TRADE AND ETHNIC DIVERSITY IN SOUTH-EASTERN EUROPE:  
A GRAVITY APPROACH

Elena GONTA*

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Abstract: The goal of this work is to analyze the influence of ethnic concentration on trade exchanges between the countries of Southeastern Europe, study that is motivated by the situation of nation-state relation in this region. The ethnic diversity, in comparison to the linguistic or religious one, has the advantage to reflect the socio-political situation of the region: the same language spoken by different ethnicities, and the same religion for diverse nationalities. At the same time, the same minorities living in different countries, and the strong historic and cultural ties between the countries, show the ethnic filiations in Southeastern Europe. Considering the cultural rapprochement, it is obvious to demand how this situation influences the economic relations of these countries in the circumstances of recent conflicts and of the (potential) integration in the EU.

For this analysis we are using the gravity model. We follow the method of Santos & Tenreyro (2005), of pseudo-Poisson Maximum Likelihood. The estimation is realized with cross-section data for five years of transition, fact that will allow us to observe the trade evolution in the region.

To represent the ethnic diversity, we use the indicator of ethnic fractionalization. It allows to capture the impact of society fragmentation on the trade volume (as we know, there are no studies on this aspect). In order to take into consideration the linguistic (and, thus, cultural) filiations between countries, we include two dummy variables for minority languages. The results show that the ethnic fractionalization has a positive influence on trade relations, as the minority languages influence but the last is less significant. The presence of recent conflicts between the countries has a positive impact on the trade volumes; it diminishes the weight of inter-ethnic networks within the country, but increases the inter-state relations that are linguistically close. The communist past (less significant last years) and the signed agreements do not influence the cultural aspect of the trade.

* PhD. student, Academy of Economic Studies of Moldova, email: gonta_elena@yahoo.fr
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INTRODUCTION

After the collapse of the communist bloc in the 90s, the South-eastern European nations are searching their identity. The characteristics of the former Yugoslavia and USSR are the important ethnic concentrations, and resulted legislations. But last century changes in the society have imposed changes in the attitude concerning the new neighbours, and have pointed out the political, historical, etc. differences. In our study we analyse the influence of the ethnic fragmentation and of the linguistic proximity on trade relations during the transition period. These are important factors for the South-eastern Europe, in context of the economic development necessity, of the socio-political events, and of the regional relations development that respond to social, political and economic needs.

Maybe the ethnic conflicts are in the most of the cases the exception and not the rule. But the recent history has shown that the South-eastern Europe was this exception: the economic and political discomfort in a multiethnic environment turned into violent conflicts on the territory of the former Yugoslavia and in Republic of Moldova. And in these cases, the biggest problems were encountered in the regions with the most important ethnic concentration, as Transnistria and Bosnia-Herzegovina. This instability results from the combination of the society transition and of the national or ethnic fragility of the countries. The communist past of the Eastern countries constrained them to have common rules. Actually, the states are searching to re-develop their cooperation in order to pass over the new conflicts. This is one of the objectives of the different economic and political agreements signed in the region.

The same society values, of course, served as basis for economic relations between states. The foreign relations, that were before clear and “without problems” (Bulgaria, USSR or Yugoslavia) or almost non-existent (Albania or Romania), had to be reviewed. The South-eastern European countries multiplied their collaborations with the new partners, that are geographically near (Moldova and Romania, or Macedonia and Bulgaria) or economically more developed (Germany and Italy for Croatia, Greece and Italy for Albania).

Today, as consequence of the conflicts, the economic relations are not obvious. Considering the nationalist tendency in South-eastern Europe, the cohabitation of an important number of

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1 This point of view are presented by Fearon & Laitin (1996). The authors consider that the politics of the pluti-ethnic countries are taking into account the inter-ethnic risk and are able to prevent it, what they are doing in most of the cases (including in the former USSR).
different ethnics in the region needs rules that are more and more precise, in order to regulate the social relations. And, therefore we think it logical to observe and analyse the role and the place of the ethnics for economic relations. Or, is the ethnic diversity (or concentration) influencing the trade? And, in this case, in what manner?

Owing to the ethnic amalgam, consequence of the common history, social and economic networks were created and developed between the same nations living in different countries; as witness being, for example the Turkish interest in Bulgaria, the relations of Albanian ethnicity from Macedonian and Serb territories, etc. One of the characteristics of the ethnics is their common language. Also, the same language is also spoken by different ethnics (the Serbs and the Croatians). Thus, to what extent this language proximity is responsible for economic relations? Does it include conflict relations between states?

In order to evaluate the importance of the social diversity and of the linguistic ties for the trade we are using the gravity model. We employ the estimation method proposed by Santos & Tenreyro (2006), and are choosing Zero Inflated Poisson estimator, as we have an important amount of null flows. We realize robustness test to verify the error heteroskedasticity and the multicollinearity.

The article is structured as follows: first, we describe the research hypotheses, the studies concerning the South-eastern European trade, as well as those treating the place of ethnic diversity and social networks for the economic and trade development; second, we develop the gravity model for the trade and present the variables and the data used; and third, we present and analyse the results of the model.

**The Influence of Social Diversity on Trade – Literature Review and Research Hypotheses**

The South-eastern European trade during the last twenty years was under the impact of the political situation and the transition. The political disintegration influenced trade relations, but they remained important for the countries of the region, even if in lesser manner that between the developed states. Also, these are transition reforms that allow a better integration in the world economy. The regional economic integration of the South-eastern Europe is one of the objectives of the agreements signed between the states. But the results of different researches show that the countries have very diverse economic characteristics, and one observes, according to trade potential, an important regionalisation of the South-eastern Europe.

The ethnic fragmentation captures the impact of the ethnic concentration on the trade; and the languages spoken by the minorities comprise the importance of the proximity ties of trade relations between the nations in different countries. The literature arguments that the diversity of society
(ethnic, linguistic, religious) influences significantly (negative) the economic growth, can lead to political instability, and needs strong institutions for a better regulation of this situation. Linguistic knowledge of the trade partners can decrease the transaction costs and establish the confidence between people. Following these results and taking into account the situation in South-eastern Europe, we are inquiring about the impact of the society fragmentation on foreign relations in presence of a strong linguistic proximity between the South-eastern European countries.

**The ethnicities and the trade in South-eastern Europe**

Trade relations remained important, even after the political disintegration of the region. The division of the South-eastern Europe in sub-regions is done on basis of trade orientation of the countries and their importance for the regional trade. The countries react in dependence of their partners in accordance to the economic characteristics and political relations between them. Thus, the most integrated countries in the region are the former Yugoslav states (they have reached their trade potential); in the same time, all the countries have reoriented the trade flows to the EU, the integration process to this organism being one of the objectives of the states in the region. The cultural heterogeneity degree of the countries and the proximity between them should directly influence the regional trade. The important number of different ethnicities permits to diversify the information, and the language knowledge of the neighbour states allows an easier access to the markets of their neighbours.

From the beginning of the 90s the South-eastern European countries have searched economic and trade dynamism that would allow them a better integration in the world economy, different regional agreements prove it. But these countries failed to develop intense and balanced relations (Christie, 2002; Kernohan, 2006; etc.), and have a trade potential with the EU less important than that of the Central and Eastern European (CEE) countries (Van Brabant, 2001; Bussière, Fidrmuc & Schnatz, 2005; etc.). The researches on the trade of South-eastern European region analyse the political disintegration and its impact on economic relations, as well as the trade potential levels and the regionalisation of the countries.

The increase in the number of the countries in the South-eastern European after the collapse of the Berlin wall entails numerous questions concerning the impact of *political disintegration* on trade relations at the moment of the globalisation and of the economic integration in Western Europe.

One of the first authors that analyse the political disintegration in Eastern Europe were Fidrmuc & Fidrmuc (2000). They analyse three cases of disintegration (the former USSR, the
former Yugoslavia\textsuperscript{2}, and the former Czechoslovakia) in Eastern Europe, as well as the case of the German re-integration. They found that the former Yugoslav states have traded much more than the Western countries at the beginning of the transition: 24 times more than previewed by the model for the former Yugoslav countries, this ratio reaching 22 in the case of the developed countries (McCallum, 1995). This fact could be explained by the closeness of the world economy of those countries and by the remoteness from the important trade centres. During the 90s the trade intensity has decreased, the flows being directed to the EU: two times more than previewed by the model for the Yugoslav states. The trade intensity remains important, fact that reveals a common history of the countries that is more important that a unique currency or a free trade agreement.

Lamotte (2003) analyses the trade relations between the CEE countries, the South-eastern Europe, and the EU in the period 1991-2001. The countries from the South-eastern Europe had a trade volume more important than that previewed by the model, confirming the results of Fidrmuc & Fidrmuc (2000). This means a weak effect of the disintegration on trade in the region, the most noticeable division being between Croatia and Serbia and Montenegro. Also, the author found that the integration agreements have a limited impact on trade: despite the stimulator integration effect, the trade between South-eastern European countries remains always under their potential.

Lamotte & De Sousa (2007) and (2009)\textsuperscript{3} analyse the effects of the economic reforms on trade flows between South-eastern European countries during the transition. The first reforms of the 90s led to the decrease of the trade volumes of the CEE countries; the redirection to the EU market and the application of the structural reforms in the 90s had a positive impact on the exchanges. The results of Lamotte & De Sousa (2007) show that the countries, which better succeeded in structural reforms, had a decrease of trade intensity within the former country, and an increase of trade intensity with other countries between 1991 and 2001. Their results confirm those of Fidrmuc & Fidrmuc (2000): the trade redirection to EU market modifies the intensity between successor states and the political separation does not necessarily destroy the business and commercial networks. As well, the authors argue that, if the reforms did not take place, the trade between the states of the same former country would have registered a bigger volume of trade in spite of the political conflicts. Lamotte & De Sousa (2009) conclude that the trade intensity between successor states remains high and that there is not strong trade disintegration as consequence of political separation. On another side, they found that the transition is an important factor of commercial disintegration, and that it favours the integration of the countries in the world economy. The two studies conclude

\textsuperscript{2} The authors analyse three countries of the former USSR (Russia, Byelorussia and Ukraine), and two countries of the former Yugoslavia (Croatia and Slovenia).

\textsuperscript{3} De Sousa & Lamotte (2009) use the PPML estimation method as proposed by Santos & Tenreyro (2006), and De Sousa & Lamotte (2007) estimate using the OLS method.
that more the reforms are accomplished, more the countries are directed to the global economy: the structural reforms progress would allow to reduce the trade costs.

Following the research articles on trade potential, the South-eastern European countries have not yet attained the trade dynamism of the CEE countries (Kernohan, 2006). The regionalisation of the South-eastern Europe and the differences in the potential levels of the countries could be explained by the conflicts that took place in the 90s in the region.

