

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/5172515>

Economic geography and European integration: The effects on the EU's external border regions

Article in *International Journal of Public Policy* · February 2008

DOI: 10.1504/IJPP.2008.019064 · Source: RePEc

CITATIONS

45

READS

618

2 authors:



[George Petrakos](#)

University of Thessaly

91 PUBLICATIONS 1,526 CITATIONS

[SEE PROFILE](#)



[Lefteris Topaloglou](#)

University of Western Macedonia

29 PUBLICATIONS 235 CITATIONS

[SEE PROFILE](#)

Economic Geography and European Integration: The Effects on the EU External Border Regions

George Petrakos

*Professor of Spatial Economics,
Department of Planning and Regional Development
University of Thessaly
e-mail: petrakos@prd.uth.gr*

Lefteris Topaloglou

*PhD Candidate, Department of Planning and Regional Development
University of Thessaly*

Abstract

The European economic space is characterized today by high levels of economic integration among current or prospect EU members and their neighboring countries in the East. The largest part of this growing economic interaction, which has a significant impact on national production, specialization and welfare, takes place through the borders of the interacting countries. However, borders and border regions have been traditionally characterized as low opportunity areas hosting less advanced local economies. This paper intends to provide an insight into a critical aspect of the integration dynamics in Europe, related to the prospects of border regions, which are among the less advanced and perimetric compared to EU and national markets and eventually the process of spatial cohesion. The paper investigates the integration experience of groups of external border regions with different degrees of institutional and geographical proximity to the EU. It also investigates the role of distance, market size and agglomeration economies in the process of cross-border interaction. The findings of the analysis have important implications for theory and policy.

Key words: *Economic Geography, European Integration, EU, Border Regions*

July 2006

1. Introduction

Although the process of European integration has allowed for the dramatic expansion of international trade and investment in the last two decades, Europe is by no means a borderless economic space and borders continue to play an important role.

Of course, borders in Europe are not any more rigid barriers to economic interaction and instruments of national protection policies. Nevertheless, they continue to divide national economic systems with different structures and price levels. Also, they continue to impede in various ways and degrees the level of interaction among the two sides.

Turning the question around, an interesting topic to explore is the impact of integration on border regions. The typical border region is perimetric with respect to national markets and core regions, often remote at the European scale and in most cases less developed than the respective national average. Given these rather unfavorable initial conditions, it would be interesting from the perspective of spatial cohesion to know to what extent and what direction the process of integration between two countries affects their border regions. In this framework, a number of questions arise intending to investigate the macro and micro properties of border space in the process of economic integration.

At the macro-spatial level first, the most critical question is in what way and to what extent border regions participate in the process of integration. Have borders been turned from barriers to bridges connecting the two sides or to tunnels bypassing them? Do the – usually less developed – border regions benefit from cross-border trans-national trade and investment relations or they just operate as corridors for trade flows originating from and directed to other regions? The second option is clearly undesired, as it associates the process of integration with a more polarized economic space which marginalizes borders and undermines spatial cohesion.

A second important question is whether geography is a real determinant of the level of cross – border interaction. A number of border regions, especially at the external borders of the EU, are at a long distance from the EU core markets and do not have the strategic benefit of proximity. It is important to know whether the geographic coordinates of border regions affect cross-border integration patterns. For example, do border regions near the EU core markets experience a different level and type of integration than perimetric ones?

Also, in border regions along the East-West pre-1989 dividing line, borders were meant to be in the past a serious barrier to interaction, affecting regional patterns of specialization and trade. Therefore, at the macro level we are also interested to know whether “initial conditions” rooting in the past affect the level of their cross-border interaction in the new setting.

Once we focus more closely at the pattern of interaction of border regions, a different set of questions arises. At the micro-spatial level, it is important to know the drivers of trade relations in border regions. Is geography and proximity the main determinant? What is the role of market size? Are nearby destinations preferred compared to more distant ones?

Answering these questions provides a useful insight into the economic geography of trade relations of border regions and provides a basis for the understanding of the effects of integration on their prospects for growth.

Given that the growing literature on borders and border regions does not provide any definite answers yet, this paper will make a first effort to address these questions and provide evidence on the basis of available data provided by the EXLINEA project, supported by the EU 5th Framework Program for Research and Technological Development. In the next section of the paper we briefly present the discussion taking place in the relevant literature, while section 3 provides the empirical analysis and the findings of the paper. Finally, section 4 presents the conclusion and the policy implications of this research.

2. Border Regions and Integration: A Review of Theory and Evidence

Although the argument that the international economy has been wholly “globalised” into a “borderless” world (Ohmae, 1990) is frequently used in discussing the evolution of international relations, border-effects clearly remain significant, even after a substantial reduction of border obstacles (Engel and Rogers, 1996). The available literature shows that trade costs would be lower without the “intermediation” of borderlines (McCallum, 1995; Helliwell, 1998; Bocker, 1998; Wei, 1996). Obviously, crossing borders involves formalities that cost time and money, reducing trade and investment interaction. For example, McCallum (1995) showed that trade between Canadian provinces is 2200 percent larger than between Canadian provinces and U.S. states of similar distance and sizes. This type of evidence suggests that borders still play a significant role in trade interaction. In addition to economic costs, borders are very often associated with the existence of different nationalities, languages, cultures and perceptions, imposing non-pecuniary obstacles to interaction (Topaloglou et al, 2006).

