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IMPACT OF MEMBERSHIP IN REGIONAL TRADE AGREEMENTS ON INTERNATIONAL TRADE

Abstract: In this paper the impact of membership in 16 RTAs on trade is analysed, both among the member states and with the rest of the world. The analysis covers the period 2000–2010. The gravity approach is used with standard variables (e.g. GDPs of the trading partners, as well as the geographic and economic distance between them), supplemented with variables relating to membership in regional trading agreements (RTAs). In this paper – differently than in the literature – several variables for participation in RTAs are used, rather than just one dummy variable.

The remainder of the paper is organized as follows. In the first part the basic data of these RTAs, which are later tested empirically, are commented on. In the second part the most important conclusions from the literature on the impact of RTA membership on international trade are analysed. The results of previous empirical studies are discussed as well. In the third part the methodology used in the empirical test is described. The fourth part contains empirical analyses and conclusions, and the paper ends with some final remarks.

Keywords: economic integration, regional trading agreement (RTA), discriminatory liberalization of trade.

JEL classification: F14, F15.

WPŁYW CZŁONKOSTWA W REGIONALNYCH UGRUPOWANIACH INTEGRACYJNYCH NA HANDEL MIĘDZYNARODOWY

Streszczenie: W artykule analizuję wpływ członkostwa w 16 RTA istniejących na różnych kontynentach na wymianę towarową między ich państwami członkowskimi oraz państw członkowskich z resztą świata. Analiza obejmuje lata 2000–2010. Wykorzystuję

model grawitacji ze standardowymi zmiennymi (m.in. PKB partnerów handlowych oraz odległość ekonomiczna między nimi) uzupełnionymi zmiennymi ilustrującymi członkostwo w RTA. Inaczej niż zwykle w literaturze przedmiotu wprowadzam wiele zmiennych opisujących udział w RTA, nie zaś pojedynczą zmienną zero-jedynkową.

W pierwszej części artykułu analizuję podstawowe dane dotyczące 16 RTA, które w dalszych częściach opracowania poddaję testom empirycznym. W drugiej części odnoszę się do najważniejszych wniosków z literatury dotyczącej wpływu członkostwa w RTA na handel międzynarodowy. Tam też analizuję wyniki wcześniejszych testów empirycznych znanych z literatury. W części trzeciej opisuję metodykę badania empirycznego. Część czwarta zawiera analizę empiryczną i wnioski z niej. Część piątą stanowią uwagi końcowe.

Słowa kluczowe: integracja gospodarcza, regionalne ugrupowania integracyjne, dyskryminacyjna liberalizacja handlu.

Introduction

The following group of regional trading agreements (RTAs)¹ are analysed: AFTA, ANZCERTA, APTA, CACM, CEMAC, CIS, COMESA, ECO, ECOWAS, EFTA, EU, GCC, LAIA, MERCOSUR, NAFTA, and SADC². The empiri-

¹ In the literature these agreements are sometimes called “preferential trade agreements” (PTAs). Even in the publications of the World Trade Organization both names (RTA and PTA) have appeared in different years in similar contexts. However, the newest tendency is to use the name RTA. I am aware of the fact that nowadays RTAs usually contain regulations on other forms of economic co-operation than just trade in goods (with the most obvious candidates being trade in services, FDI flows, migration issues, environmental and property rights protection). Therefore, though the WTO is notified by RTAs as to their preferential trade (in goods and services), in reality, RTAs cover the other types of preferences as well. I use the term RTAs for all regional agreements even if their subject is broader than just trade and their member states do not belong to the same geographic region.

² The full names of these groups are as follows (with additional information being added in brackets): AFTA (ASEAN Free Trade Area, located in East Asia), ANZCERTA (Australia New Zealand Closer Economic Relations Trade Agreement), APTA (Asia-Pacific Trade Agreement, East and West Asia), CACM (Central American Common Market, Central America), CEMAC (Economic and Monetary Community of Central Africa), CIS (Commonwealth of Independent States, Eurasia), COMESA (Common Market for Eastern and Southern Africa), ECO (Economic Cooperation Organization, Asia, Europe, Middle East), ECOWAS (Economic Community of West African States), EFTA (European Free Trade Association), EU (European Union), GCC (Gulf Cooperation Council, Middle East), LAIA (Latin American Integration Association, Nord and South America, The Caribbean), MERCOSUR (Mercado Común Sudamericano,

cal tests as well as analyses of the statistical data were carried out in respect of the same period: 2000–2010.

The analysed RTAs differ, among other things, in respect of their time of creation, depth of integration, economic potential, wealth and intensity of international economic co-operation. These RTAs were chosen for analysis in order to represent the whole world, which includes a growing number of RTAs. As they are located on every continent these RTAs exemplify the global dimension of economic integration.

Several differences between the analysed RTAs are commented on. This allows their diversity to be visualized and helps to explain the results of the empirical test. The first difference analysed is depth of integration; represented by the RTA forms recognised by the World Trade Organization (WTO) and the intensity of the internal exports within an RTA (Table 3). The second difference analysed is economic potential estimated according to the share of the RTAs in world GDP (Table 1). The next difference analysed is the wealth of RTA populations using approximations of GDP *pc*. Also analysed is the intensity of an RTA's international economic relationships represented by the share of an RTA's exports in world exports (Table 2) and the internal exports of the RTA (Table 3). The analysis of economic relationships is restricted to international trade³ for three reasons. Firstly, there are time series of disaggregated data available on this subject. Secondly, the WTO analyses the integration process mainly through international trade, meaning such aspects as the international movement of production factors are not covered by WTO regulations. Thirdly, the empirical tests based on the gravity approach that are conducted in this paper concern international trade.

1. Basic economic data on the analysed RTAs

To begin with a short analysis of the forms of integration within the framework of WTO regulations is carried out. The WTO recognizes only a few aspects of economic integration⁴, judging its depth mainly through international trade

South America), NAFTA (North American Free Trade Agreement), SADC (Southern African Development Community); for more see: [www.wto.org].

³ In this paper I exclusively analyze the international trade in goods (or only exports). This means that I exclude the international trade in services.

⁴ I exclude the non-economic aspects of economic integration, though I recognize their importance.

liberalization. In a WTO setting the differences among the analysed RTAs look smaller than in reality, as the WTO recognizes just 5 forms of institutional integration: PSA, FTA, CU, FTA+EIA and CU+EIA⁵. Among the analysed RTAs there are 3 PSAs, 4 FTAs, 4 CUs, 3 FTA+EIAs and 2 CU+EIAs⁶. Such a framework evens out the differences among the analysed RTAs. For example, the EU has the same WTO classification as MERCOSUR (CU+EIA); even though the EU is much more deeply integrated (nineteen EU members having entered a monetary union).

