THE IMPLICATIONS OF AN EU-CANADA FTA FOR THE UNITED KINGDOM

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EXECUTIVE SUMMARY

This report examines in detail the consequences of this possible FTA on the UK economy. Using a quantitative model of UK production and trade, we investigate the impact of different scenarios for removing barriers to trade. The model includes production, exports, and imports for both the UK and Canada, as well as other major trading partners. It also takes into account the role that imported intermediates play in the overall cost structure UK industry.

Bilateral relations between the United Kingdom and Canada historically have been very strong. These ties follow from a shared history and are reflected in political links including the Commonwealth of Nations and the monarchy. When the UK became a member of the European Communities in 1973, this required also becoming part of the European custom union. Thus the trade relations between the two countries since that time are governed by the common EU trade policy towards Canada.

Formal bilateral economic cooperation between the EU and Canada dates back to 1976 when the Framework Agreement for Commercial and Economic Cooperation came into force. Since this first Framework Agreement several sectoral agreements were concluded between the EU and Canada. The Framework Agreement has provided a structure for voluntary, non-binding discussion on a number of issues. However, with the success of the multilateral process (the GATT and WTO) in the reduction of tariffs for a wide range of products, it has become increasingly clear that scope for further progress in improved bilateral commercial ties lies in binding negotiation on regulatory and non-tariff issues. As such, the first important step towards a potential future FTA was first raised on the annual EU-Canada summit in 2007. Since then the first round of negotiations was held in October, 2009 with the aim of reaching a broad-based EU-Canada free trade agreement (FTA).

The report focuses on changes in UK output both at the aggregate and sectoral level, changes in aggregate and bilateral trade flows, relative wages, and national income. The impact of the FTA hinges, critically, on underlying trade and production patterns. In particular, the following features of the trade relationship prove important.

- Canada is a relatively small share (roughly 2%) of all UK exports
- Measured in terms of exports, key sectors for the UK include both goods and services: transport equipment, oil, finance and insurance, and recreational and consumer services.
- There are some sectors, in particular processed foods, where the combination of trade shares and/or high Canadian import protection means potentially significant market access gains for UK exporters.

The findings from the quantitative exercise reported in the study indicate that the UK's economy would be only limitedly affected by the EU-Canada FTA. Highlights are listed below.

- The most ambitious scenario would lead to a 0.1% increase in the UK's GDP over the long-run.

- While the impact on aggregate trade flows would be limited overall (0.6 percent overall), some sectors, such as the processed food sector, would experience more noticeable increased trade flows (an 8.4% increase in total exports for processed foods). This is because Canada still maintains high protection on processed foods.

- Impacts on UK sectoral output are negligible overall. An exception is the processed food sector, where we estimate a 1.1% increase in output due to increased export demand from Canada.

- The estimated impact on UK wages is small but positive (roughly 0.1%).

- Services trade liberalization is particularly important to overall labor gains in wage income. If barriers in services trade are reduced an approximate 0.1% increase would take place in real wages in the UK.

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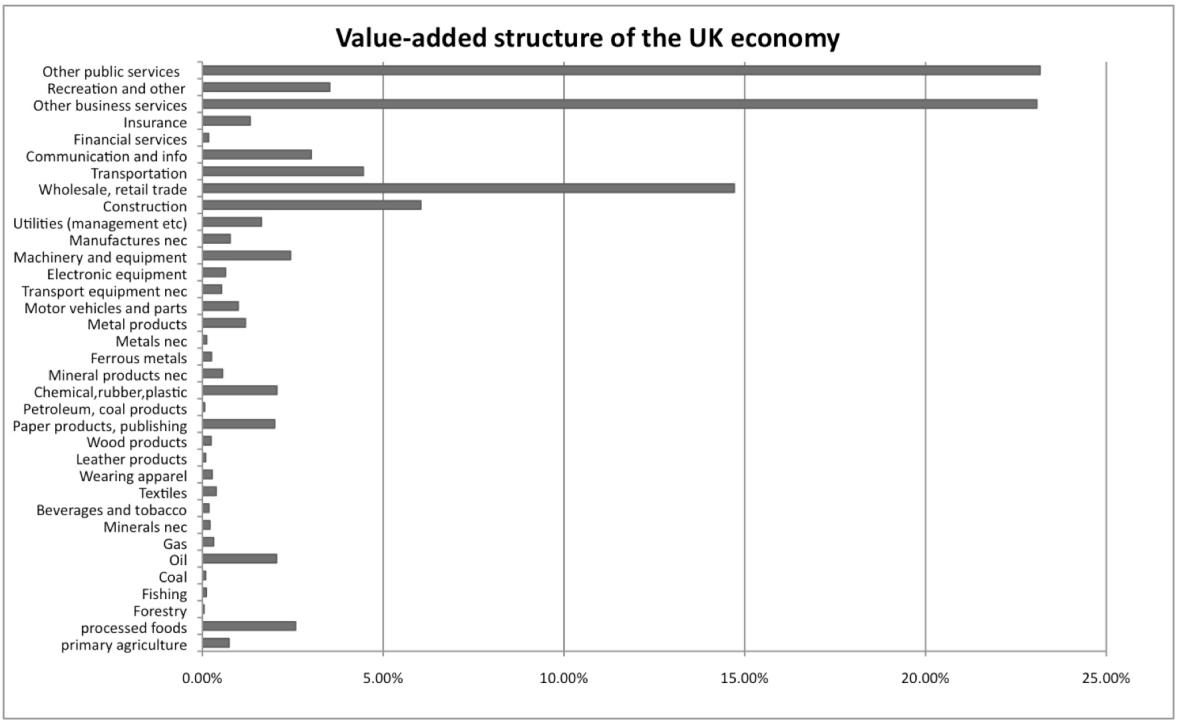
1. PRODUCTION & TRADE STRUCTURES

This section discusses the structure of the UK economy and the structure of the Canadian-UK bilateral trade relationship in detail.

The value added of each sector in the UK economy for the year 2007 is depicted in Figure 1. Value added is the total value of income (wages, capital income, and taxes) generated in the sector. It is important to note that this excludes the costs of inputs, and so avoids double counting, where contributions to national income actually involve upstream production. In terms of value added in the UK economy, the most important sectors are the services sectors from which public services and other business services both have 23% share of total value added in the economy. Wholesale, retail trade and distribution services also represent an important part of the value-added amounting to 15%. The value added of the financial services is lower than most other categories as the financial services sector as defined here is quite narrow. Many of the activities in related activities (insurance, management consulting, business services) are actually in the insurance and other business services categories.

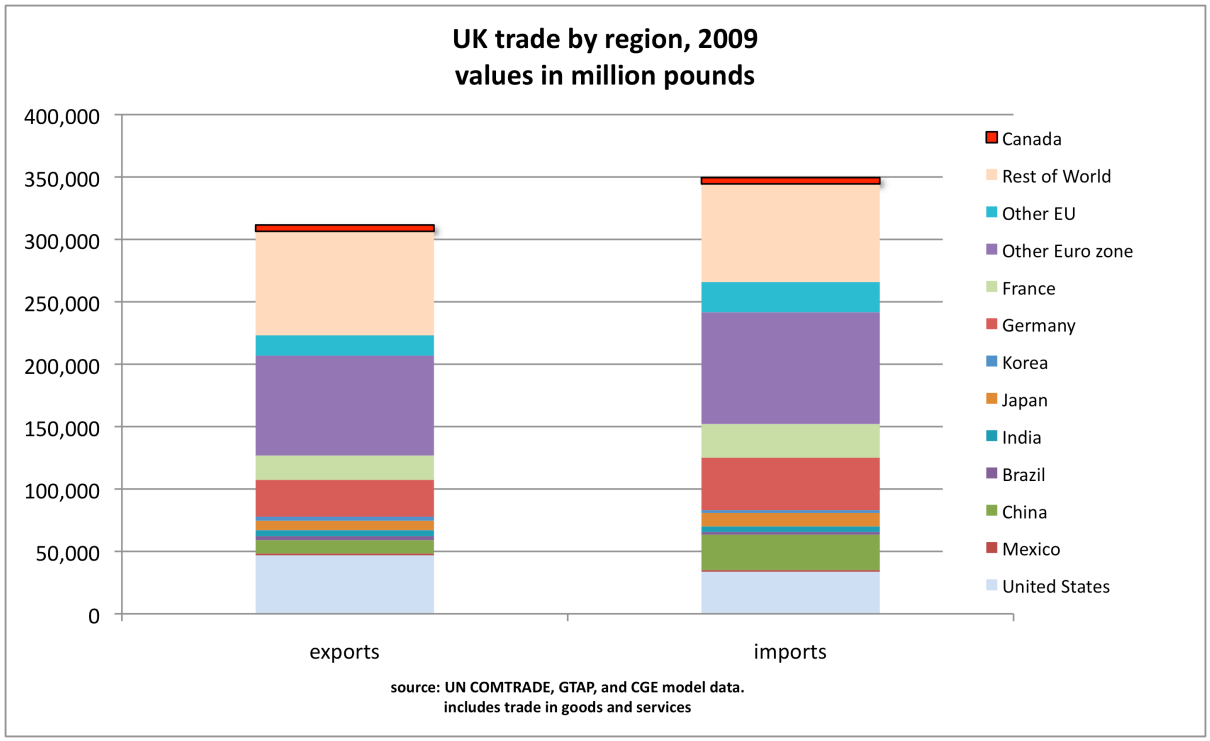
FIGURE 1 VALUE ADDED IN EACH SECTOR IN 2007, % SHARE OF TOTAL



Source: updated from GTAPV7 database.

Next we look at the importance of UK's trade with Canada. The importance of different countries in the UK's exports and imports are shown in Figure 2. Both exports and imports with Canada represent only a relatively small share of UK's total exports and imports.

FIGURE 2 UK TRADE BY REGION, 2009



Similarly for Canada the most important trading partners are within their region. Thus the UK is relatively less important for Canada than its regional trading partners.