The available evidence shows that distance among trade partners is also a factor influencing trade relations. Distance between markets increases transportation cost and therefore the cost of imports and exports. It may also influence personal contacts and communication, which play a critical role in trade. Estimates show that an increase in

the distance between countries is associated with a decrease in the volume of trade (Rauch, 1991; Kinoshita and Campos, 2003). In general, borders and the obstacles involved with border crossing can be considered as factors increasing the distance between two markets. By the same token, the reduction of barriers at the borders will bring two markets closer, resulting to an increase in economic interaction.

The available evidence seems to indicate that the geographical coordinates of border regions affect the level of cross border interaction. Although border regions are in most cases perimetric to large national markets, their geographical coordinates at the European scale is a far more critical issue. In this framework, a remote border area at a national scale may turn out to be a central place in an integrated European market. In the European Union in particular, the recent eastward enlargement, has changed dramatically the geographical conditions of many borders areas (Resmini, 2003). The external borders of the “old” EU have become the “new” internal ones, while at the same time the external borders of the “new” EU have shifted eastwards.

Therefore, it seems that at the European level two new types of border regions are emerging: the central regions and peripheral ones. Central border regions typically enjoy better market access and market potential due to their favourable location (Niebuhr and Stiller, 2002). Evidence in the New Member States shows that western border regions are among the most developed regions in the countries sharing common borders with advanced EU-15 members (Petrakos, 2001; Petrakos et al, 2004a). Of course, not all regions benefit from the expansion of economic relations. Many of them are found with less favorable geographical coordinates and cannot benefit as much as others from integration, facing difficult initial conditions such as higher transport costs (Lima and Venables, 2001).

Although the literature does not directly address this issue, it seems that opening and closing borders are not symmetric actions. Closed borders truncate the geographical size of markets for firms providing goods and services and may reduce demand below the critical size required for sustainable operation (Cristaller, 1933). As a result, the imposition of borders distorts the urban system by discouraging firms to locate in border regions (Hansen, 1977; Hoover, 1963). This means that in closed economies cities near the borders have a size that is smaller than the one they could have should the borders were never closed. Therefore, in a closed economy, border regions could be characterized as areas of low attractiveness due to their unfavourable conditions with respect to demand, which eventually affects their productive base (Dimitrov et.al., 2003). Losch (1940) compares border regions with a desert, where goods can be acquired only by distance.

Although the literature seems to have a clear position of the effects of closed borders on the spatial allocation of activities in each country, understanding the spatial dynamics that are released when border restrictions and controls are abolished is not an easy task.

Clearly, the abolition of border barriers due to the process of integration redefines space and markets. The reduction of cross-border transaction costs increases the accessibility in both sides of the borders, brings new opportunities in border regions and improves their attractiveness as business locations (Brühlhart et al, 2004). Gains, however, may not be symmetrically allocated across the border. A number of studies claim that border regions with a smaller market size tend to gain more from the process of integration (McCallum, 1995; Hanson, 1998; Hanson, 1996; Resmini, 2003; Damijan and Kostevc, 2002). Gains – but also potential losses – vary with development levels. The more advanced border regions will benefit from labor inflows, the expansion of exports and will be the origin of cross-border investment activity. Concerns in these regions will be focused on the pressures of immigration in their labor market, the dislocation of local firms and the difficulty to compete successfully with the other side in low cost sectors (Topaloglou et. al, 2006). The less advanced border regions will benefit from cross-border investment and low cost exports. However, skepticism exists in these regions regarding the ability of their productive base to compete in the new economic environment (Melachroinos, 2002).

Despite the expansion of the literature over the last decade, it is clear from the above that there is not yet a comprehensive understanding of the spatial impact of integration in border regions when barriers are removed and economic relations develop. The following section attempts to make a contribution towards this direction.

3. An Empirical Research across the EU's External Borders

Patterns of development

At the European scale, the available evidence indicates that a mix of core-periphery, East-West and North-South patterns of development dominate, with welfare levels being in most cases inversely related to distance from major economic centers (Petrakos, 2001; Petrakos *et al*, 2004a; Petrakos *et al* 2004b). Although inequalities among EU countries are reduced over time, regional inequalities within countries tend to increase (Petrakos *et al* 2005). As a result, convergence among EU countries is often offset by increasing divergence at lower levels of disaggregation. In the emerging new European economic space metropolitan and core regions systematically do better than average while border regions experience the greatest challenges and transformations.

As Figure 1 shows, border regions in Europe have significantly lower welfare levels than the core regions. They also have lower welfare levels than average. However, border regions are not a uniform group. Those bordering to EU-15 countries have higher GDP per capita figures than those bordering to New Member States, while the lowest level of

development is found in border regions bordering with external non EU countries. This ranking applies to both EU-15 and EU-NMS border regions. The only difference is that the EU-NMS regions have significantly lower figures than the EU-15 regions. Note that the average border region in the EU-NMS countries has a GDP per capita that is much lower and certainly less than half the respective average figure in the EU-15. Also note that the relative difference among the three types of border regions (with EU-15, with NMS, with external countries) is much more significant in the EU-NMS than in the EU-15.

The significant differences in the development levels among European border regions are also shown in Figure 2. The Figure depicts information at the NUTS III level and clearly illustrates that internal EU-15 border regions are in a superior situation compared to the other two groups. External EU border regions or peripheral and remote border regions are the ones experiencing the lowest levels of development and perhaps the greatest challenges in the new economic environment.