Christie (2002) examines if the South-eastern Europe can be considered as a region or if it is divided in few sub-regions. According to the author, the South-eastern Europe is formed of three sub-regions: the former Yugoslavia, Albania, and Romania-Bulgaria. The former Yugoslavia has a trade potential under the normal with the EU, and can be divided itself in two other sub-regions, fact that was pointed out after 1999: the division East-West passes by the trade of Bosnia-Herzegovina, Croatia, and Serbia and Montenegro; but this division does not have any impact on Macedonian trade with Croatia and Slovenia. Also, “[...] there is a risk that the countries of the former Yugoslavia redirect massively to the EU and end up being a set of small peripheral economies that are next to each other, rather than integrated with one another”\(^5\). Albania is the less integrated and there are some doubts of its region integration in the near future. The last sub-region, Romania-Bulgaria, distinguishes by the fact that it is not directly implied in the conflicts, it have signed European agreements, and have a trade equal or above trade potential level with the EU, and the trade of these countries with EU is the only significant in the region.

Kaminski & de la Rocha (2003) analyse the effect of trade liberalisation and of free trade agreements on the trade volumes. In accordance to the results of their gravity model for the year 2000, the regional trade is under the previewed balance level. The trade between Albania, Bulgaria and Romania are under the regional potential levels, and the same situation is with the former Yugoslav republics. The flows between successor Yugoslav states have already passed over their trade potential: Bosnia-Herzegovina has important trade volumes with Croatia, and Serbia and Montenegro, due to special relations of its federal entities with each of these countries; the trade flows between Macedonia and Serbia and Montenegro are important because of the international embargo imposed to Serbia and Montenegro; and the only exception is the trade between Croatia and Serbia and Montenegro, that does not reach its potential because of the recent conflict between the two entities.

Kernohan (2006) analyses if the lack of trade openness in South-eastern Europe is an important problem for the region. The author considers that the transition reforms are less advanced

\(^4\) The South-eastern European countries studied by Christie (2002) are those of former Yugoslavia, Albania, Bulgaria and Romania.

here that in the CEE countries, and that the former Yugoslav countries do not profit from the free trade agreements signed under SPSEE. The results on the trade potential confirm those of Christie (2002), and show that the Balkan countries have different characteristics: if the non-Yugoslav states from the South-eastern Europe have trade levels under the regional potential, the other (the former Yugoslav countries) depend on the former regional ties; also, Bosnia-Herzegovina, Croatia and Bulgaria trade too much between them, these countries and Romania are less integrated with the rest of the region, and Albania and Bosnia-Herzegovina are under-represented.

Damijan, De Sousa & Lamotte (2006) analyse the trade potential by sectors in the Balkan region. They conclude that the potential was reached almost in all trade sectors between the South-eastern European countries and the EU. More precisely, the Eastern Balkans have achieved the potential level with the EU, but is not the case of the Western Balkans. Even if the region of South-eastern Europe have attained its potential with the CEE countries, the gains East-East of the trade agreements are limited. Another important conclusion of the authors is the weak integration of the South-eastern European region in the world economy, fact that justifies the need for the trade openness of the countries. Thus, the trade barriers diminished, and non-trade barriers increased over the transition period; the results show that these are the last ones that have more significant effects on trade, fact that is worrisome from the point of view of world integration of the countries.

As discussed in above papers, the trade in South-eastern Europe is under the impact of the recent political events and of the economic interests of each country. Thus, such countries as Serbia or Croatia have ceased to trade with each other as consequence of armed conflicts, while Moldova remains (energetically) dependent on Russian market as consequence of historical and political ties. The EU economic integration was and is one of the main objectives for the most of the countries in South-eastern Europe (Bulgaria and Romania are already EU members), but this process should be accompanied by a regional integration in order to be able to profit from the economic proximity to this zone (Kaminski & de la Rocha, 2003).

The South-eastern European countries inherited an ethnically and culturally heterogeneous population. From economic and commercial points of view this situation should allow them to have access to richer knowledge and, as consequence, to diversify their products and to access easier on other markets, etc. From the other side, in order to benefit from these cultural advantages, the countries must have the necessary resources to regulate the social relations. But the fragility of the

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6 The countries of the South-eastern Europe studies by Kernohan (2006) are the former Yugoslav states, Albania, Bulgaria, Romania, and Turkey.
7 Damijan, De Sousa & Lamotte (2006) analyse the countries: Albania, Bosnia-Herzegovina, Bulgaria, Croatia, Macedonia, Romania and Serbia and Montenegro.
new states, which have to face the economic and political restructuring of the society, does not permit to profit from this cultural wealth. It is also this concentration of diverse nations that was the catalyst of the political separation and of the conflict outbreak in the South-eastern European region. This political instability puts forward the difficulties of the governments to face the social bursting, and, as a result, the need to regulate these relations. Thus, this cultural diversity reflects the needs for institutional reforms, and is on the basis of political and economic decisions of the countries in the region.

Maybe the ethnic concentration is the catalyst of the conflicts in the region of South-eastern Europe, but to what extent the foreign economic relations are influenced by the ethnic fragmentation of the society?

One of the characteristics of the cultural diversity of this region is that the same nationalities live in different countries, thus creating proximity ties between the states. The increase in the number of the countries in the region also multiplied the number of borders between the same ethnicities residing in the region. Before 1990 the romanophone ethnicity represented the majority in Romania and the Soviet Socialist Republic of Moldova, the albanophone ethnicity was residing in Albania and on the territory of the former Yugoslavia, in Republics of Serbia and Macedonia, etc. After 1990 we can add to these nations the Croats and the Serbs that are minorities in Bosnia-Herzegovina; the Serbs becoming minority people in different former Yugoslav states – Croatia, Bosnia-Herzegovina, Montenegro; and the Albanian from the former Yugoslavia living actually in many states – Serbia, Macedonia; etc. This new nationality geography can have different consequences. On the one side, the conflicts between nations favour the political disintegration, as for example the Kosovo separation in 2008, or the frozen conflict in Transnistria. On another side, the relations between the same nationalities residing in different countries allow a rapprochement between these countries, and, so, they can deepen the economic integration in the South-eastern Europe, as for example, the trade relations between Romania and Republic of Moldova, between Bosnia-Herzegovina and Croatia, between Bulgaria and Macedonia, etc. This is namely this proximity that would permit to maintain and to develop the economic ties in spite of the political disintegration, and to favour the regional integration notwithstanding the economic orientation to other economic centres.

The political disintegration has certainly influenced the direction and the volume of trade, but were the economic relations between the same nations profitable for the trade development during the transition period?

In the conditions of the South-eastern regionalisation of the countries, and of the creation (or development) of the economic relations based on ethnic principles, it is obvious that the analysis of
the ethnic diversity and the impact of the proximity between nations in different countries on foreign trade becomes important: the magnitude of the ethnic commerce is a characteristic of the regional trade.

The ethnic diversity and the linguistic proximity

The South-eastern European countries are, in their majority, small states (with one exception, that is Romania), and its population is far from being ethnically homogeneous (with one exception, that is Albania). The particular feature of this region is that the ethnicities are culturally close to each other, they are often minorities in the neighbour countries, and/or speak the same language. These countries, during almost half a century, were part of the communist bloc, or even were the same country, the transition allowed comparable development of the institutions and of capitalist customs, and, not to forget, the country neighbourhood led to similar traditions issued from a common regional history. And it is this people concentration, which created and creates political inter- and intra-ethnic tensions. The negative influence of the political instability (conflicts) on foreign economic relations (trade) is obvious, but the impact of ethnic networks on trade between states is less intuitive. We present, as follows, the indicator of fractionalisation that is on the base of the ethnicity-trade relation analysis, as well as the linguistic networking importance for the trade between states that allow us to examine the proximity of the countries.

To analyse the impact of the society diversification on the economic development, two indicators are used in the economic science: the society fractionalisation and polarisation. The choice of the fractionalisation index depends on the events in South-eastern Europe, as the conflicts and the relations between diverse ethnicities. The quality of institutions and the government expenditures influence the relation between the ethnic concentration and political situation, and, as result, the economic growth depends on it. For the South-eastern Europe the ethnic concentration is a reality that had an important place for the political instability in the region.

The two indicators, fractionalisation and polarisation, were often employed to explain the political situations and its impact on economic growth of the country\(^8\). The indicators are taking into account the number of minorities (ethnic, religious or linguistic) in the countries, but they are conceptually different. Thus, the fractionalisation represents the probability that two randomly people of a society are part of different ethnic, religious or linguistic groups\(^9\); while the society

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\(^8\) See, among others, Alesina & La Ferrara (2005), Montalvo & Reynal-Querol (2002), etc.

\(^9\) The fractionalisation concept and its empirical use were developed by Easterly & Levine (1997), Alesina \textit{et al.}, (2003), Campos & Kuzeyev (2007), Alesina & Zhuravskaya (2009), etc.
polarisation reflects the homogeneity within a group and the heterogeneity between the groups forming that society\textsuperscript{10}.

For our study we choose the society fractionalisation indicator, namely taking into account the features of the two indicators.

Primo, in accordance to the proprieties of the indicators\textsuperscript{11}, the fractionalisation is as more important as the number of the groups in the society is big, while the polarisation reaches its maximum if the society is divided in two equal groups. Considering that one of the characteristics of the South-eastern Europe countries (in its wholeness) is the important number of ethnic minorities in the states, it is more appropriate to choose the indicator of fractionalisation than that of polarisation.

Secundo, the definition of polarisation stipulates different distances (heterogeneities) between groups, while according to fractionalisation these distances are implicitly constant. It is difficult to measure these distances, and it is practically impossible to evaluate their importance for the members of different groups: for a group (in this case, ethnic one) all other groups of the same society are seen as the others (e.g. the enemy), are they close or very different. Thus, the tensions between the South-eastern European nationalities are present as well as between ethnicities that are culturally close (Bosnian and Serbs) or that are very different (Moldavian and Russian). So, considering the inter-group distances as constant reflects better the reality of these countries.

Tertio, the highly fractionalised societies are disposed to the conflict onset, but their intensity is more moderate; in the polarised societies the incidence of conflicts are lesser, but they are more intense\textsuperscript{12}. In South-eastern Europe the interethnic relations are more and more regulated, and the risk of very violent conflicts diminishes; it was not the case at the beginning of the 90s. The lose of control by the state at the beginning of transition period resulted in violent conflicts, but the creation and the development of new institutions, the signature of political and economic agreements between countries allowed a better framing of these relations. As the increased violence of the conflicts (and not their disappearance) is not more actual in the region, we consider that the fractionalisation indicator reflects better this feature of the society.

There are for these reasons that we consider that the fractionalisation reflects better, than the polarisation, the situation in South-eastern Europe.

\textsuperscript{10} Esteban & Ray (1994) propose to conceptualise and to measure the polarisation. The empirical use and the theoretical development of this indicator were proposed by Montalvo & Reynal-Querol (2002), Reynal-Querol (2002), Bhavnani & Miodownik (2009), etc.

\textsuperscript{11} For a more detailed analysis of the fractionalisation and polarisation proprieties, see Alesina et al. (2003), Esteban & Ray (2006).