FIGURE 3 CANADIAN TRADE BY REGION, 2009

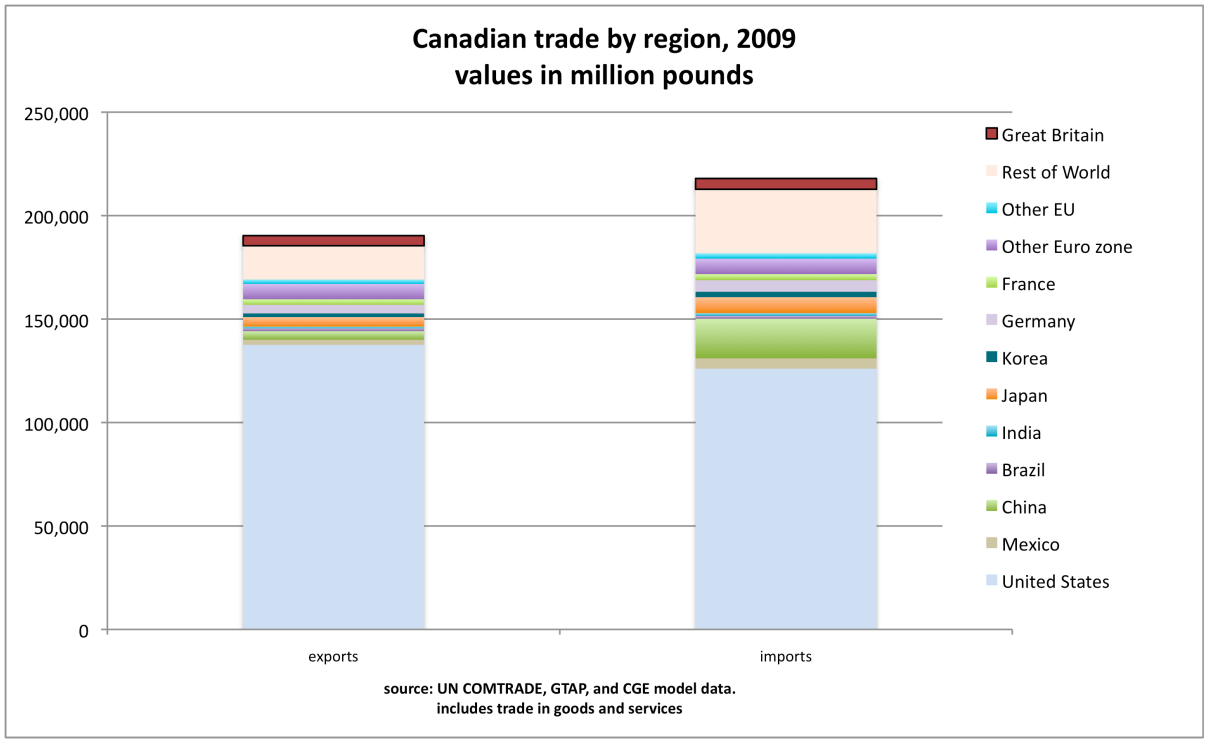
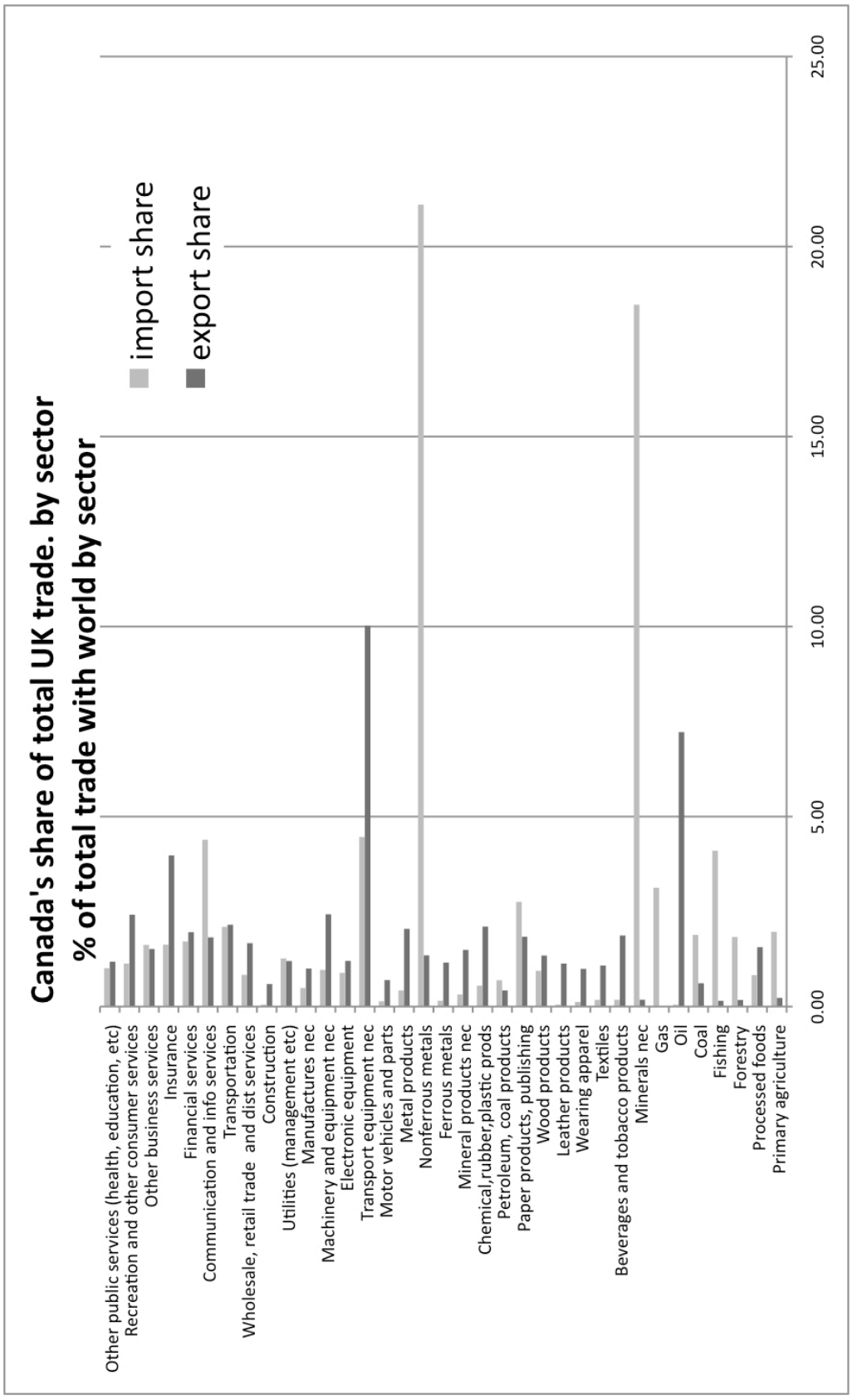


Figure 4 depicts exports from the UK to Canada at sectoral disaggregation. Most UK exports to Canada in the different sectors represent only a very small share of the total exports of the UK. Overall, this means Canada is not a very important export destination for the UK. Indeed, only 2.2% of UK's total exports are going to Canada. However, there are a few sectors with a larger share of exports. The most important export sector in terms of UK exports to Canada is transport equipment which accounts for 10% of all transport equipment exports. The other sector in which Canada is a somewhat more important export destination is oil. About 7.2% of total UK oil exports are going to Canada.

Figure 4 UK Trade With Canada As Share Of Total Trade By Sector



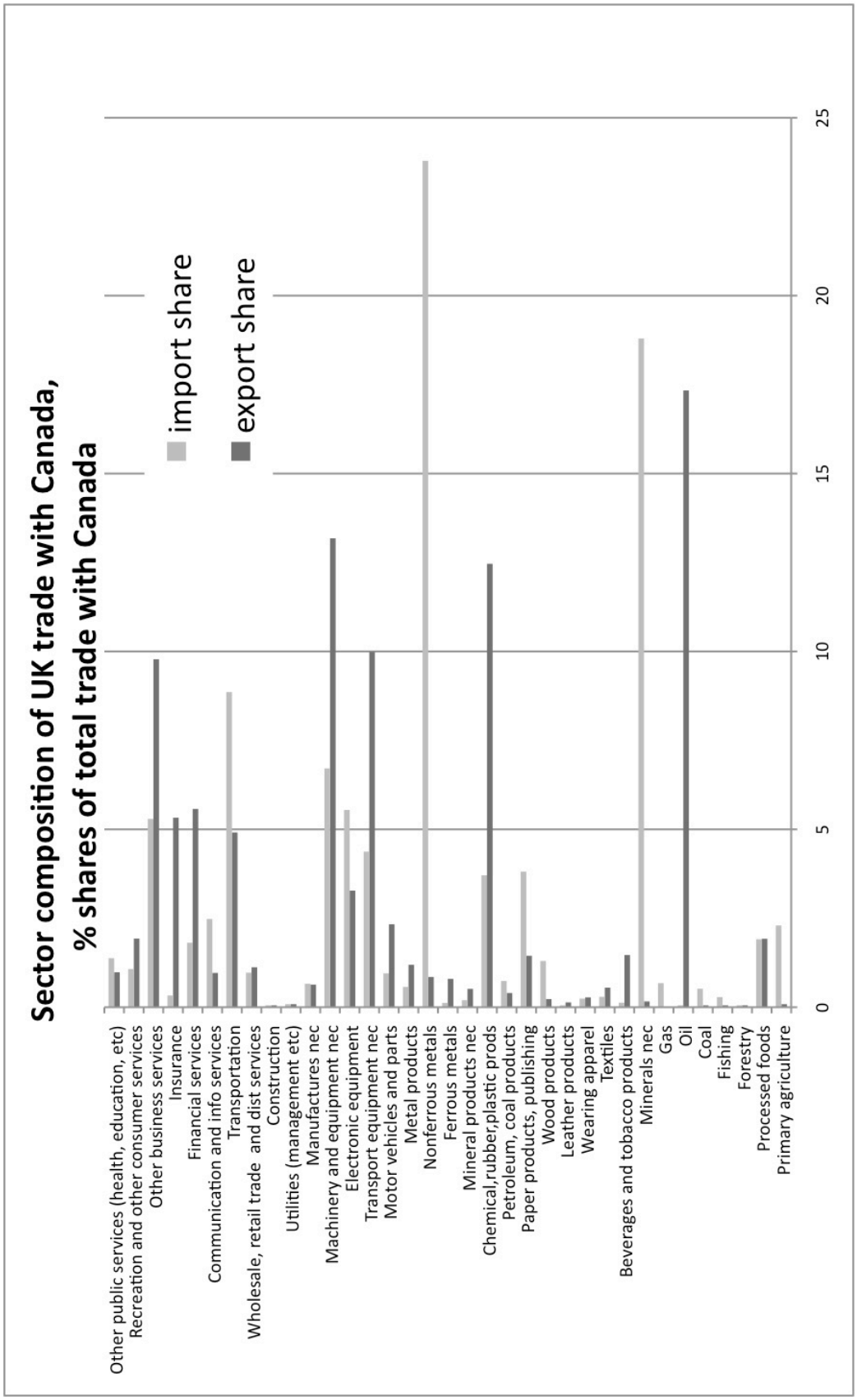
source: GTAPV7 and UN COMTRADE. Shares are for 2007.

