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**SOME MACROECONOMIC EFFECTS OF THE SYSTEM
TRANSFORMATION IN THE POLISH ECONOMY
BETWEEN 1990–2007**

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Key words: system transformation, economic growth, unemployment, inflation.

A b s t r a k t

The aim of the research was to evaluate system transformation processes, i.e. market changes and European integration occurring in parallel. Both of these conditions have been the most significant influences on the economy of the countries of Central and Eastern Europe since 1990. The basis for this evaluation was an analysis of the changes in macroeconomic indicators specifying the level and the rate of GDP increase, inflation and unemployment in 1990–2007. It was established that the Polish economy developed faster in this period in comparison to the average level of 15 existing EU member states. Among the new members of the European Union (since 1 May 2004), Poland is one the most slowly developing states – with the highest unemployment rate, but also with relatively low inflation.

**NIEKTÓRE MAKROEKONOMICZNE EFEKTY TRANSFORMACJI SYSTEMOWEJ
W POLSKIEJ GOSPODARCE W LATACH 1990–2007**

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Słowa kluczowe: transformacja systemowa, wzrost gospodarczy, bezrobocie, inflacja.

A b s t r a k t

Celem badań jest ocena procesów transformacji systemowej, czyli równoległe postępujących przemian rynkowych oraz integracji europejskiej. Obydwa te uwarunkowania wywierają najbardziej znaczący wpływ na gospodarki krajów Europy Środkowo-Wschodniej od roku 1990. Podstawą tej oceny była analiza kształtowania się makroekonomicznych wskaźników charakteryzujących poziom i tempo wzrostu PKB oraz inflację i bezrobocie w latach 1990–2007. Stwierdzono, że polska gospodarka rozwijała się w tym okresie szybciej od przeciętnego poziomu w 15 krajach tzw. dawnej UE. Wśród nowych członków UE (licząc od 1 maja 2004 r.) należymy do najwolniej rozwijających się, o najwyższym bezrobociu, ale też o stosunkowo niskiej inflacji.

Introduction and the aim of research

In the last decade of the previous century, Poland embarked on the path of system transformation. Most generally, the notion of system transformation processes in Poland can be described as the shift from a centrally planned economy, which functioned in a non-democratic state, to a market economy – common in democratic systems. In this context, we naturally talk only about the economical aspects of transformation processes, since only economic effects are subject of this study. However, it should be remembered that economic effects are influenced not only by economic conditions, but also by a wide range of other factors.

The definition of system transformation contains two constituent elements, i.e. political transformation (a change of political system) and economic transformation (actions aiming at creating market conditions for operations of business entities) (BAŁTOWSKI, MISZEWSKI 2006, pp. 23, 24). However, it appears that the definition quoted above does not exhaust the entire notion of the system transformation in Poland and in the other countries of Central and Eastern Europe. Since the beginning of those changes in Poland, parallel processes of economic integration with European Communities, as well as with other groupings and countries have been played a key role (HELLER 2003, p. 100).

Therefore, if we want to treat system transformation in the broadest possible aspect, then its definition should be modified and supplemented with aspects of international economic integration, and in perspective, perhaps also with political aspects. In this perspective, system transformation can be treated as a very general notion, consisting of three separate but closely interrelated and mutually conditioned processes. The first one consists of political transformations; the second one is the process of economic transformation, while the third one is the ongoing process of economic integration.

All of these processes have played an important role in influencing the Polish economy. Under these circumstances, it seems reasonable to examine these effects not only with reference to the Polish economy, but also to the other countries of Central and Eastern Europe who also joined the European Union on 1 May 2004. The aim of the research therefore became an assessment of selected macroeconomic effects of system transformation processes which had the most significant impact upon the economies of Central and Eastern Europe countries between 1990 and 2007.

Subject, scope of research and methods applied

The subject of the research consists of selected macroeconomic effects of system transformation processes in Poland. The study was carried out on the basis of an analysis of changes in macroeconomic indicators specifying the levels and rates of GDP increase, inflation and unemployment. The level and the rate of economical growth was measured with the value of GDP per inhabitant of the country along with the percentage increase of this indicator. Unemployment was measured using the unemployment rate indicator and the level of the general price increase rate was measured with the CPI inflation rate indicator.

The time scope of the study for Poland is the period from 1990 to 2007, whereas the comparative analysis of the results achieved by Poland with reference to the examined countries (due to the accessibility of data published by Eurostat) was carried out for the period of 1996/1997–2007.

The paper applies a comparative method, which means that the results obtained in Poland are compared to the countries that also joined the European Union on 1 May 2004, as well as to average indicators for the existing European Union member states. Thus, it has been assumed that the effects accompanying system transformation processes are a measure which objectively describes the whole period of these complex transformations.

Level and rate of economic growth

Poland, just like other countries which began their system transformation in the 1990s, was affected with the crisis at the beginning of this period. High inflation, production and investment breakdown and reduced employment initially accompanied the development of private enterprises and increasing exports to western countries.

Gross domestic product in 1990 was reduced by 8% in relation to 1989; and in the following year – by another 7% (Fig. 1). Due to a radical programme of changes carried out in 1989–1990, the Polish economy experienced positive tendencies as early as in 1992, when a growth of GDP (by 2.6%) was reported for the first time since 1989. However, the most significant improvement of the economic situation in Poland took place in 1994–1997, when an annual mean GDP increase amounted to 6.4%. The rate of growth of the Polish GDP was then the highest among all post-socialist states.

The main lever of the economic growth in this period was privatisation, bringing an increase in work efficiency, on one hand, and an increase in investments on the other. The intensification of investment processes was due

to the activity of the private sector, mostly from enterprises with foreign capital. Therefore, it is not an exaggeration to state that Poland, which was the first state to embark down the path of system transformation, was regarded by many observers as a state that had achieved astonishing success as regards the economic transformations among the countries of the Central and Eastern Europe (RAPACKI 2001, p. 107).

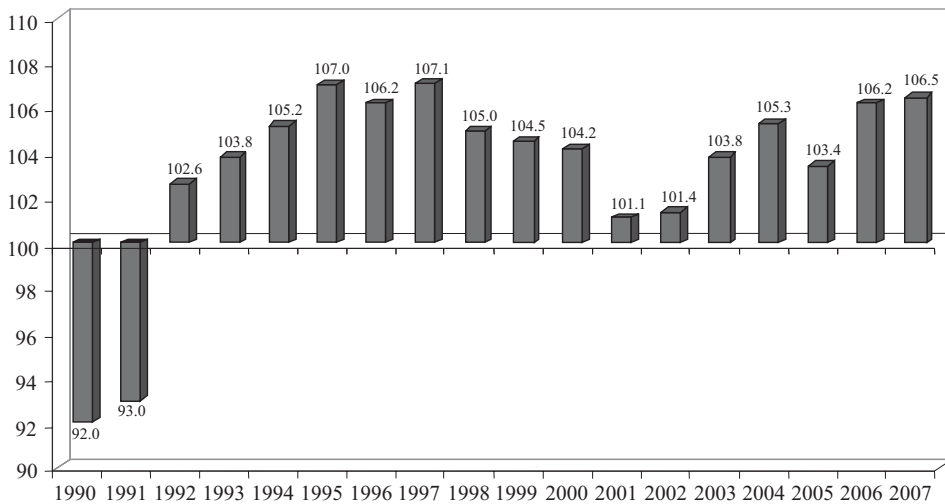


Fig. 1. Annualised real dynamics of GDP in Poland in the period of 1990–2007 (Previous year = 100)
 Source: Own work, on the basis of <http://www.stat.gov.pl/cps/rde/xchg/gus>. National Accounts, 2007 provisional estimation.

Subsequent years brought a clear decrease in economic dynamics. The mean annual GDP growth in 1999–2001 was reduced to 3.3%. The declining trend in the GDP volume was stopped in 2002–2004, when it amounted on average to 3.5% a year. Unfortunately, 2005 brought a further downturn in the GDP increase rate, while 2006 and 2007 were marked by an acceleration of the growth rate to 6.2% and 6.5%, respectively.

As mentioned earlier, the majority of the states of Central and Eastern Europe experienced a crisis, just like Poland, at the beginning of the transformation process. This crisis actually exposed the range of malfunctions of the previous economic system. In 1991 alone, the GDP growth rate decreased by 10.2%, whereas in the former Czechoslovakia – by 14.7%. In turn, after a deep crisis, most of the countries experienced rapid economic growth, lasting – depending on its dynamics – till 1994 (Hungary), 1995 (Czech Republic, Slovakia), 1997 (Poland), after which period, the majority of states again underwent

a slowdown in the domestic product growth ratio (BALCEROWICZ 1997, pp. 256–258). It is particularly visible for the Czech Republic in 1997–1998, Lithuania in 1999, Estonia in 1999 and Poland in 2001–2002 (Tab. 1).

Table 1
GDP growth rate in selected countries of the European Union (1996–2007, constant prices, in percentage in relation to the previous year)

Country	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Czech Republic	4.2	-0.7	-0.8	1.3	3.6	2.5	1.9	3.6	4.5	6.4	6.4	6.5
Estonia	4.4	11.1	5.4	-0.1	9.6	7.7	8.0	7.2	8.3	10.2	11.2	7.1
Lithuania	4.7	8.5	7.5	-1.5	4.1	6.6	6.9	10.3	7.3	7.9	7.7	8.8
Latvia	3.8	8.4	4.7	3.3	6.9	8.0	6.5	7.2	8.7	10.6	12.2	10.3
Poland	3.8	7.1	5.0	4.5	4.2	1.1	1.4	3.8	5.3	3.4	6.2	6.5
Hungary	1.3	4.6	4.8	4.2	5.2	4.1	4.4	4.2	4.8	4.1	3.9	1.3
Slovenia	3.7	4.8	3.6	5.3	4.1	3.1	3.7	2.8	4.4	4.1	5.7	6.1
Slovakia	6.1	5.7	4.4	0.0	1.4	3.4	4.8	4.8	5.2	6.6	8.5	10.4
EU (15 states)	1.7	2.6	2.9	3.0	3.9	1.9	1.1	1.2	2.3	1.7	2.9	2.7

Source: Own work on the basis of Eurostat statistical data of 01.07.2008. – http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1996.39140985&_dad=portal&_schema=PORTAL&screen=detailref&language=en&product=STRIND_ECOBAC&root=STRIND-ECOBAC/ecobac/eb012.

While analysing the data in Table 1, it can be noticed that after a period of economic revival, and more precisely, even since 1996, when Poland recorded the highest GDP growth rate of the states under examination, its situation began to deteriorate. In 2000, three out of the examined states (Estonia, Latvia and Hungary) achieved a higher GDP growth rate than Poland, while in 2001, when Poland experienced an economic breakdown, already seven countries were ahead of it. This situation slightly improved in 2003–2004, but in 2005 the Polish economy was again growing the slowest in comparison to other examined countries. 2006 brought another acceleration of the Polish GDP growth rate. It amounted to 6.2% and was higher than the growth rate of only two countries under analysis (Hungary and Slovenia), while the other countries developed faster: the growth rate for the Latvian economy amounted to 12.2%, and Estonia – 11.2%. 2007 was a continuation of a similar situation as regards Poland. Despite the increasing GDP growth rate, only two countries were still developing slower: namely Hungary and Slovenia. The Czech Republic developed at the same rate as Poland, while other examined countries developed faster.

The gap between Poland and the other examined countries of Central and Eastern Europe from the so-called „former;; European Union is particularly

visible if we compare GDP per inhabitant based on PPP (Tab. 2). In 2007, it amounted in Poland to € 13,300 and accounted for 48% of the average for existing EU member states, whereas in 1996 it amounted to € 6,900 and accounted for 38.5% of the EU average. Therefore, in the period under examination, it grew by 92.7%, whereas in the same period, this indicator in Estonia grew by 214%, in Latvia – by 193.9%, and by 54.7% in the existing EU member states.

Table 2

GDP per capita in selected European Union countries (1996–2007, in thousands of euros, in Purchasing Power Standards, constant prices)

Country	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Czech Republic	11.4	11.0	12.0	12.4	13.0	13.9	14.4	15.2	16.3	17.2	18.5	20.3
Estonia	5.7	6.6	7.2	7.5	8.5	9.1	10.2	11.3	12.3	14.1	16.1	17.9
Lithuania	5.7	6.4	6.8	6.9	7.5	8.2	9.0	10.1	10.9	11.9	13.2	15.0
Latvia	4.9	5.7	6.0	6.4	7.0	7.7	8.4	9.0	9.9	11.2	12.6	14.4
Poland	6.9	7.6	8.1	8.6	9.2	9.4	9.9	10.1	11.0	11.5	12.3	13.3
Hungary	7.9	8.5	8.9	9.5	10.7	11.6	12.6	13.1	13.7	14.4	15.3	15.7
Slovenia	11.2	12.2	13.2	14.2	15.0	15.6	16.6	17.0	18.4	19.5	20.7	22.0
Slovakia	7.4	8.1	8.8	9.0	9.5	10.3	11.1	11.5	12.4	13.6	15.0	17.0
EU (15 states)	17.9	18.9	19.5	20.5	21.9	22.6	23.3	23.5	24.4	25.3	26.4	27.7

Source: Own work on the basis of Eurostat statistical data of 01.07.2008. –

http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1996.39140985&_dad=portal&T30-schema=PORTAL&screen=detaillref&language=en&product=Yearlies_new_economy&root=Yearlies_new_economy/B/B1/B11/daa10000.

The average growth rate of the analysed indicator in the examined period in Estonia and Latvia was, respectively, 11% and 10.3% a year. The situation of the Czech Republic seems interesting, since due to the low growth rate of the analysed indicator (an annual mean of 5.4%), they lost their leading position, which it had recorded in 1996, as early as in 1997. The leadership was acquired by Slovenia and such a situation was maintained until the end of the period under examination. The Polish GDP per capita grew annually on average at the rate of 6.2%. It was faster than the GDP of the previously mentioned Czech Republic and the average mean of this indicator for “former” EU states, which amounted to 4.1%. Nevertheless, it was slower in relation to all the other countries under examination.

Unemployment

The Polish economy, at the beginning of the transformation period was burdened with a high level of hidden unemployment resulting from the principles of the command-and-quota system used. Additionally, the labour market was characterized by an ineffective structure, i.e. a very high percentage of agricultural employment and a low percentage of service sector employment.

System transformation created a labour market in Poland, which quickly revealed the phenomenon of over-employment, typical of a centrally managed economy. The rationalization of the labour market, mainly under the influence of privatisation, overlapped the slump in the economy and the acceleration of the retiring processes, which, finally, resulted in a drop of employment (KALIŃSKI, LANDAU 1999, p. 382).

In 1990-1991, the decrease in the value of the GDP was accompanied by an increase in registered unemployment, which in 1991 grew almost twofold in relation to 1990, amounting to 12.2% (Fig. 2). 1992-1993 saw an increase in GDP, although it was unsatisfactory from the perspective of creating new jobs, since this increase was accompanied with a further growth of registered unemployment from 14.3% to 16.4%, which resulted from the streamlining of employment and an increase in labour efficiency in some restructured enterprises.

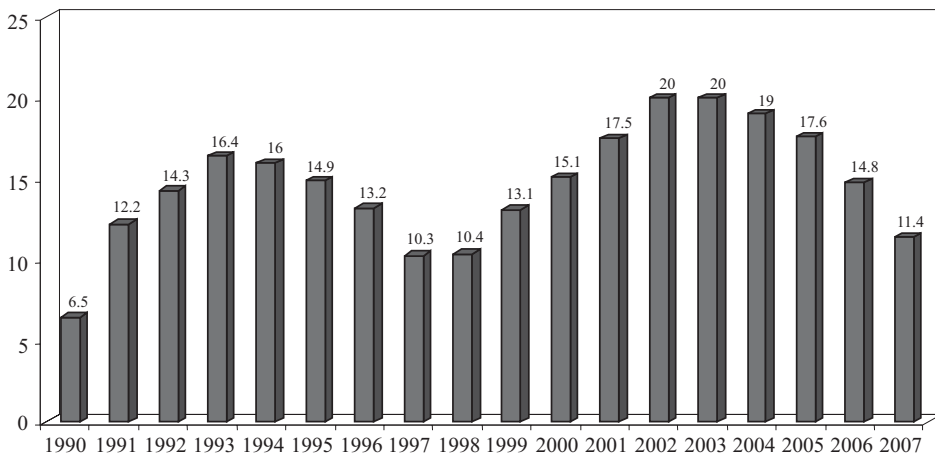


Fig. 2. Registered unemployment rate in Poland in 1990-2007

Source: Own work on the basis of the data of the Central Statistical Office "Unemployment rate in 1990-2008 (registered unemployment)".

Subsequent years brought a deterioration in the economic situation, which resulted in a drop in the employment level and an increase in the registered unemployment rate to 20% in 2002 and 2003. Although the upward trend in the unemployment rate was stopped in 2003, the level of employment was still decreasing. It should be also mentioned here that tendencies of economic growth without employment occur in most transformation countries. They result, among others, from strong competition pressure on enterprises, which results in reduction of labour costs, implementing technical progress and development of modern fields of low human labour consumption (*W trosce o...* 2004, pp. 94–95).

This situation changed in 2004, when a recorded real increase in GDP at the level of 5.3% “translated” into a decrease in the registered unemployment to 19%. 2005–2007 brought a continuation of positive trends underway in the labour market. The registered unemployment rate decreased in this period, to the level of 17.6% (2005), 14.8% (2006) and 11.4% (2007), respectively. Nevertheless, it still remained at a high level, which can be attributed both to structural and institutional factors.

The structural character of problems in the labour market is the reason why their solutions cannot be expected only as a result of increasing the rate of economic growth. Even with a high economic growth, a significant reduction in unemployment would be possible only through structural reforms in the labour market and the improvement of human capital quality (HELLER et al. 2005, p. 93).

As in Poland, other countries of Central and Eastern Europe also experienced an increase in unemployment in the early 1990s, mostly as a consequence of revealing hidden unemployment as a result of liquidating state enterprises and agricultural farms. Differences in changes to the harmonized unemployment rate for Poland and for other countries under examination are presented in Table 3.

By 2006, Poland recorded the highest unemployment rate of the eight examined states of Central and Eastern Europe, amounting in 2006 to 13.9%, against the EU average (15 states) of 7.7%. However, what was positive was the fact that since 2003 this indicator showed a decreasing tendency, therefore Poland in 2007 recorded a lower employment rate than Slovakia. Nevertheless, the unemployment rate in Poland, Slovakia and Hungary was still higher than the EU average. At the end of 2007, other examined countries recorded a lower unemployment rate than the average value for the “former” EU states. Among those countries, the most stable situation in the labour market is presented by Slovenia, which is proven by a slight fluctuation in the harmonized unemployment rate for the period of 1997–2007. The difference between the highest and the lowest unemployment rate recorded in this period for the country is only

Table 3

Harmonized unemployment rate in selected EU countries

Country	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Czech Republic	–	6.4	8.6	8.7	8.0	7.3	7.8	8.3	7.9	7.2	5.3
Estonia	9.6	9.2	11.3	12.8	12.4	10.3	10.0	9.7	7.9	5.9	4.7
Lithuania	–	13.2	13.7	16.4	16.5	13.5	12.5	11.4	8.3	5.6	4.3
Latvia	–	14.3	14.0	13.7	12.9	12.2	10.5	10.4	8.9	6.8	6.0
Poland	10.9	10.2	13.4	16.2	18.3	20.0	19.7	19.0	17.8	13.9	9.6
Hungary	9.0	8.4	6.9	6.4	5.7	5.8	5.9	6.1	7.2	7.5	7.4
Slovenia	6.9	7.4	7.3	6.7	6.2	6.3	6.7	6.3	6.5	6.0	4.9
Slovakia	–	12.6	16.4	18.8	19.3	18.7	17.6	18.2	16.3	13.4	11.1
EU (15 states)	9.8	9.3	8.6	7.7	7.2	7.6	7.9	8.1	8.1	7.7	7.0

Source: Own work on the basis of Eurostat statistical data of 01.07.2008. – http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1996.39140985&_dad=portal&_schema=PORTAL&screen=detailref&language=en&product=STRIND_EMPLOI&root=STRIND_EMPLOI/emploi/em071.

2.5 percentage points as an absolute value, while the same value for Poland was as much as 10.4 percentage points. As has been mentioned earlier, the country with the highest harmonized unemployment rate in 2007 was Slovakia, where this indicator amounted to 11.1%. At the same time, as in Poland, a continued high unemployment rate resulted, to a large extent, from a significant drop in employment at the beginning of the transformation period. Such a situation was not observed for instance, in Hungary, since this country enjoyed a high level of business liberalization and private sector development before the beginning of the transformation.

The process of price growth rate stabilization

In addition to the economy growth rate and unemployment, inflation seems to be one of the main macroeconomic problems of countries undergoing transformation. Especially during the first years of transformation in Poland, suppression of rampant high inflation and maintaining it at an appropriately low level was the main purpose of the stabilization policy applied. As a result of actions undertaken, as early as in 1991, the annual inflation rate was at the level of 70.3% against an annual inflation rate in 1990 amounting to 585.8% (Fig. 3).

Subsequent years brought a further decrease in the inflation rate, even to 1% in 2006, while, as results from Figure 3, a drop in the inflation rate, which began in 1991, was quite dynamic. In 1993, the inflation rate was already half

as much as in 1991 and amounted to 35.3%. In 1996 it was below 20%, while in 2000 it was 10.1% and reached the lowest level in the entire period of transformation of 0.8% in 2003. Subsequent years were marked with an increase in the consumer price index to the level of 3.5% in 2004 and 2.1% in 2005, which undoubtedly can be attributed to the Polish accession to the European Union, whereas 2006 again brought a lowering of the index to the level of 1%.

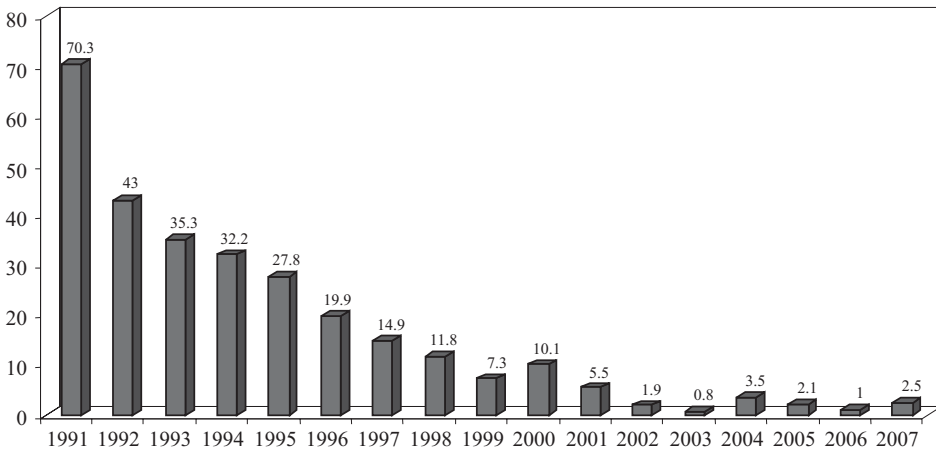


Fig. 3. Inflation rate in Poland in 1991–2007 (previous year = 100)

Source: Own work on the basis of GUS study “Annual consumer price indexes in 1950–2007”.

The problem of hyperinflation, which affected Poland, did not occur in all post-socialist countries. For instance, in Hungary, the mean annual consumer price index did not exceed 35%, and in the former Czechoslovakia, the highest inflation was recorded in 1991, when it grew to 56.6% on a year-to-year basis. While comparing the changes in harmonised index of consumer prices in Poland and in other examined countries of the Central and Eastern Europe in 1997–2006 (Tab. 4), it can be clearly seen that in this regard, in spite of difficult initial conditions, Poland has done relatively well.

In 2005, only one country recorded a lower inflation rate than Poland, namely the Czech Republic, in which this indicator amounted to 1.6% and was lower than the inflation rate in Poland by 0.6 %. In 2006, the HICP index in Poland was the lowest of all the other countries under examination. Additionally, the average inflation rate in the countries of the “former” European Union was also higher than the inflation rate in Poland, the difference amounting to one percentage point. Therefore, Poland, as in 2005, met the

Table 4
Harmonised Index of Consumer Prices (HICP) in selected countries of the European Union in 1997–2007

Country	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Czech Republic	8.0	9.7	1.8	3.9	4.5	1.4	-0.1	2.6	1.6	2.1	3.0
Estonia	9.3	8.8	3.1	3.9	5.6	3.6	1.4	3.0	4.1	4.4	6.7
Lithuania	10.3	5.4	1.5	1.1	1.6	0.3	-1.1	1.2	2.7	3.8	5.8
Latvia	8.1	4.3	2.1	2.6	2.5	2.0	2.9	6.2	6.9	6.6	10.1
Poland	15.0	11.8	7.2	10.1	5.3	1.9	0.7	3.6	2.2	1.3	2.6
Hungary	18.5	14.2	10.0	10.0	9.1	5.2	4.7	6.8	3.5	4.0	7.9
Slovenia	8.3	7.9	6.1	8.9	8.6	7.5	5.7	3.7	2.5	2.5	3.8
Slovakia	6.0	6.7	10.4	12.2	7.2	3.5	8.4	7.5	2.8	4.3	1.9
EU (15 states)	1.9	1.6	1.4	2.6	2.8	2.6	2.3	1.9	2.2	2.3	2.2

Source: Own work on the basis of Eurostat statistical data of 01.07.2008. –

http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1996.39140985&_dad=portal&_schema=PORTAL&screen=detailref&language=en&product=STRIND_ECOBAC&root=STRIND_ECOBAC/ecobac/eb040.

convergence criterion of inflation, and its inflation rate was taken into consideration while calculating a reference value of this criterion. In 2006, the other countries – except for the Czech Republic and Slovenia – did not meet this criterion. Although 2007 brought an increase in the inflation rate in Poland, to the level of 2.6% in comparison to the other countries under examination, it is not the worst situation. Only one examined country recorded in 2007 an inflation rate which was lower than the rate for Poland and lower than the average for the “former” EU states – and this was Slovakia. The other countries under examination recorded their inflation rates at a significantly higher level than Poland. The HICP index of the Latvian economy, which in 2007 recorded the highest index of the entire group of countries under examination, was higher than the index for Poland by 7.5 percentage points.

Conclusions

1. The analysis of the level and the rate of economical growth presented above proves that the Polish economy considerably stands out only against the background of the existing European Union member states. While in 1996 the GDP per capita for Poland amounted to 38.5% of the level reached on average in 15 countries of the European Union, it amounted in 2007 to as much as 48%, and the dynamics of the GDP per capita in the period under examination was higher than the dynamics of this index in the EU15, which means that Poland developed at a rate that was faster than the average rate of economic growth in

the EU states. However, taking into consideration the fact that all countries under examination developed faster than the average growth rate of the EU15, the Polish achievements do not seem so obviously spectacular.

2. While analysing the growth rate of GDP per capita in the examined countries of the Central and Eastern Europe, these countries can be divided into three groups. The first group would include the four countries with the highest economic growth rate, in which this index, calculated as the relation of 2007 GDP to 1996 GDP, exceeded 100%. These include Estonia – 214%, Latvia – 193.9%, Lithuania – 163.2% and Slovakia – 129.7%. The second group (including Poland), would consist of three countries in which the economic growth rate analysed was slightly below 100%. They include Hungary – 98.7%, Slovenia – 96.4% and Poland – 92.8%. The third group is made up of one country – the Czech Republic, with a 78.1% economic growth rate. However, taking into consideration not only the growth rate, but also the initial level of GDP per capita, the situation of individual countries at the end of 2007 can be described as follows: the highest level of GDP per capita was recorded by Slovenia and the Czech Republic, which recorded the highest level of the analysed indicator at the beginning of the period under examination. Due to their high growth rate, they “caught up” with Estonia and Slovakia. Poland has the lowest level of GDP per capita.

3. Relations and differences regarding the level of unemployment are equally complex. Up to 2006, Poland recorded the highest harmonized unemployment rate of the eight states of the Central and Eastern Europe under examination, amounting to 13.9% in 2006. In 2007, due to the downward trend in this index, a higher unemployment rate was recorded by Slovakia. However, the unemployment rate in Poland (9.6%), Slovakia (11.1%) and Hungary (7.4%) was higher than the average for the former EU15, amounting to 7%. The other countries under examination recorded unemployment rates below the EU average, whereas the lowest index of harmonized unemployment rate was recorded in 2007 in Estonia and Lithuania. However, in analysing the years of the transformation period, no clear explanation of causes of the consistently high unemployment in Poland emerges. Therefore, it seems that the origin of these causes should be searched for even earlier, i.e. in the situation of Poland in the 1980s.

4. Poland appears in a particularly favourable light against all the other countries as regards inflation. In 2006, the HICP index in Poland was the lowest of all the other examined CEE countries. Even the average inflation rate in the existing European Union member states was higher than the inflation rate in Poland. Thus, Poland met the convergence criterion of inflation. Although the inflation rate in Poland grew in 2007, yet lower inflation was recorded only in Slovakia. Despite the increase in the inflation rate, Poland

still met the convergence criterion of the inflation rate. Nevertheless, there are grounds to fear that as a consequence of a further increase in inflation Poland may cease to meet this criterion. Moreover, it should be noted that another objective, namely sustainability and stabilization of the exchange rate, which is also one of the conditions for joining the monetary and economic union, still remains an issue under discussion.

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**MIGRATION DECISIONS BY GRADUATES FROM
HIGHER SECONDARY SCHOOLS IN OLSZTYN
DURING THE YEARS 2007–2008**

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A b s t r a c t

The dominating form of modern population flows are economic migrations connected with the jobs found abroad. Therefore, the main assumption of this paper was to examine the extent of the international mobility youth on the basis of migration decisions made by future graduates of the higher secondary schools in Olsztyn. The most important objectives consisted in determining the reasons for migration of a given group and the expected time of their stay abroad. Moreover, the paper indicates the ultimate places of migration of future graduates as well as the purposes of such departures.

Key words: migration, graduates, higher secondary schools.

**DECYZJE MIGRACYJNE ABSOLWENTÓW SZKÓŁ PONADGIMNAZJALNYCH
W OLSZTYNIE W LATACH 2007–2008**

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A b s t r a k t

Dominującą formą współczesnych przepływów ludności są migracje zarobkowe związane z podejmowaniem zatrudnienia za granicą, dlatego głównym założeniem pracy było zbadanie skali mobilności międzynarodowej młodzieży na podstawie decyzji migracyjnych przyszłych absolwentów szkół ponadgimnazjalnych w Olsztynie. Celem było określenie przyczyn migracji danej grupy oraz przewidywanego okresu pozostawania poza granicami Polski. Określono również miejsca docelowej migracji przyszłych absolwentów oraz cele tych wyjazdów.

S ł o w a k l u c z o w e: migracja, absolwenci, szkoły ponadgimnazjalne.

Introduction

The youth as a demographic category, according to the international standards, is the population of people of both sexes aged 15–24 years. The lower limit is the age of graduation from the lower secondary school and minimum age for employment while the upper limit is the age standard for graduation from the tertiary school (MLONEK 1996). The vocational opportunities of young people in the labour market are highly differentiated because they are influenced by factors such as education and qualifications obtained, their social competences or the financial standing of the parents (GIERMANOWSKA 2006).

Economic emigration, that is voluntary migration from the home country for the purpose of taking a job has always existed and the currently observed, intensifying processes of globalisation in the economy and gradual lowering of barriers of various type cause that it will continue in the future (KRYŃSKA 2001). Foreign migrations represent a socio-economic phenomenon well established in the history of Poland while the phenomenon concerning the youth depends to a large extent on the situation in the Polish labour market. The unemployment rate among high school graduates (aged 15–19 years) is much higher than in the other age groups.

The study on the level of interest in economic emigration among people graduating from various types of schools (both secondary and tertiary, public and non-public) and various education profiles (technology, economics, humanities, medical) have been conducted by the Chair of Economic and Regional Policy of the University of Warmia and Mazury in Olsztyn as of the moment of Poland's integration with the European Union (i.e. 2004). The fundamental objective of those studies is to determine the level of interest of the youth graduating from a given type of school in migrating abroad for the purpose of taking up employment and gaining knowledge on the major motivations for this process (SZCZEBIOT-KNOBLAUCH, KISIEL 2007, KISIEL, SZCZEBIOT-KNOBLAUCH 2008). The results presented in this publication cover just a fragment of those studies and encompass graduates of public secondary schools in Olsztyn during the years 2007–2008.

In Olsztyn there are 17 public high schools: 4 general high schools and 13 groups of schools. In those schools students can attend 4 types of courses technical high school, profiled high schools, general high school and basic vocational schools. According to the data by the Office of the Superintendent of Education in Olsztyn, during the school year of 2006/2007 the high schools in Olsztyn had 10.8 thousand students and during the school year or 2007/2008 the number of students declined slightly to 10.7 thousand. In the graduating grades of those schools in Olsztyn there were 3536 students

during the school year of 2006/2007 and 3511 students during the school year of 2007/2008.

The questionnaire-based study covered the last grade students of 11 public high schools (general high schools, profiled high schools and technical high schools). An attempt was also made at conducting the studies at basic vocational schools but the number of correctly completed questionnaires was too small to allow presentation of the situation in that group. The study covered 522 respondents in 2007 and 469 respondents in 2008 (Fig. 1).

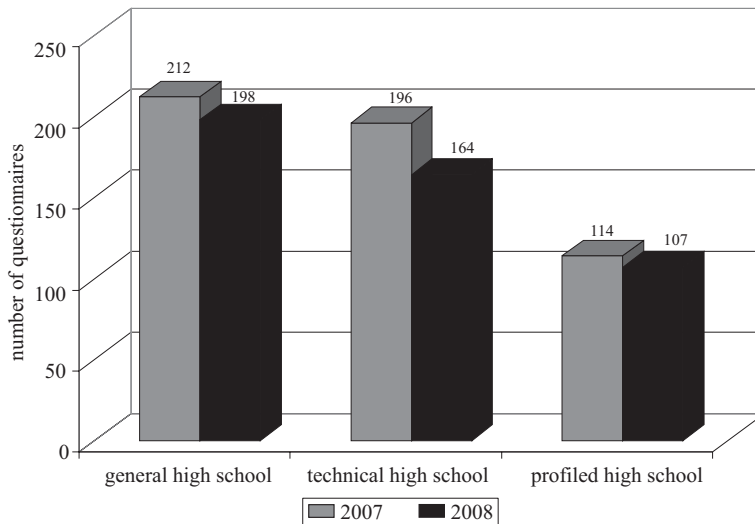


Fig. 1. Number of questionnaires received by school type during the years 2007–2008
Source: Prepared on the basis of own studies.

The timeframe of the study covered the school years of 2006/2007 and 2007/2008, and the questionnaires were completed three months before the graduation examination and professional examination (in case of professional schools – technical high schools and profiled high schools). That time for the study was selected on purpose because the majority of students already had specific plans for their future after graduating from the high school.

Results

Following integration of Poland with the European Union the mobility of unskilled labour increased and as a consequence the issue of youth migration became an important problem, not only economic but also social. Free flow of

labour to many countries of the Community gave the young Poles an opportunity for better work conditions, higher wages and gaining new experience. The analysis of the results obtained allowed determining the percentage of future graduates from Olsztyn high schools (from years 2007 and 2008) that planned to migrate abroad (Tab. 1).

Table 1
Plans of students after graduation from high school

Item	Plans of respondent students					
	general high school		technical high school		profiled high school	
	2007	2008	2007	2008	2007	2008
Continuation of education	93	92	34	38	56	51
Taking up employment abroad	7	8	39	45	30	35
Taking up employment in Poland	1	1	27	22	31	24

Source: Prepared on the basis of own studies.

In 2008, as compared to 2007, the percentage of persons declaring willingness of economic migration after graduating from school decreased. On the other hand the number of respondents expressing readiness to take up employment in Poland increased. Those differences resulted from changes that took place in Polish economy, first of all in the labour market. The fact that the level of unemployment that in March of 2007 was 14.3% and a year later decreased by over 3 percent points (11.1%) is the evidence for that change. The percentage of people declaring continuation of education after graduation did not change during the period covered and remained at 60%.

In the study of 2008, the willingness of taking employment abroad was declared mainly by students of profiled high schools (39%) and technical high schools (30%). Among future graduates of general high schools, only 7% wanted to take up employment abroad (the others planned continuing education at tertiary schools). In difference from the students of general high schools, those graduating from profiled and technical high schools in majority were educated in professions for which there was high demand in the European Union countries (the studies were conducted in schools with profile in gastronomy, electrical engineering, mechanics and construction). Respondents from those schools were aware that they would get jobs abroad without major problems.