The RTAs analysed were created at different times, with both the oldest being European RTAs (the predecessor of the EU registered with the WTO in 1958 and EFTA in 1960). The Central American RTA, CACM, dates from 1961. The Asian and African RTAs were launched much later (mainly in the 1990s or in the first decade of XXI century – see www.wto.org). NAFTA was created in the 1990s as well because until the 1980s the U.S. insisted on non-discriminatory liberalization (e.g. in the GATT framework).

In 2000 NAFTA had the largest share of world GDP (35.4% – see Table 1), and the second biggest share was the EU (25.6%). These two dominated this sample with a joint share of 61%; the combined GDP share of all the other analysed RTAs being smaller than the EU⁷. The third biggest was LAIA with a

⁵ PSA (*Partial Scope Agreement*) can only be concluded with the participation of developing countries. It provides for the partial elimination of or a decrease in tariffs, without an obligation to fully liberalize trade in goods. FTA (*Free Trade Area*) means the elimination of tariffs for trade in goods among the RTA members but keeping the member states national tariffs against other countries. In the CU framework (*Customs Union*), tariffs among the members are eliminated as in an FTA and – additionally – a common tariff rate for trade with other countries is introduced. EIA is an agreement on trade in services (this form of integration always accompanies FTA or CU). In the WTO framework trade in services is called “economic integration” (*Economic Integration Agreement* – EIA). This is justified through the necessity of deeper integration in the case of trade in services, than for trade in goods. For example trade in services obliges the presence of foreign providers in the country and incorporates elements of the international movement of production factors. The WTO meaning of “economic integration” is not a synonym for full economic integration as used in economic theory [see: Balassa 1961].

⁶ In this paper relatively closely integrated RTAs are overrepresented. There are ca. 350 RTAs in the world recognised by the WTO (many of them are bilateral). More than a half of them are FTAs (there are ca. 12 times more FTAs than CUs) – for more see e.g. www.rtais.wto.org; see also Czarny [2013, pp. 30–31]).

⁷ The data concerning RTAs share of global GDP may be overvalued, because some countries belong to more than one RTA and their GDP is then counted several times (e.g. Nicaragua is a member of CACM as well as of LAIA). To minimize this inaccuracy I calculate the joint shares of the examples in which there are MERCOSUR and LAIA members as all members of MERCOSUR are also members of LAIA. I have taken both RTAs into consideration because they have achieved different levels of integration. Moreover, LAIA incorporates some states

Table 1. The analysed RTAs share of world GDP for the years 2000–2010 (%)

RTA	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
AFTA	1.8	1.8	1.9	1.9	1.9	2.0	2.2	2.3	2.4	2.6	2.9
ANZCERTA	1.5	1.4	1.4	1.5	1.7	1.8	1.8	1.8	1.9	1.9	2.1
APTA	3.3	3.3	7.9	8.0	8.3	9.0	9.7	10.8	11.2	12.8	14.6
CACM	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
CEMAC	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0
CIS	1.1	1.2	1.3	1.5	1.8	2.2	2.6	3.0	3.5	2.8	3.2
COMESA	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.3
ECO	1.5	1.3	1.4	1.5	1.7	1.9	2.0	1.7	1.8	1.7	1.9
ECOWAS	0.3	0.3	0.3	0.3	0.1	0.1	0.4	0.5	0.5	0.4	0.5
EFTA	1.3	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.6
EU	25.6	25.8	27.1	26.4	31.6	30.5	29.8	31.0	30.6	28.9	27.4
GCC	1.1	1.1	1.1	1.1	1.2	1.2	1.5	1.6	1.8	1.4	0.7
LAIA	6.1	6.0	5.1	4.8	5.0	5.6	6.1	6.3	6.8	6.6	7.8
MERCOSUR	3.0	2.7	1.9	1.9	2.0	2.4	2.7	3.0	3.4	3.4	4.2
NAFTA	35.4	36.7	36.6	34.3	32.7	32.6	32.0	30.2	28.3	28.8	29.0
SADC	0.6	0.5	0.5	0.6	0.7	0.7	0.7	0.7	0.6	0.7	0.8

Source: Own calculations based on WDI [<http://databank.worldbank.org>, access: 23.07.2012].

share of 6.1%; its share being ten times smaller than the joint share of NAFTA and the EU. The smallest in the sample was CEMAC with a share equal to 0.1% of world GDP; which means that it was 354 times smaller than the share of NAFTA, and twice as small as the second last, CACM.

During the period 2000–2010 the GDPs of the RTAs changed. The percentage difference between the shares of both leading RTAs (NAFTA and the EU) became smaller (in 2000: it was 9.8 percentage points (p.p.); and in 2010: 1.6 p.p.), because after 2002 the GDP share of NAFTA went down (especially during the world crisis in the years 2008–2009). At the same time the EU share increased (for the years 2000–2002, 2004 and 2007). The reason was mainly the accession of new member states (in 2004 and 2007).

In the year 2002 LAIA lost third position in this classification in favour of APTA. The huge increase of APTA in world GDP resulted from the accession of China.

from outside MERCOSUR. In the case of single states belonging to the two RTAs I count their shares in the global GDP more than once. The same inaccuracy can appear in the analysis of the shares of these RTAs in global exports.

The share of CEMAC, the smallest in the sample, was constant over the whole period. Though the value of CEMAC's GDP increased by almost 40%, this was not enough to move it off last place or get it any closer to the second last, CACM [Czarny 2013, p. 130]. In 2010 the share of CEMAC's GDP in world GDP became smaller than the standard statistical error.

In 2010 the joint share of NAFTA's and the EU's GDP in global GDP had decreased to 56.4%, but these RTAs remained the world's leading producers. In this year the share of the four biggest RTAs (EU, NAFTA, APTA and LAIA) had increased from 70.3% in 2000 to 78.8% in 2010. This was a consequence of a slight increase in LAIA's share (1.7 p.p.) and a huge jump in the share of APTA (11.3 p.p.), resulting mainly from the economic expansion of China. The joint share of all the analysed RTAs in world GDP increased as well (2000: less than 80%; 2010: more than 90%). The reason was not only their economic expansion but new accessions as well (see the cases of APTA and the EU).

