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STRUCTURAL CHANGES IN THE ECONOMY OF POLISH REGIONS

Krystyna Gawlikowska-Hueckel
Stanisław Umiński
University of Gdańsk

Abstract

The paper refers to structural changes and growth dynamics in Polish regions (voivodships). First, theories that relate to logics of structural changes are presented. The focus is on concept of the so-called sectoral development. Also the criticism of the division of the economy into three sectors is depicted. Then there are development differences among Polish regions presented. Statistical data analysis confirm Williamson hypothesis, as dispersion in income among regions has increased. In Poland there are important changes taking place as far as the regions' contribution to national GDP is concerned. In absolute terms GDP has increase, but the dynamics of growth differs much among regions, with Mazowieckie regions being the leader. Growth process is accompanied by structural changes. We concentrate on shifts of agriculture, industry and services in value added and employment. Finally Polish regions' innovation capacity is judged.

Keywords:

Structural changes, regional growth, innovations.

Introduction

The aim of the present paper is to analyse – from a regional perspective – the direction of structural changes in Poland. Big-scale structural changes in the Polish economy result from:

- the elimination and evolution of old structures, created by the command-and-control system;
- the emergence of new structures, qualitatively adjusted to the demands of the market economy.

Structural changes come to the fore as a result of the process of the adjustment of the national economy to a dynamically changing global market. These adjustments take their inspiration from the directions of international specialisation and competitiveness. The aforesaid transformations, which are determined by effectiveness and rationality, become a source of economic growth.

Structural changes have a long-term character. In Poland, however, there has been an accumulation of changes in a short period of time. The scope, character and depth of changes have led to an accelerated re-allocation of resources, which allows us to discern tendencies and patterns during a comparatively short period of time. Besides, the structure and dynamics of structural transformations in Polish regions do differ.

Methodology of the research into structural transformations.

Theories investigating the patterns of sectoral changes take as their premise that each phase of development is dominated by one sector. Theories of so-called sectoral development also identify factors that cause or accelerate the "decline' of certain sectors and the growth of other sectors. These include: the size and structure of demand and technological progress.

Fisher (1935) classifies sectors on the basis of the income elasticity of demand. The income elasticity of demand for products from the primary sector is lower than 0.5, for the secondary sector, it is between 0.5 and 1 and for the tertiary sector, it is higher than 1.

According to Fourastie (1954), the primary sector encompasses food production and the extractive (mining) industry; manufacturing belongs to the secondary sector, services to the tertiary sector. The greatest concentration of resources in the primary sector took place in the so-called primordial civilisation period. Domination of the tertiary sector heralds the advent of the so-called third civilisation; this means that approximately 80% of the employed will work in services. Fourastie predicts that the so-called third civilisation will eventually become established in the first part of the 21st century.

As Clark (1957) argues, technological progress is a major *spiritus movens* of structural change. The

division of the economy into three sectors is the result of the impact of technological progress. The primary sector is characterised by moderate technological progress, the secondary by fast, while the tertiary by slow[2]. As a result of this, an increase in the offer of the tertiary sector can happen almost only through a growth in employment. The primary sector – agriculture, forestry, hunting, gathering and fishing – is based on the direct utilisation of natural resources and the production cycle in this sector requires a lot of time. This sector is marked by the law of diminishing returns[3].

The secondary sector – manufacturing – is characterised by the following aspects: production does not necessarily have to be based on the direct exploitation of natural resources; it is marked by a big scale of production, which implies that considerable capital is needed and that work needs to be efficiently organised; secondary-sector goods are tradable and can be transported over long distances; production has a continuous character and the law of increasing returns applies.

The tertiary sector encompasses services. It is in services where employment systematically increases as economies grow. Workforce transfers from one sector to another are caused by changes in real income per one inhabitant as well as transformations in the demand structure (changes in consumer preferences) brought about by these changes.

One of the most well-known theories is that by Kuznets (1976), who, while examining the relationships between general growth and changes in the structure of production, claims that high rates of increase in the global product per head and high productivity are accompanied by an accelerated shift in the structure of production. This relationship in its positive sense is visible in well-developed countries, whereas the reverse is seen in less developed ones. This is because both changes in the rate of growth and the structure of production are conditional upon scientific progress and technological innovations. Historically, the industries in which technological innovations concentrate become "growth industries".

Apart from technological progress, changes in the demand structure and international trade (which – as a result of the existence of comparative advantages – benefit a country) are seen as other major drivers of structural changes. The Rostow theory of leading sectors is intertwined with his model of phase growth. Each phase of growth is marked by three groups of industry branches, which differ from each other in terms of growth rate, labour productivity and the potential impact on transformations in other sectors in the entire economy. Rostow (1960) calls these groups of branches basic, complementary and derivative, respectively. Basic sectors are the main drivers of the pace and direction of growth; they consist in a series of industry branches, whose leading role results from the utilisation of state-of-the-art scientific and technological solutions, the exploitation of new resources, the highest dynamic of production growth and the effectiveness of management.