\textsuperscript{12} Schneider et al. (2006) and Esteban & Ray (2006) discuss the relation between fractionalisation, polarisation and conflicts, from the theoretical and empirical points of view.
The degree of the society diversification influences the productivity, the institutions, the political situation, as well as the economic development of the entire society. Many authors considered the fractionalisation indicator as a variable of economic growth, and used it to explain the influence of the ethno-linguistic and religious diversity on economic development. The authors observed that: the diversity in a society influences negatively the economic growth (Easterly & Levine, 1997; Alesina et al., 2003; Alesina & La Ferrara, 2005; Campos & Kuzeyev, 2007), it demands a better performance of institutions (Mauro, 1995; Caselli & Coleman, 2006; Lindnet & Strulik, 2008), and it influences the quality of governments leading to a situation of political instability (Mauro, 1995; Annett, 2000; Alesina & Zhuravskaya, 2009).

Among the first authors who studied the impact of the ethno-linguistic fractionalisation on economy were Easterly & Levine (1997). They use the data of Atlas Narodov Mira (1964) to analyse the influence of ethnic fragmentation, for the African countries, on economic politics, as trade, exchange rate, etc., and on political instability, that is the conflicts. They argue that an important degree of ethnic fragmentation explains the weak economic performance of the countries. Alesina et al. (2003) employ actualised data for almost all countries of the world, and confirm the results of Easterly & Levine (1997): they found a negative effect of racial fragmentation (ethnic, linguistic and religious) on the GDP per capita, on schooling, on the telephone numbers per capita. Alesina & La Ferrara (2005) consider that the management of politics could be more difficult for a heterogeneous society, in comparison to a homogeneous one. They argue that, in spite of a negative influence of social fragmentation on growth, the relation between the social diversity and the revenue is positive\(^{13}\), because more the production is diversified\(^{14}\), more the productivity gains are important. In these conditions, they propose a theoretical frame that allows the productivity increase of private goods\(^{15}\), employing the capabilities of individuals from different ethnic groups. Campos & Kuzeyev (2007) analyse the importance of ethno-linguistic diversity for the countries in transition and found that the dynamics of ethnic changes, as well as the deep economic changes influence negatively the economic growth. The results of Lindnet & Strulik (2008) confirm the preceding ones concerning the monotone negative influence of the fractionalisation on economic growth.

Mauro (1995), using the data of Atlas Narodov Mira (1964), found a negative and significant correlation between ethno-linguistic fractionalisation and the efficiency of institutions: the diversity engenders corruption and leads to a lesser diffusion of technology, and in this manner the last one

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\(^{13}\) Alesina & La Ferrara (2005) analyse the situation in different American states.

\(^{14}\) The production diversification is as more important as people have different characteristics (culture, customs, needs, etc.).

\(^{15}\) According to Alesina & La Ferrara (2005), in a heterogeneous society, the use of public goods has different objectives, and an important degree of diversity diminishes the utility of consumed goods.
has a negative impact on investments. In this context, Easterly (2001) and Caselli & Coleman (2006) consider that the institutions could frame the relations between different groups, taking into account that the making of social inter-group networks is difficult. According to Easterly (2001), these institutions would be even more useful in a heterogeneous society, in order to protect the minorities. The results of Lindnet & Strulik (2008) show that, if a country has weak or bad developed institutions and is not able to reinforce the propriety rights, the relation between social fractionalisation and the expropriation can be problematic.

Annett (2000) studies the importance of fractionalisation indicator, of political instability, and of government expenses for the economic growth. The author shows that more the society is fragmented, more are the government expenses, because and as a result of political instability. Alesina et al. (2003) verify the impact of fractionalisation on the quality of government, and argue that more expenses lead to lesser political instability. Caselli & Coleman (2006) analyse the specificities of the ethnic diversity in the conditions of exploitation and world conflicts, and they argue that, taking into account this diversity, the economic development diminishes the risk of conflicts, namely for the developing countries that are rich in natural resources. The authors mention also that the expropriation of these resources, as well as of the resources revenues can be on the basis of a conflict. Alesina & Zhuravskaya (2009) compare the segregation indicator\textsuperscript{16} with the quality of government, and found that a high degree of linguistic and religious segregation is associated to a worse government quality.

The reasons of this negative relation between the ethnic, linguistic and religious wealth (fragmentation) of the society, and the economic growth or development are many, taking into account that the evolution of these indicators reflects the situation in the country. Thus, the fractionalisation supports the corruption (Mauro, 1995), encourages the adoption of unfavourable economic politics (Easterly & Levine, 1997; Alesina et al., 2003), transforms the polity in instruments to search profits (Easterly & Levine, 1997), engenders political instability and conflicts (Mauro, 1995; Alesina et al., 2003). But also, the social fractionalisation is beneficial if the country has well developed institutions (Easterly, 2001; Alesina et al., 2003; Alesina & La Ferrara, 2005) and a good quality of government (Alesina et al., 2003; Caselli & Coleman, 2006; Alesina & Zhuravskaya, 2009). Thus, notwithstanding the difficulty of a consensus (Easterly & Levine, 1997), and in order to avoid conflicts and encourage growth, the states should adopt appropriate commercial politics (Caselli & Coleman, 2006) and infrastructure (Easterly & Levine, 1997), and should do or facilitate investments in education (Caselli & Coleman, 2006), as the consensus lack or

\textsuperscript{16} The segregation indicator, according to Alesina & Zhuravskaya (2009), allows considering the differences between the national and regional levels. The countries in transition are less segregates than the other, from linguistic and ethnic point of view.
the confidence increases the expenses of the state for the public goods, to the detriment of other economic politics (Easterly, 2001).

In general, the indicator of social fractionalisation is computed for three different groups of minorities: ethnic, linguistic and religious. Among these three groups, we choose the ethnic fractionalisation. According to Alesina et al. (2003), the ethnicity variable represents a combination of linguistic and religious characteristics. We consider that the ethnic aspect, in comparison to linguistic or religious diversity, better reflects the social conditions of the South-eastern European region. Diverse ethnicities speak the same language: the Serbo-Croatian is spoken by the Croatians, the Serbs, the Montenegrins; the same language is shared by Bulgarians and Macedonians. And many ethnicities have the same religion: the orthodox religion is used on the Moldova territory by the Moldavians, the Russians, the Ukrainians or the Gagaouz, etc.

The information and the knowledge are as multiplied as the number of the different persons (ethnicities) is important. A heterogeneous society is efficient if the relations between the groups are well framed\textsuperscript{17}. A better regulation of these relations allows increasing the confidence between nations and between countries, and, as result, to develop good economic relations. This regulation may be done at national, inter-state or international level. Within the country, political decisions have to ensure a better framing of relations between different people. These decisions depend on the history of the country and on the relations that have resulted from it; as well, they are developed between the majority and the minority nations of the countries. In our case, in South-eastern Europe the recent history – the communist experience and the conflicts – certainly modified the relations between people, and, as consequence, the confidence between them. At the inter-state level, the objective of trade facilitation and cooperation are laid on international agreements. The agreements under SPSEE signed in South-eastern Europe have the economic goal to intensify the development and the cooperation of economic and trade relations, and the political goal is to ensure the peace in the region\textsuperscript{18}. These agreements, \textit{grosso modo}, have as objective to transform the conflicts in trade in order to permit the economic development. In this context, the ethnic fractionalisation allows us putting forward framing of inter-ethnic relations in a country, and considering its impact on trade relations.

The relation between the social diversification (fractionalisation) degree and the foreign trade was not studied in the literature, as we know. We are interested in which manner the cohabitation of several nationalities influences the foreign relations in South-eastern Europe, in the context of

\textsuperscript{17} Collier (2001) considers that the efficiency of the heterogeneous societies is obtained also by the volume of information and the contract reinforcement.

\textsuperscript{18} The SPSEE has also a third part (or working table), that is the democratisation and human rights.
recent conflicts, of transition, and of economic and trade agreements signed between countries. In the case of South-eastern Europe, the political disintegration influences directly the trade, and the regionalisation impedes a more important trade development (cf. supra). A high degree of ethnic concentration could be on the basis of these relations: the South-eastern European conflicts have ethnic roots\textsuperscript{19}, and as a result of these conflicts different sub-regions were created. Thus, in Bosnia-Herzegovina, for example, three former Yugoslav ethnicities – the Serbs, the Croatians and the Bosnians – represent 99.4\% (\textit{CIA World Factbook}, 2000) of the country’s population. And the trade between federal entities and the countries of the respective ethnicities, Serbia and Croatia, could be explained by the presence of these different people. This situation can be also observed in other region countries’ trade: the trade between Moldova and Romania, Bulgaria, Turkey, etc.; the trade between Macedonia and Albania, Turkey, etc.

The trade is influenced partially by the social networks of the two countries. The knowledge of the network members allow decreasing the trade costs and develop the confidence between trade partners. South-eastern Europe is not only characterised by an important minority concentration, at the same time these minorities are residing in different countries of the region. Even if the place of these minorities differs in each country, the cultural rapprochement between them could influence the relations in the region.

The interest of economists about the relation ethnicity-trade is recent\textsuperscript{20}, and the most of the papers analyse the impact of immigration on trade evolution. In the majority of these works, the explanatory variable is the number of immigrants from their respective partner countries. Thus, the authors search to explain the trade partly by the immigration effect, is it recent or not. The analyses concerning the relations between the trade and the ethnic immigrant networks converge to the conclusion that the last ones influence significantly and positively the import and export flows: Gould (1994), Mundra (2005), Bandyopadhyay \textit{et al.} (2006) for the USA trade; Rauch & Trindade (2002) for the Chinese networks; Wagner, Head & Reis (2002) for the Canadian trade; Girma & Yu (2002) for the Great Britain case, etc.

A bigger \textit{product} differentiation between countries, according to White (2007) and Girma & Yu (2002), implies a more important impact of immigrants networks on trade. More precisely, the networks have a stronger influence on imports than on exports (Hong & Sanhapparaj, 2006), and

\textsuperscript{19} This nationality diversity does not necessarily mean that it is the cause of the conflicts. One of the example is the region of Voivodina in Serbia, where the place of the minorities is important; or the relation between the Moldavians and the Ukrainians from the Moldova (a minority that is more numerically important that the Russians) that has not been characterised by conflicts. The conflict causes depend on the place of the nations in the society, of the statute, etc. in this paper we do not present this aspect.

\textsuperscript{20} One of the first papers on immigration impact on trade flows is that of Gould (1994).
even the profits of the new immigrants decrease faster in the case of exports, in comparison to imports (Gould, 1994; Wagner, Head & Ries, 2002).

The search of trade information is directly and positively influenced by the distance (cultural and geographical): according to Rauch (1999) and Herander & Saavendra (2005), the presence of immigrant networks allows reducing the trade costs. Bigger is the cultural distance, more the networks influence is important (Herander & Saavendra, 2005; White & Tadesse, 2007), for example the North-South in comparison to the trade North-North. And namely, the linguistic knowledge are as valuable, as the linguistic distance is big (Dunlevy, 2006). On contrary, a bigger cultural distance diminishes the export flows of cultural products in comparison to other goods (White & Tadesse, 2008).

Girma & Yu (2002), Dunlevy (2006) and White & Tadesse (2007) conclude that the similarities between institutions of origin and destination countries of immigrants diminish their capacities to affect the trade, the information being less precious. According to White (2007 and 2008), these are the developing countries that present more pro-trade effects, as the market mechanisms are not very developed. Dunlevy (2006) found that the networks are more important if the market of its partner is less transparent. From the demand side, one can observe that the networking importance is decreasing gradually according as the contract institutions and the information technology are developing, but it is not necessarily the case from the supply side (Rauch, 2001).

