

# Asymmetry of Economic Development of Cross-Border Areas in the Context of Perception of Near-Border Location

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## Abstract

*The objective of the study is the investigation of the dependency between the asymmetry of economic development of cross-border regions in the European Union and the perception of near-border location as an “opportunity” or “obstacle.” For this purpose, an index of relative asymmetry of economic development was developed (DI) based on the GDP per capita in Purchasing Power Standards (PPS). The variability in the scope of perception of cross-border location as an “opportunity” or “obstacle” by the population of near-border areas was determined based on results of the Flash Eurobarometer 422. The basic statistical method applied in the study was the Spearman’s rank correlation coefficient. The obtained results provide a basis to state that the level of disproportions in the economic development of near-border regions (asymmetry of economic development) is linked to the perception of near-border location.*

**Keywords:** asymmetry, borderlands, regional development

**JEL:** R11

## Introduction

Cross-border areas are a specific phenomenon in the geopolitical, socio-economic, and cultural space of the world (Knippschild 2011; Paasi 1999; Van Houtum 1999). Due to the geographic vicinity, economic cooperation, social contacts, and sometimes shared historical experiences, in many cases areas located on both sides of the national border show many common features. The development of such dependencies and similarities is undoubtedly influenced by the process of integration of political and socio-economic systems (Kratke 1999; Perkmann 1999). On the other hand, a co-occurrence of various factors such as environmental, historical, geopolitical, and even civilizational conditions, as well as different dynamics and directions of socio-economic and political processes result in the occurrence of considerable disproportions in their development level, and substantial differences observed in other aspects (Anderson and O’Dowd 1999; Kratke 1999; Paasi 1999; Wilson and Donnan 1998).

The phenomenon of asymmetry of cross-border areas, similarly to the fact of near-border location, generates specified, although difficult to define consequences for both sides of the borderland. The asymmetry of cross-border areas can become a source of both chances and threats and challenges for the development of socio-economic systems located on both sides of the national border (Agnew 2008; Anderson and O’Dowd 1999; Sohn 2014). It can constitute a difficult to overcome barrier for the development of cross-border relations (Miszczuk 2012), but in specified conditions

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it can also stimulate the growth of cross-border relations, particularly in the context of near-border commercial exchange and professional activity (Bergs 2012).<sup>1</sup>

The aforementioned features of cross-border areas and the irregularities observed in them have both an objective aspect, reflected in statistical data and different development measures, and the subjective aspect, referring to the perception of differences characteristic of areas located on both sides of the national border by their residents (Holly et al. 2003). Due to this, the objective of this article is the investigation of the dependency between the asymmetry of the level of economic development of neighboring near-border regions (objective factor) and the (subjective) perception of near-border location as an “opportunity” or “obstacle” for development from the point of view of the population of the near-border areas.

## 1 Literature Review

Perspectives of development of near-border areas have been subject to substantial transformations in recent years. Entities located in near-border areas currently seek development policy that would consider cooperation with entities located on the other side of the border. The areas often differ in size, population density, economic characteristics, level of development, administration system, and in the cultural and linguistic sphere. This has considerable consequences for the perspectives of bilateral cooperation and development (Clement 1997; Laine 2012). The aforementioned differences are developed through a group of conditions with different character (historical, geographic, symbolic, as well as referring to the issue of permeability and function of the border), determining the internal dichotomy of cross-border areas (Anderson and O’Dowd 1999).

Kawałko (2011), analyzing the Polish-Ukrainian borderland, pointed to the existence of two basic dimensions of asymmetry of cross-border areas — the asymmetry of socio-economic systems, and asymmetry of political systems. Anderson and O’Dowd (1999) mention the existence of economic, political, cultural, and social asymmetry. Oleński (2016) discusses several dimensions of asymmetry disintegrating cross-border economies, including among others:

- asymmetry of potentials and capital, including the asymmetry of social, technological, and economic potential; asymmetry of information potential; asymmetry of human and social potential, and asymmetry of institutional capital,
- asymmetry of institutional solutions, law, and procedures, and
- asymmetry of resources.