There were many reasons for taking the decision concerning economic migration of young Poles and they depended, to a large extent, on the type of school attended (Tab. 2). The major reason, however, was the same for all the

types of schools – higher wages (87% of respondents). Those results confirmed the results of earlier studies conducted by researchers from, e.g. The Centre of Studies on Migration. The analyses conducted indicated clearly that the economic motivation was the most important reason for the increased mobility of the Poles after accession to the European Union (*Wpływ emigracji...* 2006). That was probably linked to the difficult economic situation of Poland that despite numerous changes was incomparably worse than that in the other Member States of the Community. In Poland the unemployment continues at a much higher level while the wages are at a much lower level than in the countries of Western Europe.

Table 2
Major reasons for migrating abroad for work according to graduates of 2008

Item	Major motivations for migration (% of responses)		
	general high school	technical high school	profiled high school
Higher wages than in Poland	71	95	96
Difficulties with finding a job in Poland	29	29	27
Difficulties with getting accepted for tertiary studies	14	0	6
Secured job abroad	0	5	4
Better work conditions than in Poland	14	49	57
Acquiring vocational experience	14	14	12
Language learning	70	29	57
Willingness to get to know another country	29	21	18

Source: Prepared on the basis of own studies.

In analysing the data obtained it is worth noticing that the largest differences were found between the studies concerning students of general high schools and students of technical and profiled high schools. Although the major motivation for migration was clearly identified by all the respondents, for respondents graduating from general high schools learning the language represented the equally important motivation as wages higher than in Poland (70%). The difference is also found in the frequently of selecting the motivation of “better work conditions than in Poland”. This answer was not important for respondents graduating from general high schools (14%). For the other types of schools that was the second (after wages) most frequently selected motivation for emigration.

Certain differences between the motivations most frequently selected in 2007 and 2008 (with the exception of the main motivation). In 2007, the

respondents selected difficulties with finding employment in Poland much more frequently (46%) than in 2008 (28%). This might result from the already mentioned decrease in unemployment during the period between consecutive rounds of the study. Additionally, following Poland's accession to the European Union and as a result of increased outflow of labour, structural unemployment increased meaning that in some vocations the demand for labour is higher than the supply. As a consequence, the studied students of high schools in 2008 were less afraid that after entering the labour market they would not find employment.

To obtain more comprehensive image of motivations that determined the decisions of young people on migration abroad it is also worthwhile to analyse the reasons for possible resignation from economic migration (Fig. 2). The respondents could change the decision concerning economic migration for three major reasons: obtaining satisfactory wages in Poland (55% in 2007 and 61% in 2008), obtaining permanent employment contract (47% and 43% respectively) and being persuaded by the family (31% and 47% respectively). The largest change occurred in the aspect of the family. In 2007, every third respondent declared that persuasion by the family could be the reason for resignation from migration; a year later almost a half of the respondents expressed that opinion.

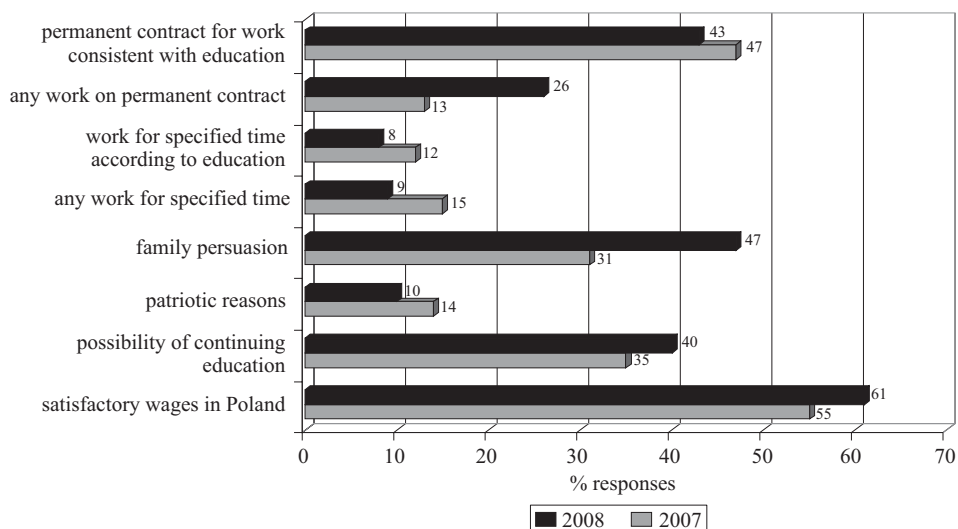


Fig. 2. Reasons for possible resignation from taking up employment abroad

Source: Prepared on the basis of own studies.

The questionnaire also contained the possible answer that there is no such reason that could make them resign from migrating abroad, but graduate students of none of the schools during none of the year of study selected that

answer. This indicates that the decision concerning migration was not final and that under favourable economic or family conditions they could change the decision and look for a job in Poland.

Migrations from Poland, for many years have been characterised by concentration on a few target countries. Prior to the accession of Poland to the European Union, according to the BAEL data, the target destinations of migrations were first of all Germany – 38%, USA – 14% and Italy – 11%. Following the accession those proportions were subject to major change and the current major destinations are the United Kingdom, Germany and Ireland. According to BAEL 34%, 20% and 10% of Poles respectively decided to migrate to those countries: (OWEN et al. 2007). Similar choices of destination of their migration were also made by graduate students of high schools from Olsztyn (Fig. 3). In the analysed years the most frequent destinations selected were: the United Kingdom, Ireland and Germany. The share of those countries in 2007 was 85% and in 2008 it decreased slightly to 79%.

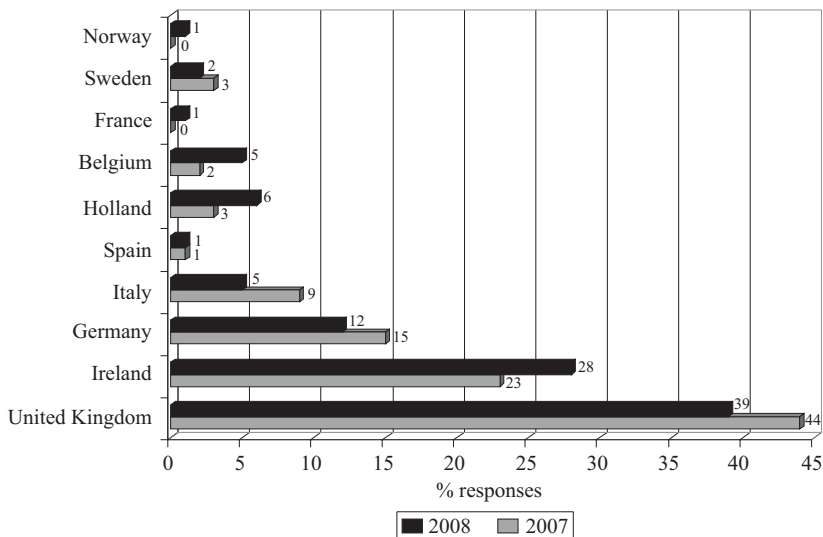


Fig. 3. Migration destinations

Source: Prepared on the basis of own studies.

The largest group of respondents selected the United Kingdom and Ireland, which was motivated by possessing friends or family there. That fact would facilitate migration significantly as it would minimise the stress and help in organisation of the migration. The migrants would be sure that they would not be left without work, that if they had problems of, e.g. administrative nature, they could expect help from somebody close to them. Comparing the years 2007

and 2008 it is also worth noticing that the percentage of those choosing work in the United Kingdom decreased by 5 percent points while the percentage of those opting for work in Ireland increased by 5 percent points. That difference resulted from changes that occurred at the described labour markets. The demand for employees from Poland in the United Kingdom was decreasing as the market was already saturated and it was increasingly difficult to find a job there.

The percentage of people opting for migration to Germany was much lower than in the earlier presented BAEL data (20%) at 13%. The difference resulted probably from the specific characteristics of those migrating to that country. According to OKÓLSKI and GRABOWSKA-LUSIŃSKA (2008), the migrants to Germany were much older (over 30 years of age) and worse educated than those migrating to the United Kingdom and Ireland. It is also characteristic that Germany is the main country for seasonal migration. Among the students covered the average age was 19 years; they also had no family of their own or responsibilities in Poland, so it was easier for them to take the decision to migrate to the United Kingdom even though the distance is a couple of times longer than to Germany.

Following the accession of Poland to the European Union the proportions between definitive, settlement migration and temporary economic migration were clearly reversed. After the period of domination (still during 1980s) of permanent emigration, the model of migration for temporary work (seasonal, short- and medium-term) returned. Those changes were also noticeable in the studies conducted (Tab. 3).

Planned duration of economic migration

Table 3

Duration of migration	lanned duration of migration (% respondents)					
	general high school		profiled high school		technical high school	
	2007	2008	2007	2008	2007	2008
Up to 1 year	69	73	32	45	43	37
From 1 to 5 years	24	18	51	45	40	49
From 5 to 10 years	2	2	5	4	7	6
Permanent	5	7	12	6	10	8

Source: Prepared on the basis of own studies.

Among the respondents only a minor proportion declared that the migration would be longer than 5 years (13% in 2007 and 11% in 2008). That was the consequence of hopes that within the coming years the situation in Poland

would improve significantly and the differences in the levels of wages and unemployment rates between Western Europe and Poland would be closed.

In case of the declared duration of the stay abroad differences between schools with different profiles were visible. It was found out that the vast majority of prospective graduates from general high schools declared the seasonal character of migration only. Almost $\frac{1}{3}$ of the students from both rounds of the studies declared migrations for periods not exceeding one year. This confirmed the assumptions that for the youth graduating from general high schools continuation of education is the priority. They could migrate for the duration of holiday period (June-September) to start studies after return, in October.

The structure of answers given to that question by students of vocational schools showed an entirely different distribution. The respondents graduating from profiled high schools in 2008 declared in equal proportions the duration of migration of one year and periods up to 5 years. This is a big change as compared to the preceding year because the proportion of respondents declaring short-term migration (up to 1 year) decreased by 13 percent points while the number of respondents declaring the duration of migration of from 1 to 5 years increased by 6 percent points. Among the students of technical high schools the proportions were just the opposite; the share of those declaring migration for up to 1 year decreased (by 6 percent points) while the share of the respondents declaring that they would migrate for longer – 1 to 5 years increased (by 9 percent points).

Taking the decision on economic migration abroad involves a large number of problems that can be faced by future employees. The main task of the migrant is to find a job in a foreign country, which is becoming increasingly difficult from year to year as a consequence of high competition in labour markets open for foreigners. During the studies conducted an attempt was made to find out how the students covered were searching for jobs and at which stage those preparations were (Tab. 4).

Students of general high schools started looking for employment the earliest. That group prepared the best for migration and was the most aware of the related problems. It could also be noticed that as they were planning the migration for just a short time (June – September) it was important for them that immediately on graduation from school the trip should be prepared and that they could be able to go (on return – in October – they would be able to continue their education). The other groups (profiled and technical high schools) declared much less frequently declared being in progress of searching for employment already during the period when the studies were conducted.

Table 4
Time of commencement of search for a job according to prospective graduates

Item	Job search (% respondents)					
	general high school		profiled high school		technical high school	
	2007	2008	2007	2008	2007	2008
Already searched	82	86	51	61	47	55
After graduating from school but still in Poland	13	14	33	36	21	24
After graduating but already abroad	5	0	16	3	32	21

Source: Prepared on the basis of own studies.

To obtain more complete image of preparations by the potential migrants it was also worthwhile to find out at what stage the organisation of that migration was (Tab. 5).

Table 5
Advancement in organisation of migration according to prospective graduates of 2008

Item	Advancement of preparations for migration (% responses)		
	general high school	profiled high school	technical high school
I have done nothing in that field	29	50	55
Cooperation with employer has been established	42	15	24
Cooperation with employment agency abroad has been established	29	0	6
Cooperation with employment agency in Poland has been established	0	15	14

Source: Prepared on the basis of own studies.

Among the respondent students graduating from vocational schools (profiled and technical high schools) more than a half had done nothing as concerns organisation of their migration. Only a minor proportion established contacts with employment agency (in Poland or abroad) or with the prospective employer. This means that students of those schools could take overhasty decisions on migration and not implement them as the studies were conducted two months before the end of school time. It should be noticed, nevertheless, that students of vocational schools pointed mainly at family and friends in answering the question on who helped them in organisation of the migration. In case of profiled high schools 38% pointed at family and 43% at friends. The situation was similar in case of technical high schools where 58% of respondents

indicated the family and 33% friends. This could mean that they did not organise the migration on their own but engaged the family and friends in the process.

Conclusion

The subject of migration has become very important, particularly after accession of Poland to the European Union, as such an immense flow of migrations has been observed never before. For that reason the studies on economic migration conducted among prospective graduates from secondary schools in Olsztyn allowed better understanding of that phenomenon.

The migration decision by the students covered were not final. This is confirmed by the fact that none of the students covered, in answering the question concerning possible reasons for resignation from migration declared that the decision on migration was final and that there was no reason for which the respondent would be ready to abandon it. The results indicate that the decisions were caused mainly by the difficult situation in the Polish labour market. The unemployment rate among the people aged 15 to 24 years is twice higher than in the other age groups. Some of the blame for that situation should be taken by ineffective education system management as it is frequent that obsolete educational curricula or lack of competence among people managing education cause that young people loose from the start at the Polish labour market and take decisions on economic migration and work below their qualifications. Changes in the Polish education system are highly needed and they should involve not only the organisational structure, curricula of education, financing and management but, first of all, the courses of education. Education should strengthen the focus on the future. That orientation will be possible only after conducting extrapolation of trends, i.e. when education is based on projections concerning specific vocations and types of occupation that would be in demand in coming years or in several years time.

The level of the declared migrations among the youth graduating from high schools in Olsztyn depended on school type. The highest percentage of those planning economic migration in 2008 was recorded among prospective graduates from the profiled high schools (42%), it was slightly lower among prospective graduates from the technical high schools (35%), while among the prospective graduates from general high schools only 8% of the respondents declared willingness to migrate.

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ESTIMATION OF RISK-RETURN RELATION PARAMETERS IN THE CONTEXT OF THE APT MODEL

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Key words: APT model, non-typical observations, depth measures.

Abstract

Pricing of capital instruments is one of the important problems in the theory of finance. Theoretical studies resulted in appearance of *Multi-Index Models*, defining the correlation between the profitability of individual securities and a number of systematic risk factors. In the basis of those models another, different from the classical Markowitz theory, method for determining the risk of investment was given specifying at the same time the risk measure appropriate for that model. As a result of further works the *Arbitrage Pricing Theory* – APT was formulated.

The article shows an attempt at pricing capital investments in shares of innovation SiTech segment companies determined by means of the APT model. It was assumed that the rates of return are generated by two-index model in which the general stock exchange market situation and the teleinformation sector market situation are the sources of risk. Analysis of the relation described by that model was supported by the non-typical observations elimination methods based, among others on the measures of depth of the observations in the sample.

Estimations of the cross section regression, following the elimination of non-typical observations indicate that investments in modern technology securities are characterized by positive and statistically significant premium for market risk. On the other hand, it was determined that the influence of sectoral risk on the expected rates of return for analyzed companies was insignificant statistically.

SZACOWANIE PARAMETRÓW RELACJI RYZYKO-DOCHÓD W KONTEKŚCIE MODELU APT

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Słowa kluczowe: model APT, obserwacje nietypowe, miary zanurzenia.

A b s t r a k t

Jednym z istotnych problemów teorii finansów jest wycena instrumentów kapitałowych. Opracowania teoretyczne zaowocowały pojawieniem się modeli wielowskaźnikowych (*Multi-Index Model*), określających zależność rentowności pojedynczych walorów od wielu czynników ryzyka systematycznego. Na podstawie tych modeli podano inny, w odróżnieniu do klasycznej teorii Markowitza, sposób wyznaczenia ryzyka inwestycji, precyzując przy okazji właściwą dla tego modelu miarę ryzyka. W wyniku dalszych prac sformułowano teorię arbitrażu cenowego (*Arbitrage Pricing Theory-APT*).

Artykuł ukazuje próbę wyceny inwestycji kapitałowych w akcje spółek segmentu technologii innowacyjnych SiTech, określonej przez model APT. Założono, że stopy zwrotu są generowane przez model dwuwskaźnikowy, w którym źródłami ryzyka jest ogólna koniunktura na giełdzie i koniunktura sektora teleinformatycznego. Analizę relacji opisaną tym modelem wspomóżono metodami eliminacji obserwacji nietypowych, opartymi m.in. na miarach zanurzania obserwacji w próbie.

Oszacowania regresji przekrojowej po eliminacji obserwacji nietypowych wskazują, że inwestycje w walory nowoczesnych technologii charakteryzują się dodatnią i statystycznie istotną premią za ryzyko rynkowe. Stwierdzono jednakże statystycznie nieistotny wpływ ryzyka sektorowego na oczekiwane stopy zwrotu analizowanych spółek.

Introduction

The systematic risk plays a special role in the securities risk analysis. In the developed capital markets such as the New York Stock Exchange (NYSE), an attempt at describing the relation between the expected profitability and the systematic risk was undertaken during 1960s and 1970s. Work on specifying the pricing of assets resulted in introduction of the CAPM (*Capital Asset Pricing Model*) model, independently by W. Sharpe in 1964 (SHARPE 1964), J. Lintner in 1965 (LINTNER 1965) and J. Mossin in 1966 (MOSSIN 1966), and the APT theory (*Arbitrage Pricing Theory*) by S. Ross published in 1976 (ROSS 1976).

Capital market equilibrium models, as they are frequently called, as a consequence of their design represent the method for determining the securities equilibrium price depending on the risk represented by them. The CAPM model defines the investment risk resulting from the behavior of all securities as the entire market, i.e. the general market situation. The level of sensitivity of individual securities to changes of indexes characterizing the status of a given capital market is the measure of that risk. According to that theory, the investor is remunerated in the form of the market premium only for the risk systematically influencing the level of the rates of return on the stocks.

The arbitrage pricing theory on the other hand enriches significantly the structure of capital assets pricing. It is a competitive theory on one hand and the theory expanding the CAPM model on the other. The APT theory allows determining the equilibrium conditions based on the process generating the

rates of return assumed in advance. According to that theory the return on stocks depend on numerous factors that are the source of the systematic risk. That theory, however, does not define those factors and does not provide information on the value and direction of influence by those factors on the rate of return on securities.

The correlation expressed by the APT theory is a theoretical linear correlation and in reality it never happens that all (or a significant majority) of securities are spread along that straight line. Generally, the equilibrium is seen as a dynamic process and the majority of securities will be characterized by overpricing or underpricing relative to the level determined by that model. In case of some companies the deviation from the equilibrium plateau observed during certain periods of time can be so large that the security can be considered a non-standard observation in the sense of both the deviation from the market equilibrium level and in the sense of the statistical sample. Non-typical observations can be the cause for deviation of information obtained as a result of studies. Currently, the methodology of statistical studies on non-typical data has developed rapidly and it has become one of the more important problems of statistical analysis. Non-typicality is generally caused by heterogeneity of the statistical population from which the sample was taken or caused by the error made by the researcher. This is of major importance in, e.g. forecasting on the bases of estimated correlations. That fact made many authors undertake the search for effective procedures to solve that uneasy and at the same time very important issue. One of such solutions are the methods based on the measures of observation depth in the sample. The notion of depth was introduced by Tukey in 1975 and it was extensively developed by numerous researchers, including: (ROUSSEUW, RUTS 1996), (LIU, PARELIUS, SINGH 1999). In this study the measure of depth of the observation in the sample was used for analysis of the relation described by the APT theory.

The article presents modeling of the correlation between the rates of return and market and sectoral risks of stocks of companies from the SiTech companies sector determined by means of arbitrage pricing theory. In the analysis conducted non-typical observations were eliminated by applying the method based on the Mahalanobis depth measure for depth of observations in the sample and the method using the values of standardized residues in linear regression (DOMAŃSKI, PRUSKA 2000).

Arbitrage Pricing Theory Model

The arbitrage pricing model is the theory introduced without restricting assumptions concerning the ideal capital market on which the CAPM model was based. There are no strong assumptions concerning the function of the

investor's wealth usefulness. Additionally, it is not assumed that the investors take their decisions on the basis of two parameters: the expected revenue and the risk. The initial assumption of the model is that the rates of return on the securities in the market are generated by multifactor linear model in the form of (ELTON, GRUBER 1998):

$$R_{it} = \alpha_i + \beta_{i1}f_{1t} + \beta_{i2}f_{2t} + \dots + \beta_{id}f_{dt} \quad (i = 1, \dots, n) \quad (t = 1, \dots, T) \quad (1)$$

where:

R_{it} – rate of return on the i security during the period t ,

α_i – free expression of the model,

β_{il} – load of the l factor for that i security, that is the parameter of sensitivity of the rate of return of that security to the influence of factor l ,

f_{lt} , ($l = 1, \dots, d$) – factor l , systematically influencing the rates of return of i security during the period t ,

ε_{it} – disturbing component representing a specific part of the rate of return on the i security during the period t .

Equation (1) is the process satisfying the following assumptions of stochastic structure:

1. $E(\varepsilon_{it}) = 0, E(\varepsilon_{it}\varepsilon_{jt}) = 0$ for $i \neq j, E(\varepsilon_{it}\varepsilon_{it}) = \sigma^2$ for $i = j,$
2. $E(f_{lt}\varepsilon_{it}) = 0.$

The first assumption defines the specific components of risk as random variables with zero expected values and non-zero variations and that the random components of the model equations for i security and j security are uncorrelated, which means that the only cause for identical, systematic changes in the rates of return on the securities is their common, similar reaction to unexpected changes of factors. The second assumption concerns independence of systematic and specific factors.

Under the conditions of equilibrium, assuming that the rates of return are generated by the multifactor model described by equation (1), the model resulting from the arbitrage pricing theory assumes the format (HAUGEN 1996):

$$E(R_i) = \bar{R}_i \approx \gamma_0 + \gamma_1\beta_{i1} + \gamma_2\beta_{i2} + \dots + \gamma_d\beta_{id} \quad (i = 1, \dots, n) \quad (2)$$

where:

γ_0, γ_l ($l = 1, \dots, d$) – constant parameters of the equation. The values of parameters γ_l are defined as premiums for the risk caused by factor f_l .

Method for elimination of non-typical observations

While analyzing a numeric data set there is always concern that observations, which do not match the others will appear in the set. Sometimes it is difficult to identify in ex post analysis the cause for the doubtful result and then numerous simple statistical procedures are available that will allow removing the non-typical result or further statistical analysis.

We call an observation a non-typical observation when it does not fit the configuration (core) of the entire set of individual observations. The correlation graph for a two-dimensional sample can present various configurations of points on a plane. In a two-dimensional case the observations can be presented on a plane and the initial, visual analysis of the entire set can be conducted. This can become one of the methods for identification of non-typical observations in two-dimensional sets.

Residues from the estimated linear regression function can be used for detecting non-typical observations. In the theory of linear regression, in addition to typical observations the following types are also identified

- non-typical,
- influential,
- distant from other observations.

A non-typical observation in linear regression is one for which a relatively large residue is obtained

$$e_i = y_i - \hat{y}_i, (i = 1, 2, \dots, n) \quad (3)$$

that is one that does not fit within the specified vicinity of the estimated regression line.

Standardized residues can be used for identifying non-typical observation in linear regression

$$\tilde{e}_i = \frac{e_i}{S_e}, (i = 1, 2, \dots, n) \quad (4)$$

where:

\tilde{e}_i – standardized residue for observation i ,

e_i – regression residue i ,

n – number of observations,

S_e – standard deviation of regression residues determined according to the formula

$$S_e = \sqrt{\frac{\sum_{i=1}^n e_i^2}{n - k}} \quad (5)$$

where:

k – defines the number of estimated regression function parameters (DOMAŃSKI, PRUSKA 2000).

Let $P_n^2 = \{x_1, x_2, \dots, x_n\}$ be the system of observable vectors expressing a two-dimensional sample with population n originating from a certain two-dimensional distribution defined by the distribution function F_2 and let $\theta \in R^2$ be a certain point in real space R^2 . In particular, it can belong to the system of points from sample P_n^2 .

The criterion that uses Mahalanobis distance of point x_i relative to the vector of averages \bar{x} is one of the criteria for determining the observation depth in the sample measure.

Mahalanobis depth measure $Mzan_2$ for point θ in two-dimensional sample P_n^2 is computed according to the following formula:

$$Mzan_2(\theta; P_n^2) = [1 + Q(\theta, P_n^2)]^{-1} \quad (6)$$

where:

$Q(\theta, P_n^2)$ – is the Mahalanobis distance of point θ relative to the vector of averages \bar{x} , determined as

$$Q(\theta, P_n^2) = (\theta_1 - \bar{x}_1)^2 s^{11} + 2(\theta_1 - \bar{x}_1)(\theta_2 - \bar{x}_2)s^{11} + (\theta_2 - \bar{x}_2)^2 s^{22} \quad (7)$$

while

$$\theta = \begin{bmatrix} \theta_1 \\ \theta_2 \end{bmatrix}, \bar{x} = \begin{bmatrix} \bar{x}_1 \\ \bar{x}_2 \end{bmatrix}, \bar{x} = \frac{1}{n} \sum_{j=1}^n x_j, S = \frac{1}{n - 1} \sum_{i=1}^n (x_j - \bar{x})(x_j - \bar{x})^T, S^{-1} \begin{bmatrix} s^{11} & s^{12} \\ s^{21} & s^{22} \end{bmatrix}.$$

The depth measure allows organizing the observations according to the distance from the central concentration, which in this case is represented by two-dimensional median vector. The observation that corresponds to the highest value of the dept measure determines the two-dimensional median vector. Observation with the higher values of depth measure are positioned more centrally in the sample than those for which the depth measure assumes low values situated outside the “data cloud”. Observations with the lowest depth values may be treated as deviating (non-typical).

Characteristics of the data

Analysis of multindex models and tests of correlations between the rates of return on capital investments and the risk expressed by beta index covered the period of three years, 2004–2006. The analysis encompassed observations for 28 continually listed securities belonging to the SiTech segment. The study used time series of monthly rates of returns for the securities (36 observations). The choice of the sample period, stable as concerns the general positive stock exchange market allows to a certain extent stable estimation of single index model indexes.

The beta parameters of multindex models were estimated in relation to the major Warsaw Stock Exchange index WIG and teleinformation sector index independent of the WIG index.

Results

For every security the KMNK parameters of the two-index model were estimated. The tested format of that model was as follows:

$$R_{it} = \alpha_i + \beta_{i1} R_{Mt} + \beta_{i2} R_{St} + \xi_{it} \quad (i = 1, \dots, n = 28) \quad (t = 1, \dots, T = 36) \quad (8)$$

where:

- R_{it} – rate of return for company i during the period t ;
- R_{Mt} , R_{St} – corresponding rate of return of the WIG index and teleinformation sector index;
- α_i , β_{i1} , β_{i2} – model parameters;
- ξ_{it} – random component of the model.

Table 1 presents the expected \bar{R} values, standard deviation of the rate of return for the analyzed companies $\hat{\sigma}$, estimated values for parameters $\hat{\alpha}$, $\hat{\beta}_{i1}$, $\hat{\beta}_{i2}$, of models (8), determination coefficients R^2 and results of the Durbin–Watson test (DW).

The majority of analyzed companies achieved the positive average monthly rate of return ranging from 0,094% to 8,368% during the studied period of 2004–2006. Assessment of parameter and corresponding values of t -Student statistics indicate statistical insignificance of that parameter, which is consistent with the theory as parameter α defines the part of the rate of return independent of the market situation.

Parameter β_1 indicates the degree of sensitivity of the rate of return for the stocks of a given company to changes in the market rate of return. Companies

Table 1
Assessment of two-index model indexes for SiTech segment companies listed during the period of 2004-2006

Abbreviation	Full company name	\bar{R}	$\hat{\sigma}$	$\hat{\alpha}$	$\hat{\beta}_1$	$\hat{\beta}_2$	R^2	Test DW
ABG	ABG	-1.717	12.087	-3.844 (-1.92 ^c)	0.817 (2.22 ^b)	0.961 (2.79 ^c)	0.28	1.608
ACP	ASSECOPOL	4.303	7.984	2.072 (1.58)	0.890 (4.02 ^c)	0.631 (2.63 ^b)	0.47	1.862
ATM	ATM	8.368	12.272	7.304 (2.75 ^b)	0.456 (1.02)	0.572 (1.18)	0.08	2.203
BCM	BETACOM	-0.622	12.181	-1.640 (-0.72)	0.521 (1.24)	0.633 (1.55)	0.11	1.473
BMP	BMPAG	1.708	7.993	0.884 (0.50)	0.288 (1.02)	-0.516 (-1.62)	0.17	1.509
CMP	COMP	2.811	9.052	1.189 (0.58)	0.569 (1.73 ^c)	-0.040 (-0.10)	0.13	1.541
CMR	COMARCH	4.105	9.307	2.572 (1.59)	0.589 (1.98 ^c)	0.610 (2.21 ^b)	0.21	1.476
CSS	CSS	1.491	8.908	-0.196 (-0.13)	0.649 (2.33 ^b)	0.569 (2.18 ^b)	0.24	1.998
ELZ	ELZAB	4.160	11.525	3.336 (1.59)	0.316 (0.82)	0.742 (2.06 ^b)	0.13	2.662
EMX	EMAX	0.447	8.854	-0.892 (-0.57)	0.515 (1.79 ^c)	0.532 (1.98 ^c)	0.18	2.421
IBS	IBSYSTEM	-1.129	12.798	-4.314 (-2.28 ^b)	1.224 (3.54 ^c)	1.144 (3.54 ^c)	0.43	2.275
IGR	IGROUP	7.190	23.452	4.695 (1.23)	0.959 (1.37)	2.338 (3.57 ^c)	0.31	1.687
INT	INTERIA	7.236	18.383	2.694 (0.94)	1.747 (3.34 ^c)	1.407 (2.88 ^c)	0.37	2.736
MCI	MCI	7.516	22.749	3.419 (0.85)	1.576 (2.15 ^b)	1.262 (1.84 ^c)	0.20	2.189
MCL	MCLOGIC	5.242	15.768	6.640 (2.24 ^b)	-0.537 (-0.99)	0.668 (1.31)	0.08	2.435
MNI	MNI	4.445	17.553	1.151 (0.49)	1.121 (1.95 ^c)	0.915 (1.71 ^c)	0.17	2.169
MTL	MEDIATEL	1.037	22.586	0.082 (0.02)	0.560 (0.65)	1.348 (1.46)	0.09	2.010
NET	NETIA	0.933	7.658	-0.789 (-0.59)	0.662 (2.68 ^b)	-0.176 (-0.76)	0.19	1.876
OPT	OPTIMUS	-1.165	9.847	-2.455 (-1.72 ^c)	0.496 (1.89 ^c)	1.184 (4.83 ^c)	0.45	1.697
PKM	PROKOM	-0.225	9.439	-3.646 (-2.81 ^c)	1.315 (5.52 ^c)	0.384 (1.72 ^c)	0.50	2.038
SGN	SYGNITY	0.591	7.261	0.058 (0.05)	0.205 (0.88)	0.616 (2.85 ^c)	0.21	2.314
SME	SIMPLE	4.845	18.222	1.437 (0.50)	1.310 (2.50 ^b)	1.693 (3.45 ^c)	0.35	2.507
SPN	SPN	0.094	12.683	-3.020 (-1.49)	1.197 (3.23 ^c)	0.868 (2.51 ^b)	0.33	1.776
TEX	TECHMEX	-0.159	11.075	-1.366 (-0.67)	0.728 (2.02 ^c)	0.867 (2.30 ^b)	0.24	2.150
TLX	TALEX	-0.177	13.401	-2.572 (-1.08)	0.920 (2.11 ^b)	0.673 (1.65)	0.18	2.529
TPS	TPSA	1.624	7.540	-1.224 (-1.20)	1.095 (5.88 ^c)	-0.240 (-1.38)	0.52	1.770
TVN	TVN	5.189	8.480	2.672 (1.66)	0.884 (3.40 ^c)	-0.191 (-0.66)	0.38	2.404
WAS	WASKO	2.769	12.757	-0.212 (-0.11)	1.146 (3.20 ^c)	1.082 (3.22 ^c)	0.38	2.052

Source: Own computations.
 a, b, c - model parameter of test statistic significant at the significance level of: $\alpha = 0.01$; $\alpha = 0.05$; $\alpha = 0.1$ respectively.
 In brackets the values of t statistic is given. Critical values for the DW test are $d_1 = 1.353$ and $d_u = 1.587$ respectively.

of SiTech segment are characterized by large variability of coefficients β_1 (from -0,53 to 1,747), but the majority of them reacted to the changes in the stock exchange market slower than the market (coefficients β_1 lower than 1). The company with the weakest reaction to market changes was SYGNITY ($\beta_1 = 0,205$), while INTERIA company with coefficient β_1 equal to 1,747 was the security most sensitive to such changes. The security reacting in average in the direction opposite to that of the market was MCLOGIC, for which coefficient β_1 was -0,537. In case of 20 companies changes in the WIG index had a statistically significant influence on changes to the rate of return on the stocks of companies studied.

Statistically significant influence of sectoral risk on the individual companies expressed by coefficient β_2 was observed in case of 18 companies. IGROUP ($\beta_2 = 2,338$) showed the strongest reaction to changes in the sector market situation while OPTIMUS (β_2) showed the weakest reaction. The values of DW test statistics show satisfying the assumption concerning absence of autocorrelation between the random components for the majority of the estimated models.

The average rates of return for the analyzed companies determined during the first stage and the estimated coefficients beta were used for testing the significance of the coefficients of the APT model empirical form:

$$\overline{R}_i = \gamma_0 + \gamma_1 \hat{\beta}_{i1} + \gamma_2 \hat{\beta}_{i2} + \varepsilon_i; \quad (i = 1, \dots, n = 28) \quad (9)$$

where:

$\gamma_0, \gamma_1, \gamma_2$ – model parameters,

$\overline{R}_i, \hat{\beta}_{i1}, \hat{\beta}_{i2}$ – expected value and coefficients beta for security i ,

ε_i – random component of the equation.

The assessments of relation (9) parameters are presented in table 2. The graphic spread of points is presented in Figure 1.

Table 2
Estimations of parameters for relation $\overline{R}_i = \gamma_0 + \gamma_1 \hat{\beta}_{i1} + \gamma_2 \hat{\beta}_{i2} + \varepsilon_i$ for 28 companies of SiTech segment listed during the period of 2004-2006

$\hat{\gamma}_0$	t_{γ_0}	$\hat{\gamma}_1$	t_{γ_1}	$\hat{\gamma}_2$	t_{γ_2}	R^2
1,447	1,23	0,415	0,33	1,035	1,06	0,061

Source: Own computations.

The dispersion of observations in figure 1 shows lack of correlation between the average rates of return and coefficients beta for the highlighted companies. This is confirmed by the results of regression analysis presented in Table 2,

which indicate lack of statistical significance of the equation parameters and low level of explanation for the expected rates of return provided by the APT model ($R^2 = 0,061$).

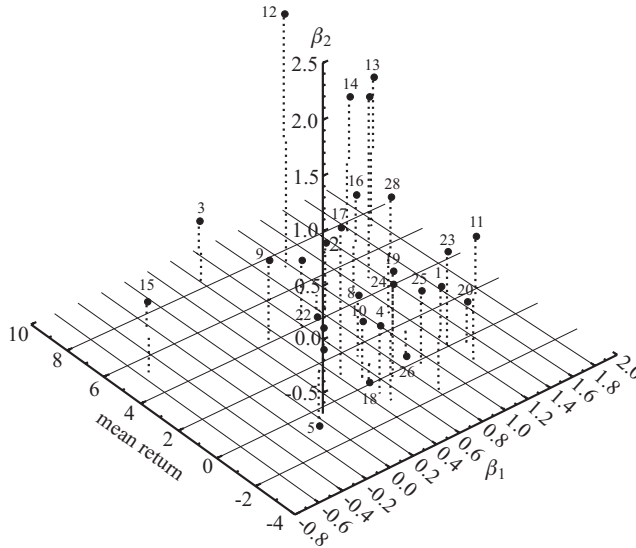


Fig. 1. Values of the average rates of return and coefficients beta for 28 companies of SiTech segment with the line of the securities market

Source: Own work.

Table 3
Values of standardized residues determined for 28 companies of teleinformation sector on the basis of relation (9)

Company abbreviation	Standardized residues	Company abbreviation	Standardized residues
ABG	-1.520	MCL	1.124
ACP	0.627	MNI	0.536
ATM	2.081	MTL	-0.670
BCM	-0.989	NET	-0.205
BMP	0.219	OPT	-1.366
CMP	0.394	PKM	-0.884
CMR	0.602	SGN	-0.533
CSS	-0.275	SME	0.372
ELZ	0.612	SPN	-0.928
EMX	-0.596	TEX	-0.940
IBS	-1.442	TLX	-0.913
IGR	0.988	TPS	-0.010
INT	1.218	TVN	1.203
MCI	1.389	WAS	-0.093

Source: Own computations.