Within the networks, the information between their members is essential and facilitates the meetings between the buyers and sellers, but also reinforces the sanctions (Rauch & Trindade, 2002). Wagner, Head & Ries (2002) explain the non-significance of a common language by the fact that it is more important to be a member of the network than to speak a foreign language. But the impact of trade networks on the economic efficiency depends on their openness to new members (Rauch, 2001).

Guiso et al. (2004) analyse the mutual confidence of European citizens, and its influence on the volume of trade. The obtained results confirm that the trade is affected by the culture, but this does not necessarily mean that this impact takes place as a result of some prejudices of the population.

Olivier et al. (2008) propose a model to analyse the interactions between the international integration and the cultural identity. They study the impact of the international trade and of the social integration, and found that the identity values influence differently these two aspects of globalisation: reducing the demand impact on the price, the integration of markets tends to favour
the intercultural divergence; at the opposite side, weakening the externality effects of local groups, the social integration creates a global cultural convergence.

The reasons of the impact of ethnic or immigrant networks on trade are diverse. First, the immigrants influence the supply and the demand in the two countries, and thus their prices and production; second, these networks allow the decrease of trade costs by the knowledge that their members have (linguistic, cultural, taste, institutional, etc.); and third, they establish and maintain confidence between countries, a necessary element for the trade contracts (Mundra, 2005; Rauch & Trindade, 2008).

The influence of ethnic, linguistic or cultural networks on trade in South-eastern Europe could have the same consequences as those presented in the above papers. But the relations between the same nationalities and people of the region are directly depending on the history of each country, that is the conflicts during the 90s and the agreements signed between the states; so, the positive and significant influence could be influenced by these events. The recent history in South-eastern Europe, more precisely the communism and the transition reforms, are responsible for the redirection and for the volume of trade. But the conflicts and the political separation did not necessarily destroy the economic networks (Lamotte & De Sousa, 2007). These social networks can be cultural, if we talk for example about the Albanian people in Serbia (including Kosovo) and in Macedonia, about the Bulgarian people in Moldova, about the Serb and Croat people in Bosnia-Herzegovina, etc. So, the economic and trade relations could result from the former.

We choose to introduce the linguistic variable, to the detriment of an ethnic or religious indicator. The variable of ethnic diversity (fractionalisation) take into consideration the society division in different nationalities, that is an indicator built upon linguistic, religious and racial criteria. We consider that a religious indicator is not relevant for the South-eastern Europe, as, besides the fact that it represents a criterion to distinguish between ethnicities, the spoken language is more important than the religion shared in the region. In these condition, the introduction of a indicator of minority languages allow observing the importance of linguistic knowledge for the people of different ethnicities, sharing the same language and having different statutes in their country of origin (Serbs and Croatians, Macedonians and Bulgarians, etc.).

It is obvious that the linguistic knowledge presents the advantage to facilitate the communication, and so, it permits to have access to information and decreases the costs of trade

\[21\text{ We cannot talk about immigration networks in this region, as it is not known exactly, for the most people, when they established here.}\]

\[22\text{ Among the linguistic conflicts one can notice the confusion between the Moldavian language as regards to the Romanian one, the misunderstanding between the Bulgarian and the Macedonian.}\]
negotiations. Also, this knowledge represents a good indicator of sharing the same culture or having
a cultural rapprochement between countries. We observe, thus, the influence of this cultural
proximity and the place of the linguistic minorities for the trade relations. As well, speaking the
same language is not equivalent to be a member of a group. Employing the linguistic variable we
are putting ahead the role of these knowledge, that is one of the essential proprieties of social
networks, but which has the feature not to possess the obligations (advantages and disadvantages)
of these groups, as, for example, the information exchange on buyers and sellers, or the sanctions to
which the members are exposed. This variable presents also the confidence level between people in
the region. If the ethnic fractionalisation represents the state of inter-ethnic relations, the minority
language indicator allows us to understand the confidence between ethnicities that is on the basis of
relations between nationalities.

The gravity model specification

In this paper we are searching to evaluate the impact of the ethnic diversity and of linguistic
proximity on trade development in South-eastern Europe. In the gravity model we introduce
variables that reflect the economic situation of the region in the context of political development
and transition. The political instability is one of the consequences of the cohabitation of several
ethnicities; at the same time, the cultural proximity between countries allows also an economic
rapprochement. The communist history plays an important role for the trade relations, and as result
of reforms from the first decade, this common past has allowed the development of similar
conditions and institutions. The economic agreements between states have the goal to develop the
cooperation in the region, they influence the trade volumes.

The countries from the model are all partners of South-eastern European countries. The
gravity model is estimated for five years chosen during the transition period. We have chosen to do
a cross-section estimation in order to be able to observe the evolution of the indicators during the
transition, that is an advantage in comparison to the panel estimation that allows obtaining
generalised results for the entire period.

The data

The empirical approach of the present work is based on the gravity model, which is largely
used and recognised for the analysis of the trade flows. Analogously to the gravity laws in physics,
the trade is explained by the mass of the countries and by the distance that separates them. Other
variables, said natural, are introduced in the model: the common border and shared language; and
an instrumental variable, reflecting the intra-regional trade, is added. The two variables of interest are the ethnic fractionalisation and the linguistic proximity. And the variables of control, communist past, recent conflicts, and economic agreements, allow us to explain the importance of the variables of interest.

Thus, the initial specification of the model is as follows:

$$T_{ij} = \exp\left(a_0 x_{ij} u_{ij}\right)$$

where the variables are:

- $T_{ij}$ is the trade volume between the countries $i$ and $j$;
- $x_{ij}$ represents the explanatory variables;
- $\alpha$ represents the unknown coefficients ($\alpha_0$ is the constant term); and
- $u_{ij}$ is the error term.

And the coefficient $i$ represents the importer country and $j$, respectively, the exporter country.

For the volume of trade between countries we are choosing the import flows. We consider that the inflows, in comparison to outflows, are better counted up by the states, and, as a result, they reflect better the trade volumes.

The first estimation model comprises the basis variables of the gravity model, characterising the unilateral features, those that are common for the two trade partners, as well as the ethnic fractionalisation.

In our model we have chosen to represent the country masses by their respective populations: $pop_i$ and $pop_j$. We have opted for the population variables as proxy of country masses, in order to point out the fact that the countries from isolated regions have the tendency to trade more with each other, all other things being equal, if their population size is smaller (following the principle of economy of scale). As well, the countries’ size (their populations) expresses the material quantitative demand (and not $ad$ $valorem$) of the states. As the South-eastern European countries receive capital inflows (remittances sent from abroad), often non-computed at national level, we consider that the population variable represents better the internal demand as compared to GDP or GDP expressed in purchasing power parity. Additionally, following the RESET test (Ramsey, 1969) for a correct model specification, the population variable, in comparison to the GDP, presents better results.

The introduction of the distances between countries serves as a proxy for the transport costs between the origin and destination. They correspond, in most of the cases, to the distances between countries capitals, or, in some cases, between the main economic centres of the country. The use of
kilometric distances was been fast criticised\textsuperscript{23}, the imprecision of this indicator for a country being obvious. In order to better represent the country mass and the total transport costs, including the time, the kind and the sort of the transport, etc., an additional measure is taken into account, namely the distances between internal merchants or the internal distances (Wei, 1996; Leamer, 1997; Wolf, 1997; Helliwell & Verdier, 2001).

In our study we have chosen to follow the method of Head & Mayer (2002). They found that the distance measure is over-evaluated in the literature, and consider that this one is more important if the countries are closer. Head & Mayer (2002) propose to counterpoise the distance between two countries in comparison to their main cities, using the expression:

\[ \text{dist}_{ij} = \left( \left( \sum \frac{\text{pop}_p}{\text{pop}_i} \right) \left( \sum \frac{\text{pop}_q}{\text{pop}_j} \right) \text{dist}_{pq} \right)^{1/d} \]

where the variables are:

- \( \text{dist}_{ij} \) is the distance between the countries \( i \) and \( j \);
- \( \text{pop}_i \) (\( \text{pop}_j \)) represents the population of country \( i \) (\( j \));
- \( \text{pop}_p \) (\( \text{pop}_q \)) represents the population of the agglomeration \( p \) (\( q \)) in country \( i \) (\( j \));
- \( d \) measures the sensitivity of trade flows in comparison to the distance \( \text{dist}_{pq} \), and is equal to 1.

The measure of the distance proposed by Head & Mayer (2002) allows computing so as « [the] bilateral trade flows between geographical units like nations are equal to the sum of bilateral trade flows between their sub-units »\textsuperscript{24}. We expect that the distance coefficient has a negative sign.

The dummy variable of the contiguity – \( \text{front}_{ij} \) – is equal to 1 if the two partner countries have a common frontier, and 0 otherwise. This variable points out the advantages of a land border, as the trans-border trade, the transit null costs, etc. But the use of this variable remains rather a habit than a practice that is theoretically or empirically justified, because we would need much more data to really put forward the fact that one passes one country, many countries or none in order to attain the destination (Head & Mayer, 2002). It is obvious that this coefficient has a positive sign.

The language spoken in the two countries – \( \text{ling}_{ij} \) – is a dummy variable that is equal to 1 if the countries share the same majority language (spoken by at least 20% of the population), is it official or not, and 0 otherwise. The researches that employ the dummy of the common language found generally that this variable influences positively the trade (Helliwell, 1999; Martinez-Zarzoso & Nowak-Lehman, 2003; Baier & Bergstrand, 2005; Lavallée, 2005; Montanari, 2005; Bussière \textit{et al.}, 2005; etc.), that is the case of European Union, OECD or the Eastern European countries. This positive impact is obvious, as the knowledge of the trade partner language diminishes considerably

\textsuperscript{23} Alcaly (1967), Ferguson (1972), etc. criticised the approach of kilometric distance between cities.

the transaction costs. And, in addition, according to Helliwell (1999), to share the same language contributes as well to the creation of an institution networking and to the confidence making, favour the migration and, by this way, develop the exchanges.

The dummy variable of South-eastern Europe – ESE – is included in order to hold the importance of the regional trade, of the specific features of the countries, and the regional integration level. We expect that this coefficient has a positive sign if the volume intra-regional trade flows of the South-eastern European countries exceed their trade volume with the countries from the rest of the world.

Taking into account all these variables leads us to the next gravity model specification:

\[
T_{ij} = \exp(a_0 + \alpha_1 \text{pop}_i + \alpha_2 \text{pop}_j + \alpha_3 \text{dist}_{ij} + \alpha_4 \text{front}_{ij} + \alpha_5 \text{ling}_{ij} + \alpha_6 \text{ESE} + u_{ij})
\]

where the variables correspond to those presented here above.

The influence of the social diversity and the cultural rapprochement between countries is the mainline of our study. As follows, we define and present the sources of these two variables.

In order to represent the ethnic concentration in a country, we use the fractionalisation indicator: \text{fract}_i \text{ and } \text{fract}_j. This indicator represents the probability that two randomly chosen people in a country belong to different ethnic groups. Thus, it captures the fragmentation degree of a society. There are few studies that employ the ethno-linguistic indicator to explain the trade flows\(^{25}\).