Figure 3 presents summary information for the density of population in the three groups of border regions compared to metropolitan regions and average EU figures. The general trend is that border regions have lower density of population and activities than average and much lower than the metropolitan areas. Interestingly, metropolitan regions in EU-15 countries have much higher densities than metropolitan regions in EU-NMS. At the same time, border regions in EU-NMS have densities that are closer to average figures than border regions in EU-15 countries. This indicates that the location pattern of activities in the EU-15 is more polarized than in the EU-NMS. In any case, in both EU-15 and EU-NMS the border regions with the lower density of population and activities are the external borders.

Figure 4 illustrates these trends presenting detailed NUTS III data for population density in 2001. Although the East-West pattern is not that clear in the case of population density as in the case of GDP per capita, the emerging pattern indicates that peripheral and in most cases external border regions are characterized by lower densities.

In general, external border regions seem to be in a state of flux with respect to socioeconomic processes where the driving forces, the economic conditions and the mix of opportunities and threads is very different compared to internal EU-15 borders.

A survey on the EU external border regions

In this section we investigate some critical aspects of the spatial dynamics developing in the external border regions of the EU with the use of a survey carried out within the

framework of the EXLINEA project¹ in nine different cross border areas at the external borders of the EU depicted in Figure 5.

The research was part of a wider effort to study the evolution, problems, policies and perceptions prevailing in the old and new external borders of the European Union. The survey was conducted with the use of a standardized questionnaire, which included closed questions that required answers in a Likert scale ranging from 1 to 7. A number of 937 questionnaires were collected from qualified respondents in the public and private sector. Figure 6 provides summary information about the number of respondents per each border zone in our sample.

The analysis of cross border economic interaction focuses on export, import and investment activities of border firms in the adjacent country and vice versa. In order to be able to provide answers to the questions set in the introduction of the paper, we classify our data into three macro-geographical levels of location and six micro-geographical levels of economic interaction. At the macro-geographical level we have classified the border regions of our sample in: (a) EU-15 border regions (BEU), (b) border regions in New Members States (BNM) and (c) border regions in non-EU External Countries (BEX). Our respondents can be located in EU-15 border regions facing non-EU regions on the other side of the borders (as in the case of border regions in Greece and Finland), or can be located in New Member State border regions facing also non-EU regions on the other side of the borders (as in the case of border regions in Estonia, Hungary and Romania), or finally can be located in non-EU countries facing EU-15 or NMS regions on the other side of the borders (as in the case of Russia, Ukraine and Moldova). As a result, our analysis takes into consideration the reaction of local actors in both sides of the new EU external borders.

At the micro-geographical level, we examine the spatial dimension of economic interaction of local firms in each border region with: (a) the nearest city on the other side (CITNEAR), (b) the nearest larger city on the other side (CITLARG), (c) the nearby regional markets on the other side (REGNEAR) (d) the more distant regional markets on the other side (REGNFAR), (e) the capital city of the country on the other side (CAPIT) and (f) other countries (OTHER). This classification attempts to detect whether and to what extend geography and market size affect the patterns and levels of interaction along the borders.

¹ The EXLINEA project "Lines of Exclusion as Arenas of Co-operation: Reconfiguring the External Boundaries of Europe" was funded by the European Commission under the 5th Action Framework. In total, eight European universities and institutions have been involved in the project. In detail: The Free University of Berlin as coordinator (Germany), the University of Thessaly (Greece), the Peipsi Centre for Transboundary Cooperation (Estonia), the Nijmegen Centre for Border Research (The Netherlands), the Karelian Institute of the Joensuu University (Finland), the University of Tartu, (Estonia), the Hungarian Academy of Sciences (Hungary), the University of Warsaw (Poland).

Aspects of the new economic geography of the EU external borders

Before presenting the findings of the questionnaire survey for the border regions participating in this research, it is interesting to look first at figure 7, which provides average international trade volume data for the countries of our sample. In the first column of the figure we provide the average volume of total trade for each country. This is simply the total volume of trade divided by the number of partner countries with which each country in our table maintained in 2003 trade relations. We can think of this figure as a sort of trade intensity index for each country. Normally, more advanced but also larger in size countries tend to have higher trade intensity figures. In the second column, the table provides for each country the average volume of total trade only for its neighbouring countries. This is in fact the same index of trade intensity calculated only for trade with neighbours. We observe that trade relations with neighbours are in all cases more intense than average trade relations. All countries in our sample tend to trade more with the average neighbouring country than with the average trade partner. More intensive trade relations with neighbouring countries are explained by lower transport costs and similar consumer preferences (Jackson and Petrakos, 2001).

Does, however, this higher level of cross-border interaction among neighbouring countries imply that their border regions also have dense cross-border relations? Is it possible two countries to have significant cross-border relations and at the same time their border regions to be practically excluded from the benefits of this interaction? Are all border regions around the new European Union frontier in the East performing the same in the emerging economic environment?

Cross border trade

We attempt to answer these questions by analyzing questionnaire responses for exports and imports originating from or directed to border regions. Table 8 provides aggregate figures for border regions in the EU (BEU), in the EU New Member States (BMN) and the neighbouring non EU countries (BEX). This macro-geographical classification is combined with micro-geographical type of information about the spatial characteristics of cross-border interaction. The responses range from 1 to 7, with extreme values representing no exports or imports at all (1) and very satisfactory level of exports or imports (7) respectively.

Figures 9 10 depict graphically the results of Figure 8 concerning exports and imports indices recorded at BEU, BNM and BEX regions. The vertical axis shows the level of trade volume whereas the index value of 4 depicts the average grade in the Likert scale. The horizontal axis represents for each macro level the different types of spatial interaction at the micro-geographical level.