Leading branches give impulses to creating other domains of the economy, namely, the complimentary sector. According to Rostow, the choice of a leading sector is the key to speeding the rate of growth in less developed countries.

The division of the economy into three sectors, which contribute, in differing proportions, to GDP growth and employment, has come in for some criticism, though. First, this three-sectoral analysis was based upon the observations of changes in employment proportions in Western European countries. This, however, was not fully borne out by the evidence from such well-developed countries as the USA and Canada, where the shift of labour from the primary sector to manufacturing and services took place simultaneously rather than sequentially. In Singapore, for instance, in 1920 more than 60% of the employed worked in services (in America and Britain in 1900 more than 50%).

Secondly, even in the 17th century services (trade, maritime transport) in such countries as England, Portugal and the Netherlands were as important as manufacturing.

Thirdly, while appreciating the role the industrial revolution played in human history, one has to remember that it did not take place in a vacuum. Industrialisation was possible, to a large extent, thanks to the accumulation of capital through the financial market, part of the financial-services system. The effectiveness of infrastructure services in trade and distribution was critical to the organisation of supply chains and manufactured goods sales network (Unctad 1989).

One can discern here the blurring of boundaries between manufacturing and service provision. What actually happens is the "de-materialisation" of manufacturing and the "industrialisation" of services as well as an ever bigger complementariness of services and manufacturing. Even though there is still debate on the rationale of the sectoral analysis of structural changes, it is useful. The following arguments corroborate this point:

- the structural burden in the form of the excessive importance of the primary sector

[2] The thesis that technological progress in the tertiary sector is slow is now not confirmed.

[3] Apart from the mechanised production, conditioned by technological and scientific progress.

and manufacturing (a legacy of the communist system experienced at the beginning of the transformation) compared to other countries, e.g. of the EU. As EU Member States are Poland's principal trade partners, structural disparities affect the competitiveness of Polish export.

- one can notice changes in the structure of the Polish economy which manifest themselves in the enhanced significance of services and the diminished role of the primary and secondary sectors (to a lesser extent).
- the sectoral approach allows us to differentiate service activity and to determine its importance to the labour market (jobs creation) and to the competitiveness of other sectors.

Besides, the sectoral approach is useful because it allows us:

- to observe the most general patters of structural changes that are taking place in Poland and its regions;
- to trace employment trends and workforce transfers between sectors;
- to identify the phase of development in which Poland find itself and to make international comparisons and predictions;
- to formulate industrial policy recommendations and to criticise government action in this area;
- to prepare a set of reforms, needed to carry out necessary EU-oriented adjustments in the light of EU industrial policy directives.

In line with phase theories, an increase in the share of services in the economy has to be positively assessed. This proves that an increase in labour productivity in manufacturing allowed a workforce shift from manufacturing to services. Yet there are voices to the opposite. Negative assessments are based on the assumption that it is manufacturing, technological progress and productivity that play a more important part in economic development (than services) (Dertouzos 1989). One can adduce the following arguments against the dynamic growth of services:

- first, manufactured goods constitute the bulk of imports, whereas the share of services in export is relatively low. Hence a shift to services contributes to the worsening of the trade balance, which in turn slows down growth;
- second, manufacturing is characterised by a faster pace of productivity growth than services; thus a shift of resources to services risks slowing down the pace of productivity growth in the entire economy;
- third, dynamic technological changes generating economic growth and an improvement in competitiveness are associated predominantly with manufacturing activity (most R&D is carried out in industry). The enhanced importance of services, therefore, leads to the weakening of a country's technological competitive position[4].

Another argument against the development of services is connected with national security, seen through the prism of dependence on other countries. Deindustrialisation renders countries dependent on the provision of defence-systems parts and components from other states (Audresch and Yamawaki, 1993).

One might counter the above arguments, pointing out that services provide infrastructure for manufacturing activity and positively affect competitiveness (whenever a manufacturer outsources high-quality services). The thesis that service jobs are worse than those in manufacturing is irrational because, for many, the tertiary sector is the only alternative to unemployment.