The fractionalisation indicator is a decreasing function of the Hirschmann-Herfindahl concentration index. The calculation formula is:

\[
\text{fract} = 1 - \sum_{i=1}^{m} \frac{(n_i/N)^2}{1} = 1 - \sum_{i=1}^{m} p_i^2
\]

where the variables are:

\text{fract} is the fractionalisation value;

\(n\) is the population of the minority \(i\) in the country population \(N\);

\(m\) is the number of minorities in the country; and

\(p\) is the part of the minority \(i\) in the country population \(N\).

The fractionalisation is a strictly concave function, and according to Esteban & Ray (2006), \(F\) is increasing if:

(a) persons from a bigger group move to a smaller one;

(b) inter-group distribution is uniform;

(c) group number is important (and inter-group distribution is uniform);

\(^{25}\) For example, Daumal (2008) is using the linguistic fractionalisation indicator in a gravity model, in order to underline the place of the linguistic diversity in the federal states.
Thus, the fractionalisation attains its maximum when each group contains one individual. The data for the calculation of the ethno-linguistic and religious fractionalisation proceed from ethnological studies and from national census. In 1964 Soviet ethnologists propose a data base presented in *Atlas Narodov Mira*, and including the ethno-linguistic groups for 119 countries. The first criterion is the linguistic one, and, in a lesser measure, those ethnic and religious. Taylor & Hudson (1974) compute the ethno-linguistic fractionalisation index based on the data from the *Atlas Narodov Mira* (1964).

The ethno-linguistic data base was completed and actualised during the years. Gurr (1996) presents a list of minorities at risk in different countries, but it does contain only a limited number of people/populations, fact that makes difficult its use in the empirical studies. Annett (2000) builds an ethno-linguistic data base, more complete (for 150 countries), based on *World Christian Encyclopedia* data. Collier (2001) proposes to take into consideration the presence of the dominant (majority) nationality, as its place and role in societies with dominant ethnicity, compared to other country nationalities, are different from a society with only minority ethnicities.

More recently, Alesina *et al.* (2003) and Fearon (2003) proposed data bases for ethno-linguistic and religious fractionalisation. Alesina *et al.* (2003) develop three different indicators for 201 countries: ethnic, linguistic and religious. Since the criterion to define the ethnicities is often the language, the ethnic fractionalisation is a melange of linguistic and racial criteria. The main source of the authors is *Encyclopedia Britannica* (2001). For the 26 countries in transition, the fractionalisation data were actualised by Campos & Kuzeyev (2007), for the period 1989-2002. They have used the national census data. Fearon (2003) proposes a method to compute the society fragmentation considering different ethnicities. This method takes into account the criteria that are own to each country to define nations living on its territory. The author includes as well the cultural inter-group distance.

Two other indicators were proposed by Bossert, D’Ambrosio & La Ferrara (2006) and Alesina & Zhuravskaya (2009). The goal of the Bossert *et al.* (2006) work is to characterise a generalised indicator of ethno-linguistic fractionalisation. They take the individual and its personal characteristics at the base of the generalised fractionalisation. Alesina & Zhuravskaya (2009)

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26 Apart the ethno-linguistic indicator of *Atlas Narodov Mira* (1964), other indicators to measure the social diversity were developed; among others Roberts (1962), Muller (1964), Mauro (1995), etc.

27 The author mentions the different degrees of population diversification (for example, the choice to class in the same category the white people of the USA, having not made the difference between their different European origins, as well as the white American people).
compute the indicators of fractionalisation at regional levels (sub-national) and those of segregation at national levels.\(^{28}\)

For our study we employ different sources, and we actualise the data where it is possible. Thus, we take as basis the indicator proposed by Alesina et al. (2003), whose data we actualise according to Campos & Kuzeyev (2007) for the transition countries, and according to *CIA World Factbook* data base if it is necessary and available. We do not follow the principle of including the distance between groups or between group members, as proposed by Fearon (2003) and Bossert, D’Ambrosio & La Ferrara (2006), we consider these distances as being constant (*cf.* supra). Since within the majority nationality of a country the (political) visions can diverge (as it has the political power and there is little risk to lose it)\(^{29}\), we do not introduce the variable of the dominant ethnicity, as proposed by Collier (2001). The accessibility of data is another argument for our sources’ choice: the data base of Gurr (1996), Annett (2000), Alesina & Zhuravskaya (2009) do not contain all the countries of our study.

So, the final specification of the first model is:

\[
T_{ij} = \exp(a_0 + a_1 \text{pop}_i + a_2 \text{pop}_j + a_3 \text{dist}_{ij} + a_4 \text{front}_{ij} + a_5 \text{ling}_{ij} + a_6 \text{ESE}) \left( \frac{\text{fract}_i + \text{fract}_j}{2} \right) u_{ij}
\]

where the variables correspond to those presented here above.

At a second level of estimation, the second model, we include the variable of languages spoken by the national minorities in the trade partner countries: \(\text{ling}_1\) \(\text{et ling}_j\). This variable is a dummy that is equal to 1 if at least 1% of the country population speaks the majority language (spoken by at least 20% of the population) of its trade partner, and 0 otherwise. The data proceed from the data base *CIA World Factbook*. This variable allows us to examine the impact of the linguistic rapprochement on exchange flows in the conditions of the ethnic concentration within the countries.

In the papers presented here above (*cf.* supra), the authors, in the most of the cases, have introduced, as proxy of social and business networks or of minority and immigration groups in a country, the number of people that are members of these groups, or the weight of these populations in the total country population. As compared to these works, we have chosen to include a dummy variable, and not a variable containing the mass or the percentage of these minorities:

> as this choice permits to point out the ethnicities importance for the trade, independently are they or not numerically important in comparison to the population size; and

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\(^{28}\) The segregation indicator is built following the principle that if the regions have close diversity levels of the country one, it take a value near to 0, and in the case where the regions are more homogeneous, the value is near to 1.

\(^{29}\) It is the case of the Republic of Moldova, for instance, where the majority population (Moldavian) is divided between the pro-West (EU) and pro-East (Russian) visions.
the introduction of absolute or relative values would oblige us to include a big number of dummy variables or to choose between different ethnicities.

Thus, the second model is presenting as follows:

$$T_{ij} = \exp(a_0)[pop_i^{a_1} pop_j^{a_2} dist_i^{a_3} front_i^{a_4} ling_i^{a_5} ESE_i^{a_6} \{(frac_i^{a_7} frac_j^{a_8})(ling_i^{a_9} ling_j^{a_10})\}] u_{ij}$$  \hspace{1cm} (6)

where the variables correspond to those presented here above.

In accordance to the conclusions of Wagner, Head & Ries (2002), to be a member of a network could be more important than to speak a foreign language. The authors have used the index of a common language, that corresponds to the probability that two randomly chosen persons, residing in the two partner countries, share the same language. They introduced the data for 30 languages and verified their influence on trade. The results they obtained show that, in the presence of an important social (immigration) network, the language is not statistically significant in order to explain the trade flows. In our paper, taking into account the ethnic diversity degree (the fractionalisation) of a country, the languages spoken by the minorities reveal the importance of the cultural rapprochement of the states for the foreign economic relations.

Additionally to the above variables, the model is augmented by control variables to verify the trade flows. These ones encompass the economic and political characteristics that could influence the exchanges, as the communist past, the recent conflicts, and the free trade agreements. We have chosen these three indicators, which, we consider, will allow us to point out the parameters explaining the cultural diversity and rapprochement.

Thus, considering that the South-eastern European countries are in the transition period, first of all, we verify for the communist past (third model): $comm_{ij}$. This is a dummy variable equal to 1 if the two partner countries had a communist past, and 0 otherwise. Since the relations between different ethnicities and the relations between different countries have had a particular development in the South-eastern Europe in the period before 1990 (for example, the former Yugoslav states were the same country), and that these countries had to revise and to reframe their relations after 1990 (for example, the relations between Moldova and Romania), we think that the communist past is a relevant variable to analyse the relation between the national minority and the trade. As well, this variable allows us to mark out the place of the transition, and to observe the importance of the social fragmentation in the context of systemic changes.

As the conflicts have a direct influence on political and economic relations between states, we introduce a respective variable (the fourth model): $conflict_{ij}$. It holds the conflicts between two countries in the period 1992-year of analysis. This dummy variable is equal to 1 if the couple of
countries had at least one conflict during the period, and 0 otherwise. The conflicts, that took place in South-eastern Europe, often were assigned as having ethnic basis. Since we include the presence of the conflicts after 1990, it translates as well the recent memory of the people, and, with the communist past variable, we control for the place of the history for the exchange flows. The conflict variable presents a particular importance with a double effect: from one side, it compounds the tensions that can still exist between trade partners, and from other side, it represents the image and the reputation of the countries, as well as the confidence that the countries can have face to each other as a result of the conflict.

The free trade agreements signed by the countries in our sample have as well as political, and economic goal (fifth model). This is a dummy variable equal to 1 if the couple of country signed the agreement, and 0 otherwise. From a commercial point of view, they comprise clauses to easy the exchanges, even if they can have different impact on trade at the level of each country or of the entire region. There are economic agreements to deepen the economic integration (EU), to prepare the transition countries to the EU integration (CEFTA), to promote the economic and political stability in the region (SPSEE\(^{30}\)), or to maintain the economic and political relations (CIS). The inclusion of these dummy variables allows to capture the part of the trade volume due to these agreements.

Thus, the explanatory variables vector, \(x_{ij}\), comprises the unilateral variables of country masses, the distance, the bilateral dummy variables (contiguity and common language), the variable of interest for our model, and the variables of control. So, the model is specified as follows:

\[
T_{ij} = \exp(\alpha_0) \left[ \text{pop}_i \alpha_1 \text{pop}_j \alpha_2 \text{dist}_ij \alpha_3 \text{front}_ij \alpha_4 \text{ling}_ij \alpha_5 \right. \\
\left. \text{ESE} \alpha_6 \left( \text{fract}_i \alpha_7 \text{fract}_j \alpha_8 \left( \text{ling}_1i \alpha_9 \text{ling}_1j \alpha_{10} \right) \right) \right] \left( \text{comm}_ij \alpha_{11} \text{conflict}_ij \alpha_{12} \left( \text{SPSEE} \alpha_{13} \text{UE} \alpha_{14} \text{CEFTA} \alpha_{15} \text{CIS} \alpha_{16} \right) \right) \right] \right]
\]

where the variables are:
- \(\alpha_0\) is the constant term;
- \(\alpha_1...16\) are the coefficients of the variables of the model;
- \(\text{pop}_i\) and \(\text{pop}_j\) are the population variables of country \(i\) and \(j\);
- \(\text{dist}_ij\) is the weighted distance between the countries \(i\) and \(j\);
- \(\text{ling}_ij\) is the dummy variable of common language between countries \(i\) and \(j\);
- \(\text{front}_ij\) is the dummy variable of the contiguity of the countries \(i\) and \(j\);
- \(\text{ESE}\) is the dummy variable capturing the South-eastern European trade;
- \(\text{fract}_i\) and \(\text{fract}_j\) are the variables of ethnic fractionalisation in the countries \(i\) and \(j\);

\(^{30}\) Even if the SPSEE was launched in 2000, this variable is introduced in the model from 1996, as Romania and Moldova concluded a free trade agreement in 1992, which, as result, is introduced in the Stability Pact.
ling\(_i\) and ling\(_j\) are the dummy variables of the languages spoken by the minorities in the countries \(i\) and \(j\);

\(comm\(_{ij}\)\) is the dummy variable of the communist past of the countries \(i\) and \(j\);

\(conflict\(_{ij}\)\) is the dummy variable of the conflict after 1992 between the countries \(i\) and \(j\);

SPSEE, EU, CEFTA and CIS are the dummy variables of the bilateral and/or regional free trade agreements signed between the countries \(i\) and \(j\);

\(u\(_{ij}\)\) is the error term.

