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EU-ENLARGEMENT AND BEYOND: A SIMULATION STUDY ON EU AND RUSSIA INTEGRATION

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Abstract: This paper examines the economic effects of the opening of the Russian Federation. The analysis carried out in the paper is two-fold. First we simulate the impact of the eastern enlargement of the EU and, second, we analyse how deeper integration between the EU and Russia contributes to this. The analysis is carried out with GTAP computable general equilibrium model. We find that there is a trade-off between the two roads of European integration arrangements. Eastern enlargement seems, even in its very deep form, be beneficial for all EU regions without causing substantial welfare losses outside the Union. EU-Russia integration, on the other hand, has different impact. To be beneficial for Russia free trade between the EU and Russia requires improved productivity in the latter, which may be due to better institutions or increased FDI. This might make the negotiations of the agreement cumbersome and if agreed its implementation difficult.

Key words: Integration, Free Trade Agreement, GTAP, EU, Russia

Tiivistelmä: Tämä tutkimus tarkastelee Venäjän ja EU:n välisen integration taloudellisia vaikutuksia. Analysoimme aluksi EU:n itälaajenemisen vaikutuksia ja edelleen EU:n ja Venäjän tiiviimmän integroitumisen vaikutuksia. Analyysi perustuu yleisen tasapainon GTAP-mallisimulointeihin. Tulosten mukaan itälaajeneminen lisää koko laajentuneen EU:n taloudellista hyvinvointia samalla vähentämättä muun maailman hyvinvointia. EU:n ja Venäjän välisen integraation vaikutukset ovat erilaiset. Hyödyttääkseen Venäjää tiiviimpi integraatio edellyttää tämän tuottavuuden paranemista, joka voi seurata institutionaalisesta kehityksestä tai ulkomaisista suorista sijoituksista.

Asiasanat: Taloudellinen integraatio, vapaa kauppa, GTAP malli, EU, Venäjä

Contents

1. Introduction

EU enlargement will change European trade relations significantly. As the major part of the continent belongs to the EU's trade policy regime the question how enlarged EU organizes its trade relations with the rest of the continent becomes more important. One of the key issues with this respect is the relationship between the EU and Russia. A full-membership is here not an option but to avoid marginalization the EU should adopt an open attitude towards the rest of the continent in its external commercial policy.

With regard to Russia an obvious starting point would be a free trade agreement. This however diverts trade and investments from the rest of the CIS countries. There is a danger that the approach that is too concentrated to Russia will marginalize these countries. Hence the EU should adopt a broader approach, which makes EU-CIS free trade as an obvious candidate for future trade relations.

In this paper, we examine the economic effects of widening and deepening EU-integration from the Russian economy's viewpoint and how deeper EU-RF integration might contribute to these effects. The next stage in EU-integration will be the eastern enlargement, which widens the Internal Market (IM) to an area having a number of consumers almost twice as large as in the United States. The expansion of the IM has an important impact on Russia as it accounts approximately for half of her total exports.

A common fear related to the EU enlargement is that it potentially marginalizes European economies that are left outside. This argument was used before the Helsinki summit where it was decided to extend the membership negotiations from the Luxembourg group (Hungary, Poland, Czech Republic, Estonia and Slovenia) to all CEECs plus Cyprus and Malta. Adoption of non-discriminating measures was, correctly, seen as a way of giving equal opportunities for all candidate countries to proceed with necessary economic and institutional reforms with having a more credible promise of entry to the EU within reasonable time.

More generally the problem is related to the hub-and-spokes nature of the Europe Agreements. Hub-and-spoke design of trade agreements[1] tends to marginalize spokes since trade barriers between the spokes tend to remain higher than in trade between the hub and a spoke. This in turn diverts investments and trade from the spokes towards the core of the system. Therefore, trade literature usually suggests organizing different levels of trade agreements like concentric circles[2] (for eastern enlargement see Baldwin 1994).

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[1] Bhagwati et al. (1998) call the system of European trade agreements a European spaghetti bowl.

[2] Or like a wedding cake as Baldwin (1994) puts it.

For European integration this could mean that the EMU forms the core circle, the Internal Market the next, then the Customs Union with a possibility for unilateral membership for EU-outsiders and, finally, a free trade area of the EU plus the rest of European countries (see Sapir 1997, 2000). For the time beyond the Eastern enlargement this question remains relevant since it is likely that Russia and other CIS countries become spokes of an enlarged Union.

Eastern enlargement is likely to affect Russian trade at least in three ways. First, lower trade barriers within the IM divert imports from Russia to intra-IM trade. This is because lower trade barriers within the IM favour IM-based exporters in terms of relative prices. This has a negative impact on Russian exporters but also from the viewpoint of the EU member states it creates welfare loss. The effect is likely to be rather small, though, since trade between the current incumbent member states and candidate countries is relatively free due to Europe Agreements. Therefore, the impact of expanding EU membership should not contribute significantly to trade diversion. Second, as Russian exporters are hit by the relative price changes and as the IM is an important market area for them, it is likely that without any further liberalisation of trade Russian exporters face a negative terms-of-trade effect. This yields a welfare gain for the IM and a loss for the Russian economy. Third, within the IM, lower trade barriers create trade. This gives an additional welfare gain for the EU countries but might also contribute positively to Russian domestic economy. In fact, there is some evidence that EU-integration has created trade also externally through increased demand. In the case of eastern enlargement this effect is likely to be boosted by the fact that the current EU member states pursue a more liberal trade policy towards Russia than the candidate countries that will adopt the EU norm after the enlargement. The direct total effect on Russian economy is the sum of these three effects.