Developmental differences amongst Polish regions

The rate of growth of Polish regions differs, which is borne out by the statistics on the change of regions' GDP (published by the Central Statistical Office, CSO thereafter). A number of factors – for instance, investment outlays, attractiveness for investors, export, domestic demand – influence the dynamics of GDP growth, which in turn gives, in a synthetic way, the picture of the economic situation. The current administrative divison into 16 regions (or voivodships) has been in place since 1999. That said, CSO has been publishing – calculated retrospectively – GDP data for the new territorial layout since 1995. Due to the inert nature of economic processes, taking into account a possibly long period of time is vital to discerning serious and deep changes. While analysing processes of regional development, special attention is paid to the following issues: acceleration of economic growth, the existence (or non-existence) of catching-up and real-convergence processes (that is, reducing disparities in terms of socio-economic development).

One of the most important hypotheses concerning convergence processes was formulated by Williamson (1965). This suggests that in a country in which economic growth accelerates, regional differences widen_(Gawlikowska-Hueckel 2002). The evidence from Poland (1995-2005) confirms that hypothesis because in this period regional disproportions in GDP per capita grew. Simultaneously, when Poland started

[4] One has to point to the fast development of so-called new services which make use of new technologies.

the catching-up process (with the EU), inside – among regions – polarisation processes intensified. In 1995 the ratio of GDP per capita of the most affluent region (Mazowsze) to that of the least affluent one (Podkarpackie) was 1.67 to 1, in 2005 it was – 2.32 to 1 (which bears witness to the divergence/uneven distribution of income[5].

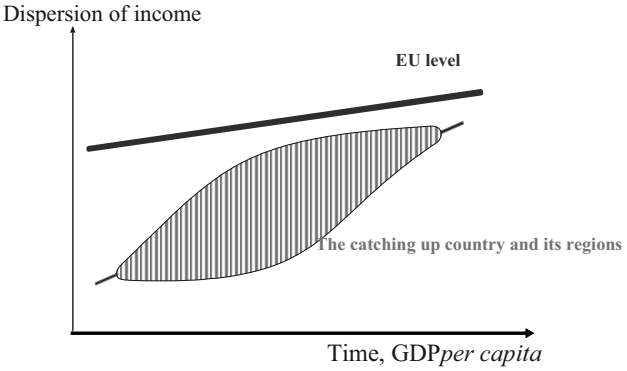

Figure 1: Theoretical illustration of Williamson hypotheses
Source: Authors' concept based on Williamson hypotheses

While analysing processes of regional development, it is necessary to take into account the point of departure since the situation at the "beginning" affects the future pace and dynamics of growth. Theory and empirical research suggest that weaker regions grow faster than stronger ones. Failure to allow for the departure-point potential savours of simplicity and casts doubts over the validity of conclusions.

In Poland, objective assessments are a bit distorted due to the specificity of Mazowieckie voivodship, in which Warsaw boosts GDP per capita for the entire region. (As we know, there has been debate on excluding Warsaw from Mazowieckie region, which would drive down GDP per head. This in turn would allow the voivodship to meet the Structural Funds criteria longer.)

Statistical analysis carried out for 15 regions (1995-2005, counting out Mazowieckie to avoid the aforesaid distortion) shows that there is a negative correlation GDP per head at start and the dynamics of regional growth. This means that poorer regions grew faster. This pattern should be categorically taken into account while assessing the regional rate of growth. For that reason, one has to be chary of assessing negatively, for instance, the relatively smaller pace of growth in Dolnośląskie or Pomorskie regions, compared to, say, Świętokrzyskie or Podlaskie regions. This is because poorer voivodships simply grew faster at the beginning.

As far as such voivodships as Podkarpackie, Świętokrzyskie and Warmińsko-mazurskie are concerned, one can discern an evident acceleration of growth in 2001-2004, after a period of slower growth. It is not legitimate, however, to predict on that basis that this tendency will be continued in the near future. The 2005 data suggest that the rate of growth in these regions actually decreased.

It follows that drawing conclusions on the basis of analysis of short periods of time, which points to spectacular successes of Polish regions, is simply not legitimate. Experts on convergence point out that it is a long-lasting process and that reducing (eliminating) regional disparities might take decades.

Theoretical insights do not always correspond with the situation on the ground, which is confirmed by the example of Mazowieckie. This voivodship, albeit being the most affluent, is characterised by the highest, long-term pace of growth. Yet one has to take a particularly close look at the statistics. They show that the pace of growth of this region is not steady and uniform, and is subject to oscillations. Mazowieckie, compared to other regions, grew dynamically in 1996-1999. Later, however, the pace of growth fell. In 2002-2003 Mazowieckie stopped coming top in GDP-per head rankings. Still, in 2005 it become leader again.

Interesting conclusions can be drawn from the comparison of regions' growth dynamics and structures of their economies. What is worth mentioning is the positive correlation between the share of services (including construction) and the pace of regional growth. Regions with a large share of services in the structure of value added are characterised by a faster rate of growth, whereas those with a large share of manufacturing grow slowly. At the same time, the share of agriculture is not correlated with the dynamics of growth since agriculture does not contribute much to the structure of value added of the regional economies. It cannot be, therefore, a driver of growth.