Table 3 presents the values of standardized residues values determined for 28 companies. It can be noticed that for companies ABG, ATM, IBS the values of computed residues were relatively the highest.

For the purpose of computing the Mahalanobis depth measures the 28 objects (companies), characterized by three characteristics, β_1 , β_2 and R_i were divided into two-element sets: $Z_1 = \{\bar{R}_i, \beta_1\}$, $Z_2 = \{\bar{R}_i, \beta_2\}$, $Z_3 = \{\beta_1, \beta_2\}$. The three numeric data sets established are treated as two-dimensional samples. For companies belonging to each of those subsets the Mahalanobis depth

Table 4
Organized Mahalanobis depth measures for two-dimensional sets

Company	Mzan (1)	Company	Mzan (2)	Company	Mzan (3)
MCL	0.244053	IGR	0.264297	MCL	0.255042
INT	0.291024	ATM	0.320068	IGR	0.274582
ATM	0.306447	BMP	0.329452	INT	0.323477
MCI	0.308754	TVN	0.335343	BMP	0.328337
IBS	0.374884	MCI	0.362385	TPS	0.334817
IGR	0.385794	INT	0.362403	MCI	0.36873
PKM	0.388881	OPT	0.378043	SME	0.371843
ABG	0.404862	ABG	0.381455	TVN	0.372709
OPT	0.428206	SME	0.382692	MTL	0.400004
SGN	0.429776	IBS	0.385823	NET	0.401858
SPN	0.435846	TPS	0.387759	PKM	0.403121
SME	0.437632	NET	0.402076	CMP	0.443528
ELZ	0.452442	CMP	0.431596	SGN	0.44528
BCM	0.458753	MTL	0.442923	OPT	0.46569
TLX	0.497237	BCM	0.481347	ELZ	0.488105
BMP	0.519959	TEX	0.495246	IBS	0.497353
TEX	0.520073	PKM	0.499404	SPN	0.533303
TVN	0.522292	MCL	0.504853	WAS	0.543868
MNI	0.525009	SPN	0.517274	ATM	0.55251
MTL	0.537782	TLX	0.517953	MNI	0.583325
EMX	0.538323	EMX	0.578754	BCM	0.613151
TPS	0.565578	ACP	0.594645	EMX	0.627562
WAS	0.566381	MNI	0.600058	CMR	0.702944
CMR	0.579003	SGN	0.601882	TEX	0.721481
ACP	0.623861	CMR	0.612644	ABG	0.728868
NET	0.63433	WAS	0.637917	TLX	0.741789
CMP	0.679284	ELZ	0.638252	CSS	0.744343
CSS	0.699277	CSS	0.713819	ACP	0.812514

Source: Own computations.

measures were computed according to formula 4 and they were presented in Table 4 in non-decreasing order.

The lowest depth measure values for two out of three two-dimensional subsets were obtained for companies MCL, ATM and BMP respectively. This means that those companies had much lower or much higher values of the tested variables β_1 , β_2 or \bar{R}_i . Considering the values of the standardized residues and the values of depth measures computed for each of the two-dimensional samples those companies for which in each of two-dimensional samples low depth measure values were obtained and those with relatively high standardized residues. The eliminated companies were: ABG, ATM, BMP, IBS and MCL. For the remaining 23 companies the structural parameters of the APT model were estimated. Assessments of the model parameters are presented in Table 5.

Table 5
Estimations of relation parameters $\bar{R}_i = \gamma_0 + \gamma_1 \hat{\beta}_{i1} + \gamma_2 \hat{\beta}_{i2} + \varepsilon_i$ for 23 companies of SiTech segment companies listed during the period of 2004–2006

$\hat{\gamma}_0$	t_{γ_0}	$\hat{\gamma}_1$	t_{γ_1}	$\hat{\gamma}_2$	t_{γ_2}	R^2
-0.836	-0.69	2.892	2.28	1.163	1.40	0.325

a, b, c – model parameter of test statistic significant at the significance level of: $\alpha = 0.01$; $\alpha = 0.05$; $\alpha = 0.1$ respectively.

Source: Own computations.

Assessment of the free expression γ_0 , reflecting the rate of return free from risk gave a negative result and it statistically insignificantly differs from zero. On the other hand, coefficient γ_1 , expressing the market premium for risk related to stock exchange market situation proved statistically significant. Its value means that the increase in the risk of the individual company (coefficient β_1) by one percent point corresponds to the average increase in the expected monthly rate of return by 2,892%, ceteris paribus. Assessment of parameter γ_2 , determining the premium for risk related to the teleinformatics sector market situation proved statistically insignificant.

The determination coefficient at 0,325 is much higher than the value of that coefficient for estimations made prior to elimination of companies (0,061). Nevertheless, its still low value indicates that the version of the two-index APT model expressed by the equation (9) is insufficient for description of the correlation between the expected profit of portfolios and the systematic risk.

Conclusion

Results of the analysis show that elimination of non-typical observations facilitates improvement of the matching of the model to the empirical data. Regression analysis of the APT model for innovation technology segment companies supported by the methods of non-typical observations elimination indicates partial significance of the relations described by the model. SiTech segment companies are characterized by positive and statistically significant premium for systematic risk expressed by the stock exchange market situation. On the other hand insignificant influence of sectoral risk on the expected rates of return for the analyzed companies was determined. Relatively low value of the determination coefficient indicates that the level of expected rates of return on analyzed assets does not result from the sensitivity of those securities to changes of the stock exchange index and sectoral index only. The other potential exogenous factors in relation to the capital market influencing the general stock exchange market situation and the levels of listed prices for individual securities could include macroeconomic variables such as inflation, global production or interest rates and indexes of global stock exchanges describing the trends in the global capital market.

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**CONDITIONS OF FOREIGN INVESTORS'
INVESTMENTS IN THE AGRICULTURAL REAL
PROPERTY MARKET**

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Key words: agricultural real property market, conditions of investments.

A b s t r a k t

The paper presents financial-economic and strategic conditions in the market of agricultural real property for foreign investors. The significance of the presented conditions was represented in the format of a model of the so-called strategic investment card as a complex approach to implementation of investment in agricultural real properties. The verification of the model was conducted on the example of Majmławki farm. The evaluation of the investment was defined in the aspects of economic, market, and social-environmental effectiveness as well as the so-called investment options.

**UWARUNKOWANIA INWESTYCYJNE RYNKU NIERUCHOMOŚCI ROLNYCH
DLA INWESTORÓW ZAGRANICZNYCH**

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Słowa kluczowe: rynek nieruchomości rolnych, uwarunkowania inwestycyjne.

A b s t r a k t

Przedstawiono uwarunkowania finansowo-ekonomiczne i strategiczne dla inwestorów zagranicznych występujące na rynku nieruchomości rolnych. Istotność przedstawionych uwarunkowań zaprezentowano w postaci modelu tzw. strategicznej karty inwestycyjnej jako kompleksowego podejścia do realizacji inwestycji w nieruchomości rolne. Weryfikację modelu przeprowadzono na przykładzie gospodarstwa rolnego Majmławki. Ocenę inwestycji zdefiniowano w aspektach: efektywności ekonomicznej, rynkowej, społeczno-środowiskowej oraz tzw. opcji inwestycyjnych.

Introduction

The crisis that appeared in the American real property market in 2005 caused that the current situation is the worst in 17 years. The negative phenomena of that crisis also reached the Polish market causing a decrease in demand for real properties. The analysts see no indications of revival in demand for real properties in the nearest future. The increase by 79% in the number of implemented collection procedures against real properties is in turn the consequence of the crisis in the mortgage loans market. In total more than 1% of families in the USA were deprived of almost 1.3 million apartments and houses, more than one million from July through December of 2007. During the whole year 2.2 million proceedings were initiated; their number during the fourth quarter of 2007 was 642,150 and they concerned seizure of 527,740 real properties (www.nieruchomosci.beck.pl 2007).

The crisis was the most severe in the segments of residential and industrial real properties. It was less severe in the segment of agricultural real properties. Nevertheless, the whirls in the real property market force the investors to improve the methods for evaluation of investment profitability.

Agricultural real properties¹ have become, as of the early 1990s, an attractive form of capital investment as a consequence of continually increasing prices, which was influenced by numerous factors. The main factors include natural, spatial-organisational, technical, land improvement and spatial ones. The basic attributes influencing the value of agricultural real properties were the area of the real property, availability of technical infrastructure, neighbouring real properties, access to means of transportation, location and fertility value (ŁAGUNA 2001).

Implementation of investment projects in agricultural real property requires now a comprehensive approach to the issues related to assessment of economic effectiveness and valuation of risk involved in the studied market. The process should focus in particular on the measures of effectiveness of a given project covering, in addition to economic effectiveness, also the social and environmental effects as well as benefits resulting from the so-called investment options.

The paper aims at presenting a model for evaluation of effectiveness of investments in agricultural real properties by foreign entities considering the practical aspects related to financial-economic and strategic conditions. The studies were conducted on the basis of Majmławki farm. The paper uses the project method that involves defining of the investment model in the format of

¹ Agricultural immobilities in special cases can consist with only land uses, usually also from plotting on soils – both building how and vegetable – (ŁAGUNA 2001).

the strategic investment card and the following methods: NPV (Net Present Value), IRR (Internal Rate of Return), DPB (Discounted Payback Period) as the methods for evaluation of economic effectiveness of the investment.

Strategic investment card as a model of investment in agricultural real properties

The concept of the Strategic Investment Card (SIC) is related to the process of investment in agricultural real property (Fig. 1). It serves defining the cause and effect relation between numerous factors influencing profitability of the investment. The SIC represents defining, on the basis of the business concept, of three perspectives of the investment in agricultural real property: economic, marketing and personal at the same time defining the method for measurement of the specific perspective while valuating the effects in the economic, social and market aspects as well as the so-called investment options.

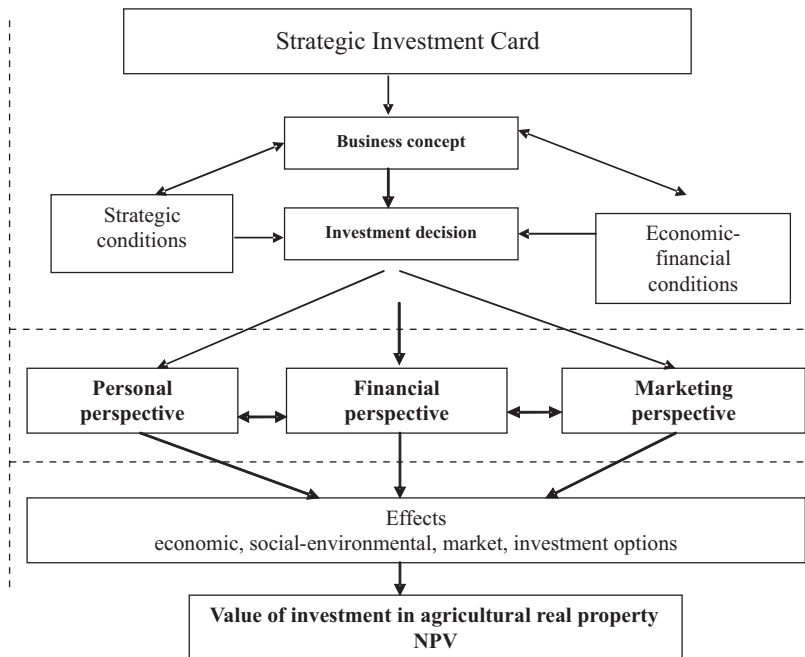


Fig. 1. Model of the Strategic Investment Card

Source: Own work based on KOZŁOWSKI (2007).

The rationale for the business concept of investment in agricultural real properties that should define elements such as:

- premises for a given project: market, marketing, social, economic, strategic;
- projection of benefits expected from a given project – increase of agricultural production, improvement of product quality, diversification of trade offer, increase of land value;
- valuation of investment options related to implementation of a given project or resignation from it; what will we achieve if we go for the project and what will happen if we do not implement it;
- valuation of risk related to project implementation in general terms – valuation of risk level or its type;
- defining the costs and time for implementation – cost of capital, schedule of work implementation;
- evaluation of profitability of the investment: economic, social, environmental and obtaining so-called investment options, is the starting point for the strategic investment card.

The business concept of the project is determined by two most important types of conditions: economic-financial and strategic ones.

Conditions of implementation of investment in agricultural real property

Considering foreign investments in agricultural real property two major sources of conditions have been defined: financial-economic and strategic. The first ones result from premises and phenomena of macro and microeconomic character. The second group of conditions is linked to the goal of investor's activities and his plans for the future.

Financial-economic conditions

Financial standing, financial risk, financial planning type and investment options can be treated as the major financial premises for investment in agricultural real property (ZIARKOWSKI 2004). The important premises of economic character include macroeconomic situation, economic-sociological phenomena and phenomena taking place in the world that frequently reach Poland with a delay of a few years.

The above premises determine the decision criteria related to investment in agricultural real property defining at the same time the investment ability and strength of the investor. Figure 2 presents the model of conditions occurring in the process of decision taking in the market of agricultural real properties.

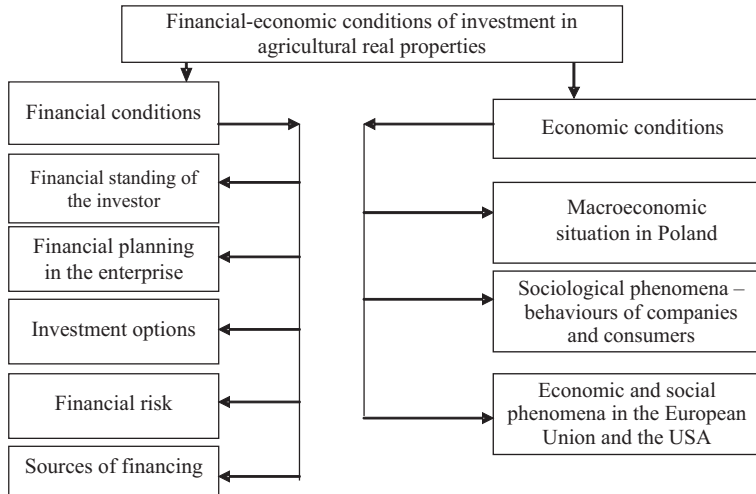


Fig. 2. Financial and economic conditions of investments in agricultural real properties
 Source: Own work base on WOŹNIAK-SOBCZAK (2001).

The financial and economic premises of investments in agricultural real properties presented in figure 2 determine the baseline (marginal) conditions determining the investment strategy of the given entity. Those premises influence to a large extent the choice of decision criteria concerning the investment in agricultural real properties (PASTUSIAK 2003).

Strategic conditions

The assumed investors' operational strategy that determines the investment types and scenarios as well as the criteria of economic profitability assessment and the risk level represents the starting point in implementation of an investment policy (WOŹNIAK 2001). Table 1 presents types of investment in agricultural real properties. The development strategy is the basic criterion for the categorization of investments.

The phase in which the investor currently is constitutes an important criterion influencing the type of investment in agricultural real property. If the investor were in the **growth phase**, he would be focused mainly on new investments thanks to which it would increase its production capacity and strengthen the technical infrastructure. At that phase the investor might generate negative cash flows and low current rate of return on the capital invested. The strategic goal is to increase revenues and sales of agricultural production.

Table 1

Types of investments in agricultural real properties – development criterion

Focus on one activity	Vertical integration	Diversification
Investment aiming at development of current agricultural production	qualitative investments – improvement of agricultural culture	investment involving change of activity profile – agritourism
Investment in sales markets	investment of infrastructural type	investments in products, services
Investment of modernisation type	investments of speculative type – waiting for increase in value	investments of extensive nature

Source: Own work based on own studies.

The investor at the **retention phase** is focused mainly on increasing the production capacity and continuous improvement of production processes. The investments in agricultural real properties are mainly investments of modernisation and replacement character. Investor at the **mature phase** is focused on harvesting the gains from the investments made during the preceding phase. The investments in agricultural real property are of replacement type mainly and aim at retaining the potential. All projects must be characterised by precisely specified and short period of return. Maximisation of cash flows is the main objective.

The dependences occurring between the investment in agricultural real property and life phase of the investor are conditioned mainly by the financial objectives, which causes that investment projects possess different characteristics. All tangible investments are assessed according to the procedure of investment planning based on the discounted cash flows and they must be characterised by rapid and secure return on the capital invested. As a consequence the investor should be able to define the phase he is currently at and on that base define the investment strategy.

Profitability assessment of investments in agricultural real properties

The process of investment in agricultural real property economic profitability assessment should be divided into stages implementation of which would allow appropriate implementation of the investment. Four major stages are identified (TROCKI, GRUCZA 2007). In addition to economic effects the investor also obtains market, social, environmental effects and so-called investment options the valuation of which is necessary for comprehensive assessment of the project of investment in agricultural real property.

Methodology for profitability assessment of investments in agricultural real properties

Aiming at appropriate implementation of investment process according to the Strategic Investment card (SIC) assumptions, four major stages allowing appropriate assessment of investment profitability have been identified.

Stage I

Defining scenarios possible for implementation as operational scenarios.

ZACHARZEWSKA (2007) identifies four baseline scenarios:

- real property purchase and conduct of agricultural production,
- real property purchase and cessation of any agricultural production while maintaining the land in good agricultural culture;
- further lease and conducting agricultural production;
- further lease and cessation of any agricultural production while maintaining the land in good agricultural culture.

Stage II

Defining the marketing concept. It is assumed that at stage II the following would be determined:

- demand for products;
- scale of demand;
- intensity of competition;
- concept of appropriate promotional activities;
- production programme;
- projections of sales prices.

Stage III

Assessment of the investment project functioning. At stage III the following is done:

- projection of profit and loss account, balance sheet and cash flow;
- defining categories of costs and revenues related to the specific investment in agricultural real property. The major categories of revenues could include: the value of main product, value of side product, subsidies to the product, subsidies to the cultivated area and increase in value of the agricultural real property. The major categories of costs might include: investment outlays, rent, taxes and fees, direct costs of production indirect costs of production;
- computation of **NPV and IRR** as the main criteria for assessment of profitability of an investment in agricultural real property;
- financial indicators – final assessment of the investment project version.

Stage IV

Taking the decision as concerns the choice of scenario for the investment in agricultural real property.

The methodology of profitability assessment represents an element of the Strategic Investment Card model and covers the aspect of the **business concept and analysis of investment conditions** for investment in agricultural real property. The above methodology is the most important area in the investment process as its correctness and accuracy determine the further success of the project.

Model (SIC) application for assessment of investments' effectiveness based on the example of a farm

Majmławki farm situated in the municipality of Sępólno, Bartoszyce county, Warmia and Mazury voivodship is the subject of this study. The farm has the total area of 207.3 ha, including 2152.4 square meters of usable area of buildings. The fertility class representing 45% of the weight of all the market characteristics and natural-location values representing 25% of that weight are the basic factors influencing the value of the subject real property (ZACHARZEWSKA 2007). Investment in the subject farm, according to the assumptions of the model (SIC) will give economic, market and social-environmental effects as effects related to the so-called investment options. The individual assumptions concerning the effects are presented below (Table 2).

Economic effects related to obtained funds can be defined by applying the profit or cash flow, level of investment profitability, values of NPV, IRR, DPB and increase in value of the agricultural real property. Analyses indicate that only scenario number 1 related to purchase of the real property and conducting agricultural production offers substantial economic effect related to obtaining positive values of NPV, IRR and DPB.

Economic assessment of investment in the studied farm

Table 2

Economic effectiveness assessment method	Investment scenarios $n = 15$ years, costs of capital = 5,8%			
	I	II	III	IV
NPV	390 000 PLN	- 1 980 893 PLN	- 168 081 PLN	- 46 000 PLN
DPB	13,2 years	-	-	-
IRR	8%	-	-	-

NPV – net present value, IRR – internal rate of return, DPB – discounted payback time

Source: Own work based on ZACHARZEWSKA (2007).

Market effects – involve such elements as share in the agricultural production market, diversification of products and services, increase of the

share in Client's portfolio and geographic expansion. The basic market effects of scenario 1 implementation are:

- increase in volume of agricultural production per 1 ha of crops by 30% within 15 years;
- increase in process for agricultural products by 150% within 15 years.

Social-environmental effects - creating new jobs, improvement of agricultural culture, new prospects for farm development and regional development. The major social-environmental effects of investment project implementation are:

- good farm location – access, technical infrastructure and closeness to sales markets;
- good natural conditions;
- high fertility of soils – majority of land in classes IIIb and IVa.

Effects related to obtained options – possibility of using natural resources, possibility of expansion, possibility of being the market leader, development of market trends consistent with behaviour of consumers – tourism, increase in demand for agricultural products.

The major options related to the investment⁶ could include:

- projected increase in land value by 5–10% per year,
- increased demand for agricultural products,
- increasing importance of agricultural-food industry,
- socio-economic phenomena linked to increase in demand for food from ecological regions, healthy nutrition, etc.

Option types obtained from investment in the subject farm are presented in Table 3.

According to projections, investment in the subject farm will offer benefits from the so-called investment options that can be divided into 3 types:

Table 3
Investment growth options obtained through the investment in the studied farm

Option name	Option characteristics	Date of execution	Option direction
Economic	food from ecologically clean areas	up to 50 years	growth
Social environmental	– movement of the population to ecologically clean areas,	up to 50 years	growth
	– striving of the society for better living quality,	up to 50 years	growth
	– increased population expenditures on ecological tourism	up to 50 years	growth
Location	nearness of the eastern border – opening of the eastern market to agricultural food products	up to 50 years	growth

Source: Own work based on own studies.

economic, social-environmental and location. The time for implementation of the options was assumed at 50 years and all of them have the growth option, which means that they can give the investor additional benefits in the future. For today, however, we are unable to estimate the value of those options.

Conclusion

Investments in agricultural real properties, because of their specific characteristics, require high diligence and care during preparation. This results from the high number of conditions that have direct or indirect influence on their profitability. The Strategic Investment Card model allows determining the cause and effect relation in the investment process; it is a tool that facilitates implementation and assessment of profitability of the investment in agricultural real property.

The primary premises resulting from strategic investment card preparation include the necessity of defining the business concept and investment potential based on strategic and financial-economic conditions related to investment activity in the market of agricultural real property market. Defining the schedule for preparation of individual components of the strategic investment card is important. Preparation and implementation of investment require from the entrepreneur possession of vast and continually updated knowledge and wide information on the market and national economy. Effective and profitable investing requires appropriate preparation of the investment projects. Unsuccessful investments, bankruptcies, takeovers and mergers of enterprises confirm that extensive knowledge on the specific area is required from the manager.

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**THE ROLE OF CROSSBORDER COOPERATION
IN SOCIOECONOMIC DEVELOPMENT BASED
ON THE EXAMPLE OF EUROREGIONS NIEMEN
AND POMERANIA**

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Key words: crossborder cooperation, euroregion, EU financial instruments.

A b s t r a c t

The paper presents the scope of current crossborder cooperation within euroregions Pomerania and Niemen. The particular attention was paid to comparison of activities of those euroregions, indication of differences and similarities in their structures, goals and activities undertaken. Additionally, economic, financial and formal-legal constraints to crossborder cooperation and factors influencing its development were discussed. The paper also presents the level of use of the European Union funds within the frameworks of implemented goals of cooperation within euroregions.

Studies were carried out during the period of April – November 2007. During the analyzed period preparation for absorption of European Union funds, which was to be the antidote for financial limitations posing the major obstacle in tightening crossborder cooperation proved to be the priority for the municipal authorities. The European Union funds received were allocated mainly to development of infrastructure and tourism, cultural and youth exchange and business investment projects.

**ROLA WSPÓŁPRACY TRANSGRANICZNEJ W ROZWOJU SPOŁECZNO-GOSPODARCZYM
NA PRZYKŁADZIE EUROREGIONÓW NIEMEN I POMERANIA**

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Słowa kluczowe: współpraca transgraniczna, euroregion, instrumenty finansowe UE.

A b s t r a k t

W artykule przedstawiono zakres dotychczasowej współpracy transgranicznej w euroregionach Pomerania i Niemen. Szczególną uwagę zwrócono na porównanie działalności euroregionów, wskazanie różnic i podobieństw w ich strukturze, celach oraz realizowanych działaniach. Ponadto

wskazano na gospodarcze, formalnoprawne i finansowe ograniczenia współpracy transgranicznej oraz na czynniki wpływające na jej rozwój. W pracy przedstawiono także stopień wykorzystania funduszy unijnych w ramach realizacji celów współpracy euroregionalnej.

Badania przeprowadzono w okresie kwiecień–listopad 2007 r. W analizowanym czasie priorytetowym zadaniem władz gminy okazało się przygotowanie do absorpcji funduszy unijnych, które miało być antidotum na ograniczenia finansowe stwarzające największe trudności w zacieśnianiu współpracy transgranicznej. Otrzymane środki unijne przeznaczono głównie na rozwój infrastruktury i turystyki, wymianę kulturalną i młodzieży oraz inwestycje gospodarcze.

Introduction

Belief that further European integration will be possible thanks to closing the gaps in development between individual countries and regions was the main stimulus for establishing instruments of financial support for crossborder cooperation in the European Union. The idea of crossborder cooperation in Europe has more than 50 years tradition. Experience resulting from crossborder cooperation between regions of Western Europe was the cause for interest in the effects of that form of collaboration and development in Poland. Crossborder cooperation was perceived as an opportunity to improve the living standards of residents in border regions.

Development and intensification of crossborder cooperation has occurred in Poland since the early 1990s. The process of harmonization of Polish regional policy with the EU regional policy undoubtedly was of significant influence on the crossborder cooperation development. Currently, both material and intangible effects of that cooperation are becoming increasingly visible. It should also be pointed out that border areas situated along the western and eastern borders of Poland are characterized by different conditions for cooperation. Western and eastern euroregions are characterized by complementary (cooperative) economic structure supportive for crossborder cooperation. In those border areas economic, social and financing asymmetry can be found. Differences in the rate of self-government development are also visible. On the other hand, the southern euroregion have competitive (similar) structure (KOSZYK-BIAŁOBRZESKA, KISIEL 2008).

Methodology of studies

The diagnosis of the current crossborder cooperation in euroregions Pomorania and Niemen is the aim of the paper. Particular attention was paid to the comparison of activities covered by crossborder cooperation in euroregions Pomorania and Niemen and sources of financing it.

The paper discusses the results of own studies conducted among municipalities of the Polish parts of euroregions Pomerania and Niemen. To obtain the information necessary to conduct this study a questionnaire was developed that was mailed to municipalities selected for the purpose with the request for answering the questions. The questionnaire consisted of 17 questions concerning crossborder cooperation conducted by those municipalities. The study covered municipalities of euroregions Pomerania and Niemen situated on the Polish side of the border. Location on the state border or bordering with municipalities situated directly along the border (the belt of two municipalities) was the criterion for selection of municipalities to participate in the study. Those municipalities were defined as border ones (*Gminy przygraniczne*. 1997). The selected group encompassed 45 municipalities in Western Pomeranian voivodship, 10 in Warmia and Mazury voivodship and 49 in Podlaskie voivodship. Completed questionnaires were returned by 43% of municipalities in Euroregion Pomerania and 48% of municipalities in Euroregion Niemen.

Intermediate and final reports from implementation of crossborder cooperation programs made available by secretariats of euroregions, official statistics as well as other published expert opinions concerning the issues related to the studies provided the additional sources of information.

Results of studies and discussion

In line with the general trend for institutionalizing crossborder cooperation, euroregions were established along borders of Poland as of 1990s. The major factors for development of cooperation within the frameworks of euroregions were: regaining of political sovereignty, revival of free market, democratization of the state and building of civic society coupled with development of local governments and regional awareness (KOSZYK-BIAŁOBRZESKA, KISIEL 2008).

The earliest euroregion initiatives developed along the Polish-German border. Euroregion Pomerania established on the 15th of December 1995 is the youngest euroregion along the western border of Poland. Establishment of euroregion Niemen on the 6th of June 1997 resulted from the need of increasing the living standards of the border area communities. The areas of both euroregions are closely linked to the Baltic Sea and protection of its waters. The area of Poland that belongs to the euroregion Pomerania is larger (20 616 km²). Also, the majority of the population of that euroregion lives in the Polish part of it (1 610 239). Both euroregions carry out tripartite cooperation (Tab. 1).

Table 1

Euroregions in Poland in 2006 – basic comparative data

Name	Date established	Partners of the Polish partners	Euroregion area in km ² including:		Euroregion population, including:	
			Foreign partners	Polish	Foreign partners	Polish
Pomerania	15.12.1995	Germany, Sweden	German: 15 424	20 616	German: 1 028 296	1 610 239
Niemen	6.06.1997	Lithuania, Byelorussia	No data available	10 774	No data available	905 176

Source: Own work based on: *Euroregiony ...* (2007).

In the current Polish practice of interregional cooperation two basic models for establishing legal and institutional bases have been applied by the authorities and local governments. The local government cooperation model is applied in euroregion Pomerania. It involves creating first a special purpose union of municipalities registered by a competent court for cooperation on the Polish border and next making the agreements and establishing the structure of the euroregion with a similar union of territorial units of the territorial partner or partners. Attention should be brought to the fact that in practical terms, at a certain moment of building the cooperation inclusion of regional authorities takes place, which represents an important success factor at further stages of crossborder cooperation.

The second, administrative-local government model, characteristic for euroregion Niemen, represents establishment by regional and local administrative bodies and local governments (frequently with support of central authorities) of a crossborder interregional union or trans-border union. The euroregion established in that way operates on the basis of the charter formulated jointly by the parties to the agreement.

Organizational structures of euroregions represent an important aspect of their operation. Bodies of euroregions situated along different borders specified in the charters show certain similarities but also differences. Both euroregions have similar organizational structures in which the Board is the most important body. The Board determines the main directions of euroregion activities and specifies priorities in implementation of joint projects. It is the joint body that coordinates the basic issues of euroregional cooperation and assures funding for and implementation of that cooperation (KOSZYK-BIAŁOBRZESKA, KISIEL 2008). In euroregion Pomerania the Board consists of 24 members and in euroregion Niemen – 18 members.

The Presidium fulfills the representative and coordinative functions in euroregions between sessions of the Board. The Board and the Presidium are

the highest executive bodies in euroregions. The Presidium drafts resolutions for the Board, implements the resolutions, supervises the secretariat, manages the assets, approves the activities and financial plan, implements the main directions of euroregion activities and appoints some organizational structures (KOSZYK-BIAŁOBRZESKA, KISIEL 2008). The Presidium consists of 3 (Niemen) and 4 (Pomerania) representatives of each of the parties.

Secretariat is responsible for the current administrative and office activities in euroregions (*Euroregiony...* 2004). On the other hand, working groups are responsible for solving specific problems and undertaking cooperation in specific areas. They develop concepts of joint projects and implement tasks commissioned by the Board, Presidium and Secretariat. They also prepare draft motions and recommendations for meetings of the Board and Presidium (KOSZYK-BIAŁOBRZESKA, KISIEL 2008). The number of working groups varies:

- 5 in euroregion Pomerania covering the following subject areas: economic cooperation, transport and infrastructure; tourism, rural areas and natural environment; education, social issues, youth, culture and sports; cooperation of administration and municipal institutions; and public order;
- 6 in euroregion Niemen, that is: for economic issues; social issues; environment protection, culture and sports within which there is a special sub-group for Augustów Canal, tourism and physical development.

The funding of crossborder cooperation is generally defined in the charters of individual euroregions. Activities in euroregion Pomerania are financed through: contributions of signatories, revenues from own activities as well as subsidies and donations. In euroregion Niemen the sources for financing of activities are defined differently. Each of the parties provides funds for implementation of goals, tasks and joint projects based on the principle of equality. The associations fund their activities mainly from member contributions, EU structural funds, revenues from activities and donations (*Euroregiony...* 2004, KOSZYK-BIAŁOBRZESKA, KISIEL 2008). Use of those funds for common goals is agreed among the parties to the euroregion.

Socioeconomic development, continuous improvement of living standards of residents and facilitating mutual contacts between communities are the basic goals of cooperation within euroregion (KOSZYK-BIAŁOBRZESKA, KISIEL 2008). According to the agreement on establishment of euroregions, undertaking joint activities for their sustainable development and bringing closer its residents and institutions at both sides of the border are the main goals of cooperation in the euroregions studied. The tasks resulting from the assumed goals are presented in Table 2.

Table 2

Tasks resulting from the assumed goals of cooperation

Tasks	Euroregions	
	Pomerania	Niemen
Improving the living standards of residents	+	
Cooperation in physical planning		+
Development of economic cooperation	+	+
Adjustment of infrastructure to the needs of those crossing the border	+	+
Establishing common information systems	+	
Cooperation in culture, education and sports		+
Cooperation and exchange of community, scientific, professional, cultural and youth groups	+	
Improvement of the natural environment status		+
Development of good relations between neighbors		+
Creating conditions allowing free contacts		+
Cooperation for liquidation of hazards and natural disasters	+	+
Supporting the idea of European unity	+	

Source: KOSZYK-BIAŁOBRZESKA, KISIEL (2008).

This is confirmed by the studies conducted (Tab. 3) according to which the priority undertakings in crossborder cooperation implemented by municipal authorities in euroregions Pomerania and Niemen include: integration of activities in science, education and culture, promotion of tourism and economy and activities aiming at improvement of transport conditions. Activities aiming at support for European integration and cooperation in physical planning enjoyed the lowest interest to the studied euroregions.

Table 3

Activities implemented within the frameworks of crossborder cooperation by the studied municipalities in euroregions Pomerania and Niemen (in %)

Form of crossborder activity	Euroregions	
	Pomerania	Niemen
Conducting economic promotion	10,1	13,1
Cooperation in physical planning	0,8	1,9
Cooperation in municipal management	5,0	1,9
Cooperation in the area of ecology	6,3	2,8
Conducting activities aiming at improvement of transport conditions	12,9	11,1
Integration of activities in science, education and culture	36,9	41,4
Promotion of tourism	24,0	22,2
Activities aimed at supporting the European integration	4,5	5,6

Source: Own work based on studies.

On the basis of the experience of euroregions on borders of Poland the most frequent barriers to cooperation can be identified. Analyses conducted by the Statistical Office in Wrocław (*Euroregiony*. 2007) indicate that according to the experiences of euroregions within the borders of Poland the set of the most frequent barriers to crossborder cooperation includes the following limitations:

- the visa requirement (Niemen),
- difficulties in finding a foreign partner; smaller number of entities participating in the cooperation, lower interest of those entities in such cooperation (Pomerania),
- language barrier (Pomerania),
- insufficient funds available for support of cooperation (Pomerania),
- asymmetries in economic and financial potentials of partners to cooperation (Pomerania, Niemen).

Similar results were obtained from the conducted studies (Fig. 1), where the major obstacles to tightening crossborder cooperation noticed by municipal authorities in euroregions Pomerania and Niemen were the financial limitations (over 35% of the responses), uneven level of economic development of the partners, differences in competence of local authorities and absence of adequate regulations and legal standards as well as low activity of the local community. According to the authorities of the municipalities covered, absence of equivalent or alternative jobs was the least important obstacle to cultivating crossborder cooperation (only ca. 3–4% of responses).

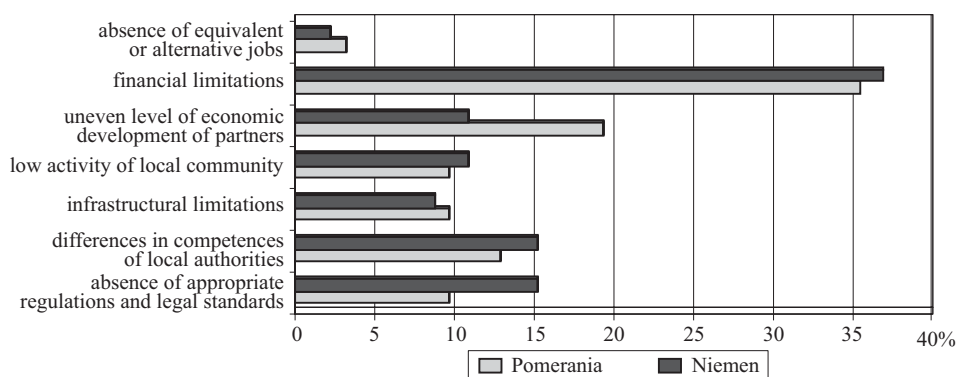


Fig. 1. Difficulties in tightening crossborder cooperation perceived by municipalities in Euroregions Pomerania and Niemen

Source: Own work based on the results of studies.

The benefits offered by crossborder cooperation, according to the authorities of municipalities in euroregion Pomerania, include mainly: stimulating cultural exchange and tourist traffic as well as improvement of contacts

between people in the border area. On the other hand, in euroregion Niemen the key benefits of tightening the cooperation indicated by the respondents were: the possibility of modernizing the infrastructure, enterprise development and increased inflow of capital and technologies. Considering the information presented as concerns the tasks resulting from the assumed goals of cooperation, the conducted studies confirmed the major disproportions between benefits of crossborder cooperation indicated by respondents. Both regions presented a similar position only in case of benefits resulting from improvement of the natural environment status (ca. 10% of responses).

