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REGIONAL DISPARITIES AND MIGRATION IN MEMBER STATES EU

Abstract:

Certainly, the spatial distribution of economic activities is far from uniform in many countries European Union and significant differences at national and at regional level are still persistent. The aim of this study is to investigate and compare regional disparities in member states of European Union and estimate the effect of regional migration flows on convergence of regions. This study focuses on income and employment, these two factors are considered as major determinants of migration and on the contrary, migration can contribute to reducing income and employment disparity between regions. The econometric analysis uses panel data primarily from Eurostat Database.

Keywords:

disparity, convergence, European Union, regions, migration, income, unemployment rate

JEL Classification: C20, F20, J60

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1 Introduction

Economic convergence is one of the main goals of the European Union integration process, referred to in all the EU treaties. Article 174 of the Treaty of Lisbon states that “The Community shall aim at reducing disparities between the levels of development of the various region sand the backwardness of the least favoured regions...”(EU Treaty of Lisbon, 2007). The Regional disparities convergence is representing tendency in regional disparities development towards their minimizing, or elimination, leading to balanced state. Disparity means inequality or disproportion of different phenomena, in our case, differences in household income and unemployment rates. Definition by OECD (OECD 2016): Regional (spatial) disparities express the scope of difference of intensity manifestation of economic phenomena under investigation observed within regions of given country. Territorial disparity indicates the scope the intensity of given economic phenomena differs to between regions within given country. Hence, the OECD definitions are significantly limited in focusing only on economic phenomena and concentrating to regional disparities only inside countries.

The aim of this study is to investigate and compare regional disparities in member states of European Union and estimate the effect of regional migration flows on convergence of regions. This paper used the Granger causality test for examining the impacts of interregional migration on income and unemployment rate disparity in EU countries. The data which was used in this paper comes primarily from the Eurostat Database. This study is focused on regional disparity within European Union countries and inter-regional migration, specifically, the empirical study of panel data at NUTS2 level. The paper begins with some brief overview theories of disparity and migration. Then, the methodology, research question, and data collection are presented. Then the results are discussed, and at the end of the paper, we conclude with some suggestions for future research.

The relationship of spatial inequalities and economic growth has been long the subject of economic theories. The results of studies that examine the impact of income inequalities on economic growth are often vague and it cannot be proven with certainty in which terms income inequality affects economic growth. Similarly, it is also theoretically undetermined to define the impact of migration on disparities. Migration models based on neoclassical theory assume that migration will contribute to the diminishing of spatial disparities (see Lewis, 1954; Harris and Todaro, 1970; Todaro, 1976). However, there are many migration frameworks that predict an increase in disparities between regions (for example, the theory of cumulative causes, see Myrdal, 1957).

The theories of regional development can be divided according to selected criteria, for example, according to the trend of development disparities or the disparity settlement approach by government. For the first criterion is important the economic development and trend, whether there is a reduction or, on the contrary, a widening of the differences between regions. These tendencies reflect the convergence and divergence theories of regional development. The convergence theories predict, in principle, the gradual equalization of differences between regions, i.e. the levelling processes predominate through the economies. The opposite is the theory of divergence, for which the basic tendency of increasing the interregional differences is through the differentiation processes (e.g. concentration, etc.). Here, it is necessary to draw attention to the fact that many authors in their theories contemplate the opposite trend than they

themselves prefer; some authors mentioning the episodic changeovers of these trends or combining both approaches. The consensus is perhaps only with the fact that convergence theories assume a considerably longer time horizon than divergence theories. To diminishing disparity between regions, a much longer time is needed than is necessary to increase the disparity between regions. For the second criterion is important the degree of central government intervention in influencing activity or funding. There is classification of the theories of interventionist and non-interventionist. Even this classification cannot be said to be valid in general, but few theories are purely one of these categories and therefore a distinction must be made between a specific degree of state intervention.