The countries and the estimation period

In order to be able to evaluate the importance of cultural relations for the trade in South-eastern Europe, in the context of the transition and recent conflicts, we introduce the trade relations between countries that have a relative importance for the countries of interest. The estimation years are also important for the development of the region and put ahead the main events taking place in the South-eastern Europe.

The country sample of our study comprises 53 countries: 8 countries from the South-eastern Europe\(^{31}\), 15 countries members of the EU before the May the 1\(^{st}\) 2004, 10 countries integrating the EU in 2004, 7 countries members of the CIS, 3 countries members of the EFTA, 8 non-European countries members of the OECD, and 2 bid Asian economies, China and India. Thus, our sample consists of \((53 \times 52 = )\) 2756 potential observations for trade of the South-eastern European countries and with the rest of the world.

The choice of countries is not done randomly: we followed the principle that the South-eastern European countries tend to the economic development of the developed countries, as the OECD states, but their development is similar to other transition countries, as the CEE countries or the CIS. Thus, notwithstanding the almost non-existent trade between, for example the Mexico and the South-eastern Europe, this country is included in the study, as it is an OECD member. The 10 EU member states from 2004 are introduced in the sample, since the economic and political development is very similar between the two groups. On the contrary, considering the physical distance, the small volumes of trade and the remoteness from the common interest centres with, for example Tajikistan or Kyrgyzstan, these countries (as some others) are not included in the study, even if they are CIS members. As well, China and India are introduced in the analysis, since they are among the first 50 trade partners of the most of the South-eastern European countries, and they play an important role in the world trade.

\(^{31}\) In our study we consider Montenegro and Serbia as one country, since the first one became independent in 2006.
We have opted for the cross-section estimation of our gravity model for five years during the transition period: two years during the first decade, or the crisis period, 1996 and 1999, and three years during the second decade, 2002, 2004 and 2007. The number of observations for each year differs, as we lack data. Thus, we have 2466 observations for the year 1996, 2701 for 1999, 2728 for 2002, 2726 for 2004, and 2720 for 2007.

We have chosen to begin with the year 1996, as it is the first year after the end of wars in the former Yugoslavia; while 1999, on contrary, is the year of Kosovo bombardment. The year 2002 estimations permit us to examine the first results of the regional agreements signed under the Stability Pact for the South-eastern Europe; the estimations for 2004 and 2007 reveal the situation in the region during the two moments of EU enlargement. The choice of these analysis years allow a better understanding of the economic development conditions, putting forward the crises and their consequences during the first decade, and the economic situation and events from the last decade.

**The model estimation and the results**

The estimation method of the gravity model, following the Anderson & van Wincoop (2003) approach, is that proposed by Santos & Tenreyro (2006). The robustness tests reinforce the reliability of our model results.

The obtained results correspond to those generally found in the literature. We have observed also a positive influence of the ethnic diversity, as well as we have noted a relation between the linguistic proximity and the conflicts.

**The model estimation**

To estimate our model we follow the approach proposed by Anderson & van Wincoop (2003). According to it, the trade between the countries decreases as a result of a relative trade protection. From a theoretical point of view, the trade is determined by the relative trade barriers. That is, the trade between two countries depends on the bilateral barriers between them, which are determined in comparison to the barriers that the two countries have with the other countries or the rest of the world: the bi- and multilateral resistance.

Based on a constant elasticity of substitution (CES) utility function, the authors obtained the price indices, which are depending on all the bilateral barriers. Summing up, these price indices correspond to the multilateral resistance. Anderson & van Wincoop (2003) have proposed a complex method to compute these indices. Since they are not easily observable and one has to
calculate them following a complex non-linear method, many authors\textsuperscript{32} replace them by the fixed effects of the country of origin and of destination. The results of two approaches are consistent, and the differences are relatively small, fact that leads to use the second method for the empirical studies, for facility reasons.

Thus the gravity equation takes the form:

\[ T_{ij} = \exp(a_0 + b_{ij})x_{ij}^u u_{ij} \]  

(8)

where the variables are:

- \( a_0 \) is the constant term;
- \( b_{ij} \) represents the term capturing the fixed effects;
- \( x_{ij} \) is the vector of the variables in the model;
- \( u_{ij} \) is the error term.

Recently, Santos & Tenreyro (2006) proposed to estimate the gravity model (and more generally the constant elasticity models) in their multiplicative form, namely using the pseudo-Poisson Maximum Likelihood (PPML) estimator. The authors have observed that the errors obtained by the method of ordinary least squares (OLS) are heteroskedastic (see gr. I), and as consequence, it leads to final biased results, and a false interpretation. On contrary, the Poisson estimator remains robust to the heteroskedastic parameters. In addition, the PPML estimator allows including the null trade flows between states. These null flows can have several sources: either the countries does not trade at all with each other (for example, Moldova and New Zealand), or the trade flows are down approximated as they are very small but not null, or simply the zero flows can be the data lack or incorrectly computed. As argued by Santos & Tenreyro (2006), the estimation errors of the OLS are heteroskedastic. We present in the graph I the error distribution of our model estimated by OLS, which confirm the heteroskedasticity nature of this estimator.

The Monte-Carlo simulations, made by the authors, confirm the consistency and the efficiency of the PPML estimator as compared to the OLS, non-linear least squares and methods. Thus, the PPML estimator biases are always small and the results are robust; and it is not the case of the other estimators.

\textsuperscript{32} See Feenstra (2004) for an exhaustive list.
The heteroskedasticities Huber-White of the models based on OLS estimation: error distribution
### Tab. 1: Estimations of the First Model: OLS and PPML Estimators

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Importer fixed effects: Yes
Exporter fixed effects: Yes
Observations: 2357, 2466, 2582, 2701, 2656, 2728, 2569, 2726, 2632, 2720
R-squared: 0.83, 0.84, 0.85, 0.84, 0.85
Pseudo R2: 0.93, 0.93, 0.92, 0.92, 0.93
F test: 127.48, 163.28, 181.64, 168.24, 173.96
Chi2: 16197.26, 17623.03, 16462.75, 15757.57, 15636.41

Robust standard errors in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%.

Coefficients of importer and exporter dummy variables are not shown.
The results obtained by Santos & Tenreyro (2006) using the PPML estimator are different from those obtained by the OLS estimator, fact that is another confirmation of the error heteroskedasticity impact in the case of the OLS estimations. Following the Anderson & van Wincoop (2003) approach, the most remarkable results of the PPML estimator are the distance elasticities that are two times less important than estimating by OLS method. The contiguity variable becomes significant and the common language coefficient between the states is lesser, using the PPML estimation. The effects of free trade agreements remain similar with the two techniques, their effects on trade being 40%. In addition, the most adequate method, among those verified by Santos & Tenreyro (2006) (OLS, Tobit, Non-linear Least Squares, etc.), in order to estimate a gravity model à la Anderson & van Wincoop (2003), is the PPML estimator.

In the table 1 we present the results of the first basis model, estimated by the two methods: OLS and PPML. The results are expressed in neperian logarithms, and are obtained from the model estimation with the STATA program. The variable coefficients of the country pairs fixed effects are not presented, but included in the estimation. Comparing the two kinds of estimations, OLS and PPML, we observe several important differences.

The population elasticities (POPi et POPj) correspond to our expectations. They have values around the unity (easily less important in the PPML case). The coefficients are significant at 1% for the two estimators, OLS and PPML. The weighted distance elasticities, with a negative and significant influence at 1%, are twice less important estimated by PPML (-0.85) than by OLS (-1.5). They correspond to the results found in the literature, and confirm the differences between the two estimators found by Santos & Tenreyro (2006).

The common border variables (FRONTij) are around 1.5 times more important estimating by PPML than by OLS. This variable is significant with OLS estimator for only two years, 1999 and 2002, at 5%, the PPML estimator is significant at 1% during all the estimation years. The coefficients (LINGij) of the common language in the partner countries estimated by OLS are around twice more important than those estimated by PPML. The coefficients of the two estimators are significant at 1%. The significance changes of the contiguity coefficient between the two estimations confirm the results of Santos & Tenreyro (2006). This non-significance appears because of the collinearity that can exist between the two variables, the contiguity and the common language. In our case, the use of PPML allows us pointing out the importance of each variable.

33 The collinearity between the variables of contiguity and common language can be due to the fact that neighbour countries can also speak the same language, namely in the case of small countries.
The values of the dummy variable for the South-eastern Europe (ESE) trade are as well different with the two estimators. They are around the unity for the PPML and are significant at 5% for 1996 and at 1% for all the other years. For the OLS estimator this variable has a significant coefficient comprised between 0.6 and 1.6. Important differences can be also found in the literature, even if those results differ from ours (compare for example Fidrmuc & Fidrmuc (2000) and Lamotte & De Sousa (2009)).

The variables of interest, ethnic fractionalisation in the countries, have different degree of significance with the two estimators. Thus, the ethnic diversity of the importer country (FRACt) is always positive, but with different levels of significance: the 1996 coefficient for the OLS and that of 2002 for the PPML estimators are not significant. While, the exporter ethnic concentration (FRACj) is rarely significant, but always with a positive impact: two years in the case of PPML estimator, and one year in the case of OLS one.

Comparing the two estimations, we observe as well a bigger importance for the Pseudo R2 (PPML) with regard to R2 (OLS). These values, 0.93 and 0.84 respectively, are another argument in the favour of the PPML estimator.

The error heteroskedasticity OLS model, the introduction of null trade flows in the PPML model, and even the comparison between the R2 and Pseudo R2 of the two models, are arguments to choose the estimation of the gravity model by the Pseudo-Poisson of Maximum Likelihood, as proposed by Santos & Tenreyro (2006), and our results obtained by this methods correspond to those found generally in the literature.

To verify the robustness of our model, we have done several tests. Namely, we interested to the collinearity between the variables and the country fixed effects, we corrected the error heteroskedasticity, and we tested between two Poisson estimation methods.

The fixed effects in the gravity model, as proposed by Anderson & van Wincooop (2003), can be at the base of the multicollinearity between the model variables and the country fixed effects. In this case, the estimation results can be biased and non-reliable. Several solutions are proposed: to remove the collinear variable, if it is not important for the research; to transform numerically the variable multiplying it to a constant arbitrary chosen; or, otherwise, to combine logically the variables.

---

34 As we know, there are no study concerning the trade gravity model including the countries of our work, and a fortiori a dummy variable corresponding to ours.