The information provided in these figures allow us to make a number of interesting observations: First, it is evident that, in almost all cases, the level of cross border

exports and imports of border regions with neighboring countries is lower than average. Poor trade and especially export performance can be attributed to a certain extent to the weaker economic structure and the lower level of development of peripheral regions, confirming earlier reports in the literature (Petrakos et al., 2004a; Petrakos and Christodoulakis, 1997). Trade is higher than average only in the case of exports and imports to other countries. This is an indication that border regions continue to maintain the trade orientation that they developed in the pre-1989 period under sharply different border conditions. The higher level of trade volume referring to the other countries (OTHER) compared to other origins or destinations on the horizontal axis, indicates that the effects of adjacency have not yet become the main driver of border regions trade interaction. Thus, we could claim that border regions still maintain trade relations established in the past, when borders were closed.

As figure 9 shows, exports to non EU neighbors originating in BEU border regions are in general higher than exports originating in BNM border regions. On the other hand, exports to EU-15 or NMS countries by border regions in neighboring non EU countries are almost in all cases higher than the other two macro groups. The exception is exports to OTHER (not neighboring) countries, where exports by BEX are lower. The rationalization of this ranking is in line with developments in East-West trade and investment. NMS external border regions have the poorest performance because NMS have directed their export industry (partly developed by EU-15 FDI) in their Western borders towards the EU-15 core markets, not in their Eastern borders towards their (relatively poorer) Eastern neighbors. On the other hand, exports by BEX are relatively higher perhaps due to the establishment in these frontier regions of EU FDI with a re-exporting character, which aim to take advantage of factor price differentials.

Second, we observe in figure 10 that in cross border imports an interesting pattern appears where BEX imports are systematically higher than BNM imports, which in turn is also systematically higher than BEU imports. This scaling in imports, where the weaker border regions (BEX) import more and the more advanced (BEU) import less is an indication that cross border imports take place between unequal partners. The economically weaker side of the border line has the tendency to import more once cross-border relations are established, introducing a certain degree of asymmetry in trade relations. In several cases, this asymmetry is not only a border regions affair, but it is also reproduced at the national level, where trade surpluses on the one side of the border line are often matched by trade deficits on the other.

Third, the largest cities near the borders (CITLARG) compared to the rest of the national locations attracts systematically higher export and import volumes. The higher performance of CITLARG at the micro-geographical level in both exports and imports is an indication that cities with sufficient market size and proximity to borders may operate as nodal points of cross border interaction. The higher level of activity attracted by CITYLARG compared to CITNEAR implies that distance and proximity is not the sole

factor driving economic interaction. The figures show that a sufficient market size is also required for trade relations to develop. On the other hand, the metropolis (CAPIT) attracts a lower level of activities than CITLARG, indicating that neither market size is the sole driver of cross-border interaction. The evidence seems to indicate that when a trade-off between market proximity and market size appears, the level of interaction will tend to be higher in places combining a minimum market size with a moderate distance. However, when a trade-off between distance and size is not explicit, rational agents will always prefer nearby markets (REGNEAR) from more distant ones (REGFAR), indicating that distance plays an important role in cross border trade interaction.

Cross border investment

In Figure 11 we provide aggregate figures concerning cross border investment activity originating in both sides of the borders. The figures are mean values provided for three macro groups and six micro-geographical types of interaction. The reported responses range from 1 (no investment at all) to 7 (very satisfactory level of investment).

Figures 12 and 13 demonstrate graphically the performance of cross border investment in the macro and micro geographical levels respectively. Figure 12 depicts cross border investment by local firms while Figure 8 depicts investment in the local economy by firms originating in the other side of the borders. The vertical axis represents the level of investment intensity ranging from 1 to 7 while value 4 shows the average grade of the scale. The horizontal axis indicates the spatial types of investment activity.

On the basis of the information provided in Figures 11-13 we can make the following interesting observation: First, the level of cross border investment at the macro-geographical level is below the average grade (4) in all cases, indicating low investment dynamism in border regions in general. The evidence shows that border areas are neither important origins of cross-border investment nor important destinations, as both incoming and outgoing flows related to border regions are relatively low.

Note that cross border investment inflows from third (OTHER) countries report high values compared to incoming investment from the listed locations of the neighbouring country. This is an indication that frontier border regions, especially in the NMS and the non EU countries, have the attention from other advanced countries and receive from them relatively higher volumes of FDI than from their neighbours for reasons related more to factor price differentials and less to proximity and transport costs..

Second, despite low levels of interaction, investments originating from BEU regions (Figure 12) appear to be by far higher in relation to investment originating in BNM and BEX regions respectively. Symmetrically, BEX and BNM regions appear to be more significant investment destinations compared to BEU regions (Figure 13). The fact that BEU regions appear to be in a systematic way compared to BNM and BEX regions the most significant origins and the less significant destinations of foreign capital, verifies

that capital flows have been asymmetric along the old and new East-West frontier. Although more advanced regions in the 'old' Europe (including border regions) can typically be places of both inward and outward capital flows, less advanced regions in the 'new' Europe and especially external border regions tend to be more often FDI recipients.

Third, at the micro level it seems that the large cities (CITLARG) appear to be the destination of cross border investment by BEU and BNM regions more intensively than the nearest cities in the borders (CITYNEAR) and the capital cities (CAPIT). On the other hand, BEX regions tend to slightly favour capital regions as the most favoured destination of their investment.