Lower trade barriers within the IM intensify intra-IM substitution and improve EU-based firms' efficiency. As trade barriers between candidate countries and the EU are already quite low improved substitution is likely have much more substantial role in shaping events than the direct effects that are due to removal of visible trade barriers.

Eastern enlargement may marginalize Russian economy also via foreign direct investments. Full membership gives CEECs a more favourable position as host countries for FDIs relative to Russia than today. This may, in turn, divert integration and productivity gains.

In this paper, we investigate the above-described effects quantitatively using a computable general equilibrium model. We analyse two different regime changes, first eastern enlargement and, second, a free trade area (FTA) between the IM and Russia. The latter is made for pragmatic purposes. The current release of the model that we are using has former Soviet Union as a block. Therefore, we

left for future work the interesting question of how this differs from a scenario where CIS countries are like spokes to the EU.

In each scenario, we have three sub scenarios. First, we simulate trade liberalization, i.e. enlargement or the EU-Russia free trade area. Second, we assume that in addition to the base impact the substitution between foreign and domestic goods becomes more elastic. This can be interpreted arguing that deeper integration decreases market segmentation. Our third scenario adds a productivity growth to this, which may be due to more intensified competition or increased FDI.

The rest of the paper is organized as follows. The next section introduces the GTAP model and describes the level of aggregation and other assumption we have made. Section 3 describes the current stage of affairs in trade relations between the EU, CEECs and Russia. Section 4 gives a more detailed description of the simulations that we carried out. Section 5 gives the results and, finally, section 6 concludes.

2. GTAP model

The Global Trade Analysis Project (GTAP) modelling framework, developed at the University of Purdue, has become widely applied and well-documented analysis tool in a wide range of topics (there are currently over 400 GTAP applications in the GTAP web page: http://www.gtap.agecon.purdue.edu). The GTAP model is a multi-region, computable general equilibrium (CGE) model. The inter-regional linkages originate from bilateral trade flows, while intra-industry linkages are captured by the regional input-output structure. The GTAP database represents the state of the world economy in a given year. The data covers bilateral trade patterns, structure of production, consumption and intermediate use of commodities and services. This study utilises the latest GTAP database version 5.4. The original data consists of 78 separate regions[3] with each region including 57 different sectors of production. The base year for the data is 1997.

Tables 2.1 and 2.2 show the level of aggregation that was used in the analysis. We aggregated the 78 regions of the GTAP database 5.4 into eight. Since the emphasis of this analysis is in the EU-Russia relationship five out of eight regions stem from this. The three other regions are NAFTA being a relatively important regional arrangement, the rest of the former Soviet Union, which has an important trade link with Russia and the rest of the World. The 57 sectors of production were aggregated into 15. To some extent the aggregation reflects the importance of different sectors for the Russian economy. The main focus of this paper is however in aggregate effects and a detailed analysis of the effects on production sectors is left for future research.

Table 2.1   Regional aggregation in the GTAP model

New Region	Original GTAP
1. CEECN	Poland, Estonia, Latvia, Lithuania, Czech Republic
2. CEECS	Hungary, Malta, Slovakia, Slovenia, Cyprus
3. EUN	Austria, Denmark, Finland, Germany, Sweden
4. EUS	Belgium, France, United Kingdom, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain
5. RUS	Russia
6. rest FSU	Rest of the Former Soviet Union
7. NAFTA	Canada, United States, Mexico
8. ROW	Rest of the world

3 (new regions compared to the previous 5.0 version are: Croatia, Cyprus, Czech Republic, Estonia, Latvia, Lithuania, Albania, Malta, Romania, Slovakia, Slovenia and Russian Federation)

Table 2.2   Sectoral aggregation in the GTAP model

NEW SECTOR	Original GTAP sector
1 Apparell	Leather products, Wearing apparel
2 Coal	Coal
3 Crop	Sugar cane, sugar beet, Cereal grains nec, Crops nec, Oil seeds Processed rice, Paddy rice, Sugar, Vegetables, fruit, nuts, Wheat
4 Chemicals and plastics	Chemical, rubber, plastic prods
5 Metal products	Fabricated metal products
6 GAS	Gas
7 Ferrous metals	Iron and steel
8 Livestock sector	Cattle, sheep, goats, horse, Fishing, Dairy products, Animal products nec, Meat products nec, Raw milk, Vegetable oils and fats
9 Other manufactures	Electronic equipment, Wood products, Metals nec, Mineral products nec, Machinery and equipment nec, Manufactures nec, Petroleum, coal products
10 Oil	Oil
11 Other primary production	Beverages and tobacco products, Forestry, Food products nec, Minerals nec, Plant-based fibers, Wool, silk-worm cocoons
12 Services	Communication, Construction, Dwellings, Electricity, Gas manufacture, distribution, Insurance, Business services nec, Financial services nec, Pub.Admin/Defence/Health/Educat, Recreation and other services, Trade, Water
13 Textiles	Textiles
14 Transport equipment	Air transport, Motor vehicles and parts, Transport equipment nec, Transport nec, Sea transport
15 Paper products, publishing	Wood and paper products