According to Gorzelak (2003), the existing differences (described by the author as distances) between near-border regions constitute one of the most important factors determining the effectiveness of cross-border cooperation. In this aspect, the author designates the following types of distance:

- geographic, manifested in variable values of the geographic environment and transport accessibility;
- socio-economic, referring to the structure and level of development of the economies of near-border areas; and
- institutional, related to differences in the scope of competencies of neighboring administrative regions and subregional units.

One of the most important factors influencing the course of processes of development of near-border areas is the fact of near-border location, perceived almost commonly as the source of peripherality in geographic terms, translating into peripherality in the socio-economic sense (Jakubowski, Bronisz, and Miszczuk 2017; Miszczuk 2013). A national border can negatively affect the regional economy, particularly through limiting of the area of influence and high transaction costs inhibiting cross-border commercial exchange and production (Anderson and O’Dowd 1999).

The economic development of cross-border areas, however, is not only determined by the border itself, but also asymmetries observed on its both sides. Whereas some of them — e.g., differences

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1. See also: Scientific Report on the Mobility of Cross-Border Workers within the EU-27/EEA/EFTA Countries. Final Report commissioned by European Commission DG Employment and Social Affairs, presented by MKW Wirtschaftsforschung GmbH, Munich, Empirica Kft., Sopron, Gernot Nerb et al., MKW Wirtschaftsforschung, Empirica, January 2009.

in the level of prices or differences in the scope of legislature, can stimulate the development of economic cooperation, others—e.g., linguistic differences or those in the scope of size and accessibility of financial resources, can constitute a significant barrier for the development of cross-border interactions (Clement 1997; Laine 2012). The asymmetry of the level of economic development of cross-border areas in itself influences the development of cross-border functional relations, including economic relations. For example, in view of results of the study by Nerb et al. (2009),<sup>2</sup> it is differences in the level of economic development that can become a factor stimulating the increase in cross-border commercial exchange.

The issue of symmetry and asymmetry—i.e., similarities and differences between cross-border areas, is also a key factor determining the development of cross-border cooperation (Ganster et al. 1997; Jakubowski, Bronisz, and Miszczuk 2017). It can magnify difficulties in the development of advanced forms of cross-border cooperation and improving the cohesion of cross-border regions. Therefore, considerable asymmetry of economic development can be treated as a threat to the regional development of cross-border areas, particularly in the case of location near a less developed area on the other side of the border.

Although near-border location is commonly perceived as a barrier, it can become a potential factor of development and a source of competitive advantage (Dolzblasz 2015; Sohn 2014). Already Christaller and Lössch emphasized that stable borders can be a source of economic benefits, particularly in the scope of development and support of foreign trade (Anderson and O’Dowd 1999). Also, according to Bański (2010), location at a border can constitute a potential chance for development, because the border can be treated as a source of location-related benefits, stimulating local development. Laine (2012) points out that economic inequalities occurring in many cross-border areas can not only lead to asymmetry, but also result in the development of the phenomenon of complementarity of economic systems located on both sides of the border, generating growth of economic and non-economic relations. The relations, if appropriately managed, can prove a factor favorable to development.

According to the majority of researchers undertaking the issue of near-border and cross-border areas (Agnew 2008; Bański 2010; Dolzblasz 2015; Kawalko 2007; Sohn and Lara-Valencia 2013), however, it cannot be determined whether the border in itself and near-border location can constitute a considerable development barrier or can prove factors stimulating development. According to Dolzblasz (2015), both dimensions—i.e., positive and negative consequences of near-border location—can be manifested at the same time, although in different aspects. In this context, the economic strength (level of development) of neighboring countries and regions, as well as the character of the border and the level of its permeability can prove important (Jakubowski and Bronisz 2015). This means that the effect of asymmetry of economic development of near-border areas on the development processes of near-border regions can be manifested only when the national border is characterized by an appropriately high level of permeability.

The objective of this article is the investigation of the dependency between the asymmetry of the level of economic development—i.e., disproportion in the scope of development of neighboring near-border areas in the European Union and the perception of near-border location from the point of view of the population inhabiting the near-border areas. For this purpose, a research hypothesis was stated that the level of disproportions of economic development of a near-border area of country A in relation to the area located on the other side of the border is related to the perception of near-border location as an “opportunity” or “obstacle” for development. It was also assumed that a greater advantage in the level of economic development of a near-border region of country A towards the neighboring near-border region of country B entails a higher likelihood of residents of the near-border areas of country A to perceive near-border location as an “obstacle,” and the other way round—the lower the level of economic development of a near-border area of country A towards the neighboring near-border region of country B, the higher the likelihood of residents of the near-border area of country A to perceive near-border location as an “opportunity.”

