OLSZTYN ECONOMIC JOURNAL
Abbrev.: Olszt. Econ. J., 2012, 7(2)

MODEL OF A REGIONAL BUSINESS CYCLE INDICATORFORTHE PROVINCE OF WARMIA AND MAZURY

Rafał Warżała

Department of Macroeconomics
University of Warmia and Mazury in Olsztyn

K e y w o r d s: indicator, business cycle, analysis, region.

A b s t r a c t

Business cycle analysis at the national level does not have to be consistent with the economic situation of its individual regions. Diversity in the structure and development dynamics of the individual regions isalso reflected in the range of sensitivity to business cycle changes. Anevaluation was conducted of the suitability of multi-dimensional comparative analysis methods to evaluate the business cycle in the economy on a regional basis based on the example of Warmia and Mazury.The economy of Warmia and Mazury and its sensitivity to macroeconomic disturbances was the subject of the analysis. The business cycle studies by region conducted in Poland are based on so-called "business cycle tests" which are characterised by a high level of subjectivism. They are based on the results of questionnaire-based surveys conducted among entrepreneurs and, as a consequence, it seems justified to build a business cycle indicator for the province of Warmia and Mazury based on "hard" economic data. The proposal of the business cycle indicator for the region of Warmia and Mazury is based on the key economic dimensions for the region. The currently applied methods for elimination of irregular fluctuations and location of turning points were used for designing it. The outcome of the above measures offers the possibility to present the value of the current and prognostic business cycle indicator for Warmia and Mazury with monthly frequency.

KONSTRUKCJA WSKAŹNIKA KONIUNKTURY DLA WOJEWÓDZTWA WARMIŃSKO-MAZURSKIEGO

Rafał Warżała

Katedra Makroekonomii
Uniwersytet Warmińsko-Mazurski w Olsztynie

S ł o w a k l u c z o w e: wskaźnik, cykl koniunkturalny, analiza, region.

A b s t r a k t

Analiza koniunktury gospodarczej w skali całego kraju niekoniecznie musi być zbieżna z sytuacją gospodarczą poszczególnych jego regionów. Zróżnicowanie pod względem struktury i dynamiki rozwoju poszczególnych regionów ma swoje odzwierciedlenie również w zakresie wrażliwości na

wahania koniunkturalne. Celem artykułu jest ocena przydatności metod wielowymiarowej analizy porównawczej do oceny stanu koniunktury w gospodarce w ujęciu regionalnym na przykładzie Warmii i Mazur. Przedmiotem badań jest gospodarka Warmii i Mazur oraz jej podatność na zaburzenia makroekonomiczne. Realizowane w Polsce badania koniunktury w ujęciu regionalnym są oparte na tzw. testach koniunktury, które charakteryzują się znaczną dozą subiektywizmu. Bazują one na wynikach badań ankietowych, przeprowadzanych wśród przedsiębiorców. Wydaje się więc uzasadnione zbudowanie wskaźnika koniunktury dla województwa warmińsko-mazurskiego na podstawie tzw. twardych danych ekonomicznych. Propozycja wskaźnika koniunktury dla regionu Warmii i Mazur jest oparta na wartościach najważniejszych dla regionu wielkości ekonomicznych. Do jego konstrukcji wykorzystano stosowane obecnie metody eliminacji wahań nieregularnych oraz lokalizacji punktów zwrotnych. Efektem tych działań jest możliwość prezentacji wartości wskaźnika bieżącego i wyprzedzającego koniunktury Warmii i Mazur z miesięczną częstotliwością.

Introduction

Business cycles represent an inseparable component in the functioning of economies worldwide. It can be said that cyclicality is closely correlated with the process of socioeconomic development. Consequently, the issue of business cycles has become one of the most important problems in macroeconomics. Obtaining knowledge of the mechanisms of monetary shock transmission to the change in real values in the economy and possibly preventing (or at least mitigating) them has also become the focal point of attention within the framework of economic policy issues.

A review of the published business cycle indicators for the province of Warmia and Mazury was the primary goal of the paper. Presentation of the design of the business cycle indicator for the region of Warmia and Mazury was a secondary goal.

Business cycle indicators in literature

Business cycles represent a very complex phenomenon and there is no single theory allowing a clear separation of them from otherphenomena of a similar nature. In the literature, a diversity of actors that form the basis for economic fluctuations are indicated. Their mutual relations may be of an incidental nature or represent a consistent mechanism where the longer cycles consist of a defined number of shorter ones (BOBROWICZ 1999, p. 14).

The initial attempts at identification and description of the phenomenon of eneral economic fluctuations based on economic theories were undertaken at the end of the 19th c. W.S. Jevons and H.L. Moore linked the existence of economic cycles with the appearance of sunspots and weather cycles. That was the first attempt at defining the periodicity of the fluctuations, as the earlier views of the representatives of classic economy were limited to stating that any

disturbances in the economy were of an exogenous character and the market mechanisms causean automatic return to a state of equilibrium (LUBIŃSKI 2004, p. 78).

At the next stage of studies on the nature of economic development cyclicality, the focus was on explaining the cycles as individual, unrelated phenomena. The aim of the studies was to measure and describe, but not explain, the causes for the phenomenon discussed. On that basis, during the 1920s the institutions dealing with business cycle studies, such as the National Bureau of Economic Research (NBER) in the USA and the Institut Fur Konjunkturforschung (IFO) in Germany, were established.

Works by J. Juglar represent the turning point in studies of economic development cyclicality. He showed, on the basis of empirical analyses, that treating the phenomenon of fluctuations as being caused by external factors was misleading. Among the numerous theoretical concepts that were elaborated as a consequence of the studies by Juglar, one of the fundamental divisions in the theory of business cycle fluctuations into exogenous and endogenous fluctuations can be pointed at. Exogenous theories see the causes of economic fluctuations in external phenomena, independent of the economic mechanism. The endogenous theories, on the other hand, link fluctuations with the market economy functioning mechanism (LUBIŃSKI 2004, p. 78).

Representatives of the exogenous theory see the economic system as relatively stable, which when thrown out of balance eventually returns to it automatically. The reference within that group to the opinions of the classics also concerns the economic growth sources i.e. the technological progress, capital accumulation, population increase or discovery of new resources. Any disturbances resulting from technological changes or State intervention are coordinated by the market mechanism. After their withdrawal, the economy returns automatically to the path of rapid growth with full use of the factors of production.

