Policy Note

Modeling the Effects of Free Trade Agreements between the EU and Canada, USA and Moldova/Georgia/Armenia on the Austrian Economy: Model Simulations for Trade Policy Analysis

Joseph Francois and Olga Pindyuk

──────────── **Abstract** ────────────

This study examines the economic impact on Austria of three possible new EU free trade agreements: (1) an EU-US agreement; (2) an EU-Canada agreement; and (3) an EUArmenia/Georgia/Moldova agreement. This is done with a computational model of the global economy. The trade agreements are modeled as a mix of preferential tariff reductions and reductions in non-tariff measures that affect both goods and services. The primary impact follows from NTM reduction rather than tariff reductions. Of the three agreements, a potential agreement with the US is by far the most important. This follows from the size of the US economy. The US accounts for roughly one-quarter of extra-EU Austrian exports. Overall, the combined impact of the FTAs studied is positive. Most of the impact follows from investment response. Productivity gains from NTM reduction mean a combination of increased national income, higher wages, and employment, and increased capital stocks for the Austrian economy.

Keywords: Free trade agreements, EU, Canada, USA, CGE modeling

JEL-codes: C68, F15, F17

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Modeling the Effects of Free Trade Agreements between the EU and Canada, USA and Moldova/Georgia/Armenia on the Austrian Economy: Model Simulations for Trade Policy Analysis

Author: Joseph Francois, Olga Pindyuk (wiiw)

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1.   Introduction

The European Union is pursuing bi-lateral trade and investment agreements with Canada, and jointly with Armenia, Georgia and Moldova. An agreement with Canada means the EU will have agreements with two of the three members of the North American Free Trade Agreement (NAFTA). There has been informal discussion of a possible agreement with the United States, the third and primary pillar of NAFTA, though no formal negotiations are underway. The potential impacts of a EU-US agreement are substantial.

This study examines the economic impact on Austria of three new EU free trade agreements: (1) an EU-US agreement; (2) an EU-Canada agreement; and (3) an EU-Armenia/Georgia/Moldova agreement. This is done with a computational model of the global economy. The trade agreements are modeled as a mix of preferential tariff reductions and reductions in non-tariff measures. Non-tariff barriers affect both goods and services. They have emerged as a major focus on the most recent generation of trade agreements.

2.   Economic context

The majority of Austria's exports are destined for the EU Single Market. From Table 1 below, 68 percent of Austrian exports of goods and services on a gross value basis are destined for other

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EU Member States. However, another 7.1 percent are destined for the United States. When we focus on extra-EU exports, the United States accounts for 23 percent of Austrian exports. Together, Canada and the United Stated account for 25 percent of extra-EU exports, and 7.8 percent of total exports.

To put the value in perspective, France accounts for 3.4 percent of Austrian goods and services exports, Britain accounts for 3.5 percent, Italy accounts for 7.5 percent, and German accounts 29.9 percent. This means that the NAFTA economies, collectively, are more important than France and Britain combined as a trading partner, though substantially less than Germany. For Germany, the US is comparable to France, Italy, Britain (all between 7 and 8.5 percent of German exports), and twice as important and China. In contrast, Armenia, Georgia and Moldova, while of political importance, are substantially smaller as trading partners, and an FTA with them is not likely to have substantive effects on the Austrian economy. Table 1 also reports shares in a value added basis. These estimates are based on the Austrian (and European) value added content of exports. On this basis, the United States is somewhat less important for Austria, but more important for the European Union as a whole.

Table 1

Export Percent Shares, 2007

	EU	USA	Canada	Georgia, Moldova Armenia
gross exports				
Austria	68.720	7.197	0.641	0.098
EU26	63.340	8.050	0.885	0.077
extra-EU gross exports				
Austria		23.009	2.048	0.196
EU26		21.959	2.413	0.197
exports on a value added basis				
Austria	68.473	6.566	0.613	0.062
E26	61.676	8.435	0.936	0.587
share of GDP exported (value added)				
Austria	22.238	2.133	0.199	0.020
E26	14.815	1.953	0.217	0.014

Source: own calculations from model database

Sector structures of Austria's exports differ greatly by various trading partners (Tables with the data on exports structures are presented in the main report). In the country's exports to the US it is motor vehicles that account for the biggest share (34.4%) – in contrast to exports to the EU, where motor vehicles account for only 12.8%. Insurance services are another sector, exports share of which is much higher in trade with the US, than in trade with the EU (4.2% versus 0.4%).

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Chemicals and metals are less important for Austrian exports to the US or Canada as compared to exports to the rest of the EU.

Exports to Canada, as well as exports to Georgia and Moldova, are dominated by other machinery (again the export shares are much higher than in trade with the EU). Second biggest exporting sector in trade with Canada is motor vehicles. Chemicals and processed foods account for quite significant shares of Austrian exports to Georgia. Exports to Armenia are concentrated mainly in metals and metal products (83.7% of total exports to this country).