A second perspective on UK exports is provided in Figure 5. In the figure, UK exports to Canada are broken down by shares of total exports to Canada. On this basis, the most important sectors are machinery and equipment, chemicals, energy, transport equipment, and business services. On the basis of simple trade shares, it therefore appears that the most important sectors are higher value added manufacturing and service sectors. However, when we turn to Canadian import protection, and to the impact of trade liberalization, some of the strongest impacts are actually in processed food exports. Basically, the high level of Canadian import protection means current trade shares are misleading when judging market access potential.

Figure 4 and Figure 5 also provide some insight on UK Imports from Canada and the rest of the world. While again most of the sectors represent only a very small fraction of total UK imports, there are some sectors in which Canada is a relatively more important import source. The sector with the highest share in total imports is minerals with 18.5% of total mineral imports originating from Canada. Another sector with similarly high importance is non-ferrous metals, accounting for 21.1 % of imports coming from all destinations.

Non-ferrous metals and minerals are important not only as a share of total UK imports by sector, but also as a share of total imports from Canada (Figure 5). This reflects an important feature of the Canadian economy. Like Australia, Canada is a high-income country with exports that are focused on more on raw materials (metals, minerals, energy, lumber, etc) than is the case with the other high-income trading partners of the UK. This implies some additional complementarity between the UK and Canadian economies.

Figure 5 UK Trade With Canada, Sector Composition



source: GTAPV7 and UN COMTRADE. Shares are for 2007.

2. BARRIERS TO TRADE & FDI – CANADA AND EU

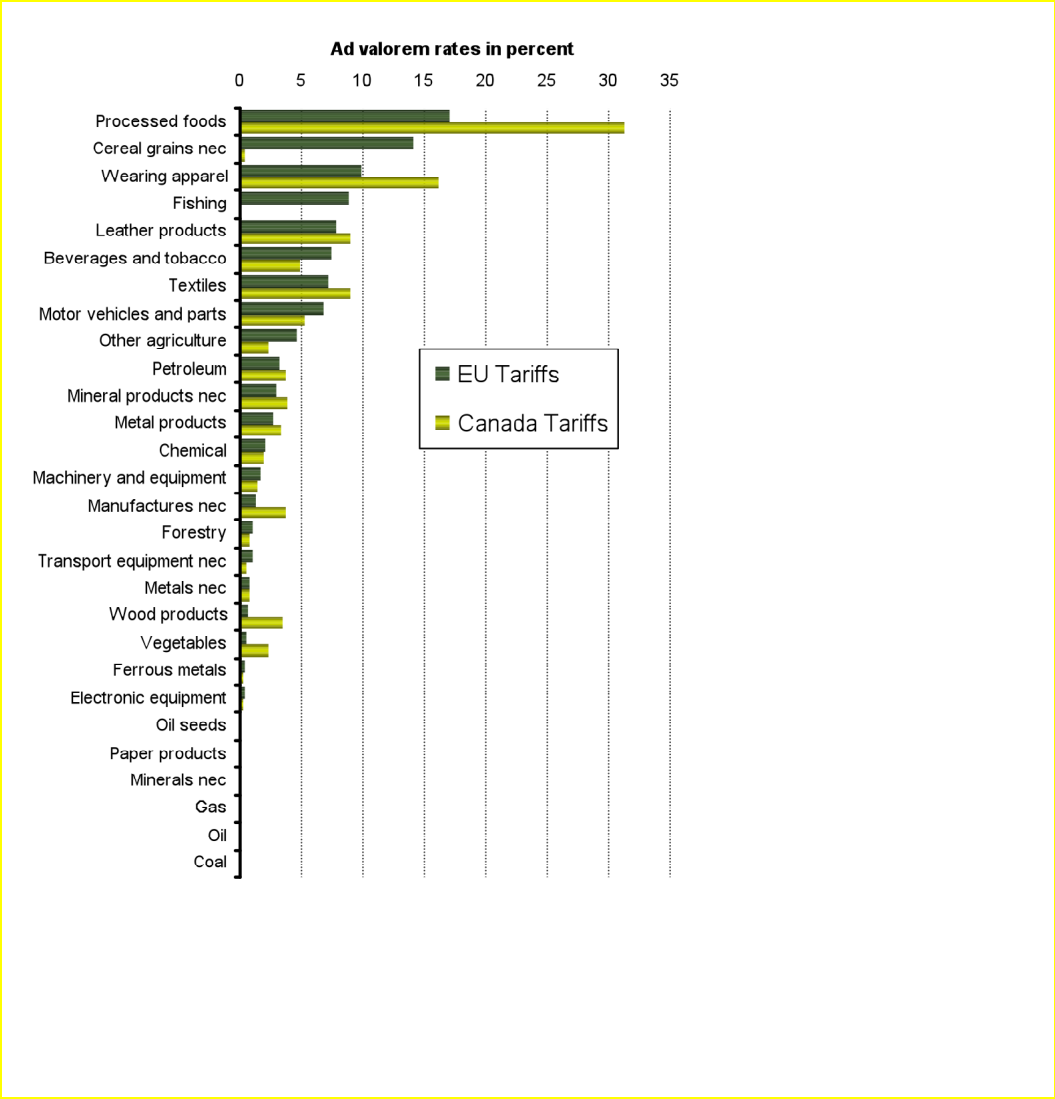
This chapter provides an overview of current trade barriers between the EU and Canada. Trade barriers which we overview in this chapter include tariffs on goods, non-tariff barriers, barriers to services trade, other trade cost and FDI restrictions.

TARIFFS AND QUANTITY RESTRICTIONS IN MANUFACTURING

The overall tariff picture in UK-Canada trade shows very low tariffs on those goods that are traded the most. The sectors for which the UK's exports are the largest to Canada, namely oil and transport equipment, both face very low tariffs. The sectors with the largest tariffs are processed foods, for which tariffs are higher than 30%, wearing apparel, leather products, and textiles. The UK's exports to Canada in these sectors are low. These four sectors represent 2.8% of total UK exports going to Canada. Thus while a potential FTA with only limited to elimination of tariffs on goods is likely to have an important effect on exports in these sectors the overall effects on the UK economy and its total exports is likely to be only limited.

The sectors which are most protected in the UK are similar to those of Canada. The highest protection is applied on processed food imports, followed by cereal grains, wearing apparel, fishing, leather products, beverages and tobacco, textiles and motor vehicles. None of these sectors represent a very important share of Canadian exports to the UK. For example, processed food export from Canada to the UK for example amount to 1.9% of total Canadian exports to the UK.

FIGURE 6 Trade Protection For Goods



Note: Sorted according to the European tariffs, highest at top
Source: Data are from national applied tariff schedules as notified to the WTO, trade-weighted by GTAP sector.

The reported tariffs in Figure 6 above are the tariffs for the baseline 2004 data in the GTAP database. These tariff data are based on HS tariff line data, from MacMAPS, the WTO, and WITS, trade-weighted by sector. A successful Doha-round will further reduce tariffs significantly. Further EU/UK-Canada trade liberalisation should not factor in tariffs reductions that would be agreed at the Doha-round negotiations. Therefore the baseline scenario includes the implementation of Doha and the application of post-Doha tariffs as reflected in the February 2008 draft Doha text using the median-range of formula coefficients, and including developing country exemptions and special provisions. As shown in Table 3, there are significant tariff reductions to be expected in that baseline scenario, for example on grains where UK's import tariffs are reduced from 14.2 percent to 0.9 percent. Canada has already low tariffs on grains and that are not reduced further. Some high tariffs on processed food and textile and clothing will remain high in the Doha-scenario. The UK's protection of processed food will decline

TABLE 1 IMPORT TARIFFS BEFORE AND AFTER DOHA, PERCENT

	EU/UK import protection against imports from Canada		Canadian import protection against imports from the UK	
	2004 baseline	Post-Doha scenario	2004 baseline	Post-Doha scenario
Cereal grains nec	14.2	0.9	0.4	0.4
Vegetables, fruit, nuts	0.6	0.1	2.4	2.1
Oil seeds	0.0	0.0	0.0	0.0
Other agriculture	4.7	0.2	2.3	1.5
Forestry	1.1	0.0	0.8	0.5
Fishing	8.9	4.1	0.0	0.0
Coal	0.0	0.0	0.0	0.0
Oil	0.0	0.0	0.0	0.0
Gas	0.0	0.0	2.5	0.0
Minerals nec	0.0	0.0	0.1	0.1
Beef	22.6	4.0	4.6	1.2
Other meats	37.2	32.9	16.0	4.7
Dairy products	46.0	0.3	113.9	100.7
Processed foods	14.0	3.7	17.8	15.4
Beverages and tobacco products	7.4	1.0	4.8	3.4
Textiles	7.2	3.8	9.0	4.3
Wearing apparel	9.9	4.1	16.2	5.3
Leather products	7.9	3.6	8.9	4.1
Wood products	0.7	0.5	3.5	2.3
Paper products, publishing	0.0	0.0	0.0	0.0
Petroleum, coal products	3.2	2.7	3.7	3.6
Chemicals ,rubber, & plastic prods	2.1	1.3	1.9	1.4
Mineral products nec	2.9	1.9	3.9	2.3
Ferrous metals	0.4	0.3	0.3	0.2
Metals nec	0.7	0.4	0.8	0.7
Metal products	2.7	1.8	3.4	2.5
Motor vehicles and parts	6.8	3.5	5.3	3.2
Transport equipment nec	1.0	0.9	0.5	0.2
Electronic equipment	0.4	0.3	0.2	0.2
Machinery & equipment nec	1.7	1.3	1.4	1.2
Manufactures nec	1.3	0.9	3.7	2.2

Note: Calculations using WTO tariff schedules based on 2008 draft Doha text and medium-range of formula coefficients, and including developing country exemptions and special provisions.

Source: Johann Heinrich von Thünen Institut (vTI) Bundesforschungsinstitut für Ländliche Räume, Wald und Fischerei, Institut für Marktanalyse und Agrarhandelspolitik (MA) – Braunschweig

from 17.1 percent to 8.0 percent, and Canada's protection in the same sector will be reduced from 31.3 percent to 27.3 percent. The post-Doha set of tariffs is based on estimations by the von Thunen Institut (Braunsweig) and mapped to the sectors in the GTAP model. Based on our own recent assessment[1], the revised post-February 2008 text will have little impact on the tariff scenarios. Because the recent draft text primarily adds flexibilities for developing countries, this still corresponds to the current set of offers for trade between the UK and Canada. The details of how the post-Doha tariffs are computed are found in Box 1.