The so-called theory of shocks presented by, *inter alia*, E. Slutzky and R. Frisch, was the extreme example of the influence of external stimuli on the economic relations which cause the business cycles. They point out that even combining absolutely random data sets may create an aggregate of a cyclical nature. According to Frisch, defining the factor that initiates the fluctuations of economic values is the key to understanding the business cycle phenomenon. He is the author of the so-called impulse proliferation model that divides the cycle progress into the external causes for initiation of the cyclic fluctuations and the causes of their continuation (HERBST 2003, p. 22).

Within the framework of the endogenous theories, it is highlighted that the economy itself is a system of internal instabilities. According to Keynes, the lack of balance between investments and savings can be a cause of instability.

The theory by Kalecki, on the other hand, is based on the assumption that instability is caused by fluctuations in orders for investment goods caused by changes in the profit rate. The inseparability of economic growth processes and cyclical fluctuations is a common characteristic of the endogenous theories.

In addition to the above-mentioned contribution of the Polish economist M. Kalecki in the development of endogenous business cycles theories, he is only mentioned in the subject literature as the precursor of the notion of the political business cycle. In the article published during 1940s, Kalecki linked economic instability with the government economic policy being subject to influences from various pressure groups. The repeating periods of crisis caused by extra-economic decisions of the central authorities are the outcome of such activities (LUBIŃSKI 2004, p. 98).

The concept of the electoral cycle known in the literature represents a continuation of the political cycle. According to this theory, winning and retaining the power is the goal of the political elites. In the democratic system, this is linked to a victory in the general election. Assuming that society assigns the highest value to its own material situation and the general condition of the economy, instrumental use of economic policy to achieve electoral success can be projected. In the political cycle model, the characteristic pattern of social behaviour is assumed. It involves taking electoral decisions on the basis of the most recent experiences. Additionally, it is assumed that the voters do not draw conclusions from either the negative or the positive experiences and their behaviours are repeatable. The ultimate decision of the electorate represents the victory of the current group, which ends the situation of uncertainty in the economy or the change of the governing group, which involves a change in the economic policy. In both cases, specific economic perturbations take place (LUBIŃSKI 2004, pp. 98–100, PIECH 2003, p. 59).

The monetarist concept formulated by M. Friedman is one of the contemporary business cycle theories. The statement that the level of monetary income in the society is determined by the increase of the monetary resources in the economy is thecore of this approach. An increase in the supply of money causes an interest rate decrease. This stimulates investments and, ultimately, the consumption demand. An increase in inflation is the ultimate outcome of this process. This means a decrease in the real supply of money and, as a consequence, annihilates the temporary production increase. An increase in prices, not production, is the only outcome of an expansive monetary policy in the long-term perspective (BARCZYK 1997, p. 132).

The theses by Friedman were developed by R. Lucas, who analysedthe conditions under which the monetary policy may be effective. The imperfect information available to the producers is seen as an important problem. Subjective evaluation of the changes in the prices of own products makes them

increase production. The consequences of this are an increase in employment and an increase in the nominal wages. The propensity to accept the monetary illusion causes an increase in employment and a decrease in unemployment. Only in the longer term does the revision of the actions taken by the business entities and employees occur. The belief in solely nominal changes, and not the actual ones, influences the limitation of production, decreases employment and increases unemployment. Similar to the changes in the supply of money, a return to the baseline situation, with the exception of an increase in prices, takes place as a result of the adjustment in all values. Lucas presents the position that the rigidness of wages is the cause for delays in matching the supply and demand in the market. Changes in the level of nominal wages as a consequence of incomplete information available to the employees on the prices do not translate into changes in wages in the real categories. Higher wage demands during consecutive periods influencing the unemployment rate are the outcome. The repeatability of the sequence of the above events causes that the actions by the government concerning, e.g. changes in money supply, become predictable. This means that predictable changes in the supply of money result in changes in prices, but not in production. The statement that changes in the supply of money at a faster rate than expected by business entities may influence economic revival is the final conclusion by Lucas. He also formulated a thesis on the ineffectiveness of monetary policy as a tool for stimulating economic growth (HALL, TAYLOR 2007, p. 404).

As a consequence of insufficient explanation of causes for the business cycle fluctuations occurring during 1970s in the global economy, J. Tobin formulated the thesis on technological changes and changes in consumer tastes as the main causes for a collapse in the growth dynamics. In 1982, F. Kydland and E. Prescott presented a non-monetary model of equilibrium called the real business cycle (SNOWDON et al. 1998, pp. 248–252). The real cycle theory, in contrast to the monetarist concepts, attributes fundamental importance to real shocks, mainly on the supply side caused by changes in productivity. Supporters of the real cycle concept cite changes such as fluctuations in agricultural production, energy price fluctuations, wars, political coups, economic policy changes and technological shocks caused by changes in the quality of labour and capital outlays (LUBIŃSKI 2004, p. 106). Changes in the technological progress rate represent the most important factor of changes in the economy according to the real business cycle supporters. According to them, they are consistent with the development of business cycle fluctuations. However, the critics of this approach cite the difficulties with proving a cause and effect relation between the discussed values (SNOWDON et al. 1998, p. 276). It is generally concluded that the real business cycle theory provides imprecise explanations of changes in some economic values observed during the business

cycle. The reference to microeconomics in explaining the behaviours of business entities is an advantage of this theory.

The majority of theoretical analyses aim at proving the similarity between the regional and national economic fluctuations. Some researchers show that the business cycle development in a national scale is the sum of the business cycle changes in individual regions. On the other hand, such an aggregated approach to business cycle analysis may eliminate certain characteristic features of the individual regions of the country from the analysis and,consequently, limit the status of knowledge on the characteristics of the business cycle fluctuations in the regional approach. CARLINO and SILL (2001, p. 69) showed, on the basis of cyclic changes in the dynamics of real incomes, that strong divergence in the business cycle development exists between the regional and national cycles. The literature also presents indicators testing the correlation indicator for the components of the economies of individual regions (CRONE 2005, p. 148).

In the countries of Central and Eastern Europe that have a GDP structure similar to highly-developed countries, the situation in the construction industry is relatively important for the general status of the business cycle. This is understandable because the increase in demand in that sector of the economy results in further investments contributing the same amount to the economic growth acceleration. The cycles related to construction are known in the literature as Kuznetz cycles and have an average length of 20 years (See: SOLOMOU 1998, p. 84).