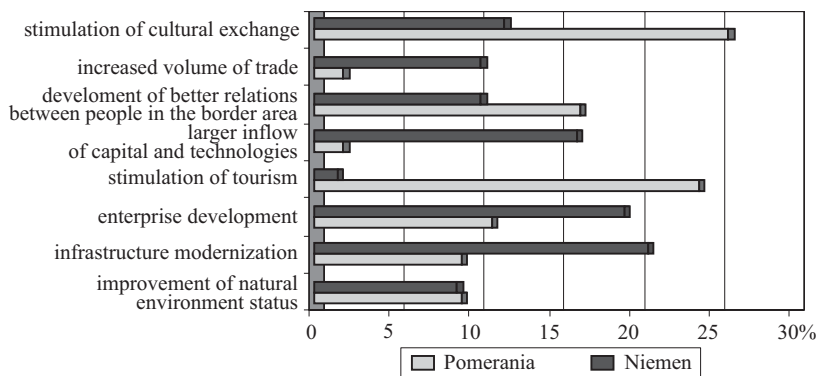


Fig. 2. Benefits achieved within the frameworks of crossborder cooperation according to the opinions by respondents from the studied municipalities in Euroregions Pomerania and Niemen
 Source: Own work based on the results of studies.

Euroregions facilitate access of local government units to European Union funds and implementation of crossborder projects. The PHARE CBC Program established in 1994 by the European Union represented an important instrument of financial support for crossborder cooperation as 1/4 of the PHARE funds was allocated for support of crossborder cooperation. Within the frameworks of PHARE CBC Program Poland-Germany the Small Projects Fund (SPF) was established in 1994. Initially the Fund was available to 4 euroregions on the Polish – German border. During the following years the Fund covered all euroregions on Polish borders with its activities. The character and amount of subsidies for projects varied. Some euroregions were able to use two programs as a consequence of their location. An example of that situation was Pomerania that used both the Polish-German program and the Baltic Sea Region program. The Small Projects Fund, similar to the entire Phare CBC program served supporting the processes of integration of Poland with the European Union through, among others, establishing links and ties between

people in the form of so-called “*people to people*” activities. It was set up for implementation of low budget “soft” projects up to 50,000 EUR. Year 2003 was the last year of PHARE programming in the countries acceding the EU, however, according to the schedule, projects covered by PHARE 2003 allocation were implemented by the end of November 2006.

Availability of funds for various projects differed. Euroregions situated along the Polish – German border benefited to the greatest extent and the longest, i.e. as of 1995. The smallest number of projects supported by PHARE CBC SPF was implemented in euroregions of the southern and eastern border areas. Between the two regions studied Euroregion Pomerania was definitely ahead. As concerns the total amount of funding obtained from the SPF, that euroregion received the highest amount of support at 5,7 million EUR while the beneficiaries from that euroregion had access to two funds: Polish – Germany and the Baltic Sea Region funds. Euroregion Niemen had much lower funds available at ca. 3,4 million EUR for 218 projects implemented. The implementation of the Small Projects Fund in the Polish parts of euroregions during the years 1995–2003 is presented in Table 4. The most frequently supported beneficiaries implementing small projects were the units of territorial government, culture houses and centers as well as non-government organizations.

Table 4

Implementation of Phare Small Projects Fund in Polish parts of euroregions during the years 1995–2003*

Euroregion	Number of projects	Subsidy (K EUR)
Pomerania	469	5 762,2
Niemen	218	3 360,5
Total	4 083	34 389,3

* Projects approved for 2003 round were implemented with delay, i.e. also during the years 2004–2006

Source: *Euroregiony...* (2007).

Infrastructure development, cultural exchange between local communities and groups in the border area, youth exchange, environment protection economic development and development of tourism in border areas were the priority areas of activity within the frameworks of PHARE CBC SPF. During the analyzed period the smallest number of projects supported with European Union funds concerned activities in the areas of local democracy support and crossborder development studies and concepts (Fig. 3).

In 2004, within the frameworks of INTERREG III A program, the instrument allowing support of the so-called micro-projects was established.

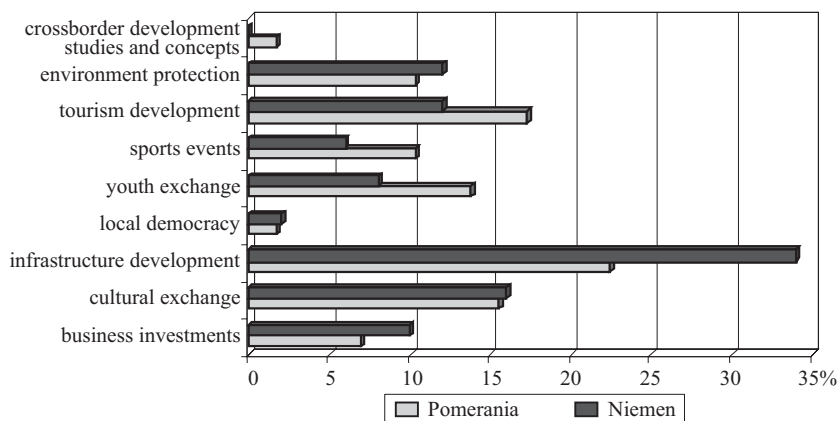


Fig. 3. Areas of cooperation implemented within the frameworks of received European Union funds
 Source: Own work based on the results of studies.

It substituted for the PHARE CBC SPF. Micro-projects supported from Interreg III A program in the Polish parts of euroregions during the years 2004–2006 are presented in Table 5.

Table 5
 Micro-projects subsidized from Interreg III A program implemented in the Polish parts of euroregions during the years 2004–2006

Euroregion	Micro-projects	Totals subsidy amount	Average subsidy amount per project
		K PLN	
Pomerania	236	8 495,2	36,0
Niemen	72	7 516,8	104,4
Total	1 581	64 314,4	40,7

Source: *Euroregiony...* (2007).

The largest number of projects (236) was implemented in Euroregion Pomerania; the total amount of subsidies was ca. 8,5 million PLN. Although Euroregion Niemen implemented more than three times fewer micro-projects over the covered period, the amount of subsidies was not significantly lower and amounted 7,5 million PLN. The average subsidy amount for one project was from 36,000 PLN in Euroregion Pomerania to 104,4 K PLN in Euroregion Niemen.

Nevertheless, the studies conducted confirm difficulties in obtaining European Union funds by municipal authorities from the euroregions covered. The reasons for rejection of applications filed are presented in Figure 4.

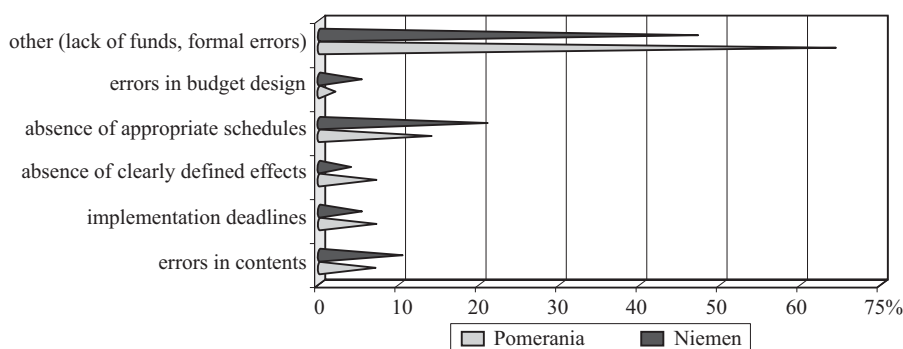


Fig. 4. Reasons for rejection of applications for subsidizing the projects implemented from the European Union funds

Source: Own work based on the results of studies.

Formal errors and absence of appropriate schedules at the stage of project application resulting in rejection of applications filed for subsidizing project implementation from structural funds during formal application evaluation were the major reasons for rejection. The other shortfalls that made implementation of projects impossible included, according to the respondents, shortfalls of content represented by lack of clear formulation of results assumed, poorly designed budgeting assumptions, excessively distant deadlines for implementation of projects and absence of appropriate schedules to the application.

Conclusions

The studies conducted allow formulating the following conclusions:

1. Presence of economic, social and local-government asymmetry is, undoubtedly, strength of border areas along the eastern and western borders of the Republic of Poland supportive for development of crossborder cooperation. During the period studied the priority activities of municipal authorities in Euroregions Pomerania and Niemen in that area included mainly integration of activities in the area of science, education and culture as well as promotion of tourism and economic promotion as well as activities aiming at improvement of transport infrastructure.

2. The visa requirement at the border is the basic obstacle to undertaking crossborder cooperation according to respondents from Euroregion Niemen. In Euroregion Pomerania the major difficulties included difficulties in finding a foreign partner, smaller number of entities participating in cooperation and their lower level of interest in cooperation as well as the language barrier and

insufficient funds for supporting cooperation. Asymmetries in economic and financial potentials concerned problem issues indicated by municipal authorities from both euroregions.

3. Opportunities offered by the possibility of obtaining European Union funds represent an important element in crossborder cooperation undertaken by authorities of euroregions Niemen and Pomerania. In view of the conducted studies, Euroregion Pomerania was a definite leader as concerns both the number of implemented projects and the amount of subsidies obtained. As concerns the total amount of funds obtained from the SPF it received the highest amount of funds at 5,7 million EUR while beneficiaries from that euroregion had access to two facilities: Poland – Germany and the Baltic Sea Region facility. Much smaller funds were available to Euroregion Niemen, ca. 3,4 million EUR, for 218 implemented projects.

4. Since 2004, within the frameworks of INTERREG III A program, euroregions had the possibility of financing projects supporting development of crossborder cooperation in the form of co-called micro-projects. The largest number of micro-projects was approved for implementation in euroregion Pomerania – 236, representing the total subsidy amount of ca. 8,5 million PLN. The average amount of subsidy per one project ranged from 36 K PLN in euroregion Pomerania to 104,4 K PLN in euroregion Niemen.

Translated by JERZY GOZDEK

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EVALUATION OF ENVIRONMENTAL ORDER IN WARMIA AND MAZURY VOIVODSHIP

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Key words: sustainable development, environmental order, indicator-based evaluation.

Abstract

The studies aimed at evaluation of the environmental order at regional level. The study covered Warmia and Mazury voivodship. The data obtained from the resources of the Regional Data Bank (RDB) was processed by means of comparative indicator method. Selected indicators of sustainable development were selected from the perspective of environmental order characteristic and computed on the available statistical data from the years 2002–2006. The studies show that the majority of indicators for Warmia and Mazury voivodship showed rankings and values above the average for the remaining voivodships. Only indicators W_3 and W_{13} obtained negative results during all the years covered. Year 2004 that was a breakthrough for environment protection did not generate major changes. The changes concerned mainly the financing of outlays on environment protection.

OCENA ŁADU ŚRODOWISKOWEGO WOJEWÓDZTWA WARMIŃSKO-MAZURSKIEGO

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Słowa kluczowe: rozwój zrównoważony, ład środowiskowy, ocena wskaźnikowa.

Abstrakt

Celem badań była ocena ładu środowiskowego na poziomie regionalnym. Badaniami objęto województwo warmińsko-mazurskie. Dane zebrane z zasobów Banku Danych Regionalnych (BDR) opracowano wskaźnikową metodą porównawczą. Wybrane wskaźniki zrównoważonego rozwoju wyselekcjonowano pod kątem charakterystyki ładu środowiskowego i obliczono na podstawie danych statystycznych dostępnych z lat 2002–2006. Z badań wynika, że większość wskaźników dla województwa warmińsko-mazurskiego wykazywała oceny i wartości powyżej średniej, jaką osiągały pozostałe województwa. Tylko wskaźniki: W_3 i W_{13} otrzymały we wszystkich badanych latach ujemne oceny. Przełomowy dla ochrony środowiska rok 2004 nie przyniósł większych zmian. Dotyczyły one głównie finansowania nakładów inwestycyjnych na ochronę środowiska.

Introduction

Sustainable development is the socio-economic development within which the process of integration of political, economic and social activities takes place while maintaining the natural balance and durability of elementary natural processes to secure the possibility of satisfying the basic needs of individual communities or citizens, both of the present and the future generations¹. Among the principles of sustainable development accepted in Rio de Janeiro within the frameworks of the Earth Charter 18 apply directly to the environmental order. The majority of environmental order principles focus on two pillars of sustainable development: supporting equality of generations in access to natural environment resources and supporting the capacity of the environment (BORYS, KUSTERKA 2005, pp. 247–253).

The concept of sustainable development understood as integrated order must be implemented by interdependent development of the environmental, economic, spatial and social orders at all levels: local, regional, national and even global (BORYS 2005, pp. 22–60). Selected, adjusted and theoretically elaborated measures for expressing the environmental, economic, social and spatial order will allow development of the sustainable development model for the region.

Methodology of studies

The studies aimed at evaluation of the environmental order at regional level. The study covered Warmia and Mazury voivodship.

The data was processed by means of comparative indicator method. Sustainable development indicators were selected from the perspective of environmental order characteristics and computed on the basis of statistical data available from the resources of the Regional Data Bank (RDB) for the years 2002–2006. Evaluation of the environmental order was based on fifteen indicators of sustainable development in four areas (SZADZIEWSKA 2008, pp. 27–30): environment and landscape protection, protection and sustainable development of forests, emissions into the environment and water management.

1) Environment and landscape protection:

- W_1 – share of arable land area in the agricultural land area (%),
- W^2 – share of natural sanctuaries in the total area of legally protected areas (%),

¹ Act of the 27th of April 2001 Environment protection law (Dz.U. No. 62 item 627 as amended, Art. 3 point 50).

- W_3 – share of ecological use areas in the total area of legally protected areas (%),
- W_4 – share of voivodship budget funds in total outlays on environment protection (%),
- 2) Protection and sustainable development of forests:
 - W_5 – woodiness (%),
 - W_6 – share of forest areas in the area of the voivodship (%),
 - W_7 – share of total forest renewals and afforestation areas in the area of the voivodship (%),
 - W_8 – share of public SP forest areas in the total area of forests (%),
- 3) Emissions to the environment:
 - W_9 – share of population serviced by wastewater treatment plants in the total population (%),
 - W_{10} – share of population serviced by sewers networks in the total population (%),
 - W_{11} – share of waste stored in the total volume of waste produced during the year (%);
- 4) Water management:
 - W_{12} – share of population serviced by water supply networks in the total population (%),
 - W_{13} – share of water consumption in agriculture and forestry in the total water consumption in the national economy and by the population (%),
 - W_{14} – share of underground water intake for the industrial purposes in the total water consumption in industry (%),
 - W_{15} – share of surface water intake for the industrial purposes in the total water consumption in industry (%).

Indicators W_1 , W_{11} , W_{13} , W_{14} and W_{15} are destimulants while the other indicators are stimulants. For each indicator the so-called presentation ranking showing by how many percents the indicator is better or worse than the average for the compared voivodships was (ROGALA 2005, pp. 237–246). The evaluation considers uniform preference of the value, i.e. the higher the scored value the better the situation in the studied unit. The zero unitarisation methods were applied for comparison of the unitarised indicator values to the average by applying the following formulas (BORYS 1984, pp. 284, BORYS and ROGALA 2004, pp. 601–608, ROGALA 2005, pp. 237–246):

- for stimulants

$$O_P = [(W_i - W_{\min}) / (W_{\max} - W_{\min.})] \times 100\% \quad (1)$$

- for destimulants

$$O_R = [(W_{\max} - W_i) / (W_{\max} - W_{\min.})] \times 100\% \quad (2)$$

– for the average value of the stimulator

$$O_{P-\acute{s}r} = [(W_{\acute{s}red} - W_{min.}) / (W_{max} - W_{min.})] \times 100\% \quad (3)$$

– for the average value of destimulator

$$O_{R-\acute{s}r} = [(W_{max} - W_{\acute{s}red}) / (W_{max} - W_{min.})] \times 100\% \quad (4)$$

where:

- O_P or O_R – point score of the W indicator value for the voivodship,
- $O_{P-\acute{s}r}$ or $O_{R-\acute{s}r}$ – point score of the average indicator value for the compared group of units (voivodships), that score depends on the distribution of indicator values,
- W_i – value of indicator for the evaluated unit,
- $W_{min.}$ – minimum value of the indicator for the given population.
- $W_{max.}$ – maximum value of the indicator for the given population,
- $W_{\acute{s}red}$ – average value of the indicator for the given population.

Next the values of indicators were referred to the average values in the compared group of units according to the formula:

$$[(O_P / O_{P-\acute{s}r}) \times 100\%] - 100\% \text{ or } [(O_R / O_{R-\acute{s}r}) \times 100\%] - 100\% \quad (5)$$

The tables present the values of indicators, minimum values, maximum values, average values in the compared group and deviations from the average. The graph presents the relation of indicator value for the studied voivodship to the average value computed for the remaining voivodships in the baseline year 2002, in the year of accession of Poland to the EU and in the last year covered by the study 2006.

Results of studies

Four indicators of sustainable development covering the aspect of environment and landscape protection in Warmia and Mazury voivodship were analysed (Tab.1). Three covered the characteristics of land use and legal protection of land while the fourth one covered financing of environment protection from voivodship budget funds.

As indicated by the data presented in Table 1, the share of arable land area in agricultural land area (W_1) changed slightly during the years covered. During the years 2002–2004 it increased from 69,14% to 69,96%, while in 2004 it decreased to 69,51%.

Table 1

Values of indicators from the environment and landscape protection section

Indicator [%]	Year	Indicator value for Warmia and Mazury voivodship W_i	Indicator value in Poland			Indicator evaluation deviation from the average [%]
			$W_{min.}$	W_{max}	W_{sred}	
W_1 Share of arable land area in the agricultural land area (D)*	2002	69,14	65,96	87,10	76,70	72,68
	2003	69,26	64,41	87,28	76,50	67,16
	2004	69,96	64,43	87,00	76,49	62,13
	2005	69,51	64,47	87,01	76,53	66,98
	2006	73,79	64,8	88,85	77,44	31,99
W_2 Share of natural sanctuaries in the total area of legally protected areas (S)	2002	2,2	0,31	3,03	1,42	70,27
	2003	2,67	0,31	3,56	1,53	93,44
	2004	2,66	0,31	3,56	1,56	88,00
	2005	2,66	0,31	3,66	1,59	83,59
	2006	2,66	0,31	3,66	1,62	79,39
W_3 Share of ecological use areas in the total area of legally protected areas (S)	2002	0,32	0,04	1,31	0,48	-36,36
	2003	0,37	0,04	1,27	0,52	-31,25
	2004	0,27	0,04	1,27	0,50	-50,00
	2005	0,27	0,04	1,33	0,53	-53,06
	2006	0,28	0,04	1,35	0,54	-52,00
W_4 Share of voivodship budget funds in the total outlays on environment protection (S)	2002	9,36	0,32	6,16	2,23	373,22
	2003	3,82	0,02	3,24	0,97	300,03
	2004	0,63	0,00	1,63	0,59	6,77
	2005	0,62	0,00	0,88	0,39	58,96
	2006	0,40	0,04	2,05	0,59	-34,54

* D – destimulant, S – stimulant.

Source: Prepared on the basis of: SZADZIEWSKA 2008, pp. 35–56 and RDB data.

It reached the highest level at 73,79% in 2006. However, the deviation from the average decreased systematically down to 31,99% during the last year of studies, 2006. The increasing share of arable land (in the studies it was assumed as destimulant) has a negative influence on the status of the environment as a consequence of vegetable production intensification.

Indicators concerning legally protected areas were treated as stimulants. At the same time, although the area of legally protected land increases (both in Poland and in the voivodship), no increase in the area of strictly protected areas has been recorded in Warmia and Mazury voivodship. No national parks have been established in the voivodship; on the other hand numerous sanctuaries exist and their ranking as compared to other voivodships was high and in 2003 exceeded it by 93,44%. The last year of the studies was characterised by the value of 79,39%. One of the area protection indicators – share of ecological use areas in the total protected area (W_3), was also evaluated. It is characterised

by relatively modest restrictions and in the areas of high natural values with intensive economic development it does not cause major conflicts. During the years encompassed by the study that indicator was characterised by a decreasing trend from $-31,36$ in 2002 to $-52,00$ in 2006. At the same time the share of that form of protection systematically decreased in the voivodship. This resulted mainly from increasing share of other nature protection forms, mainly areas of protected landscape. The fourth indicator (W_4) concerned the share of funds from the voivodship budget in total outlays on environment protection. It indicates high involvement of regional level authorities in environment-oriented investments. In 2002 it exceeded the national average significantly by over 300% while the year 2006 brought a decrease below the average to $-34,54\%$. The decrease of the outlays from the voivodship budget as well as the inflow of European Union funds after Poland's accession in 2004 could be the cause (Fig. 1).

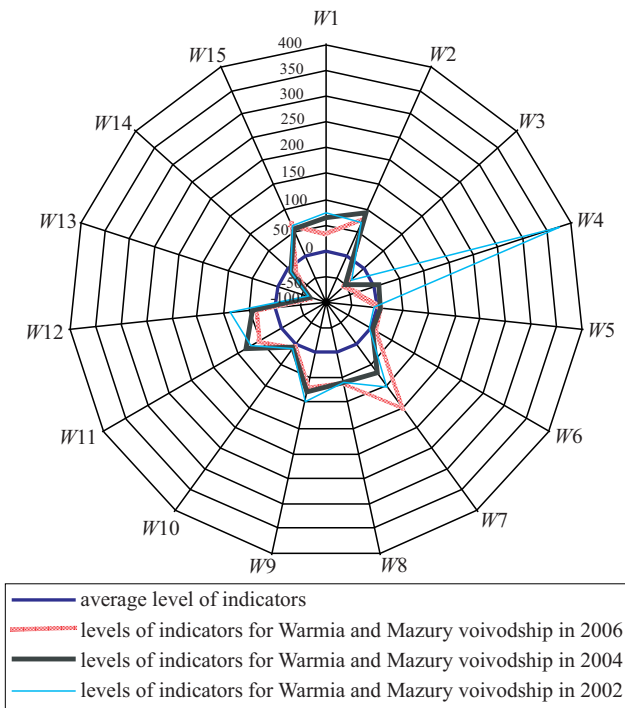


Fig. 1. Evaluation of environmental order indicators in Warmia and Mazury voivodship
 Source: Prepared on the basis of: SZADZIEWSKA 2008, pp. 35–56 and RDB data.

Table 2 presents the levels and evaluation of indicators from forests protection and sustainable development section.

Table 2
Values of indicators from the forests protection and sustainable development section

Indicator [%]	Year	Indicator value for Warmia and Mazury voivodship W_i	Indicator value in Poland			Indicator evaluation deviation from the average [%]
			$W_{min.}$	W_{max}	W_{sred}	
W_5 Woodiness (S)*	2002	29.70	20.56	48.22	30.27	-5.87
	2003	29.80	22.02	48.50	30.35	-2.94
	2004	29.90	20.63	48.71	29.47	4.52
	2005	30.00	20.73	48.73	29.55	5.10
	2006	30.20	20.79	48.74	29.70	5.27
W_6 Share of forest areas in the area of the voivodship (S)	2002	30.51	20.95	49.67	30.92	-4.09
	2003	.	22.34	49.95	31.01	.
	2004	30.71	21.02	50.50	30.14	6.24
	2005	30.84	21.12	50.21	30.21	6.91
	2006	31.03	20.08	50.25	30.32	6.92
W_7 Share of total forest renewals and afforestation areas in the area of the voivodship (S)	2002	0,26	0,12	0,37	0,19	100,00
	2003	.	0,13	0,38	0,22	.
	2004	0,27	0,10	0,41	0,20	70,00
	2005	0,27	0,11	0,43	0,20	77,78
	2006	0,36	0,11	0,47	0,21	150,00
W_8 Share of public SP forest areas in the total area of forests (S)	2002	94,92	54,43	98,56	80,21	57,06
	2003	94,86	54,20	98,56	80,14	56,75
	2004	94,81	54,19	98,56	80,05	57,08
	2005	94,55	54,21	98,54	79,93	56,84
	2006	94,3	54,32	98,57	79,83	56,72

* S – stimulant.

Source: Prepared on the basis of: SZADZIEWSKA 2008, pp. 35–56 and RDB data.

All the evaluated indicators from W_5 to W_8 are stimulants. Indicators concerning woodiness W_5 , as well as the share of forest lands W_6 in both Warmia and Mazury voivodship and in the other voivodships increased. Increase of woodiness is consistent with the assumptions of the programme of increasing the woodiness of the country. Although the obtained scores (deviation from the national average) were low, their values increased systematically over the years covered.

The woodiness indicator showed a relatively high improvement from -5,87% relative to the average for the other voivodships in 2002 to 5,27 in 2006. W_7 indicator that covers the share of renewed forest areas and afforestation in the total area of forestlands, that is indicates the sustainable development of forest and its durability showed a slight increase until 2005. In 2006 a significant improvement was recorded as the score reached the value higher by 100% than the average for the voivodships compared. The share of public SP forest areas in total area of land W_8 is equally important. In the literature (ŻYLICZ

2008, pp. 32–33) discussions continue on whether it is better when the forest is public or private property, nevertheless, in this paper it was considered a stimulant. State Forests manage the forest resources quite professionally and the experience of other countries (Portugal), where forests were privatised shows that it is difficult to enforce exploitation of forests coupled with observation of principles of sustainability from private owners and numerous cases of purposefully setting forests on fire were recorded (ŻYLICZ 2008, pp. 32–33).

Table 3 presents selected indicators of emissions of pollutions to the environment.

Indicators of emissions of pollutions to the environment

Table 3

Indicator [%]	Year	Indicator value for Warmia and Mazury voivodship W_i	Indicator value in Poland			Indicator evaluation deviation from the average [%]
			$W_{min.}$	W_{max}	W_{sred}	
W_9 Share of population serviced by wastewater treatment plants in the total population (S)*	2002	66,06	44,17	74,77	55,39	95,10
	2003	.	45,22	76,46	57,12	.
	2004	68,75	45,29	77,60	58,74	74,42
	2005	69,89	47,30	78,37	60,01	77,73
	2006	70,2	49,04	78,82	61,84	65,31
W_{10} Share of population serviced by sewers networks in the total population (S)	2002	62,12	41,15	72,06	56,20	9,59
	2003	62,74	41,97	72,23	57,00	7,52
	2004	63,74	42,96	72,99	57,44	7,50
	2005	64,36	44,46	73,28	58,35	11,60
	2006	64,64	45,45	73,62	59,65	3,57
W_{11} Share of waste stored in the total volume of waste produced during the year (D)	2002	2,4	1,50	37,90	16,57	66,43
	2003	2	1,40	36,60	16,87	75,37
	2004	1	3,80	33,50	15,39	79,46
	2005	1,4	4,00	33,20	13,64	62,58
	2006	3,7	3,60	39,20	15,29	48,47

* S – stimulant, D – destimulant.

Source: Prepared on the basis of: SZADZIEWSKA 2008, pp. 35–56 and RDB data.

Indicators W_9 and W_{10} concern the issue of coverage of the country with the sewers networks and wastewater treatment. In the studies they were considered to be stimulants. Increase in their values is highly important for protection of waters and soils, particularly in case of high level of coverage with water supply networks achieved. The value of indicator W_9 (share of population serviced by wastewater treatment plants in the total population) increased systematically over the years covered by the study while the score exceeded the average for the other voivodships in the country significantly. At the same time the score decreased its value year after year from 95,10% in 2002 to 65,31% in 2006.

Indicator W_{11} covered the share of waste stored in the total volume of waste produced. This is a destimulant because segregation and recovery of waste are most favourable for environment protection. During the years 2002–2004 a significant improvement can be noticed as the value of the indicator decreases; unfortunately 2005 and 2006 brought a significant increase in the value of that indicator. The score of indicator W_{11} develops in a similar way because although it is high as in 2002 it was 79,46% above the average for the remaining voivodships, during the last year of the study it decreased to 48,47%.

Water management was the fourth area covered (Tab. 4).

Water management indicators

Table 4

Indicator [%]	Year	Indicator value for Warmia and Mazury voivodship W_i	Indicator value in Poland			Indicator evaluation deviation from the average [%]
			$W_{min.}$	W_{max}	W_{sred}	
W_{12} Share of population serviced by water supply networks in the total population (S)	2002	86,38	70,50	94,12	84,99	39,34
	2003	86,40	70,82	94,24	85,31	38,19
	2004	87,00	71,38	93,84	85,91	43,51
	2005	87,87	73,53	93,71	86,38	43,27
	2006	88,02	74,38	93,76	87,55	35,14
W_{13} Share of water consumption in agriculture and forestry in the total water consumption in the national economy and by the population (D)	2002	31,28	0,51	38,75	19,31	-61,57
	2003	31,65	0,48	37,89	18,18	-68,34
	2004	31,3	0,41	38,02	18,96	-64,74
	2005	32,19	1,15	39,48	19,23	-64,00
	2006	32,11	0,46	38,99	18,85	-65,84
W_{14} Share of underground water intake for the industrial purposes in the total water consumption in industry (D)	2002	23,89	0,76	79,55	17,63	-10,11
	2003	21,97	0,68	73,32	16,94	-8,92
	2004	22,71	0,72	76,90	16,68	-10,01
	2005	28,62	0,74	79,06	17,12	-18,57
	2006	28,92	0,66	77,14	17,35	-19,35
W_{15} Share of surface water intake for the industrial purposes in the total water consumption in industry (D)	2002	67,23	14,33	99,27	79,48	61,90
	2003	25,84	14,82	100,06	77,13	223,68
	2004	69,86	14,41	99,31	80,14	53,63
	2005	66,98	12,71	101,09	80,93	69,20
	2006	67,5	12,35	99,90	80,41	66,24

* S – stimulant, D – destimulant.

Source: prepared on the basis of: SZADZIEWSKA 2008, pp. 35–56 and RDB data.

Four selected indicators are: W_{12} – share of population serviced by water supply networks in the total population, W_{13} – share of water consumption in agriculture and forestry in the total water consumption in the national economy and by the population, W_{14} – share of underground water intake for the industrial purposes in the total water consumption in industry and W_{15} – share of surface water intake for the industrial purposes in the total water consumption in industry. Indicator W_{12} is a stimulant that shows an increase in value during the years covered by the study. The score, however, fluctuates assuming the lowest value during the last year of the study at 35,14%. Those values are still higher than the average for the other voivodships.

The other indicators W_{13} , W_{14} and W_{15} are destimulants. They indicate the use of water resources. The Environmental Policy of the State assumes limitation of water consumption, in particular for production purposes. The indicator of water consumption in agriculture and forestry showed a very low score as compared to the other voivodships (during all the years of the study lower by at least 61,57% from the average. Also the intake of underground waters for the needs of national economy and population, the score of which systematically decreased to reach -19,35% in 2006 showed the same trend. Indicator W_{15} was characterised by instability and in 2003 it was only 25,84%, while the average for the other voivodships was 77,13. At that time it reached a very high average score at 223,68%.

Conclusion

The principle of cause and effect according to which human activity has influence on the environment and is the cause of unfavourable changes is important in determination of indicators concerning the environment (BORYS 2005, pp. 62–68). The studies covered four aspects of environmental order: protection of environment and landscape, protection and sustainable development of forests, emissions of pollutions to the environment and water management. The studies indicate that the majority of indicators for Warmia and Mazury voivodship showed scores and values above the average for the other voivodships. Only indicators W_3 and W_{13} scored negative for all years covered by the study. Even after accession to the European Union in 2004 no major changes were recorded. The changes were found mainly in the area of financing the outlays on environment protection.

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**CONDITIONS FOR DEVELOPMENT
OF THE FINANCIAL ADVISORY SERVICES
FOR HOUSEHOLDS**

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Key words: financial advisory services, households, financial investments, management of financial surplus.

Abstract

Financial advisory services have been developing extensively since 2001. Because of the short period of functioning of that type of services in the financial market the clients perceive the currently available offer with reserve. So far, they have been interested mainly in loan advisory services, mainly in the housing market. Until recently that area was the main domain of banks although the wide range of available products caused that the clients started looking for professional advice not only from the bank consultant, who is interested in selling the products of represented company, but also from professional loan adviser who was able to collect information from the market and prepare the best financial options for the client.

The study aimed at determining the scope of financial advisory services implemented in the area of placing the financial surplus of medium affluent households and directions of its development. The study covered 496 medium affluent households from Warmia and Mazury voivodship. They possess adequate funds for implementing long-term investment programmes, they are more aware of the necessity of saving and they see their gaps in knowledge on financial instruments. They lack confidence in financial advisers and belief that the quality of services provided, and first of all their effectiveness, would be worth the price demanded for the advice.

**UWARUNKOWANIA ROZWOJU USŁUG DORADZTWA FINANSOWEGO
NA RZECZ GOSPODARSTW DOMOWYCH**

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Słowa kluczowe: doradztwo finansowe, gospodarstwa domowe, inwestycje finansowe, zarządzanie nadwyżkami finansowymi.

A b s t r a k t

Doradztwo finansowe w Polsce rozwija się intensywnie od 2001 r. Z uwagi na krótki okres funkcjonowania tego rodzaju usług na rynku finansowym klienci z rezerwą odnoszą się do obecnej oferty. Do tej pory byli oni głównie zainteresowani doradztwem kredytowym, szczególnie na rynku mieszkaniowym. Do niedawna ten obszar był główną domeną banków, jednakże szeroka oferta produktowa sprawiła, że klienci zaczęli poszukiwać fachowej pomocy nie tylko u doradcy bankowego, który jest zainteresowany sprzedażą produktów własnej firmy, lecz także u profesjonalnego doradcy kredytowego, który potrafi zebrać informacje z rynku i przygotować najlepsze warianty finansowe dla klienta. Celem badań było określenie zakresu usług doradztwa finansowego realizowanego w obszarze lokowania nadwyżek finansowych średnio zamożnych gospodarstw domowych i kierunków jego rozwoju. Badaniem objęto 496 średnio zamożnych gospodarstw domowych z województwa warmińsko-mazurskiego. Mają one odpowiednie środki finansowe na realizację długofalowych programów inwestycyjnych, są bardziej świadome konieczności oszczędzania oraz widzą swoje niedostatki w wiedzy na temat instrumentów finansowych. Brakuje im tylko zaufania do doradców finansowych i przekonania, że jakość świadczonych usług, a przede wszystkim ich efektywność, będzie warta ceny, jakiej żądają za poradę.

Introduction

Households, as increasingly active participants in the financial market formulate the demand for professional financial intermediation and advisory services. Their goal is to satisfy the joint as well as the individual household members. Dynamic development of products and services available in the Polish financial market causes an increased demand of clients for professional advise aimed at optimisation of purchasing decisions.

Use of financial services by households results from diversified needs. HARRISON (2000) identifies among them the needs related to accessibility of cash, insurance of the property owned, transfer of funds, delaying the payment and the need for financial advice. The use of financial advisory services is not the basic aim of consumer activity but it allows optimisation of the process of making the choices of complex financial products. Such services are necessary for both obtaining additional sources of capital and for placement of financial surplus, i.e. in the process of saving and capital investing.

Legal regulations applicable to financial advisory services

Neither in Europe nor in the American market the uniform, comprehensive regulations concerning the legal position of the financial adviser have been developed. That lack of homogeneity causes problems related to defining the independent financial advisory services. According to the European Union

directive concerning financial intermediation services, a financial adviser is an objective professional whose role is to provide the client with knowledge on managing the capital in a way allowing the client independent taking of specific decisions concerning purchase of financial products and unrestricted movement within the financial market.

The initial information concerning the profession of the financial adviser was recorded in the United States in 1976. At that time it was described as “personal finance planner”. The Financial Planning Standards Boards Ltd. was the first institution that trained and employed financial planners. In 1980, it started expansion outside the USA awarding the first licenses for training, examining and drafting personal financial plans. Those initial licenses were granted in the countries with equivalent financial and legal systems, i.e. the United Kingdom and Australia.

In Continental Europe, until the present day, no uniform European system of certification for the profession of the financial adviser has been developed. On the other hand, however, it is a general standard in the EU countries that the advisers must pass examinations verifying their qualifications at regular time intervals (every 2–3 years). The examination consists of two parts: theoretical and practical (development of the financial plan).

In Europe the total of 48 industry organisations associating financial advisers and overseeing the quality of services they provide operate. The most important ones are Belgian FECIF (The European Federation of Financial Advisers and Financial Intermediaries) established in 1999, German European Federation of Financial Professionals (EFFP) and British Financial Services Authority (equivalent to the Polish Securities and Stock Exchange Board – Polish Financial Supervision Authority).