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2. See: Scientific Report on the Mobility..., op. cit.

## 2 Data and Methodology

The delimitation of cross-border areas covered by the analysis was based on units of statistical division NUTS3 in accordance with the territorial range of programmes of cross-border cooperation implemented in the scope of the European Territorial Cooperation (ETC), currently constituting one of two objectives of the cohesion policy of the European Union (EU).<sup>3</sup> The analysis covered areas subject to bilateral programmes of cross-border cooperation (a total of 36 pairs of near-border areas), excluding cross-border areas located along sea borders (8 pairs of near-border areas). In the case of cross-border areas subject to multilateral programmes of cross-border cooperation, only pairs of near-border regions were qualified for the analysis with no existent separate, exclusively dedicate bilateral programmes (a total of 9 out of 45 pairs of cross-border areas). The study concerned a total of 45 cross-border areas (covering 90 near-border areas) out of 89 possible constellations (covering 178 near-border areas).

The determination of the level of asymmetry of economic development of cross-border areas in the European Union employed data on the level of GDP per capita in Purchasing Power Standards (PPS). The index offers a number of advantages: it is characterized by a considerably universal character, relative facility of interpretation, and relative comparability in time and space. On the other hand, attention should be paid to the limitations of this measure. It is not able to reflect the complex nature of economic development (Lawn 2007). Considering the necessity of operationalization of data on the subregional level in cross-border territorial systems, the application of the measure proved to be the best solution.

The procedure of calculation of GDP per capita in PPS for cross-border areas in the European Union (and Switzerland and Norway) covered the collection of data on GDP and population in 2015 for units of the statistical division on the level NUTS3 included in the composition of cross-border systems selected for the study, for which the data source was Eurostat<sup>4</sup> and the Federal Statistical Office of Switzerland<sup>5</sup>, and their conversion according to purchasing power based on conversion indices available in the EUROSTAT database. Next, for each cross-border system, the index of relative asymmetry of economic development (DI) was calculated, reflecting the disproportions of the level of development of the near-border area in country A towards the near-border area in country B and the other way around, according to the following formulas:

$$(1) \quad DI_i = 100 \cdot \frac{y_i - y_j}{y_i + y_j} \quad (\text{for near-border area A}),$$

$$(2) \quad DI_j = 100 \cdot \frac{y_j - y_i}{y_i + y_j} \quad (\text{for near-border area B}),$$

where:

$y$  — value of GDP per capita in PPS,

$i$  — near-border area included in the cross-border area belonging to country A,

$j$  — near-border area included in the cross-border area belonging to country B.

The analysis of perception of the effect of near-border location on development processes in the perspective of residents of near-border regions employed results of the Flash Eurobarometer 422 (Eurobarometer 2015) survey conducted on 30 June 2015 in all areas covered by programmes of cross-border cooperation financed in the scope of the European Territorial Cooperation. It was aimed at the investigation of the approach of residents of near-border regions of the European Union (as well as Norway and Switzerland) to the programme of cross-border cooperation and the population of the neighboring country, as well as other issues permitting better programming of EU interventions in the future. The survey covered more than 40 thousand respondents ( $n = 40\,619$ ). In the case of cross-border areas covered by bilateral programmes, an average sample was approximately 600 respondents, and in the case of cross-border areas covered by multilateral programmes — from

3. See Interreg webpage at <https://interreg.eu/>.

4. Data available at <https://ec.europa.eu/eurostat/web/regions/data/database>, as on 12 April 2018.

5. Data available at <https://www.bfs.admin.ch/bfs/de/home.html>, as on 12 April 2018.

1 200 to 2 020 respondents. This study used answers to question Q5 reading as follows: “In your opinion, living near the border with country X is...” together with the following options of answers:

- more of an obstacle,
- more of an opportunity,
- has no effect, or
- I have no opinion on the subject/no answer.

