

# THE PRICE CONSEQUENCES OF DIVERSIFICATION OF REGIONAL DEVELOPMENT IN POLAND

## CENOWE KONSEKWENCJE ZRÓŻNICOWANIA ROZWOJU REGIONALNEGO W POLSCE

<https://doi.org/10.34739/zn.2019.48.08>

Grzegorz Przekota<sup>1</sup>  
Agnieszka Lisowska<sup>2</sup>

<sup>1</sup> Polska, Politechnika Koszalińska, Wydział Nauk Ekonomicznych  
ORCID: 0000-0002-9173-2658, e-mail: grzegorz.przekota@tu.koszalin.pl

<sup>2</sup> Polska, Politechnika Warszawska, Wydział Zarządzania  
ORCID: 0000-0003-0143-1905, e-mail: agnieszka.lisowska@pw.edu.pl

**Abstract:** The economic potential of individual regions of Poland is different. Each region has its own individual specificity. Use of the specific nature of a given region is a significant element of managing the country as a whole and individual regions. Occurring imbalances in economic development may cause a lot of adverse conditions, such as internal migration or regional marginalisation. Excessive price and income disparities may consequently result in under mining the economic growth of the entire country. For reason of coherence of the whole country, it is beneficial if disproportions between given regions are not too large. This study focuses on an attempt to identify the price consequences of diversification of regional development in Poland. The analysis drew on coefficient of variation, correlation coefficient, regression coefficient and medium-term rate. It is noted that individual regions are different in terms of the dynamics of economic growth, degree of development and salary level. However, prices are much less diverse.

**Keywords:** Gross Domestic Product, CPI, salaries, dynamics, voivodeships

**Streszczenie:** Potencjał gospodarczy poszczególnych regionów Polski jest różny. Każdy region charakteryzuje się indywidualną specyfiką. Wykorzystanie specyficznego charakteru danego regionu stanowi ważny element zarządzania krajem jako całością oraz poszczególnymi regionami. Występujące nierówności w rozwoju gospodarczym mogą być przyczyną wielu niekorzystnych zjawisk, jak chociażby migracja wewnętrzna czy marginalizacja regionalna. Nadmierne nierówności cenowe i dochodowe mogą w konsekwencji osłabiać wzrost gospodarczy całego kraju. Dla spójności całego państwa korzystne jest, aby dysproporcje pomiędzy poszczególnymi regionami nie były zbyt duże. W opracowaniu podjęto próbę określenia konsekwencji cenowych zróżnicowania rozwoju regionalnego w Polsce. W analizie wykorzystano ze współczynnika zmienności, współczynnika korelacji, współczynnika regresji i średniokresowego tempa. Zauważa się że poszczególne regiony różnią stopniem rozwoju, dynamiką wzrostu gospodarczego oraz poziomem wynagrodzeń. Natomiast znacznie mniej zróżnicowane są ceny.

**Słowa kluczowe:** Produkt Krajowy Brutto, CPI, wynagrodzenia, dynamika, województwa

### Introduction

Diverse economic development of individual regions is a natural phenomena that occurs around the world. There are particularly visible disproportions in the development of large urban agglomerations and rural areas. This phenomenon is not desired although it is natural. Therefore, it is attempted to limit it by making full use of the economic potential. Of course it can be said that the observed diversification is a result of the potential, however, as the practice shows, new reserves are still being discovered and, moreover,

social expectations are changing. Hence, searching for solutions aimed at improving the competitiveness of regions. The theory of Williamson's regional development (Williamson, 1975, p. 158-200) that highly-developed economies support reduction of regional differences is negated, even more often reverse relationships are observed, e.g. developed economics experience widening gaps between regions.

Source literature focuses on the diversification of economic development and devotes less attention to price diversification between regions. One of the reasons for this

phenomenon is the importance of particular sizes, and the second is that the price differentiation is not so large in practice. It is quite interesting that prices undergo convergence to a greater extent than economic growth.

The theory of economics indicates the occurrence of different dependencies between the economic growth and inflation (Gokal, Hanif, 2004). Especially there are other short- and long-term factors determining the price level. The short-term factors include changes in demand and supply, however, the meaningfulness of these factors ceases to be outranked in the long-term, where instruments of monetary policy assume growing importance. Another issue is the impact of inflation on the economic growth – it is indicated that the case of short-term inflation favours the economic growth, whereas in the long-term it can lead to the instability of growth. Most of the studies conducted indicate a negative relationship between inflation and economic growth. However, a key issue is determining an optimal level of inflation in the country, that is such a level of inflation that allows for the highest pace of real economic growth. The optima level of inflation depends on the nature and structure of the economy, and it is different for individual countries (Mubarik, 2005).

Taking into account the above-mentioned observations, the following objectives were adopted as the aims of the conducted research:

1. Description of the current diversification of regional growth and development in Poland.
2. Description of price and salary diversification.
3. Determining the relationship between the economic development and the level of price and salaries, as well as the dynamics of growth and the dynamics of prices and salaries.