Precise determination of the turning points and, as a consequence, the business cycle phases, represents one of the most difficult stages on the business cycle analysis. This is the consequence of the multiplicity of methods using different techniques for determination of those elements. The literature identifies three major concepts for business cycle fluctuation identification:

– the classic business cycle concept based on studying the fluctuations in absolute values of economic indicators;

– cycle deviation concept according to which the growth path deviation from the long-term trend is measured;

– the growth cycle concept involving economic growth rate change analysis without defining which part of those changes results from the growth process and which is a consequence of the business cycle.

The growth cycles were assumed as the basis for analyses in this study. This method allows identification of business cycles even when a long period of uninterrupted growth takes place. In this case, analysis of absolute values does not offer clear results.

Business cycle survey according to the regional approach

Studying the business cycle according to the regional approach in Poland represents a relatively new issue. The Poznań University of Economics was the first centres that started such studies during the 1980s. However, as a consequence of the subject scope, those studies cannot be considered comprehensive[1]. During 1990s the above-mentioned scientific centre also developed the business cycle indicator for the province of Wielkopolskie but activities in that field have not been continued.

The business cycle analysis conducted by the Central Statistical Office in Poland in 1992 did not consider regional aspects. Although partial business cycle studies are conducted at the provincial level, they serve the purpose of aggregation and processing of questionnaire-based studies at the national level[2].

Research institutes in Poland, such as Pentor of GFK Polonia, conduct limited studies on the Polish economic situation. The GFK Polonia institute conducts only fragmentary surveys concerning the structure of demand, marketing preference of customers or branch management (http://www.gfk.pl/sectors_and_markets/custom_research/index.pl.html). In the case of the Pentor institute, it monitors the situation in the banking market on a monthly basis and measures economic sentiment among consumers. These surveys, however, encompass the entire country and they do not consider, e.g. the differences in the per capita GDP, wages or the economic structure of the region (http://www.pentor.pl).

The Gdańsk Institute for Market Economics, as of January 2001, has conducted a survey of the business cycle in the province. The survey is conducted by means of the business cycle test method involving a monthly questionnaire-based check covering a selected group of business entities. The respondents answer questions concerning their impressions related to the general economic situation in the province and questions concerning the situation of their businesses. The questions concern, *inter alia*, the level of production, sales and employment. The complementary questions concern the

---

[1] The studies conducted by the Poznan University of Economics covered two areas: industry and construction.

[2] Performance of fragmentary studies of the economic market cycle at the provincial level by the Central Statistical Office is based on the chosen methodology, i.e. stratified random sampling without replacement and proportional tothe test sample size.A layer is defined as a simultaneous grouping according to the chapter, group and class of the Polish Classification of Activity and size class (small, medium, large). The source for generating the files for the studies is provided by the Database of Statistical Units. Update of the sample is conducted once a year. www.stat.gov.pl/cps/.../PUBL_badanie_koniunktury_gospodarczej_v3.pdf

expectations of the respondents as concerns the change in the situation in the nearest future (1–3 months). On the basis of the questionnaires collected, the Institute computes the business cycle indicator (current and forecasted data for the entire country and for each of the 16 provinces monthly) (http://www.ibngr.pl).

The University of Management and Administration in Zamość is also an institution that conducts business cycle studies on a regional scale. The surveys are conducted using the business cycle test methods and encompass the area of Lubelskie province.

The province of Warmia and Mazuryis a region witha low level of development in Poland. The dynamics of economic growth there are also relatively low. The per capita GDP in the province of Warmia and Mazury does not exceed 75% of the national value. The average wage level in the sector of enterprises is lower by 21% than the national average while the unemployment rate is usually almost twice higher than the national value. The regional economy has an agricultural-tourism profile. This that it is encumbered with the specificity of agricultural production fluctuations (overproduction, lack of price stability, strong dependence on changes in EU trade policy), on the one hand, while on the other, there is a developing tourism sector which encounters numerous difficulties, such as the absence of a well-developed network of roads, railways and airports and the absence of the appropriate tourism infrastructure (hotels, restaurants). The significant fluctuations in demand in tourism in Warmia and Mazury, resulting from the relatively short period of high economic activity in tourism and the period of standstill dominating the year, are also significant problems for tourism.

Table 1

Selected macroeconomic indicators for the province of Warmia and Mazury and Poland

Item	GDP per capita (in PLN million, 2009)		Unemployment rate in 2011		Average wage (in PLN, 2011)	
	absolute	Poland=100	absolute	Poland=100	absolute	Poland=100
POLAND	35,210	100	12.5	100	3,605	100
Warmia and Mazury	25,970	73.8	20.1	160.8	2,869	79.6

Source: http://www.stat.gov.pl/cps/rde/xbcr/gus/rn_pkb_rachunki_regionalne_w_2009.pdf; *Bezrobotni oraz stopa bezrobocia wg województw, podregionów i powiatów*, GUS, www.stat.gov.pl; *Komunikat o sytuacji społeczno-gospodarczej województwa warmińsko-mazurskiego*, WUS Olsztyn.

The so-called synthetic measures were used for quantification of the business cycle status in the province of Warmia and Mazury. They serve to define the development of a phenomenon which requires using a relatively

large number of characteristics with one number. Such phenomena that are multi-characteristic processes are observed for an object or for a group of objects, which, as a consequence, allows ranking the objects according to the development status (MALINA 2004, p. 38, STRAHL 1990, p. 46).

In this study, the evaluation of the business cycle status of the province of Warmia and Mazurybased on the most important indicators acting as component variables of the synthetic indicator was conducted by applying the discussed method. Evaluation of economic activity changes in the region of Warmia and Mazury during the period from January 2008 until May 2011 is the outcome of applying that method.

Aggregated data concerning the following economic macro-values was used for designing the synthetic business cycle index in the province of Warmia and Mazury:

– Consumer goods and services price index
– Number of the unemployed registered with the labour offices
– Number of job offers posted with the labour offices
– Dynamics of average wage in the sector of enterprises
– Dynamicsof construction-assembly production
– Dynamics of industrial production sold
– Dynamics of retail sales
– Number of building permits issued
– Number of tourists visiting the region
– Accommodation facilities use indicator
– Cereals purchase price index
– Cattle purchase price index
– Pigs purchase price index
– Value of the business climate index in the Euro zone

Three synthetic indicators of the moods of entrepreneurs and the banking sector climate were also used as complementary information on the business cycle status. These include:

– the current business cycle indicator (by IBnGR)
– the prognostic business cycle indicator (by IBnGR)
– the business cycle in the banking sector indicator (by Pengab)

All changes were considered with monthly intervals. Aiming at elimination of the effect of accrual of the increases in values of all the variables, they were converted to differences between the neighbouring periods using the synthetic increase formula by Shishkin. That operation aims at maintaining the synthetic nature of the positive and negative changes in the value of a given variable (HERBST 2003, p. 58).