In Poland, as of the 16th of November 2006, the Association of Financial Advisers (European Federation of Financial Professionals Poland – EFFP Poland) has been in operation. It assesses the quality of services provided by its members (certified personal financial advisers), takes care of the high, consistent with the principles of FECIF level of training and certification of financial advisers in Poland. Advisers certified by German EFFP can be members of the Association. For that purpose they pass a special examination. Eligibility to take the examination is obtained through completing training at schools and institutions accredited by the EAFP, i.e. European Academy of Financial Planning in Warsaw, Wrocław University of Economics and The Gdańsk Academy of Banking. As at the 31st of December 2007, there were around 600 certified Personal Financial Advisers in Poland.

The principles of providing services by financial advisers have been developed by the European Commission. According to the provisions of European legislation the advisors have the duty to inform the client about their indepen-

dence or links to financial institutions the products of which they distribute. Before obtaining the offer, the client should be informed in what register the intermediary is registered and where possible complaints concerning his services could be filed. The information provided by the adviser must be provided in writing, detailed and in the official language of the country, in which the information is provided (or other language agreed by the parties). The financial advisers are required to be insured against civil liability.

In European legislation there are no regulations governing the remuneration of financial advisers. They receive various types of compensation for their services – some receive commission on products sold from financial intermediaries, others fees for advisory service delivered payable by the clients, still others receive both (KOSSOWSKI 2007).

Conditions of financial advisory services development

Financial advisory services have been developing extensively in Poland as of 2001. As a consequence of short period for which the services of that type have been available in the financial market the potential clients look with reserve at the currently available offer. The clients were interested mainly in the lending advisory services, particularly in the housing lending market. Until recently that area was the main domain of banks, but the wide offer of products caused that clients started searching for professional advise not only from the bank adviser, who is interested in selling products of his own company, but also from a professional financial adviser, who is able to collect information from the market and prepare the best financial options for the client.

The market of advisory and intermediation services in investing the financial surplus has started developing during the last two years only thanks to the higher level of household savings. Increased wages and decreased unemployment level caused that capital accumulation processes appeared also in the medium affluent households.

Accumulation of savings by households has the micro and the macro-economic dimension as this is the process leading to building of wealth and development of capital, which is the condition for sustainable economic growth (RYTELEWSKA 2005). The decision concerning resignation from current consumption for the future consumption must be carefully considered to give favourable effects for the investor. The created portfolios of investments will be dependent on income of the households, their preferences for liquidity as well as skills of operating within the financial market.

The study “The Poles and the money” conducted by PBS in August 2007 concerning savings and financial customs of the citizens showed that Poles showed improving knowledge of financial market’s operation, but when they had to use an increasing number of available products and services they kept to their saving customs and tested methods that were associated first of all with banks (PIOTROWSKI 2007). Bank is still perceived as the institution of public confidence and as a consequence is a more secure depository than the other participants of the financial market.

Analyses conducted by the company “Analyze Online” indicate that the value of household savings increased systematically and in September 2007 reached the value of PLN 684,5 billion. Compared to the countries of the Old Union an average Pole still has savings that are 10 times smaller. During the last quarter again an increase in the share of deposits (36,1% share in the structure of savings) and cash outside banks (11,1%) could be observed while at the same time a decrease was recorded in the share of the domestic investment funds (15,6%) and shares of public companies (9,5%). Those changes were a consequence of the decreases in prices of shares at the stock exchange and withdrawal of the clients from risky investment funds. During the entire year 2007, the savings in the banks increased slower than debts and as a consequence the gap between loans and savings increased (BAR 2007). The data indicates that some of the clients did not transfer the surplus to less risky financial instruments but instead withdrew from the investments entirely. Studies by PBS showed that 58% of the Poles had no savings, which shows why the market of saving products developed at an unsatisfactory pace.

Professionalism and effectiveness of that type of services is the basic problem for potential clients of financial advisory companies. In Poland there is no liability of the adviser for his professional actions and decisions. It is hard for a person who does not know finance to assess professionalism of the adviser and effectiveness of the proposed solutions (ŚLIPERSKI 2007). There are also some difficulties with defining the scope of activities of the financial consultant – should he be an intermediary, a seller or a financial adviser to the client. Those conditions show that activities concerning licensing of that type of activities should be seen as positive.

Poles point at advisory companies as an increasingly important source of knowledge on saving and investing to which they turn for advice. The advisers do particularly well in the area of mortgage loans and sales of participation units of investment funds. Analyses of the market indicate that the value of loans originated will continue increasing but the higher dynamics of growth will be observed in the investment advisory services (CHOCHOŁOWSKI 2007). Additionally segmentation of clients based on the household income (low affluent, medium affluent, wealthy) as well as specialisation in the offer of

services (mortgage loans, investment products) is increasingly well visible in the market of financial advisory services (KOSSOWSKI 2007).

Goal and methodology of studies

The studies aimed at determining the scope of financial services implemented in the area of placement of the financial surplus of medium affluent households and the directions of its development. This formulation of the goal of the study required defining the profile of that group of households, identifying their propensity for investing, determining the structure of types of financial advisory services used as well as forecasts and preferred changes in that area.

The study encompassed 496 medium affluent households from Warmia and Mazury voivodship. The subject scope of the study encompassed single person households generating incomes of at least PLN 5000 net and households consisting of more persons that generated the income of at least PLN 7000 net. As indicated by the review of literature concerning the scope of the investment offer the clients rely mainly on the activities of banks or their own knowledge (CHOCHOŁOWSKI 2007). As a consequence the entities selected for the study were those that used banking services of personal banking in 2007, that means were actively interested in effective allocation of their funds. For that reason the targeted research sample selection was applied. In gathering empirical materials the questionnaire-based method was applied by using the questionnaire prepared in collaboration with one of the banks. Methods of comparative analysis were used for processing the results.

Characteristics of the research sample

The group of clients covered (the questionnaire respondents were the members of households who made the largest contribution to the household budgets or decided on the investment expenditures made) was dominated by persons whose average age was 30–45 years (Fig. 1), which resulted from a few premises. Accumulation of capital is a long-term process and the services offered required possessing adequate financial resources. As a consequence, relatively few young people could benefit from personal banking services. The small group of respondents over 45 years of age could be explained by lower propensity for using financial services altogether, the necessity or willingness of spending the funds for the needs of the nearest family or for own needs, which results in terminating the investing or, in case of clients who became more affluent, resulted in their shift to another segment of services.

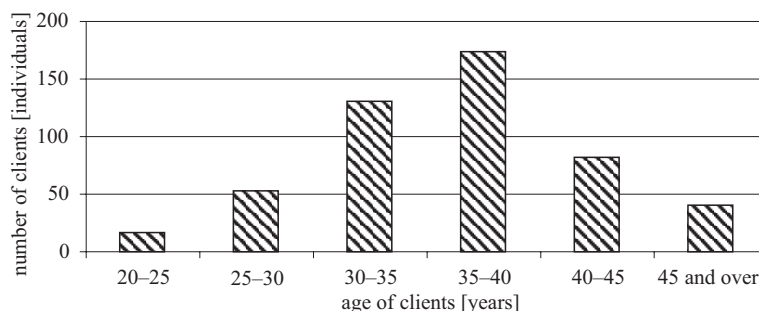


Fig. 1. Age structure of the studied sample

Source: Own work.

According to the ESA (European System of Account) methodology, the sector of households encompasses both the households of people who are consumers only and households of individuals operating own business (RYTELEWSKA 2005), and as a consequence both those groups were included in the studied sample.

Over 88% of the encompassed households were situated in towns. People investing their financial surplus worked mainly in the financial sector (38,9%), operated own business (24,0%) or were independent professionals (22,0%). The respondents used the full scope of the banking services offered to them but most frequently they used settlement services (59,9%) and lending services (59,3%). The majority of households used mainly the basic services. For that group of entities the bank was the settlement-credit institution and not a financial adviser to the client, even if they used that type of bank services offered.

The nationwide studies conducted in Poland (RZANNY 2007) also indicated that the distribution of people with high incomes concentrated in urban agglomerations. The affluent persons were usually in the age group of 30–35 years, which means that they started their careers during 1990s and currently held management positions in the financial or trade sector. They use services of banks mainly for maintaining settlement-savings accounts (95%), payer cards (70%) and credit cards (53%). The vast majority of them show high propensity for investing. They invest mainly in products characterised by high expected rate of return (investment funds, life insurance, real property), and they are limited to a limited extent in time deposits, but they want to continue investing.

Directions of placement of financial surplus

The households invested the available surplus funds in various financial instruments, which is presented in Figure 2. Purchase of investment funds participation units (48,8%) was the main form of funds allocation followed by investments in real property (38,1%) and listed joint stock companies (37,1%). Deposit products were treated as complement to the client's investment portfolio.

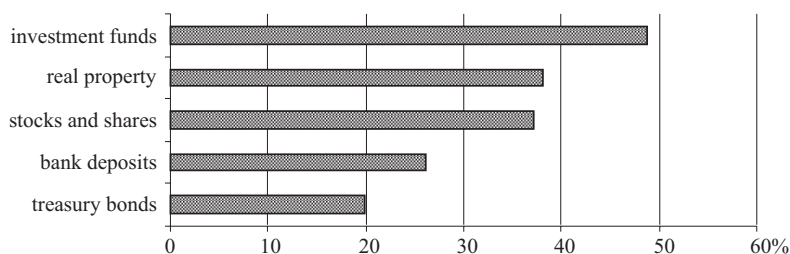


Fig. 2. Current directions of financial surplus allocation

Source: Own work.

The clients allocated the largest proportion of funds in stock funds (28,6%) and balanced funds (26,2%), which was supported by positive situation in the financial markets. Diversification of investment portfolio is also visible as concerns the investment funds. The level of profitability obtained caused that that group of households was ready to accept a higher risk level. RYTELEWSKA (2005) indicates that in the case of financial services, the scope of interest of the consumers expands with passage of time – from high liquidity and low risk level products to low liquidity products that require significant financial resources. Such processes were observed in the group of households covered although they continued to maintain a certain secure investment packages in their portfolios.

The analyses conducted showed that over 75% of households covered planned continuing the investment process in the future. Around 37% of households declared the possibility of accumulating in the coming year of the investment capital amounting up to PLN 50,000 and another 35% projected accumulating between PLN 50,000 and PLN 100,000. The preferred directions for investing that financial surplus are presented in Figure 3.

Clients continue their interest in allocating their financial surplus in investment funds and real property to an even greater extent than currently. Weakening of the financial market observed during the last 6 months of 2007 caused a decrease in direct investing in stocks/shares among the members of

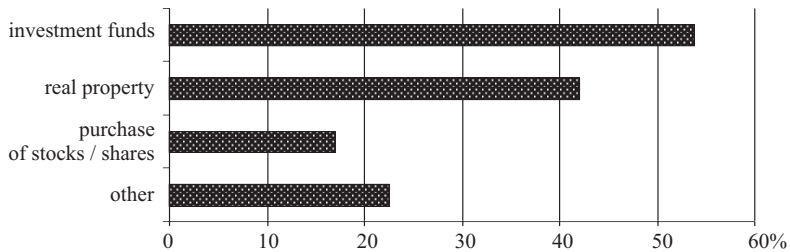


Fig. 3. Preferred directions of investment for the future financial surplus

Source: Own work.

the group studied while their interest in entrusting capital to specialists from investment funds increased. We should expect here the transfer of funds to less risky funds, although some of the investors do not intend to liquidate their investments expecting profits in a longer term. Own financial capacities of the studied households make it impossible to reach the declared amounts for investments and that is why over 66% of those households intend to use bank loans. This applies in particular to purchase of real property.

Scope of financial advisory services in the area of allocation of financial surplus

The respondents of the study based their investment strategies mainly on their own knowledge or intermediation of banks or other sources. Only 33.1% of households used the financial advisory services. Those were not just the services offered within the frameworks of bank financial advisory services but also and first of all financial advisory services provided by external companies – the most popular brands among those available in the market were Expander, Open Finance and Notus. The subject scope of those advisory services to the studied group of clients is presented in Figure 4.

First of all, the clients used advisory services concerning investment products (78,8%) and lending products (46,8%); significant were also the services concerning pension products (32,9%) and use of European Union funds (23%) – which was of interest to people operating their own businesses.

The studies conducted indicate that optimisation of the process of financial surplus allocation considering individual possibilities of the client should be the main objective of financial advisory services (79,8%), and that requires continual collaboration between the service provider and the service user. In most cases clients have contacts with the bank as the basic financial institution, so that is where the largest potential for development should be seen.

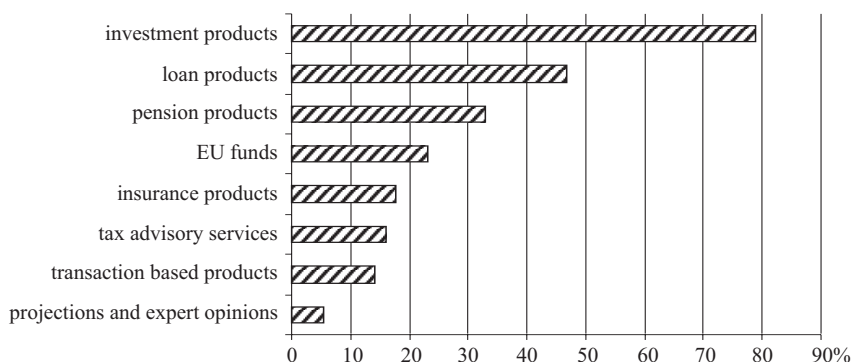


Fig. 4. Subject scope of advisory services used

Source: Own work.

While lending advisory services can be linked to a particular bank, the investment advisory services should be focused on a wide range of financial instruments existing in the market, not only within a given capital group within which a given bank operates.

The respondents (37,3%) pointed out that relieving the clients from completing unnecessary paperwork related to the investments made, when the adviser acts on commission from the client and using his power of attorney implements the investment strategy chosen by client, should be an important element. Activities of the adviser should be focused on providing help in taking financial decisions (22,0%) and modelling the structure of the investment portfolio (22,6%), however, the clients see protection of assets and risk management as even more important tasks (33,1%). Also ŚLIPERSKI (2007) points out that the adviser should first of all focus on protection of client's capital and only later on multiplying it and at the same time he should implement a certain educational objective – show how to manage money, which is different from investment or credit advisory services.

Conclusion

Development of the financial market causes that moving within it creates major difficulties for a large proportion of the clients – one has to either educate himself, possess appropriate capital management skills or use services of other entities. The studies conducted indicate that there is a very high potential for development of financial advisory services in the area of allocation of financial surplus of households although it is necessary for both financial institutions and external companies to undertake a combat to win the clients.

Households already possess adequate funds to implement long-term investment programmes, are more aware of the necessity to save and also see the shortcomings of their knowledge on financial instruments. They are just short of confidence in financial advisers and believe that the quality of services provided, and first of all their effectiveness will be worth the price demanded for advice. Only professionalism in providing services can cause that clients would resign own investment attempts switching to competent financial advisors whose services are worth paying for.

The fluctuations in the financial market that are currently experienced offer a good moment for initiating the combat for the client. Showing the potential and persuading him to prepare long-term investment strategy will allow development of that segment of services.

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**EX ANTE AND EX POST ECONOMIC EFFICIENCY
OF ROAD PROJECTS BASED ON THE EXAMPLE
OF OSTRÓDA BYPASS**

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Key words: cost-benefit analysis, economic efficiency, road investment projects.

Abstract

The article focuses on the issues of measurement of cost-benefit of road investment projects both at pre-implementation stage and *ex post*, by applying cost-benefit analysis. The studies used cost-benefit analyses for modernization of Ostróda bypass in Warmia and Mazury voivodship. As a result of the conducted studies it was established that the *ex ante* road-bridge costs were underestimated in relation to *ex post* costs. At the same time the savings on user and environmental costs estimated in *ex post* analysis were higher than estimated in *ex ante* analysis by 54,89%. Although the internal rate of return in *ex ante* analysis was 22,95%, and in *ex post* analysis 26,97%, this does not prove credibility of *ex ante* analysis. The studies showed that in pre-implementation analysis there were significant inaccuracies in estimation of both the costs and the benefits related to the investment project.

**EFEKTYWNOŚĆ EKONOMICZNA EX ANTE I EX POST INWESTYCJI DROGOWYCH
NA PRZYKŁADZIE OBWODNICZY OSTRÓDY**

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Słowa kluczowe: analiza kosztów i korzyści, efektywność ekonomiczna, inwestycje drogowe.

Abstract

W artykule skoncentrowano się na zagadnieniach pomiaru kosztów i korzyści inwestycji drogowych, zarówno w fazie przedrealizacyjnej, jak i *ex post*, za pomocą analizy kosztów i korzyści. W badaniach wykorzystano analizy kosztów i korzyści modernizacji obwodnicy Ostródy w województwie warmińsko-mazurskim. W efekcie przeprowadzonych badań stwierdzono niedoszacowanie kosztów drogowo-mostowych *ex ante* w stosunku do kosztów *ex post*. Jednocześnie

oszczędności kosztów użytkowników i środowiska oszacowane w analizie *ex post* są wyższe od oszacowanych w analizie *ex ante* o 54,89%. Mimo że wewnętrzna stopa zwrotu *ex ante* wynosiła 22,95%, a *ex post* 26,97%, nie dowodzi to wiarygodności analizy *ex ante*. W toku badań wykazano, że w analizie przedwykonawczej wystąpiły istotne niedokładności w szacowaniu zarówno kosztów, jak i korzyści związanych z inwestycją.

Introduction

The condition of transport infrastructure, and in particular roads in Poland is still, by far unsatisfactory. In spite of numerous announcements and programmes of road network development in our country presented by consecutive governments, visible increase in dynamics of investment projects in that area has not occurred. For many years the investment needs in Polish roads have been incompatibly higher than the funds available for the purpose. It should be stressed, however, that poorly developed network of roads as well as low quality of road surfaces represent in increasingly visible barrier to socio-economic development of the country. Those facts gain special importance in the context of preparations of our country for co-organization of the European Football Championship in 2012.

The paper focuses on the issues of measurement of economic costs and benefits of road investment projects during both pre-implementation and the *ex post* evaluation using the cost-benefit analysis. Although there are well-established procedures of conducting such analysis for various types of infrastructure projects, studies on functioning of those procedures and possibilities of further improving them are still necessary. Investments in road infrastructure are among highly capital-intensive projects that at the same time offer multiple benefits for the users and the environment. Measurement of costs and benefits related to road investment projects allows assessment of economic efficiency of such projects. As a consequence, there is a possibility of selecting for implementation of the projects that can offer the highest input in the improvement of social welfare.

The role of cost-benefit analysis (CBA) in the process of road investment projects preparation and evaluation

Classic methods of investment evaluation are not adjusted to assessment of economic infrastructure projects. The basic reason is lack of the possibility of identifying revenues from conducted activity, which results from the character of public services. In case of infrastructural investments two types of efficiency assessment can be used. The first type is called the process efficiency assess-

ment and it involves mainly administrative monitoring of conducting the financial transactions, accounting system, management and data archivation. The second type of assessment that concerns evaluation of efficiency of the results is commonly known as *cost-benefit analysis* (BRZOWSKA 2005, p. 34).

Cost-benefit analysis is of particular importance for estimation of economic benefits resulting from implementation of a given project. In principle, the analysis should encompass the project influence at all levels: financial, economic, social, environment protection, etc. The cost-benefit analysis aims at indicating and converting to cash value of all the possible effects of a given project for the purpose of estimating the costs and benefits of the project. Next the results obtained are summed up (the so-called net benefit is calculated) and on that base the decision is taken on whether the project should be implemented or rejected. Costs and benefits should be valued based on the increment principle considering the difference between the option assuming project implementation and alternative options without the project (*Wytyczne...* 2006).

Four stages can be identified in the cost-benefit analysis method:

- identification of all factors (favourable and unfavourable) influencing the society as a result of a specific investment project,
- valuation of benefits and costs in monetary terms,
- computation and selection of the discount rate for computation of the current value,
- choice of the variant indicating net social benefits, i.e. surplus of total benefits over the total costs (BRZOWSKA 2005, s.43).

From among numerous variants we choose the one that offers the highest net benefit. Implementation of a given investment project should be determined by the effect of the cost-benefit analysis, i.e. obtaining the highest surface of benefits over the total costs.

Cost-benefit analysis is currently treated as the fundamental tool for assessment of the projects' effects using the criterion of public funds and means allocation efficiency. Generally it is pointed out that public resources allocation efficiency occurs when resources such as land, capital or labour are allocated to achieve the highest value in categories of goods or services that is offered by using them. In this sense CBA is considered the tool allowing comparison of the efficiency of different directions and methods of public resources and funds allocation to projects (FRENKIEL, DROBNIAK 2005, p. 57).

The possibility of expressing all elements of assessment in the same payment units is the main advantage of cost-benefit analysis. Analysing costs and benefits in a longer time perspective is another CBA benefit. Unfortunately, costs of accidents or environmental impact can be difficult to convert into money and imprecise, which is one of the few disadvantages of expressing the assessment elements in cash. To minimize that inconvenience, where necessary,

multi-criterion analysis coupled with weighing of individual factors is applied. The result of classic cost-benefit analysis in such a case will be just one of the elements of project assessment (KOWALEWSKI 2005, pp. 55–57).

Cost-benefit analysis of investment projects should be conducted both before and after project implementation. This allows assessment of whether the project really was economically justified, showing mistakes and shortfalls at project planning stage and determining the caused for deviation of costs and benefits *ex post* as compared to *ex ante* values. Which is even more important considering the fact that the given project has been completed, cost-benefit analysis conducted *ex post* can help in taking appropriate decisions based on more complete information concerning implementation of similar projects in the future (KOWALEWSKI, LELUSZ 2004, p. 22).

It should be pointed out that cost-benefit analysis is just a technique of decision taking that applies to numerous decisions of political and social nature related not only to the investment project itself but also the system of determining prices (e.g. in the public sector) and drafts of legal regulations. In case of investment decisions, maximization of discounted value of the surplus of all benefits over the total costs considering the specified limitations is the criterion of choice (KAMIŃSKA 1999, p. 97).

Goal, scope and methodology of studies

Assessment of costs and benefits estimated in *ex ante* analysis as compared to the values obtained during *ex post* analysis was the main goal of the conducted studies. With achievement of the main goal the following objectives are linked:

- comparison of costs and benefits *ex ante* and *ex post* for modernization of Ostróda bypass;
- explanation of the reasons for possible differences between costs and benefits.

Pre-implementation and post-implementation analysis of the road project “Strengthening of the surface of the national road No. 7 Ostróda bypass section” was the basic research material. Those analyses were carried out by Biuro Projektowo-Konsultingowe Transprojekt Gdański on commission by the Directorate of Public Roads (now General Directorate for National Roads and Motorways). The project was implemented during the years 1999–2000. The *ex ante* analysis was prepared in 1996 and the *ex post* analysis was prepared in 2005.

The calculation of costs and benefits of the road project that serves economic efficiency assessment for the implemented project was conducted according to the methodology developed by the Road and Bridge Research

Institute in Warsaw. The schematic representation of that methodology is presented in Figure 1. The methodology is based on the comparison of the difference between costs and benefits for two variants: without investment (W0) and with investment (WI).

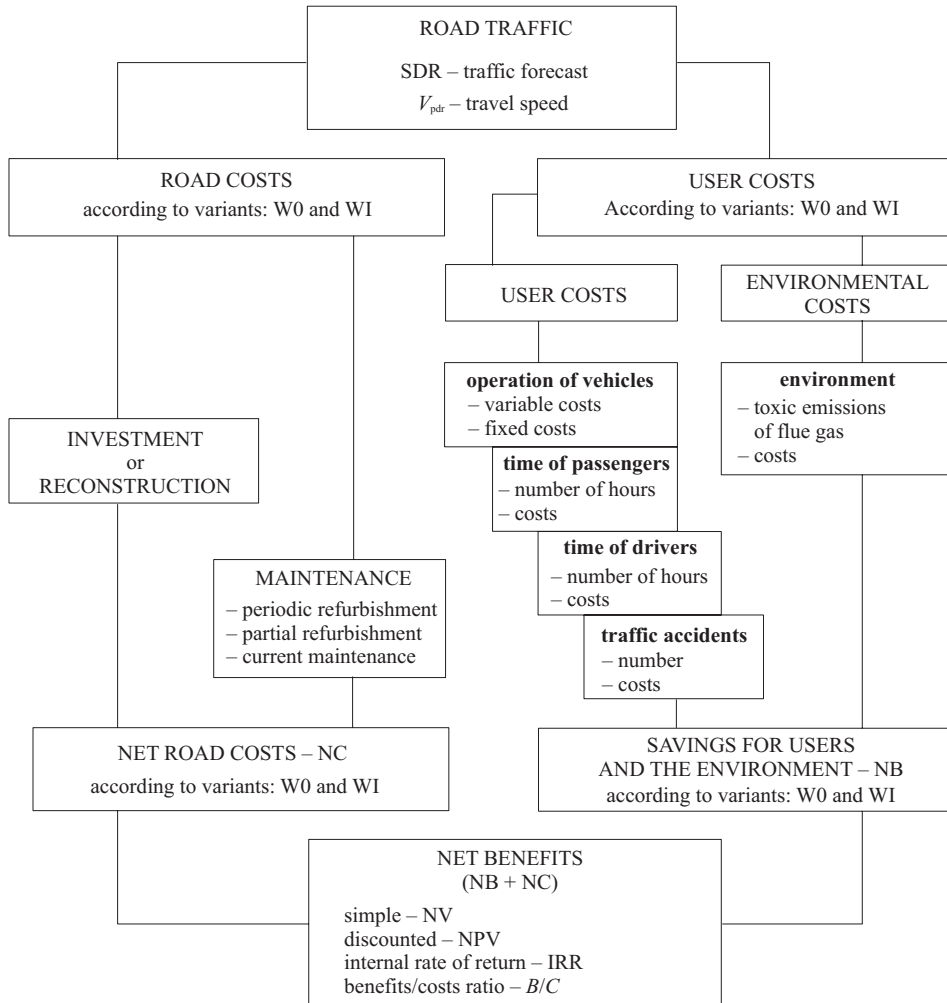


Fig. 1. Economic efficiency computations diagram

Source: Instrukcja oceny... (2003).

For the purpose of conducting the analysis the following was computed:

- net benefits and costs of the project as the sum of net outlays and savings that were discounted using the discount factors appropriate for the given discount rate (NV),

- updated net benefits (NPV – Net Present Value) for the discount rate “r” e.g. 8%, 10%, 12% and other up to achieving the NPV = 0, as the sum of net benefits during the consecutive years of the analysed period,
- benefits to costs ratio (B/C), as the ratio of discounted benefits to discounted net outlays during the analysed period for each discount rate separately,
- Internal Rate of Return (IRR), that is the discount rate at which NPV = 0 or $B/C = 1$.

Costs and benefits calculated in *ex ante* and *ex post* analysis as well as economic efficiency measures (IRR, B/C) were compared to develop the comparative cost-benefit analysis for the analysed investment project. Assessment of efficiency conducted in *ex post* analysis was done in 1999 prices while for the *ex ante* analysis in those of 1995. To assure compatibility of costs and benefits measured in the subject analyses individual values were converted to the monetary measures applied in *ex ante* analyses by means of the index of prices increase for consumption goods and services.

Results of studies

Net road-bridge costs

The costs of investment project in the *ex ante* analysis were assumed on the basis of the initial investor's bill of costs while the costs of investment project *ex post* are the actual outlays incurred. Comparison of the volume of outlays divided into settlement elements included in the pre-implementation and post-implementation analyses is presented in Table 1 and Figure 2. The data presented in table 1 indicate that in pre-implementation analysis 8 out of 10 elements of road works were priced. This, however, is not an error but only a contents difference between the two analyses. It was established that the value of elements not priced in the pre-implementation bill of costs (e.g. earthworks, elements of streets, etc.) were included in items “Base course” and “Surfaces”. As a consequence, it had no influence on the scope of planned and implemented road works. The revealed discrepancy in contents makes partial comparative analysis of both research materials useless. In totalled values the actual outlays on road works were higher by 8,56% than the road works outlays estimated in pre-implementation analysis.

It was established that the higher *ex post* costs of the project as compared to the pre-implementation bill of costs resulted from performance of necessary supplementary works (mainly concerning bridges). Underestimation of the scope of necessary works (relatively frequent in construction sector) seems to be the main reason for the difference in costs found.

Table 1
Specification of Ostróda bypass modernization costs accounting elements in *ex ante* analysis and *ex post* actual values (in PLN)

No.	Specification of accounting elements	Investment costs		Ex post/ex ante [%]
		ex ante	ex post	
A.	Road works	4 824 220	5 237 024	108.56
1.	Preparatory works	0	913 899	-
2.	Earth works	0	117 062	-
3.	Body drainage	0	66 354	-
4.	Base course	938 120	350 406	37.35
5.	Surfaces	3 886 100	2 967 904	76.37
6.	Finishing elements	0	131 086	-
7.	Traffic safety devices	0	655 448	-
8.	Elements of streets	0	11 784	-
9.	Road greenery	0	0	-
10.	Other works	0	23 081	-
B.	Bridge works	2 333 170	395 114	16.93
	Total	7 157 390	5 632 138	78.69

Source: Own computations based on the data included in *ex ante* and *ex post* analyses.

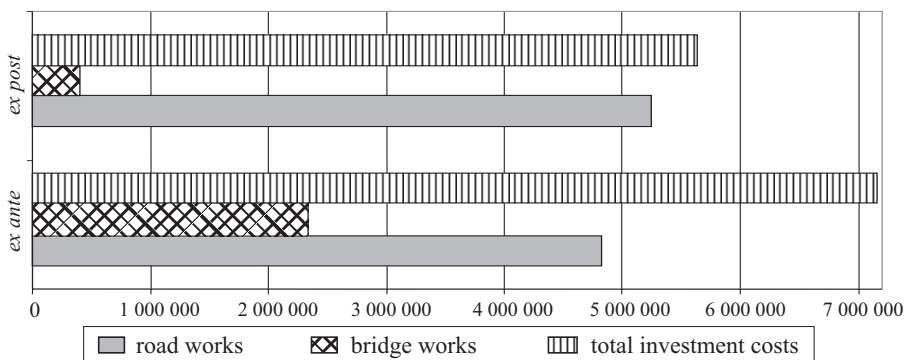


Fig. 2. Comparison of the elements of accounting for Ostróda bypass modernization project in *ex ante* and *ex post* analysis in actual values (in PLN)

Source: Own work based on the data included in *ex ante* and *ex post* analyses.

Net roads and bridges maintenance costs are also a component of the costs of roads and bridges in addition to the investment outlays. The roads maintenance costs include costs of periodic surface renovation, current refurbishment and current maintenance (snow removal, painting of horizontal signs, etc.). Net roads maintenance costs represent the difference between the costs estimated in the “zero” variant and costs in the investment variant.

The actual net roads maintenance costs (348 133 PLN) are definitely lower than the costs estimated in pre-implementation analysis (2 600 000 PLN) and represent only 13,4% of *ex ante* costs. The reason for the indicated under-estimation is the significant differences in unit costs of road maintenance estimated in pre-implementation and post-implementation analyses. The relations between the outlays and net roads and bridges maintenance costs included in *ex ante* and *ex post* analyses influence the net value of roads and bridges costs directly (Tab. 2).

Table 2
Road and bridge costs net and their major components in *ex ante* and *ex post* analyses for Ostróda bypass modernization

Item	<i>Ex ante</i> (PLN)	<i>Ex post</i> (PLN)	<i>Ex post/ex ante</i> (%)
Investment project costs	7 157 390	5 632 138	78.69
Net roads maintenance costs	2 600 000	348 133	13.39
Net road and bridge costs (investment project costs minus maintenance costs)	4 557 390	5 284 005	115.94

Source: Own work based on the data included in *ex ante* and *ex post* analyses.

High savings on roads maintenance costs assumed in *ex ante* analysis would result in decreasing the investment outlays by 36,33%, while actually they were compensated in 6,18% only. Investment outlays in *ex post* analysis were lower by 21,31% than estimated in *ex ante* analysis.

Compensation of both described phenomena resulted in the situation that the net road and bridge costs as a result of project implementation were higher than estimated in the pre-implementation analysis by 15,94%.

Savings of users and environment costs

The next stage of road investment project efficiency assessment involves totalling all savings on user and environmental costs, i.e.:

- vehicles operational costs,
- costs of time of passengers and drivers,
- costs of road accidents,
- costs of emissions of flue gases arduous to the environment.

Net savings (benefits) are the difference between costs estimated in the “zero” variant and in the investment variant.

In case of the analysed investment project, in both *ex ante* and *ex post* analysis it was estimated that there would be no savings on the costs of

passengers and drivers time. Modernization investment projects (and the project used as example qualifies as such) do not result in a change in the cross section of the road, or the purpose of W0 and WI variants the traffic density did not change and, as a consequence, the speed of vehicles remains at roughly the same level. This results in the same driving times in both variants and, as a result, the costs of time of road infrastructure users are identical. This causes zeroing of the balance of economic benefits of the variants for each year. For the same reasons it was estimated that there would be no savings on costs of toxic components of flue gases that are dependent mainly on the driving speed of automotive vehicles.

Figure 3 indicates that savings on automotive vehicles operation costs estimated in the post-implementation analysis are higher than in the pre-implementation analysis and represent 174,03% of *ex ante* estimated savings. Because as a result of implemented investment project the length of the road section did not change and technical parameters of the road were also the same, it should be concluded that significantly higher savings of costs in *ex post* analysis resulted from errors in projecting the traffic density occurring in *ex ante* analysis. This, in turn, could influence the level of unit costs used in computations. The studies conducted showed that savings on costs of traffic accidents were lower in *ex post* analysis and represent 74,7% of such costs determined in *ex ante* analysis.

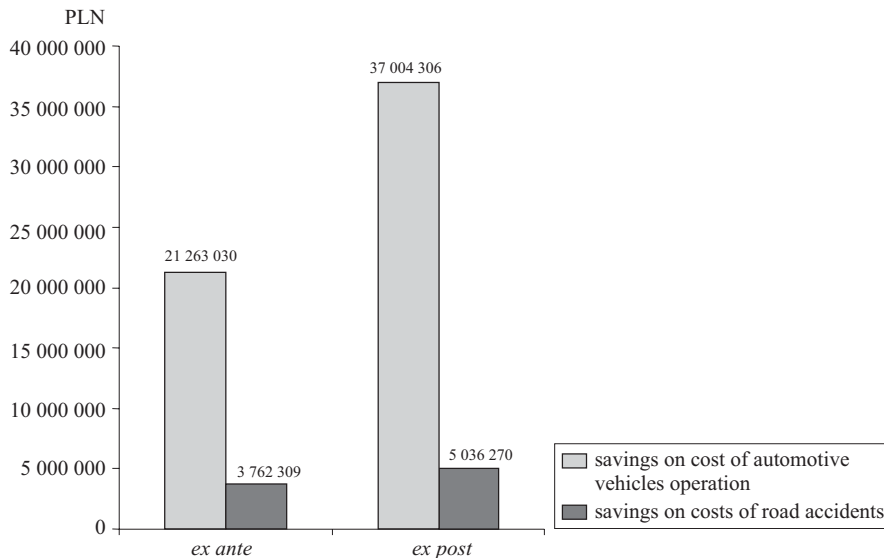


Fig. 3. Savings on automotive vehicles operation costs and costs of road accidents in *ex ante* and *ex post* analysis of Ostróda bypass modernization (PLN)

Source: Own work based on the data included in *ex ante* and *ex post* analyses.

During further diagnose of the observed phenomenon it was established that the accident rate indicators assumed for the post-implementation analysis were lower by ca. 50% than those assumed in pre-implementation analysis (i.e. the actual number of accidents was lower than planned). Additionally the situation was also influenced by lower costs per accident, because analyses of the other determining factors of accidents showed an increase of the same level in their values.

The total savings of user and environment costs resulting from bypass modernization amounted:

– *ex ante*: 26 299 280 PLN,

– *ex post*: 40 734 409 PLN.

The data presented indicate that the savings on user and environment costs estimated in *ex post* analysis were in case of the studied project higher than those estimated in *ex ante* analysis by 54,89%.

Measures of investment project economic efficiency *ex post* and *ex ante*

The cost-benefit analysis is conducted using aggregated data originating from partial analyses of individual components of costs and benefits conducted at the earlier stages. They allow assessment of efficiency of the analysed investment project. The investment efficiency assessment is done by means of the following indicators: net present value (NPV), benefits/costs indicator (*B/C*) and internal rate of return (IRR).