## Literature review

The concept of development contains many varied issues. It can be differently defined depending on the needs. However, a common element of varied approaches to development is “change”. The current state is transformed as expected. The ongoing changes are often long-term. They can involve material or value matters. From the point of view of a regions’ development, these are primarily economic or socio-economic issues that often include the activity of official authorities (Domański, 2004, p. 7), specifying that the aim of these activities is to sustainably improve the living standard and the growth of competitiveness of the region (Właźlak, 2010, p. 43).

The factors determining regional development include these components and properties of regions and their surroundings, as well as events occurring in these areas that lead to a transition of regions from simpler, less perfect to more complex and better forms or states. Their influence can be compared to an endless cause-effect chain. It means that each positive change (effect) has its own source (cause), and its effect creates new conditions in which the same or other factors (causes) initiate a sequence of subsequent events to open the premises for further transformations. A number of interrelated causes can be distinguished in this process, and the most important of them co-create a collection of determinants of regional development (Głuszczyk, 2011, p. 74).

Talking about the regions, certain relatively homogeneous areas should be taken into account. According to the European nomenclature adopted in Poland the following areas are distinguished: at the regional level (grouping voivodeships (NTS 1), voivodeships (NTS 2), subregions (NTS 3)) and at the local level (districts (NTS 4), municipalities (NTS 5)). Such divisions facilitate a better disposal of support aids to regions requiring a special intervention. In order to describe an economic potential of individual regions and to compare the level of their development, a number of indicators is used and the most popular of them are: Gross Domestic Product, gross value added (GVA), capital expenditure and inputs in research and development (Skrzyp, 2009, p. 13).

In recent years there have been many interesting theories connected with economic growth. First of all, it should be noted that forecasting a rise in the growth may be affected by a significant error. State interference through an active fiscal and monetary policy is not able to prevent future crisis. The last crisis which transferred from financial markets to the economy has shown that countries cannot stop recession. Against this background the creative destruction theory of Schumpeter acquires a new significance. Unfortunately, it is greatly simplified today and is often used to justify the need of bearing certain costs in the interest of long-term development, and the richness of Schumpeter’s thoughts in their random treatment enables almost all of their interpretation (Glapiński, 2004, p. 304).

On the grounds of Schumpeter’s theory, the necessity of innovation is raised. The spatial socioeconomic systems are divided into systems that are able to generate innovation, unable to create innovation but capable of absorbing innovation and finally unable to generate or absorb innovation. In this context, innovativeness

becomes, not only a key factor of development, but also the general cause of developmental disharmony (Passela, 2005, p. 51). However, as shown by the experience of many Asian countries, technological progress, development and economic growth can be achieved using imitation. In any case, as U. Zagóra-Jonszta notes, currently the terms innovative economy or innovative solutions are often misused by applying them also to the imitative economy. In fact, a really creative entrepreneur-innovator is rather rare. More often we deal with an entrepreneur-imitator. It seems as this terminological misuse is connected with two reasons: first of all the terms creationism and innovativeness sounds better than imitation, secondly, in economic theories there is a more frequent use of terms in an excessive way, resulting probably from the fact that economists have a tendency to normative the approach and a desire to create reality that meets expectations (Zagóra-Jonszta, 2015, p. 30). It remains an open question, whether stimulating growth and economic development should really put such a strong emphasis on seeking innovation. Of course the fact that innovations are needed for the global development shouldn't be depreciated, but on a local or regional basis a pragmatic approach towards the economic growth that manifests itself in the best effectiveness to use available production resources, seems to be more important.

A growing trend in Gross Domestic Product can be observed in all voivodeships since the beginning of the 20th century. However, they were developing in a different manner and disproportions were high. The clear development leader was Mazowieckie Voivodeship, then Dolnośląskie Voivodeship, Wielkopolskie Voivodeship, Śląskie Voivodeship and Pomorskie Voivodeship. These are voivodeships with large urban agglomerations that are distinguished by a high level of development, therefore they generate much faster economic growth. In addition, they are characterized by a more diversified structure of the economy, significantly better access to communication, richer stock and quality of human capital, and thus also a higher investment attractiveness. On the other hand, Podkarpackie Voivodeship, Warmińsko-Mazurskie Voivodeship, Podlaskie Voivodeship and Świętokrzyskie Voivodeship showed the lowest GDP ratio up to 2009 per capita. These are voivodeships of so-called Eastern Poland, which are characterized by peripheral location, both in the country and in the entire EU. The above-mentioned voivodeships do not have the advantages enumerated for the best five voivodeships (Regional development in

Poland, 2009, p. 27). The situation has not changed since the 90s of the twentieth century. In general, industry is this branch of the economy that is associated with larger development expenditures, which in turn results in faster development of industrial regions than in the case of agricultural regions (Gruchman, 2006, p. 147).