Large cities are also the most frequently cited origin of FDI in the case of BEU and BEX regions, while capital cities take the lead in the case of BNM regions. The fact that capital cities and largest cities near the borders exhibit higher investment dynamism, underlines the role of critical market size in the case of investment inflows and the role of agglomeration economies in the case of investment outflows.

However, when we compare the cross-border investment activities of nearby (REGNEAR) and more distant regional markets (REGFAR) either as places of origin or as places of destination, we detect systematically a better performance of the markets with better proximity. This, as in the case of trade relations, is an indication that distance and proximity is an important factor influencing investment behaviour in border regions, especially when market size and agglomeration economies are not explicitly differentiated between nearby and distant regions.

4. Conclusions

This paper has provided evidence that the external border regions are among the weakest and less advanced regions of the European Union. Moreover, they have developed relatively low levels of cross border economic interaction with neighboring countries. Although East-West trade and investment in Europe have increased dramatically during the last years, border areas at the new EU frontier do not seem to participate as key players in this process. Existing patterns of cross border interaction may generate in certain cases "tunnel effects", marginalizing further the respective border areas. As a result, integration based on market dynamics may not lead to higher levels of spatial cohesion in Europe, if less advanced border regions fail to gain the most from cross-border interaction.

The evidence shows that performance in trade and investment is affected by the degree of institutional and geographical proximity to the EU structures and markets. External border regions of the 'old' EU tend to have a better performance than external border

regions of the 'new' EU and the non-EU countries where economic relations are often asymmetric. Although geography at the macro level seems to affect the level and type of interaction of external border regions, its effects often require long periods of time in order to be realized. This is clearly evident in the geographical orientation of trade of the border regions. Despite the fact that the EU external borders have been open for more than fifteen years, border regions still maintain more significant economic relations with other countries than with nearby neighboring countries. The inability of open borders to change the trade orientation that border regions have developed during the years of isolation is an indication that placing barriers at the borders and removing them are not symmetric actions in terms of expected market dynamics. Initial conditions formed in the years of isolation and path dependency in the evolution of economic activities resist a drastic geographic reorientation of trade activities driven by market forces and based on the benefits of proximity.

This paper provides also some evidence about the spatial aspects of cross-border interaction at the micro level, which are in line with the discussion in the New Economic Geography literature. The evidence seems to indicate that distance and market size are two important determinants of cross border trade and investment interaction. Trade and investment flows are higher when distance is short and market size large. When, however, a trade-off between market proximity and market size appears, the level of interaction will tend to be higher in places combining a minimum market size with a moderate distance. The fact that the largest border city is preferred to the nearest one and is also preferred to the capital city for economic relations implies that the counteracting forces of distance and market size may affect trade and investment patterns in a non-linear way. Excluding a linear relation eliminates the possibility of dominance of distance over market size (the nearest city attracts all the activity) and also eliminates the possibility of dominance of market size over distance (the capital city attract all the activity). This non-linear relation of distance and market size to economic interaction allows for a peak of cross border activities in places combining moderate distance with significant size (like regional capitals) but also allows for some levels of interaction in places combining different proportions of distance and size. If we assume that transport costs and distance tend to favor a spread, while market size tends to favor a polarization of activities, it seem that the prevailing pattern of interaction will be associated with some – perhaps moderate – polarization effects, in the sense that the small (and usually weak) places near the borders will benefit less from cross-border interaction.

Bibliography

- BRÖCKER, J. (1998) How would an EU-membership of the Visegrad-countries affect Europe's economic geography?, *Annals of Regional Science*, Vol. 32, pp. 91-114
- BRÜLHART, M., CROZET, M. and KOENING P. (2004) Enlargement and the EU Periphery: The Impact of Changing Market Potential, *Hamburg Institute of International Economics*, Discussion Paper 270.
- CHRISTALLER, W. (1933), *Die zentralen Orte in Suddeutschland Eine ökonomisch-geographische Untersuchung über die Gesetzmassigkeit der Verteilung und Entwicklung der Siedlungen mit städtischer Funktionen*
- DAMIJAN, J. and KOSTEVC, C. (2002) The Impact of European Integration on Adjustment Pattern of Regional Wages in Transition Countries: Testing Competitive Economic Geography Models, *Center for Transition Economics*, Discussion Paper 118.
- DIMITROV, M., PETRAKOS, G., TOTEV, S., and TSIAPA, M. (2003) Cross-Border Cooperation in Southeastern Europe: The enterprise's Point of View, *Eastern European Economies*, Vol. 41 (6) pp. 5-25.
- ENGELS, C. and ROGERS, J. (1996) How wide in the border?, *The American Economic Review*, Vol. 86, (5), pp. 1112-1125.
- HANSEN, N. (1977) The Economic Development of Border Regions, *Growth and Change*, Vol. 8, pp. 2-8
- HANSON, G. (1996) Economic Integration, intra-industry trade, and frontier regions, *European Economic Review*, Vol. 40, pp. 941-949.
- HANSON, G. (1998) Regional adjustment to trade liberalisation, *Regional Science and Urban Economics*, Vol. 28, pp. 419-444.
- HELLIWELL, J. (1998) *How Much do National Borders Matter*, Washington: The Brookings Institution.
- HOOVER, E. (1963) *The Location of Economic Activity*, Berkshire: McGraw-Hill.
- JACKSON M. and PETRAKOS G. (2001) Industrial performance under Transition: the impact of structure and geography, in PETRAKOS and TOTEV (eds.) *The Development of the Balkan Region*, Aldershot: Ashgate, 141-174.
- KINOSHITA, Y. and CAMPOS, N. (2003), Why does FDI go where it goes? New evidence from the transition economies, *Discussion Paper 3984*, Centre for Economic Policy Research, London
- LIMAO, N. and VENABLES, A. (2001) Infrastructure, Geographical Disadvantage and Transport Costs, *World Bank Economic Review*, Vol. 15 (3), pp. 451-479.
- LÖSCH, A. (1944), *Die räumliche Ordnung der Wirtschaft*, Auflage
- MCCALLUM, J. (1995) National Borders Matter: Canada–US Regional Trade Patterns, *American Economic Review*, Vol. 85 (3), pp. 615–623.
- MELACHROINOS, K. (2002) European Integration and The Spatial Dynamics of Manufacturing-Employment Change, *Environment and Planning*, Vol. 34, pp. 2017-2036.
- MONFORT, P. and NICOLINI, R. (2000) Regional Convergence and International Integration, *Journal of Urban Economies*, Vol. 48, pp. 286-306.
- NIEBUHR ANNEKATRIN and STILLER SILVIA. 2002. Integration Effects in Border Regions – A Survey of Economic Theory and Empirical Studies. *Hamburg Institute of International Economics Discussion Paper* 179.
- OHMAE KENICHI. 1990. *The Borderless World*. London: Collins.
- PETRAKOS G., RODRIGUEZ-POSE A. and ANAGNOSTOU A. (2004) Regional inequality in the EU, in *Integration, Growth and Cohesion in an Enlarged European Union*, BRADLEY JOHN, PETRAKOS GEORGE and TRAISTARU IULIA, (Eds.) New York: Springer, pp. 29-43.
- PETRAKOS G., RODRIGUEZ-POSE A., ROVOLIS A. (2005) Growth, Integration and Regional Inequalities in Europe, *Environment and Planning A*, 37: 1837-1855.