Accounting for intermediate linkages in the Austrian economy shows that shares of business services and other services in total exports are much higher than judging by gross value structure (by as much as 10.3 p.p. and 5.3 p.p. respectively). At the same time, motor vehicles, other machinery, and chemicals appear to play less important role in exports – their shares in total exports value added are 4.8%, 12.5%, and 6.8% respectively, as compared with 12.6%, 18.0%, and 10.1% respective shares in gross exports value.

3.   Policy context

The most recent set of bilateral and regional trade agreements has emphasized non-tariff measures. This includes not only EU centered agreements (such as ongoing EU-Canada negotiations) but the negotiations surrounding the Trans-Pacific Partnership as well. Table 2 below summarizes the main elements of the trade agreements modeled in this study. This includes tariff reductions, but also non-tariff barrier reductions. Tariff reductions in the policy experiments are based on actual applied tariffs as reported by the WTO and UNCTAD. Non-tariff barrier estimates are based on recent studies of NTMs. These are reported in Table 2 as reductions in barriers comparable to trade cost reductions (as a percent of the value of traded goods and services).

As noted in the ECORYS (2009) study, focusing on the total existing level of barriers to trade can be misleading. This is because estimated cost impacts include barriers that cannot be reduced. Based on comparison of barriers affecting intra-EU trade, relative to extra-EU trade, a rough rule of thumb is that half of total estimated barriers can actually be reduced through negotiations. This means, for example, that the 5.9 percent barrier reductions by the US in the context of a EU-US agreement follow from removing half of barriers leading to total trade costs of 11.8 percent.

More details on the modeled reductions in trade costs for the US, EU, and Canada are provided in Table 3. These are based on a combination of elements following from the original ECORYS (2009) study. The first is a rough estimate that of barriers in place roughly half are "actionable," meaning they can actually be addressed in negotiations. A second point is that roughly half of those barriers that are actionable relate to increased trade costs, and half to barriers. We model a reduction of 50% in actionable barriers to trade.

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Table 2

Export barrier reductions if FTAs are implemented percent of value of made of goods/services

	tariffs	NTMs goods	NTMs services
US-EU			
US barriers	1.714	5.936	2.641
EU barriers	3.397	6.232	2.081
Canada-US			
CA barriers	4.297	5.575	7.277
EU barriers	3.128	6.232	2.081
Armenia/Moldova/Georgia-EU			
Georgia barriers	6.631	16.549	9.765
Moldova barriers	2.989	16.549	9.765
Armenia barriers	4.175	16.549	9.765
EU barriers	0.957	6.232	2.081

Source: model database. GEO,MDV,ARM NTMs are from FSU estimates.

Table 3

EU, US, and Canadian NTM reductions

	USA	Canada	EU27
NTMs for goods, percent reduction	10.5		
Processed foods	2.8	7.0	8.4
Textiles and clothing	0.0	2.8	3.0
Wood products	0.0	0.0	5.4
Paper pulp publishing	3.3	0.0	3.4
Chemicals	7.5	3.7	3.7
Metals and metal products	6.5	7.5	5.8
Electrical machinery	12.3	7.0	5.4
Motor vehicles and parts	10.1	12.3	12.5
Other transport equipment	6.3	9.4	7.8
Other machinery	5.9	5.9	6.9
average goods	10.5	5.6	6.2
NTMs for services, percent reduction			
Transport	4.2	6.2	3.6
Finance	12.2	8.1	9.6
Insurance	13.1	5.0	15.0
Business services	10.1	7.5	6.2
Communications	8.8	6.6	7.2
Construction	11.0	8.6	3.1
Personal services	10.1	7.5	6.2
Other services	2.1	8.6	7.5
average services	9.0	7.3	7.3

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As can be seen from Table 3, the biggest decline in NTMs is envisaged on the side of the US, both for services and goods. On average, NTMs for goods are expected to be cut relatively more than the ones for services in the case of the US. Canada and the EU, on the contrary, are likely to decrease barriers to services to a larger extent, than to goods, In terms of sectors the US are expected to introduce the biggest reductions to NTMs in finance and insurance services, and in electrical machinery and motor vehicles in manufacturing. Canada is likely to liberalize the most its construction and other services trade, and trade in motor vehicles and other transport equipment. NTMs for motor vehicles, processed food, and other transport equipment will be decreased the most in the EU's manufacturing as well; in services, it is insurance and finance which should face the highest NTMs reduction.

4.   Estimated Effects

The analysis of the impact of each trade agreement on Austria is based on the application of a multi-sector, multi-region computational model (known as a computable general equilibrium or CGE model). The policy experiments involve tariff and NTM reductions as summarized in Tables 2 and 3. The model includes investment effects (i.e. changes in investment levels following changes in economic policy). It also includes a long-run labor market closure linking employment levels to productivity and wages.