According to studies on investment attractiveness of regions carried out in 2015 by the Gdańsk Institute for Market Economics, the clear leader in this area was Śląskie Voivodeship. A high investment attractiveness is also a characteristic of Mazowieckie Voivodeship, Dolnośląskie Voivodeship and Małopolskie Voivodeship. Five voivodeships, including Podkarpackie Voivodeship, Warmińsko-Mazurskie Voivodeship, Świętokrzyskie Voivodeship, Lubelskie Voivodeship and Podlaskie Voivodeship were found to be the least attractive (Investment attractiveness of voivodeships... 2015, p. 58).

Territorial disparities that occur in Poland are characterised by an upward trend, which results from a faster economic growth that is generated mainly by the most important Urban areas. Therefore it is important to support both types of areas, those which generate the growth and those which undergo processes of marginalization. In order to do that, it is necessary to apply a proper regional policy, as well as the use of funds from the EU cohesion policy. Tackling regional disparities has been included in the regional Policy of Poland (National Development Strategy), and the objectives of the regional policy to 2020 assume:

1. Supporting the increase in competitiveness of regions („competitiveness”).
2. Building territorial cohesion and counteracting marginalisation of problem areas („cohesion”).
3. Creating conditions for effective and partner implementation of territorially oriented development activities („efficiency”).

These objectives may be implemented in the upcoming years thanks to the financial instruments of EU cohesion policy, which are currently the most important source of financing regional policy in Poland.

The highest employment rate in Poland occurs in industry, then in trade and agriculture. Since the highest employment is in industry, and the highest incomes occur in industrial voivodeships, the industry sector should be modernize in the first place. The transformation period has brought such changes, however, the industry structure has still not changed, it is broken down into low- and medium-advanced technology, which constitutes about 70% of sold production of the industry and medium-high and highly

advanced technologies accounting for about 30% of sold production of the industry (including highly advanced technologies, which amounts to only about 4.5%) (Bolonek, 2007, p. 122).

Despite the support from the EU budget that is focused on territorial cohesion, development of voivodeships in Poland is still of an inconsistent nature. The development of industry has the biggest impact on the amount of income generated in voivodeships. Due to a varied availability of producer goods, the voivodeships should diversify income activities, more than hitherto. The source of a more balanced development of regions should be specialisation of manufacturing branches and interregional exchange. To this end it is indispensable to determine new sources of income in terms of the offer addressed to other voivodeships and expect an offer of cooperation from other voivodeships. Therefore, it can be assumed that the convergence of regional development is possible under the condition of a greater regional specialisation and a greater planned interregional exchange (Bolonek, 2010, p. 360-374).

### **Research methodology and sources of data**

The study involved the examination of time series of selected variables describing a condition of the economy in particular voivodeships. The research was divided into three parts:

1. Diversification of regional development in Poland;
2. The importance of investment in the development of regions;
3. Relationships between prices and economic development.

The first part included the analysis of Gross Domestic Product per capita in comparison to the national average, GDP Dynamics and selected variables describing the standard of living: an average floor area of a flat per person, university graduates per 10 thousand inhabitants and doctors (total working staff) per 10 thousand inhabitants. The second part analysed the value of fixed assets per person and dynamics of investment. In the third part, the researcher analysed the consumer price index (CPI), prices of selected consumption and non-consumer products, as well as salaries. The data comes from the Statistics Poland (former name: Central Statistical Office) and refers to the years 2004-2015.

Correlation coefficient and regression coefficient helped to determine relationships between individual variables. The variation in the value of individual variables between voivodeships was described with the use of variation coefficient.

### **Diversification of the economic development of Polish regions**

Research carried out since the 1990s, as well as earlier, indicated a quite significant diversification of the economic development in individual regions of Poland. It created a series of discussions concerning this problem. There were emerging questions about action that should be undertaken in order to boost the economy of the less developed regions. The current state (see Table 1) shows that the problem still remains prevailing. Diversed values of GDP per capita between voivodeships are very large. The lowest GDP per capita (with 100 GDP per capita in Poland) was recorded in Lubelskie Voivodeship (70.09), but the results were not much better in Podkarpackie Voivodeship (71.28), Warmińsko-Mazurskie Voivodeship (73.50) and Świętokrzyskie Voivodeship (77.38). The best result is achieved in this ranking by Mazowieckie Voivodeship (155.94), which clearly excels over the following voivodeships: Dolnośląskie Voivodeship (108.66), Śląskie Voivodeship (106.91) and Wielkopolskie Voivodeship (106.44). Diversification of the GDP per capita between voivodeships accounted to 22.6%.