Elimination of the component of seasonal character from the data of an empirical time series represents a subsequent step in designing a synthetic

business cycle indicator. The ARIMA procedure is the most popular method serving time series decomposition. This method uses the concept of a mobile average for estimation of the seasonal component value[3]. Given the fact that some values of variables were available already after decomposition, this procedure was employed only for some variables.

The aim of the next procedure was to divide the variables considered in the business cycle analysis into three categories: prognostic variables, simultaneous variables and delayed variables. This is important for determination of the nature of the component variable influence on the current business cycle status expressed by means of the synthetic indicator. The so-called reference series in most cases represented by the variable reflecting changes in employment or production volume is the reference point for the above-indicated categories. In this analysis, the value of industrial production sold was assumed for the reference series.

The variables were selected according to the criterion of division into the prognostic and simultaneous indicators in relation to the business cycle fluctuations using a correlation analysis and a test by means of the major components method[4].

The basis for the design of the simultaneous indicator design involved: the number of unemployed registered with the labour offices, the number of job offers posted with labour offices, the dynamics of the average wage in the sector of enterprises, dynamics of construction-assembly production, dynamics of the industrial production sold, the number of tourists visiting the region, accommodation facilities use indicator, dynamics of retail sales and the current business cycle indicator (by IBnGR). On the other hand, the following variables were classified as variables with prognostic properties in relation to the business cycle status: the number of building permits issued, the prognostic business cycle indicator (by IBnGR), an indicator determining the status of the economic climate and the climate indicator of the banking sector (Pengab).

Standardisation of component variables is the next step in the design of the synthetic business cycle indicator. The aim of that operation is to limit the influence of indicators showing high variability on the final values of the synthetic indicator (MALINA 2004).

Aggregation of component variables to form a composite index is the last step in designing the business cycle indicator. It is achieved, in most cases, by summing up the standardised increases of individual variables or by computing the average value of such increases.

---

[3] The *ARIMA* procedure was implemented using the STATISTICA 8.0 software package.

[4] In the analysis of the business cycle for the province of Warmia and Mazury, the development of a synthetic delayed indicator was abandoned.

Defining the selection criterion for weights attributed to the individual components represents a separate issue to be solved at the final stage of the business cycle indicator computation. In computation of the synthetic business cycle, the strength of correlation with the reference series was assumed for the criterion of the share of the individual variables in the formation of its final value.

Analysis of the business cycle index components for the province of Warmia and Mazury[5]

Labour market

As of the end of December 2011, as compared to the end of the 3rdquarter of 2011, the number of unemployed in the province of Warmia and Mazury increased by 9,000 people. This was the fifth consecutive month during which an increase in the number of the unemployed was recorded compared to the preceding period. In comparison to September 2011, the number of unemployed increased by 1.3%. Ultimately, the number of unemployed in Warmia and Mazury as at the end of December 2011 was 107,300 people.

As of the end of December 2011, the unemployment rate in the province of Warmia and Mazury was 20.1% and was higher by 7.6 percentage points than the national average where the value of that indicator was 12.5%. This means that in the province of Warmia and Mazury, for every 100 professionally-active people there were 20 people that were unemployed, while the national average was 12 people, The unemployment rate for the province of Warmia and Mazury in December 2011 as compared to September increased by 1.4 percentage point while in the country that increase was by 0.7 percentage points. Compared to the equivalent period of the preceding year, the unemployment rate increased by 0.1 percent point (for the country it remained unchanged). Warmia and Mazury is the region where unemployment is still the highest in Poland.

During the analysed period, unemployment increased in nine counties of the province with the highest increases recorded in the counties of Nowe Miasto (by 9%), Iława (by 7.4%) and Olsztyn (by 5.7%). In twelve counties unemployment decreased by from 0.2% in Ełk county to 13.2% in Giżycko county.

In December 2011, 1,538 job offers were posted at the employment offices, which is fewer by 238 (13.5%) than in December 2010 and by 234 (13.3%) less than in November, 2011.

---

[5] Prepared on the basis of: *Komunikat o sytuacjispołeczno-gospodarczejwojewództwawarmińsko-mazurskiego*, monthly publication, WUS Olsztyn.

Compared to the preceding year, the decrease was recorded in the:

– number of unsubsidised, i.e. originating from the free market job offers – by 18, i.e. by 1.4%;

– number of subsidised job offers – by 1,126, i.e. by 65.9%;

– number of vacant vocational activation places – by 1,454 i.e. by 79.4%.

In December 2011, the county labour offices in the province of Warmia and Mazury received 1 notice concerning the intent of dismissing 1 person. The notice concerned an enterprise operating in Działdowo county (industrial processing). From the beginning of the current year, the intent of group dismissals of employees was notified by 19 employers and the planned dismissals covered 926 persons. Within the earlier reported group dismissals, in December 2011, 41 persons lost jobs in the province of Warmia and Mazury, including:

– Section *National defence* – 32 persons in Elbląg county,

– Section *Wholesale and retail trade; repair of automotive vehicles, excluding motorcycles* – 8 persons in Olsztyn,

– Section *Education* – 1 person in Ostróda.

According to the status as at the end of December 2011, the extent of group dismissals was narrower than announced by the enterprises at the beginning of the year. However, as assessed by the Province Labour Office in Olsztyn, this does not have to mean an improvement in the situation in the labour market but may indicate the situation where employers, by spreading dismissals over time avoid the required consultations with the trade unions or representatives of the employees. It happens often that the enterprises hide the fact of group dismissals by spreading the decrease in employment over the period of a few months. Employers, when they want to dismiss employees according to the group redundancy formula, are required to notify the labour office about such intent. Dismissals were recorded, *inter alia*, at insurance companies, banks, logistics and postal service companies as well as employees of military units.

Almost a half of the unemployed (49.3%, i.e. 50,853 persons) in the province are residents in rural areas. As compared to the equivalent period of 2010 their number increased by 2,459 persons, i.e. by 5.1%, while the percentage share of this category of people in the total unemployment increased by 0.8 percentage points. The highest percentage share of the residents from rural areas in the total unemployment was recorded in the counties of Nowe Miasto (76.5%), Elbląg (73.8%) and Olsztyn (68.9%), while that share was the lowest in the counties of Ełk (37,4%), Giżycko (45,3%), and Lidzbark (43.9%).

