

The impact of metropolitan areas on internal migrations in Poland.

The case of southern regions

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Abstract

Metropolitan areas significantly affect regional development. They attract an inflow of investments, innovations and know-how as well as create domestic population migration flows. Relocation of human resources regulates both a size and structure of population, supports regional labour markets, the demand for goods stimulation, etc.

The objective of this paper is to discuss the impact of metropolitan areas on domestic migration flows concentrating on southern area of Poland. The empirical study covers subregions and counties and refers to the period of 2008-2010 corresponding to global financial and economic crisis. Ratio analysis as well as taxonomical analysis was applied in the research.

Research results show that southern Polish subregions demonstrate low intensity of intraregional population movements while interregional flows are quite significant, in particular within the territory of southern Poland. The majority of migration flows occur in relation to the city of Wrocław and the city of Cracow, due to their metropolitan capacity. Their scope is extensive and reaches not only the neighbouring areas, but also the remaining territory of Poland (excluding north and north-west areas).

Keywords: internal migration, metropolitan areas, ratio analysis, synthetic measure

JEL Classification: J1, R1

AMS Classification: 91B82, 91G70

1. Introduction

Civilization progress affects a form and dynamics of urbanization processes. One of its most important symptoms is metropolization of territorial space (see [3], [12], [2], [16]). Metropolitan areas, as economic, research, academic, cultural, administrative and political centres, constitute an important regional development factors (see [13], [17]). Their existence provides a lot of advantages, among others, the well developed transport infrastructure, resilient labour market, extensive economic infrastructure (e.g. technology parks, business incubators, technology transfer centres), high availability of (e.g. educational, health, cultural) services (see [10], [1], [18], [11]).

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The concentration of such functions results in an increasing relationships between central area and its neighbours, however, its scope of action is usually considerably wider (see [4]). The attraction force represented by a (financial, human etc.) capital, the development of entrepreneurship and service provision is translated into the intensification of domestic migration movements (see [15], [20], [14], [9]). The purpose of this paper is to determine the potential metropolitan areas of southern Poland and consider their influence on internal migrations, its scale and conditions.

2. Research scope and method

The research refers to the situation of southern area of Poland covering Dolnośląskie, Opolskie, Śląskie, Małopolskie, Świętokrzyskie and Podkarpackie regions⁴ (NUTS 2) and their subregions (NUTS 3). The empirical study covers the period of 2008-2010⁵. The specified period corresponds to the global financial and economic crisis, which affected economic growth and development slow down in Poland, as well the domestic migrations reduction and narrowing down the group of destination (inflow) areas.

Ratio analysis was applied in order to explore migration flows. Inter- and intraregional flow ratings were used for analyzing intensity and directions of migration movements between and within 66 Polish subregions (NUTS 3). They were computed as the share of migration flows aggregated for the period of 2008-2010 in average population of destination region (place of current registered residence). Three groups of intraregional flows were distinguished – strong, medium and low movements⁶ considering only the highest values of interregional flow ratio. They were divided into very strong, strong and medium flows; in the last group three classes of moderate flow intensity were additionally distinguished⁷. The analysis is supplemented by including migration values within particular counties⁸ of the subregions. Net migration, inflow and outflow ratings for counties were calculated and classified as very high, high, medium, low and very low values⁹.

Taxonomical analysis was also conducted to determine the economic situation of Polish subregions using a synthetic measure (see [6], [7]). A set of variables selected to describe

⁴ The Polish equivalent of “NUTS 2 region” is “a voivodship”.

⁵ All calculations are based on data provided by Local Data Bank of the Central Statistical Office in Poland.

⁶ The classification refers to values of specified centiles (min, C_{33}), (C_{34} , C_{66}), (C_{67} , max).

⁷ The classification refers to values of specified centiles such as very strong flows which represent 2% of the most intensive flows within the country (C_{98} , max), strong flows (C_{96} , C_{98}), 1st class medium flows (C_{94} , C_{96}), 2nd class medium flows (C_{92} , C_{94}) 3rd class medium flows (C_{90} , C_{92}).