While the level of diversification in GDP per capita can be taken as a natural state, because individual regions are characterized by a distinct nature of the economy, the more dangerous phenomenon is marked in GDP dynamics as it shows whether there is a gradual equalization of GDP between individual regions or an increase in disproportions of GDP. It appears that the correlation coefficient between GDP per capita and GDP dynamics is positive and it equals 0.74. Even after eliminating the Mazowieckie Voivodeship it is still high and amounts to 0.59. Such a situation means that voivodeships with a higher value of GDP per capita expand more rapidly and as a result, disproportions between voivodeships with low and high GDP are increasing. The voivodeships with the fastest average development rate in the years 2004-2015 were: Mazowieckie Voivodeship (+4.96% annual average), Pomorskie Voivodeship (+4.21% annual average) and Wielkopolskie Voivodeship (+4.04% annual average). And the voivodeships with the lowest average development rate (less than 3% on annual average) were Opolskie Voivodeship, Podlaskie Voivodeship, Świętokrzyskie Voivodeship, Warmińsko-Mazurskie Voivodeship and Zachodniopomorskie Voivodeship.

**Table 1.** Gross Domestic Product in voivodeships in 2004-2015

<b>Voivodeship</b>	<b>GDP / per capita (Poland=100)</b>	<b>GDP dynamics</b>	<b>min</b>	<b>max</b>
Łódzkie	92.71	103.89	100.8	106.5
Mazowieckie	155.94	104.96	101.9	108.8
Małopolskie	88.90	103.98	101.4	107.0
Śląskie	106.91	103.84	100.5	110.0
Lubelskie	70.09	103.23	100.8	106.4
Podkarpackie	71.28	103.91	100.6	105.8
Podlaskie	73.28	102.81	100.4	106.1
Świętokrzyskie	77.38	102.87	98.8	107.8
Lubuskie	86.28	103.93	99.8	108.5
Wielkopolskie	106.44	104.04	101.9	109.7
Zachodniopomorskie	87.38	102.88	100.3	105.7
Dolnośląskie	108.66	103.86	100.2	109.3
Opolskie	82.58	102.43	98.8	107.9
Kujawsko-pomorskie	84.60	103.29	98.8	107.2
Pomorskie	97.36	104.21	100.9	107.9
Warmińsko-mazurskie	73.50	102.86	100.1	104.2

Source: own elaboration on the basis of data from Statistics Poland – Local Data Bank.

Voivodeships were also described according to some additional features indicating economic growth and living standards: an average floor area of a flat per person, university graduates per 10 thousand inhabitants and doctors per 10 thousand inhabitants (Table 2). On the basis of such data, the researchers in the source literature determine synthetic measurements of development. This study did not retain such an approach in order to determine the coefficient of variation. In the case of the average usable floor area per capita the obtained coefficient of variables was 5%, for university graduates 15.1% and for the number of doctors 18.8%. Moreover, it was also found that the correlation coefficient of GDP per capita with an average usable floor area per capita is 0.51, with the number of university graduates it accounts for 0.63 and with the number of doctors it equals 0.45. These results prove that voivodeships with a higher GDP per capita and an average life standard measured with the use of additional indicators is higher. Masovian Voivodeship dominates in all categories. It has an average usable floor area per capita of 26.37m<sup>2</sup>,

the number of university graduates 143.46 and the number of doctors 60.2. Warmińsko-Mazurskie Voivodeship in the second place in the category of average usable floor area per capita with the result of 21.88, Lubuskie Voivodeship was second in the category of university graduates with the result of 75.09 and the second voivodeship in the category of the number of doctors was Wielkopolskie Voivodeship which obtained the result of 32.1.

The obtained results clearly favour Mazowieckie Voivodeship in terms of living standards and economic development. Individual parts of the voivodeships have not been studied here, but it can be assumed that the obtained result was mainly influenced by the socioeconomic development of Warsaw. As in the case of other research, the worst results are also achieved in this study by voivodeships situated in eastern Poland and the following voivodeships: Zachodniopomorskie, Lubuskie and Opolskie Voivodeships. It is not without reason that these voivodeships are considered provinces that need the special activities of central authorities.

**Table 2.** Selected indicators describing the state of the voivodeship on average in 2004-2015

Voivodeship	Average floor area of the flat per person	University graduates per 10 thousand inhabitants	Doctors (total working staff) per 10 thousand inhabitants
Łódzkie	25.21	108.10	55.6
Mazowieckie	26.37	143.46	60.2
Małopolskie	24.21	127.64	52.4
Śląskie	24.76	97.11	52.0
Lubelskie	24.91	115.09	55.1
Podkarpackie	22.94	91.16	36.6
Podlaskie	25.59	104.98	46.5
Świętokrzyskie	23.77	106.53	41.5
Lubuskie	23.99	75.09	37.5
Wielkopolskie	24.95	113.91	32.1
Zachodniopomorskie	23.77	101.39	41.5
Dolnośląskie	24.98	124.65	46.7
Opolskie	25.87	90.88	32.2
Kujawsko-pomorskie	22.37	98.26	42.1
Pomorskie	23.62	103.17	45.8
Warmińsko-mazurskie	21.88	92.93	35.7