[1] 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.

BOX 1 CALCULATIONS OF POST-DOHA TARIFFS

The problems in defining such a scenario 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 the highest tariffs are chosen to be sensitive. This might include products with particularly high tariffs but little trade.

Jean, Laborde and Martin (2006) overcome this problem of 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 used here are from the German Federal Agriculture Research Institute -- the Johann Heinrich von Thünen Institute (vTI) – and follow 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% 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% 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.

Sources: *Brockmeier, M. and J. Pekikan (2008), "Agricultural market access: A moving target in the WTO negotiations?" FoodPolicy 33(2008,)250–259;*
Jean, S., D., and W. Laborde Martin (2006), "Consequences of Alternative Formulas for Agricultural Tariff Cuts." in K. Anderson and W. Martin, eds, Agricultural Trade Reform and the Doha Development Agenda. Palgrave macmillan/The World Bank, Washington, 2005. ISBN: 0-8213-6239-9;
Martin, W., and Z. Wang. 2004. "Improving Market Access in Agriculture." World Bank, Washington, DC.

BARRIERS TO TRADE IN SERVICES

Due to the nature of services trade, measuring restrictions on services is more difficult than measuring restrictions on trade in goods. The two most peculiar characteristics of services are intangibility and non-storability. Besides often they also require differentiation and joint production, with customers having to participate in the production process (Francois, J. et al., 2008, Francois and Hoekman 2010).

OVERALL BARRIERS

For purposes of comparing overall barriers, we report here on gravity estimates to services barriers, based on Francois, Hoekman, and Woerz (2008). Gravity models estimate the expected volume of trade (in this case for services) between two countries on the basis of the size of their respective economies, the distance between the countries, and other possible barriers to trade such as the absence of a common border of linguistic differentiation. This expected volume of trade which is the estimated volume obtained with the gravity model is then compared to the actual volume and the discrepancy between the two figures is considered a good proxy for the importance of barriers to trade. The "missing volume" of trade is converted into a tariff equivalent by

means of an assumed value for the price elasticity. The estimates are reported in Table 2.

TABLE 2 ESTIMATED TRADE COSTS FOR UK-CANADA CROSS-BORDER TRADE IN SERVICES

		Trade cost estimates, %		Estimated trade cost savings within the EU (EU effect)
BOP	**description**	**Canada**	**EU27 average**	**in percentage**
200	**Total**	**58.1**	**39.6**	**35.5**
205	Transport	48.6	28.1	54.4
236	Travel	53.1	39.1	5.7
245	Communications	40.4	18.4	22.9
249	Construction	47	19	62.6
253	Insurance	27.3	35.8	..
260	Financial services	29.4	42.3	..
262	Computer and information services	36.5	29.8	..
266	Royalties and license fees	41.8	53.7	..
268	Other business services	50.3	34.9	10.8
287	Personal, cultural, and recreational services	24.3	27.6	..
291	Public services, n.i.e.	33.8	18.3	20.5
981	Other commercial services	52.4	37	32.7

Notes: EU effect is the estimated log-deviation in trade linked to observed intra-EU trade flows vis-a-vis third countries.
.. 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.
Trade costs are based on an assumed import demand elasticity of 5.

These estimates corresponds to the tariff equivalent explaining the amount of missing trade beyond what can be explained by the traditional gravity variables (GDP, distance, common border and common language). In other words, these are residual estimates of the service barriers. A disadvantage of the residuals method is that it tends to overestimate the actual magnitude of the barrier: only if the underlying explanatory model would perfectly capture the "other" factors that drive trade would the residual be a pure "barriers-based" residual. However, the gravity based approach is the only approach currently available in the economics literature to carry out such estimates.

DEFINING THE SCOPE FOR LIBERALIZATION

Table 2 highlights the variable quality of bilateral trade data in services. However, not all of the estimated service trade barriers can realistically be removed. To assess the amount of service barriers that can potentially be removed through new EU/UK-Canada trade and investment cooperation, we turn for guidance to internal-EU service trade. From the data, we find that services are more traded internally within the European Union than across the Atlantic. In other words, controlling for factors such as size of GDO and proxiity, service trade *between* EU-members is much higher than between any EU-member states and Canada (or the US). On the contrary, Canada' service trade with the US is not much higher than with the EU after controlling for the traditional gravity factors.

The definition of the services trade liberalisation experiment in this simulation exercise follows from these estimates. Full liberalization would imply, in the case of Canadian services exports to the EU and based on the range of estimates above, a cost savings in the range of 40 percent, on average, for Canadian service exports. However, for intra-EU trade, the estimated trade volume effects of full liberalisation would imply a much smaller cost savings (with price elasticities of 4 to 5) of between 6 and 8 percent only. Basically, while the trade cost estimates above include many things, the EU has only addressed some of these successfully. In our view, this suggests that any EU-Canada agreement is likely to achieve, at best, a similar range of services trade cost savings as those already achieved inside the incomplete single market for services in the EU. For this reason, the transatlantic services liberalisation experiment is defined as a drop in services trade cost savings comparable to what has been realized within the EU. These are reported in Table 3. The remaining variations across service sectors are due to the services price elasticities used in the model.

TABLE 3 ESTIMATED TRADE COST SAVINGS FOR EU-CANADA CROSS-BORDER TRADE IN SERVICES IN %

Sector	EU exports to Canada	Canadian exports to EU
Utilities	11.3	10.3
Construction	8.4	7.8
Wholesale, retail trade and dist services	10.1	10.5
Transportation	15.4	13.1
Communication and information services	14.7	13.5
Financial services	14.1	13.8
Insurance	11.6	11.2
Other business services	11.7	11.5
Recreation and other consumer services	15.1	12.2
Public services (health, education, etc)	9.4	10.0

Note: The estimates in the table can be thought of as tariff equivalents in services.
Source: Updated estimates based on model from Francois, Hoekman, and Woerz (2008) and ICE model simulations:

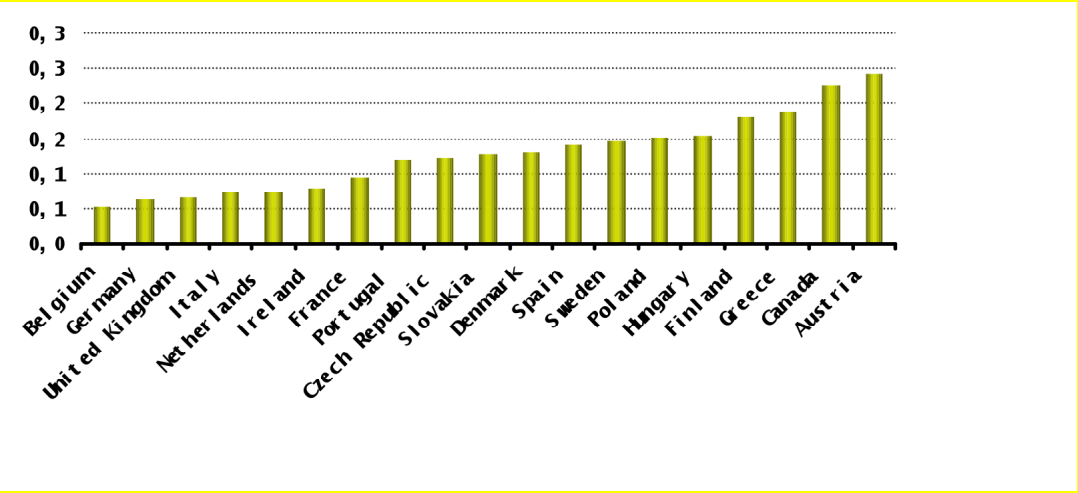
BARRIERS TO INVESTMENTS

The OECD has measured the restrictiveness of the individual OECD-countries towards foreign direct investment. The OECD (2006) paper provides a revised measure of regulatory restrictions on inward foreign direct investment (FDI) for OECD countries and extends the approach to 13 non-member countries. The methodology is largely similar to that adopted in the previous version of the OECD indicator and covers three broad categories of restrictions: limitations on foreign ownership, screening or notification procedures, and management and operational restrictions.

On that basis, Canada currently has one of the highest FDI restrictiveness index among OECD countries and is even measured as more restrictive than some non-OECD

countries. On the other hand the UK has one of the lowest restrictiveness index among the OECD countries, being less than half of that of Canada, cf. Figure 7.

FIGURE 7 OECD FDI RESTRICTIVENESS INDEX, 2006



Note: Index scale of 0-1 from least to most restrictive. Based on regulatory development as of April 2006.
Source: OECD (2006) FDI regulatory restrictiveness index.

Looking at the sector details of the OECD FDI regulatory restrictiveness index in Table 4 it appears that the UK is relatively much less restrictive in most of the sectors than Canada or other EU countries. In Canada, telecoms, finance, transport, electricity tend to me more restrictive. On the other hand in the UK, the only restrictive sector is the transport sector. Nevertheless, the restrictiveness in this sector is still about half of that of Canada.