⁸ The Polish equivalent of “county”, “LAU 1” and “administrative district” is “a powiat”.

⁹ For net migration ratio “medium”, “low”, “very low” flows refer to negative balance of migration movements.

business profile, productivity, entrepreneurship, foreign capital, investment, financial condition of entities and absorptivity of regional labour market is presented in Table 1.

Name of variable	Variable preference	Pattern value	Anti-pattern value
Gross added value per employed person (PLN)	stimulant	136,953	48,712
Natural person conducting economic activity per 100 working-age persons (entity)	stimulant	19	7
Share of commercial companies with foreign capital per 100 national economy entities in private sector (%)	stimulant	5.968	0.278
Investment outlays in enterprises <i>per capita</i> (PLN)	stimulant	12,024	1,053
Share of persons employed in service sector in employed persons (%)	stimulant	83.3	27.0
Average monthly gross wages and salaries (PLN)	stimulant	4,504.85	2,401.06
Share of registered unemployed persons in working-age persons (%)	destimulant	1.5	13.2

Table 1 The set of variables.

Firstly, the character of variables (stimulant, destimulant) and pattern object values were determined. Upper pattern object served as the point of reference at maximum value of stimulant and minimum value of destimulant reached in 2008. The variable values were normalized by means of unitization with zero minimum. A destimulant was transformed into a stimulant by subtracting its values from one.

In the next step distances between objects (subregions) and pattern object were determined using Euclidean distance. For each subregion the value of synthetic measure using Hellwig's method (see [8]) was calculated. On the basis of its values [0, 1] a situation of subregions was defined as relatively high, moderate, low and very low level of economic development.

The most economically developed subregion of Poland (synthetic measure value: 0.987) is the city of Warsaw (Mazowieckie region) which performs the role of metropolitan area (see [5], [16]), while the weakest situation (0.086) is presented by Chełmsko-Zamojski subregion of Lubelskie region (see Fig. 1). The city of Wrocław (0.590), the city of Cracow (0.523) and also Katowicki (0.484) and Legnicko-Głogowski (0.444) subregions represent relatively high level of regional development among the subregions of southern Poland, but the majority of south-eastern subregions are economically backward.

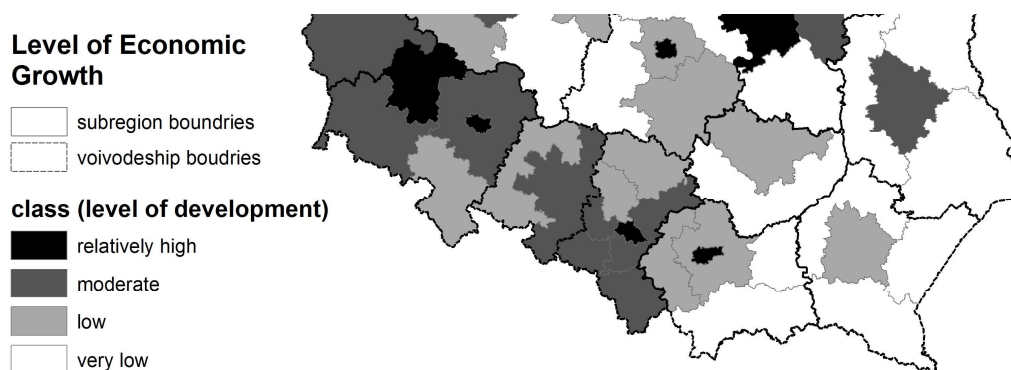


Fig. 1. Economic situation of subregions (NUTS 3).

3. The intensity and directions of migration flows in southern Poland

The highest intensity of intraregional migration flows, among territorial units of southern Poland, has been registered only in Legnicko-głogowski and Jeleniogórski subregions, while the majority of southern subregions prove moderate population flow accumulation (Fig. 2).