Regional success stories have to be seen in perspective. Poland's GDP per capita is one of the lowest in the entire EU and Polish regions are amongst the poorest EU areas. Hence the catching-up process will take many years, there is no guarantee that all the regions will attain that aim. Rankings of the wealth of regions remain stable (http://epp.eurostat.ec.europa.eu/), and spectacular successes resembling developmental leapfrogging need to be seen as an exception rather than as a rule. What is more, only

[5] One shall be conscious that GDP per capita is not always the best measure of well being. Even better measure could be the disposable income per capita. Unfortunately such statistics are not available for regions. Also remittances that flow from abroad to poor regions would be useful as this wealth is not produced in a region, but it is consumed in it.

time will tell whether poorer regions' tendency to develop faster will continue. EU membership has given an important impulse to development. But only after some time will it be possible to say whether it is stronger in more affluent regions (endowed with a bigger economic potential) or in poorer regions that experience the poor-grows-faster effect

(http://ec.europa.eu/regional_policy/sources/docoffic/official/reports/cohesion4/index_en.htm).

Changes in the value and structure of GDP

GDP per head is the most synthetic indicator that characterises life quality and changes in welfare. Despite certain imperfections, it is a commonly used measure. Eurostat uses it also to assess the remoteness of regions.

Table 1: Changes in regions' shares in Poland's GDP

	Share in Poland's GDP in %		Change in 1995-2005		Rank in 1995	Rank in 2005	Rank's change
	1995	2005	2005/1995 (%)	2005-1995 (% points)			
Dolnośląskie	8,1	7,8	96,2	-0,3	4	4	0
Kujawsko-pomorskie	5,4	4,7	87,4	-0,7	8	8	0
Lubelskie	4,6	3,9	85,8	-0,6	10	10	0
Lubuskie	2,6	2,4	92,6	-0,2	15	14	**1**
Łódzkie	6,3	6,2	97,9	-0,1	6	6	0
Małopolskie	7,2	7,3	100,9	0,1	5	5	0
Mazowieckie	16,8	21,4	127,6	4,6	1	1	0
Opolskie	2,8	2,3	82,1	-0,5	13	16	**-3**
Podkarpackie	4,2	3,8	91,2	-0,4	11	11	0
Podlaskie	2,4	2,3	95,4	-0,1	16	15	**1**
Pomorskie	5,7	5,7	99,3	0,0	7	7	0
Śląskie	15,1	13,3	87,7	-1,9	2	2	0
Świętokrzyskie	2,7	2,5	93,0	-0,2	14	13	**1**
Warmińsko-mazurskie	3,0	2,9	95,0	-0,2	12	12	0
Wielkopolskie	8,5	9,4	111,3	1,0	3	3	0
Zachodniopomorskie	4,6	4,1	89,8	-0,5	9	9	0

Source: Own calculations based on Main Statistical Office data

Analysis of Polish regions' share in the creation of national GDP in 1995-2005 points to interesting conclusions:

- first, what is striking is the advantage of the capital voivodship of Mazowieckie over other regions in terms of contribution to national GDP; Mazowieckie was the absolute leader in 1995 and 2005;
- second, the advantage of Mazowieckie in 2005 compared to 1995 increased (in 1995 the region created 16.5% of GDP while in 2005 – 21.4%);
- third, less developed regions' contribution to national GDP decreased (Lubelskie, Lubuskie, Opolskie, Podkarpackie, Świętokrzyskie, Warmińsko-mazurskie);
- fourth, also moderately developed regions' contribution to national GDP fell (Łódzkie, Kujawsko-pomorskie, Zachodniopomorskie, Śląskie, Dolnośląskie). Pomorskie maintained its share, while Małopolskie, Wielkopolskie and, as above mentioned, Mazowieckie increased their share.

It is important to note that in absolute terms GDP increased in all regions, but its dynamics was different. In 1995-2005 in all Polish regions GDP per head increased. The greatest dynamics was observed in Mazowieckie. It is not typical because usually it is poorer regions (with lower GDP per head at point of departure) that experience a higher pace of economic growth. Such a big dynamics of GDP growth in the economically strongest region means that Williamson's hypothesis as applied to Polish regions holds true.

As for the places occupied by Polish regions in GDP per capita rankings, in 2005, compared to 1995, some changes occurred. Wielkopolskie region made most progress, moving up from 7th to 3rd place, and Łódzkie moving up from 10th to 7th. Małopolskie, Pomorskie and Podkarpackie moved one place up. Kujawsko-pomorskie fell from 6th to 9th, Zachodniopomorskie from 4th to 6th, Opolskie from 9th to 11th and Lubelskie from 14th to 16th.