GTAP model computes money metric equivalent of aggregate per capita utility for a region (using the regional household's utility function). The welfare measure is regional household's Equivalent Variation (EV), which is the difference between the expenditure required to obtain the new post-simulation level of utility at initial prices.

3. EU-enlargement: economic structures and trade patterns

On 1 May 2004, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia joined the EU. Bulgaria and Romania that also negotiated for membership were ruled out of any possible adherence plan to the EU the first wave. Bulgaria and Romania have been, however, left with door open for entry at a later date – though not necessarily by their target date of 2007. Henceforth we use abbreviation CEEC10 to denote the group of the new member states.

In the analysis, we divide the new EU member countries into two blocks: CEEC North (CEECN) which includes Poland, Estonia, Latvia, Lithuania, Czech Republic and CEEC South (CEECS) which includes Hungary, Malta, Slovakia, Slovenia, Cyprus. The EU15 was also divided into North and South blocks: EUN (Austria, Denmark, Finland, Germany, Sweden) and EUS (Belgium, France, United Kingdom, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain).

The structure of an average economy in the CEEC10 differs quite significantly from that of the EU15. The CEEC10 has nearly two times higher GDP share of agricultural production than the EU15 average and nearly three times lower per capita GDP than the EU15. Also, as we shall see, the level of trade protection in the CEEC10 is within most sectors much higher than the EU15. In the EU15's imports, the highest pre-entry protection levels towards the CEEC10 were in agriculture, textiles, electronics and chemical products. Otherwise the Europe agreements between the EU15 and CEE-countries have gradually liberalized trade within the current EU25.[4]

We also consider scenario where the enlarged EU forms a free trade area (FTA) with the Russia. A similar asymmetry between the applicant and the union exists as with the EU-enlargement. Russian economy is slightly larger than the CEEC10 one, but still only about 6 % of total EU25 GDP.

Differences in the supply side (in terms of producer cost structures) between Russia, the CEEC10 and the EU indicate that agricultural products (crops + livestock) are relatively more important in the CEEC10, while natural resources, oil and gas are relatively more significant in Russia.

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[4] For detailed import tariff rates between the EU15 and CEEC10 see GTAP database 5.4. The figures can also be obtained from the authors upon request.

Table 3.1   Trade (sum of all goods) - Bilateral Exports shares at Market Prices

	CEECN	*CEECS*	*EUN*	*EUS*	*RUSSIA*	*RestFSU*	*NAFTA*	*ROW*
CEECN	0.03	0.04	0.32	0.23	0.08	0.07	0.07	0.15
CEECS	0.04	0.09	0.34	0.22	0.03	0.02	0.08	0.18
EUN	0.03	0.03	0.15	0.38	0.02	0.01	0.11	0.28
EUS	0.01	0.01	0.20	0.38	0.01	0.00	0.11	0.27
RUSSIA	0.05	0.05	0.14	0.20	0.00	0.17	0.08	0.30
RestFSU	0.06	0.05	0.09	0.13	0.28	0.10	0.06	0.24
NAFTA	0.00	0.00	0.06	0.16	0.01	0.00	0.39	0.38
ROW	0.00	0.00	0.08	0.17	0.01	0.00	0.23	0.49

Source: GTAP database 5.4

Table 3.1 shows the geographical trade patterns of eight different regions that are studied in this paper. An interesting difference between, on the one hand, the EU countries and, on the other hand, the CEE-countries is that for the former the importance of the EUN as a trading partner is greater than the importance of the EUS whereas the opposite holds for the latter. That pattern is explained by the fact that the EUN is defined not so much based on geographical North but based on the new member states' and Russia's share in their trade. Another explanation is that Germany, which is by far the most important trading partner for most CEE-countries, belongs to that group. The EUS contains the other big EU countries, which explains why its share in the rest of the World's and, somewhat surprisingly also is Russia's exports. Noteworthy is also the difference in importance of the rest of the World as an export target between the CEEC10 and the other regions of this study.

4.   Policy scenarios

4.1 The impact of Eastern Enlargement

4.1.1 EU-enlargement (EU1)

Three different EU-enlargement simulations were implemented. The first is a scenario where all bilateral tariffs and export subsidies between the EU and the CEECN (Poland, Estonia, Latvia, Lithuania, Czech Republic) and the CEECS (Hungary, Malta, Slovakia, Slovenia, Cyprus) are abolished, and the EU average common external tariff (CET) is applied to the CEEC group. This scenario is labelled as EU1 in the tables reporting the simulation results.

