.17	1.56	1.82	2.52	3.17
Beverages and tobacco products	0.15	3.20	3.40	-3.92	-6.80	-7.26
Wearing apparel	10.34	10.93	11.45	11.50	13.01	13.96
Textiles	23.78	28.31	33.08	26.43	33.11	39.02

Table A.21 Change in producer prices, % change, Other ASEAN

Other ASEAN	Static/Short Run			Dynamic/Long Run		
Producer prices	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*
Cereal grains nec	0.12	0.50	0.42	-0.24	-0.17	-0.38
Vegetables, fruit, nuts	0.33	0.57	0.77	0.92	1.46	1.84
Oil seeds	0.14	0.31	0.46	0.75	1.24	1.58
Livestock	0.66	1.04	1.58	2.04	3.21	4.16
Other agriculture	0.56	0.91	1.10	1.04	1.64	2.03
Forestry	-1.94	-2.31	-2.36	-1.64	-1.84	-1.83

Other ASEAN	Static/Short Run			Dynamic/Long Run		
Producer prices	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*	*Limited FTA*	*Ambitious FTA*	*Ambitious plus FTA*
Fishing	0.14	0.74	1.18	1.41	2.90	3.79
Coal	-1.60	-2.02	-2.14	-0.55	-0.67	-0.09
Oil	0.13	0.22	0.24	0.56	0.99	1.10
Gas	0.22	0.56	0.59	0.33	0.64	0.70
Minerals nec	0.25	0.61	1.06	1.29	1.77	2.60
Sugar	0.71	1.29	1.58	0.90	1.55	1.89
Processed foods	0.52	0.96	1.32	1.28	2.21	2.86
Beverages and tobacco products	1.30	0.46	0.85	2.85	4.62	5.10
Textiles	-1.16	-1.09	-1.16	-1.63	-1.87	-2.05
Wearing apparel	-0.56	-0.19	0.03	-1.10	-1.07	-0.98
Leather products	2.08	2.50	2.85	2.34	2.97	3.26
Wood products	-1.55	-1.68	-1.62	-1.41	-1.54	-1.48
Paper products, publishing	0.41	0.80	1.17	-0.17	-0.05	0.07
Petroleum, coal products	0.31	0.43	0.50	0.60	1.03	1.09
Chemical,rubber,plastic prods	0.47	0.90	1.49	0.46	1.04	1.32
Mineral products nec	0.13	0.44	0.81	0.65	1.22	1.70
Ferrous metals	0.01	0.18	0.37	-0.08	0.03	0.19
Metals nec	-0.68	-0.65	-0.42	-0.45	-0.33	-0.01
Metal products	2.38	3.12	3.63	1.94	2.49	2.81
Motor vehicles and parts	9.49	14.33	15.64	8.69	12.88	13.95
Transport equipment nec	3.31	5.53	6.75	3.67	6.80	9.85
Electronic equipment	2.27	3.00	3.52	1.56	1.98	2.25
Machinery and equipment nec	5.76	7.09	8.19	4.42	5.10	5.78
Manufactures nec	8.31	13.23	14.98	7.63	11.25	12.74
Utilities	1.22	1.73	2.20	0.82	1.17	1.33
Construction	0.52	0.90	1.26	0.40	0.74	1.00
Trade	0.81	2.03	1.87	0.74	1.26	1.71
Transport	0.93	0.70	1.91	0.62	1.05	1.32
Communication	1.11	1.23	1.95	-0.02	-0.35	-0.14
Financial services nec	1.82	2.40	3.08	1.35	1.83	2.13
Insurance	1.29	1.89	2.58	0.63	1.02	1.22
Business services nec	1.36	2.10	2.70	1.14	1.85	2.20
Recreation and other services	0.56	0.97	1.40	0.46	0.86	1.18
Other services	0.92	1.48	1.95	0.92	1.46	1.93