One can discern a worrying trend, which has already been mentioned. Mazowieckie, the best developed region, is moving ahead, increasing distance to the national average. Lubelskie, the poorest region, is increasing the difference in terms of GDP per head to the national average and, to a larger degree, to Mazowieckie.

Despite positive changes taking place in Polish regions, their developmental level in terms of GDP per capita remains far from the EU average. As transpires from the analyses presented in the Fourth Cohesion report, five Polish voivodships find themselves in the list of the EU's poorest regions. This means that, positive trends notwithstanding, the distance between Poland and the EU is still large.

Changes in value added and employment in the three sectors (agriculture, manufacturing, services)

As mentioned above, in 1995-2005 growth process in Polish regions were accompanied by deep structural changes. They manifested themselves in the form of a diminishing share of agriculture in value added created in each of the voivodships. As indicated earlier, Poland compares unfavourably with the EU average in this respect. While agriculture's contribution to value added is low, employment is high, which is testament to low productivity in this sector.

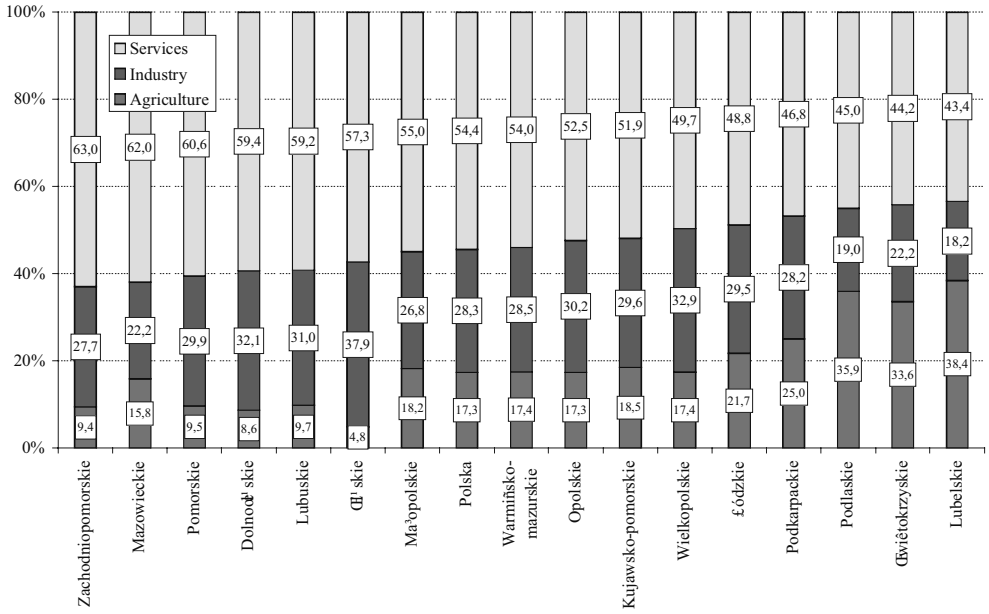

Figure 2: Share of agriculture, industry and services in employment in 2004 (%)
Source: Own calculations based on Main Statistical Office data

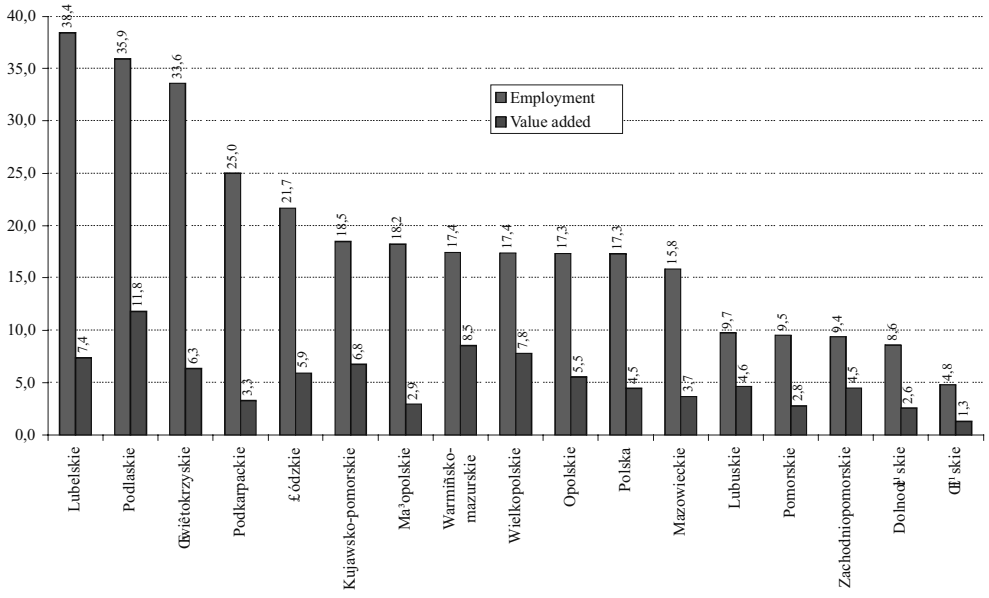

Figure 3: Comparison of agriculture share in employment and in value added in regions in 2005 (%)
Source: Own calculations based on Main Statistical Office data