Complete economic integration of Poland with the EU countries took place as a result of opening the labour markets by the last Member States in January 2011 (Germany, Austria, Switzerland). Nevertheless, as indicated by the

values of the labour market indicators, this did not result in perceptible changes as concerns changes in the regional labour market. Until the end of 2011, within the framework of the European Employment Service EURES, 69 employment offers were received (32 offers fewer than during the equivalent period of the preceding year), and from the beginning of the year – 1,935 offers were received (1,425 offers more than in December 2010). The majority of job offers obtained from January until November 2011 originated from the Netherlands (1,220 offers, i.e. 63.0%) and Germany (508, i.e. 26.3%), while the other jobs were offered first of all in Spain (148 offers, i.e. 7.6%), as well as Italy (17 offers, i.e. 0.9%) and the United Kingdom (15 offers, i.e. 0.8%).

As concerns the division of the offers into subsidised and unsubsidised ones, those later ones are more beneficial to the economy of the region because they originate from the free market and are not linked to any expectations from the employers.

The structure of job offers as compared to the equivalent period of 2010 changed in favour of unsubsidised employment. Currently such offers represent 50% of all vacant jobs and vocational activation,which is 21.9 percentage points more than during the period of January-November 2010. The percentage share of vacant vocational activation positions in the entire offer decreased significantly from 44.3% in 2010 to 28.8% in 2011 (change by 15.5 percentage points); the decrease in the number of subsidised employment was smaller (from 27.6% in 2010 to 21.2% in 2011, i.e. by 6.4 percentage points).

In December 2011, the county labour offices received 1,772 offers of vacancies and vocational activation positions, i.e. 934 fewer (34.5%) than at the end of 2010. As compared to the equivalent period of the preceding year:

– the number of unsubsidised job offers, i.e. those coming from the free market – increased by 220, i.e. 34.5%;

– the number of subsidised employment offers decreased by 529, i.e. 59.0%;

– the number of vacant vocational activation positions was lower by 625, i.e. 67.9%.

Analysing the trends in the labour market of Warmia and Mazury during the years 2005–2011 a decreasing trend in both the number of the unemployed and the number of job offers can be noticed. While the first conclusion is of a positive nature, the decrease in the number of newly-created jobs in the region may be a concern. That trend, however, has no economic background. This is the outcome of changes in the outlays of the Labour Fund for active forms of combating unemployment. As of 2011, compared to 2010, outlays on training were decreased by 80%, on scholarships during the period of internship by 60% and on vocational preparation of adults and youth by almost 30%. This limitation also applied to reimbursement of the costs of creating jobs and additional equipment of workstations offered to the employers and the

costs of starting business by the unemployed. In both cases, the budgets were cut down by over 80%. On the other hand, the funds for unemployment benefits and social aid increased, which will not support improvement in vocational activation of the unemployed.

The value of the average wage in the sector of enterprises in the province of Warmia and Mazury increased year-to-year by the end of December 2011 by 3.4%. Compared to November, the level of wages increased on average by 8.4%. At the same time, the dynamics of wages in the sector of enterprises in the whole country was 4.4% in year-to-year comparison while in comparison to the preceding month, the level of wages increased by 9%. The dynamics of wage changes in the region is thus lower than the changes of wages in the enterprises for the entire country. If we consider the inflation index, then the wages in the province of Warmia and Mazury in December were at the level of 12 months earlier. On the other hand, on the national scale, a small decrease in the real value of wages took place (by 0.2 percent point). It should be pointed out that the increase in wages analysed according to the month-to-month approach in the case of December may not be considered fully valid because in December employees usually receive additional financial benefits (yearly bonuses, seasonal bonuses) added to the wage. On the other hand, the conclusion can be formulated that the dynamics of wages at the end of 2011 according to the year-to-year approach reached a certain status of equilibrium. In December 2011,the average value of wages in the sector of enterprises in the province of Warmia and Mazury represented 79.3% of the equivalent wage nationally, which represents a result worse than the situation at the end of the 3rd quarter of 2011. The situation concerning wage changes was accompanied by a minor increase in the average employment in the sector of enterprises according to the year-to-year approach (by 2.3%). On the other hand, compared to the preceding month, December traditionally represents the end of seasonal work and expiration of civil-legal employment contracts. The consequence of that is the decrease in the average employment level in the sector of enterprises during the last month of the year as compared to November (by 0.2%). The slowdown in the wage increase rate to the level of inflation and the minor increase in employment indicate that entrepreneurs expect a decrease in the dynamics of demand for their products and are adjusting their costs to temporarily lower revenues during the coming year.

Industrial and construction-assembly production

Sold industrial production of the province of Warmia and Mazuryin current prices in December 2011 was higher by 11.4% than a year earlier and did not changecompared to the preceding month. At the same time, industrial

production in Poland increased in December 2011 by 7.7% as compared to the equivalent month of the preceding year. On the other hand, compared to the preceding month, the national production decreased by 4.9%. The above data indicate better market cycle results for Warmia and Mazury year-to-year as compared to the national indicators of sold industrial production. In the case of the dynamics for all of Poland,there was an improvement as compared to the same period of the preceding year but the rate of increased slowed. This means that in the situation of difficulties in the financial market (related to the situation in the Euro zone) the enterprises were continually performing the orders and contracts made during the first half of 2011, whichwas a period of a relatively better market situation. In the case of foreign contracts, the competitiveness of Polish exports was supported by a weak Polish zloty. However, facing the weakening demand in the Euro countries, and particularly in Germany, the prospects for changes in orders for industrial products for the nearest months are negative. Changes in the domestic demand for industrial products, in the context of, among others, higher inflation and a decrease in the real purchasing power of wages and unemployment increase will show a decreasing trend. It should be highlighted, nevertheless, that industry and construction are the sectors that led the GDP increase throughout 2011. This indicates the increasing competitiveness of Polish industry, not only in the domestic scale.

The economic results of the province of Warmia and Mazury are slightly worse compared to the equivalent period of the preceding year. The industrial production increase in Warmia and Mazury was lower year-to-year compared to the equivalent period of the preceding year. Although during the fourth quarter of the current year the dynamics of industrial production increase for the province of Warmia and Mazury decreased slightly as compared to the third quarter of 2011, in December 2011 it still showed a positive rate of change. Generally, from the beginning of 2011 the dynamics of industrial production exceeded on average the level of 10%, which should be considered a good result. Enterprises were completing contracts signed during the first half of the year and, in some industries such as furniture or timber production, a return to the traditional sales markets for those sectors took placefollowing a large decrease in production volumes in 2010. This was also the effect of the weakening Polish zloty as a result of debt problems in the Euro zone countries. In that context, changesin the situation in the EU countries, particularly Germany, will be of key importance for the further development of trends in the industrial market.