This paper's analysis of the GDP shares of 16 RTAs confirms the extreme differences between them. NAFTA and the EU – both incorporating developed countries – dominate. These two RTAs differ with respect to the depth of their integration and the composition of prerogatives granted to member states. NAFTA is still a free trade area (FTA), with free trade in services (EIA), but it does not have any plans to deepen integration; whereas part of the EU has already created a monetary union. Also, the EU is expanding and including new member states, whereas NAFTA has not changed its composition since its creation.

APTA is beginning to tread on the heels of both the biggest RTAs due to an 11.3 p.p. increase in its share of global GDP. In the year 2010, NAFTA, the EU and APTA together produced no less than 71% of world GDP.

However, even the expansion of some less developed groups (especially the APTA) does not obviate the statement that apart from Europe, Nord America, the Middle East and Australia (plus Oceania), people are poorer than can be concluded solely from an analysis of each RTAs GDP (for more see Czarny [2013, pp. 133–4]). Over the analysed period the richest in the sample was the population of EFTA, and the poorest was ECOWAS, but the differences in wealth are decreasing. In 2000 the GDP *pc* of ECOWAS was 90 times lower than GDP *pc* of EFTA, and in 2010 it was 60 times lower. In 2000 the two RTAs with the biggest economic potential (NAFTA and the EU) were in second and third place in the classification of the wealthiest RTAs (the leader was EFTA). In 2010 the leader remained the same (EFTA), but second place was taken by ANZCERTA whose GDP *pc* had increased almost 2.4 times. Due to its huge population the leading RTA in terms of GDP growth

was APTA, and this remains one of the RTAs containing developing countries. In 2000 APTA had a much lower GDP *pc* than MERCOSUR or AFTA, and slightly higher than LAIA. In 2010 the GDP *pc* of APTA was almost the same as that of MERCOSUR and LAIA, but still remained much lower than that of AFTA. Generally, the gap between the richest (containing developed countries) and the poorest (developing countries) RTAs has been reduced.

The analysed RTAs differ regarding the intensity of their cooperation with other countries and groups (see Table 2); as well as in respect of the intensity of trade within the RTAs (Table 3).

Table 2. The shares of RTAs' exports in world exports for the years 2000–2010 (%)

RTA	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
AFTA	7.2	6.8	6.8	6.8	6.9	6.8	7.0	6.8	6.8	7.2	7.3
ANZCERTA	1.1	1.1	1.1	1.0	1.1	1.1	1.1	1.1	1.3	1.4	1.5
APTA	3.8	3.6	9.5	10.3	11.5	12.5	13.2	14.3	14.7	16.2	17.6
CACM	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
CEMAC	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0
CIS	1.9	1.9	2.0	2.1	2.6	2.8	3.0	3.3	3.7	3.1	3.4
COMESA	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1
ECO	1.1	1.1	1.2	1.3	1.5	1.7	1.7	1.4	1.9	1.6	1.9
ECOWAS	0.6	0.5	0.4	0.5	0.2	0.1	0.7	0.5	0.7	0.6	0.8
EFTA	2.6	2.7	2.7	2.6	2.6	2.6	2.6	2.6	2.8	2.7	2.6
EU	43.2	44.7	45.4	45.9	51.0	47.6	46.6	48.3	47.1	47.1	44.0
GCC	1.3	1.1	1.1	1.8	0.6	2.7	2.8	2.2	0.9	0.7	0.3
LAIA	4.3	4.1	3.9	3.6	3.7	3.7	3.9	3.3	3.6	3.3	3.6
MERCOSUR	1.5	1.6	1.5	1.6	1.7	1.7	1.7	1.8	2.0	2.0	2.1
NAFTA	20.3	19.7	18.1	16.1	15.0	14.6	14.2	13.8	13.5	13.4	13.6
SADC	0.6	0.7	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7

Source: Own calculations based on [<http://comtrade.un.org>, access: 24.07.2012].

In the analysed period the EU had the biggest share of world exports. This is not surprising as this RTA consists of a number of small to medium developed countries forced to export because their domestic markets are not big enough to make full use of increasing returns to scale (This is especially true regarding the production of manufactured goods). Moreover, among the

EU members is the second largest exporter in the world (Germany). Also, the share of EU-exports has consistently been above 40%; and in 2004, the year of east European enlargement, it even briefly went above 50%. The EU share has consistently been more than two times larger than the respective share of NAFTA, which until 2006 was in second place in this classification (NAFTA's share was 20.3% in 2000; and 14.2% in 2006), with APTA replacing NAFTA in second place in 2007 (APTA's shares was 14.3% in 2007; and 17.6% in 2010).

During the period 2000–2010 NAFTA continuously lost importance, and with its share of world exports decreasing by 6.7 p.p. it was the largest drop in the whole sample. This is understandable; as on the one hand, part of this decrease took place in the year 2007 (though the economic crisis became global in the autumn of 2008 it had started in the U.S. economy much earlier, which had a considerable effect on the NAFTA economy). On the other hand, NAFTA's members are large economies that concentrate on their own internal markets. At the same time world exports expanded: its value increased almost 2.3 times [Czarny 2013, p. 138], which created an additional difficulty in keeping its international position.

In the analysed period the main winner in respect of world exports was APTA, with an almost 14 p.p. increased share. The second biggest increase was that of CIS (1.5 p.p.), but this was nine times smaller than that of APTA (though CIS bettered its position in the rankings: from position 7 in 2000 to 6 in 2010).

Additional information about the export activities of the RTAs can be derived from a comparison of their shares in world GDP and world exports (by comparing the data in Tables 1 and 2). The Asian RTAs analysed (AFTA and APTA), along with the European ones (EU, EFTA), demonstrated shares in exports consistently higher than their shares of global GDP. The biggest relative difference observed was AFTA. In 2000 its share in global exports was 4 times bigger than its share of world GDP and in 2010 this difference was 2.5 times. This was a result of the fact that AFTA's share in global exports did not change much though its share of global GDP was constantly growing. Also, in the years 2000–2010 the shares of EFTA in exports and world GDP and stayed relatively stable, whereas the respective shares of APTA expanded (the share in world exports increased almost 5 times, and of global GDP 4.4 times).

However, the RTAs from America follow a different pattern. NAFTA, as well as LAIA and MERCOSUR, had bigger shares of global GDP than in world exports. NAFTA's case has already been discussed (the example of big countries). As far as LAIA is concerned, this may be confirmation that the goods produced there lacked international competitiveness.