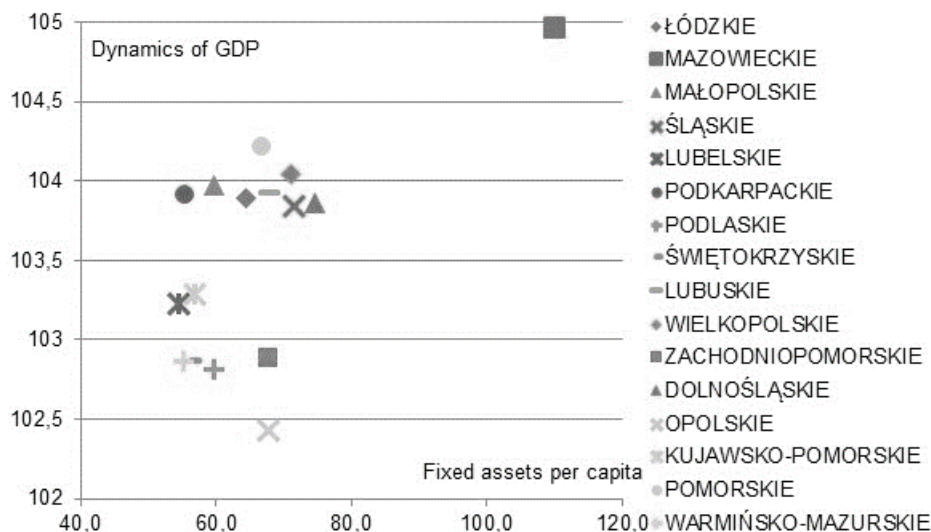
Source: own elaboration on the basis of data from Statistics Poland – Local Data Bank.

### The importance of investment in the regions' development

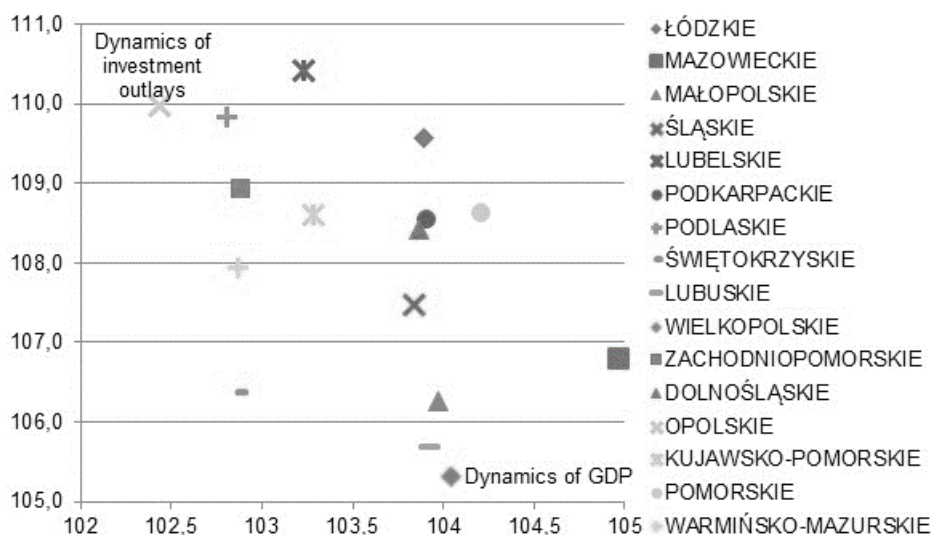
Investments are considered necessary in stimulating the economic growth. As indicated by data concerning the relationship of the dynamics of GDP with the value of fixed assets (Figure 1), the higher value of fixed assets per capita, the more voivodeships examined showed a higher dynamics of development. The examined relationship turned out to be quite strong, because the value of correlation coefficient accounted for 0.63. Moreover, it was established that the increase of value of fixed assets per capita by 10 thousand zloty was tantamount to an average 0.3 percentage point higher rate of economic growth.

On that background, the relationship between the dynamics of capital expenditures and the dynamics of GDP (Figure 2) should be positively assessed. It is negative, and the value of correlation coefficient was -0.47, which means that the dynamics of investment in voivodeships that lag behind in terms of development is significantly higher than dynamics of investments in faster developing voivodeships. Generally, in voivodeships developing faster by 1 percentage point the dynamics of investment was an average higher by 1.1 percentage point.

Such results suggest that extending economic opportunities of less developed regions as a result of investment will help to overcome a certain impasse in their further development.



**Figure 1.** Relationship of the dynamics of GDP with the value of fixed assets  
Source: own elaboration on the basis of data from Statistics Poland – Local Data Bank.



**Figure 2.** Relationship between the dynamics of capital expenditures with the dynamics of GDP  
Source: own elaboration on the basis of data from Statistics Poland – Local Data Bank.