Changes in tariff rates are higher for the CEEC10 than for EU, which reflects higher degree of pre-enlargement protection in the new member states.

4.1.2 EU-enlargement and internal market (EU2)

The above EU-enlargement simulation did not take into account the fact that the enlargement involves the accession of the new members to the internal market. This will have further effect to these economies via trade, FDI, domestic investment etc. Thus, it is fair to say that to some extent the above simulation underestimates the long run impacts of the enlargement. Accession to the internal market means that number of administrative barriers to trade, as well as number of technical barriers of trade, i.e. minimum requirements, harmonisation of rules and regulations etc., are abolished. Furthermore, it may be argued that risk and uncertainty will be mitigated by the CEEC10 accession to the EU.

To take into account some of these integration effects we did a second EU-enlargement simulation with higher degree of import demand elasticity within the customs union. This meant increasing the Armington elasticities for a number of key sectors. In the GTAP model, the Armington assumption is applied in international trade. The assumption means that commodities with the same name, produced by different countries, are imperfect substitutes. The Armington assumption implies that imperfect substitutes can have different prices in different countries and explains two-way trade between regions. By increasing substitutability between domestically produced and imported good within customs union, we hope to capture some of the internal market effects that further encourage trade within the area. In fact, this scenario attempts to capture reduced market segmentation, which is a likely as the IM removes non-visible trade barriers.

The simulation with increased Armington elasticity values involved re-specifying the old commodity specific elasticity value vector into region-commodity matrix of values. It was assumed that the existing estimates for the elasticity values (ranging from 1.8 to 4.4) were doubled within the CU. The model stability with respect tot he elasticity values was checked by doing series of simulations with less dramatic increases in the elasticity values. Results showed that qualitatively the smaller increases were consistent with the reported case.

4.1.3 EU-enlargement and factor productivity increase within CEECN and CEECS (EU3)

The third EU-enlargement scenario involved implementing the EU2 scenario with additional increase in total factor productivity in the new EU member regions. Labour as well as capital productivity is bound to rise in CEEC group due to increased foreign investment, labour migration, increased competition etc. This simulation involved imposing a 6 % increase in the CEEC factor productivity parameter. It must be emphasised that the 6 % does not correspond to yearly change – rather it is some kind of approximation for a one-shot increased productivity change in the new, post accession, equilibrium.

4.2 RU1-RU3 free trade area between enlarged EU and Russian Federation

The free trade area (FTA) scenario between the Russian Federation and the enlarged EU involved basically the same policy shock simulations as in the above EU enlargement case (removal of bilateral tariffs,[5] Armington elasticity value and factor productivity increase in the FSU). The main difference here is of course that there is no CET constraint on the FSU. These simulations are labelled as RU1, RU2 (Armington) and RU3 (RU2 + factor productivity increase in Russia). In RU2 scenario we doubled Armington elasticities within EU25 + Russia regions.

The point of reference for the below scenarios is the equilibrium data that corresponds to the post enlargement simulation. In the EU enlargement case, on the other hand, the point of reference was the base year equilibrium of the GTAP database.

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[5] A detailed figures on sectoral tariff rate changes can be obtained from the authors upon request.

5. Simulation results from the EU-enlargement and FTA scenarios

Abolishing formal trade barriers affects directly to the relative prices of interme-diate inputs and final goods. Changes in demand for goods from different regions lead to trade creation and trade diversion. Free trade means that prices reflect relative scarcities so that countries can better exploit the gains from trade. Trade creation involves reallocation of production between different regions creating efficiency improvement in overall production. Furthermore, elimination of trade barriers affects terms of trade, that is, the price of exports relative to imports. Abolishing import tariffs will improve terms of trade for countries that export their goods to that market. While such trade of terms improvement may harm domestic production it can welfare improve welfare due to rise of value of its produced goods relative to imported goods.

All results are reported in terms of percentage changes compared to the relevant reference. In the case of EU-enlargement this reference is the GTAP base year (1997) equilibrium. In case of the FTA simulation the point of comparison is the post EU enlargement equilibrium data. It is also worth mentioning that one should read the results more in qualitative terms than attach weight on specific numerical values, which in any case depend on the model's parameter values and the chosen 'business as usual' reference scenario.