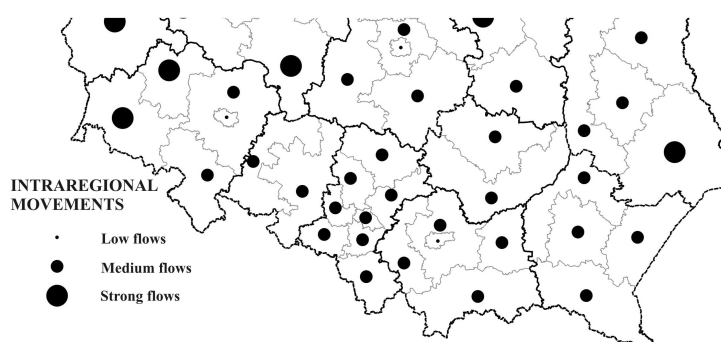


Fig. 2. The intensity of intraregional migration flows within subregions¹⁰ (NUTS 3).

However southern subregions significantly contribute to interregional population movements (Fig. 3), majority of the most intensive flows seem to be bilateral and not exceed the area of southern Poland. There is no considerable migration outflow towards and inflow into the remaining country areas with the exception of the city of Wrocław and Cracow. People migrate at short distances, mostly between the nearest neighbouring subregions.

Large population relocation in the area of **Dolnośląskie** region (located in the south-eastern part of the analyzed territory) is observed between Legnicko-Głogowski subregion and its neighbouring areas (in particular Jeleniogórski subregion) as a bilateral relationship. Despite

¹⁰ Wrocław and Cracow subregions represent the cities with the rights of a county. According to the CSO methodology the population movements within their surroundings are not considered as migration flows because they do not correspond with crossing an administrative border of a gmina (LAU 2, here: city) territory.

its significance as the regional economic centre no symptoms for metropolitan area establishment within its boundary have been detected.