The current EU policy perceives inequality rather as an undesirable factor for economic growth and therefore economic convergence is one of the main goals of the European Union integration process. This objective has been transposed into the document "CR 2030", as one of the objectives is to increase the quality of life in individual municipalities, reducing regional inequalities. Assuming regional inequalities are undesirable for economic growth, there are several so-called channels through which these inequalities are spreading: (i) limiting access to education that provides people with the potential for personal growth; (ii) restrictions on business; (iii) increased political instability and uncertainty. It is important to note that, according to many studies, creating disparities does not necessarily have negative impacts on regions, it turns out that disparities can be considered as a significant incentive to mobilize internal resources in the region, or to anticipate a more efficient form of division of labour or regional specialization. According to Barrios and Strobl (2009), EU regional policy should focus on strengthening national growth to ensure greater prosperity in all regions at the expense of temporarily increasing inequalities, especially in the poorest new EU Member States, with low levels of economic development and relatively low regional inequalities. In other words, to achieve economic growth, there must be a temporary increase in disparities between regions. The hypothesis is that the development of regional inequalities should be based on the inverse curve of the shape of u , depending on the level of national economic development, this hypothesis corresponds to the theoretical knowledge of New growth theory. Inequalities should first grow and then decline depending on the availability of knowledge across the economy (the level of knowledge is directly linked to the level of economic development). National growth may initially trigger regional inequalities.

The important question is why spatial disparities arise and what can increase or diminishing them. For the economic growth, the capital and labour stock in the region is important, the migration is associated with labour force and labour market. Further studies focus on another factor of economic growth such as life expectancy (see Kasnauskiene and Michnevic, 2017). While migration can contribute to the economy growth, it cannot provide by itself a solution to the demographic problems and budgetary implications of an ageing population (see Demyen and Lala Popa, 2015; Kasnauskiene, G., Vebraitė, 2014). Migration models can be divided into whether they are focused on explaining the causes or consequences of migration. Urry (2000) argues that the so-called sedentary structure of the population was a typical characteristic for the countries of Eastern Europe. It is now being gradually replaced by a new structure for which population mobility is typical. These conclusions are also confirmed by Castles and Miller (2009), who claim to be living at a time that is referred to as the age of migration. On the other hand, Malmerg (1997) pointed to the so-called paradox of immobility. His view of migration reveals that

the vast majority of the world's population is not migrating anywhere. If we express the degree of mobility as the share of the number of migrants in the total population of the country from official United Nations statistics (2016), 244 million international migrants in the world in 2015 represented just over 3.3% of the world's population. In other words, 96.7% of the world's population did not migrate across the borders of their state. However, these statistics refer only to external migration. If statistics could spread to internal migration, the percentage of migrants in the world's population would undoubtedly be higher. Although global migration may seem insignificant, the FRA (2017) summarizes the findings of a survey of attitudes towards minority groups in the European Union, with the result that the number of Europeans fearing minorities is threatening to threaten their social cohesion so far. People are particularly concerned about the economic implications of immigration, but it is important to note that people who struggle with their economic situation have been calling for a reduction in migration (see Helen Dempster and Karen Hargrave, 2017).

It is important to recognize that there are many types of migration, and this study focuses primarily on economic migration between regions. Migration between regions is therefore referred to as internal migration, it represents the degree of population mobility, including the movement of domestic and foreign persons. Many empirical studies focus on identifying the migration causation, these migration model yields rather mixed results, when looking at recent empirical evidence for European data. Regional employment disparities are often shown to be important factors in determining migratory flows. On the contrary, the influence of regional wage or income levels is difficult to prove in many empirical examinations (see e.g. Westerlund, 1997, for inter-regional migration in Sweden, Devillanova and Garcia-Fontes, 2004, for Spain).