The values of those indicators are determined using the following formulas (PERKINS 1994, pp. 67 and 85):

$$\text{NPV} = \sum_{i=0}^n \frac{(B_t - C_t)}{(1 + r)^t},$$

where:

NPV_r – net present value (discounted net profit – discounted net benefit at the discount rate r) from the investment project; positive NPV is the condition for accepting the project for implementation,

n – number of project use periods,

B_t – project benefits in the consecutive year t ,

C_t – project costs in the consecutive year t ,

r – financial or economic discount rate

$$B/C = \frac{\sum_{t=0}^n \frac{B_t}{(1+r)^t}}{\sum_{t=0}^n \frac{C_t}{(1+r)^t}}$$

IRR represents the economic discount rate at which the NPV = 0, i.e. investment outlays are covered by the future benefits resulting from it while the profit equals zero or $B/C = 1$. The higher the IRR than the social cost of capital in a given country, the higher is the contribution of a given project in increasing the social welfare. If the IRR is lower than the social costs of capital then the social welfare deteriorates as a consequence of implementation of the specific project.

Aiming at comparing the efficiency of the studied project at pre-implementation stage and *ex post* we focused on the comparative analysis of B/C and IRR indicators. In case the discount rate was assumed at 12% the benefits/costs indicator in *ex ante* analysis was lower (1,93) than in case of *ex post* analysis (2,55). There was also no large difference in the IRR, which in case of *ex ante* analysis was 22,95%, and in case of *ex post* analysis 26,97%. In other words, at that discount rate the project showed the NPV = 0 and $B/C = 1$.

The studied project was a public investment and its social use balanced the motif of profit and eliminated the alternative investment options from the decision path. In such a case, disregarding the imperfections in contents already indicated in this paper, at the stage of *ex ante* studies one should make absolutely sure as concerns the optimal organization of the project – starting from time-organization schedule of works across the entire project through the technical-technological choice of works performance (materials, techniques) while not decreasing the quality and companies-contractors and suppliers (project implementation costs) up to organization of traffic for the duration of road works. Only due diligence at the stage of public investment project planning and programming allows assuring economically optimal use of funds, which is reflected in the IRR.

Summary and conclusions

The comparative analysis of *ex ante* and *ex post* analyses for the project of Ostróda bypass modernization including assessment of efficiency of that investment project from the perspective of achieved benefits and incurred costs was the subject of interest here. Conducted studies allowed formulating the following conclusions:

1. Road and bridge costs were found underestimated by 15,94% in *ex ante* analysis as compared to *ex post* costs. That difference resulting mainly from prognostic, planning and estimation errors could determine the long-term success if implementation of the subject investment project.

2. User and environment costs savings estimated in *ex post* analysis are for the studied project higher than those estimated during *ex ante* analysis by 54,89%, which allows the project achieving higher than assumed parameters of economic efficiency. The difference detected, however, does not allow expressing a positive opinion on *ex ante* analysis as concerns its contents.

3. The internal rate of return showed a relatively low difference – IRR *ex ante* was 22,95%, and *ex post* 26,97%. This does not prove credibility of *ex ante* analysis. During the studies it was shown that during pre-implementation analysis significant inaccuracies in estimation of both the costs and the benefits related to the project occurred. It seems obvious that similarity of the IRR values is the resultant of the prognostic errors made and imperfection of methodological facilities in estimating efficiency of road projects.

In view of the above observations it should be concluded that it is necessary to further improve the methodological bases of *ex ante* analysis also in the direction of eliminating the human factor errors. That issue is of particular importance considering limited public funds allocated for funding of road investment projects.

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MONETARY POLICY UNDER CONDITIONS OF NAIRU “FLATTENING”*

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Key words: globalisation, NAIRU, monetary policy, inflation.

Abstract

The last decades represent a period of global economy fast transformation, which is reflected in the real life and leads to changes in relations between the situation in the labour market and the inflation processes. Those changes are frequently referred to as „NAIRU” flattening. It can be expected that it will bring important consequences for the process of national monetary policy development in individual countries. The aim of the paper is to present analysis of the influence of NAIRU flattening on the effectiveness of the national monetary policy and effectiveness of its tools.

POLITYKA MONETARNA W WARUNKACH „SPŁASZCZENIA” NAIRU

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Słowa kluczowe: globalizacja, NAIRU, polityka monetarna, inflacja.

Abstract

Ostatnie dekady stanowią okres szybkiej transformacji światowej gospodarki, która ma odzwierciedlenie w sferze realnej oraz prowadzi do zmian relacji między sytuacją na rynku pracy oraz procesami inflacyjnymi. Zmiany te są często określane jako „spłaszczenie” NAIRU. Można oczekiwać, że będą one wywoływać istotne konsekwencje dla procesu kształtowania narodowej polityki monetarnej poszczególnych krajów. Celem niniejszego opracowania jest przeanalizowanie prawdopodobnego wpływu „spłaszczenia” NAIRU na efektywność narodowej polityki monetarnej oraz skuteczność jej narzędzi.

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Introduction

Monetary policy effectiveness and efficiency of its tools are currently considered the key condition for achievement of the goals of the state in the area of product and inflation stabilisation. The last decade was a period of increasing optimism among monetary decision-makers related to the success of the majority of highly developed countries in combating inflation that in most cases did not involve high costs in the labour market and on the side of the product. Very frequently this is linked to rapid diffusion of knowledge related to the so-called good monetary policy practices and the opinion concerning high effectiveness of monetary tools. On the other hand, positive consequences of changes in the relation between the labour market situation and inflation processes that are frequently defined as “NAIRU” flattening are reported.

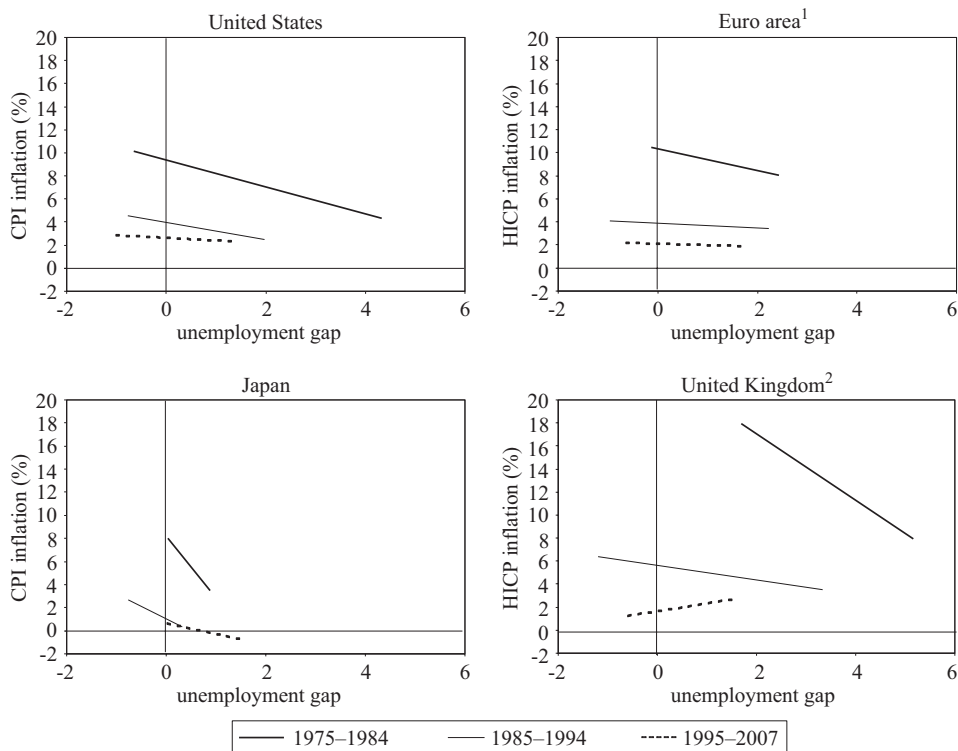
This paper aims at analysing the probable influence of “NAIRU” flattening on the effectiveness of the national monetary policy and efficiency of its tools.

NAIRU flattening during the years 1975–2007 and its causative factors

According to the dominating orthodoxy the decrease of the unemployment level below the natural unemployment rate¹ leads to stimulating the inflation pressure. As a consequence, it is a factor forcing monetary policy tightening. However, since the mid nineties of the past century, in many highly developed countries, simultaneous decrease of unemployment, frequently below the estimated natural rate, and retaining the stability of inflation, or frequently even its decrease, were recorded. That phenomenon was particularly well visible in the United States, but it also applied to the European Union countries (STROH 2002). As a consequence, we can talk about, at least short and medium term, modifications of the traditional relations between the phenomena of inflation and the product that are reflected by NAIRU flattening. This is presented in figure 1 in relation to the highest developed economies of the world.

Analysis of empirical studies concerning the sources of changes in monetary transformation mechanisms in highly developed countries allows indicating three channels that could lead to NAIRU flattening. Those are:

¹ That term has been proliferated by Milton Friedman, although economists with Keynesian background much more frequently use the term NAIRU (*non accelerating inflation rate of unemployment*). Currently economists are generally in agreement that the differences between both concepts are mainly limited to the issue of terms used and rhetoric in describing the same phenomenon. See B. Snowdon, H. Vane, *Rozmowy z wybitnymi ekonomistami*, Dom Wydawniczy Bellona, Warszawa 2003, p. 159.



Where:

Unemployment gap is the difference between unemployment level and NAIRU (estimated according to the OECD methodology). The graphs show straight regression lines computed for quarterly data.

¹ For the Euro zone, CPI until 1991. The Federal Republic of Germany is used in place of the entire Germany for the purpose of estimating the aggregated Euro zone before 1991.

² Trend line grade for the United Kingdom from 1995 to 2007 should not be interpreted as a hint that deeper recession is linked to higher inflation. Award of operational independence to the Bank of England in May 1997 changed the relations between the British level of unemployment and inflation significantly. That change indicates that the regression analysis from 1995 to 2007 might be burdened by an error.

Fig. 1. NAIRU in the most important world economies during the years 1975–2007
 Source: *OECD Economic Outlook 2007*.

- increasing productivity of labour resulting mainly from progress in teleinformation technologies;
- changes in the labour market structure resulting from the increase in importance of high quality human capital, increased mobility of labour and labour markets deregulation processes;
- globalisation.

The first and the second channel are tightly linked with each other. According to the majority of economists, both progress in teleinformation

technologies and structural changes in contemporary labour markets and higher quality of human capital form an important source for labour productivity growth rate acceleration. When the dynamics of labour productivity is significantly ahead or similar to the dynamics of nominal wages, which are strongly negatively correlated with the unemployment level, this allows maintaining a relatively constant level of actual wages despite an increase in nominal wages driven by the “tight” labour market. As a consequence the unit labour costs for companies remain relatively stable thanks to which the risk of inflation coming from increasing production costs is eliminated.

Focusing on structural changes in the labour markets we can talk about two opposite phenomena. In case of highly developed countries the demand for highly skilled employees and the relatively inflexible supply of them resulting from demographic changes as well as increasing costs of education and increasingly lengthy educational path can lead to increasing the bargaining power of employees in payroll negotiations. This phenomenon may contribute to increasing the NAIRU gradient and shifting it upwards. On the other hand, during the recent decades phenomena such as increasing employment rotation in case of the majority of economic sectors, increasing importance of new, flexible forms of employment and temporary employment as well as limitation of the traditional power of trade unions started appearing in the labour markets of the OECD countries². The literature frequently indicates that the process of increasing global competition is one of the major causative forces of those phenomena. Those factors can influence in a significant way the labour market dynamics and can decrease the NAIRU level, at least in the medium-term perspective. The influence of teleinformation technologies and Internet on decreasing the job search costs and increase in labour markets transparency is another important factor leading to structural changes in the labour market.

² Those issues are widely discussed by Paul Osterman. see P. Osterman, *Labor Market Intermediaries in the Modern Labor Market* [in:] R. P. Giloth (ed.) *Workforce Intermediaries for the Twenty-first Century*, Temple University Press – The American Assembly, Columbia University, Philadelphia 2004, pp. 155–169; P. Osterman, *Work Reorganization in an Era of Restructuring: Trends in Diffusion and Effects on Employee Welfare*, *Industrial and Labor Relations Review*, 2000, Vol. 53, No. 2, p. 179–196. Robert Gordon highlights the important influence of the decrease in the power of trade unions on NAIRU in case of the USA. See: R. J. Gordon, *The Time-Varying NAIRU and its Implications for Economic Policy*, *Journal of Economic Perspectives*, 1997, Vol. 11, No. 1. pp. 11–32. Sushill Wadhvani comes to the same conclusion in case of the British economy. See: S. Wadhvani, *Is Inflation Dead?*, Lecture at the National Council of Applied Economic Research in New Delhi, India 17 December, Bank of England 1999. That phenomenon was recorded generally in the majority of the OECD countries during 1990;s. This is confirmed by studies of Michael Dumont, Glean Rayp and Peter Willeme, who verified empirically the significant negative influence of increasing internationalisation on the power of trade unions in Belgium, France, Germany, Italy and the United Kingdom. See: M. Dumont, G. Rayp, P. Willeme, *Does Internationalization Affect Union Bargaining Power? An Empirical Study for Five EU Countries*, *Oxford Economic Papers*, 2006, Vol. 58, No. 4, pp. 77–102.

As a consequence, improved effectiveness of labour markets in linking the demand side with the supply side can influence decreasing long-term unemployment level and the natural unemployment level (*Wider on the subject see*, 1998, pp. 16–24).

Coming to the third probable source of lowering the NAIRU it should be pointed out that changes in inflation processes resulting from globalisation can have twofold nature. Currently the economists agree that teleinformation revolution has contributed significantly to limiting the transaction costs included in the traditional menu costs models. This translated into an increased potential for applying dynamic price strategies and higher frequency of price changes in micro-entities³. As a consequence, the higher frequency of price adjustments in case of an increasing part of the economy forming an element of the global competitive market may lead to higher variability of prices related to changes in economic activity. This should translate into increase in the gradient of NAIRU (*OECD Economic Outlook*, 2007). There are, however, a number of important factors related to the globalisation process that may lead to flattening of NAIRU. Already in mid-nineties of the previous century Joseph Stiglitz indicated that an increase in intensity of competition in global market might form a factor eliminating former limitations of the supply side and as a consequence lead to long-term decrease of NAIRU. It should be highlighted, however, that he did not model that mechanism (STIGLITZ, pp. 3–14). The econometric verification of that phenomenon in the United Kingdom can be found in the analysis by Nicoletta Batini, Brian Jackson and Stephen Nickell, whose studies confirm the influence of globalisation on limiting the potential for increasing the margins by companies even in the situation of increasing domestic demand (BATINI, JACKSON, NICKELL, 2005, pp. 1061–1071). Increased importance of international links among economies, increasing specialisation in international trade, lead to weakening the traditional sources of inflation stimuli such as the increasing domestic demand and results in increasing the importance of factors of global nature. Under such conditions equilibrium in global, relatively flexible and competitive markets is an increasingly important factor determining the level of prices in individual countries⁴. That phenomenon gained in power in particular during the nineties of the previous century and it undoubtedly can contribute to NAIRU flattening (BORIO, FILARIO 2007).

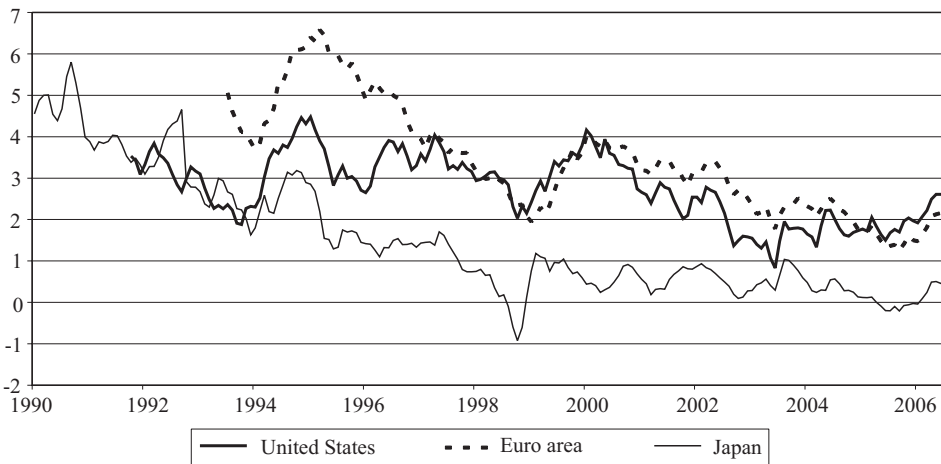
³ Lonard Nakamura analyses that issue in very detail in the American trade sector. See: 1998, pp. 3–14.

⁴ Sectors of industrial goods and services that are subject to international trade, characterised by relatively high flexibility of supply will be, in particular, the source of higher stability of prices. On the other hand raw materials sectors and agriculture with relatively rigid flexibility of supply can be included among global factors that may form the global sources of inflation stimuli.

Monetary consequences of NAIRU “flattening”

Explaining to what extent the discussed factors translate into changes in the NAIRU course is an important problem for empirical studies. Nevertheless, the consequences of the influence of a change in NAIRU for economic policy and the potential of the State to influence the economic situation in a given country remains the key issue.

According to some commentators, lowering of NAIRU and limitation of variability of prices resulting from the domestic demand size may create conditions for central banks to conduct “milder” medium-term monetary policy that would allow maintaining lower than possible until recently unemployment without excessive risk of building up inflation pressure (Compare: *OECD Economic Outlook*, 1999, p. 93). Figure 2 confirms the global trend to decrease the real interest rates, which is consistent with the above analytical pattern.



The difference between the nominal rates and inflation expectations. The expected average inflation level of CPI during the next 10 years for the United States based on the Survey of Professional Forecasters (SPF) by the Federal Reserve Bank of Philadelphia. The expected average inflation level of HICP during the next 5 years for Euro Zone based on the SPF by the European Central Bank. The expected average inflation level of CPI within the next 6–10 years for Japan based on the Consensus Forecasts.

Fig. 2. Level of real interest rates in the United States, Japan and countries belonging to the Euro Zone during the years 1990–1997

Source: *OECD Economic Outlook* 2007, p. 196.

On the other hand, the analysed change in NAIRU development may make conducting such a “mild” monetary policy rather difficult, increase the risk related to it and limit the effectiveness of actions undertaken by monetary authorities.

In case of the first and second channel that may influence NAIRU, a change in the very delicate and difficult to capture relation between: wages, prices, productivity and unemployment level is strongly stressed. The opinion that thanks to the higher productivity of labour, which, as a result of time delay, might not be followed by the increase in nominal wages, despite a very low unemployment level it is possible to maintain the constant level of unit costs represents a common element of both those approaches. This may be treated as a positive supply shock that is supportive for low inflation level. By the same the conditions are created for conducting a milder monetary policy in the environment of expansion without the risk of overheating the economy. According to optimists, this may be supportive for long-term, stabile and sustainable economic growth.

The analysed changes, however, do not have to be the base for the durable mechanism facilitating conducting the monetary policy. Durable acceleration in labour productivity increase rate and retaining it at a high level is not of key importance for maintaining low inflation under conditions of fast economic expansion. The more important thing is whether at a given moment acceleration in labour productivity increase rate takes place. This is the condition for appearance of the time delay in adjustment of real wages to the higher labour productivity increase rate. Under conditions of rapid economic growth that is accompanied by low unemployment level, limiting the increasing labour productivity increase rate and stabilizing it at even a high level, after eliminating the time delays, can lead to return of the inflation pressure and represent the beginning of serious problems for the monetary policy (Wider see: KOENING 2000). As a consequence, that mechanism should be treated as short or, at the most, medium-term source of anti-inflation pressure. That issue can be presented by applying the following simplified approach. According to the dominating theory and historical data for the majority of highly developed countries it can be assumed that the real increase of wages representing the difference between the nominal increase of wages and the inflation is tightly linked to the increase in productivity of labour. This can be represented as:

$$\frac{dy}{dw} - \frac{dy}{dp} = \frac{dy}{dq}$$

where:

w – wages,

p – prices,

q – productivity.

After reversing that relation we can see that the increase of prices is related to the increase of the unit labour cost, i.e. the difference between the increase of wages and increase of productivity:

$$\frac{dy}{dp} - \frac{dy}{dw} = \frac{dy}{dq}$$

As a consequence, when sufficiently fast increase in labour productivity increase rate takes place the level of inflation may be stable or even the inflation can decrease despite low unemployment level forcing an increase in the level of wages. Shortly speaking, increasing labour productivity increase rate linked to the delay in adjustment of wages to the increasing labour productivity increase rate may balance or even outweigh the inflation effects resulting from the low level of unemployment. Unfortunately, that does not have to mean permanent liquidation of inflation pressure. The labour productivity increase rate may stay permanently high but one cannot that it will permanently accelerate. At a certain moment it must stabilize. Although that situation may occur even at a high level, it is synonymous with elimination of anti-inflation stimulus. Lack of adequate reaction by monetary authorities at that moment would be equivalent to building up the inflation pressure requiring “tight” labour market (KOENING 2000, pp. 7–9, 12).

Considering that accurate determination of the time and direction of labour productivity trend is all the time one of the most difficult tasks for economic forecasting the above analysis shows what important challenges the monetary authorities are facing in the situation of NAIRU “flattening”. It also proves that anti-inflation influence of changes related to labour productivity increase rate increase might be of temporary character. The moment that positive influence is extinguished it may make conducting adequate monetary policy more difficult (see also: MELJERS, 2006, pp. 1–23; CETTE, MAIURESSE, KCOGLU, 2004).

The ability of the central bank to influence the size of the domestic product gap and its influence on the inflation processes is one of the foundations of anti-cyclic monetary activities effectiveness. Meanwhile, the possibility of appearance of a significant limitation in relations between inflation dynamics and the size of the domestic product gap and at the same time increase in the dependence of inflation on the global balance of demand and supply is an important consequence of NAIRU flattening. Under favourable circumstances that phenomenon may prevent appearance of domestic inflation pressure. However, in certain situations it may represent a very serious problem for the national monetary authorities (See: BEAN 2006, p. 472).

Tight links between local inflation processes and factors of global character makes determining the gap in the domestic GDP more difficult for the

monetary authorities. For the central bank this means limiting the effectiveness of the inflation control tool. As a consequence, under conditions of NAIRU flattening excessively loose monetary policy may take place during the times of changing mechanisms of monetary transmission. Under such circumstances the central bank may refrain from tightening the monetary policy despite increasing inflation pressure pointing at its absence or its minor symptoms in the labour market. In a longer time perspective making that mistake may result in permanent increase of inflation expectations and inflation. The necessary, but late reaction of the central bank will take place under conditions of low sensitivity of inflation to the central bank interest rates level and high dependence of inflation on exogenous global factors. In extreme case, when the inflation is independent of the size of the domestic supply gap, monetary restrictions may nor bring anti-inflation results and on the other hand, may result in already strong slowdown in the domestic economic activity. As a consequence, those activities may lead to a high increase of unemployment. This would mean lack of traditional direct influence of monetary authorities on inflation dynamics. The influence of restrictive monetary policy could be limited to the exchange rate mechanism only. Higher domestic interest rates could favour higher inflow of foreign capital and appreciation of the currency resulting in limiting the inflation pressure (See: YELLEN 2006). The limitation of activities of the exporters would, however, be the additional side effect of that. This would increase further the costs of anti-inflation activities. That situation is equivalent to very high costs of returning to the stability of prices. Additionally, even that indirect channel of monetary authorities influence on inflation pressure might be endangered. Under conditions of strongly integrated global financial markets, when market participants find out that monetary authorities do not focus on maintaining long-term stability of prices this may cause mass resignation from maintaining resources denominated in the currency of a given country. This would lead to its major weakening, which in turn would translate into the additional increase of inflation pressure⁵.

Similarly, in such a case low effectiveness and very high costs of monetary authorities reaction to the global exogenous negative supply shocks could be expected. This proves that NAIRU flattening may limit the effectiveness or, at least hinder the control of economic processes by monetary authorities.

Studies conducted by the International Monetary Fund confirm a significant decrease in the influence of the domestic GDP gap on inflation in the majority of countries. During the last twenty years the increase in production above the trend by 2 percent points for the period of one year caused the

⁵ The possibility of appearance of such risk is discussed wider by Donald Kohn. See: D. L. Kohn, *Globalization, Inflation, and Monetary Policy*, At the James R. Wilson Lecture Series, The College of Wooster, Wooster, Ohio, October 11, 2005, <http://www.federalreserve.gov/boarddocs/speeches/2005/20051011/default.htm> (28.04.2008).

increase of inflation by 0,4% during the consecutive year in the individual countries while during the earlier decades that effect was 0,6%. Currently, after three years from appearance of the demand shock the effect on inflation disappears entirely while twenty years ago still around a half of the influence on inflation would have to be visible (after: RYBIŃSKI 2007, pp. 283–284).

Conclusion

The analysis conducted proves that monetary decision-makers should be aware of the possible risks related to NAIRU “flattening”. That element should be considered during formulation of the national monetary policy. Additionally, a lot indicates that global networking of the economy, development of global markets of services, knowledge, labour and other products that until recently had been treated as products that had not been the subject of international exchange, will in the future lead to further loosening of relations between the domestic GDP gap and inflation processes. As a consequence, it can be expected that NAIRU “flattening” represents a factor increasing the risk of making serious mistakes in the monetary policy area. Those mistakes may result in building up the inflation pressure, which under conditions of NAIRU “flattening” may prove difficult and costly to control. The consequences of appearance of that negative scenario gain even more importance if the direct costs related to appearance of inflation and its indirect negative consequences will lead in a given country to the negative disturbance in the long-term economic growth path.

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PROCESSES OF CONCENTRATION IN SUGAR INDUSTRY

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Key words: concentration, sugar industry, market share.

Abstract

The paper presents the progress and the consequences of concentration processes in sugar industry. The studies encompassed both market and production concentration processes. The current structure of entities in the sugar market is the effect of statutory regulations and several years of ownership-capital transformations that lead to development of five owner groups. Within those groups concentration of production occurred as a consequence of which a significant improvement of production-technological results of sugar industry and its raw materials base took place.

The situation in the sugar market is determined to a high extent by its specifics and the market conditions that encompass statutory regulations, demand factors and the global market situation. The currently taking place sugar market reform is to result in a decrease in prices and production volumes, which requires termination of production in consecutive sugar refineries and taking up other types of production by such plants. This forces further restructuring and concentration processes. Only the most productive and modern refineries will be able to continue production.

PROCESY KONCENTRACJI W PRZEMYSŁE CUKROWNICZYM

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Słowa kluczowe: koncentracja, przemysł cukrowniczy, udział w rynku.

Abstract

W artykule przedstawiono przebieg i skutki procesów koncentracji w przemyśle cukrowniczym. Badaniami objęto procesy koncentracji rynku i koncentracji produkcji. Aktualna struktura podmiotowa rynku cukru jest efektem regulacji ustawowych i trwających kilkanaście lat przekształceń własnościowo-kapitałowych, które doprowadziły do powstania pięciu grup właścicielskich. W obrębie tych grup doszło do koncentracji produkcji, w efekcie której nastąpiła istotna poprawa wyników produkcyjno-technologicznych przemysłu cukrowniczego i jego bazy surowcowej.

Sytuację przemysłu cukrowniczego w dużej mierze determinuje jego specyfika oraz uwarunkowania rynkowe, na które składają się ustawowe regulacje, czynniki popytowe i sytuacja na rynku światowym. Przeprowadzana obecnie reforma rynku cukru ma doprowadzić do spadku cen i zmniejszenia rozmiarów produkcji, co wymaga zaprzestania produkcji w kolejnych cukrowniach i podjęcia przez nie innych rodzajów działalności. Wymusza to dalsze procesy restrukturyzacji i koncentracji. Produkcję będą mogły kontynuować tylko najbardziej wydajne i nowoczesne cukrownie.

Introduction

Sugar industry has a long tradition and it is an important branch of agricultural-food processing and the entire economy in Poland. Sugar is considered a strategic product and its consumption increases systematically. It is a product that is used not only for direct consumption in households but also as a semi-finished product in other sectors of agricultural-food industry, i.e. in the fruit and vegetables, spirits, sweet bakery and confectionery industries. Side products from sugar beet processing (molasses, beet pulp and liming lime) are raw materials for spirits, chemical, pharmaceutical, cosmetic and fodder industries. The side production of sugar industry played a particularly important role during mid 20th c. (WYKRĘTOWICZ 1997, pp. 284–286). It is probable that in the near future its importance will increase again as a consequence of the need for management of sugar production surplus and the situation in the fuels market.

Because of tight links to the raw materials base, sugar industry is one of the industries that are scattered territorially. At the same time, however, for many years, and in particular after the division of multi-plant State owned enterprises in 1990, it was dispersed excessively (See: GIERSZEWSKI 2001, p. 30). Production was carried by some tens of plants of relatively small size. Excessively short sugar production campaigns, excess of production capacity and high fixed costs influenced financial results of sugar refineries unfavourably. In the environment of intensifying competition and increasing market surplus, those factors represented a threat for further existence of many plants and forced undertaking of improvement activities. The statutory sugar market regulation introduced in mid 1990s changed the operation principles of that market and outlined the direction of ownership transformations and organizational changes in sugar industry. It was expected that newly established sugar holdings would accelerate the sector modernization and restructuring processes. The initial years when those regulations were in force did not bring the expected results, although a clear improvement of production as well as technical-productivity indicators occurred (KONDRAKIEWICZ 2000, pp. 223–227). During the consecutive years significant structural transformations in entities present in the sugar market took place

and gradual decommissioning of some plants started. Those processes resulted in the increased level of concentration in sugar industry.

Concentration is a process leading to increasing the economic power of business entities. That phenomenon can be generally defined as increase of the quantitative advantage of a given entity in relation to the entire community. In case of processes occurring in the industry market concentration and production concentration are most frequently identified. Market concentration means the situation where a given market is dominated by the largest entities. Production concentration is the process of increasing the size of the individual industrial units, i.e. the increase in scale of production in specific companies (SOSNOWSKA 1998, pp. 11–12). Production concentration is achieved frequently through concentration of enterprises, i.e. mergers, strategic alliances and purchase of shares in other entities (WAWRZY尼亚K 2000, p. 29).

For years studies on concentration processes have been the subject of interest for economists and practice of management, mainly in the context of competition policy development. Assessment of those processes, and in particular their economic consequences has not always been straightforward and it happens to be the subject of numerous controversies. On one hand, concentration leads to monopolization, which is generally considered a negative phenomenon while on the other it allows achievement of the effects of scale and improvement of operational effectiveness. In the environment of globalisation and increasing competition it can be considered a natural and inevitable element of development. In view of the above, determining the premises for, development and consequences of competition in sugar industry is an important issue.

Synthetic presentation and assessment of the development of concentration processes in sugar industry considering its two basic areas, i.e. market concentration and production concentration was the main goal of the paper. The specific objectives of the studies were: determination of basic premises for and importance of concentration from the perspective of sugar industry specificity, determination of the current market position of the main producers, analysis of the methods and rate of production concentration and assessment of economic consequences of the phenomena observed in the sugar market.

Methodology of studies

Processes of concentration in sugar industry are the subject of the paper. The timeframe of the analysis covered the period from early 1990s until the production campaign of 2007/2008. The latest four production campaigns

during which Polish sugar market was entirely subject to the Common Agricultural Policy of the European Union was subject to detailed studies. Materials of the Institute of Sugar Industry (IPC) and the Association of Sugar Industry Technicians (STC) as well as information from the major sugar manufacturers in Poland were the source data for analysis.

Determining the specificity of sugar industry, which to a significant extent governs its functioning was the starting point for conducting the studies. In that context it was impossible to disregard pointing at the issues concerning the statutory regulation of sugar market that, to a significant extent, determines the situation of the sector and in Poland has also become the main impulse for structural transformations. Several years of continual ownership and organizational transformations in sugar industry, which as a consequence have led to significant structural transformations and major market concentration were also subject to observation. As their consequence concentration of all Polish sugar refineries into five ownership groups, that is: Krajowa Spółka Cukrowa (National Sugar Company), Südzucker, Pfeifer und Langen, British Sugar Overseas and Nordzucker has taken place. The studies encompassed all those groups. The percentage share in the domestic sugar market was assumed as the main indicator of market concentration.

Next, the scope and development of production concentration in individual ownership groups was analysed. Those processes occurred through gradual decommissioning of smaller refineries, which allowed increasing the average production capacity and making a better use of the production potential in the operating plants. SOSNOWSKA (1998, p. 13) indicates that the value is the most often applied measure of production. In sectors with uniform production (and that is the nature of sugar industry) natural measures that are more convenient in case of comparisons can be used. That is why the analysis is based on the volume of production and not on production value.

The diagnose of production-economic standing as well as major weaknesses and problems of sugar industry at the beginning of 1990s was the reference point for assessment of the development and consequences of concentration processes. The comparisons were made by matching the major parameters from that period with the current production-economic standing of sugar industry. The majority of parameters characterizing the sector are subject to frequent changes and seasonal fluctuations. This hinders assessment of the direction and consequences of transformations taking place because, depending on the base period assumed the results may differ significantly. For those reasons the average values for the years 1990–1994 were assumed as the base values for comparisons and assessments. The studies conducted allowed indicating the major directions of changes and assessment of the development of concentration processes in sugar industry as well as formulating conclusions concerning

their effects. The final part of the paper deals with the prospects for development and challenges facing sugar industry.

Premises for statutory sugar market regulation

Currently, Poland produces ca. 2 million tons of sugar per year and is the third largest producer of sugar in the European Union after Germany and France. Sugar industry is a typical agricultural industry linked directly to sugar beet cultivation. That cultivation has positive influence on technological progress in agriculture and represents an important source of income and support for numerous farms. Even during the period of global decline in profitability of production in entire agriculture sugar beet cultivation allowed achievement of income higher than in other types of production. Up to now sugar beet remains one of the most profitable agricultural products and it is projected that this situation will continue in the future (SZAJNER 2006, p. 15).

Sugar industry has positive influence not only on agriculture and its environment but also on developments in other sectors of economy it cooperates with. It is also not insignificant from the perspective of unemployment that sugar industry creates jobs linked to it directly and indirectly. It can be concluded, as a consequence, that it stimulates development in many sectors of national economy.

As a consequence of high dependence of sugar industry on agriculture, it is also influenced by specific characteristics of agricultural production such as production seasonality and campaign type of work. Significant fluctuations in the yields resulting from climatic factors result in the situation where relatively frequently the production capacities of sugar industry are not used fully. The above conditions and the phenomenon of market unreliability were the main premises for subjecting that sector to intervention. There are continual arguments concerning the reasons for, the scope and the instruments of that intervention (MAKARSKI 1998, pp. 302–315) Generally, however, there are no major doubts as concerns the need for that intervention; what is more there are indications of increasing character and expansion in scope of agricultural policies in the majority of highly developed countries (WILKIN 2003, pp. 42–48).

In the European Union, statutory regulation of sugar market took place already during 1960s, i.e. at the beginning of implementation of the Common Agricultural Policy. The scope of the regulation is wide; intervention encompasses sugar, sugar beet, sugar cane, molasses, pulp, sugar refining products and industrial substitute of sugar in the form of isoglucose obtained from maize (so-called cereal sugar) while some other sugars have been covered by other market regulations (CZYŻEWSKI, HENISZ-MATUSZCZAK 2006, pp. 179–180).

The sugar market in Poland has been subjected to statutory regulation in mid-1990s. The difficult and unstable situation of the industry was the basic premise for implementation of regulation. The crisis in food industry that started in 1990 covered also the sugar industry and led to drastic deterioration of economic-financial standing of that industry. The technical status of Polish sugar refineries deteriorated; their size structure was unfavourable. Significant capital outlays were necessary for investments and modernization in all areas of operation starting with the raw materials base, through production processes and management up to sales and distribution policies. Both productivity parameters and production capacity changed too slowly for the Polish sugar industry to be able to meet the international market requirements. Supporters of statutory sugar market regulation assumed that it would improve the situation of sugar industry, accelerate restructuring processes and facilitate preparation for integration with the European Union. Demanding statutory market regulation they referred to pre-war traditions and legal regulations in force at that time (*Dzieje cukrownictwa*. 1981, pp. 172–174). In 1994, the Act regulating sugar market was enacted. Its imperfections as well as increasing market imbalance and absence of satisfactory effects in the form of improvement in the economic-financial situation of sugar producers caused that the Act was amended several times.

Integration with the European Union resulted in immediate applicability of European regulations to the Polish sugar market. At the same time the issue of necessity to conduct further reforms in the sugar market regulation appeared as the system in operation was criticized for high prices in the internal market and low competitiveness in the global market. As a consequence, the European Commission approved the draft reform that has been implemented as of the 2006/07 season. The major changes include decreasing the prices and lowering the production limits that are to be eliminated ultimately, and introduction of a system of compensations for farmers and special subsidizing for those sugar producers who resign producing it (CHUDOBA 2006, pp. 10–11).

Market concentration

Market concentration processes in sugar industry have taken place, to a significant extent, thanks to organizational-ownership transformations initiated by the Act of the 26th of August 1994 “On sugar market regulation and ownership transformations in sugar industry”. In 1995, in implementation of its provisions, 4 holding companies were established (Lubelsko-Małopolska Spółka Cukrowa, Mazowiecko-Kujawska Spółka Cukrowa, Poznańsko-Pomorska Spółka Cukrowa and Śląska Spółka Cukrowa). Their major goals were to accelerate restructuring and privatisation of sugar industry.