Table 5.1 gives the simulation results concerning the total output. With regard to the enlargement scenarios we find the most significant effects on the CEECN row. It is interesting that, in terms of total output, the CEECN obtains substan-tially bigger gains than the CEECS and that the CEECS gains mainly when there is a boost in productivity in the new member states. The impact for the incum-bent EU countries is very small. This confirms the standard result that the new entrants are likely gain from eastern enlargement whereas the incumbents face only negligible effects. In EU1 scenario, which corresponds with the basic simu-lation of Baldwin et al. (1997), the impact for the CEEC10 is smaller. The reason is that we use more recent GTAP database.[6]

In scenario EU2, the CEECN obtain a small additional gain (1.70 – 1.41 percent-age points) but the impact of increased substitutability for the CEECS is practi-cally zero. The additional effect productivity boost is bigger. The gain for the CEECN becomes two-fold and for the CEECS nearly four-fold in the EU3 sce-nario compared to EU1 scenario. From the viewpoint of the EU15, Russia or the

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[6] Baldwin et al. estimated that the effect of the eastern enlargement on CEECs is 1.5 per cent. Also Havlik (2002) argue that this overestimates the impact since Europe Agreements gradually diminish trade barri-ers.

rest of the World scenarios EU2 and EU3 do not change the picture. The impact of eastern enlargement remains negligible.[7]

Table 5.1   *The effects of eastern enlargement and EU-Russian free trade area on GDP volume, % compared to the baseline*

qgdp	eu1	eu2	eu3	ru1	ru2	ru3
CEECN	1.41	1.70	2.81	0.12	0.10	0.11
CEECS	0.40	0.39	1.47	0.07	0.08	0.08
EUN	0.02	0.03	0.03	0.02	0.02	0.02
EUS	0.01	0.01	0.01	0.01	0.01	0.01
RUS	-0.02	0.00	0.00	0.22	0.22	1.30
RestFSU	-0.01	0.02	0.02	-0.08	-0.08	-0.07
NAFTA	0.00	0.00	0.00	0.00	0.00	0.00
ROW	0.00	0.00	0.00	0.00	0.00	0.00

From Russian point of view our simulation results suggest that the impact of eastern enlargement on Russian economy is negligible. This suggests that the fear of Russia's marginalization due to eastern enlargement does not get support from the results.[8]

In sum, the simulations confirm the earlier results: eastern enlargement is beneficial for the CEEC10 and does not harm the rest of the World. What is new in this paper is that we use the most recent GTAP database, which allows us to avoid some data problems that were present in earlier analyses.[9] Moreover, our division of the CEEC10 into two sub-groups clearly demonstrates that the gains from enlargement vary from country to another. According to our results the gains are much bigger in the CEECN than in the CEECS.

With regard to the EU-Russia FTA the impact is positive for Russia's total output. The magnitude is very modest, though. To obtain more considerable output effects a boost in productivity in Russia countries is needed (scenario RU3). This emphasizes the role of FDI in Russia's integration process.

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7 Note that the model that is applied in this study is static and might, thus, neglect dynamic effects of eastern enlargement. Vaittinen (2004) investigates the impact of eastern enlargement using a dynamic version of the model and, indeed, he finds that the gains for the new member states are considerably bigger in the long run. For EU15 the results are, however, rather similar.

8 Note that according to the simulations in Baldwin et al. (1997) Russia gains. One reason behind that is the fact that EU membership liberalizes CEECs trade policy regime towards Russia. Much of this effect has, however, already taken place. For a more recent situation, see discussion in Hamilton (2002).

9 In previous version of GTAP database, the Baltic States were a part of former Soviet Union. Moreover, it was not able to study Russia as a separate unit (see Sulamaa and Widgrén 2003).

For the EU15 the impact of the EU-Russia FTA is also slightly positive having the same magnitude as in eastern enlargement. The new member states gain as well. These findings contradict with our earlier analysis of the EU and CIS integration using the older GTAP database. One can easily argue that the most recent release of the GTAP database is more reliable both in terms of trade barrier data between Russia and the EU and, as mentioned before, in terms of country groupings. Therefore, we may conclude that the output effect of the eastern enlargement and the EU-Russia FTA is positive without causing more than negligible negative impact for the rest of the World. As expected the rest of the former Soviet Union loses a little due to the EU-Russia free trade area but otherwise there are no negative effects. Note, however, that Russia's output gains from deeper integration with the EU are much smaller than the CEECN's gains and about the same magnitude with the CEECS's gains. For the CEECS and Russia it seems that productivity boost is a pre-condition for significant gains from deeper integration with the EU.

Tables 5.2a and 5.2b give the trade effects in our simulations (imports 5.2a and exports 5.2b). Eastern enlargement has significant impact on the CEEC10 trade as their imports and exports increase by more than 10 per cent in all scenarios. As above in output effects, the impact of eastern enlargement is different in the CEECN and the CEECS. In scenarios EU2 and EU3, the increase in exports exceeds the increase in imports in the CEECN whereas the opposite holds for the CEECS. In the base enlargement scenario, imports exceed exports in both regions, though. For EU15 the trade effects are much smaller the bigger impact being in the EUN.