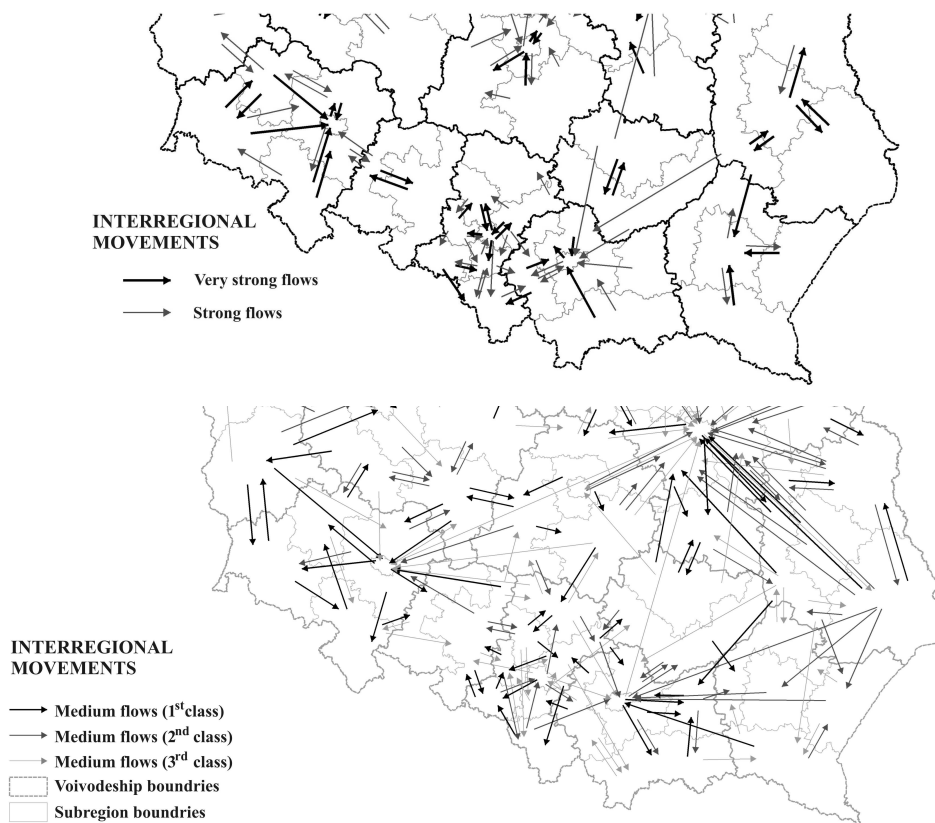


Fig. 3. The intensity and directions of interregional migration flows between subregions.

The city of Wrocław (ranked as 4th just after Trójmiejski subregion) constitutes the economic centre significantly affecting regional development of south-western Poland. Its economic situation considerably differs from the city of Warsaw, however, the city of Wrocław can be defined as one of the most evolving regions in Poland and its scope of impact keeps extending. These implications suggest the city is very high economic potential and its ongoing development as a metropolitan area, which manifests itself in intensified population movements, in particular migration inflows to the city and its surroundings.

Considerable relocation of human resources, especially strong inflow from neighbouring subregions (Jeleniogórski, Legnicko-Głogowski, Wałbrzyski and Wrocławski subregion) of Dolnośląskie region between the city of Wrocław and the other subregions is observed. The most intensive movements focus in Wrocławski subregion surrounding the city. Large population inflow and high positive values of net migration in counties located in its territory prove the occurrence of suburbanization processes (see Fig. 4).

The city of Wrocław also affects second order neighbours¹¹, in particular the nearest subregions of Lubuskie, Wielkopolskie and Opolskie regions and also more distant territories of the country, among others, Sieradzki and Piotrkowski subregion of Łódzkie region, Częstochowski (Śląskie region) and even the city of Warsaw (Mazowieckie region).