TABLE 4 FDI RESTRICTIVENESS SCORES BY COUNTRY & SECTOR (1 = CLOSED, 0 = OPEN)

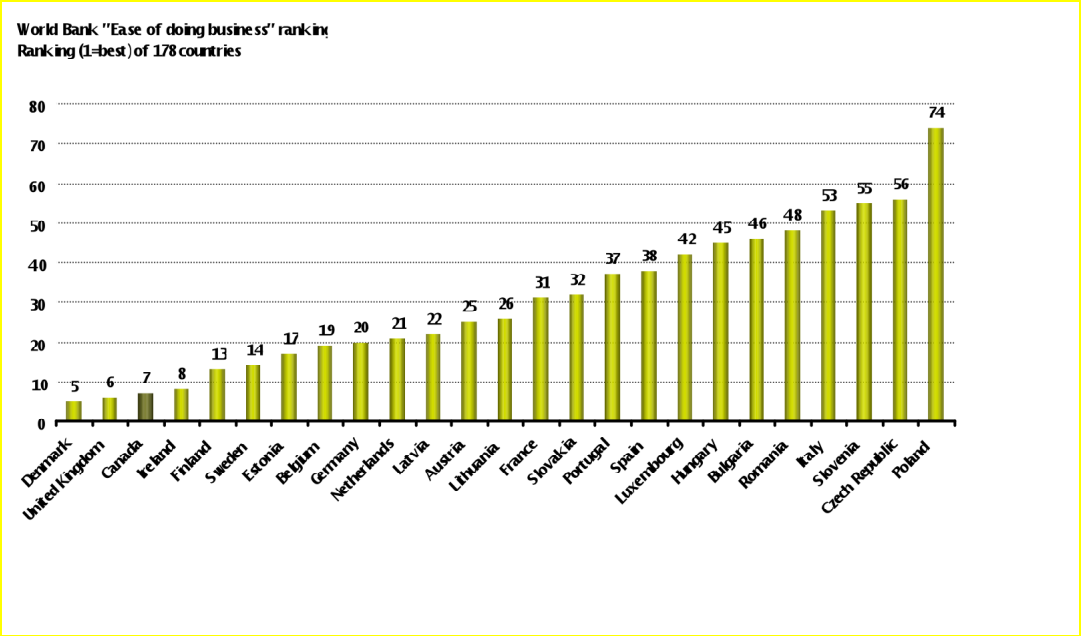
	Business services	Telecoms	Construc-tion	Distri-bution	Finance	Hotels & Restaurant	Transport	Electricity	Manu-facturing	Total
Canada	0.175	0.525	0.150	0.150	0.219	0.150	0.413	0.350	0.150	0.228
UK	0.017	0.017	0.017	0.017	0.070	0.017	0.256	0.017	0.017	0.065
EU27 average	0.143	0.115	0.050	0.048	0.110	0.048	0.247	0.374	0.052	0.119

*Note: The FDI score ranges from 0 to 1. Higher scores imply a lower degree of openness to foreign direct investment in the economy or the given sector. *Malta, Cyprus Bulgaria and Luxembourg were not included in the original.*
Source: OECD (2006) OECD's FDI REGULATORY RESTRICTIVENESS INDEX -REVISION AND EXTENSION TO MORE ECONOMIES

In terms of a more general measure of the regulation of relevance for firms, Canada performs just as well as some of the best performing EU members. Measured by the World Bank "ease of doing business" index, Canada ranks seventh worldwide. On the other hand United Kingdom (ranked sixth) performs better than Canada (cf. Figure 8).

The overall "ease of doing business" ranking is a result of the countries rankings on ten sub-indices. Canada generally performs well, but poorly on sub-indices for "Trading across borders" (ranking 39) and on enforcing contracts (ranking 43).

FIGURE 8 Ease Of Doing Business In EU And Canada



Note: The diagram shows the ranking from best (number 1) to worst (number 178). Singapore tops the list, and is ranked as the best country in terms of "ease of doing business.

Source: World Bank, Ease of Doing Business Index, 2007.

3. THE MODEL AND POLICY SCENARIOS

THE MODEL

The policy simulation uses a computable general equilibrium model (CGE) of global world trade. CGE models help answering *what-if* questions by simulating the price, income and substitution effects in equilibrium on markets under different assumptions. Here, the economic outcomes of the "baseline" scenario with no policy effects is compared to the scenario with a potential free trade agreement between the EU and Canada are evaluated. The "baseline" for the model is the equilibrium before the policy change, and the 'scenario' is the equilibrium after the policy change. The effect of the policy change can then be quantified as the difference between the two.

The remainder of this sub-chapter presents the computable general equilibrium model applied in the analysis.

THE GENERAL EQUILIBRIUM MODEL

The CGE model employed is based on Francois, van Meijl, and van Tongeren (2005). The most important aspects of the model can be summarised as follows:

- it covers global world trade and production
- it allows for scale economies and imperfect competition
- it includes intermediate linkages between sectors
- it allows for trade to impact on capital stocks through investment effects

The inclusion of scale economies and imperfect competition implies agglomeration effects like those emphasized in the recent economic literature.

BOX 2 KEY FEATURES OF THE MODEL

Model simulations are based on a multi-region global CGE model. Sectors are linked through intermediate input coefficients (based on national social accounts data) as well as competition in primary factor markets. The model includes imperfect competition, short-run and long-run macroeconomic closure options, as well as the standard static, perfect competition, Armington-type of model as a subset. It also allows alternative labour market closures. On the policy side, it offers the option to implement tariff reductions, export tax and subsidy reduction, trade quota expansion, input subsidies, output subsidies, and reductions in trade costs. International trade costs include shipping and logistic services (the source of fob-cif margins) but can also be modelled as Samuelson-type deadweight costs. This can be used to capture higher costs when producing for export markets, due to regulatory barriers or NTBs that do not generate rents (or where the rents are dissipated through rent-seeking).

In the model there is a single representative composite household in each region, with expenditures allocated over personal consumption and savings. The composite household owns endowments of the factors of production and receives income by

selling these factors to firms. It also receives income from tariff revenue and rents accruing from import/export quota licenses. Part of the income is distributed as subsidy payments to some sectors, primarily in agriculture.

Taxes are included at several levels. Production taxes are placed on intermediate or primary inputs, or on output. Tariffs are levied at the border. Additional internal taxes are 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 relevant (as indicated by social accounting data) taxes are placed on final consumption, and can be applied differentially to consumption of domestic and imported goods.

On the production side, in all sectors, firms employ domestic production factors (capital, labour and land) and intermediate inputs from domestic and foreign sources to produce outputs in the most cost-efficient way that technology allow. Perfect competition is assumed in the agricultural sectors (but the processed food products sector is characterised by increasing returns to scale). In these sectors, products from different regions are assumed to be imperfect substitutes.

Manufacturing sectors are modelled as involving imperfect or monopolistic competition. Monopolistic competition involves scale economies that are internal to each firm, depending on its own production level. An important property of the monopolistic competition model is that increased specialisation at intermediate stages of production yields returns due to specialisation, where the sector as a whole becomes more productive the broader the range of specialised inputs. These gains spill over through two-way trade in specialised intermediate goods. With these 'spillovers', trade liberalisation can lead to global scale effects related to specialisation. Similar gains follow from consumer good specialisation.

While the model covers changes in gross trade flows, it does not model changes in net international capital flows. Rather the capital market closure involves fixed net capital inflows and outflows. This precludes the model from giving any indications of changes in international investment flows.

DATA USED FOR THE BASELINE

The model runs on the GTAP database, version 7. It provides the data for the empirical implementation of the model. The database is the best and most up-to-date source of internally consistent data on production, consumption and international trade by country and sector.[2] It combines this database with revisions made to various national tables to reflect more current data (for example the energy sector output data in Canada), and revisions to protection data based on detailed tariff line data from the WTO and UNCTAD, and including estimates of current bound rates, commitments to future bound rates based on the current draft Doha text (subject to occasional revision). It also reflects von Thünen Institut data on applied tariffs, bound tariffs, and ad valorem equivalents of agricultural protection. The database for the model is benchmarked for

[2] For more information, please refer to Dimaran and McDougall (2006).

2007, and for 2014. The projection to 2014 is based on the assumption that the Doha Round modalities proposed in February 2008 will be agreed and implemented, and also currently agreed WTO Accession commitments

The GTAP data on protection incorporate the Macmaps data set, which includes a set of *ad valorem equivalents* (AVEs) of border protection across the world. The source information concerns various instruments, such as specific tariffs, mixed tariffs and quotas, which cannot be directly compared or summed. In order to be of use in a CGE model, these have been converted into an AVE per sector, per country and per trading partner. 3 We have supplemented these data with data from von Thünen Institut, which reflect careful analysis of current as likely (i.e. Doha) WTO commitments.

SECTOR AGGREGATION

For the purpose of this study, we aggregate the GTAP database into 31 sectors. The sector structure is shown in Table 5.

TABLE 5 SECTORS IN THE MODEL

Primary agricultural sectors	**Manufacturing and extraction sectors**		**Services sectors**
Cereal grains	Fishing	Wood products	Electricity
Vegetables	Coal	Paper products	Construction
Oil seeds	Oil	Petroleum	Trade
Other agriculture	Gas	Chemical	Air transport
Forestry	Minerals	Mineral products	Communication
	Beef products	Ferrous metals	Financial services
	Other meats	Metals	Insurance
	Dairy products	Metal products	Business services
	Processed foods	Motor vehicles and parts	Recr. and other services
	Beverages and tobacco	Transport equipment	Public production
	Textiles	Electronic equipment	
	Wearing apparel	Machinery and equipment	
	Leather products	Manufactures	

Source: Based on GTAP sectors

Beef, Other meats, Diary products, Processed foods, Beverages and tobacco are under manufacturing as these are processed goods. For example raw milk is included in primary agriculture while cheese under manufacturing sectors.

The GTAP agricultural and food processing sectors are classified according to the Central Product Classification (CPC). The other GTAP sectors are defined by reference to the International Standard Industry Classification (ISIC rev.3 as defined by United Nations Statistic Division). Services and utility classifications predate the GATS and are based on IMF balance of payments statistics (BOP) and UN definitions.

MARKET STRUCTURE

For the chosen sectors from Table 5 some are assumed to exhibit increasing returns to scale. Scale elasticities, based on average mark-up estimates, are reported in Table 6. The starting point for these is estimated price-cost mark-ups from the OECD (Martins, Scarpetta, and Pilat 1996), Antweiller and Trefler (2002), and Christopoulou and P.

[3] The MacMaps database is the result of a joint effort by the International Trade Center (governed by UNCTAD and WTO) and Cepii.

Vermeulen (2008). These provide estimates of mark-ups, based on methods pioneered by Hall (1988) and Roeger (1995). 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).