Table 4

Summary of Impacts on Austria

	EU-US agreement	EU-Canada agreement	EU-Georgia Moldova agreement
Summary, effects on Austria			
National income, million dollars	5,568	684	95
National income, percent	1.744	0.215	0.030
Less skilled labor			
change in employment, percent	0.528	0.065	0.010
change in wages, percent	1.059	0.131	0.019
More skilled labor			
change in employment, percent	0.511	0.064	0.009
change in wages, percent	1.025	0.129	0.019
Change in capital stock, percent	3.761	0.481	0.067

Source: model estimates

From Table 4, the greatest impact follows from a EU-US agreement. This is not surprising, given the relative size of the economies involved. Critically, the lowering of NTMs leads to increased labor productivity, higher wages, and a combined 0.6 percent increase in employment. The reason for the strong boost in labor productivity (and so wages and

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employment) follows from the nature of NTMs. While they involve a share (roughly half) accruing as rents linked to barriers, roughly half of the price impact of NTMs follows from increased costs. From Table 2, this means that a 5.9 percent US barrier reduction for NTMs affecting goods, this implies a roughly 2.45 percent cost reduction (productivity gain) linked to reductions in regulatory and procedural barriers that raise costs.

Overall, the combined impact of the FTAs studied is positive. If implemented collectively, we estimate a 2.0 percent long-run gain to Austrian GDP. Much of this follows from investment response. Static gains are roughly 0.4 percent of GDP. The remaining 1.6 percent follows from increased levels of investment in Austria (a 3.76 percent increase as reported in Table 4). The investment follows from increased productivity, particularly as NTMs for good are reduced.

The productivity gains from NTM reduction mean a combination of increased wages, employment, and capital stocks for the Austrian economy, overall. As discussed in the main report, the employment and investment response varies by sector.

Table 5

Estimated Changes in Output, Employment, and Exports from all three FTAs

	Output	More skilled workers	Less skilled workers	Exports	Imports
Agr forestry fisheries	1.049	0.907	0.899	0.05	3.26
Other primary sectors	0.672	0.579	0.572	-0.23	0.6
Processed foods	2.460	1.069	1.035	4.51	2.65
Textiles and clothing	3.409	1.698	1.661	4.21	2.24
Wood products	1.136	-0.384	-0.420	0.83	1.95
Paper pulp publishing	1.456	-0.226	-0.262	0.73	1.99
Chemicals	0.264	-1.043	-1.079	0.6	2.72
Metals and metal products	1.544	0.317	0.280	2.02	3.32
Electrical machinery	1.406	0.294	0.257	1.62	2.77
Motor vehicles	12.668	9.782	9.742	13.29	6.96
Other transport equipment	-0.835	-1.803	-1.839	2.34	5.93
Other machinery	1.991	0.728	0.691	2.4	4.09
Other goods	-0.648	-1.947	-1.983	-1.8	4.99
Transport	0.602	-1.339	-1.385	0.94	3.1
Finance	1.938	0.571	0.534	2.34	2.82
Insurance	2.218	0.753	0.716	3.9	3.29
Business services	2.812	0.253	0.216	2.59	0.73
Communications	2.122	0.283	0.246	1.77	1.62
Construction	3.828	1.790	1.749	0.82	4.36
Personal services	1.827	0.568	0.531	0.89	2.44
Other services	1.737	0.664	0.624	0.46	2.34

Source: model-based estimates

Table 5 presents a summary of modeling results in the sector breakdown. More detailed results with effects of individual FTAs can be found in the main report.

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The greatest increases in Austrian output occur in motor vehicles (reflecting US barrier reductions), followed by a broad increase in service sector production (averaging around 2.5 percent across service sectors). Relative employment rankings map closely to changes in output by sector. The motor vehicles and parts sector sees the greatest increase in percent terms (over 9 percent for both more and less skilled workers). However, in terms of sign, we see more sectors where jobs are lost. This includes chemicals, wood and paper, and other transport equipment. In these sectors, we see increased capital intensity, partly in response to rising wages. As overall employment and wage levels go up, there is an incentive in all sectors for a shift toward capital intensity. Indeed this shift, in general equilibrium, reinforces and supports the ability of the economy to provide more overall employment, and at higher wages, under the policy experiments.

The country's exports grow in all the sectors apart from other primary sectors and other goods, the increase being most visible in motor vehicles (13.3%), processed food (4.5%), and textile and clothing (4.2%). The bulk of the effect comes from decrease of NTMs in trade with the US. The impact of tariffs decrease on Austrian exports was noticeable primarily in textiles and motor vehicles exports to the USA.

In Austrian imports, the highest increase takes place in motor vehicles (7%), other transport equipment (5.9%), other goods (5%), and construction (4.4%). As in the case of exports, the FTA with US is driving the results, primarily decrease in NTMs with respect to the US merchandise imports. FTAs with Armenia, Georgia, and Moldova do not cause significant impact on overall Austrian imports