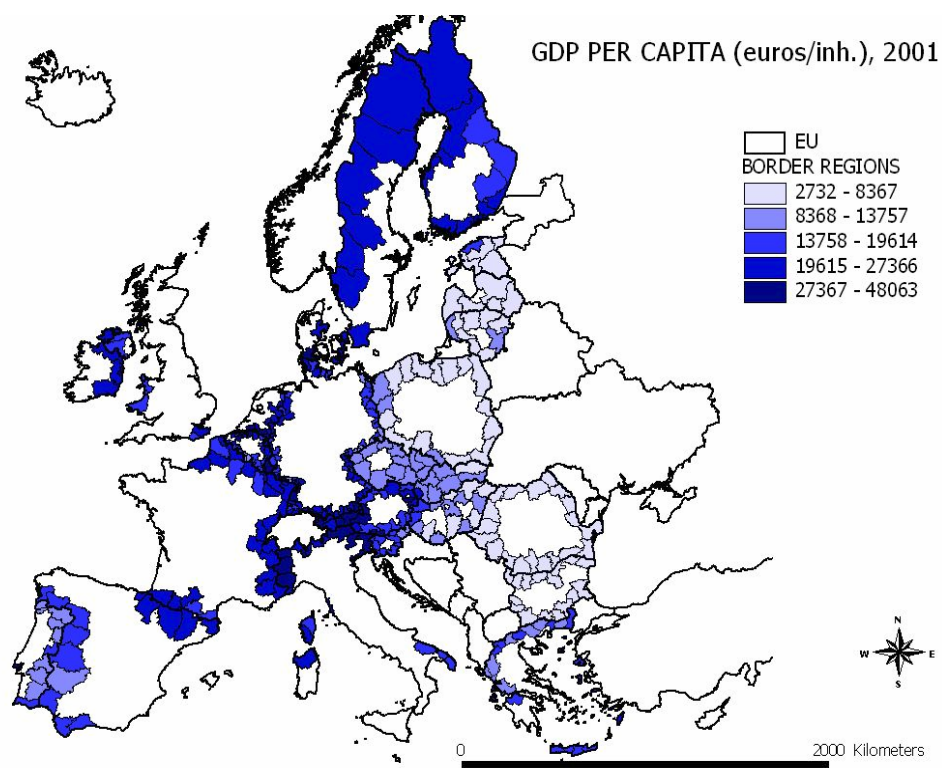
- PETRAKOS, G. (2001) Patterns of Regional Inequality in Transition Economies, *European Planning Studies*, Vol. 9 (3), pp. 359-383.
- PETRAKOS, G. and CHRISTODOULAKIS, N. (1997) Economic Development in the Balkan Countries and the Role of Greece: from Bilateral Relations to the Challenge of Integration, *CEPR*, Discussion Paper 1620.
- PETRAKOS, G., PSYCHARIS, Y. and KALLIORAS, D. (2004) Regional Inequalities in the EU Accession Countries: Evolution and Challenges, in *Integration, Growth and Cohesion in an Enlarged European Union*, BRADLEY JOHN, PETRAKOS GEORGE and TRAISTARU IULIA, (Eds.) New York: Springer, pp. 45-64.
- RAUCH, J.E. (1991) Comparative Advantage, Geographic Advantage and the volume of trade, *The Economic Journal*, Vol. 101, pp. 1230-1244.
- RESMINI, L. (2003) Economic integration and regional patterns of industry location in transition countries, *43rd ERS European Conference*, Jyväskylä, Finland
- TOPALOGLOU, L., KALLIORAS, D., MANETOS, P. and PETRAKOS G. (2006) A Border Regions Typology in the Enlarged European Union, *Journal of Borderlands Studies*, Vol 20 (2). pp 67-89.
- WEI, S.J. (1996) Intra-National versus International Trade-How Stubborn are Nations in Global Integration?, *NBER Cambridge Massachusetts*, Working Paper No 5531.