### Relationship between prices and economic development

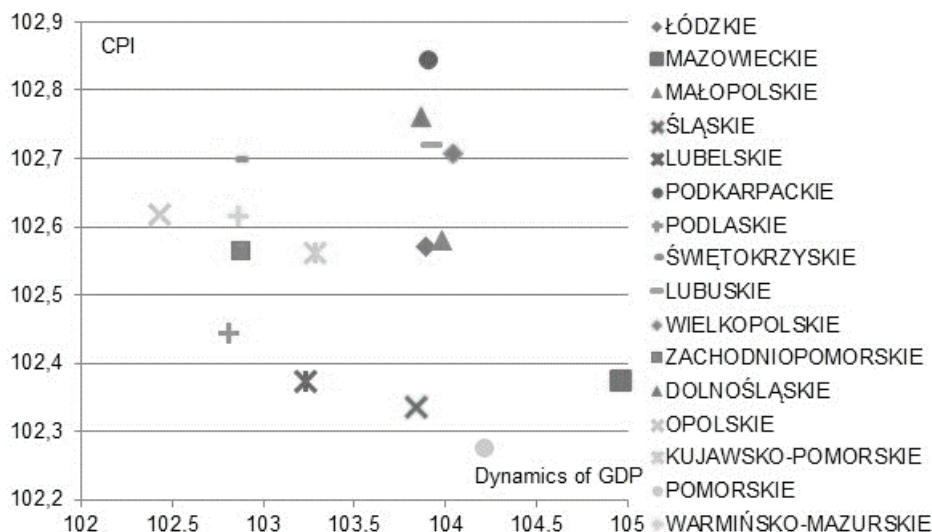
The basic problem of employment concerns the relationship between prices and economic development (Figure 3). A slightly negative relationship is observed in this area. Correlation coefficient between the dynamics of GDP and the average value of the consumer price index (CPI) was  $-0.16$ . Therefore, it is difficult to interpret such a result in a reliable way. Such a result may be affected by a much lower range of volatility of the average CPI value than the dynamics of GDP. The average value of CPI was in the range of 102.27-102.84, whereas the GDP dynamics was ranged

between 102.43-104.96. It confirms the assumption about a much greater price convergence than the convergence of economic growth. However, when trying to explain the obtained negative relationship there are two explanations. The first one is that higher price dynamics inhibits growth, and the second is that with lower economic growth producers may look for compensation in the form of higher prices.

Remarks about the lack of clear differences in consumer products are confirmed by the data included in Table 3. On their basis there are no grounds to assume that there is a clear link between economic development and prices. Correlation coefficient between Gross Domestic

Product per capita and the price of bread, middle loin and ripening cheese and hot water amounted to: 0.27; -0.01; 0.18; -0.06. However, the price volatility of these products between voivodeships were as

follows: 7.6%; 3.0%; 3.0% and 8.0%. This fluctuation is significantly lower than the variability of features characterizing socioeconomic development.



**Figure 3.** Relationship between the dynamics of consumer prices and GDP dynamics  
Source: own elaboration on the basis of data from Statistics Poland – Local Data Bank.

**Table 3.** Prices of selected consumer products (average for the years 2004-2015)

Voivodeship	Wheat-rye bread for 0.5 kg	Middle loin for 1 kg	Ripening cheese for 1 kg	Hot water for 1 cubic metre
Łódzkie	2.04	14.62	18.39	17.58
Mazowieckie	1.92	14.91	19.04	19.34
Małopolskie	2.16	14.42	18.73	18.23
Śląskie	2.28	14.05	18.88	16.71
Lubelskie	1.95	15.02	18.95	20.22
Podkarpackie	1.89	14.95	17.79	18.62
Podlaskie	1.92	14.76	18.92	16.46
Świętokrzyskie	1.71	14.71	18.47	19.37
Lubuskie	2.00	14.14	19.79	19.29
Wielkopolskie	2.04	13.75	18.90	17.29
Zachodniopomorskie	2.07	14.01	19.52	21.48
Dolnośląskie	2.21	14.44	19.61	15.83
Opolskie	2.22	13.70	18.63	17.45
Kujawsko-pomorskie	1.87	13.86	20.18	18.74
Pomorskie	1.93	14.95	18.49	18.39
Warmińsko-mazurskie	1.83	14.50	18.81	16.71

Source: own elaboration on the basis of data from Statistics Poland – Local Data Bank.

Similar conclusions are provided in the study of relationships between economic development and prices of non-consumer goods (Table 4). Again, a clear relationship between economic growth and

prices cannot be determined. Correlation coefficient between Gross Domestic Product per capita and the price of brick, cement, urea and mix feed amounted to: 0.00; -0.19; 0.14 and -0.12. However,



