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THE PROPENSITY TO CHANGES IN THE COMPETITIVE AND INNOVATIVE ECONOMIC ENVIRONMENT

PROCESSES – STRUCTURES – CONCEPTS

EDITED BY
RYSZARD BOROWIECKI, JAROSŁAW KACZMAREK

THE PROPENSITY TO CHANGES IN THE COMPETITIVE AND INNOVATIVE ECONOMIC ENVIRONMENT

Processes – Structures – Concepts

CRACOW UNIVERSITY OF ECONOMICS
Department of Economics and Organization of Enterprises
FOUNDATION OF THE CRACOW UNIVERSITY OF ECONOMICS

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Edited by
Ryszard Borowiecki, Jarosław Kaczmarek

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Piotr Bartkowiak

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INTRODUCTION

Changes in the economic systems and their structures, progressing currently with great speed and intensity, bring about a need to adapt enterprises and institutions, national economies, integration systems and the global economic system to new conditions and factors of development. The level of complexity and multidimensionality of the changes are intensified by the processes of the internationalisation of economies, the growth of their competitiveness and innovativeness. Simultaneously, the undertaken struggle has to take into account the necessity to overcome negative factors and effects of the long–term economic crisis.

The changes, of fundamental significance, are a sign of our times, the times of the new economy and new challenges. The adaptation of economies and their entities to the new conditions and factors of development is a categorical imperative of their effective and efficient operation.

In the process of the search for the ways of adaptation to the new conditions and factors, specific concepts are being developed and strategies are applied. They mark out the paths of changes for the functioning and development of firms and economies. They consist in internationalisation (globalisation and regionalisation), innovativeness, entrepreneurship and the creation and the effective use of knowledge resources. It is knowledge and information which are becoming critical factors in achieving success as well as the key strategic resources. The world in entering the third phase of transformations in the form of information society, via constant and fast spreading access to information.

In the era of turbulent changes in the environment and inside enterprises and economies, demolishing old concepts and the occurrence of new ones, there is one common direction and goal of the undertaken actions – necessary soothing of unstable economies and providing them with new impulses to restore the paths of permanent development. The problem, however, is that at present we can observe not only the dysfunctionality of economies but also of economic streams and theories. The criticism concerns the basic assumptions of neo–classical economics, the monetarist doctrine, or neo–Keynesian model. The behavioural approach is becoming a more and more visible opposition to regulations and control, strongly exposed, particularly during the economic crisis.

Three categories – innovativeness, competitiveness and development – have become the foundation of contemporary economies, their entities and views of their functioning. The categories, being interdependent, give character to the undertaken actions, set the directions of functioning as well as the strategies of operations and managing resources.

Innovations have become the basic catalyst of the effective operations and the factor of economic development. For enterprises they are a specific entrepreneurship tool. They are transformed into market opportunities and the creation of competitive advantage. Entities capable of creating novelties, innovative entities demonstrate competitive advantage, and competitiveness itself, being closely connected with changes and constituting the materialisation of competition, enforces pre–emptive adaptation to the changing external and internal conditions.

The essence and the processes describing innovativeness and competitiveness lead directly to the category of development. During this process individual entireties combine into more complicated systems

which have new, unprecedented properties and regularities. The traditional identification of development with qualitative changes, and growth with quantitative changes is now too much of simplification, since quantitative changes do not occur in isolation from qualitative changes. The components of the development of economy and its entities are their size and structure, and each of them is characterised by complexity and multidimensionality. The progressing changes are subject to the influence of managers, being submerged in specific economic policies.

The problems of innovativeness, competitiveness and development are in the centre of interest of the book entitled "The Propensity to Changes in the Competitive and Innovative Economic Environment. Processes – Structures – Concepts". It has collected the output of the Authors conducting research in these three areas. They have also become a distinguishing feature of the book structure, maintaining the logic of links and the coherence of the presented contents. As scientific editors we express our hope that the book handed over to the Readers will be one of many important publications, extending the knowledge about the transformations of contemporary economies and enterprises, the creation of competitive advantage and the use of innovations in the process of their development.

The entirety of the Authors' deliberations is divided into three thematic parts:

I. Economic development, functional policy and structural changes.
II. Competitiveness and innovativeness of economy and its entities.
III. The process approach and restructuring in business management.

Part One starts with deliberations devoted to public debt, its structure and determinants, described on the basis of the experiences of the Eastern European countries. Then, attention is focused on the issues of the functioning of the small enterprise sector and special economic zones. Further deliberations concern the problems of the development of exports, energetic security, to finally reach detailed issues concerning green jobs and wage inequalities.