In the aforementioned question, the point of reference is a near-border area of the specific country. Therefore, in accordance with the concept of the authors of the survey, the obtained answers do not refer to the issue of near-border location in general, but to location near the border with a near-border area of the particular country. Considering the objective of this paper, further analyses employed the percentage of answers: more of an obstacle, and more of an opportunity.

At the next stage of the study, Spearman’s rank correlation coefficients were calculated between the used variables:

- value of the index of relative asymmetry of economic development (DI) and percentage of respondents claiming that near-border location is “more of an obstacle,” and
- value of the index of relative asymmetry of economic development (DI) and percentage of respondents claiming that near-border location is “more of an opportunity.”

The value of correlation coefficients was calculated for the entire studied population (EU28 + CH&NO,  $n = 45$ ), and separately for near-border areas located in cross-border areas of the:

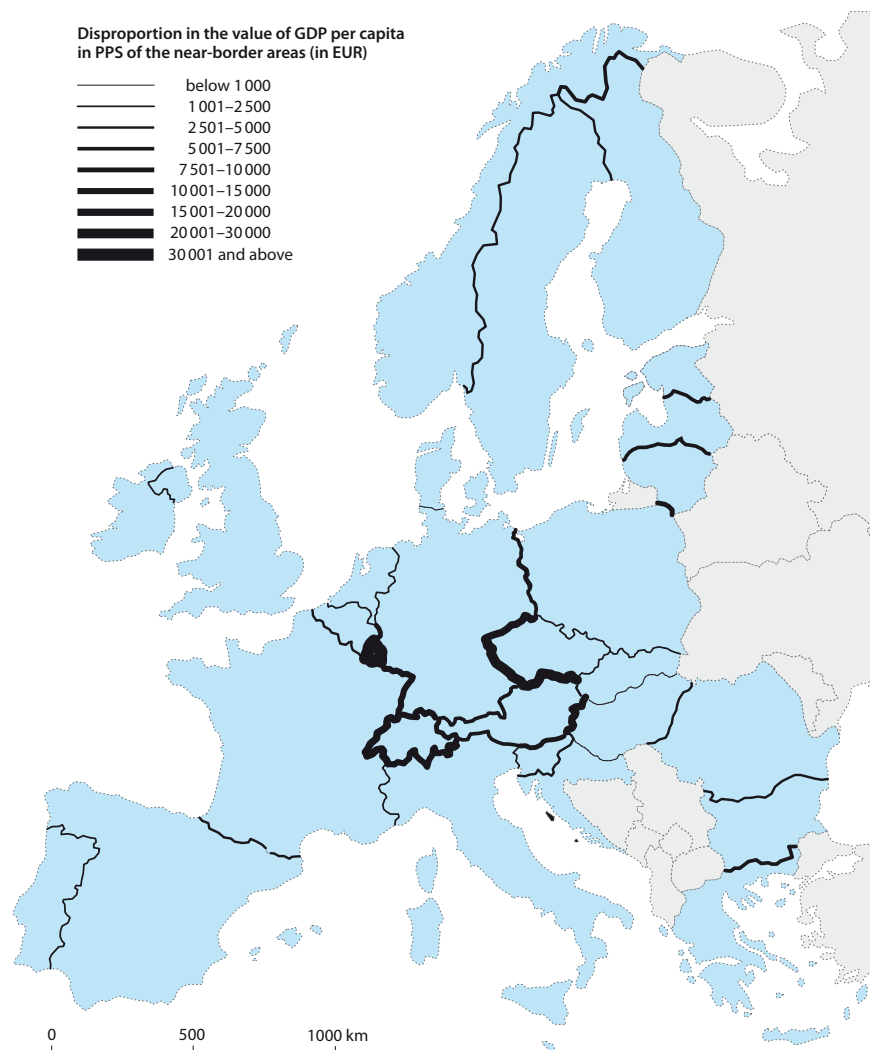
- so-called old EU member states (UE15) together with Switzerland and Norway (EU15 + CH&NO,  $n = 22$ ),
- so-called new EU member states (UE10 + 2 + 1,  $n = 12$ ), and
- borderland of so-called old and new member states (U15 + CH&NO / EU10 + 2 + 1,  $n = 11$ ).