Entry of foreign strategic investors and resulting inflow of capital allowed commencement of the processes of restructuring and modernization of Polish sugar refineries. At the same time the process of establishing strong regional groups with involvement of foreign – German, British and French capital started (KONDRAKIEWICZ 2006, pp. 129–134).

The next transformation in the structure of entities in Polish sugar market occurred a few years later. On the 25th of August 2001 the Act “On sugar market regulation” specifying, among others that some of not yet privatised sugar refineries would be consolidated into the National Sugar Company became effective. The National Sugar Company was established as a result of merger of two holding companies, i.e. Lubelsko-Małopolska Spółka Cukrowa and Poznańsko-Pomorska Spółka Cukrowa with Mazowiecko-Kujawska Spółka Cukrowa Following registration of the merger (30th of September 2003) the process of consolidation of subsidiary companies started leading to formation of a structure with characteristics of a consortium. Currently the National Sugar Company consists of 27 plants and producing over 37% of the national production it is the dominating entity in the Polish sugar market (see fig. 1).

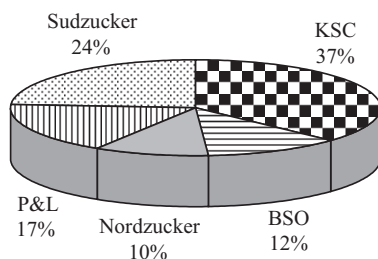


Fig. 1. Share of owner groups in sugar production in Poland during 2007/08 campaign
Source: Own work based on STC data.

Südzucker Polska Group consisting of 22 refineries is the second largest in size and importance in the domestic sugar market. Südzucker started its expansion into the Polish market in 1997 when it became the strategic investor of Ropczyce refinery belonging at the time to Lubelsko-Małopolska Spółka Cukrowa. The company built its current market position through consecutive acquisitions. The most important of them was the acquisition of Saint Louis Sucre, which meant simultaneous purchase of Silesian refineries belonging at the time to that French company. In addition to the Silesian refineries the group encompasses refineries Ropczyce and Strzyżów as well as the company Cukier Małopolski S.A. with three refineries. The current structure of the group was built through consecutive organizational changes. In 1999 the company Cukier Królewski working for the Group and dealing with sales of

sugar was established. During the campaign of 2003/2004 Przeworsk refinery was acquired by Cukier Małopolski S.A. company, which completed the process of mergers of the eastern refineries. In 2004, a company managing all the companies in which the Group possesses majority interest was established. After its merger with the company Cukier Królewski in March 2005 the company was formed that became the new trade bureau of Sudzucker Polska group.

Pfeifer und Langen Group encompasses 11 refineries located in Wielkopolska and it is the third producer of sugar in Poland. At the first stage of group building 6 refineries were merged and next other 5 from Kalisz-Konin group were acquired. The current group structure was formed in 2004. All the refineries are concentrated in the production group; in addition the group has a separate distribution company.

British Sugar Overseas (BSO), consisting of 10 refineries is another group in the Polish sugar market. It achieved its market share in September 2000 after acquisition of 4 refineries belonging to Rolimpex, Danisco Sugar and consortium of those companies. As of 2003, BSO Polska is the majority shareholder of the company SugarPol and it still aims at strengthening its market position. BSO sells its products in Poland under the brand name of Srebrna Łyzeczka.

Nordzucker, which currently has 6 refineries, developed its market position in a similar way as the BSO. The refineries are located in two areas distant from one another, in the vicinity of Poznań and Toruń. This resulted in the situation that within that group independent companies of local character, i.e. Wielkopolski Cukier S.A. in Poznań area and Pomorski Cukier S.A. in Toruń area operated initially. The current group structure was formed in 2005 after completing the merger of the regional companies. The refineries in Opalenica and Chełmża carry out production while sales of products are carried out under the brand name of Promyk.

The volumes of sugar production in individual owner groups are determined to a significant extent by production quotas obtained by them. As a consequence of progressing sugar market reform those quotas decrease systematically. The total production limit awarded to Polish producers for the campaign of 2004/2005 was 1580 K tons of sugar in quota A (i.e. allocated for the domestic market needs) and 91,9 K tons of sugar in quota B (for export with subsidies). For the next season the reduced quotas were awarded, i.e. in case of quota A to 1495,3 K tons and quota B to 86,9 K tons. During the season of 2006/07 and the following the quotas A and B were merged and reduced again. Poland was awarded the limit of 1498 K tons and did not use the possibility of selling a part of it to the restructuring fund but to the contrary it purchased additional quotas. As a consequence the production quotas for the

season of 2007/2008 and following is 1533 K tons. The white sugar production level during the covered period by individual producers is presented in Table 1.

Table 1
Production of white sugar (in K tons) and share of owner groups in sugar market (in %) in Poland during the years 2004–2008

Producer	Campaign							
	2004/05		2005/06		2006/07		2007/08	
	K tons	%	K tons	%	K tons	%	K tons	%
National Sugar Company	798.7	39.89	794.7	38.42	637.5	37.06	722.4	37.35
Südzucker	517.9	25.88	537.3	25.97	447.1	25.99	462.3	23.90
British Sugar Overseas	206.9	15.96	208.2	16.98	208.1	16.61	227.2	17.44
Nordzucker	159.0	10.33	177.0	10.07	142.0	12.09	184.9	11.75
Pfeifer & Langen	319.6	7.94	351.1	8.56	285.7	8.25	337.2	9.56
Total	2002.1	100.0	2068.3	100.0	1720.4	100.0	1934.0	100.0

Source: Own computations based on the STC data.

The actual production level during each year exceeds the awarded production quotas. This results from the fact that for economic reasons only large scale production of sugar is profitable. During the past years all producers produced a part of their production within the co-called quota C (for export without subsidies) the share of which in the total production was in average ca. 20%. Under the current conditions the existing production capacities cannot be used fully because of the problems with disposal of production surplus exceeding the awarded limits. The effective regulations do not allow export of surplus sugar. The surplus can be transferred for the consecutive campaign or sold to the industry.

Data presented in Table 1 indicates relatively large level of variability in sugar production during consecutive years. This results mainly from climatic factors and consequential differences in quality of raw material produced. It should be mentioned, however, that during the earlier years even larger fluctuations in the production levels than currently were observed.

The variable level of production during consecutive years is accompanied by a relatively constant market structure. The market position of individual owner groups developed at the time of integration of Poland with the European Union has not changed significantly during the last few years. In the vast majority of cases their shares in the market changed from year to year by within one percent point only. The general trend is a small decrease in importance of the largest groups, including the leader, the National Sugar Company and a slight improvement in the position of the smallest producer, Nordzucker.

Production concentration

Ownership-organizational changes that have led to establishment of a few groups of sugar producers in Poland were accompanied by restructuring processes. Aiming at increasing their competitiveness, all owner groups present in the Polish market have undertaken different activities that encompassed almost all aspects of operation of sugar refineries – starting from raw materials management and purchasing of other raw materials, through organization of production processes and management, modernization of production capacity, restructuring of plants up to the sales policies. From the perspective of specificity of sugar industry and the situation that existed during early 1990s, decommissioning of some plants seems the most important activity. Such actions were expected when sugar holding companies were established as it was assumed that this would accelerate production concentration processes and lead to decommissioning of small, unprofitable refineries. However, during the period of their operation such processes occurred only occasionally (KONDRAKIEWICZ 2000, pp. 212–214). In general, holding companies established companies did not fulfil the hopes related to them as they did not contribute either to regulating the market or to accelerating the processes of restructuring and privatisation of sugar industry. That is why we should agree with the negative opinion concerning the Sugar Act (BAŁTOWSKI 2002, p. 226).

The processes of production concentration and decommissioning of refineries were undertaken at a wider scale only after 2000, and they intensified in 2004 when as many as 14 plants were decommissioned. During the consecutive years those processes were continued but with lower intensity. As the consequence, during the campaign of 2007/2008, only 29 refineries, i.e. only 40% of all refineries existing in Poland worked. Which is important, those processes involved all owner groups; currently the number of refineries working in each of them is lower than the number of refineries that were decommissioned. It should also be pointed out that groups with participation of foreign capital started decommissioning processes earlier and conducted them faster than the National Sugar Company. The detailed data concerning working refineries by individual groups is presented in Table 2.

Decommissioning of sugar refineries does not mean their absolute liquidation. Some plants deal with warehousing of sugar and organization of raw materials contracting; attempts are also taken at entire change of the profile of their business. Sugar production limits and the raw material base of decommissioned plants are taken over by economically stronger refineries with higher production capacities. This allows development of their potential and leads to clear improvement in the structure of refineries as concerns day processing capacities. Nationally, the percentage share of small plants

Table 2

Number of sugar refineries in Poland by owner group

Owner group	Number of refineries				
	total	in operation			
		2004/2005	2005/2006	2006/2007	2007/2008
National Sugar Company	27	20	18	13	11
Südzucker	22	12	11	10	10
Pfeifer & Langen	11	5	5	4	4
British Sugar Overseas	10	4	4	2	2
Nordzucker	6	2	2	2	2
Total	76	43	40	31	29

Source: Own computations based on the IPC data.

decreases systematically to the benefit of the medium and large ones. During the last campaign refineries with processing capacity of under 2 K tons per day represented just a few percent of the total operating plants while during the early 1990s the majority of refineries had such production capacities. Gliniojeck refinery belonging to BSO is the largest in Poland and it processes in excess of 7,5 K tons of beets per day producing over 100 K tons of sugar per year corresponding in size to an average refinery in the European Union.

Decommissioning of some sugar refineries resulted also in increasing the distance of some sugar beet plantation from working refineries. It should be reminded here that a characteristic of sugar industry is that its basic raw material is unsuitable for extended storage and long distance transport is expensive and results in quality deterioration. As a consequence sugar industry is more scattered than the industries suitable for any location as sugar refineries should be located in sugar beet production centres. Poor location of the refinery (an example here could be Łapy and Ropczyce) causes problems with full use of production capacity resulting from absence of adequate raw materials base and excessive costs of importing sugar beets from distant plantations (SMOLEŃSKI, URBAN 1993, p. 21).

Consequences of concentration in sugar industry

Processes of market concentration and production concentration resulted in significant changes in sugar market structure and the entire sugar industry. All technical and yield parameters characterizing that sector were subject to systematic improvement during the recent years while as compared to the situation of early 1990s a significant progress has been achieved. Table 3

presents the basic data concerning production and technological indicators of sugar industry during its operation in the environment of the European Union as compared to the situation during the years 1990–1994.

Production and technology results of sugar industry

Table 3

Indicator	Campaign				
	average 1990–1994	2004/05	2005/06	2006/07	2007/08
Sugar production per 1 refinery [t]	30,2	46,7	51,7	56,1	66,7
Sugar crop [t/ha ⁻¹]	5,15	6,86	7,23	8,2	9,5
Sugar yield [%]	12,82	16,22	17,29	15,02	15,05
Average day processing volume [t]	209,8	144,8	141,9	131,7	132,8
Average day processing volume per 1 refinery [t]	2,76	3,37	3,55	4,25	4,58
Campaign length [days]	86	87	84	87	96

Source: Own computations based on the IPC and STC data.

Decommissioning of smaller plants evidently increased the volume of production per refinery. During several years it more than doubled. The average production of sugar in Poland per one refinery is currently in excess of 66 K tons while several years ago it was at the level of around 30 K tons per year. The spread of production volumes at that time was immense – the smallest Polish refineries supplied only 12 k tons of sugar per year while the largest one almost 70 K tons. It is assumed that to achieve satisfactory profitability one plant should produce over 100 K tons of sugar per year. From that perspective the situation is still unsatisfactory, particularly as compared to the other European Union countries.

Decreasing the number of operating refineries resulted in the situation that although the volume of sugar beets processed per day decreased, the volume processed by a single refinery increased significantly (by ca. 65%). Also the yield of sugar per 1 ha improved clearly; it increases systematically from year to year and currently is ca. 9,5 t while during the early 1990s it was just over 5 tons.

From the perspective of the financial results and production effectiveness of sugar industry the length of sugar beets processing period is of major importance. For economic reasons many large European sugar companies undertake attempts at extending the campaign up to even 100 days. In some countries production process modernization involving production of semi-finished products only during the campaign (thick juice) and storing it in appropriate tanks is undertaken. The final stage of production can take place much later (even in April or May) without harm to quality and the total

production costs are lower. In Poland such solutions had not been applied for many years and very short campaigns, frequently carried out just to retain the production limits were a significant weak point of that industry. Decommissioning of some plants allowed extending the campaign in the remaining ones as a result of which, during the recent years, the average time during which sugar beets are processed was extended significantly. During the campaign of 2007/2008 it was 96 days while one of the groups (Pfeifer & Langen) worked for almost 124 days. Also in the BSO group the period of processing is relatively long. The shortest campaigns take place in the National Sugar Company where during the last campaign the average length was over 83 days.

Processes of market concentration and production concentration that took place in individual owner groups have also brought positive changes as concerns the status and organization of raw materials base of sugar industry. The basic data concerning the major indicators of its status during the analysed period is presented in Table 4.

Table 4
Raw materials base of Polish sugar industry

Indicator	Campaign				
	average 1990–1994	2004/05	2005/06	2006/07	2007/08
Area under sugar beet [ha]	392	292	286	237	229
Area under sugar beat per 1 refinery [ha]	5.16	6.79	7.15	7.65	7.90
Sugar beet production [t]	13.1	13.3	12.5	11.5	12.7
Sugar beet yield [t/ha ⁻¹]	33.72	42.7	41.0	48.3	55.7
Number of planters [K]	306.3	77.9	70.7	61.7	60.8
Planters per 1 refinery [K]	4.03	1.81	1.77	1.99	2.10
Average plantation area [ha]	1.15	3.75	4.05	3.68	3.80

Source: Own computations based on IPC and STC data.

The area under sugar beet was subject to significant fluctuations during the consecutive years; analysed in a long perspective it has been decreasing systematically and it currently is over 220 K ha. It is just 60% of the level of early 1990s. At the same time, mainly thanks to cultivation technology development, the yield of sugar beet per 1 ha increased significantly while the total harvest remains at the level only slightly lower than several years ago. The decrease in area under sugar beet is accompanied by evident decrease in the number of planters and increase in the average plantation area. That trend is very clearly noticeable over a longer period of time. All those values indicate a significant progress in development and modernization of raw material base of Polish sugar industry. Unfortunately, in comparison to other countries

Poland still has a lot to do to catch up, particularly as concerns the yields of sugar beets achieved.

Decommissioning of some plans brought not only positive results. Some problems also appeared as, for example, the earlier mentioned problem of the radius of cultivation around individual refineries. At the same time all owner groups have undertaken actions eliminating inconveniences of transport for extended distance and resulting losses in raw material quality. In individual owner groups organizational units have been established that have taken over from the refineries the majority of tasks in raw materials management and they have developed new principles of collaboration with planters. Clear decrease in their number facilitated progress in widely understood quality of raw material supplies (including such characteristics of supply as batch size, regularity, quality uniformity in each batch, extending the time of harvest). Agricultural producers cannot undertake such activities on their own; they also cannot be forced by agricultural policy or administration. Only economically strong processing entities and their groups can initiate qualitative progress in production and supplies of sugar beet (GRABOWSKI 1998, p. 208, URBAN 1996, p. 20). The owner groups currently fulfil that role. As a result of activities undertaken by them an increase in the area of average plantation and partly area concentration represented by increased density of cultivation in the areas around operating plants were achieved. Significant changes occurred in sugar beet reception and its quality assessment, which considers sugar content. Purchasing at factory yard (so-called reception in the field-refinery system) was expanded; some refineries introduced initial cleaning of beets at the field and covering of piles. All those activities improved the quality of raw material significantly and as a consequence facilitated obtaining sugar, increased its yield and decreased production costs. Increase of sugar beet yields and their larger stability were also recorded, which means progress in cultivation technology and less dependence on climatic conditions.

Considering continual surplus in sugar market the sales policy as well as introduction of new products and products quality development are important. In sugar industry direct sales can apply to a small part of the buyers only (URBAN 1998, p. 241), that is why organization of distribution channels gains special importance. Currently, sales policies are dealt with by specialist companies working for large groups, which has eliminated internal competition between individual refineries within them. The situation in production diversification looks less favourable. The range of products remains relatively narrow although some refineries have introduced new products or changed the structure of products manufactured. Only a few refineries switched almost their entire production to new types of sugar (coloured sugar – golden crystal or liquid sugar).

It should be pointed out here that although decommissioning of plants should be considered rational and inevitable for economic reasons it causes serious social problem. So far each decision on decommissioning of a sugar refinery caused numerous protests of the employees and local community. This is understandable when the major importance of that sector and the fact that during early 1990s the sector employed almost 2 million people (including sugar beet producers) are considered. As a result of transformation processes in sugar industry major reductions of employment took place and currently it is twice smaller than several years ago. For some sugar producers the reform means the necessity of terminating production and undertaking other types of business activity. Only the most productive and modern refineries will be able to continue production.

Technology development and good production results of sugar industry do not translate directly into its financial-economic standing, which is unstable and subject to frequent changes. Generally, sugar industry, as compared to other sectors of agricultural-food processing, is characterized by one of the highest levels of diversity in economic-financial indicators (see: DROŹDŹ 2005, p. 19 and *Analiza...* 2007, p. 311).

The economic-financial standing of sugar industry is influenced significantly by sales prices of sugar and sugar beet purchase prices. That later factor develops more favourably for agricultural producers than for the refineries. Covering Poland with Common Agricultural Policy resulted in an increase of the basic purchase prices for sugar beet from PLN 131 to Euro 47,67 per ton (*Podstawowe rynki...* 2005, p. 193). During the period immediately preceding the accession of Poland to the European Union and immediately after it, a rapid increase in domestic demand for sugar and resulting significant increase in its price occurred. However, it was short lasting and as of June 2004 a moderate decrease in sugar prices took place; currently the prices are stabilized. The initial increase of prices contributed to radical improvement of sugar industry financial results, which, however, was short lived. Sugar produced already after the integration was sold at prices lower than immediately before integration while the prices for sugar beet increased significantly. That is why already in 2005 the situation of the sector deteriorated again and it recorded the loss of PLN 18 million (that is 0,33% of its revenues). The following year was better as sugar industry generated over PLN 420 million in profits representing over 8% of its net income (*Analiza...* 2007, pp. 311–312).

Frequent changes in financial standing and price-income situation of sugar and sugar beet producers give rise to two basic questions. First, which factors determine the standing of sugar industry and second, what are the prospects and possibilities for development of the sector. It seems that factors conditioning the current and the future situation of sugar industry and prospects for its

further development can be divided into two main groups. One is the demand factors and the situation in the global sugar market. The second group encompasses statutory regulations, and in particular the changes that must occur as a result of the sugar market reform.

As concerns the demand conditions the situation in global markets seems quite favourable and for the nearest future an increase in demand for sugar is expected, particularly from the developing countries and as a consequence of biofuels production. On the other hand, however, in the global sugar market there is a continual surplus of sugar, competition from manufacturers of isoglucose and cane sugar (mainly Brazil) increases. On the other hand it is difficult to expect a significant increase in demand in the domestic market. The internal consumption of sugar in Poland increases very insignificantly and currently is at the level of around 1600 K tons per year (i.e. ca. 40 kg per capita) that is at the level lower than the level of production.

Statutory regulations are the second, next to the market-demand factors, important element determining the situation in sugar industry and influencing its development potential. Sugar market reform currently in progress in the European Union means a decrease in its price, reduction in size of the production quotas and changes in foreign trade principles (SMOLIŃSKI 2006, pp. 26–40). The assumptions for the reform project sugar production concentration in the regions with the best natural conditions for sugar beet cultivation coupled with its limitation in the other regions. The special restructuring fund from which disbursement of compensations for sugar producers, planters and suppliers of specialized machinery are planned forms the incentive for decommissioning of plants. As a consequence there was a major concern that instead of modernization of Polish refineries they will be closed, as this would be more profitable. However, none of the sugar companies operating in Poland wants to limit production voluntarily. What is more, all producers purchased additional quotas within the pool available to them. It is probable that Poland will remain in the group of countries with high level of production but further restructuring that threatens with loss of many jobs will be necessary.

Termination of sugar production in some European regions may improve the situation and create better development prospects for other producers. Ultimately, the market price of sugar in the European Union is to drop to around EUR 450 per ton, which probably is close to the equilibrium price. As a consequence, only the lowest cost producers will be able to continue sugar production. This is a threat to less productive plants and their employees and planters-suppliers. Consequently, despite the immense progress achieved in sugar industry there is still need for further investments and modernizations including the range of products and production quality to adjust it better to market demands and to match competition.

Summary and conclusions

During several recent years important changes occurred in the Polish sugar market. They encompassed the principles of its organization and operation (including statutory market regulation), ownership transformations and changes in technology and organization in sugar industry. From the perspective of sector effectiveness and its economic-financial standing, the processes of concentration that involved both market concentration and production concentration seem of particular importance.

Market concentration occurred as a result of structural-organizational changes initiated by statutory regulations that promoted grouping of sugar refineries belonging to one owner. They resulted in the division of the market among a few major sugar producers. Currently there are five sugar producing owner groups in the Polish market, the majority of them are groups with foreign capital present also in the markets of other European Union countries. The exception here is the National Sugar Company belonging to Polish capital, which has over 37% share in the sugar market and is the dominating entity in that market. Sudzucker, Pfeifer und Langen, British Sugar Overseas and Nordzucker, holds the consecutive positions and their market shares are 24%, 17%, 12% and 10% respectively. For a few years the market structure has remained at the similar level, which results mainly from the effective production limits. They are much lower than the processing capacities of Polish sugar refineries, which was the main premise for decommissioning of some plants and resulted in the increase of production concentration level.

Processes of production concentration in sugar industry were inseparably linked to market concentration. For economic reasons some of the plants had to be decommissioned. This allowed increasing production capacities in the largest plants and extending the campaign duration but also required major employment reductions. Decommissioned refineries are used as sugar warehouses, they deal with organization of sugar beet contracting and substitute production was organized in some of them.

In assessing the technical-production effects of concentration a visible progress should be noted. As compared to the situation from early 1990s, all technical-production indicators improved clearly, progress was achieved in raw materials management, particularly as concerns concentration of cultivation and increase and stabilization of the yields. Raw material quality improvement contributed to improvement of indicators influencing sugar quality and final economic results, i.e. polarization, sugar yield and sugar yield per hectare. As a consequence, capital concentration processes and development of strong owner groups and production concentration in the largest plants contributed to improvement in the status of raw materials base and economic as well as production situation in sugar industry.

Concentration processes in sugar industry occurred in all owner groups. Analysis of their progress and rate of the changes shows that in the groups with foreign capital participation those processes started earlier and progressed with higher intensity. Foreign investors made significant investment outlays and started comprehensive modernization of production potential and raw material base faster than the National Sugar Company. Currently, it is hard to show clearly the advantages of some groups over the others although there are differences between them in the levels of detailed parameters and individual indicators.

As already mentioned, processes of market and production concentration in sugar industry were tightly linked. The processes of market concentration, however, should be considered primary as production concentration processes at a wider scale occurred only after formation of strong owner groups. Contrary to the initial assumptions, sugar holding companies operating during the second half of 1990s did not terminate production in small and technologically obsolete refineries. Decommissioning intensified only after 2004 that is only when 2004 sugar industry started operating within the European Union Single Market.

Significant changes in the operational environment of sugar industry enterprises and sugar beet planters were brought by integration of Poland with the European Union. Polish producers were subjected to all sugar market regulations effective in the Community. The first year following the accession was exceptionally favourable for them, mainly because of the significant increase in sugar prices and sugar beet purchase prices. Nevertheless, gradually, the situation of sugar producers started deteriorating; the situation of farmers during two consecutive seasons was significantly better. During that entire period processes of restructuring and modernization of sugar refineries were continued aiming at maintaining their competitiveness and closing the gap between Polish producers and producers from other countries. Increase in sugar beet purchase prices forced optimisation of production processes and reduction of non-raw material production costs, which offered the only option for obtaining positive profitability.

Continuing sugar market reform creates new challenges and forces consecutive decreases in production costs and improvement of technological processes productivity. It is probable that further concentration in sugar production will occur, which will involve the necessity of decommissioning additional production plants. In the near future further changes in the production profile of some plants will have to take place coupled with implementation of social mitigation programmes for the current employees. Continuation of restructuring and sugar production concentration processes while maintaining its size at the level of around 2 million tons per year will allow

Poland maintaining one of the leading positions in the sugar market of the European Union.

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**LEVEL OF INVESTMENT ATTRACTIVENESS
AND SCALE OF FOREIGN INVESTMENTS
DURING THE YEARS 2005–2006**

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Key words: investments, regional development, investment attractiveness.

A b s t r a c t

Investment attraction of regions demonstrates the ability of areas to attract investment capital. The level of attractiveness alters on account of changing criteria that entrepreneurs consider before establishing a company. These are triggered by the access to factors of production, new technologies, subjective preferences of investors as well as the competition between regions in investment attractiveness.

The aim of the article is to present changes in investment attractiveness of regions in Poland, to demonstrate dependence between investment attractiveness and the number of economic entities with foreign capital as well as an attempt to state conditions of future foreign investment inflow to regions.

The presented calculations have demonstrated that there is a strong statistical dependency between investment attractiveness and the number of economic entities located in a region. Enterprises with foreign capital were less sensitive to investment attractiveness than enterprises without foreign capital. The investment attractiveness index design methodology, which disallows specific industry location factors being considered as well as the way foreign capital is being attracted, might be the reason for this. Well-prepared sites, having good access to means of transport, preferably with tax relieves are vital to foreign investors for particular investments that are developed. The future inflow of foreign investments may be determined by the investment attractiveness of a region and the level and number of prepared locations where foreign investors will be able to establish an economic entity easily.

**POZIOM ATRAKCYJNOŚCI INWESTYCYJNEJ A SKALA INWESTYCJI
ZAGRANICZNYCH W LATACH 2005–2006**

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Słowa kluczowe: inwestycje, rozwój regionalny, atrakcyjność inwestycyjna.

Abstrakt

Atrakcyjność inwestycyjna regionów obrazuje zdolność określonych obszarów do pozyskania kapitału inwestycyjnego. Jej poziom nie jest stały w czasie, podobnie jak zmienne są preferencje przedsiębiorców, będące m.in. odzwierciedleniem dostępu do czynników produkcji, technologii wytwarzania, kosztów produkcji, subiektywnych odczuć inwestorów czy konkurencji ze strony innych regionów pod względem atrakcyjności inwestycyjnej.

Celem artykułu było przedstawienie zmian, jakie nastąpiły w atrakcyjności inwestycyjnej regionów Polski, ukazanie zależności między atrakcyjnością inwestycyjną a liczbą podmiotów gospodarczych z kapitałem zagranicznym w regionie oraz próba określenia warunków przyszłego napływu tych inwestycji do regionów.

Wyniki uzyskanych badań wskazały, że istnieje silna statystyczna zależność między atrakcyjnością inwestycyjną a liczbą podmiotów zlokalizowanych w regionach. Lokalizacja przedsiębiorstw z kapitałem zagranicznym zależała jednak w mniejszym stopniu od atrakcyjności inwestycyjnej regionu niż krajowych podmiotów. Przyczyną tego może być metoda konstrukcji syntetycznego wskaźnika atrakcyjności inwestycyjnej, która nie pozwala na uwzględnianie specyfiki branżowej lokalizowanych inwestycji oraz sposób przyciągania inwestycji zagranicznych. Dla przedsiębiorców zagranicznych istotne są dobrze przygotowane miejsca pod konkretne inwestycje, uzbrojone, z dobrym dostępem do sieci transportowej, najlepiej ze zwolnieniami lub ulgami od podatków. Przyszły napływ inwestycji zagranicznych może zależeć od atrakcyjności określonych terenów, a także od stopnia przygotowania i liczby miejsc, w których przedsiębiorcy zagraniczni będą mogli bez przeszkód rozpocząć działalność gospodarczą.

Introduction

Investors, in the process of selecting the location for business projects consider numerous factors influencing the taking of a positive decision on location of the future investment project. The criteria applied by entrepreneurs are highly dependent on specifics of the business they operate in or intend to start operation as well as general profitability of the project located in a specific area. Factors not related directly to activities of the enterprise called the soft location factors describing, among others: the social climate, safety, saturation with recreation, sports and cultural facilities in a given area also seem important from the perspective of the investor.

Entrepreneurs search for locations where they could use their capital in the most effective ways, i.e. locations where the rate of return on capital invested would be the highest. Processes of integration involving an increasing number of countries as well as membership of countries in various integrating communities (e.g. the EU), force entities operating within global economy to adjust the governing law to the global standards. Tighter integration of financial institutions takes place; in many cases common foreign policy is conducted; barriers to trade are liquidated; common technical and quality standards are introduced. Changes occurring in global economy manifesting through the increased mobility of goods and factors of production cause that it is increasingly easy for the investors to start-up and conduct business activities in

different regions, sometimes distant from the initial locations of their investments (NAZARCZUK 2007, p. 104).

Increasing, as a consequence of globalisation process, freedom of capital movement results in the situation where it is not the capital competing for the most favourable location but the regions (towns, municipalities, counties and voivodships) compete with one another for new investments (KOSIEDOWSKI, POTOCZEK 2001, pp. 9–10). Regions compete with one another by applying different instruments. For the investors, however, investment attractiveness of a given area (for this paper the authors assumed that the region corresponds to the area of a voivodship) is crucial from the perspective of location of their investment.

It should be remembered that attractiveness of the region is not a permanent characteristic of a given area. Both the region and its environment are subject to continual transformations (changes involve the level of infrastructure development, transport access, tax deductions and credits for entrepreneurs, competition of local enterprises increases, etc.) causing the situation that in the future the region, compared to other regions, can be less or more attractive to the investors.

This paper aims at determining the changes in investment attractiveness of Polish regions, and showing the dependences between investment attractiveness and the number of business entities in Polish regions as well as indicating the conditions for inflow of foreign direct investments.

Investment attractiveness and competitiveness of the region in acquisition of capital

In the synthetic way, investment attractiveness can be understood in the categories of ability to persuade investors to choose the region as the place for the investment location (KALINOWSKI 2006, p. 13). However, attractiveness seen in this way would be narrowed to the volume of investment outlays only while the issue is much more complex and it requires more detailed analysis. It also seems reasonable to specify the factors influencing perception of a given region as attractive for investment.

For sure the following factors play an important role in creating the image of the region for the investors (GONTARZ, REMISIEWICZ 2003, p. 27):

- market factors: market size, population growth, gross domestic product growth rate and its to *per capita* value, distance and access to exports markets;
- cost factors: labour costs/productivity, availability of raw materials, cooperation opportunities, quality of business infrastructure (roads, telecommunication, business support institutions), possibilities of profits transfer;

- investment climate: political stability, macroeconomic stability, tax system, legal system, incentives for investors.

The factors presented in many cases determine the investment risk that the entrepreneur will have to cover locating his project in a given area. In many cases they will also influence the profitability of the project itself. Those determining factors, nevertheless, do not appear and are not analysed individually. The investment attractiveness of a given area is determined by the combination of location factors. Areas offering the optimal combination of the location factors are attractive for investments as they allow reducing investment outlays and current operational costs of the enterprise facilitating maximization of profits and decreasing the risk of project failure (KALINOWSKI 2005, pp. 9–10).

The criteria considered by potential investors are subject to continual changes. They are also dependent frequently on the type of planned business or even subjective likes and dislikes of people planning the project. Currently the attractiveness of the region is determined by its characteristics describing (GORZELAK 2002, pp. 63–64):

- availability of efficient and reliable transport and communication infrastructure, including that of international character allowing maintenance of *just-in-time* regime of supplies;
- saturation with business service institutions as well as rich in research and development facilities and institutions supporting transfer of innovation to production process and technology transfer;
- high, diversified and flexible qualifications of labour allowing gradual change in the work profile as well as labour motivation and discipline;
- economy diversification, possibility of establishing direct cooperation links (*contracting-out, outsourcing*) and obtaining high quality “business environment services”;
- good living conditions (safety, recreation possibilities, high quality of educational and cultural offer, landscape beauty) tempting highest qualified personnel (scientists, managers, owners, people of culture, journalists) to settle in the given area.

Factors determining attractiveness of the region are nothing else but investment location factors. For sure the spectrum of their influence, however, is much wider. Opinions that competitiveness of regions is influenced by the diversity of their economic structures, transport access, existence of scientific-research background and business environment institutions are common (KLAMUT 1999, p. 10). That opinion could confirm cohesion of those two terms.

Sometimes, instead of the competitive of the regions the notion of attractiveness, which considers the conditions for location of investment projects is used. Competitiveness and attractiveness are notions of similar meaning as it can be believed that regions compete with each other on the level of their

attractiveness for entrepreneurs (BUDNER 2004, p. 47). Use of the term attractiveness can also aim at showing the subjective nature of the region as a part of the economic space within which processes of movement and distribution of enterprises take place.

Investment attractiveness, as a consequence, is closely linked to the possibilities of the region to compete in the combat for winning investors. Competitiveness, generally defined in the economy as the ability to achieve success in economic competition, in the field of regional development is understood as the ability of regions to adjust to changing conditions as concerns retaining and improving the position in the competition taking place also among the regions (KLAMUT 1999, p. 9). An area characterized by the potential of human knowledge allowing it to be ahead of the needs and to find new opportunities for use of available resources for the purpose of generating advantage can be called a competitive region.

There are at least two interpretations of the issue of competitiveness of the regions – direct and indirect. Direct competition of the regions should be understood as existence (or development) of conditions of the regional environment for businesses operating within it that allow obtaining competitive advantage in the components that are beyond their operational control (BOJAR 2001, p. 12). Indirect competition, on the other hand, should rather be interpreted as rivalry of territorial units for benefits of various types, i.e. bringing in foreign investors, retaining capital in the region, access to funding, etc.

Globalisation of the economies contributes to intensification of competition among regions for location of enterprises. Capital can make a choice of location from a much wider range of option than it was possible in the industrial economy strongly dependent on resources of raw materials and energy in the world divided into influence zones of two dominating ideologies (GORZELAK, JAŁOWIECKI 2000, p. 7).

Regions differ from each other. Each region has its own characteristics resulting from its natural resources and historical conditions (MAKULSKA 2004, p. 141). They are also diversified by the opportunities to gain possible benefits. That is why undertaking appropriate actions that would result in competitiveness of regions and closing the gaps existing between them is of key importance.

Differences in competitiveness of regions result in diversification of their development dynamics (KLAMUT 1999, p. 13). It depends on investment attractiveness of the area, i.e. the ability of the region to attract investors, which in turn conditions the competitiveness of those areas in the race for capital and translates into their further development.

Changes in investment attractiveness of Polish regions

Attractiveness of a given region depends largely on the type of business that the entrepreneur is involved in or intends to start-up. That is why it is not recommended to treat investment attractiveness of the given region as the determining factor for all investment projects located in the country as the situation can occur where a given region is highly attractive for, e.g. tourism and recreation activities while it is totally unattractive for location of, let's say, heavy industry.

Investment attractiveness of an area is subject to changes exactly in the same way as preferences and tastes of investors. Changes in the methods of production, manufacturing technologies and the environment influence which factors would play an important role in perception of a given region as more or less attractive because the proportions will change as concerns the use of means of production or changes will take place in the local markets and the investors will apply new criteria, very often subjective ones, which in their opinion at a specific time assure the maximum rate of return on the investment made.

The Gdańsk Institute for Market Economics (IBnGR) prepares reports in which it analyses investment attractiveness of Polish regions. The team of scientists prepares rankings of the regions concerning, among others, their overall attractiveness for winning investment projects – the so-called synthetic investment attractiveness indicator. Those studies are periodic ones. This paper presents an attempt at comparing and listing the changes that took place during three years (Tab. 1).

The Śląskie voivodship, which for three years has been ranked ahead of Dolnośląskie and Mazowieckie voivodships, was the unquestioned leader in investment attractiveness in 2007. Voivodships Małopolskie, Wielkopolskie, Łódzkie and Pomorskie were ranked in the further positions. According to IBnGR, Świętokrzyskie, Lubelskie and Podlaskie voivodships were the weakest ones. Investment attractiveness is not a permanent characteristic of the given voivodship. Voivodships develop at different rates; also the preferences of the investors change. Following the trends in changes in the ranking of regions according to their attractiveness allows selecting those developing in the most dynamic way as well as those that do not catch up with the other voivodships.