The next analysis concentrates on the mutual exports among RTA members (so called internal exports). This is based on the theoretical expectation that trade liberalisation within an RTA will lead to an intensification of trade among the member states (mainly through the effects of trade creation and trade diversion). In order to investigate this, the EU member states belonging to the Euro Zone (EZ) and those EU members staying outside the EZ (EU without EZ) are analysed separately. This was done because of the big difference in the shares of internal exports by these two parts of the EU and the opposite direction of their changes.

Table 3. The shares of RTAs' internal exports in their exports for the years 2000–2010 (%)

RTA	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
AFTA	24	23	24	26	26	26	25	26	26	25	27
ANZCERTA	10	10	10	12	12	10	9	10	8	7	7
APTA	2	2	9	10	11	11	11	11	12	12	12
CACM	23	30	27	28	29	24	19	24	24	24	25
CEMAC	2	2	4	31	7	3	2	6	5	7	96 ^a
CIS	23	24	22	24	24	21	21	22	23	22	19
COMESA	11	11	13	15	9	12	11	16	11	14	20
ECO	6	5	5	5	6	6	6	8	7	8	9
ECOWAS	9	10	12	10	24	28	9	9	11	9	7
EFTA	1	1	1	1	1	1	1	1	1	1	1
EU without EZ	73	73	74	73	79	78	79	80	79	79	78
EZ	50	50	49	51	51	50	49	49	49	50	48
GCC	3	7	5	7	6	6	7	7	8	13	21
LAIA	11	12	12	12	13	15	15	17	19	18	18
MERCOSUR	22	18	12	12	13	13	14	15	15	15	16
NAFTA	58	57	58	58	57	57	55	52	50	49	49
SADC	17	15	17	15	16	14	16	15	14	15	14

^a I cannot comment on CEMAC's share because although very specific, it seems to be anomalous rather than signifying a new tendency.

Source: Czarny [2013, p. 150].

In period under analysis the values of the internal exports in all the analysed RTAs were increasing [Czarny 2013, p. 149], but these increases were of different sizes and were rather variable. The EU experienced the biggest increase in the value of its internal exports, with the APTA undergoing the

second biggest increase; though this was almost seven times smaller than that for the EU. CEMAC was last in this classification, and over the period analysed experienced such small growth in internal exports that it was invisible in the statistical data.

In 2000, the internal exports of 7 out the 16 analysed RTAs were either equal to or under 10% of their overall exports (ECO, ECOWAS, EFTA, APTA, CEMAC, GCC and ANZCERTA). In 2010, there were only four RTA's that had internal exports accounting for less than 10% ANZCERTA, ECO, ECOWAS and EFTA. In 2010 the share of APTA's internal exports was 6 times bigger than in 2000, and for GCC it was 7 times bigger (for information about the internal exports of CEMAC see note a) at the bottom of Table 3).

In 2000 three RTAs (COMESA, LAIA and SADC) had internal exports in the range of 10–20%. In 2010 this interval fit the shares of internal exports for APTA, CIS, LAIA, MERCOSUR and SADC. This means that for the majority of RTAs analysed, internal exports made up less than 1/5 of their exports to all partners combined.

Dominant (with a share of over 50%) were the internal exports of the EU and NAFTA. However, in the case of NAFTA these shares decreased over the last two years of research to 49%. Similarly, the Euro Zone (EZ) saw a tendency for the importance of its internal exports to decline (50% share in 2000; and 48% in 2010). At the same time, those EU members not being part of the EZ have strengthened their trading ties: with the share of their internal exports fluctuating between 73% in 2000 and 80% in 2007. It seems that the EZ members have already reached their maximal level of mutual trade after decades of integration and are – in general – competitive enough to start trading more intensively with the outside world. At the same time the EU countries outside the EZ are mainly new members still deepening their ties within the EU and developing trade with the most obvious candidates – economically similar neighbouring countries.

In the period analysed many RTAs saw a tendency for their share of internal exports to fall: NAFTA (–8 p.p.), MERCOSUR (–6 p.p.), CIS (–4 p.p.), ANZCERTA (–3 p.p.), ECOWAS (–2 p.p.) and SADC (–3 p.p.). The two analysed parts of the EU behaved differently. In the EZ internal exports decreased (–2 p.p.), whereas in the rest of the EU it increased (5 p.p.). Just as unusual could be the fall in the share of internal exports observed in MERCOSUR, whereas in LAIA (to which all the members of MERCOSUR belong) saw a simultaneous 7 p.p. increase in the share of its internal exports.

Generally, this analysis only partly confirmed the theoretical expectations regarding external trade being replaced with internal trade among RTA

partners. The majority of RTAs remain open to trading with the outside world. Only the most integrated (EU) and developed (EU, NAFTA) RTAs have significant shares of internal exports. However, the last mentioned RTAs have a dominant position in the analysed sample.

2. Literature on the impact of RTAs on international trade

In gravity models, controlling variables regarding the participation of the analysed countries (or one partner in a pair) in regional trading agreements (RTAs) are often used. Usually, the impact of RTA creation on trade among its member states is analysed. However, in some cases the analysis concentrates on trade between one member state and a partner from outside the RTA. These analyses are designed to measure the intensity of trade creation and trade diversion effects. The trade creation effect is usually analysed with a dummy variable with a value of 1 if both analysed countries are in the same RTA or 0 otherwise. A dummy variable controlling for the participation of countries from one pair of partners in the same RTA estimates whether formal economic cooperation had a statistically significant effect [Frankel 1997]. However, this approach does not show whether any statistically significant effect is due to trade creation, trade diversion, or both effects. It is necessary to use additional estimation parameters in the gravity model to create a counterfactual approach. These estimates can then be compared to the actual bilateral trade flows of an analysed country with its RTA partners and with the countries from outside of the RTA, in order to estimate trade creation, trade diversion and the net result [Kreinin and Plummer 2012, p. 146].

Some authors modify this approach and analyse the impact of participation in the selected RTAs separately. These analyses take into consideration the fact that depending upon the type of RTA, the subject of its regulations, plus the number and characteristics of its member states, their impact on trade can vary. In the literature the analysed results can be differentiated because of, among other things, differences in the analysed time series and among the countries involved.

In some relatively early works [e.g. Aitken 1973] the positive impact of RTAs on trade between member states was suggested. However, Bergstrand [1985] could not confirm this effect. Frankel, Stein and Wei [1996] tested trade between 63 countries for the period 1965–1992, confirming the existence of the trade creation effect in the internal trade of the European Communities, MERCOSUR, Andean Pact, ASEAN and ANZCERTA.