The calculations were made using the Statistica 10 package. The analysis of the obtained results permitted the verification of the hypothesis stated in the scope of the research work.

### 3 Presentation and Discussion of Findings

In view of the obtained results, cross-border areas in the European Union (together with Switzerland and Norway) are characterized by considerable variability in the scope of asymmetry of economic development. Its level measured as disproportion in the value of GDP per capita in PPS varies from EUR 287 in the case of the Slovakian-Hungarian cross-border area (lowest level of asymmetry) to EUR 51,9 thousand in the case of the France-Luxemburg cross-border area (highest level of asymmetry). The generally low level of disproportion was observed in cross-border areas of Central-East Europe, between France and Spain, France and Italy, and Spain and Portugal, as well as between Holland and Germany, Holland and Belgium, and Germany and Denmark. High level of disproportion was observed in all borderlands of Luxemburg (with France, Belgium, and Germany) and Switzerland (with France, Germany, Austria, and Italy), as well as in the belt of cross-border areas located between so-called old and new EU member states. The level of variability of the index of relative asymmetry of economic development (DI) is presented in figure 1.

The highest percentage of answers of respondents considering location near the neighboring country as an “obstacle” was recorded in the case of residents of the German part of the German-Polish borderland (20% in the case of the area covered with the programme Interreg Poland-Germany/Saxony, and 13% in the case of Interreg Germany/Brandenburg–Poland and Interreg Germany/Mecklenburg – West Pomerania / Brandenburg–Poland), Swiss part of the Swiss-Italian borderland (18%), Greek part of the Greek-Bulgarian borderland (15%), and German part of the German-Czech borderland (14% in the case of the area covered with the programme Interreg Germany/Saxony – Czech Republic). In each of the aforementioned cases, a high percentage of answers recognizing near-border location as an “obstacle” concerned near-border areas showing a high advantage in the level of economic development over the near-border area located in the neighboring country. The highest percentage of answers recognizing location near the neighboring country as an “opportunity” was recorded in the case of residents of the Hungarian part of the Hungarian-Austrian borderland (77%), French part of the French-Luxemburg borderland (67%), and Slovenian



**Fig. 1.** Asymmetry of economic development of cross-border areas

*Source:* Own elaboration based on Eurostat 2018; Federal Statistical Office of Switzerland 2018

**Tab. 1.** Values of the Spearman's rank correlation coefficient between the level of asymmetry of economic development and perception of residing in a near-border area (contribution of answers to question Q5: "In your opinion, living near the border with country X is..." survey Flash Eurobarometer 422)

Index of relative development asymmetry (DI)	More of an obstacle	More of an opportunity
Near-border areas EU28 + CH&NO . . . . .	0,456*	-0,494*
Near-border areas EU15 + CH&NO . . . . .	0,132	-0,429*
Near-border areas EU10 + 2 + 1 . . . . .	0,019	-0,091
Near-border areas U15 + CH&NO / EU10 + 2 + 1	0,686*	-0,738*

*Source:* Own elaboration based on data published by Eurostat, Federal Statistical Office of Switzerland, and Eurobarometer (see: Flash Eurobarometer 422: Cross-border cooperation in the EU. [@:] [http://data.europa.eu/euodp/en/data/dataset/S1565\\_422\\_ENG](http://data.europa.eu/euodp/en/data/dataset/S1565_422_ENG))

[In the journal European practice of number notation is followed—for example, 36 333,33 (European style) = 36 333.33 (Canadian style) = 36,333.33 (US and British style).—Ed.]

\*  $p < 0,01$

part of the Slovenian-Austrian borderland (also 67%). In this case, a high percentage of answers recognizing near-border location as an "opportunity" also each time concerned near-border areas showing a considerably lower level of economic development than the near-border area located in the neighboring country.

The study results concerning the correlation between the level of asymmetry of economic development and perception of residing in a near-border area calculated by means of the Spearman's

rank correlation coefficient are presented in Table 1 together with the assessment of statistical significance of the analyzed correlations.