TABLE 6 MARKET STRUCTURE, AND TRADE AND SUBSTITUTION ELASTICITIES

Sector	Trade substitution elasticity	Value Added Substitution Elasticity	Market Structure
Cereal grains nec	5.9	0.23	Armington
Vegetables, fruit, nuts	3.7	0.23	Armington
Oil seeds	4.9	0.23	Armington
Other agriculture	5.4	0.23	Armington
Forestry	5.0	0.20	Armington
Fishing	2.5	0.20	Armington
Coal	6.1	0.20	Armington
Oil	10.4	0.20	Armington
Gas	34.4	0.20	Armington
Minerals nec	1.8	0.20	Armington
Beef	7.7	1.12	Armington
Other meats	8.8	1.12	Armington
Dairy	7.3	1.12	Armington
Processed foods	9.3	1.01	Monopolistic Competition
Beverages and tobacco products	3.1	1.12	Monopolistic Competition
Textiles	9.7	1.26	Monopolistic Competition
Wearing apparel	7.7	1.26	Monopolistic Competition
Leather products	6.1	1.26	Monopolistic Competition
Wood products	7.1	1.26	Monopolistic Competition
Paper products, publishing	5.4	1.26	Monopolistic Competition
Petroleum, coal products	10.5	1.26	Monopolistic Competition
Chemical,rubber,plastic prods	9.1	1.26	Monopolistic Competition
Mineral products nec	5.2	1.26	Monopolistic Competition
Ferrous metals	7.5	1.26	Monopolistic Competition
Metals nec	7.5	1.26	Monopolistic Competition
Metal products	6.6	1.26	Monopolistic Competition
Motor vehicles and parts	9.3	1.26	Monopolistic Competition
Transport equipment nec	5.3	1.26	Monopolistic Competition
Electronic equipment	7.9	1.26	Monopolistic Competition
Machinery and equipment nec	6.3	1.26	Monopolistic Competition
Manufactures nec	6.0	1.26	Monopolistic Competition
Electricity	3.9	1.26	Monopolistic Competition
Construction	4.8	1.40	Monopolistic Competition
Trade	4.0	1.68	Armington
Air transport	3.4	1.68	Armington
Communication	3.3	1.26	Monopolistic Competition
Financial services nec	3.4	1.26	Monopolistic Competition
Insurance	4.0	1.26	Monopolistic Competition
Business services nec	3.9	1.26	Monopolistic Competition
Recreation and other services	3.7	1.26	Monopolistic Competition
Public production	4.2	1.26	Armington

Source: GTAP database lower-nest (ESUBM) trade and variety elasticities

COUNTRY AGGREGATION

The country aggregation used for the model is presented in Table 7. It has UK separated from the rest of the EU countries, Canada and some other regions/countries.

TABLE 7 COUNTRY AGGREGATIONS IN THE MODEL

Countries/regions
Canada
UK
European Union-UK
United States
Mexico
Other OECD
Rest of World

Source: Based on GTAP version 7

MODELLING THE REMOVAL OF TRADE BARRIERS

Besides the tariff protection for goods and service sector protection outlined in the previous chapter, we also address other trade costs and their reduction through trade facilitation and removal of non-tariff barriers (NTBs).

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, e.g. language barriers, as well as the physical activity of transportation itself. The trading costs are related to international movement of goods and related logistic services are met by composite services purchased from a global trade services sector. The model also includes costs related to customs procedures and other administrative "burdens" related to import and export. Such barriers affect the economy by increasing the costs of international exchanges over and above tariff costs.

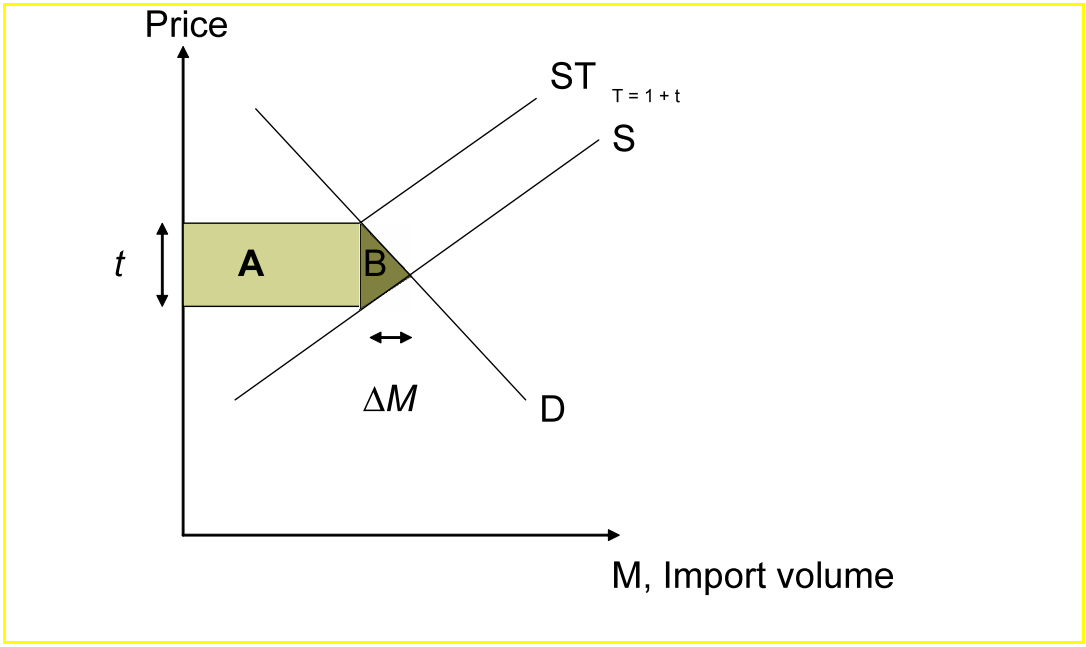
There are many references in the trade literature to empirical estimates of these costs but there are no specific estimates for the cost of NTBs in the case of Canada or the UK. Based on a reading of the relevant literature a notional NTB value of 2 percent is used in the model for all manufacturing sectors. The cost of NTBs in services sectors is assumed to be included in the tariff equivalent for services while NTBs in primary commodity sectors are assumed to be negligible.

EFFECTS FROM TARIFFS AND NON-TARIFF BARRIERS DIFFER

In the analysis of trade policy we focus on two separate sets of issues. One is linked to tariffs, while the other is linked to non-tariff barriers. The economics of the welfare effects of tariffs are relatively straightforward, while those for NTBs are less so. The basic points are illustrated below. Assume we can represent import demand and supply the curves below.

Import supply is represented by *S*, while a trade cost-distorted supply curve is represented by *ST*, where *T = (1+t)* is our measure of an ad valorem trade cost at rate *t*. In the case of a tariff, the deadweight cost is area *B*. Area *A* represents tariff revenue. Its impact on welfare depends on relative supply and demand elasticities (and hence relative market power). For a small country, this area involves a loss in welfare offset by tariff revenues, without any terms of trade gains for the importer. Regardless of the allocation of terms of trade gains, global welfare effects are limited to the triangle *B*.

FIGURE 9 Effect Of Removal Of Non-Tariff Barriers



When NTBs involve quotas and quota rents with price impact t, national welfare effects again depend on the allocation of areas *A* and *B* between countries. Global welfare effects are again limited to area *B*. The impact of non-tariff barriers linked to efficiency have a different overall impact. Consider, for example, regulatory barriers that raise the cost of selling into the market by the cost factor *t*. Here, we now assume that *t* represents a real increase in the cost of producing and delivering to the market. Examples can include technical barriers that raise production costs, regulatory barriers that require inefficient delivery methods or increased production costs, or increased paperwork and procedures that cost manpower, time, and hence money. In all these cases, area *B* then represents real costs. These are not simply reallocated between countries, or between consumer and government. They are lost income globally. As a result, the global impact on welfare will be the combined areas *A* and *B*.

In general, cost-raising trade barriers imply direct, and significant, gains from trade liberalization relative to comparable tariffs (where comparable is defined in terms of price impacts.) Their allocation depends, like terms of trade effects, on relative supply and demand elasticities. Regardless of their national allocation, however, global welfare effects will be bigger.

PROJECTIONS TO 2014

The modelling work includes a projection of the baseline to 2014. This means that we evaluate the likely effects of further cooperation for a *hypothetical* future baseline year, situated for convenience in 2014 and reflecting the long-run changes in economic structures. The baseline projection to 2014 is included in the analysis to reflect the recent changes in higher oil prices and food prices – changes that to a large extend are driven by the projected increase in demand as emerging economies dominated by India and China enter the world economy.

TABLE 8 BASELINE GDP AND GROWTH PROJECTIONS

	nominal GDP 2004, billion pounds	nominal GDP 2007, billion pounds	nominal GDP 2014, billion 2007 pounds
UK	1062	1349	1,603
Canada	490	703	846
European Union	5,386	6,943	8,282
United States	5,837	6,897	8,171

Note: Projections are based on average of most-recent and near term forecasts
Source: IMF and the OECD

The projection of the baseline implies significant increases in oil and food prices resulting from changes in global supply and demand. According to these projections, real oil prices will increase by 82 percent from 2004 to 2014 and real grain prices will increase by 68 percent.

TABLE 9COMMODITY PRICES 2007 AND 2014 VS 2004, 2004=100

Sector	**2004**	**2007**	**2014**	**Cummulative 2004-2014, percent increase**
	nominal price index (current dollars)			
Oil	100.0	181.5		
Grains	100.0	139.3		
	real price index (2004 dollars)			
Oil	100.0	161.4	182.1	82.1
Grains	100.0	123.9	168.1	68.1

Note: Benchmark matches global commodity price indexes from the IMF, 2004-2007. Further increases reflect impact of macro growth projections.
Source: IMF and the OECD

CLOSURE OF THE MODEL

Two closure rules are implemented: a short-run closure with fixed capital stock and a long-run (dynamic) macroeconomic closure. The latter examines changes along a steady-state growth path (level effects) following from induced increases in the capital stock. The long-run effects are based on Francois et al (1997). Here we link capital stocks to long-run 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. In contrast, in the short-run we do not include the impact of investment on installed capital stocks. We do not preclude changes in gross international capital flows (indeed increased services trade implies FDI flows as well). However we are not focused on changes in net capital flows, as these are driven in the long run by macroeconomic mechanisms outside the trade scenarios (and indeed trade policy is a second or third order determinant of long-run net capital flows).

The long-run estimates reflect changes in investment, and also include additional productivity gains from interaction between investment effects and changes in intermediate and final product varieties. As reported here, they represent shifts in the general baseline trend of the economy over a counterfactual or alternative scenario where the FTA is not implemented. This means the long-run effects, which include those of the short-run, also incorporate further effects such as those resulting from capital accumulation. Thus the results of the long-run, dynamic scenarios involve a mix of induced investment, and also productivity effects. The productivity effects follow from an interaction of investment and variety/specialization gains.

POLICY SCENARIOS

The scenario is based on the following assumptions regarding trade policy changes:

- A full bilateral elimination of remaining post-Doha tariffs on goods and agricultural products
- A reduction in trade barriers for services whereby barriers between EU and Canada are reduced (both ways) to a level corresponding to the intra-EU services barriers
- 2 percent trade cost (NTB) savings for industrial goods. This percentage reduction in trade costs is applied to all manufacturing sectors except motor vehicles.

From a policy point of view, this scenario can be seen as quite radical in its assumptions. Nonetheless it is useful in providing an upper benchmark for the effect of potential measures to liberalize trade.