The trade diversion effect was analysed with a dummy variable having a value of 1 if only one of the pair of trading partners was a member of an RTA. Frankel, Stein and Wei [1996] confirmed the trade diversion effect in EFTA, NAFTA and ANZCERTA. For the ASEAN, MERCOSUR, Andean Pact and European Communities the respective coefficients were positive, which suggested a growing intensity of trade with their partners from the rest of the world. This result indirectly proved that these RTAs decreased their trade barriers against the outside world simultaneously with liberalising internal trade.

Some analyses are aimed at assessing an RTA's impact on member states trade as well as on their turnover with the rest of the world. They show the different consequences of inter-industry as well as intra-industry specialisation and trade resulting from e.g. increasing returns to scale and product differentiation. Of special interest in this type of research is confirmation of the hypothesis about the intensification of horizontal intra-industry specialization because of its relatively low adjustment cost.

The impact of participation in RTAs on the structure of trade in goods was studied by, among others, Egger, Egger and Greenaway [2008]. The authors analysed a group of (mainly) developed countries (the majority were members of the OECD). They proved that RTA accession leads to an increase in intra-industry trade of approx. 4%.

Foster and Stehrer [2011, pp. 385–409] analysed the impact of the RTA membership on the structure of trade among member states. They analysed 168 countries (developed and developing ones) over a long period (1962–2000). They confirmed that the biggest increase in trade intensity can be expected among RTAs created by developed partners. Simultaneously, the negative impact of RTA membership on intra-industry trade is confirmed in the case of groups containing the relatively less well developed South American countries.

Park and Park [2011, pp. 249–268] analyse almost all the RTAs recognised by the GATT/WTO. Using gravity models they estimated both trade creation and trade diversion in the exchange of goods between the member states. They compared the consequences of RTA creation based on either Article XXIV of GATT or on the Enabling Clause. They confirmed the presence of the trade creation effect as well as of the trade diversion effect, in addition to proving the greater effectiveness of RTAs based on Article XXIV of GATT than on the Enabling Clause. In their opinion the rules of origin (RoO) are more effective if they are applied uniformly throughout the whole RTA (as in the EU and EFTA) and not constructed separately by each member state.

3. Methodology

Several gravity models to analyse the impact of participation in RTAs on the trade of member countries were constructed. In a few models the dependent variable is the value of exports from country i to country j in year t (X_{ij}^t in equation 1), whereas in the other models this variable is the value of imports (M_{ij}^t in equation 1). Both exports and imports are calculated in current prices and at current exchange rates in USD. The data concerning exports and imports are drawn from the COMTRADE database [<http://wits.worldbank.org>, accessed: 25.07.2012]. Although there was a small amount of missing data the values of exports were measured in the SITC nomenclature. Only in those cases lacking SITC data was this supplemented with data in the HS nomenclature.

Among the independent (explanatory) variables used were the standard variables such as GDP and the geographic as well as economic distance between the trading partners. The economic distance is defined as the absolute value of the difference in GDP *per capita* of the trading partners. GDP values, their elements along with GDP *per capita* are calculated at current prices and at current exchange rates [<http://data.worldbank.org/data-catalog/world-development-indicators>, accessed: 24.07.2012]. The geographic distance between the trading countries ($dist_{ij}$) is based on the distance between their capitals [<http://www.cepii.fr>, accessed: 25.07.2012].

In the analysis several variables regarding participation in RTAs were utilised. However, the standard usage of a dummy variable controlling for the intensity of bilateral preferential trade in comparison with the exchange of goods between partners not granted mutual preferences (with a value of 1 if both trading partners are members of the same RTA, or 0 if just one of the pair is in the RTA) is only used in the last group of models (mainly for comparison).

In the first group of gravity models variables regarding the participation of pairs of countries in one of the 16 core RTAs from every continent (analysed in part 1 of this paper) were used. They are defined using separate dummy variables. The reason is a desire to analyse the different impacts of participation in each of these RTAs on the trade of its members (as compared with trade with partners from the outside world).

These variables were supplemented with one variable having a value of 1, if countries i and j in the year t were both members of an RTA other than these 16 RTAs ($other_rta_{ij}^t$).

In the model a dummy variable is also used for trading partners using the same official language ($lang_{ij}$ with the value 1 if the citizens of the countries i

and j use the same official language, and 0 otherwise). This variable represents cultural ties or possibly the colonial past of the partners.

Moreover, variables were used for the last economic crisis (in respect of the years 2009 and 2010 when changes in international trade were especially turbulent). The above mentioned variables, $y09^t$ and $y10^t$, illustrate the break-down of trade in 2009 and its recovery in 2010 (the parameters relate to changes in the values of exports or imports in both the selected years in comparison with the time before the crisis and under the (in reality not fulfilled) assumption that all other factors are unchanged in comparison with the time before the crisis (changes in the expected conditional value of dependent variables in the years 2009 and 2010 in comparison with the pre-crisis period).

The tested equation is as follows:

$$\begin{aligned} \ln X(M)_{ij}^t = & \alpha_0 + \alpha_1 \ln(GDP_i^t) + \alpha_2 \ln(GDP_j^t) + \alpha_3 \ln \left| GDPpc_i^t - GDPpc_j^t \right| + \\ & + \alpha_4 \ln dist_{ij} + \alpha_5 lang_{ij} + \alpha_6 other_rta_{ij}^t + \alpha_7 AFTA_{ij}^t + \\ & + \alpha_8 ANZCERTA_{ij}^t + \alpha_9 APTA_{ij}^t + \alpha_{10} CACM_{ij}^t + \alpha_{10} CEMAC_{ij}^t + \\ & + \alpha_{11} CIS_{ij}^t + \alpha_{12} COMESA_{ij}^t + \alpha_{13} ECO_{ij}^t + \alpha_{14} ECOWAS_{ij}^t + \\ & + \alpha_{15} EFTA_{ij}^t + \alpha_{16} EU \setminus EZ_{ij}^t + \alpha_{17} GCC_{ij}^t + \alpha_{18} LAIA_{ij}^t + \\ & + \alpha_{19} MERCOSUR_{ij}^t + \alpha_{20} NAFTA_{ij}^t + \alpha_{21} SADC_{ij}^t + \\ & + \alpha_{22} y09^t + \alpha_{23} y10^t + \varepsilon_{ijt} \end{aligned} \quad (1)$$

with:

- $X(M)_{ij}^t$ – exports (imports) from (to) a country i to (from) a country j in the year t ,
- α_0 – absolute term,
- GDP_i^t – exporter's GDP in the year t (describing the impact of economic potential on exports (export supply); expected positive impact on the dependent variable (positive sign of the coefficient); for imports as a dependent variable: importer's GDP in the year t (impact of economic potential on imports (import demand); expected positive impact on the dependent variable (positive sign of the coefficient),
- GDP_j^t – importer's GDP in the year t (the impact of the importer's economic potential on the demand for foreign goods;

- expected positive impact on the dependent variable).
For imports as a dependent variable: exporter's GDP in the year t ; expected positive impact on the dependent variable,
- $|GDPpc_i^t - GDPpc_j^t|$ – absolute value of the difference of the nominal GDP *per capita* of exporter and importer in the year t (the smaller this difference, the more intensive is the trade in goods); expected negative impact on the dependent variable (negative sign of the coefficient),
- $dist_{ij}$ – distance between trading countries i and j (approximation of trading costs; among others, transportation costs); expected negative impact on the dependent variable,
- $lang_{ij}$ – dummy variable illustrating the common official language of the countries i and j (in the past a common official language was expected to influence mutual trade positively; however, current technological developments and electronic communication (the Internet) mean there is little empirical confirmation for this conclusion); expected positive impact on the dependent variable or lack of any statistical significance for this variable,
- $AFTA_{ij}^t, \dots, SADC_{ij}^t$ – dummy variables illustrating pairs of countries i and j in the year t participating in one of the 16 selected RTAs; according to the theory of economic integration [see e.g. Baldwin and Wyplosz 2009, pp. 162–181] expected positive impact on the dependent variable,
- $other_rta_{ij}^t$ – dummy variable illustrating pairs of countries i and j in the year t participating in RTAs other than the mentioned 16 RTAs; according to the theory of economic integration [see e.g. Baldwin and Wyplosz 2009, pp. 162–181] expected positive impact on the dependent variable,
- $y09^t$ – dummy variable with a value of 1 for the year 2009; expected negative impact on the dependent variable (because of the global economic crisis),
- $y10^t$ – dummy variable with a value of 1 for the year 2010; expected negative impact on the dependent variable (because of the global economic crisis).

The independent variables (except dummy variables) are logarithmized using natural logarithms. This means that the parameters of the logarithmized explanatory variables (α_1 , α_2 , α_3 and α_4) specify by what percentage the expected value of the dependent variable changes if *ceteris paribus* the value of the explanatory variable changes by 1%⁸. The coefficients of dummy variables not logarithmized (α_5 , ..., α_{21}) specify the change in value of the natural logarithm for the dependent variable if *ceteris paribus* the value of the independent variable changes by one unit⁹. Calculating the percentage change in value of the dependent variable, if the value of the explanatory (dummy) variable changes *ceteris paribus* by one unit, requires the use of definition of natural logarithms below¹⁰.

As far as the variables $y09^t$ and $y10^t$ are concerned, the assumption *ceteris paribus* does not hold, as in these selected years, the values of many of the analysed variables were very different than in the earlier period. They only allow for an analysis of a hypothetical situation in which there were no such changes. They do not describe the reality of the world economy. These variables were used eliminating the risk of missing variables.

The Hausman-Taylor estimation method was used as it enables the use of both time-varying and time invariant variables; however, it is permitted for some of them to be endogenous in the sense of correlation with individual effects, but still exogenous with respect to idiosyncratic errors. Some of the independent variables can be viewed as truly exogenous, treating distance between countries as an example of a factor that cannot itself be influenced by any other variables. It is assumed that those variables that can be endogenous, in the sense of correlation with individual effects, are the most “fragile” and prone to vary as a result of economic phenomena taking place both inside the countries and in the international environment. These explanatory variables characterize the pairs of countries constituting a single observation rather than single countries. This means individual effects of the following variables are treat as potentially correlated:

⁸ These parameters are interpreted as elasticities (E): $E = \frac{\frac{\partial f(x)}{\partial x}}{f(x)} x = \frac{\partial \ln f(x)}{\partial \ln x}$.

⁹ These coefficients are interpreted as semielasticities (SE): $SE = \frac{\frac{\partial f(x)}{\partial x}}{f(x)} x = \frac{\partial \ln f(x)}{\partial x}$.

¹⁰ From the definition of natural logarithms: $\ln a = b \Leftrightarrow \exp(b) = a$ is to be calculated as $(\exp(SE) - 1) \cdot 100\%$ equal percentage change in the value of the dependent variable.

- dummy variables that describe the various countries that wish to participate in the same RTA ($other_rta_{ij}^t$; $AFTA_{ij}^t$; ...; $SADC_{ij}^t$); expectation that an RTA is accessed by countries with a natural propensity to intensive cooperation for, among other things, social or historical reasons (such as the Czech Republic and Slovakia rather than North and South Korea);
- the logarithmized absolute difference between *per capita* GDPs in two countries (the exporter and importer) constituting a single pair ($\ln|GDPpc_i^t - GDPpc_j^t|$); expected more intensive trade in goods in pairs of countries comparably developed (smaller difference in GDPs *pc*);
- $\ln dist_{ij}$ approximate trade costs; expected more intensive trade in goods in pairs of adjacent countries, especially in pairs of countries with a common border, traditional trade contacts etc.

4. Empirical analysis

The factors influencing exports and imports for all goods during the period 2000–2010 are analysed. This analysis covers all pairs of countries in the world for which information about their exports is available (24,647 pairs of countries in the case of models explaining the factors influencing exports, and 28,561 pairs in models explaining the factors influencing imports). The estimation results are presented in Table 4.