Table 5.2a   Volume of merchandise imports by region, % compared to the baseline

qiwreg	eu1	eu2	eu3	ru1	ru2	ru3
CEECN	22.77	30.82	32.19	1.86	2.39	2.47
CEECS	13.20	18.69	19.88	0.95	1.33	1.37
EUN	0.65	1.54	1.57	0.28	0.48	0.49
EUS	0.10	0.43	0.43	0.14	0.26	0.25
RUS	-0.58	-0.09	-0.07	11.67	11.78	14.14
RestFSU	-0.14	0.38	0.40	-3.26	-3.20	-3.07
NAFTA	0.12	-0.07	-0.08	-0.06	-0.05	-0.07
ROW	-0.14	-0.06	-0.07	-0.13	-0.11	-0.14

Table 5.2b   Volume of merchandise exports by region, % compared to the baseline

qxwreg	eu1	eu2	eu3	ru1	ru2	ru3
CEECN	14.83	35.79	35.98	-0.62	0.99	1.03
CEECS	5.08	14.16	14.40	-0.26	0.38	0.40
EUN	0.58	1.28	1.32	0.03	0.24	0.27
EUS	0.26	0.48	0.50	0.06	0.17	0.19
RUS	0.16	0.21	0.23	7.46	7.47	6.55
RestFSU	0.09	0.12	0.16	0.48	0.48	0.44
NAFTA	0.19	0.17	0.19	0.08	0.08	0.12
ROW	0.16	0.15	0.17	0.05	0.05	0.09

In the EU-Russia FTA scenarios, the effects are qualitatively similar with the eastern enlargement. Russian exports and imports increase substantially. The EU countries' imports increase mainly in the CEEC10, which is caused by lower trade barriers towards Russia. The imports of EU15 do not increase as much reflecting the economic size asymmetry between the EU and Russia.[10]

10We also carried out calculations where in multiplied the armington elasticities by 2,3,4,... We noted that the effect of increasing the price responsiveness of import demand displays decreasing returns of the multiplication factor, that is, increasing the elasticity results in export growth at falling rate of increase. Hillberry et. al. (2001) argue that the role of the distinct national preferences, that is the Armington elasticities, is in fact exaggerated in CGE models in general, as these limit modelled responses to trade policy changes. The authors point out that in most CGE models, including the GTAP model, the choice of the Armington elasticity values relies on existing time series econometric literature estimates. There is, however, a growing consensus (see for example Galloway et al. (2000)) that the time series estimates are too low and hence the use of these estimates in CGE models contribute to the fairly small economic responses in face of trade policy simulations. The detailed calculations are not reported here but can be obtained from the authors upon request.

Table 5.3   Terms of trade change, % compared to the baseline

tot	eu1	eu2	eu3	ru1	ru2	ru3
CEECN	1.76	-1.68	-1.70	1.23	0.91	0.94
CEECS	2.50	1.11	1.09	0.63	0.54	0.56
EUN	0.02	0.09	0.10	0.20	0.19	0.20
EUS	-0.05	0.00	0.00	0.09	0.09	0.09
RUS	-0.27	-0.06	-0.02	-1.57	-1.52	-1.39
RestFSU	-0.06	0.21	0.21	-2.08	-2.05	-1.94
NAFTA	-0.04	-0.02	-0.02	-0.02	-0.01	-0.02
ROW	-0.05	-0.02	-0.02	-0.07	-0.06	-0.07

Table 5.3 gives the terms of trade effects. For the enlargement scenarios we expect that the EU member states face an improvement whereas Russia's terms of trade is likely to deteriorate. The results confirm this with exception of EU2 and EU3, where the CEECN faces a terms of trade deterioration. Deterioration of the CEECN terms of trade is due to better enhanced substitution and reduced market segmentation within the IM. Note that in relative terms enlargement boosts the CEECN trade with the EU15 much more than the CEECS trade with the EU15 making the former group more trade-oriented towards the IM. A more intensified competition in their exports market seems to off-set the gains from lower trade barriers. Note that the additional impact of better substitutability and productivity boost goes into the same direction in the CEECS as well.

Regarding the EU-Russia free trade area, the EU15 and the CEEC10 face qualitatively similar positive terms of trade effect. In particular, EU-Russia free trade area improves the CEECN-countries' terms of trade. The improvement of terms of trade in the CEECS in roughly a half of that and in the EU15 it is small but, still, positive. Somewhat surprisingly Russia's terms of trade deteriorates in all three EU-Russia FTA scenarios. This is also the main reason why Russia's economic welfare decreases as a result of free trade with the EU (see table 5.4).

Table 5.4 shows the regional economic welfare effects of different arrangements in Europe. Welfare is measured by equivalent variation relative to total output. Figure 5.1 summarizes the welfare effects at regional level. The figure gives the welfare effects for EU25 (divided into four sub-groups), Russia, the rest of the FSU, NAFTA and the rest of the World.

The overall welfare effects of eastern enlargement are, as expected, small for the incumbent countries but quite significant for the new entrants. In basic enlargement scenario EU1, the EUN obtains a welfare gain but the EUS loses economic welfare.