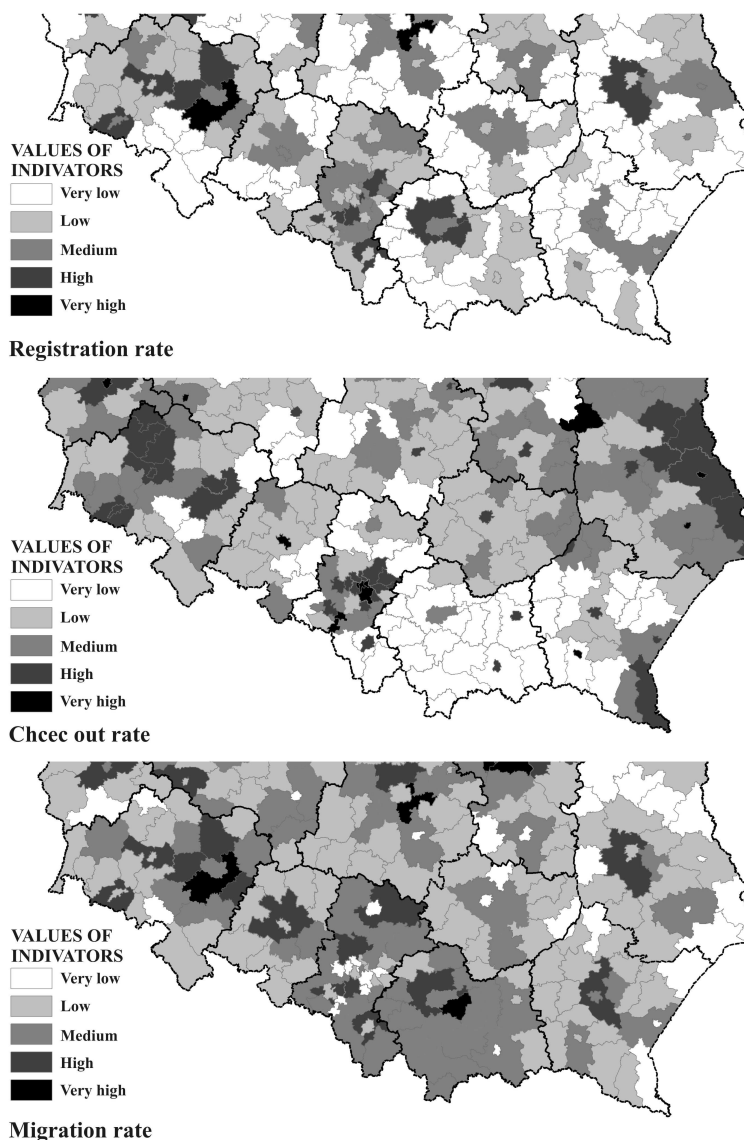


Fig. 4. Inflow, outflow and net migration rate in (LAU 1) counties.

The city of Cracow, located in **Małopolskie**, is the territorial unit featuring a very good economic situation. It is ranked as 5th after the city of Wrocław, but as far as its metropolitan functions are concerned it does not differ very much from the city of Warsaw (see [16]). Its influence on the other regions is significant and results in very high migration flows, also

¹¹ The two areas are adjacent in n -th order if the need arises to cross at least n administrative borders in order to move from one to the other (see e.g. [19]).

within the borders of Oświęcimski subregion. Its scope of impact covers the subregions of Małopolskie, as well as more distant territorial units of Poland. Counties located near to the city present high positive net migration (Fig. 4) confirming an evolving suburbanization process.

High territorial mobility is observed in **Śląskie** region, in particular in its central (Bytomski, Katowicki) and southern (Tyski and Bielski) subregions. Bilateral relationships occur between these subregions and their neighbours (especially the nearest ones). Human resources relocation between second order neighbouring regions is mostly registered in relation to Katowicki subregion, but at relatively short distance. Despite its role as the strong economic centre the functional urban area of Upper Silesia does not prove the scope of action typical for metropolitan areas therefore is classified by ESPON as the weak European metropolitan growth area (IV level) similarly to the city of Wrocław and the city of Cracow.

Bilateral interactions within the area of **Opolskie** region relate mostly to its two (Nyski and Opolski) subregions. However, relatively large migration flows in relation to Dolnośląskie (in particular the outflow from Nyski subregion to the city of Wrocław and its neighbours) and Śląskie (e.g. inflow from the subregions of Śląskie to Opolski subregion) region are recognized.

A similar situation is characteristic for **Świętokrzyskie** region where significant migration movements between its two subregions, as well as outflows from Kielecki subregion to the city of Warsaw and the city of Cracow are made. Moderate flows refer to the nearest subregions of Śląskie, Łódzkie and Mazowieckie region.

Podkarpackie region features the weakest territorial mobility shows. Rzeszowski subregion constitutes the object of relatively intensive population inflows and outflows. However, there occur short-distance bilateral movements especially between neighbouring (in particular Krośnieński and Przemyski) subregions and also relatively high population migration inflow from Puławski subregion of Lubelskie region.

4. Conclusions

Subregions of southern Poland demonstrate low intensity of intraregional population movements while interregional flows are significant. Relocation of human resources refers in particular to the territory of southern regions with no considerable outflows into the remaining areas of the country. Therefore southern Poland represents a self-sufficient and a well organized structure of colonial areas.

Significant population movements (in particular bilateral interactions) occur between the neighbouring subregions. Kielecki and Krakowski subregion and also the city of Cracow and the city of Wrocław also participate in long-distance flows regarding the second order or higher neighbourhood regions, e.g. the city of Warsaw. There are three main areas of migration flows in southern Poland, such as the city of Wrocław, the city of Cracow and the Upper Silesian Industrial Basin as the biggest economic centres of the region. Nevertheless, the city of Wrocław and the city of Cracow, due to their metropolitan capacity, are among the recipients of the majority of migration flows.

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