The problems of international competitiveness and its significance for the Polish economy are the introduction of Part Two of the book. It is virtually filled with texts devoted to innovations and innovativeness, reinforcing or even creating this competitiveness. Therefore, it is worth paying attention to the change in the attitude to innovativeness – from the closed to the open one, its use in the development of enterprises, or to the legal problems of its security. To end this part of the book, also the problems of innovativeness in the dimension of the functioning of a higher education facility or a region (voivodeship) are signalled.

The last Part Three of the book brings closer the problems of the use of the process approach in enterprises, putting emphasis on the issues of the improvement of operations and restructuring. The question of the use and development of IT technologies or controlling occupy an important position in them. A strong emphasis in this part of the book is also provided by the discussion concerning the structural changes and restructuring of the sectors of economy – steel industry, hard coal mining or energy industry.

The books handed over to the Readers, by collecting and ordering the developed knowledge, research findings and new searches becomes an inseparable part of the presentation of interesting inquiries, detailed analyses and formulated assessments conducted by the Authors, describing complex and multidimensional problems of development, innovativeness and competitiveness. Thus, we can cherish the hope that the problems presented in the book will be the point of reference for new reflections, inquiries and analyses in this area of scientific discussion.

Ryszard Borowiecki, Jarosław Kaczmarek

PART I

ECONOMIC DEVELOPMENT, FUNCTIONAL POLICY AND STRUCTURAL CHANGES

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COMPONENTS OF THE PUBLIC DEBT AND EXPERIENCE OF ITS RESTRUCTURING IN THE EASTERN EUROPE COUNTRIES

Summary

In today's turbulent economic system, restructuring is a typical activity forced by changes. The literature emphasises numerous management concepts and methods whose examination in the context of restructuring allows to state that their use in the process of implementing economic changes may become a factor affecting their effective execution. At the same time, the use of selected methods supporting the implementation of changes is conditioned by a number of factors such as, for instance, the economic situation of a country. The main aim of the paper is to present the components of public debt and methods of its restructuring. Special attention is paid to experience of external debt management in post–Soviet countries of Eastern Europe. The paper considered the current state and determined the priority guidelines of public debt management.

* * *

Introduction – task definitions

Development of the world market, expansion of international trade, globalization tendencies of the international financing system lead to increase in activity of the external and internal markets. Due to the increasing process of marketisation of national economy, its entities and society, restructuring should be perceived as a necessary condition of survival and development[1]. According to A. Stabryła, restructuring

[1] W. Janasz, K. Janasz, *Restrukturyzacja kreatywna współczesnych inteligentnych organizacji w świetle globalnych przepływów kapitału, wiedzy i wartości*, „Przegląd Organizacji" 2015, No 9, pp. 9–17.

is a diagnostic and designing procedure to improve the management and operational systems, with changes referring mainly to decision–making systems of management[2]. Restructuring refers to assets, capital, employment, organisation and ownership structure[3]. Typical restructuring activities include: outsourcing, spin off, lean management and reengineering. It should be stressed however that one can also encounter views emphasising that reengineering, TQM or benchmarking is a different approach to changes and should not be associated with restructuring[4]. The „learning" approach, in turn, indicates adaptation to changing conditions of operation through small changes[5] or receives an answer to small changes (issue management) or recognises and reacts to so–called weak signals[6]. Thus, the new methods bring solutions within the already applied concepts of problem solving: new ideas of acting are not searched for in this context.

Distinctive features of the modern market economy in developing countries are the growth of external and internal loans. This inevitably leads to financial dependence of the country on the foreign lenders. As a result, it may be stated, that public debt is the organic component of financial systems of the vast majority of countries across the world.

The problem of the large–scale increase in the volume of external debts is one of the most relevant against the backdrop of financial globalization and development of international finances. Developed countries have started to resort to the foreign loans after the Second World War to recover their economy. The direct intergovernmental credits in the formation of public debt of developed countries had the greatest value in 1950s and 1960s. The role of international financial organizations as the creditors of developed countries gradually decreases. At the same time, the largest debtors of the world are such countries as USA, Germany, Canada, France and Sweden.

Countries with economy in transition play an important role in the modern structure of external debt of countries of the world. During the 1990s all countries with economy in transition were characterized by the relatively high level of growth of external debt, which is connected with the transformational processes and political and economic instability.