4. RESULTS

IMPACT ON THE LEVEL OF ECONOMIC ACTIVITY AND ECONOMIC WELFARE

The impact of different scenarios on UK's GDP is presented in Table 10. On the short-run only tiny changes would take place in the GDP, amounting to 0.01% change. On the long run, which would be achieved in about ten years, implementing all scenarios would result in a still small, 0.09% increase in GDP. While tariff reductions would not have any significant effect, services trade liberalization, which would involve a reduction in trade barriers for services whereby barriers between the UK and Canada are reduced (both ways) to a level corresponding to the intra-EU services barriers, would be the most important contributor to changes in GDP. This total change on the long run would amount to 1.283 million pounds. The change in UK's GDP after implementing liberalization would be much lower than the changes occurring in Canada's GDP.

TABLE 10 CHANGES IN GDP

	Total	Tariff reductions	Services trade liberalization	NTBs in goods
% Change in GDP (quantity index)				
short-run	0.01	-0.01	0.02	0.01
long-run	0.09	0.00	0.07	0.02
Value Change in GDP million £ (2007 prices)				
short-run	321	0	321	160
long-run	1,283	160	802	321

To analyse welfare effects we use a measure of 'equivalent variation' which is the amount of income that would have to be paid to households in a given country to leave the households as well off without the policy change as they would be with it. These are measured as national income effects. On the other hand, GDP is a fixed weight index, meaning it is a measure of the physical change in output in the economy. This is an incomplete measure of the total welfare impact of policy changes, as it does not include changes in relative prices. Changes in real national income include the combination of changes in physical production, changes in relative prices, and how this maps to the real purchasing power of the populace as they face both income and price changes. These national income effects for short- and long-run under the different scenarios are presented in Table 11.

The magnitude of the effects is similar to the effects on GDP. On the short run only very tiny changes take place amounting to a 0.02%. On the long run changes remain small, the total change being 1.345 million pounds which amounts to a 0.08% increase.

TABLE 11 NATIONAL INCOME EFFECTS

	Total	Tariff reductions	Services trade liberalization	NTBs in goods
Real national income change, %				
short-run	0.02	0.00	0.02	0.01
long-run	0.08	0.01	0.05	0.02
Real national income change, million £ (2007 prices)				
short-run	423	-32	302	154
long-run	1,345	139	918	289

IMPACT ON TRADE FLOWS

The impact on aggregate export flows of the UK is also rather small both on the short- and the long-run. Table 12 presents changes in exports for the different scenarios. On the short-run the total change amounts to a bit less than half percent increase while on the long run it is 0.55% increase. Services trade liberalization which would imply a reduction in trade barriers for services whereby barriers between UK and Canada are reduced to a level corresponding to the intra-EU services barriers, would have a somewhat higher impact on the long-run than over the short-run, amounting to 0.13% increase in the value of UK exports.

TABLE 12 CHANGE IN VALUE OF EXPORTS

	Total	Tariff reductions	Services trade liberalization	NTBs in goods
% Change in value of exports				
short-run	0.43	0.26	0.07	0.10
long-run	0.55	0.30	0.13	0.12

Next we discuss changes in total exports at sectoral level. Results decomposing the effects of the different scenarios on the long-run, which would be achieved in about ten years, are presented in Table 13. While most of the sectors experience a very tiny change, an 8.5% increase takes place in processed food products. This is due to the removal of the important initial Canadian trade protection in the sector.

TABLE 13 % CHANGE IN UK EXPORTS (VALUE) -- 2014 BASELINE, LONG-RUN

	% share of total exports	Total change	Tariff reductions	Services trade liberalization	NTBs in goods
long-run					
primary agriculture	1.4	0.2	0.3	0.0	0.0
processed foods	4.5	8.5	7.9	0.0	0.7
Forestry	0.1	0.1	0.1	-0.1	0.0
Fishing	0.4	-0.6	-0.6	0.0	0.0
Coal	0.0	0.1	0.1	0.0	0.0
Oil	5.4	0.2	0.1	0.0	0.0
Gas	0.9	0.2	0.1	0.0	0.0
Minerals nec	3.2	0.2	0.1	0.0	0.1
Beverages and tobacco products	1.8	0.0	-0.1	0.0	0.1
Textiles	1.0	0.1	0.1	-0.1	0.1
Wearing apparel	0.5	0.3	0.2	0.0	0.1
Leather products	0.2	0.0	0.0	0.0	0.0
Wood products	0.5	0.0	0.0	0.0	0.1
Paper products, publishing	1.6	0.1	0.0	0.0	0.1
Petroleum, coal products	2.1	0.1	0.1	0.0	0.0
Chemical,rubber,plastic prods	12.0	0.5	0.1	-0.1	0.4
Mineral products nec	0.8	0.2	0.1	0.0	0.1
Ferrous metals	1.5	-0.2	-0.3	-0.1	0.1
Metals nec	1.3	-2.8	-1.0	-0.2	-1.7
Metal products	1.1	0.6	0.3	-0.1	0.3
Motor vehicles and parts	6.4	-0.2	-0.2	-0.1	0.0
Transport equipment nec	2.1	0.5	-0.2	0.0	0.8
Electronic equipment	4.1	-0.2	-0.4	0.0	0.2
Machinery and equipment nec	11.2	0.2	0.0	-0.1	0.3
Manufactures nec	1.4	0.1	-0.1	0.0	0.1
Utilities (management etc)	0.2	0.2	0.0	0.2	0.0
Construction	0.2	0.2	-0.1	0.3	0.0
Wholesale, retail trade and dist services	1.4	0.4	0.0	0.4	0.0
Transportation	4.5	0.3	0.1	0.2	0.0
Communication and info services	1.0	0.2	0.0	0.3	0.0
Financial services	6.9	0.9	-0.2	1.1	0.0
Insurance	3.1	0.8	-0.2	1.0	0.0
Other business services	13.5	0.1	-0.1	0.2	0.0
Recreation and other consumer services	1.8	0.4	-0.1	0.4	0.0
Other public services (health, education, etc)	1.9	-0.1	-0.1	0.1	0.0

Next we turn to the impact on UK-Canada bilateral export flows. Changes in both Canadian exports to the UK and UK exports to Canada over the long-run are presented in Table 14. Three columns are presented for both the UK and Canadian exports showing the base value of exports, % change, and changes in value for each sector.

While the aggregate export changes were rather small for the UK, changes in bilateral exports are much larger with certain sectors experiencing very high increases. Canadian exports to the UK increase by 15% on the long-run, while UK exports to Canada increase

almost twice as much, by 29%. In terms of value, this latter amounts to a 2.343 million pounds increase in exports to Canada from the UK.

At sectoral level, the most important change takes place in the UK's processed food exports to Canada. The increase on the long-run is 486% (which is equivalent to 1.274 million pounds). This is due to the elimination of the very high initial Canadian tariffs in this sector. In the same time, given EU's trade restrictions in the sector, exports of processed foods from Canada to the UK also increases by 81%. Some other sectors, which enjoyed higher protection levels in the baseline also experience quite substantial increases. For example, exports of textiles and wearing apparel increases both ways between 61-73%. Beverages and tobacco products, where EU/UK tariffs were somewhat higher also experience an increase with Canadian exports to the UK increase by 22%.

IMPACT ON SECTORAL OUTPUT

Changes in output at the sectoral level are very small in the short-run in almost all sectors (these results are presented in the Annex in Table 18). On the long run, there are two sectors in which small but significant changes take place (see Table 15). These are mainly due to increased demand in Canada for the exported products in these sectors. Changes in bilateral exports showed very large increases in UK's exports of processed foods towards Canada under the different scenarios. This important increase in exports is reflected in changes in outputs in this sector, resulting in a 1.1% increase over the long run. The share of this sector in total output is not very big, it amounts to 2.6% of total value-added only, and thus this increase at the aggregate has a very small effect. The other sector in which some change takes place is metal products for which output decreases by 3.8%. Since the share of this sector in total output is very small (0.1%) the impact on total output is negligible.

TABLE 14 CHANGE IN BILATERAL EXPORTS (VALUE) -- 2014 BASELINE IN MILLION £ (2007 PRICES), LONG-RUN EFFECTS

	Canadian Exports to UK			UK Exports to Canada		
	Base Value	% change	value change	Base Value	% change	value change
primary agriculture	114	79.6	91	10	-0.1	0
processed foods	114	81.1	92	308	486.2	1,274
Forestry	11	0.4	0	0	-0.2	0
Fishing	36	18.7	7	2	-12.2	0
Coal	76	-0.2	0	1	0.8	0
Oil	0	-1.0	0	1,324	1.5	20
Gas	84	-0.1	0	0	0.0	0
Minerals nec	2,376	-1.8	-43	11	5.5	1
Beverages and tobacco products	8	22.4	2	115	4.6	5
Textiles	21	72.8	15	36	61.3	22
Wearing apparel	19	64.0	12	21	60.8	13
Leather products	2	36.4	1	9	32.6	3
Wood products	73	16.7	12	23	24.3	6
Paper products, publishing	209	9.9	21	117	8.5	10
Petroleum, coal products	59	59.6	35	29	75.9	22
Chemical,rubber,plastic prods	216	35.3	76	982	26.6	261
Mineral products nec	13	21.4	3	39	22.7	9
Ferrous metals	7	17.8	1	59	15.0	9
Metals nec	1,414	22.7	321	52	11.9	6
Metal products	37	26.3	10	88	30.7	27
Motor vehicles and parts	71	23.3	17	192	17.8	34
Transport equipment nec	300	22.8	68	732	7.3	53
Electronic equipment	241	21.5	52	184	14.9	27
Machinery and equipment nec	404	23.1	93	986	16.2	160
Manufactures nec	36	16.0	6	57	17.6	10
Utilities (management etc)	7	19.5	1	6	17.3	1
Construction	0	46.0	0	5	44.3	2
Wholesale, retail trade and dist services	55	20.3	11	101	20.8	21
Transportation	583	23.5	137	371	21.6	80
Communication and info services	162	10.7	17	71	9.7	7
Financial services	98	14.8	15	527	16.2	85
Insurance	21	19.8	4	443	19.5	86
Other business services	301	6.3	19	832	6.3	52
Recreation and other consumer services	68	18.1	12	160	16.6	26
Other public services (health, education, etc)	101	12.7	13	75	13.4	10
TOTAL	7,337	15.3	1,122	7,967	29.4	2,343