Figure 1. GDP per capita of European Border Regions, 2001

	CORE REGIONS	TOTAL	BORDER REGIONS		
			Bordering EU-15	Bordering NMS	External Borders
EU-15	32,677	24,566	23,423	21,932	20,619
EU-NMS	16,026	9,082	11,476	8,135	6,869

Source: Own estimates from Eurostat Regional Database

Figure 2. GDP per capita of European Border Regions, NUTS III level, 2001



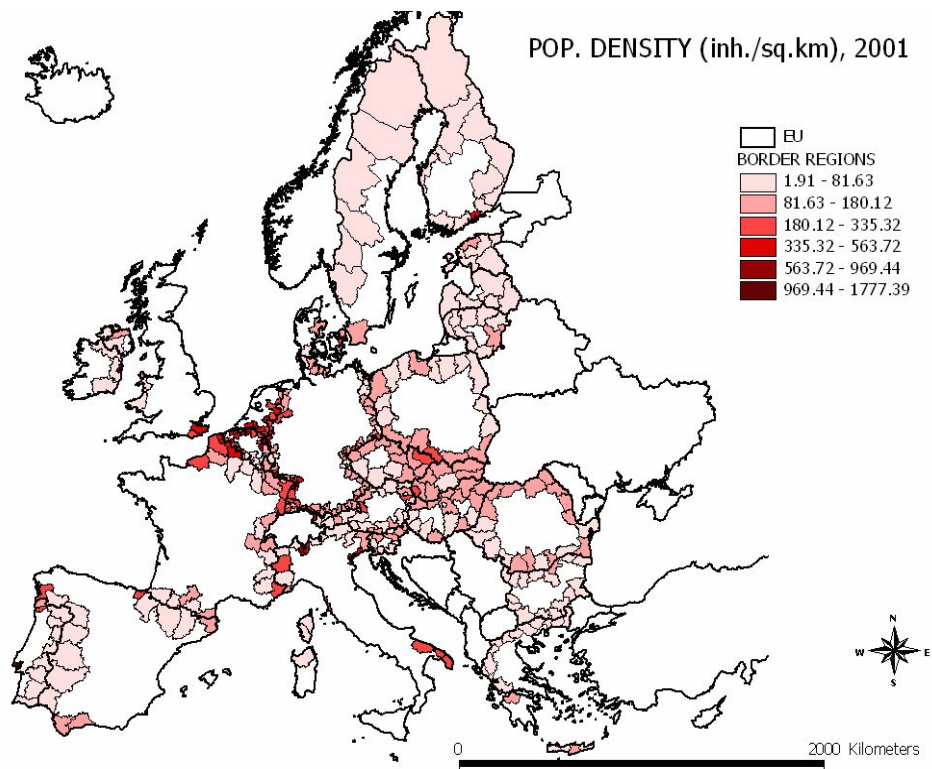
Source: Authors' work based on Eurostat Regional Database

Figure 3. Population Density of European Border Regions, 2001

	CORE REGIONS	TOTAL	BORDER REGIONS		
			Bordering EU-15	Bordering NMS	External Borders
EU-15	1,314.39	115.75	64.60	88.69	63.82
EU-NMS	642.00	96.25	74.32	88.68	65.02

Source: Own estimates from Eurostat Regional Database

Figure 4. Population Density of European Border Regions at NUTS III level, 2001



Source: Authors' work based on Eurostat Regional Database

Figure 6. Summary Information of the Research Sample

No	CROSS BORDER ZONES	QUESTIONNAIRES
1	GREECE (49)-ALBANIA (49)	98
2	GREECE (83)-FYROM (41)	124
3	GREECE (60)-BULGARIA (118)	178
4	FINLAND (39)-RUSSIA (42)	81
5	ESTONIA (70)-RUSSIA (78)	148
6	POLAND (29)-UKRAINE (26)	55
7	ROMANIA (75)-MOLDAVIA (73)	148
8	HUNGARY (24)-ROMANIA (41)	65
9	HUNGARY (11)-UKRAINE (29)	40
	TOTAL	937

Source: Authors' Elaboration

Figure 7. Average trade volume of EXLINEA countries, 2003

	TOTAL TRADE (X+M)/N	TRADE WITH NEIGHBORING COUNTRIES (X+M)/N neighbors
EU -15	472	4661
Greece	349	691
Finland	603	8.885
EU - NMS	654	1.811
Poland	832	2.306
Hungary	644	1.366
Estonia	65	1.454
Romania	288	810
Bulgaria	132	1.485
External countries	1.187	3.490
Russia	1.325	3.827
Ukraine	274	1.343
FYROM	22	484
Albania	24	429
Moldova	18	188

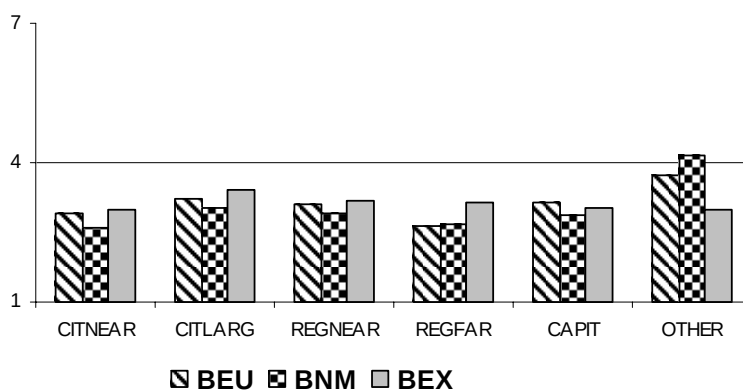
Source: Own estimates from IMF (2004) *Direction of Trade Statistics*, Yearbook, Washington D.C.