Table 5.4   *Economic welfare effects of EU enlargement and the formation of EU-Russia FTA, EV, mill. USD*

EV	eu1	eu2	eu3	ru1	ru2	ru3
CEECN	2618.36	759.60	2273.70	1099.28	842.87	877.35
CEECS	2383.53	1317.95	2608.31	656.00	590.15	612.53
EUN	658.91	1566.60	1632.40	2096.73	1984.42	2041.40
EUS	-434.32	674.29	698.67	1911.82	1896.32	1946.95
RUS	-323.06	-52.45	-20.90	-385.59	-333.08	4538.40
RestFSU	-42.63	123.04	122.50	-1053.64	-1036.40	-975.70
NAFTA	-617.52	-135.26	-184.39	-266.83	-164.60	-229.06
ROW	-1745.71	-344.02	-398.87	-2096.30	-1819.21	-2054.03

The simulation results regarding the EU-Russia free trade area are asymmetric. All sub-regions of the EU25 gain in all three scenarios. From Russian point of view the result is not as positive. In order to gain from the EU-Russia free trade area Russia needs a productivity boost (scenario RU3). This might be obtained via better institutions and/or more FDI.

Figure 5.1 summarize the welfare effects at region level that is used in our analysis and figure 5.2 at more aggregated level. The figures demonstrate that both the eastern enlargement and EU-Russia free trade area are beneficial for the EU25 as an aggregate. At more disaggregated region level eastern enlargement is not beneficial for the EUS in the base scenario but turns to be beneficial if substitutability of imports and exports goods is improving or if there is a productivity boost in the new member states' economies.[11] From Russian point of view the EU-enlargement effects are negligible and that holds for the rest of the former Soviet Union as well. The losses for NAFTA and the rest of the World are in absolute terms somewhat bigger but in per capita terms they are very small.

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[11] In a recent paper, Liapis & Tsigas (1998) find the EU enlargement yields a small welfare loss for the rest of the world but a small welfare gain if CAP is reformed.
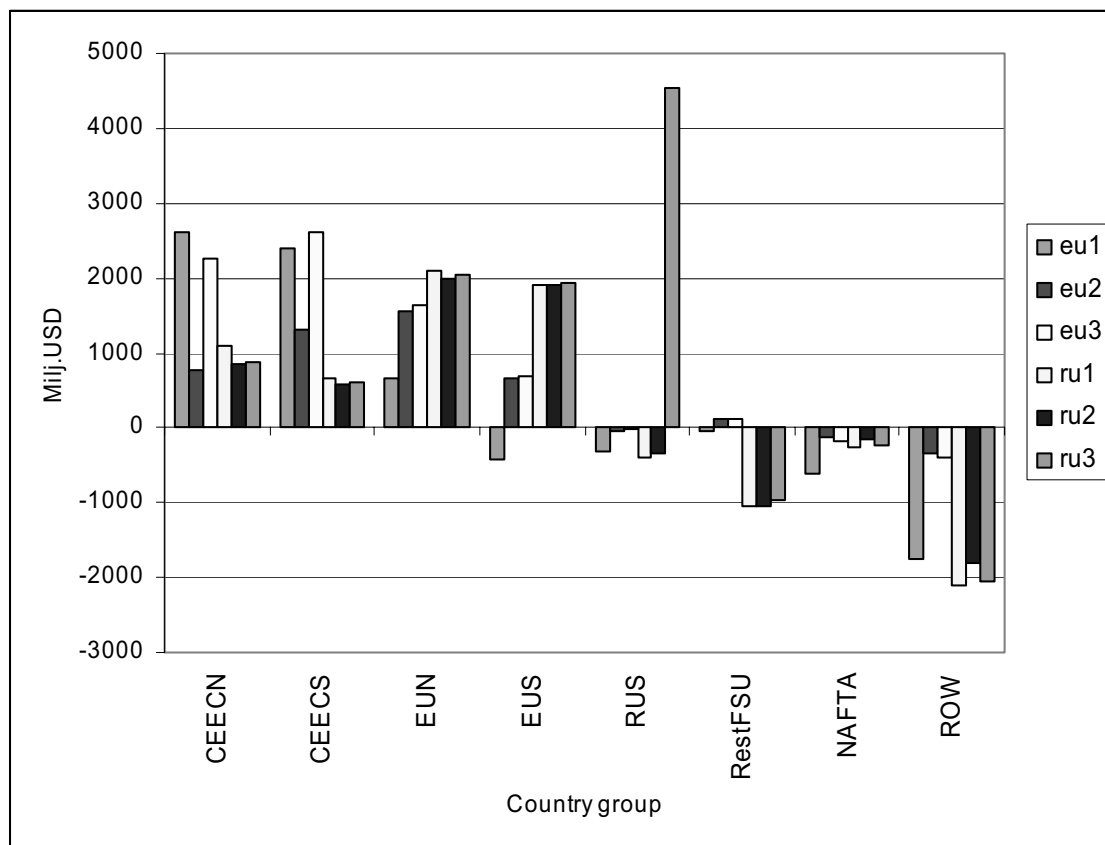
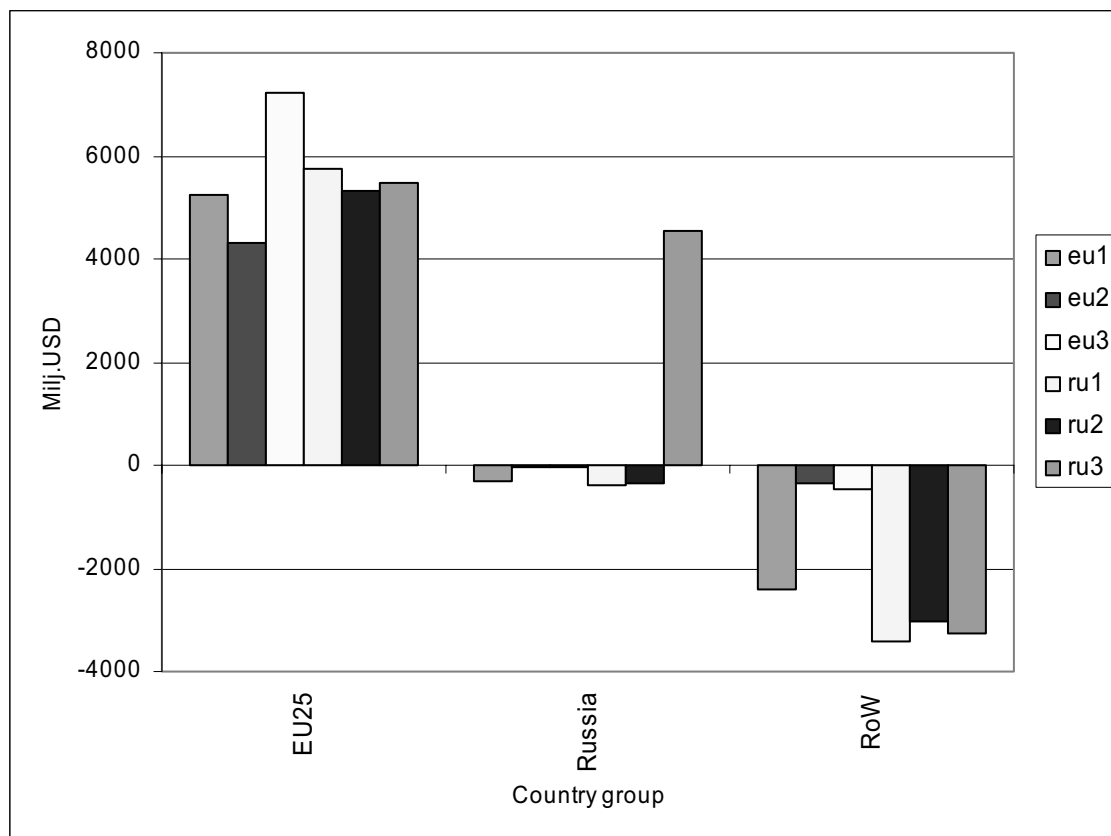*Figure 5.1   Welfare effects of different trade agreements (EV mUSD)*