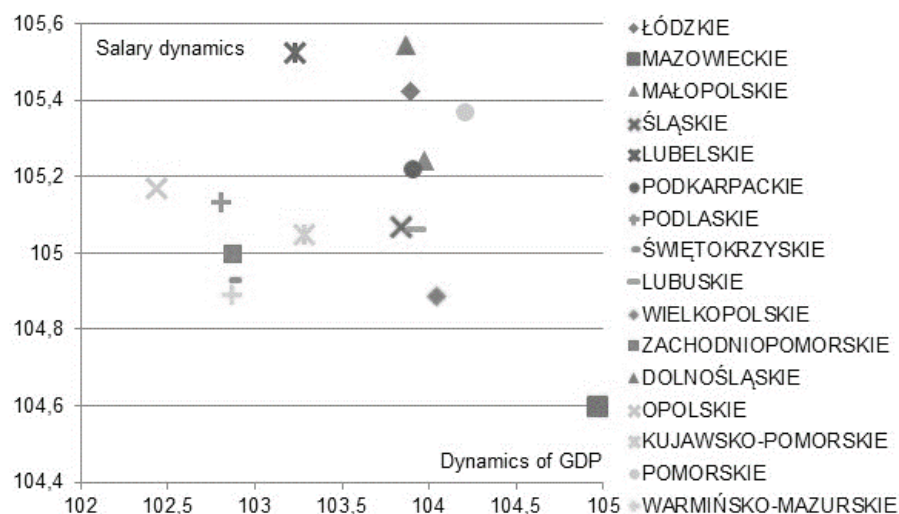
the price volatility of these products between voivodeships were as follows: 13.6%; 4.2%; 4.1% and 6.8%. Although this variability is higher than fluctuations of consumer prices, it is still lower than the variability of features characterizing socioeconomic development. The situation regarding the relationship between wage dynamics and GDP dynamics is quite interesting (Figure 4). It turns out that nothing can be said about any clear relation (Pearson coefficient -0.08). Similarly to CPI

there are also significantly smaller variations than in the case of GDP dynamics and moreover the obtained results are higher than GDP dynamics and significantly higher than dynamics of CPI ratio because the lowest index accounted here to 104.6, and the highest was 105.5. It can be seen from the layout of points in Figure 3 and 4 that there is no link between the wage dynamics and dynamics of prices (correlation coefficient -0.005).

**Table 4.** Prices of selected consumer products (average from the years 2004-2015)

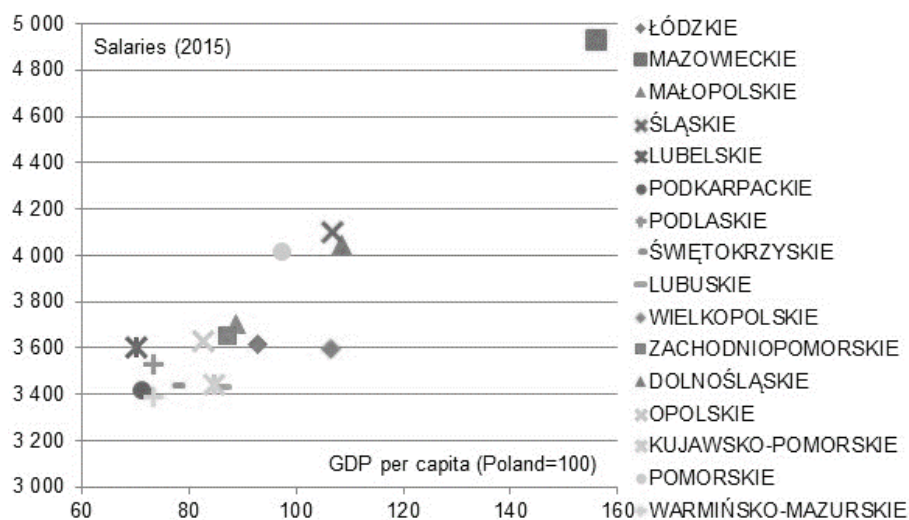
Voivodeship	Building solid burnt brick class15 (apiece)	Portland cement for 25 kg	Urea fertilizer 46% N for 25 kg	Mix feed for porkers for 1 decitonne
Łódzkie	1.10	10.35	36.19	108.35
Mazowieckie	1.10	11.65	36.73	119.21
Małopolskie	1.15	10.84	40.37	125.74
Śląskie	1.14	10.47	36.38	133.91
Lubelskie	0.98	11.88	34.44	128.51
Podkarpackie	0.93	11.31	37.42	129.84
Podlaskie	1.27	11.88	34.64	113.81
Świętokrzyskie	0.99	11.01	35.87	126.64
Lubuskie	1.40	10.97	35.30	127.07
Wielkopolskie	1.24	10.74	35.27	112.11
Zachodniopomorskie	1.51	11.28	36.20	116.74
Dolnośląskie	1.26	11.40	37.12	118.73
Opolskie	1.24	11.38	34.87	108.69
Kujawsko-pomorskie	1.20	11.36	34.50	108.00
Pomorskie	1.39	11.10	35.06	115.17
Warmińsko-mazurskie	1.45	12.01	37.75	125.45

Source: own elaboration on the basis of data from Statistics Poland – Local Data Bank.



**Figure 4.** Relationship between wage dynamics and GDP dynamics

Source: own elaboration on the basis of data from Statistics Poland – Local Data Bank.