Volume of the construction-assembly production, encompassing works of investment and refurbishment nature attained in the province of Warmia and Mazury by construction enterprises employing more than 9 per-

sons was in December 2011 higher by 3.2% than a year earlier and higher by 51.2% compared to November 2011. Compared to the national results (increase by 4.2% compared to the preceding year and by 20.3% compared to the preceding month) the indicators characteristic for Warmia and Mazury indicate higher fluctuations, which results from the general situation of the regionhaving the highest unemployment rate in Poland. Despite the occurrence, as can be seen in the decreasing prices of residential units, of a certain surplus of supply, the increase in building permits granted is surprising. In December 2011, the county administration offices issued 478 building permits, i.e. 79 (19.9%) more than in November and 144 (13.2%) permits fewer than the equivalent period 12 months earlier. This may indicate the maintenance of good dynamics in the construction sector in 2012.

The results of the construction sector can be divided into two components. Infrastructure construction financed by the public sector is the first of them. In that field, both in the regional and the national approach,a relatively good market is "pulled" by large infrastructural projects co-financed from EU funds. This is the part of the construction sector that is not subject to the market cycle fluctuations. Private construction encompassing both individual construction and housing construction is the second component. In this case,thereis a correlation with the general economic situation as well as the influence of a government-implemented programme stimulating the demand through the real estate market "family on its own" programme. Construction has a particularly high sensitivity to changes in the situation in the credit market. In this context, a clear weakening of dynamics in that sector occurred following limitation of the credit offer of banks denominated in foreign currency and the implementation of more restrictive conditions for the origin of loans denominated in Polish zlotys. In the long-term perspective, limitation of the demand for credit will be the consequence of the government winding down the "family on its own" programme and probably higher margins of commercial banks for clients, which is linked to the losses incurred by the banking sector as a result of the restructuring of the public debt of Greece agreed by the Euro zone countries. In the case of the construction industry, an important role is played by infrastructural projects financed from the EU funds that increase dynamics and stabilise the demand in that market.

Internal and foreign demand

The dynamics of retail sales is an index measuring the value of retail sales for each month achieved by trade and non-trade enterprises. Changes in retail sales represent the fastest indicator of trends in the consumption expenditures

of society. The level of this indicator is the result of the situation in the labour market and the dynamics of the average wage in the economy.

Retail sales in the province of Warmia and Mazury in December 2011 were higher by 6.5% as compared to the equivalent month of the preceding year. The level of sales was higher than the value for the preceding month by 13.1%. Nationally, the retail sales increased in December 2011 by 4.2% according to the year-to-year approach, while a month-to-month change increase by 20.3% occurred. It should be generally concluded that during the period covered, the retail sales results for the country as the whole show higher stability in reaction to market fluctuations compared to the dynamics for the province of Warmia and Mazury. During the last crisis of 2009 when the province of Warmia and Mazuryrecorded several-percent decreases in sales year-to-year, nationally the year-to-year dynamics oscillated within 100% of the previous year's value. Despite the visible decrease in demand in the Euro zone countries, in Poland the dynamics of retail sales decreased only slightly and (with few exceptions) it did not show decreases in absolute values, which occurred relatively frequently in the region of Warmiaand Mazury. This means that during the period studied, consumers in Poland did not respond to the catastrophic visions of crisis presented in the media and maintained a high level of demand.

According to the data by the Central Statistical Office, during the period covered, the highest increase in the share in retail sales was recorded for the section of "non-food consumption goods" (increase by 1.5 percent point) and "non-consumption goods" (increase by 1.4%). The share of alcoholic beverages and tobacco products practically did not change, while in the case of food and non-alcoholic beverages as well as own goods and products a decrease by 2.7% and 0.3% respectively occurred. It is projected that during the nearest future, a slowdown in the dynamics of retail sales will take place resulting mainly from deterioration of the situation in the labour market and relatively high inflation which limits the real wage increase rate. A significant role will be played by factors of a psychological nature, i.e. reactions to changes in the moods of consumers in the EU countries.

The economy of Warmia and Mazury is also influenced by a less favourable economic situation abroad.The period until December 2011 was characterised by a systematic deterioration in sentiment among entrepreneurs from the Euro zone, including the German economy, which is of key importance for the currency area. The IFO index value representing the climate for business in the German economy as in December 2011 was 107.3 points compared to 107.5 points as at the end of the third quarter and 114.5 points in December 2010. The International Monetary Fund decreased the forecast of the GDP increase in Germany in 2012 from 2% estimated in April

2011 to the level of 0.8% in September 2011. The main reasons for the decrease in the GDP dynamics will include the consequences of the Euro zone economic debt crisis and the decrease of consumption in the German economy.

The current account balance in the fourth quarter of 2011 was negative at 4,964 million EUR[6]. The level of that balance was decided by the negative balance of revenues (3,375 mln EUR) and of trade (2.814 mln EUR) as well as the positive balance for services (714 mln EUR) and current transfers (511 mln EUR). The negative current account balance as compared to the data for the fourth quarter of 2010decreased by 1,326 mln EUR. The decrease of the negative current account balance was influenced by the increase in the positive balance for services by 110 mln EUR and the higher positive balance of current transfers by 603 mln EUR. At the same time the negative balance of revenues decreased by 79 mln EUR and the deficit in trade decreased by 534 mln EUR. The balance of the capital account was positive at the level of 3,562 mln EUR.

The exports of goods during the fourth quarter of 2011 were estimated at the level of 35.1 billionEUR while imports amounted to 38 billion EUR. Compared to the fourth quarter of 2010, the exports of goods increased by 7.3% while the imports of goods increased by 5.1%. The negative balance of trade amounted to 2.8 billionEUR as compared to 3.3 billionEUR during the fourth quarter of 2010.

During the fourth quarter of 2011, the balance of international services was positive, amounting to 714 mln EUR. The level of the positive balance of services was determined, first of all, by the balance of transport services amounting to 728 mln EUR (an increase by 268 mln EUR as compared to the fourth quarter of 2010) and foreign travel amounting to 392 mln EUR (a decrease by 98 mln EUR). At the same time, the balance for the other services was negative, amounting to 406 mln EUR (a decrease by 60 mln EUR).