TABLE 15 % CHANGE IN UK OUTPUT (QUANTITIES), 2014 BASELINE, LONG-RUN

	% share of value added	Total change	Tariff reductions	Services trade liberalization	NTBs in goods
long-run					
primary agriculture	1.0	0.1	0.1	0.0	0.0
processed foods	2.6	1.1	1.0	0.0	0.1
Forestry	0.1	0.0	0.0	0.0	0.0
Fishing	0.3	0.0	0.0	0.0	0.0
Coal	0.3	0.0	0.0	0.0	0.0
Oil	2.1	0.0	0.0	0.0	0.0
Gas	0.5	0.0	0.0	0.0	0.0
Minerals nec	0.5	0.0	0.0	0.0	0.0
Beverages and tobacco products	0.2	0.0	-0.1	0.0	0.0
Textiles	0.3	-0.3	-0.2	0.0	-0.1
Wearing apparel	0.2	-0.2	-0.2	0.0	-0.1
Leather products	0.1	-0.2	-0.2	0.0	0.0
Wood products	0.3	-0.3	-0.2	0.0	-0.1
Paper products, publishing	2.0	0.0	0.0	0.0	0.0
Petroleum, coal products	0.1	-0.1	-0.1	0.0	0.0
Chemical,rubber,plastic prods	2.0	0.1	0.0	0.0	0.1
Mineral products nec	0.6	0.0	0.0	0.0	0.0
Ferrous metals	0.3	-0.3	-0.2	-0.1	0.0
Metals nec	0.1	-3.8	-1.2	-0.2	-2.5
Metal products	1.2	0.0	0.0	0.0	0.1
Motor vehicles and parts	1.0	-0.2	-0.2	0.0	0.0
Transport equipment nec	0.5	-0.1	-0.2	0.0	0.2
Electronic equipment	0.5	-0.4	-0.4	0.0	0.1
Machinery and equipment nec	2.5	0.0	-0.1	0.0	0.1
Manufactures nec	0.8	0.0	-0.1	0.0	0.0
Utilities (management etc)	1.4	0.0	0.0	0.0	0.0
Construction	6.1	0.1	0.0	0.1	0.0
Wholesale, retail trade and dist services	14.0	0.1	0.0	0.0	0.0
Transportation	4.3	0.0	0.0	0.0	0.0
Communication and info services	2.9	0.1	0.0	0.1	0.0
Financial services	0.2	0.3	-0.1	0.4	0.0
Insurance	1.4	0.2	0.0	0.2	0.0
Other business services	21.9	0.1	0.0	0.1	0.0
Recreation and other consumer services	3.6	0.0	0.0	0.1	0.0
Other public services (health, education, etc)	24.1	0.0	0.0	0.0	0.0

IMPACT ON WAGES

The impact of different scenarios on wages of both skilled and unskilled workers is presented in Table 16. Generally an FTA would have only marginal effects on the wages in the UK. On the short-run the changes in real wages for both skilled and unskilled workers is around 0.4-0.5%. The long-run would result in somewhat higher but still

very low changes amounting to 0.11-0.12% increase in real wages. On the long-run, services trade liberalization contributes mostly to this increase. If barriers in services trade are reduced between the UK and Canada to a level corresponding to the intra-EU services barriers then a 0.07% increase would take place in real wages in the UK.

TABLE 16 CHANGES IN REAL WAGES

	Total	Tariff reductions	Services trade liberalization	NTBs in goods
% change in real wages				
skilled labor, short-run	0.04	0.00	0.03	0.01
skilled labor, long-run	0.11	0.01	0.07	0.02
unskilled labor, short-run	0.05	0.02	0.02	0.01
unskilled labor, long-run	0.12	0.04	0.07	0.02

5. CONCLUSIONS

This report analysed the possible impact of free trade agreement between the EU and Canada on the UK's economy taking into account different scenarios for removing barriers between the countries. The first scenario assumed a full bilateral elimination of remaining post-Doha tariffs on goods and agricultural products. The second scenario assumed also a reduction in trade barriers for services. The most ambitious scenario added also a 2 percent trade cost (NTB) savings for industrial goods. We examined the effects of these assumptions both on the short-run and also taking into account dynamic effects on the long run.

The findings indicate that the UK's economy would be only limitedly affected by this FTA. The most ambitious scenario would lead to a 0.09% increase in the UK's GDP over the long-run and result in a 0.08% real income increase. While aggregate trade flows would be only limitedly affected, some sectors, such as processed food sector, would experience increased trade flows. Sectoral output in the UK would change only very limitedly, processed food sector being an exception where a 4.7% increase in output would take place due to increased export demand from Canada. At that same time, it should be stressed that, in the context of the broader trans-Atlantic, trade cost reductions are likely to have much stronger impacts, in terms of gains to GDP, wages, and exports than those identified here. Recent research sponsored by the European Commission (Berden et al, 2009) on the EU-U.S. relationship points to substantial scope for reductions in trade costs for goods and services related to negotiated reductions in regulatory barriers and related non-tariff measures. This research reinforces a basic message of the recent work on EU-Canada trade as well as the basic message of this study – non-tariff barriers are where the potential benefits are. This carries over to the broader trans-Atlantic trade and investment relationship.

TABLE 17

% Change in UK Exports (value) -- 2014 baseline
short-run

	% share of total exports	Total change	Tariff reductions	Services trade liberalization	NTBs in goods
short-run					
primary agriculture	1.4	0.2	0.2	0.0	0.0
processed foods	4.5	8.4	7.8	-0.1	0.7
Forestry	0.1	0.2	0.1	0.0	0.0
Fishing	0.4	-0.6	-0.6	0.0	0.0
Coal	0.0	0.1	0.0	0.0	0.0
Oil	5.4	0.1	0.1	0.0	0.0
Gas	0.9	0.1	0.1	0.0	0.0
Minerals nec	3.2	0.1	0.1	0.0	0.1
Beverages and tobacco products	1.8	-0.1	-0.1	0.0	0.1
Textiles	1.0	-0.1	0.0	-0.1	0.0
Wearing apparel	0.5	0.1	0.2	-0.1	0.0
Leather products	0.2	-0.1	0.0	-0.1	0.0
Wood products	0.5	-0.1	-0.1	-0.1	0.1
Paper products, publishing	1.6	0.0	-0.1	0.0	0.1
Petroleum, coal products	2.1	0.1	0.1	0.0	0.1
Chemical,rubber,plastic prods	12.0	0.3	0.1	-0.1	0.4
Mineral products nec	0.8	0.2	0.1	0.0	0.1
Ferrous metals	1.5	-0.3	-0.3	-0.1	0.1
Metals nec	1.3	-2.9	-1.0	-0.2	-1.7
Metal products	1.1	0.5	0.3	-0.1	0.3
Motor vehicles and parts	6.4	-0.3	-0.2	-0.1	0.0
Transport equipment nec	2.1	0.5	-0.2	-0.1	0.8
Electronic equipment	4.1	-0.5	-0.5	-0.2	0.2
Machinery and equipment nec	11.2	0.1	-0.1	-0.1	0.3
Manufactures nec	1.4	-0.1	-0.1	-0.1	0.1
Utilities (management etc)	0.2	0.0	0.0	0.1	-0.1
Construction	0.2	0.1	-0.1	0.3	-0.1
Wholesale, retail trade and dist services	1.4	0.3	-0.1	0.4	0.0
Transportation	4.5	0.3	0.1	0.2	0.0
Communication and info services	1.0	0.1	-0.1	0.2	0.0
Financial services	6.9	0.5	-0.3	0.8	-0.1
Insurance	3.1	0.7	-0.2	0.9	-0.1
Other business services	13.5	0.0	-0.1	0.1	0.0
Recreation and other consumer services	1.8	0.3	-0.1	0.4	0.0
Other public services (health, education, etc)	1.9	0.0	-0.1	0.1	0.0

TABLE 18 CHANGE IN UK OUTPUT, SHORT-RUN

% Change in UK Output (quanties) -- 2014 baseline
short-run

	% share of value added	Total change	Tariff reductions	Services trade liberalization	NTBs in goods
short-run					
primary agriculture	1.0	0.1	0.1	0.0	0.0
processed foods	2.6	1.0	1.0	0.0	0.1
Forestry	0.1	0.0	0.0	0.0	0.0
Fishing	0.3	0.0	0.0	0.0	0.0
Coal	0.3	0.0	0.0	0.0	0.0
Oil	2.1	0.0	0.0	0.0	0.0
Gas	0.5	0.0	0.0	0.0	0.0
Minerals nec	0.5	0.0	0.0	0.0	0.0
Beverages and tobacco products	0.2	-0.1	-0.1	0.0	0.0
Textiles	0.3	-0.4	-0.2	-0.1	-0.1
Wearing apparel	0.2	-0.3	-0.2	0.0	-0.1
Leather products	0.1	-0.3	-0.2	-0.1	-0.1
Wood products	0.3	-0.4	-0.2	-0.1	-0.1
Paper products, publishing	2.0	0.0	0.0	0.0	0.0
Petroleum, coal products	0.1	-0.1	0.0	0.0	0.0
Chemical,rubber,plastic prods	2.0	-0.1	-0.1	-0.1	0.1
Mineral products nec	0.6	0.0	0.0	0.0	0.0
Ferrous metals	0.3	-0.3	-0.3	-0.1	0.0
Metals nec	0.1	-3.9	-1.1	-0.2	-2.5
Metal products	1.2	0.0	-0.1	0.0	0.0
Motor vehicles and parts	1.0	-0.3	-0.2	-0.1	0.0
Transport equipment nec	0.5	-0.1	-0.2	0.0	0.2
Electronic equipment	0.5	-0.6	-0.5	-0.1	0.0
Machinery and equipment nec	2.5	-0.1	-0.2	-0.1	0.1
Manufactures nec	0.8	-0.1	-0.1	0.0	0.0
Utilities (management etc)	1.4	0.0	0.0	0.0	0.0
Construction	6.1	0.0	0.0	0.0	0.0
Wholesale, retail trade and dist services	14.0	0.0	0.0	0.0	0.0
Transportation	4.3	0.0	0.0	0.0	0.0
Communication and info services	2.9	0.0	0.0	0.0	0.0
Financial services	0.2	0.1	-0.1	0.3	0.0
Insurance	1.4	0.1	-0.1	0.2	0.0
Other business services	21.9	0.0	0.0	0.0	0.0
Recreation and other consumer services	3.6	0.0	0.0	0.0	0.0
Other public services (health, education, etc)	24.1	0.0	0.0	0.0	0.0

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