35 The coefficients can have even opposed signs to those expected. See, for example Dougherty (2002), p.235-239.
In our model, with country fixed effects, we realised that the multicollinearity was present\textsuperscript{36}: the VIF (Vector Inflation Factor) indicator under STATA is about 800, knowing that the commonly accepted level has not to exceed 10. Verifying the model variables we have realised that this is the ethnic fractionalisation that is collinear with the country fixed effects. Thus, between the three solutions presented here above, we have opted to combine the variables, and namely to group the country fixed effects in country group fixed effects\textsuperscript{37}.

We have grouped our 53 countries of the model in 35 country groups and regions: 11 groups with 2, 3 or 4 countries each, and 24 groups with one country. The choice to classify the countries in eleven groups was done taking into account the importance of each third country for the countries of analysis (of South-eastern Europe), as well considering the geographical criteria: Eastern Asia and Oceania (4 countries), Baltic states (3 countries), Caucasus (3 countries), Benelux (3 countries), America (3 countries), Continental Scandinavia (3 countries), European CIS (2 countries), former Czechoslovakia (2 countries), Britannic Isles (2 countries), Iberia (2 countries), North-Western Scandinavia (2 countries). As a result, the estimation results are satisfying: the VIF value is always less than 10.

The option to combine the country fixed effects in regions fixed effects reduces the degree of the countries heterogeneity, as well as the multicollinearity resistance at the country level. But we can still verify it at the level of regions. As the South-eastern European countries are not grouped with other countries or between each other, we control for the multilateral resistance of these countries with their partners, they are grouped or not in regions.

For the model robustness, we correct the error heteroskedasticity, employing the test of White (1980).

Following the paper of Duc et al. (2008), we test the regression of zero-inflated Poisson (ZIP). In order to control and to compare the ZIP and the PPML estimators, we use the test Vuong. We test two determinants of zero flows (see tab. 2): the populations of the two countries and the weighted distance between trade partners\textsuperscript{38}. We follow Duc et al. (2008) to make our choice, considering Chi2 as differentiation criterion. We have observed that the values of Chi2 obtained with population and weighted distance factors are equal. As a result, we choose the criterion of the\textsuperscript{32}

\textsuperscript{36} We have tested several base models for the collinearity, replacing the population with other variables, as the GDP or GDP per capita, or removing the unilateral effect variables. The multicollinearity is always present.

\textsuperscript{37} Fontoura et al. (2006) group the 25 coutries of their model in three groups in order to observe the heterogeneity. They introduce also the bilateral fixed effects of these countries, in sum \((3*3-1=)\) eight country groups. We don not include the bilateral fixed effects, as not all the countries are classified in groups.

\textsuperscript{38} We have also tested a third determinant of zero trade flows, the GDP of the two countries, but the results for the year 199 were collinear, and we have removed this variable.
**tab. 2: Estimations of the first model: ZIP with two inflation factors**

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Robust standard errors in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%.
Coefficients of importer and exporter dummy variables are not shown.
significance degree of these two factors, to take our decision. And we have chosen the population variable as inflation factor for the zero flows, which is statistically significant at 1% for all the years of analysis, while the distance is not significant at 10% level for 2002 and 2004. The variables’ coefficients obtained with the ZIP estimator have the same signs and the same significance degree as the PPML estimator (compare the tables 1 and 2).

The results

As we have mentioned here above, the results of the base model (the first model) correspond to those in the literature (see table 2).

Thus, the country weight is around the unity as well as for the importer, as for the exporter country, and during all the estimation period. These figures confirm the Anderson & van Wincoop (2003) theory to impose a unitary coefficient to the partner weights. The small difference between the coefficients of the importer (i) and exporter (j) countries (with the exception of the first year), reveals that, all things being equal, the importer flows are relatively more important. In the case of small countries, that are the South-eastern European states, these figures confirm the economy of scale principle (cf. supra).

The negative coefficient of the distance (between -0.886 in 2007, and -0.821 in 2002) shows that further are the countries, less they trade with each other. On the contrary, share the same land border allows increasing the trade volumes more than 1.38 \([=\exp(\text{coefficient})]\) times (in 2004), all other things being equal. From the geographic point of view, one has to know that the trans-border trade and the null transit expenses are factors that play an important role for the international trade, fact that is confirmed by the obtained results.

As for the place of the common language spoken in the two countries, this factor multiplies the trade of around 1.9 times after 1999, but of 2.2 times in 1996, all other things being equal. Our results are less important than those found, among others, by Melitz (2008) and Bussière et al. (2005)\textsuperscript{39}. The reasons for this difference can be due to the characteristics of our country sample. Thus, according to Bussière et al. (2005), the countries that share the same language are characterised by a common past, by a common border, or by the free trade agreements signed between the states\textsuperscript{40}. But the countries of our study, that speak the same language, have had also conflicts between them, as those from the former USSR or the former Yugoslav territories; or they

\textsuperscript{39} Melitz (2008) finds that the common language elasticity is equal to 2.7, while Bussière et al. (2005) obtain a language coefficient the equal to 3.

\textsuperscript{40} See Bussière et al. (2005), for other reasons of the trade rapprochement between countries sharing the same language.
redirected their trade to other markets than those culturally close, as the Eastern European flows re-oriented to the EU markets.

The trade intensity of the South-eastern Europe has remained relatively stable between 1996 and 2007, that is after the end of the Yugoslav wars. Thus, the regional trade is 2.4 times more important for the South-eastern European countries as regard to the trade with other countries. The increasing effect of this coefficient in 1999 (2.9 times), in comparison to 1996 (2.5 times), is due to the intensification of the regional relations as a result of the Kosovo conflict. In 2002 and 2004, the decrease in the regional trade intensity, 2.6 and 2.4 times respectively, can be caused by the redirection of the regional trade to the CEE countries, which markets are well known by the South-eastern European states, and present the advantage to be closer to the EU. In 2007, the results of the signature of the free trade agreements under SPSEE could explain the increase of the regional trade coefficient until 2.8 times. These figures differ from the results found by Lamotte & De Sousa (2009)\textsuperscript{41}, but confirm that the trade disintegration is lengthy, or even inexistent, in this region during the period of research\textsuperscript{42}. The differences between the results of the two studies can be due to the different country samples\textsuperscript{43}. The levels of trade intensity of our paper reveal that the “big” South-eastern European region is much less integrated that the successor states of the former Yugoslavia. This fact could prove the sub-regions creation in the South-eastern Europe, results found by Christie (2002) and Kernohan (2006). In addition, in our study is included another country, Republic of Moldova, state that is trade oriented more to the CIS markets, and that points out the division in the region.

The variable of ethnic fragmentation would allow us to put forward the importance of social networks for the international exchanges. Several papers have showed that this society diversification has a negative impact on the economic development of the countries (\textit{cf. supra}). But from the trade point of view, has the cohabitation of different cultures the same negative influence on exchanges or does this situation lead also to the production diversification\textsuperscript{44}?

The results reveal that the ethnic fractionalisation has a positive influence on the volume of trade, but it is not always statistically significant. Thus, the concentration of several nationalities plays an important role for the importing country during all the analysis period, except for 2002,

\textsuperscript{41} This is the only paper comparable to ours, as the estimation method is the same.

\textsuperscript{42} To compare, Lamotte & De Sousa (2009) found trade intensities of 13 in 1996, 15 in 1999, 11 in 2002, and 13 in 2004 (there are not results for the year 2007, as their analysis ends up in 2005).

\textsuperscript{43} In the paper of Lamotte & De Sousa (2009) this effect is computed for the five successor states of the former Yugoslavia, while our study comprises eight countries from the South-eastern Europe.

\textsuperscript{44} See Alesina & La Ferrara (2005) for the social diversity effects on the revenues.
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Robust standard errors in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%.
Coefficients of importer and exporter dummy variables are not shown.
while the ethnic factor for the exporting country is significant only the first two years, 1996 and 1999, other things being equal. So, according to these results, we can mention that the interethnic networks were maintained and remained significant for trade exchanges within the importer countries (the demand), that is not necessarily the case for the exporter countries (the supply). Or, the multiplication of ethnic relations allows to have a more diversified supply, as the producers do not use any more or use these networks in a lesser manner in their countries. For the countries in transition (23 countries in our sample), one could mention several reasons of this relation. The products knowledge and the competitiveness proceeded from the former partners (or even, from countries of ethnic origin) is a motivation to assert and to employ the interethnic networks as business networks by the importers. On the contrary, the opening and the orientation towards the new markets, as well as the increase of the product competitiveness stimulate the destinations diversification for the exporters-producers.

The second variable of interest for our study is the linguistic rapprochement. This variable is also examined as a factor of control for ethnic diversity. We verify here if the existence of business networks between the different ethnicities within a country could be explained by the linguistic proximity between countries. For instance in Macedonia, do the Macedonians benefit, from the trade point of view, of the relations that the Albanians of this country can have with the albanophones from abroad?

From the table 3, we observe that the variables of the base model do not change drastically their influence on the trade volume after the inclusion of the two linguistic variables, namely that in the im-/exporter country at least 1% of the population speaks the language of the majority people of the ex-/importer partner country. The variable of the linguistic rapprochement is significant at 10% only for the year 2007 for the importing country. More precisely, the linguistic advantage for these countries allows them to increase the imports by 1.2 times, fact that confirms the conclusions of Hong & Sanhapparaj (2006), concerning a stronger influence of the inter-state networks on the imports, than on the exports. Our results also show that the linguistic minorities have a low influence on the trade relations between the states. These figures permit us to make two other comments. Firstly, we can mention that, in the context of a multiethnic structure of a society, the countries do not always benefit, from commercial point of view, from the linguistic proximity that they have with their partners. Secondly, it was obvious that the variable of the majority language

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45 We have also made estimations with linguistic proximity coefficient and removing the ethnic diversity variable. The results of this specification do not change their significance, sign or tendency, as regard to the model containing the ethnic diversity.
### Estimations of the third model

| Year | POPi | POPj | DISTij | FRONTij | LINGij | ESE | FRACTi | FRACTj | LING1i | LING1j | COMMij | Constant | Inflated POPij | Constant |
|------|------|------|--------|---------|--------|-----|--------|--------|--------|--------|--------|---------|----------|------------|----------|
| 1996 | 0.989*** | 1.053*** | -0.862*** | 0.320*** | 0.715*** | 0.327 | 0.156*** | 0.175*** | 0.045 | 0.034 | 1.019*** | 2.366 | -0.259*** | 1.642* |
| 1997 | 0.938*** | 0.976*** | -0.843*** | 0.304*** | 0.620*** | 0.679 | 0.176*** | 0.116* | 0.069 | -0.021 | 0.604*** | 3.276*** | -0.136*** | -0.578 |
| 2000 | 0.894*** | 0.868*** | -0.826*** | 0.295*** | 0.527*** | 0.752** | 0.063 | 0.053 | 0.157 | 0.006 | 0.371 | 3.941** | -0.201*** | 0.049 |
| 2004 | 0.870*** | 0.830*** | -0.846*** | 0.268*** | 0.493*** | 0.789** | 0.071* | 0.053 | 0.216 | -0.003 | 0.169 | 5.082*** | -0.225*** | 0.383 |
| 2007 | 0.922*** | 0.811*** | -0.884*** | 0.278*** | 0.494*** | 0.981*** | 0.146** | 0.055 | 0.194* | 0.383 | 0.114 | 5.614*** | -0.180*** | -0.102 |

Inflate

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Constant

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Robust standard errors in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%.
Coefficients of importer and exporter dummy variables are not shown.
would be the most influenced, its impact on the trade volume being more reduced, 1.8 times. This non-significance of the minority languages could be explained by the importance and the influence of the majority language or languages, as well as by the lack of confidence between the countries.