During the analysed quarter of 2011, the balance of revenues from abroad was negative, amounting to 3,375 mln EUR. The level of the negative balance of revenues from investments during the fourth quarter of 2011 was influenced the most by the revenues obtained by direct foreign investors, amounting to 2,547 mln EUR. That amount consisted of the dividends disbursed (amounting to 539 mln EUR), reinvested profits (1,392 mln EUR) and interest paid on the loans (616 mln EUR). The revenues of foreign direct investors from their capital involvement in Polish entities were lower by 382 mln EUR, i.e. 13.0% as compared to the equivalent quarter of 2010.

The negative value of the balance of revenues was increased by revenues disbursed to non-residents for portfolio investments in Poland (in the form of

[6] Prepared on the basis of: Bilansp atniczy w 2011 r., NBP, http://www.nbp.pl/statystyka/bilans_platniczy/bop_kw2011.pdf

dividends received from share securities and interest on debt securities issued by Polish entities). The revenues of non-residents in this case amounted to 1,102 mln EUR.

During the fourth quarter of 2011, the inflow of funds from the European Union included in the balance of payments amounted to 4,412 mln EUR. That was the highest in value quarterly inflow of capital since Poland's accession to the EU. The inflow amounting to 853 mln EUR was included in the current transfers, while the amount of 3.559 mln EUR in capital transfers. During the same period, Poland paid 826 mln EUR to the European Union budget as membership contributions and fees. As a consequence of those transactions, the balance of transfers with the European Union was positive and amounted to 3.586 mln EUR.

During the fourth quarter of 2011, the balance of foreign investments in Poland was positive, amounting to 2,562 mln EUR. The amount of the balance of foreign investment in Poland was influenced by the net capital inflow from foreign direct investments and foreign loans to Polish entities. At the same time,an outflow of net capital from the current and deposit accounts of non-residents in Polish banks was recorded.

The balance of the foreign direct investments in Poland was positive and amounted to 1.892 mln EUR. The level of this balance was determined mainly by the inflow of net capital from investments in debt instruments, amounting to 2,535 mln EUR and positive reinvestment of profits, amounting to 1,392 mln EUR. The outflow of net capital resulting from decreasing the equity of Polish enterprises due to direct investments amounted to 2.035 mln EUR.

The positive balance of foreign portfolio investments during the fourth quarter of 2011 amounted to 546 mln EUR. It resulted, first of all, from the net inflow of capital from investments by non-residents in debt securities amounting to 350 mln EUR (mainly investments made by non-residents in the Government bonds).

Short-term perspectives of changes in the economy of Warmia and Mazury

The development of the economic situation in the province of Warmia and Mazury is determined, similar to the national situation, by factors included in the category of the advance variables of the economic market situation. In the case of this analysis, the prognostic element is implemented by such indicators as the IFO index, whichreflects the economic mood in Germany (the major trading partner of Poland), the number of building permits issued (that indicates the trends in the construction industry) and by the multiplication

effect in the majority of the sectors of the economy, the situation in the banking sector describing the size of demand for credit in the economy and a prognostic indicator defining the expectations of enterprises concerning the development of the production order portfolio.

The Pengab index value in January 2012 remained at a level similar to the preceding month, i.e. it was 24 points,which was 0.1 points more than in December of the preceding year[7]. An improvement was recorded mainly in the banks with majority foreign capital, while in institutions of other types the situation either did not change or decreases were recorded.

The Pengab index, treated as a synthetic market cycle indicator in banking institutions, increased by 0.1 points as compared to December: from 23.9 points to 24.0 points. At the same time, the Pengab index value decreased in cooperative banks from 27.5 points to 22.1 points and in banks with majority domestic capital- from 20.8 pointsto 20.2 points while in the banks with majority foreign capital it increased from 25.2 points to 28.6 points.

The total deposits in the current accounts increased in 49% of the institutions (an increase by 13 points as compared to the result for December); the deposits of individuals in 42% while deposits by business entities in 39%. A decrease in the activities of deponents was recorded in12% of the institutions; the deposits of individuals in 11% and deposits by business entities in 13%.

The total time deposits increased in 50% of the institutions (an increase by 1 point as compared to the result for December). In the segment of households, they increased in 46% of the institutions and in the segment of business entities in 34% of the institutions. Total decreases occurred in 12% of branches; the deposits of individuals in 13%, while deposits by business entities in 12%.

The total number of loans originated increased in 47% of institutions, decreased in 21% of them and did not change in 32%. The increase in lending to individuals was recorded in 45% of the institutions while the increase of lending for business purposes in 39% of branches; the decrease occurred in 20% and 22%, respectively.An increase in lending operations is expected by 57% of the institutions – 50% in the segment of individuals and 53% in the segment of corporate clients. Limitation of the total lending activities is expected by 7% of the institutions;lending for the individuals – 13%, and lending for corporate clients – 6%. The value of irregular loans to individuals increased in 24% of the institutions, decreased in 14% and did not change in 62%.

An increase in consumer loans for individuals occurred in 38% of institutions, a decrease in 17%, while in 45% of them the level of lending was

[7] Prepared on the base of: *Monitor Bankowy 1/2012*. ZwiązekBankówPolskich, Pentor 2012.

unchanged. The consumer loans to individuals will increase according to the representatives of 46% of the institutions, decrease according to 13% while 41% of the respondents project no change. The prognostic index is 34 points. For the nearest future, the banking market is expecting a revival linked to the increase in corporate client activity in the spring (the seasonal factor). On the other hand, the continually unsure situation in the Euro zone may be a negative factor. Because of the links between the banks operating in Poland with foreignparent institutions, an unfavourable situation in the Euro zone countries may cause a limitation of loan supply and an increase in loan price, which will have an unfavourable influence on the real economy.

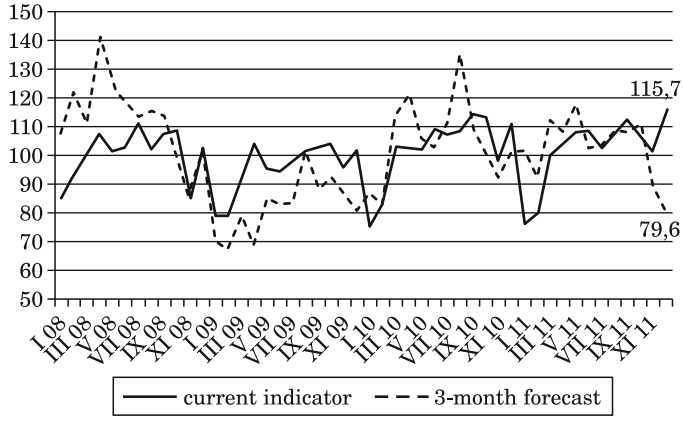

Fig. 1. Value of the synthetic market cycle indicator in the province of Warmia and Mazury
Source: own research.