Table 4. The estimation results (gravity models as in equation 1)

Variables	Exports	Imports
$\ln(GDP_i^t)$	0.917 ^a (0.00802)	0.726 ^a (0.00796)
$\ln(GDP_j^t)$	0.618 ^a (0.00751)	0.797 ^a (0.00781)
$\ln GDPpc_i^t - GDPpc_j^t $	-0.0833 ^a (0.00691)	-0.0783 ^a (0.00705)
$\ln dist_{ij}$	-2.878 ^a (0.0667)	-3.183 ^a (0.0710)
$lang_{ij}$	0.293 ^a (0.0649)	0.283 ^a (0.0661)
$other_rta_{ij}^t$	-0.00888 (0.0220)	-0.00435 (0.0232)
<i>AFTA</i>	0.431 (0.428)	-0.239 (0.471)

cont. tab. 4

Variables	Exports	Imports
<i>ANZCERTA</i>	2.627 (2.327)	2.278 (2.575)
<i>APTA</i>	0.524 ^c (0.301)	0.430 (0.333)
<i>CACM</i>	-1.734 ^b (0.757)	-2.548 ^a (0.837)
<i>CEMAC</i>	-2.204 ^b (0.895)	-4.000 ^a (0.990)
<i>CIS</i>	0.454 (0.336)	0.142 (0.371)
<i>COMESA</i>	-1.025 ^a (0.147)	-0.722 ^a (0.333)
<i>ECO</i>	-1.088 ^b (0.424)	-1.687 ^a (0.468)
<i>ECOWAS</i>	-2.451 ^a (0.290)	-3.144 ^a (0.307)
<i>EFTA</i>	0.108 (1.344)	-0.119 (1.488)
<i>EU</i>	-0.0681 ^c (0.0410)	-0.111 ^b (0.0447)
<i>GCC</i>	-2.923 ^a (0.625)	-3.326 ^a (0.687)
<i>LAIA</i>	0.945 ^a (0.307)	0.957 ^a (0.340)
<i>MERCOSUR</i>	-1.019 (1.000)	-1.672 (1.106)
<i>NAFTA</i>	1.126 (1.345)	1.124 (1.488)
<i>SADC</i>	-0.751 ^a (0.274)	-1.247 ^a (0.296)
y_{09}^t	-0.157 ^a (0.0110)	-0.161 ^a (0.0113)
y_{10}^t	-0.124 ^a (0.0123)	-0.166 ^a (0.0128)
<i>Constant</i>	-4.740 ^a (0.655)	-1.850 ^a (0.704)
Number of observations	191038	219761
Number of countries' pairs	24647	28561

^a $p < 0.01$, ^b $p < 0.05$, ^c $p < 0.1$.

Source: Own estimations in STATA.

In Table 4 all the standard variables (GDP of exporter, GDP of importer, geographic distance and difference in GDPs *per capita*) are statistically significant and their parameters have the expected (compatible with international trade theory) signs. The GDPs of exporter and importer have a positive impact on exports, whereas a negative one regarding the distance between partners and the absolute difference between their GDPs *per capita*.

Despite the use of English as the international language and the development of information and communication technologies, the dummy variable illustrating a common official language used in pairs of trading countries is statistically significant. This seems to be due to the fact that a common language proves cultural proximity or historical (e.g. colonial) ties.

According to the theory of economic integration, RTAs intensify trade among participating countries as a result of the trade creation effect. However, the dummy variable regarding the participation of trading partners in other RTAs than the 16 selected ($other_rta_{ij}^t$) proved statistically insignificant in models describing the export and import of goods. Moreover, participation in some RTAs from the group of 16 RTAs was statistically insignificant as well. This holds for the 6 RTAs in the model describing exports (AFTA, ANZCERTA, CIS, EFTA, MERCOSUR and NAFTA), and for the 7 RTAs in the model describing imports (AFTA, APTA, ANZCERTA, CIS, EFTA, MERCOSUR, NAFTA). This lack of confirmation for the trade creation effect is even more evident as the parameters accompanying the dominant majority of statistically significant dummies had negative signs. The gravity model describing exports, as in equation 1, shows the trade creation effect appearing only in APTA and LAIA (and for the model describing imports, only in LAIA).

These results do not confirm the theoretical predictions for various reasons. The first potential reason is the changing nature of RTAs. Trade has become one of many aspects involved, especially after successful conclusion of the GATT/WTO Uruguay Round resulting in a considerable lowering of most tariffs. The trade creation effect proved weak in those RTAs containing developing and transition countries with relatively less intensive trade flows among the member states, which could explain the statistical insignificance or negative signs of the parameters describing these RTAs. Moreover, many of these RTAs were created long ago and the trade creation effect, even if it occurred, had already run its course (e.g. as mentioned in part 1 of this paper – CACM was created in 1961, GCC at the beginning of 1980., COMESA, ECO and ECOWAS in the first half of the 1990., CEMAC and SADC in the

second half of 1990). The argument that the trade creation effect had run its course applies to the EU as well, though in this case it is supplemented with arguments concerning, among other things, the broader scope of integration (this issue was discussed in part 1 analysing the internal exports of EZ countries and of EU members outside of the EZ). On the other hand, the data took into account the changing number of RTA participants (in the UNCTAD database) which can be a potential source of distortion in the results (in the analysed period of 2000–2010 such changes were observed in – especially important from the viewpoint of the world economy – APTA, the EU as well as in COMESA).

Moreover, the analysed period (2000–2010) contains the years of economic slowdown (2001–2003) and the international economic crisis (2009–2010), which could explain the lack of any confirmation for the trade creation effect (as world trade weakened in these years).

The parameters accompanying the variables $y09^t$ and $y10^t$ relate to the falling values of exports as a result of the economic crisis. If all the other factors in the model had remained constant in comparison with the pre-crisis period, one could expect a decrease in the value of exports (imports) in 2009 by approx. 14.5% (15%) in comparison with the period 2000–2008. In the year 2010 the respective values would be approx. 11.5% (15.5%) lower. In the real world economy the 2009 decrease in trade was similar to that estimated in the model, whereas in 2010 – different to the estimated results – increases in values of both exports and imports were observed. These results suggest that in the analysed period other variables changed as well (especially that the GDPs of exporters and importers decreased in 2009 and increased one year later).

In a subsequent analysis 16 dummy variables relating to the selected RTAs were substituted ($AFTA_{ij}^t$; ...; $SADC_{ij}^t$) with just one dummy variable ($16_rta_{ij}^t$) – see equation 2. Again all the pairs of countries with available data concerning their exports of goods were analysed. The estimation results are presented in Table 5.

$$\begin{aligned} \ln X(M)_{ij}^t = & \alpha_0 + \alpha_1 \ln(GDP_i^t) + \alpha_2 \ln(GDP_j^t) + \\ & + \alpha_3 \ln \left| GDPpc_i^t - GDPpc_j^t \right| + \alpha_4 \ln dist_{ij} + \alpha_5 lang_{ij} + \\ & + \alpha_6 other_rta_{ij}^t + \alpha_7 16_rta_{ij}^t + \alpha_8 y09^t + \alpha_9 y10^t + \varepsilon_{ijt}. \quad (2) \end{aligned}$$

Table 5. The estimation results (gravity models as in equation 2)