2 Methodology, research questions and data collection

This study provides an answer to the following central research question: Does regional migration contribute to the convergence of economic indicators at NUTS2 level in EU? In addition to the central research question, the following these hypotheses were formulated:

Hypothesis 1: The regional income disparity is affected by regional migration.

Hypothesis 2: Migration contributes to the convergence of income and unemployment rates in European Union countries at NUTS2 level.

For the analysis, statistical indicators from the Eurostat database were selected and used for collecting balanced panel data. The observed period was between 2000 and 2016, but unfortunately not all data were available throughout the period (see Table 2). Therefore, the final panel data for one variable contains a total of 263 NUTS2 from 22 EU countries. Countries with only 1 NUTS2 region: EE - Estonia; CY - Cyprus; LV - Latvia; LT - Lithuania; LU - Luxembourg; MT - Malta, were not included in the analysis. The list of variables is presented in the following Table 1.

Table 1: Overview of variables

Variable (v)	Statistical indicator	Note
MIG	Statistical indicator is defined as the ratio of net migration (including statistical adjustment) during the year to the average population in that year.	The value is expressed per 1000 persons. The net migration plus adjustment is calculated as the difference between the total change and the natural change of the population..
INC	Income of households Purchasing power standard based on final consumption per inhabitant	For testing H1 and H2 expressed as d_{ijt}^v
UNEMPL	unemployment rate (age 15 – 74) %	

Source: own based on Eurostat

In order to be able to compare regional disparities between individual EU countries, the NUTS2 territorial unit was chosen. For the sake of the need for comprehensive statistics of the Member States and their sub-units, Eurostat introduced the so-called NUTS classification in 1988. The territory of the state was divided according to certain parameters into several levels. The main purpose of this division can be seen in statistical comparisons that have informative value. For each member country there is a standardized classification (eg CZ-NUTS, SK-NUTS, DE-NUTS, etc.).

The size of regional disparities is usually measured using the standard statistical indicators of variability rate. The most frequently used indicators are standard deviation and variation coefficient. This way of expression has not been chosen for our analysis, because it is more appropriate for expressing disparities for the country level and not for the region level. Given that the dataset panel is used, the regional inequality for region in particular country was defined in this study as the percentage difference between the NUTS2 and NUTS0, so it was possible to calculate how much the regions differ from average level for the examined variables (v):

$$d_{ijt}^v = abs\left(\frac{r_{ijt}^v}{s_{jt}^v} - 1\right)$$

Where i represents the NUTS2 region and j stands for EU country; t is a given year and v represents the *inc* or *unempl* variable. Thus, d is the expression of the disparity of the region at time t , r expresses the variable at the regional level (NUTS2) and s expresses variable at the country level (NUTS0).

To verify the validity of the first hypotheses (H1), the Granger causality test was used. Granger for VAR uses test to obtain Wald statistics of the hypothesis that all coefficients on the lags of variable x are jointly zero in the equation for variable y . The estimator of vector autoregression (VAR) for each country was selected to meet condition of minimum AIC. Estimates and results are presented in the following chapter. VAR estimates were used for verifying the second

hypothesis (H2). The validity of the hypothesis was determined on the basis of the estimated regressor sign. If the estimated coefficient sign was negative, there was a diminish in disparities (so-called convergence), and in the case of positive values (positive sign), it means that due to migration the difference between the region was increased (so-called divergence).

Results and discussion

The following chapter is devoted to the description of calculated regional inequalities and the results of empirical analysis. In Table 2 there is list of the countries and the number of NUTS2 regions for which data was available. In the third and fourth columns, the average level of inequality between the region in the given country is calculated. The values close to zero mean that there is a relatively low average inequality between the region. Countries with the lowest inequalities in the INC variable are: Croatia, Austria and Slovenia; on the other hand, Finland, Denmark and Romania are the countries with the highest inequalities in income. The ranking of countries by inequality in the unemployment rate is a little different, but among the countries with the lowest inequalities are again Croatia, Slovenia and then Ireland. Countries with the highest average rate of unemployment inequality include Finland, Denmark and Belgium.