As far as the sectors' share in employment is concerned, it is in Lubelskie (34.8%), Podlaskie (35.9%) and Świętokrzyskie (33.6%) where agriculture's share is highest. The ratio of agriculture's share in regional employment to its contribution to regional value added bears witness to the tertiary sector's effectiveness. 25% of the employed in agriculture in Podkarpackie generate only 3.3% of the region's value added. In each of the Polish voivodships agriculture is characterised by low effectiveness. That said, in some areas the ratio of agriculture's share in regional employment to its contribution to regional value added is not as drastically low as in Podkarpackie. From this viewpoint, it is Warminsko-mazurskie that – with the ratio of 17.4 to 8.5 – stands out amongst Polish voivodships. On average, in Poland agriculture's share in employment was 3.9 times higher than its contribution to value added. Małopolskie, Świętokrzyskie, Lubelskie, Mazowieckie and, as just mentioned, Podkarpackie are marked by the lowest effectiveness of agriculture (as measured by agriculture's share in regional employment to its contribution to regional value added). This stands in contrast to the situation in Zachodniopomorskie, Lubuskie, Małopolskie and, as just mentioned, Warmińsko-mazurskie.

Analysis of trends shows that in 1995-2005 Lubelskie experienced the largest decrease in agriculture's contribution to regional value added (a fall of 8.4 percentage points). This means that in 2005 this region created only 46.5% of the value added generated in 1995. As mentioned above, Lubelskie is the region in which the role of agriculture (as measured by its share in employment) has been highest. By the same gauge, next come Podkarpackie (-6,5 percentage points), Opolskie (-6,3 percentage points) and Świętokrzyskie (-6,2 percentage points). By contrast, Śląskie (-1,1 percentage points), Pomorskie (-2,9 percentage points) and Małopolskie (-2,9 percentage points) experienced the smallest fall in the value added generated by agriculture.

Śląskie and Pomorskie are regions in which agriculture plays the least considerable part in employment creation. Structural changes in 1995-2005 affected also manufacturing, but changes in that sector's contribution to regional value added were not as drastic as in agriculture. In one voivodship, Lubuskie, industry's share in value added increased substantially. In 2005 it amounted to 123.7% of the value added generated in 1995. Opolskie, Dolnośląskie and Wielkopolskie experienced the relatively smallest changes. In these regions value added in 2005 constituted, respectively, 98,6%, 98,6% and 94,4% of the value added generated in 1995. Mazowieckie, Zachodniopomorskie and Małopolskie experienced the largest decreases in industry's share in value added. This was, respectively, 75.1% (of the value generated in 1995), 78.8% and 80.2%.

Lubuskie is the only voivodship in which services' contribution to value added decreased in 1995-2005 (a fall of 2.4 percentage points). In all other regions, the role of services (as measured by the increase in their share in valued added) increased considerably. Also worth mentioning is the fact that it increased to the largest extent in less developed regions: Lubuskie (11.4 percentage points), Świętokrzyskie (9.3 percentage) and Podkarpackie (8.8 percentage points).

Polish regions' innovation capacity

Innovation capacity is the ultimate element taken into account while examining Polish regions' developmental potential. As is well known, the EU compares unfavourably with the USA and Japan in this respect (Zielińska-Głębocka 2003). There is evidence, presented in *European Innovation Scoreboard*, that the EU – on most indicators – has not managed to catch up. While analysing Europe's innovation capacity, one has to remember that there exist considerable disparities not only between old and new member states, but also within the EU-15 and the EU-12. Trends in changes in innovation capacity traced in recent years show that particular member states develop differently. This is conditioned by the pace of innovation generation and its deployment. Denmark, Germany, Sweden and Finland are leaders, while Poland, Slovakia, Spain and Estonia are lagging behind.

As emerges from the research published by European Innovation Scoreboard (http://www.proinno-europe.eu/), Poland finds itself amongst countries described as losing out in terms of competitiveness and innovation capacity. In this context, the problem of regional disparities assumes a new seriousness. This is due to the differences in outlays and expenditure on R&D, which implies big asymmetry. True, over the analysed decade, some changes took place; yet they were not always beneficial to poorer regions. In 1995-2005, some regions' share in the national outlays on R&D decreased. These are Świętokrzyskie, Opolskie, Warmińsko-mazurskie, Zachodniopomorskie, Podkarpackie, Lubelskie, Łódzkie, Śląskie and Mazowieckie.