Variables	Exports	Imports
$\ln(GDP_i^t)$	0.922 ^a (0.00802)	0.732 ^a (0.00794)
$\ln(GDP_j^t)$	0.623 ^a (0.00749)	0.802 ^a (0.00778)
$\ln GDPpc_i^t - GDPpc_j^t $	-0.0817 ^a (0.00691)	-0.0771 ^a (0.00706)
$\ln dist_{ij}$	-2.819 ^a (0.0626)	-3.056 ^a (0.0658)
$lang_{ij}$	0.229 ^a (0.0645)	0.229 ^a (0.0656)
$other_rta_{ij}^t$	-0.0237 (0.0220)	-0.0150 (0.0233)
$16_rta_{ij}^t$	-0.0125 ^a (0.00336)	-0.0162 ^a (0.00365)
$y09^t$	-0.160 ^a (0.0110)	-0.165 ^a (0.0113)
$y10^t$	-0.128 ^a (0.0123)	-0.171 ^a (0.0128)
Constant	-5.538 ^a (0.609)	-3.249 ^a (0.648)
Number of observations	191038	219761
Number of countries' pairs	24647	28561

^a $p < 0.01$, ^b $p < 0.05$, ^a $p < 0.1$.

Source: Own estimations in STATA.

Again the standard variables (GDPs of the exporter and importer, plus distance and the difference in GDP *per capita*) are statistically significant and the parameters had the expected signs according to international trade theory. The GDPs of both trading partners positively influenced exports, whereas the distance and the absolute difference between their GDPs *per capita* had a negative impact. Worth noticing is the positive impact of a common official language as well as the negative impact of the economic crisis on both the export and the import of goods.

The dummy variable regarding the participation of trading partners in RTAs other than the 16 analysed ($other_rta_{ij}^t$) still remains statistically insignificant in both models (explaining factors influencing exports and imports). The variable confirming participation of both partners in the group of 16 RTAs ($16_rta_{ij}^t$) was statistically significant with a negative parameter. This result confirms earlier estimations showing the negative impact on trade of

participation by trading partners in the majority of the 16 RTAs. However, this negative impact is relatively weak: *ceteris paribus* –1.2% in the case of exports and –1.6% for imports.

In the last two estimated gravity models two dummies ($other_rta_{ij}^t$ and $16_rta_{ij}^t$) are substituted with just one dummy variable regarding the participation of the trading partners in RTAs (rta_{ij}^t) – see equation (3). This is a return to the most popular way of expressing the participation in RTAs. All the pairs of countries for which data are available were analysed again. The dependent variables were the export or import of goods and the estimation results are presented in the Table 6.

$$\begin{aligned} \ln X(M)_{ij}^t = & \alpha_0 + \alpha_1 \ln(GDP_i^t) + \alpha_2 \ln(GDP_j^t) + \\ & + \alpha_3 \ln|GDPpc_i^t - GDPpc_j^t| + \alpha_4 \ln dist_{ij} + \\ & + \alpha_5 lang_{ij} + \alpha_6 rta_{ij}^t + \alpha_7 y09^t + \alpha_8 y10^t + \varepsilon_{ijt}. \end{aligned} \quad (3)$$

Table 6. The estimation results (gravity models as in equation 3)

Variables	Exports	Imports
$\ln(GDP_i^t)$	0.919 ^a (0.00801)	0.725 ^a (0.00797)
$\ln(GDP_j^t)$	0.617 ^a (0.00752)	0.794 ^a (0.00782)
$\ln GDPpc_i^t - GDPpc_j^t $	–0.0792 ^a (0.00693)	–0.0733 ^a (0.00708)
$\ln dist_{ij}$	–3.014 ^a (0.0663)	–3.293 ^a (0.0698)
$lang_{ij}$	0.144 ^b (0.0654)	0.132 ^b (0.0666)
rta_{ij}^t	–0.0516 ^b (0.0223)	–0.0518 ^b (0.0235)
$y09^t$	–0.157 ^a (0.0110)	–0.160 ^a (0.0113)
$y10^t$	–0.124 ^a (0.0123)	–0.164 ^a (0.0128)
Constant	–3.625 ^a (0.647)	–0.847 (0.690)
Number of observations	191038	219761
Number of countries' pairs	24647	28561

^a $p < 0.01$, ^b $p < 0.05$, ^c $p < 0.1$.

In this analysis, as in previous ones, the standard variables (GDPs of the exporter and importer, plus distance and the difference in GDP *per capita*) were statistically significant and the parameters had the expected signs from international trade theory. The GDPs of both partners had a positive influence on exports; whereas the distance and the absolute difference between their GDPs *per capita*, a negative one. Again, the positive impact of having a common official language was observed as well as the negative impact of the economic crisis on the export and the import of goods.

This time, exactly as in the test of the model from equation 2 (see Table 5), the variable regarding participation of the trading partners in RTAs (rta_{ij}^t) was statistically significant, but the parameters had negative signs, which is contrary to the theory of economic integration. Therefore the model does not confirm the trade creation effect. Moreover, it confirms the opposite effect: partners participating in the same RTA trade less intensively. It is presumed that this result was influenced by the characteristics of the 16 RTAs selected. It seems that with the expanding scope of RTAs, trade is becoming less important for integrating countries. This was already envisioned in part 1 where the low levels of internal exports by the majority of the analysed RTAs was discussed. Trade is more and more being supplemented or even substituted by other forms of economic cooperation. At the same time, long lasting trade integration is leading to the expiration of trade creation (as in case of the EEC/EU).

Final remarks

In almost all empirical tests, the impact for the majority of the 16 RTAs analysed on both exports and imports is at best moderate. The parameters are statistically insignificant or, even if significant, negative; which is contrary to the theory of economic integration. This means that the expected trade creation effect is not confirmed.

An important reason for the statistical insignificance of the variables controlling for participation in RTAs may be the changing scope of preferential agreements. Trade in goods is not as important as before, though its liberalization is always an important part of RTAs. Preferential trade no longer seems to be the decisive argument for participation in RTAs. Nowadays, among other things, RTAs cover the principles of international cooperation in production as well as the movements of capital and labour. In studying economic integration, we have to consider not only its impact on international trade, but also on all the forms of economic co-operation covered by RTAs.

The empirical tests using gravity models, taking into consideration participation in RTAs as a potentially important factor influencing exports/imports, confirm the relative sensitivity of the results to the specifications of the models. That means it is practically impossible to compare the results achieved by different authors; and also makes it difficult to verify predictions and confirm the results of previous analyses. This highlights the limitations of the gravity model as an analytical tool.

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