**Figure 5.** Link between salary level and economic development  
 Source: own elaboration on the basis of data from Statistics Poland – Local Data Bank.

Unless the relationship between the economic growth measured by the Gross Domestic Product per capita and prices of consumer and non-consumer products was confirmed, in the case of the relation between the economic growth measured by the Gross Domestic Product per capita and the level of remuneration is very strong and positive (correlation coefficient 0.93). Higher economic growth corresponds to higher wages on average. Higher GDP by 10 points per capita was associated with higher wages of about 169 PLN. Salaries are quite strongly differentiated – coefficient of variation 10.3%, even after eliminating Mazowieckie Voivodeship it is 6.2%.

## Conclusions

The conducted research confirm observations included in other studies related to the differentiation of regional development in Poland. Generally, it turns out that Mazowieckie Voivodeship leads in this type of classification. Both the economic growth and standard of living, as well as the salary level is the highest in this province. It is interesting that this fact does not influence prices of selected consumer and non-consumer products, therefore the costs of living in this voivodeship are not different from other provinces. Another group of provinces are voivodeships with well-developed industry: Śląskie, Dolnośląskie Silesian and Wielkopolskie. The worst situation is in voivodeships situated in Eastern Poland and in West-Pomeranian, Opolskie Voivodeship and Lubuskie Voivodeship. Here, with lower GDP and lower wages, the prices of selected consumer and non-consumer products do not differ from prices in

more developer provinces. Such situation confirms a stronger price convergence than economic growth. Despite the fact that the dynamics of investment is significantly higher in less developed voivodeships than in those that are better developed, it does not translate to a faster economic growth. It is quite the opposite – the economic growth in less developed voivodeships is lower, which in turn leads to a continuous increase in disparities between the regions.

As solutions to counter the excessive regional differentiation, the study indicates the need for specialization. However, it can be concluded on the basis of experience gathered by other countries that it is difficult to achieve a sustainable, long-term economic growth. Another issue connected with development is communication access. Well communicated regions develop much faster. Furthermore, resources that constitute a key basis for development are also important. It is difficult to change the structure of the economy in the short term, but a rational investment in less developed regions is a necessary condition for their development. However, the effects of action should be expected in the long term.

## References

- Bolonek, R. (2007). Developmental dualism as a factor strenghtening social inequalities in a knowledge-based economy, [in:] Social inequalities and economic growth. Knowledge-based economy 10, University of Rzeszów Press, Rzeszów.
- Bolonek, R. (2010). Divergence of regional development of Poland as a determinant of technological modernisation in the economy.

- Social Inequalities and Economic Growth 16, 360-374.
- Domański, B. (2004). Criticism of the concept of development and regional studies. *Regional and Local Studies* 2(16), 7-23.
- Głapiński, A. (2004). Capitalism, democracy and the state tax crisis. Around the theory of Joseph Alois Schumpeter. Warsaw: Publishing House of SGH Warsaw School of Economics.
- Głuszczyk, D. (2011). The essence of regional development and its determinants. *Economics* 5(17), Publishing House of Wrocław University of Economics, 68-80.
- Gokal, V., Hanif, S. (2004). Relationship between Inflation and Economic Growth. Reserve Bank of Fiji, Working Paper 4.
- Gruchman, B. (2006). Regional development of Poland in the perspective of membership in the economic and monetary union. *Legal, Economic and Sociological Movement* LXVIII (2), 148-154.
- Mubarik, Y.A. (2005). Inflation and Growth: An Estimate of the Threshold Level of Inflation in Pakistan. *State Bank of Pakistan Research Bulletin* 1(1-2), 35-44.
- Passella, E. (2005). Contemporary local and regional development, [in:] R. Brol (Ed.), *Local and regional economy in theory and practice*. Wrocław: Publishing House of Wrocław University of Economics.
- Regional development in Poland, report 2009. Warsaw: Ministry of Regional Development.
- Skrzyp, J. (2009). Diversified development of Polish regions and its consequences. *Scientific Journals of Siedlce University of Natural Sciences and Humanities, Series: Administration and Management* 81(2009), 9-20.
- Tarkowski, M. (Ed.). (2015). Investment attractiveness of Polish voivodeships and sub-regions. Gdańsk: Gdańsk Institute for Market Economics.
- Williamson, J. (1975). Regional Inequality and the Process of National Development. A Description of the Patterns. In: J. Friedmann, W. Alonso (Eds.), *Regional Policy. Readings in Theory and Applications*, (pp. 158-200). Cambridge: MIT Press.
- Właźlak, K., (2010). Regional development as a task of public administration. Warsaw: Wolters Kluwer Polska.
- Zagóra-Jonszta, U. (2015). The theory of economic development and Schumpeter's "creative destruction" and its topicality. *Optimum Economic Studies* 3(75), 20-31, DOI: 10.15290/ose.2015.03.75.02.