By contrast, the following voivodships increased their share in the national outlays on R&D: Lubuskie, Podlaskie, Pomorskie, Małopolskie, Wielkopolskie, Kujawsko-pomorskie and Dolnośląskie. It transpires that the situation in this respect is changing dynamically, so it is difficult to predict how it will evolve in the future. Analysis of expenditure per capita on R&D offers another perspective from which to look at this particular aspect of regional disparities.

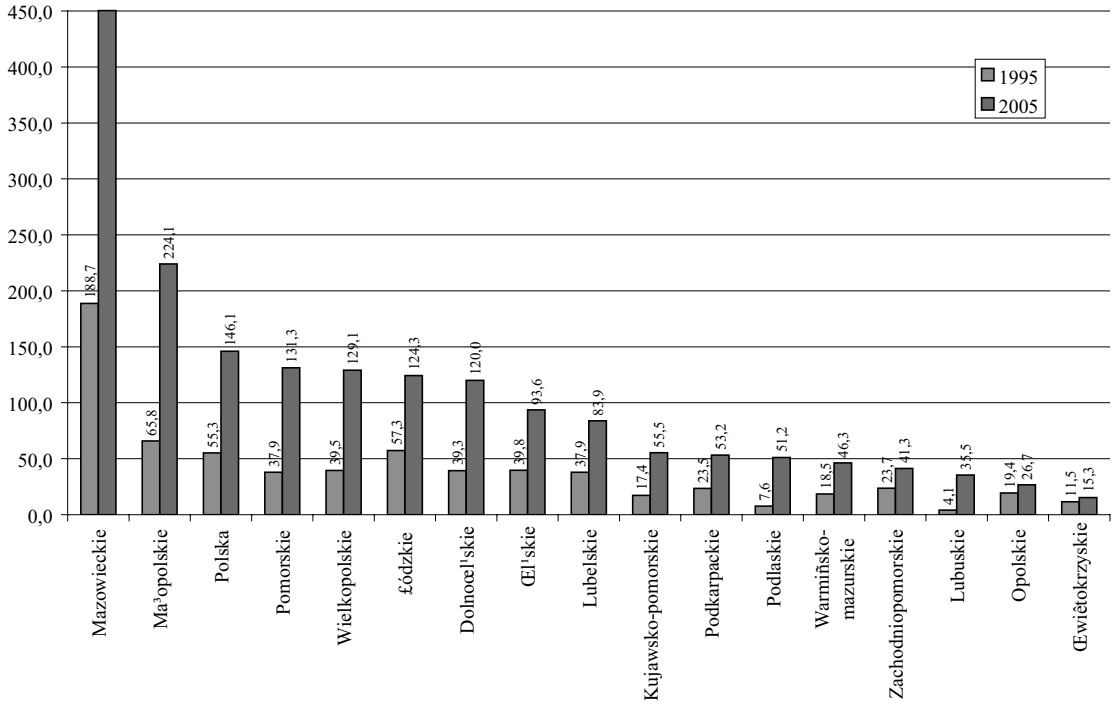

Figure 4: Expenditures on R&D per capita in Poland's regions in 1995 and 2005 (PLN)
Source: Own calculations based on Main Statistical Office data

With regard to that, Mazowieckie comes top (450 zlotys in 2005), with Małopolskie second (but with only 224.1 zlotys). In all other regions the value of this indicator was lower than the national average. These figures suggest that there is a gap between Polish regions. Suffice it to say that expenditure per head on R&D in Mazowieckie was 30 times higher than in Świętokrzyskie, which fared worst in this respect. In addition, in 1995-2005 that distance grew exponentially since in 1995 expenditure per head on R&D in Mazowieckie was 17 times higher than in Świętokrzyskie. The situation is aggravated by the fact that in Poland's least developed regions, expenditure on R&D per head is still minimal. One can argue that this is not a tragedy, as poor regions will not become engines of growth or innovation milieu. For poor regions more important could be to reduce civilisation gap that can be fostered by building roads, water processing plants, etc. However in the longer time perspective, undoubtedly investments in modern technologies seem a sine qua non for building sustainable competitive advantages.

Businesses' inclination to invest in R&D is one of the most important indicators of increasing modernity and innovativeness. In this respect, too, regions differ from each other. It is generally recognised that companies' share in expenditure on R&D should be as high as possible.