Figure 5.2   Welfare effects of different trade agreements in three different regions (EV mUSD)

The EU-Russia free trade area has somewhat different implications. First, while the EU25 gains from this arrangement for Russia it is beneficial only if its economy faces a productivity boost. That would substantially change the picture. Second, from the rest of the World's point of view, the additional losses are somewhat bigger than from eastern enlargement alone but still very small in per capita terms. The additional losses for NAFTA are of the same magnitude but for the rest of the former Soviet Union they are much bigger than in eastern enlargement. Third, the simulation results suggest - somewhat surprisingly[12] - that all sub-regions of the EU gain from the EU-Russia free trade. This is in sharp contradiction with our earlier results that used an older GTAP database and less appropriate regional grouping.

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[12] See Sulamaa and Widgrén (2003) for details. In the earlier findings a free trade area among the EU25 and the Commonwealth of Independent States (CIS) turned out to be only slightly beneficial for CIS-countries but not beneficial for large parts of the EU and the rest of the world.

6.   Conclusions

In this paper, we have simulated the economic effects of eastern enlargement and the EU-Russia free trade area. The main emphasis of the paper is in effects to Russian economy. The simulations were carried out with GTAP computable general equilibrium model using the most recent GTAP database, which in contrast with the earlier versions has an appropriate regional division of the global economy.

We distinguished between three variants of dealing with integration effects. The baseline integration scenarios (the eastern enlargement or the EU-Russia free trade area) cover only reductions in trade barriers. Then, as second stage, we assumed increased substitution between import goods and their domestic counterparts. The third pair of simulations assumed improved productivity in either the new EU member states (eastern enlargement) or the new EU member states and Russia (the EU-Russia free trade area).

The eastern enlargement scenarios confirmed the usual result that the incumbent EU countries gain very little but new entrants might benefit substantially especially if we assume all the above mentioned integration effects. This would give almost 3 per cent output gain for the new EU-member states in terms of their GDP.

From the EU25's point of view the EU-Russia free trade area is, like the eastern enlargement, beneficial for all sub-regions of the EU. The same cannot, however, be concluded from the Russian point of view. The baseline agreement is not beneficial to Russian economy mainly due to deteriorating term of trade. Without significant improvement in productivity Russia does not obtain economic welfare gains from free trade agreement with the EU25. This might make its implementation problematic or even its feasibility questionable.

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