Table 2: Overview of disparities in NUTS2

STATE	NUTS	ING disparity		UNEMPL disparity		INC	UNEMPL
		(avg)		(avg)			
BE - Belgium	11	0.12	8	0.42	20	2003 - 2014	2000 - 2016
BG - Bulgaria	6	0.22	18	0.21	10	2000 - 2016	2003 - 2016
CZ - Czech Republic	8	0.12	9	0.32	18	2000 - 2016	2000 - 2016
DK - Denmark	5	0.98	21	0.99	21	2007 - 2016	2007 - 2016
DE - Germany	38 ⁻²	0.11	7	0.30	16	2000 - 2015	2003 - 2016
IE - Ireland	2	0.12	10	0.09	2	2000 - 2015	2000 - 2016
EL - Greece	13	0.14	13	0.15	7	2000 - 2015	2000 - 2016
ES - Spain	18	0.16	15	0.25	13	2000 - 2015	2004 - 2016
FR - France	21	0.11	6	0.16	9	2000 - 2015	2005 - 2016
HR - Croatia	2	0.03	1	0.04	1	2011 - 2015	2007 - 2016
IT - Italy	21	0.20	17	0.41	19	2000 - 2016	2005 - 2016
HU - Hungary	7	0.20	16	0.28	15	2000 - 2015	2000 - 2016
NL - Netherlands	12	0.09	4	0.16	8	2000 - 2015	2000 - 2016
AT - Austria	9	0.05	2	0.27	14	2000 - 2016	2000 - 2016
PL - Poland	16	0.13	11	0.14	6	2000 - 2015	2000 - 2016
PT - Portugal	7	0.14	12	0.14	5	2000 - 2015	2007 - 2016
RO - Romania	8	0.29	20	0.22	12	2000 - 2015	2000 - 2016
SI - Slovenia	2	0.08	3	0.13	3	2003 - 2016	2010 - 2016
SK - Slovakia	4	0.28	19	0.32	17	2000 - 2015	2000 - 2016
FI - Finland	5 ⁻¹	0.99	22	1.02	22	2000 - 2015	2005 - 2016

STATE	NUTS	ING disparity	UNEMPL disparity	INC	UNEMPL
SE - Sweden	8	0.10 ₅	0.13 ₄	2000 - 2015	2000 - 2016
UK - United Kingdom	40 ⁻⁵	0.14 ₁₄	0.21 ₁₁	2003 - 2016	2005 - 2016

Source: own based on Eurostat

For the testing of both hypotheses, panel data were used, examined time periods unfortunately differs within countries, but for most countries, they were able to obtain sufficiently long time series and the panels were balanced. Then we estimated VAR and applied Granger causality test and the results are presented in Tables 3. Based on P-values in row "prob" it may be seen if the changes in migration did or did not affect changes in the income and unemployment rate. In the "DISP" column, the direction of dependence between migration and explanatory variables was evaluated. If the estimated coefficients in the VAR regression had positive sign, the increasing rate of migration lead to an increasing disparity between regions (convergence) and vice versa.