It might be worthwhile to mention that in the following voivodships, firms' contribution to national expenditure on R&D is higher than the average: Pomorskie, Podkarpackie, Kujawsko-pomorskie, Świętokrzyskie, Dolnośląskie, Śląskie, Lubuskie and Małopolskie. Nonetheless, it is essential to remember that expenditure on R&D in all Polish regions (and, in particular, in less developed ones) is relatively low.

Also another indicator, employment in the R&D sector, is testament to the asymmetry in regional innovation capacity. In 2005, the combined share of the three leaders (Mazowieckie, Małopolskie and Wielkopolskie) in employment in R&D constituted 49.5% of the national total. In contrast, the combined share of the "laggards" (with a share of less than 5%) – Podlaskie, Podkarpackie, Kujawsko-pomorskie, Opolskie, Warmińsko-mazurskie, Świętokrzyskie, Zachodniopomorskie and Lubuskie – constituted only 16.4%. What is remarkable is the high value of the indicator in Lubelskie: in 2005 this region's share in national employment in R&D equalled 5.7% (in 1995 it was 5.4%). Bearing in mind that overall the number of employed in R&D increased in 1995-2005, positive trends can observed in 12 Polish regions. It is Lubuskie that experienced the biggest increase: in 2005 the number of the employed in R&D was 171.4% higher than in 1995. In Świętokrzyskie, Mazowieckie, Dolnośląskie and Łódzkie fewer people worked in R&D in 2005 than in 1995.

Summary

Data on changes in regional GDP show that the rate of growth differs from region to region. The pace of growth is conditioned by many factors;

hence it offers a synthesis of the socio-economic situation in a region. While analysing processes of regional development, special attention is paid to the following issues: acceleration of economic growth, the existence (or non-existence) of catching-up and real-convergence processes (that is, reducing disparities in terms of socio-economic development). The Williamson hypothesis, which posits that in a country in which the rate of growth accelerates, regional disparities grow, is borne out in Poland. When Poland started the catching-up process, inside – among regions, polarisation intensified.

In Poland, objective assessments are a bit distorted due to the specificity of Mazowieckie voivodship, in which Warsaw boosts GDP per capita for the entire region.

Statistical analysis carried out for 15 regions (1995-2005, counting out Mazowieckie to avoid the aforesaid distortion) shows that there is a negative correlation GDP per head at start and the rate of regional growth. This means that poorer regions grew faster. This pattern should be categorically taken into account while assessing the regional rate of growth.

Drawing conclusions on the basis of analysis of short periods of time, which points to spectacular successes of Polish regions, is simply not legitimate. Experts on convergence point out that it is a long-lasting process and that reducing (eliminating) regional disparities might take decades.

Interesting conclusions can be drawn from the comparison of regions' growth dynamics and structures of their economies. What is worth mentioning is the positive correlation between the share of services (including construction) and the pace of regional growth. Regions with a large share of services in the structure of value added are characterised by a faster rate of growth, whereas those with a large share of manufacturing grow slowly. At the same time, the share of agriculture is not correlated with the dynamics of growth since agriculture does not contribute much to the structure of value added of the regional economies. It cannot be, therefore, a driver of growth.

Regional success stories have to be seen in perspective. Poland's GDP per capita is one of the lowest in the entire EU and Polish regions are amongst the poorest EU areas. Hence the catching-up process will take many years, there is no guarantee that all the regions will attain that aim. Rankings of the wealth of regions remain stable, and spectacular successes resembling developmental leapfrogging need to be seen as an exception rather than as a rule. What is more, only time will tell whether poorer regions' tendency to develop faster will continue. EU membership has given an important impulse to development. But only after some time will it be possible to say whether it is stronger in more affluent regions (endowed with a bigger economic potential) or in poorer regions that experience the poor-grows-faster effect.

If we take into account Polish regions' innovation capacity, differences in this respect are severely strong. Expenditures on R&D calculated per capita in Mazowieckie are 30 times higher than in Świętokrzyskie. Moreover, between 1995 and 2005 the scope of polarisation of innovation capacity has increased. Thus we can say that innovation gap among regions is higher than incomes gap. Obviously we can argue that this is not a tragedy, as poor regions will not become engines of growth or innovation milieu. For poor regions more important could be to reduce civilisation gap that can be fostered by building roads, water processing plants, etc. However in the longer time perspective, undoubtedly investments in modern technologies seem a sine qua non for building sustainable competitive advantages.

We could refer to Ahorini (2000) who draws attention to the process of structural changes from primary and secondary sectors towards services as shift from "the economy of goods to the economy of ideas". This – in longer time – could help in building a solid competitive advantages at regional level. The development of "economy of ideas" – in our opinion – must be accompanied by investment in innovations, R&D, research personnel etc. And we do not see it in many of the Polish regions.

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