In South-eastern Europe the ethnic concentration has played an important role in the evolution of the political events in the 1990s, and it was transformed into linguistic proximity between the states, as a consequence of the political disintegration of the states. These events have influenced the economic relations in the region. In order to point out the particular feature of the South-eastern Europe, we control for the factors that characterise the region: the communist past, the conflicts of the 1990s, and the free trade agreements signed by the countries.

First of all, we are wondering if the transition process influences the inter-ethnic relations. We consider here the communist past, as the social values and the principles of the minority people integration change slowly. The common history favoured comparable transition processes and institution developments, and the politics application of these institutions requires of time. The ethnic diversity is advantageous for the economic development if the country has well developed institutions, according to Easterly (2001), Alesina & Ferrara (2005). But the institution similarity of the culturally close countries diminishes their capacities to affect the trade, the information being less precious, according to Girma & Yu (2002), Dunlevy (2006) and White & Tadesse (2007).

The estimation results (tab. 4) show that communist history influences the trade of the countries having shared this past. But this influence is independent from the cohabitation of different ethnic or linguistic minorities on their territories: the ethnic fractionalisation and the linguistic rapprochement do not change drastically their significance and their impact on trade relations. More precisely, in the case of the South-eastern Europe, trade exchanges, in 1996 and in 1999, are still employing the networks from the communist period. It is only beginning with 2002 that one can speak about the South-eastern Europe regionalization, that is not influenced by the old networks, when the South-eastern European countries trade at least 120 % more between them than with other countries, all other things being equal. In this context, commercial redirection of the transition countries towards the EU, as well as the realisation of the SPSEE agreements matrix, are important factors for the creation of new economic relations in South-eastern Europe.

46 In the former Yugoslavia and the former USSR the laws favoured the minority nationality development and protected them from the majority (Martynova, 1998).

47 The institutional reforms in the South-eastern Europe have began in the early 2000 (EBRD, 2000 and 2003), and are conditionned by the EU integration (Cheptea, 2007; Akimov et al., 2008).
### Table 5: Estimations of the Fourth Model

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Robust standard errors in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%.
Coefficients of importer and exporter dummy variables are not shown.
Then, we control if the relation ethnicities-conflicts influences trade. The conflicts, having taken place in South-eastern Europe, are considered as having ethnic bases (cf. supra). And, according to Annett (2000), Alesina & Zhuravskaya (2009), the society fragmentation leads to an unstable political situation and to conflicts. The political instability would have been able to destroy the relations and the networks between the different ethnic groups within the same country. The political disintegration can have also an impact on the confidence level between the countries. We verify, thus, the importance for the trade of the population memory as regard to the recent conflicts, that is the confidence between the people after the end of the conflicts. Or, according to the conclusion of Guiso et al. (2004), taking into account the confidence between the countries, the trade is not necessarily influenced by certain population prejudices. The transformation of the conflict relations into the confidence relations is analysed in the context of the linguistic similarities between the countries, and of the existence of potential networks between the national minorities.

The estimation results that are remarkable are the positive effects of the conflict variables (tab. 5). It is significant during the last four years of our analysis. The positive sign can be explained by the necessity of reconstruction of the countries having been in war. So, in South-eastern Europe, the countries of the ex-Yugoslavia which were in conflict are neighbouring states, know each other and share the same language, as for instance the Croatia and Bosnia-Herzegovina; the NATO, and therefore the member countries, as the EU members or the United States of America, was one of the parties in Yugoslav conflicts; Moldova was in war with Russia, etc. In order to exceed the unstable political situation, the countries of the South-eastern Europe had to revise their economic relations and to promote the regional trade. After the end of the conflicts, the EU was interested in South-eastern Europe which would have become their potential and future neighbour, and it has proposed and launched the SPSEE in 1999. As for Russia, it remained the first commercial partner of Moldova. So, the conflict relations, in this case in South-eastern Europe, were transformed into advantageous relations for the trade between conflict parties. The relatively stable influence of the conflict past on trade (around 1.7) shows that the level of the confidence between the countries did not change during the period of analysis. One can also point out that the existence of the conflicts influences the inter-ethnic relations within the countries: in 2004 the society fragmentation is not any more significant in the case of the inflows. On the contrary, one notices a growing influence of the linguistic rapprochement coefficient of the importing country. It shows the relations recovery beginning with 2002 between the countries culturally close and having known conflicts. The coefficients of the communist countries, including the South-eastern Europe, shows that the conflicts have an important influence on the economic relations between these countries.
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Inflated

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Robust standard errors in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%.
Coefficients of importer and exporter dummy variables are not shown.
And finally, according to Caselli and Coleman (2006), the fractionalised states should adopt trade politics in order to avoid the conflicts. The agreements signed between the countries could be at the basis of this politics and reinforce the foreign economic relations. They would allow, as well, to support the confidence between the countries, a necessary element for the trade contracts, according to Mundra (2005) and Rauch & Trindade (2008). So, we introduce the last control variable, the bi- and multilateral agreements signed between the states. In the table 6 we present the model estimation containing the trade agreements variables. Analysing these results, it is necessary to take into account that some of these agreements, apart from their economic and commercial objectives, have the goal of restoring the security and the political stability between the countries (the SPSEE), of preparing the countries to the EU integration (the CEFTA), or of supporting the old economic relations (the CIS).

The signature of SPSEE agreements favours the South-eastern Europe regional trade beginning with 2002. The countries, that have concluded agreement negotiations of the SPSEE matrix by 2002 (5 signed agreements at that moment from a total of 28), had a more important trade volume, by 130%, comparing to other regional countries, while the regional trade is non-significant. One could mention that the first agreements under the SPSEE were signed between the countries that already have had important trade volumes (for instance, the Romania and the Republic of Moldova). In 2004 (26 signed agreements), the SPSEE member countries recorded a decrease of their relative mutual trade by 65%. At the same time, one points out that the South-eastern European trade had augmented by 350%. We performed another estimation of the model for that year, eliminating the ESE variable, and we have noticed the statistical non-significance of the trade agreements under the SPSEE. This fact leads us to consider this Stability Pact as non-important for the trade, thus confirming the same commercial situation as in 2002. In 2007, the year of the EU membership of two regional countries, the SPSEE agreements contributed to a trade increase by 280%, all other things being equal; and in the same time the South-eastern European trade records an increase of 99%. The EU enlargements contributed to an increase of the member trade by 73 % in 2004, and by 43% in 2007, all other things being equal, in comparison to the trade of the non-members. The non-significance of this variable in 1996 and 2002 could be explained by a bigger importance of the natural factors (the common language and the contiguity, the relatively small distances between the countries, etc.), while in 1999 the introduction of the unique currency could explain the resumption of the relations between the countries. The CEFTA membership contributes to the preparation process for the EU integration. As a result, the trade flows of member

48 The SPSEE was launched in 1999, but free trade agreements were signed before this year by some countries of the region.
49 The results of these estimations are not presented in this paper.
countries are directed to the European market. This could explain the non-significance of these agreements. For the year 2004 this variable points out the SPSEE\textsuperscript{50} trade decrease, all other things being equal. The CIS agreements reveal that the countries do not profit from their free trade agreements, fact that could be explained by the conflicts that have taken place between these countries.

The estimation results show that the economic and trade agreements are not profitable for the development of relations between the countries which are culturally close, the variables of the fractionalisation and of the proximity do not change drastically their influence on trade. These agreements have a more important impact on distance between the countries, what is explained by the fact that the distances represent the transit expenses, the entrance barriers, etc., the most of which are diminished or even cancelled by the free trade agreements.

**Conclusion**

In the present paper we introduced the gravity model for the South-eastern European trade. We verified for the importance of the ethnic and linguistic variables for the trade, testing them with the factors determining the regional trade, as the communist past, the conflicts of the 1990s, and the free trade agreements signed between the states.

According to the Anderson & van Wincoop (2003) theoretical model we can take into account the multilateral resistance. The estimation method proposed by Santos & Tenreyro (2006), the pseudo-Poisson of Maximum Likelihood, allows us to include the zero trade flows and to correct the error heteroskedasticity, what is not possible using the MCO estimator. We have performed several tests to control the variable multicollinearity, we corrected the error heteroskedasticity by the White test, and we have used the Vuong test to choose between two methods of Poisson estimation.

As regards the South-eastern European exchanges, the estimation results reveal that the trade intensity remained relatively stable during the period of analysis, and that the trade disintegration takes place slowly, fact that confirms the results of other papers. The South-eastern European relations were influenced during the first years of our analysis by the old communist networks, the trade redirection taking place only after the SPSEE application. The second EU enlargement, which concerned the two countries of the region, influenced its trade, augmenting about three times.

Ethnic diversity has a positive and significant influence during four years of analysis on the import flows, and only during the first two years on the export flows. This shows the employ of inter-ethnic networks for the inflows, while the destination diversification for the producers depends

\textsuperscript{50} Three CEFTA member countries in 2004 are Bulgaria, Croatia and Romania, that are also SPSEE members.
less and less on ethnic relations. The linguistic proximity between the states influences little the exchanges, and, as well, this impact is more significant in the case of the imports. Also, it can be mentioned that the multi-ethnic structure of a state does not allow to benefit, from the point of view of trade, from a common language by the two countries.

The impact of these two variables on the trade is not influenced in the case of the countries having known the communist past or having signed free trade agreements; while the conflicts diminish, from the trade point of view, the weight of inter-ethnic networks within the country. But the importance of linguistic relations increases between the countries having known conflicts in the 1990s.

The economic transition has changed the trade direction of the countries. To take into account the institutional factor, in the context of the multiethnic countries, would allow to notice the framing of the relations between different nationalities. Also, a more precise definition of the ethnicities in South-eastern Europe would allow to analyse the conflict consequences on the actual relations of these nations, which reside in neighbouring countries, as well as the effects of economic agreements signed between the countries.
REFERENCES


Atlas Narodov Mira (1964), Miklukho-Maklai Ethnological Institute at the Department of Geodesy and Cartography of the State Geological Committee of the Soviet Union, Moscow.


Lavallée E. (2005), « Governance, corruption and trade: a North-South approach », Cahier de recherche EURIsCO, nr. 4.


Muller S.H. (1964), « The world’s living languages: basic facts of structure, kinship, location, and number of speakers », New York, Ungar.


Rauch J. (1999), « Networks versus markets in international trade », Journal of international economics, nr. 48, nr. 1, pp. 7-35.


Taylor C. & Hudson M.C. (1972), The world handbook of political and social indicators, 2ème édition, Yale University Press.