Figure 8. Cross Border Trade in macro and micro geographical levels (mean values)

<i>Micro-geographical level</i>						
<i>Macro-geographical level</i>	Exports					
	CITNEAR	CITLARG	REGNEAR	REGFAR	CAPIT	OTHER
BEU	2.89	3.22	3.10	2.64	3.13	3.73
BNM	2.61	3.01	2.93	2.68	2.86	4.14
BEX	2.97	3.42	3.18	3.16	3.01	3.00
TOTAL	2.82	3.22	3.07	2.83	3.00	3.62
	Imports					
BEU	2.38	2.43	2.59	2.40	2.52	3.87
BNM	2.65	2.88	2.92	2.71	2.81	4.54
BEX	3.09	3.77	3.75	3.52	3.71	3.79
TOTAL	2.71	3.03	3.08	2.88	3.01	4.06

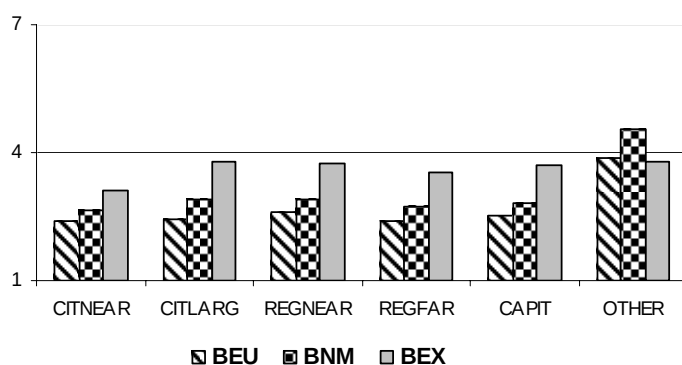
Source: Authors' Elaboration

Figure 9. Cross Border Exports in micro and macro geographical level



Source: Authors' Elaboration

Figure 10. Cross Border Imports in micro and macro geographical level



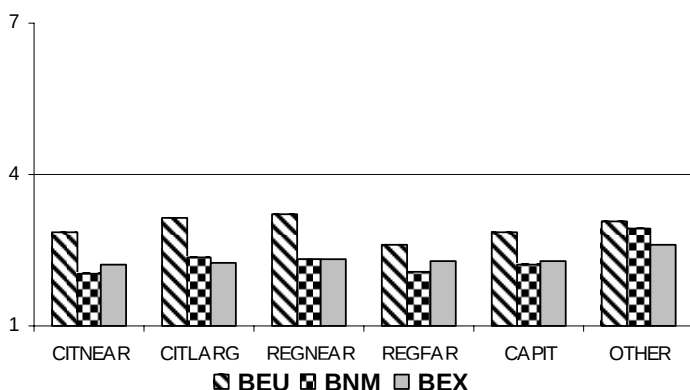
Source: Authors' Elaboration

Figure 11. Cross Border Investments in micro and macro geographical level (mean values)

		<i>Micro-geographical level</i>					
<i>Macro-geographical level</i>		Investment by local firms					
		CITNEAR	CITLARG	REGNEAR	REGFAR	CAPIT	OTHER
BEU		2.87	3.14	3.20	2.61	2.85	3.07
BNM		2.02	2.36	2.33	2.08	2.20	2.94
BEX		2.22	2.25	2.30	2.28	2.29	2.62
TOTAL		2.37	2.58	2.61	2.32	2.44	2.88
		Investment originating in the other side					
BEU		2.17	2.40	2.38	2.18	2.35	3.71
BNM		2.45	3.02	2.76	2.81	3.10	3.41
BEX		2.33	2.67	2.58	2.44	2.63	3.33
TOTAL		2.32	2.70	2.57	2.48	2.70	3.48

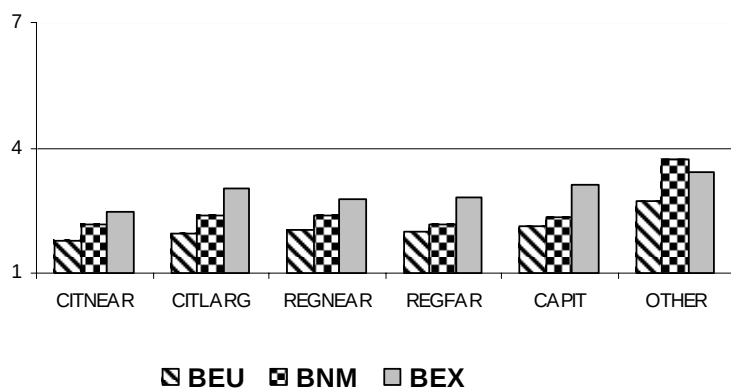
Source: Authors' Elaboration

Figure 12. Cross Border Investments by local firms in micro and macro geographical level



Source: Authors' Elaboration

Figure 13. Investments in the local economy by firms originating in the other side in micro and macro geographical level



Source: Authors' Elaboration