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Table 1

Investment attractiveness of Polish regions 2005–2007

Voivodship	Investment attractiveness of voivodships – ranking of the voivodship			Changes in investment attractiveness		
	2005	2006	2007	2005–2006	2006–2007	2005–2007
Dolnośląskie	4	3	2	1	1	2
Kujawsko-Pomorskie	12	11	11	1	0	1
Lubelskie	15	15	15	0	0	0
Lubuskie	10	10	10	0	0	0
Łódzkie	6	7	6	-1	1	0
Małopolskie	3	4	4	-1	0	-1
Mazowieckie	2	2	3	0	-1	-1
Opolskie	9	9	9	0	0	0
Podkarpackie	11	13	12	-2	1	-1
Podlaskie	16	16	16	0	0	0
Pomorskie	7	6	7	1	-1	0
Śląskie	1	1	1	0	0	0
Świętokrzyskie	14	14	14	0	0	0
Warmińsko-Mazurskie	13	12	13	1	-1	0
Wielkopolskie	5	5	5	0	0	0
Zachodniopomorskie	8	8	8	0	0	0

Source: Own work based on: *Atrakcyjność inwestycyjna regionów i podregionów Polski 2007* (2007, p. 68), *Atrakcyjność inwestycyjna regionów i podregionów Polski 2006* (2006, p. 93), *Atrakcyjność inwestycyjna regionów i podregionów Polski 2005* (2005, p. 77).

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During the years 2005–2007, the largest changes were recorded in case of the Dolnośląskie voivodship. Its ranking among all Polish voivodships improved by two positions, from number 4 in 2005 to 2 in 2007 (by 1 position every year). This is the best result recorded during the analysed period. That situation was influenced by a systematic improvement in the partial factors included in the synthetic indicator of investment attractiveness, i.e. transport access (mainly commissioning of the sections of A2 and A4 motorways), economic infrastructure (business environment institutions, opportunities for investing in special economic zones, level of development in research and development facilities), activities of the voivodship targeted at the investors

(preparation of investment project offers, information and promotion activities). The other regions of the country increased their investment attractiveness less.

The Kujawsko-Pomorskie voivodship was the only region in the country that improved its ranking by one position. Małopolskie, Mazowieckie and Podkarpackie voivodships on the other hand dropped by one position in the ranking during the period covered while the others maintained their positions.

The data contained in table 1 allows concluding that investment attractiveness is characterized by low variability over a short period of time. It happens so because the design of the synthetic indicator of investment attractiveness considers, among others, indicators representing the level of socio-economic development of the regions, which usually changes over long or medium periods of time.

Methodology of studies

Foreign investments are defined in different ways in the subject literature, which can result in differences in interpretation of different data sets. According to the concept of the Central Statistical Office (GUS) the foreign investors are those projects or entities that possess foreign capital and conduct business activity. In case of the NBP (OECD) acceptance of the limit of 10% foreign partner share narrows significantly the research sample as compared to the concept by GUS, which does not make such a limitation (UMIŃSKI 2002, pp. 21–22). That is why, for assessment of the influence of investment attractiveness and its implications for location of companies with foreign capital the GUS data and definition were applied. As commercial companies represent the most frequent form of foreign investments in Poland, it was decided to analyse those business entities.

The authors of the paper decided to answer the question of how far the number of entities with foreign capital in the voivodship depends on investment attractiveness of that area. As a consequence the hypothesis was formulated that there is dependence between investment attractiveness of the region and the number of business entities operating within it. That would confirm that entrepreneurs (including foreign ones) pay attention to the level of investment attractiveness of the region while taking decisions on location of their investments. To verify whether the hypothesis was true one of statistical measures, i.e. correlation, which allows determining existence of dependence between investigated values, was applied. In this case the number of business entities was paired with the synthetic indicator of investment attractiveness of voivodships prepared by IBnGR, which, using one number indicates the level

Table 2
Investment attractiveness and the number of business entities in regions

Voivodship	Total number of economic entities	Total number of commercial companies	Commercial companies of private domestic capital	Commercial companies with foreign capital	Synthetic investment attractiveness indicator in 2006
Dolnośląskie	303 050	20 021	16 516	5 681	0.73
Kujawsko-Pomorskie	186 949	9 706	8 815	1 512	-0.3
Lubelskie	150 579	7 324	6 805	883	-0.61
Lubuskie	105 559	6 337	4 771	2 436	-0.14
Łódzkie	241 221	11 824	10 306	2 387	0.007
Małopolskie	289 368	17 300	15 386	2 992	0.35
Mazowieckie	609 601	68 365	53 640	20 649	0.75
Opolskie	92 846	4 635	3 816	1 259	-0.09
Podkarpackie	140 656	6 062	5 456	766	-0.45
Podlaskie	88 931	3 851	3 611	437	0.68
Pomorskie	229 010	18 522	16 389	3 664	0.09
Śląskie	425 499	26 762	23 791	4 716	0.92
Świętokrzyskie	106 312	4 123	3 774	528	-0.54
Warmińsko-Mazurskie	111 311	5 239	4 715	881	-0.34
Wielkopolskie	345 669	21 672	18 427	5 155	0.32
Zachodniopomorskie	209 478	11 595	9 344	3 836	0.006
Correlation coefficient	0.8528	0.7313	0.7507	0.6676	-

Source: Own work based on: *Rocznik Statystyczny Województw 2007, Atrakcyjność inwestycyjna województw i podregionów Polski 2006* (2006, p. 93).

of intensity of region attractiveness for investors. The determination coefficient on the other hand allowed presenting the degree to which variability of the dependent variable can be explained by changes in the independent variable, i.e. to what extent investment attractiveness can explain the distribution of enterprises across Polish regions. As a consequence of data on the number of business entities in Polish voivodships for 2007 not being available the further studies used the data for years 2005–2006.

Results of studies

The conducted analysis indicates that there is a statistical dependence between the number of companies with foreign capital in the voivodship and the investment attractiveness of the specific area. This is evidenced by Pearson coefficient of correlation at 0.67 proving that the dependence is strong. If the value obtained, however, is compared to the results of correlation for the number of commercial companies of domestic private capital (0.75), the total number of commercial companies (0.73) and the total number of business entities (0.85), it can be noticed that the value is smaller. The best matching (the highest coefficient of correlation) to the synthetic indicator of investment attractiveness is obtained for the total number of business entities which was presented in Table 2.

Considering the coefficient of determination, which is the square of the coefficient of correlation value in the analysis, allows noticing the following dependence (Tab. 3). Only 44.58% of locations of commercial companies with foreign capital in 2006 can be explained by changes in investment attractiveness (Tab. 3). This is a value much lower than the value of the coefficient of determination for commercial companies of domestic private capital (56.35%), or total number of commercial companies (53.48%) or total number of business entities (72.73%). This indicates again that location of commercial companies with foreign capital is the least of all the studied entities for 2006 dependent on the intensity of the characteristic of investment attractiveness of the voivodship.

The dynamic analysis of that issue for 2005 and 2006 allows noticing that both the coefficient of correlation and coefficient of determination for the investigated dependence for commercial companies with foreign capital increased. As a consequence, the dependence between investment attractiveness of the region and the number of commercial companies with foreign capital increased (from 0.63 to 0.67). To an increasing extent then the inflow of companies with foreign capital can be explained by changes in investment attractiveness: 39.27% in 2005 and 44.58% in 2006 respectively.

Correlation and determination coefficients for years 2005–2006

Table 3

Item	Correlation coefficient		Determination coefficient	
	2005	2006	2005	2006
Total number of business entities	0.8575	0.8528	0.7353	0.7273
Total number of commercial companies	0.7125	0.7313	0.5077	0.5348
Commercial companies of private domestic capital	0.7363	0.7507	0.5421	0.5635
Commercial companies with foreign capital	0.6267	0.6676	0.3927	0.4458

Source: Own work based on own computations.

The values of coefficient of correlation and coefficient of determination for the total number of business entities decreased insignificantly during the covered period of time. The values describing the abovementioned dependences for the total number of commercial companies and domestic private capital improved slightly, which indicates an increasing dependence of location of such entities on the investment attractiveness indicator (Tab. 3).

Additionally, no effect of delay by a year of the increase in the number of investment projects in a given region relative to the investment attractiveness indicator for a given year was observed. The correlation results obtained for the data covering the number of business entities in regions for the consecutive year with the attractiveness indicator were lower than the compared values of data on business entities for the same period of time.

The results of analyses presented above indicate that companies with foreign capital base their decisions on location of investment projects to a lesser degree than domestic entities on the level of investment attractiveness of Polish regions. This would suggest that the synthetic indicator of investment attractiveness, because of its design, generalizes the influence of numerous factors, frequently not allowing consideration for business specificity of located investment projects. Additionally, there may be other than investment attractiveness determining factors that in a significant way influence the location decisions by foreign investors.

Special Economic Zones (SEZ) undoubtedly are one of such factors. Investment incentives offered in SEZ taking the forms of exemption from local taxes represent a very important stimulus for foreign enterprises as they allow a significant reduction in business operational costs, which translates into faster and higher return on investment made.

Initially, location of SEZ aimed at closing the gaps between regions and as a consequence SEZ were mainly situated in poor regions of the country. The

currently effective regulations allow including investment projects into a sub-zone of SEZ on the application of the investor anywhere in the country when investment outlays in that area exceed Euro 40 million or where at least 500 jobs are created (SADOWSKI et al. 2006, p. 24). This undoubtedly implicates willingness to locate enterprises with foreign capital in locations more convenient for the investors resulting, among others, from the specifics of business activity conducted, which are less dependent on investment attractiveness of the entire voivodship.

Conclusion

Investment attractiveness determines to a significant extent the inflow of foreign and domestic investments into a given voivodship. Its level informs the entrepreneurs about the general attractiveness of a given area for conducting business there. However, in case of locating a strictly specified business activity the synthetic indicator of attractiveness might be of excessively low precision.

The results of conducted analyses confirm that there is a strong dependence between the level of investment attractiveness and the number of entities located within the voivodship. Among all the groups of business entities analysed, entities with foreign capital were the least sensitive to changes in the level of attractiveness, although the level of correlation of those two values increases.

Foreign capital is frequently attracted to the country by specific incentives offered by local authorities. Those incentives frequently involve tax relieves or exemptions; sometimes they involve offers of improved land prepared for specific investment projects with good access to transport network. That is why foreign investors locate their investment projects in Poland paying less attention to investment attractiveness of regions than the domestic entrepreneurs, although that attractiveness is still a bearing factor. Not infrequently preparation of a specific area allocated for the investment project is more important from their perspective. That is why the further inflow of foreign investments will probably be directed to areas that are attractive and moderately attractive for investment, which will make adequate number of well prepared locations for specific projects available, at best included into areas of sub-zones of the Special Economic Zones, which in turn will increase investment attractiveness of such locations.

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**EMIGRATION AND FACTORS DETERMINING
RETURN TO POLAND OF THE GRADUATES OF THE
FACULTY OF SOCIAL SCIENCES AND ARTS OF THE
UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN**

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Key words: economic migration, labour market, work abroad, Faculty of Social Sciences and Arts, University of Warmia and Mazury.

Abstract

Migrating in order to find better living conditions is an unusual phenomenon, which is very difficult to verify. It has been typical for different groups of people for ages, either Poles have left their country to live in a state, where they were provided better economic and social conditions or political freedom. The phenomenon of economic migration of the Polish citizens after accession to the European Union structures was mainly caused by visible disproportions in level of earnings between Poland and Western countries. Primarily it has concerned young, well educated people, who perceived work abroad as an opportunity for higher earnings as well as chances for promotion or career.

The aim of the following article was to probe the interest of graduates of the Faculty of Social Sciences and Arts at the University of Warmia and Mazury in Olsztyn in working abroad as well as defining reasons of migrations. It was essential to identify personal reasons and also individual deciding factors that lead to migration. The research concerned a group of 1410 students, who represented three majors: Pedagogics, Political Studies and Sociology. The probe was taken on associative group of 325 respondents. The results of the research poll were presented in a descriptive form, as well as in tables and graphs.

The research showed that almost L of students from the examined Faculty considered the possibility to work abroad. For most of them the main reason for migration was better earnings (80 percent). The only motivations to come back or quit planning migration was a definite change on the labour market, higher wages and labour demand. Due to the low level of preparation in the time of the research the scale of actual migration could be smaller.

**EMIGRACJA I CZYNNIKI DECYDUJĄCE O POWROCIE DO KRAJU ABSOLWENTÓW
WYDZIAŁU NAUK SPOŁECZNYCH I SZTUKI
UNIwersYTETU WARMIŃSKO-MAZURSKIEGO W OLSZTYNIE**

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A b s t r a k t

Wędrowni ludności w poszukiwaniu lepszych warunków bytu są zjawiskiem niezwykle złożonym i trudnym do zweryfikowania. Migracje towarzyszyły ludności od wieków, również Polacy z różnych przyczyn opuszczali kraj, by zamieszkać w państwie, które gwarantowało im lepsze warunki ekonomiczne, społeczne czy wolność przekonań politycznych. Zjawisko migracji zarobkowej z Polski, która nastąpiła tuż po akcesji do Unii Europejskiej, głównie miało przyczynę w wyraźnych dysproporcjach w poziomie zarobków między Polską a krajami Europy Zachodniej. Dotyczyło przede wszystkim osób młodych i dobrze wykształconych, którzy w pracy na Zachodzie dostrzegli możliwość większych zarobków oraz szans na awans czy karierę.

Celem pracy było zbadanie zainteresowania studentów ostatnich lat studiów licencjackich i magisterskich Wydziału Nauk Społecznych i Sztuki Uniwersytetu Warmińsko-Mazurskiego w Olsztynie wyjazdami zagranicę oraz motywów decyzji o ewentualnym wyjeździe. Istotne było również ustalenie przyczyn osobistych oraz czynników indywidualnych decydujących o wyjeździe. Badaniem objęto populację 1410 studentów. Badane osoby reprezentowały 3 kierunki studiów: pedagogikę, politologię i socjologię. Badania przeprowadzono na łącznej grupie 325 respondentów, z przyczyn technicznych jednak nie uzyskano pożądanej liczby respondentów studiujących na studiach niestacjonarnych. Otrzymane wyniki badania ankietowego przedstawiono w formie opisowej, tabel, i rysunków.

Z przeprowadzonych badań wynika, że prawie $\frac{1}{4}$ studentów badanego wydziału rozważa możliwość podjęcia pracy zarobkowej za granicą. Dla większości głównym motywem skłaniającym do wyjazdu były wyższe zarobki (80%). Jedynie zmiana sytuacji na rynku pracy, wyższe zarobki i większy popyt na pracę mogłyby skłonić zdeterminowanych studentów do pozostania w kraju lub do powrotu z zaplanowanej już emigracji. Niski poziom stanu przygotowań w chwili przeprowadzania badania jednak mógł świadczyć o tym, że faktyczna liczba emigrantów mogła być niższa.

Introduction

Migration in search for better conditions of existence is an inseparable element of appropriate functioning of individuals in the society. The scope and importance of migrations evolved through centuries but have not been studied and classified in detail yet. With socioeconomic development those processes intensified and became the subject of scientific studies by economists and sociologists. Globalization, common availability of information, common access

to and cheaper and cheaper modes of movement contributed significantly to facilitating migration of the population.

Accession of Poland to the European Union in May 2004 opened the opportunity of taking up legal employment in some countries of the European Economic Area with prospects for full freedom of movement and taking up employment within the entire European Economic Area 7 years after accession. That liberalization of the European labor market created an opportunity for Polish citizens but as indicated by the most recent estimates, also a threat for the national economy as young, well-educated and entrepreneurial participants of the domestic labor market decided to make use of that opportunity.

Perception of significant disproportions in socioeconomic development, living standards and wages stimulates decisions concerning emigration while the current situation in the labor market making employment according to education acquired during the studies impossible also does not support the decision to stay in Poland. This results from maladjustment of the tertiary education structure to the needs of labor market and the requirements of the employers expecting from the applicants several years of professional experience, without which young graduates cannot expect satisfactory employment.

As a consequence, they frequently choose work below their qualifications that at the same time gives incompatibly higher income than employment in Poland in a position adequate to education. Young people often see work abroad as an opportunity to improve their material status and, with time, also an opportunity for development and professional career.

The aim of the article is to present the mechanisms of income migration and the opportunities for legal employment of Poles in the European labor market. The main goal of the study was to determine the interest among students of the last year at bachelor and master courses offered by the Faculty of Social Sciences and Arts of the University of Warmia and Mazury in Olsztyn in emigration and motivations for the decisions concerning possible emigration.

Methodology of studies

The studies covering the population of last year students of master degree courses at the Faculty of Social Sciences and Arts at the University of Warmia and Mazury in Olsztyn were conducted during the first year quarter of 2007 and covered students completing education at the end of the academic year of 2006/2007. The questionnaire composed of 33 questions, mainly half-open, and a detailed legend was the research tool designed to determine the readiness of future graduates for migration.

The study covered the population of 1410 students including 908 full time students and 502 extramural students. The respondents represented three courses of studies: Pedagogies, Political Sciences and Sociology. The size of the representative sample was calculated from the formula (SZREDER 2004, p. 121):

$$n = \frac{0,025 \cdot z^2_{\alpha/2} \cdot N}{0,25 \cdot z^2_{\alpha/2} + (N - 1) \cdot d^2}$$

where:

$z^2_{\alpha/2}$ – value of random variable Z with normal standardized distribution, for which $P(|Z| \leq z^2_{\alpha/2}) = 1 - \alpha$,

N – size of the studied population,

d – statistical error.

The samples calculated on that basis were 208 for full time students and 175 for extramural students. The study was carried out on the total group of 325 respondents, however, as a consequence of organization and specifics of education process no required number of respondents was obtained for extramural students population. The results of questionnaire study obtained were presented in the descriptive, tabulation and graphic formats.

Income migrations of Poles after accession to the European Union

Emigration of Poles is an important element in the history of the country and as a consequence Poland for decades has been considered a country of emigration and it has many years of emigration overseas that were initiated during the times of partitions of the country. During the recent history of Poland we can also see trends supportive for that phenomenon. Years 1989–2004 are characterized mainly by small-scale migration to countries such as Germany, France, Spain, Luxembourg and Belgium that took place on the basis of bilateral agreements between Poland and those countries. During the late 1990s and early 2000s around 400,000 Poles worked legally and ca. 150,000 illegally in the countries of the “EU Fifteen”, which resulted from the freedom of traveling regained after 1989 and elimination of the visa regimes (BONI 2005, pp. 182–183).

Nevertheless, a much higher freedom of migration did not cause an increase in the scale of emigration from Poland; to the contrary, it decreased the scale of it. On the other hand the scale of short-term migrations taking from a few to several weeks increased significantly (KACZMARCZYK, OKÓLSKI

2005, p. 13). At the same time it is worth noticing that after 1990 the profile of foreign migrations changed from long-term related mainly to political causes to seasonal migrations caused mainly by economic factors. That was in a way a symbol of Polish systemic transformation (KISIEL, SZCZEBIOT-KNOBLAUCH 2007, p. 608).

After the 1st of May 2004, employment of Poles in the European Union countries by sector did not change in any significant way as compared to the pre-accession situation (WIŚNIEWSKI, DUSZCZYK 2006, p. 17). In mid-2004 the media presented immense numbers of Poles that supposedly took up employment in other European Union countries; the slogans such as “departure fever” or *exodus*, mainly to the United Kingdom and Ireland were formulated. On the other hand the majority of published data present a more balanced estimates considering to a significant extent seasonal migrations frequently mistakenly interpreted as permanent emigration. Before the accession of Poland to the European Union, however, legal employment there was taken up by ca. 400,000 Polish citizens, mainly in Germany, with over 300,000 Poles migrating there every year, but they were mainly seasonal workers employed mainly in agriculture and hospitality services (DUSZCZYK 2006, p. 2). Considering the complexity of the migration as phenomenon the scale of migrations from Poland can only be estimated. The poles by Centrum Badania Opinii Społecznej indicate that ca. 1.2 million Polish citizens work in the European Union (*Praca Polaków*. 2006, p. 1).

According to the data provided by the European Commission, immigrants from new accession countries in 2004 are much better educated than the population of the EU-15. It is worth to notice the general typology of Polish emigrants as they are mainly young people (18 – 34/37 years), possessing no family to support, mainly originating from areas with low level of urbanization, characterized by higher disproportions in incomes as well as exposed to unemployment and related social marginalization (*Trzy lata członkostwa...* 2007, pp. 58–60). The potential Polish emigrant is also a relatively well-educated person exposed to the phenomenon of *brain waste* (*Wpływ emigracji...* 2007, p. 17), i.e. employment of people with high qualifications in positions requiring no specialist education or earlier professional experience. In case of the extensive outflow of specialist labor we can talk about even the so-called *brain drain* (KACZMARCZYK, OKÓLSKI 2005, pp. 44–47).

From the perspective of the source country, in this case Poland, external migrations decrease the pressure on the labor market, which can lead to a decrease in the unemployment rate (*Wpływ emigracji...* 2007, pp. 24–25). In Poland, following the 1st of May 2004, a significant decrease in the unemployment level occurred coupled with an increase in the employment level, which, however, could not be linked directly to emigration. It should be assumed that

economic emigration was a significant, but not the determining factor of changes in the labor market (*Trzy lata...* 2007, p. 61). The outflow of professionals needed to secure basic public services such as health services or education, however, is an issue. The source country also loses a lot on education and training of people who emigrate to highly developed countries offering greater opportunities to well-educated employees after completing their education (*World Population...* 2006, p. 26).

From the demographic perspective, migrations have an important influence on age structure in the source country. Emigration of mainly young people leads to increased burdens for the society by the elderly and can have significant consequences for the social security system (*World Population...* 2006, p. 19). The reverse situation occurs in the receiving country where the number of people in productive age group increases mitigating increasing demographic problems of highly developed countries.

The psychological consequences of migration for the migrant and his family are also important. Separation from the keen, contact with the reality of a foreign country, frequently without knowledge of the language and culture of the receiving country, lead to serious psychological consequences such as alienation, sense of discrimination, loneliness in both the country of emigration and in the home country or even loss of health as a consequence of work under difficult conditions and significant overwork (SZCZEBIOT-KNOBLAUCH 2006, *Biul. Migracyjny* 2007).

Economic migrations of graduates of the Faculty of Social Sciences and Arts

Migration aimed at improvement of socioeconomic situation has accompanied people forever. Also in the contemporary world it is impossible to stop that phenomenon because of both progressive processes of integration offering freedom of movement and employment and perceptible disproportions in the level of income and social life. Economic migration offers unlimited opportunities to young and well-educated people, also those who have just graduated from their tertiary studies.

Students of the University of Warmia and Mazury are not an exception and readily declare the willingness for foreign migration to take a better-paid employment. Studies conducted in 2007 among those students indicated that over 1/4 of them ending their studies planned to take up employment abroad (SZCZEBIOT-KNOBLAUCH, KISIEL 2007, p. 15). Among the graduates from the Faculty of Social Sciences and Arts that trend was present at a slightly lower level.

The studies on a group of students from the Faculty of Social Sciences and Arts completing their education during the academic year of 2006/2007 indicated that 25% of full time students and 15% of extramural students declared their willingness to migrate abroad (Fig. 1).

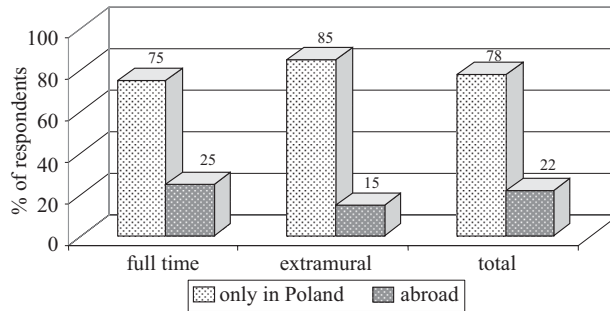


Fig. 1. Place of search for employment after graduation from studies

Source: Prepared on the basis of own studies.

Totaling the data obtained shows that out of the total number of 326 students 22% of the respondents wanted to take care of their professional career abroad. It should be added that many people declaring willingness to search for employment abroad assumed that they would also conduct such search in Poland. Almost 40% of respondents declaring emigration for a job stressed that they did not exclude the possibility of finding employment in Poland where they planned starting their search and only in case such search would not give a satisfying employment opportunity they would emigrate.

The theory of migration presents purely economic motivations related to improvement of the financial standing of the migrants and their families staying in the source country as the main factor for economic migration. It can be concluded then that the current economic emigration from Poland is a phenomenon of strictly economic nature that is caused by the differences in remuneration rates between the home country and the target country of emigration. It should be highlighted, however, that this is a necessary condition, but not the sufficient one (KACZMARCZYK 2006, p. 7).

During the study covering the students of the Faculty of Social Sciences and Arts the respondents were enquired about the main reasons for their emigration after graduation. The respondents determined in their answers the level of significance of the factors given as the factors determining the emigration. In line with the assumptions of the theory of economies the main reason given was the higher level of remuneration in the target country (almost 80% of responses) and difficult conditions in the labor market in Poland (almost 60% of responses) (Fig. 2).

The results obtained from the studies can be compared with the results of studies conducted in May 2004 in the ten largest academic centers in Poland. The study conducted immediately after Poland's accession to the European Union indicated similar dependences concerning the motivations for economic emigration among students including mainly low wages and bad situation in the Polish labor market as well as perceptibly better working conditions abroad (*Migracje zarobkowe... 2004*, p. 97).



Fig. 2. Reasons for taking employment abroad

Source: Prepared on the basis of own studies.

The main factors influencing the choice of the destination country for migration was mainly the level of wages, which was considered very important by ca. 80% of the respondents. Over 60% of the responses concerned ease of finding employment abroad. Over 50% of the respondents considered presence of the family or friends in the destination country very important, probably to compensate for the earlier mentioned "costs of separation" and facilitate living abroad (Fig. 3).

It should be acknowledged, however, that the countries most frequently declared as destinations of employees; migration were within the distance of 1–3 hours by air from Poland. Over 40% of the respondents chose the United Kingdom as the country of destination, the country of the largest economic migration of Poles during the years 2004–2007. It was followed by Ireland (14%) and Germany (8%). The United States of America indicated by 9% of the respondents was the only country outside European Economic Area indicated. This could result from the requirement to obtain the entrance visa required from the Poles and the difficulties with legal employment in that country (Fig. 4).

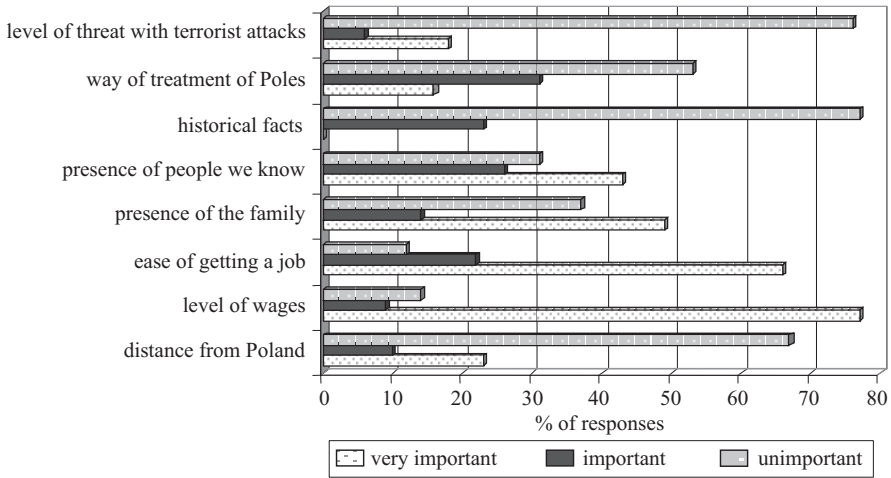


Fig. 3. Factors determining the choice of the target country of migration

Source: Prepared on the basis of own studies.

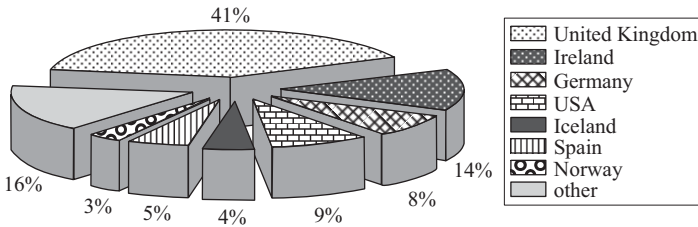


Fig. 4. Destination countries of migration

Source: Prepared on the basis of own studies.

Analyzing the phenomenon of migration from the perspective of the push-pull theory indicates a strong influence of both those factors that must appear for the migration to take place (RYMARCZYK 2006, p. 152). According to GUZEK (2001, p. 156) during the entire modern era economic migration was determined not by the positive stimuli encouraging people to migrate to other countries to take up employment but the negative stimuli of the home country. He mentions in particular hunger or threat of hunger as well as existence conditions too far from the social minimum resulting from overpopulation, unemployment and general economic backwardness.

The large difference in the level of remuneration between the Polish labor market and the labor markets of the Western countries of the European Union is the major reason of economic emigration from Poland. However, the analysis

of the human resources consulting company HRK Partners indicates that work abroad is much more profitable in case of laborers who, e.g. in Germany can earn five times more than in Poland, than in case of a person with tertiary education. Currently the people emigrating from Poland are mainly graduates of tertiary schools and specialists. That later group is willing to emigrate, however, only by the perspective of two- three-times higher wages (KRAKOWIAK 2007).

Probably the expectations concerning the level of remuneration are linked to the intended allocation of money earned and this depends heavily on the time of the planned emigration or the material standing of the potential migrant. Studies conducted among the Poles working in the United Kingdom and Ireland show that in the country where they live they allocate the majority of their earnings on current expenditures related to support (90% of responses), over 40% of responses indicated entertainment and travel and only 30% of responses considered savings and other investments (GARAPICH, OSIPOVIČ 2007, pp. 10–11).

Expectations concerning earnings among the students of the Faculty of Social Sciences and arts were highly diversified and for obvious reasons they were higher than remuneration levels offered in Poland. The largest number of the respondents expected remuneration at the level of PLN 3,100 – 5,000, the next group were students who would be satisfied earning abroad from PLN 5,100 to 7,000. Every fifth respondent from the Faculty would aim at a remuneration exceeding PLN 7,000 while working abroad (Fig. 5).

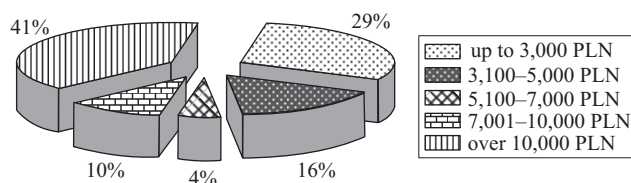


Fig. 5. Expected value of remuneration abroad

Source: Prepared on the basis of own studies.

Every fourth student of the Faculty of Social Sciences and Arts intended to allocate the money earned for purchase of a flat. The other investments the respondents would like to make using funds earned abroad were: establishing of own business (16,4%) and improvement of professional qualifications (14,8%). Only 13,3% of the respondents indicated current expenditures as the main method for spending foreign earnings.

During the coming years Polish economy will probably develop at the rate of 5–6% per year, twice or trice faster than the economy of the United

Kingdom, the country that received the largest wave of immigrants from Poland. The European Commission projections indicate that within two years unemployment in Poland will decrease to 6%, the same level as the unemployment rate in the United Kingdom (BIELECKI, BLICHAZ 2007).

Good standing of the economy is also supportive for increase of wages. The data of the Central Statistical Office indicate that in 2007 wages increased by over 10%. But this data applies to the sector of enterprises only. In many cases the increase was even higher, e.g. in some services. On those bases numerous economists projected a wave of returns from emigration that stops being profitable (ZUBER 2008). The most recent report prepared by the British Institute for Public Policy Research and the Polish Institute of Public Affairs indicates that out of over one million Poles who emigrated from Poland after the 1st of May 2004 to the United Kingdom, around a half returned to Poland. At the same time the number of people coming to the United Kingdom decreases systematically (LORENZ 2008).

Many people from the beginning assume emigration for a specific time to accumulate a specific amount of capital and return to Poland to live and work there. 43% of the respondents considered earning the required amount of funds to be the factor that is most important and decisive as concerns return from emigration indifferent of its duration. Others do not plan to return, are undecided or make the possible return dependent on many factors. Almost 70% of the respondents considered increase of wages in Poland the most important factor determining their return to Poland; this was followed by an increase in the number of jobs available in Poland (45% of responses) (Fig. 6).

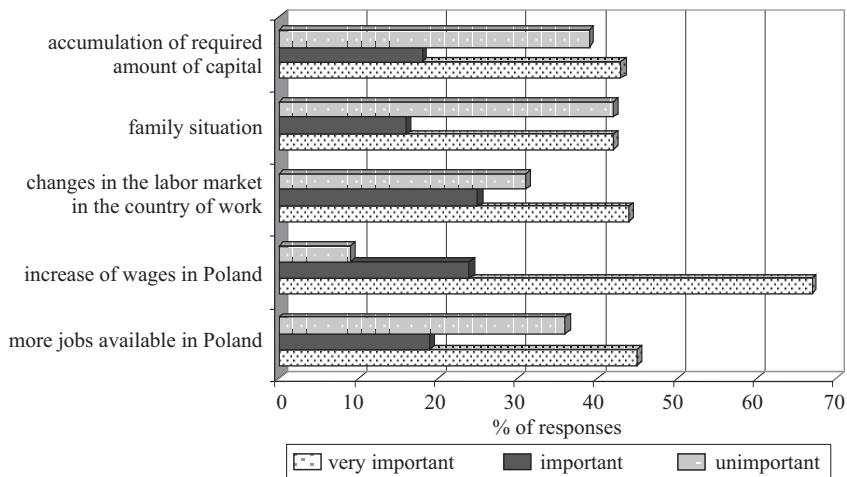


Fig. 6. Factors conditioning return to Poland

Source: Prepared on the basis of own studies.

The above factors can be classified as attracting and motivating return from emigration because of the positive phenomena in the mother country. There are also factors pushing the immigrants out because of unfavorable situation in the country of immigration among which the respondents specified negative changes in the labor market in the receiving country. 44% of responses pointed at that factor as very important. The studies conducted among the students of the University of Warmia and Mazury indicate that remorse related to leaving the family and the country and taking up employment abroad are an important factor motivating return from emigration. The responses also included answers indicating patriotism of the respondents who felt that they are behaving wrongly in relation to the homeland that gave them, among others, their education (SZCZEBIOT-KNOBLAUCH, KISIEL 2007, p. 60).

Conclusion

Loud discussions concerning the wave of economic migrations and consequences of that phenomenon for the economy of Poland in 2007 changed the direction of thinking among the economists and politicians as the wave of Polish migrants stopped swelling. The numbers of Poles returning to Poland exceeds the number of those who emigrate in search for employment. The decisions concerning return are influenced by recession and decrease in the value of euro or pound relative to Polish zloty, which makes employment abroad not so profitable as it used to be immediately after Poland's accession to the European Union. The other reasons are cultural differences and difficulties with assimilation abroad. It can be assumed then that a significant proportion of educated young people who left Poland after graduation from studies will return to Poland where they will find satisfactory employment.

On the basis of empirical studies conducted among students of the Faculty of Social Sciences and Arts the following conclusions can be formulated:

1. The propensity for migration among students of the Faculty of Social Sciences and Arts was determined at the level of 22%. This means that every fourth student declared willingness to migrate abroad to search for income generating employment. Three out of four respondents were in the age of 23–26 years characteristic for the profile of a migrating person.

2. The level of remuneration (77%) and ease in finding a job (66%) were the main reasons for the choice of a specific country as the target for migration. Based on those premises the respondents chose the United Kingdom as their destination the most frequently (41%). The UK was followed by Ireland (14%), Germany (8%) and the United States of America (9%), that is countries with the highest percentages of Polish immigrants.

3. Almost 90% of the responses from the respondents pointed at higher wages as the main expectation from work abroad. At the same time more than a half of the respondents expected to acquire professional experience and secure better living for the family. The respondents expected mainly the wages equivalent to PLN 3,100–5,000 (41%) or PLN 5,100–7,000 (29 %).

4. Permanent employment contract consistent with the education they possessed was a factor that the respondents specified as very important in taking the decision on resignation from emigration (78%). Students made the decision concerning the return from emigration dependent on changes in the labor market in Poland: increase of wages (67%) and higher demand for labor (45%). Many people planned emigration for the purpose of accumulating a specific amount of capital after accumulating which they planned to return (43%).

On the basis of studies conducted among students of the Faculty of Social Sciences and Arts the estimated percentage of graduates who emigrated in search for a job after graduation can be given. The low level of preparation for emigration at the time of conducting the study could however indicate that the actual number of emigrants was lower. The respondents mentioned positive changes in the labor market as the factor motivating for return. In 2007 in Poland an increase of wages occurred and the demand for labor increased; the media also report that the numbers of returns are higher than the numbers of departures. Such changes are a positive factor for development of the economy and can contribute significantly to decreasing the scale of migrations of the Poles.

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