Table 3: Overview of disparities in NUTS2

STATE	INC				UNEMPL			
	VAR (*)	df_r	prob	DISP	VAR (*)	df_r	prob	DISP
BE	1	128	0.5654	divg	3	177	0.0317 **	divg
BG	2	95	0.394	divg	1	80	0.7987	divg
CZ	4	123	0.1616	conv	2	129	0.7392	conv
DK	2	43	0.4884	divg	2	43	0.43	divg
DE	3	565	0.7665	divg	2	497	0.0001 **	conv
IE	2	24	0.5167	divg	3	24	0.7409	conv
EL	1	204	0.5474	conv	2	214	0.8906	conv
ES	3	278	0.9368	divg	5	218	0.0366 **	divg
FR	3	326	0.4311	divg	3	242	0.2808	divg
HR	2	3	0.5826	conv	1	16	0.7126	conv
IT	1	353	0.1355	conv	1	248	0.0435 **	conv
HU	4	99	0.1476	divg	2	112	0.4016	conv
NL	2	185	0.6697	conv	4	191	0.091	divg
AT	3	143	0.0008 ***	conv	2	146	0.2048	divg
PL	1	252	0.8419	divg	4	259	0.5567	conv
PT	1	108	0.9093	conv	4	57	0.5422	divg
RO	2	121	0.9523	conv	3	126	0.2145	divg
SI	1	24	0.8419	conv	4	1	0.678	conv
SK	3	54	0.0034 ***	conv	3	58	0.0082 ***	divg
FI	1	60	0.8097	conv	1	44	0.694	conv
SE	1	124	0.4571	conv	1	132	0.0367 **	divg
UK	3	550	0.5022	divg	3	410	0.5611	divg

note:*** p<0.01, ** p<0.05, * p<0.1

Source: own based on Eurostat

Based on P-values in Table 3, it can be seen that changes in the MIG have affected changes in the rate of INC and were statistically significant only in Austria and Slovakia. For the

unemployment rate, the Granger test was statistically significant in the countries: Belgium, Germany, Spain, Italy, Slovakia and Sweden. If we look at the convergence tendency in Austria and Slovakia, we can see from the results that the migration variable contributed to a reduction in income disparities and hence to convergence. In the case of a variable unemployment rate, in Germany and Italy migration contribute diminishing unemployment rate disparities. In Belgium, Spain, Slovakia and Sweden, differences between the region have increased. Therefore, the results cannot unambiguously determine whether there is a tendency to reduce disparities between regions. These results do not explicitly support the conclusions of the Neoclassical model of migration on convergence of regions due to migration flows.

Since most tests were not statistically significant, it would be better to look at the model specification and aggregate data analysis. The results of statistical analyses are dependent on the chosen scale of the analysis we perform and are further influenced by how we analyse the units we analyse within a single scale. The influence of unequal size and shape of territorial units or, more generally, the different demarcation of territorial units on the results of statistical analysis is called modifiable areal unit problem (MAUP) (see Johnston et al., 2000, Wong 2009).

Conclusion

The phenomenon of economic convergence and migration is very important for economics and plays important role in other society discipline as are the sociology or political science. The purpose of this study was to investigate and compare regional disparities in member states of European Union and estimate the effect of regional migration flows on convergence of regions. The Variables INC and MIG at the national level (NUTS0) have already been used in Kureková and Hejduková (2016). Compared to other studies, the empirical analysis was more extensive and applied to all EU countries (with more than 1 NUTS2 region) and the convergence trend was examined in more detail.

Two hypotheses were formulated in this paper: The regional income disparity is affected by regional migration (H1); The migration contributes to the convergence of income and unemployment rates in European Union countries at NUTS2 level (H2). For verifying the validity of the first hypotheses (H1), VAR estimates were used for verifying the second hypothesis (H2). The estimator of vector autoregression (VAR) for each country was selected to meet condition of minimum AIC. Results allowed us to conclude that income disparities in Austria and Slovakia were determined by regional migration. The regional migration in Austria and Slovakia reduced regional income disparities. In Germany and Italy migration contributed to diminishing unemployment rate disparities. Contrary in Belgium, Spain, Slovakia and Sweden migration contributed to increasing differences between the regions.

Results of our study show interesting information about inter-regional migration and regional disparities in EU countries and may also provide a useful basis for future research in this area. If we compare the results from Kureková and Hejduková (2016), we can see as well that it was not confirmed that migration at NUTS2 level undoubtedly contributed to convergence or divergence. Since most tests were not statistically significant, it would be better to explore the model specification and do data analysis, perhaps to do the analyses at NUTS3 level for all member countries.

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