The obtained results show a statistically significant positive correlation between the level of asymmetry of economic development of near-border areas and perception of location near the national border as an “obstacle” ( $r = 0,456$ ), and a statistically significant negative correlation between the level of asymmetry of economic development of near-border areas and perception of location at the national border as an “opportunity” ( $r = -0,494$ ). Further, the correlation between the analyzed variables was analyzed in the scope of three designated groups: cross-border areas located on the borderland of so-called old EU member states (UE15) together with Switzerland and Norway, so-called new EU member states (UE10 + 2 + 1), and on the borderland of so-called old and new EU member states (U15 + CH&NO / EU10 + 2 + 1) (tab. 1). No statistically significant correlation was found between the level of asymmetry of economic development of near-border areas and perception of near-border location either as an “obstacle” or “opportunity” in the case of near-border areas located in so-called new EU member states (UE10 + 2 + 1). This may be explained by the relatively low level of variability of the analysed variables (measured by variance and standard deviation) concerning both: the asymmetry of economic development as well as the perception of border location. In the case of so-called old EU member states (U15 + CH&NO), no statistically significant correlation was determined between the level of asymmetry and perception of near-border location in the “obstacle” category. As in the previous case, this may be due to the low variability in the percentage of people recognizing the border location as an “obstacle”. It may also mean that despite the existing disproportions, the generally high level of the economic development of areas located on both sides of the borders determines the low percentage of people who perceive the border location negatively. In this category of cross-border areas (U15 + CH&NO), a statistically significant negative correlation ( $r = -0,429$ ) was observed between the asymmetry of economic development of near-border areas and the perception of near-border location as an “opportunity.” Finally, statistically significant and strong correlation was determined between the disproportion in the scope of development of neighboring near-border areas and perception of the location by the population residing in near-border areas on the borderland of so-called old and new EU member states ( $r = 0,686$  in the “obstacle” category and  $r = -0,738$  in the “opportunity” category) — i.e., in the group of cross-border areas characterized by particularly large discrepancies in terms of the level of economic development.

The obtained results provide a basis for concluding that the level of disproportion in the economic development of near-border areas (asymmetry) is in correlation with the perception of near-border location as an “opportunity” or “obstacle.” Greater advantage in the level of economic development of a near-border region of a given country towards the neighboring near-border region of the other country entails a higher likelihood of residents to perceive near-border location as an “obstacle,” and the other way round — the lower the level of economic development of a near-border area of a given country towards the neighboring near-border region of the other country, the higher the likelihood of residents to perceive near-border location as an “opportunity.”

However, one should bear in mind the fact that the perception of near-border location by residents of areas located near the state border may depend also on the occurrence of other factors. In addition to the asymmetry in the scope of economic potential, analyzed cross-border areas are also characterized by considerable historical, political, institutional, and infrastructural differences. The importance of the cultural and linguistic factor also has to be taken into account. Justice should also be given to the statement by Holly et al. that the perception of the asymmetry of near-border areas does not have to be based on objective criteria. Areas located on the other side of the national border are evaluated from a somewhat subjective perspective, based not only on the interpretation of facts, observations, and potential experience, but also on the existing stereotypes (Holly et al. 2003). For instance, in the case of residents of near-border areas of countries of the EU15, the perception of near-border location neighboring with so-called new member states might still be biased by the heritage of several decades of division of Europe by the so-called Iron Curtain. The factors mentioned above seem to be an interesting subject of further research.

## Conclusions

Cross-border areas are shaped by a group of conditions with varied character. In the course of the historical development process, near-border areas located in separate state organisms gain different features. The borderland itself becomes a place of meeting of different political and socio-economic systems, where any differences, disproportions, and inequalities become evident, whereas their characteristic asymmetry is a multidimensional and dynamic phenomenon. The fact of near-border location itself, as well as the asymmetry of the socio-economic development manifested in the context of geopolitical transformations, becomes a source of chances, challenges, and threats for the socio-economic systems of areas located on both sides of the border. This paper discusses the issue of correlation between the asymmetry of economic development of neighboring near-border regions and subjective perception of near-border location as an “opportunity” or “obstacle” for development from the point of view of residents of near-border areas. The obtained results show the general existence of the said correlation. This means that the perception of near-border location as an “opportunity” or “obstacle” is related to the disproportions in the economic development of near-border regions.

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