The status of the business cycle in the province of Warmia and Mazury as at the end of 2011 was better than in the equivalent period of the preceding years by 5 points. The value of the synthetic market cycle indicator in December 2011 was 115.7 points and it was higher than the index value from the end of the third quarter of 2011 by 3.1 points and was higher than the indicator value from the end of the second quarter of 2011 by 7.5 points. The value of the short term predicative indicator was 79.6 points and it was lower by 28.2 points compared to the third quarter of 2011 and lower by 8.8 points than the indicator from November 2011. The increase in the current market cycle indicator value in December 2011 compared to the results from the end of the third quarter of 2011 was influenced by an increase in all component variables, with the exception of the results from the labour market. The highest increase in the scores was shown by construction, which is justified by the end of the year and the conclusion of the undertaken investment projects.

A large increase was also observed in the retail sales variables and the level of wages in enterprises. This is also the effect of the phenomenon of seasonality. December is the month of Christmas shopping and the disbursement of bonuses, overtime payments and awards. The situation in the regional labour market had a negative influence on the business cycle indicator value. The unemployment rate increased by 0.7 percentage points as a result of the increase in the number of unemployed by 4,100 persons. At the same time, the number of job offers decreased significantly (a decrease by 13.3%). The level of evaluation of the current situation of enterprises also had a positive effect for the value of the current indicator.

The value of the short-term prognostic indicator represents the result of the positive and negative changes influencing the value of the forecast. The increase in the number of building permits issued (by 15.4 percentage points) and a slight improvement of the situation in the German economy reflected by the IFO index value should be classified to the first group of variables in December 2011. Deterioration of the situation in the banking market, expressed by means of the synthetic Pengab indicator as well as the value of expectations of entrepreneurs concerning the orders for production, mainly those intended for exports, were included among the variables decreasing the forecast value in December 2011.

Recapitulating the evaluation of the province of Warmia and Mazury economic situation, it can be concluded that after a relatively good first half of 2011, a slight slowdown in the economic growth rate occurred again. It was manifested in a decrease in the dynamics of such indicators as the industrial production, construction-assembly production, retail sales and the employment rate.

The local labour market situation is the area of the largest concern. The high level of unemployment (20.1%), which will increase during the two consecutive months, is an issue of particular concern. The forecasts of unemployment decrease refer rather to the second quarter of 2012. The level of prices in the region is similar to the dynamics for the entire country. The situation in foreign trade is relatively good, as a consequence of the performance of orders from the preceding periods and the relatively weak Polish zloty, which supports exports.

Entrepreneurs; expectations concerning the following quarter are prudent. They expect deterioration of the general economic situation in the majority of industries. It should be remembered that the fourth and the first quarters of the year are characterised by usually less favourable influence of factors of a seasonal nature, which is particularly manifested in the labour market. A decrease of unemployment in Warmia and Mazury might potentially be supported by opening of the labour market in Germany, although so far this

has not been reflected in the unemployment indicator. It seems that the economic development of the region during the consecutive quarters will be determined by the dynamics of private sector growth in Poland and in the EU countries, and this shows a slowing trend. The decrease in activities of territorial governments implementing investment projects from public funds may also be a factor slowing down the development rate. This results from limitation of the potential for contracting public debt imposed by the Ministry of Finance in 2011. Lack of sufficient own funds will be a barrier to co-financing investment projects from EU funds.

Translated by JERZY GOZDEK

Accepted for print 29.05.2012

References

BARCZYK R., KOWALCZYK Z. 1993. *Metody badania koniunktury gospodarczej*. Wydawnictwo Naukowe PWN, Warszawa – Poznań.

BOBROWICZ S. 1999. *Wahania cykliczne w gospodarce*. Wydawnictwo Uniwersytetu Gdańskiego, Gdańsk.

CARLINO G., SILL K. 2001.*Regional income fluctuations. Common trends and common cycles*. Review of Economics and Statistics, 83: 446–456.

CRONE T.M. 2005. *An alternative definition of economic regions in the United States based on similarities in state business cycles.* Review of Economics and Statistics, 87: 617–626.

GFK Polonia, http://www.gfk.pl/sectors_and_markets/custom_research/index.pl.html (access 14.07.2011).

GUS. Główny Urząd Statystyczny, Portal informacyjny, www.stat.gov.pl/bilans.

HALL R., TAYLOR J. 2007. *Makroekonomia.* Wydawnictwo Naukowe PWN, Warszawa.

HERBST M. 2003. *Koniunktura gospodarcza metropolii*. Wydawnictwo Naukowe „Scholar", Warszawa.

LUBIŃSKI M. 2004. *Analiza koniunktury i badanie rynków*. Dom Wydawniczy Elipsa, Warszawa.

MOORE G. 1969. *Generating leading indicators from lagging indicators*. Western Economic Journal 6.

MALINA A. 2004. *Wielowymiarowa analiza przestrzennego zróżnicowania struktury gospodarki Polski według województw*. Wydawnictwo Akademii Ekonomicznej w Krakowie.

NBP. Narodowy Bank Polski, www.nbp.pl.

NIEMIRA M.P., KLEIN P.A. 1994. *Forecasting Financial and Economic Cycles*. John Wiley&Sons, New York.

OWYANG M.T., RAPACH D., HOWARD J. 2009. *States and the business cycles*. Journal of Urban Economics 65: 181–194.

PIECH K. 2003. *Polityczny cykl koniunkturalny – wnioski dla Polski* In: *Diagnozowanie koniunktury gospodarczej w Polsce*. Eds. K. Piech, S. Pangsy-Kania. Dom Wydawniczy Elipsa, Warszawa.

SOLOMOU S. 1998. *Economic Cycles – Long Cycles and Business Cycles Since 1870*. Manchester University Press, Manchester.

STRAHL D. 1990. *Metody programowania rozwoju społeczno-gospodarczego*. Państwowe Wydawnictwo Ekonomiczne, Warszawa.

The Gdańsk Institute for Market Economics, http://www.ibngr.edu.pl/ (access 6.07.2011).

TNS, http://www.pentor.pl (access 14.07.2011).

Związek Banków Polskich. 2011. Monitor Bankowy, 5 (za Pentor 2009).

www.wus.olsztyn.pl