Management and servicing of the public debt is one of priority tasks of financial policy of the state, an important condition of stability of its financial system. Effective debt management at all its stages will allow to avoid the crisis debt situations and congestion of expenditure side of the government budget in the section of the public debt servicing costs, will promote stabilization of the socio–economic situation and development of economy of the country[7].

Traditional method of debt reduction is its restructuring. At debt restructuring the terms of its service (interest, amount and timing of payment) are revised.

Although today there is no universally accepted definition, a restructuring as rule means legislatively certain sharing of debt instruments to new with different features. Moreover, the new instruments can consolidate all the previous debt obligations (Figure 1.)[8].

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[2] A. Stabryła, *Podstawy zarządzania firmą: modele, metody, praktyka*, Oficyna Wydawnicza Antykwa, Kraków–Kluczbork 1997.

[3] M. Kożuch, *Przesłanki, rodzaje i narzędzia restrukturyzacji przedsiębiorstw,* Zeszyt Naukowy – Wyższa Szkoła Zarządzania i Bankowości w Krakowie, Kraków 2010, No 12, pp. 80–91.

[4] R. Borowiecki, A. Jaki, *Restrukturyzacja – od transformacji do globalizacji,* „Przegląd Organizacji" 2015, No 9, pp. 4–9.

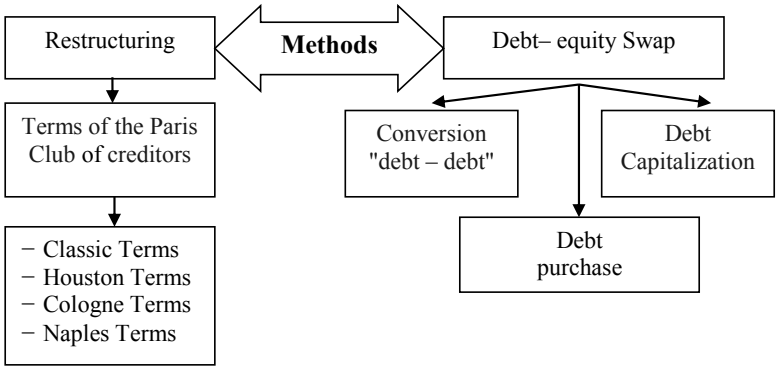
[5] T. Rojek, *Wykorzystanie narzędzi restrukturyzacji w procesie zarządzania efektywnością przedsiębiorstwa,* „Studia Oeconomica Posnaniensia" 2016, No 4.2, pp. 135–154.

[6] *Issues Management: Theoretische Konzepte und praktische Umsetzung. Eine Bestandsaufnahme*, scientific editor: U. Röttger, Springer–Verlag, Berlin 2013.

[7] N.V. Zrazhevska, *Mehanizm restrukturyzacii zovnishn'ogo derzhavnogo borgu* [Mechanism of foreign debt restructuring], "Finance of Ukraine" 2005*,* No 9, pp. 47–55.

[8] O. Ugarteche, *Public debt crisis in Latin America and Europe: a comparative analysis,* http://www.paecon.net/PAEReview/issue67/Ugarteche67.pdf**.** (accessed 07.05.16).

Figure 1. Methods and instruments of external debt management



Source: own study on the basis of the following sources: O. Ugarteche, *Public debt crisis in Latin America and Europe: a comparative analysis*. http://www.paecon.net/PAEReview/issue67/Ugarteche67.pdf. (accessed 07.05.16); Weiss M.A., *The Paris Club and International Debt Relief*. https://www.fas.org/sgp/crs/misc/RS21482.pdf (accessed 11.12.2013); V. Sidenko, V. Jurchyshyn, K. Markevych, *Borgy: chas braty i chas viddavaty. Globalni tendencii ta vyklyky dlja Ukrainy* (Debts: time to take and time to give. Global trends and challenges for Ukraine), The analytical report. Kyiv 2015, p. 74.

The most common is the restructuring of official debt, which takes place within the framework of the «Paris Club». To the poorest debtor countries for the purpose of debt relief there offered the choice of one of options of the aid from the government–creditors, who are the members of the «Paris Club».

Official creditors provide the following types of aid: partial cancellation of debt; further extension in validity of debt obligations; reduction of interests on debt servicing. The terms, on which the aid is provided, depend on the level of development and income of the debtor country. Classic Terms, the standard terms available to any country eligible for Paris Club relief; Houston Terms, for highly–indebted lower to middle–income countries; Naples Terms, for highly–indebted poor countries; and Cologne Terms, for countries eligible for the IMF and World Bank's Highly Indebted Poor Countries Initiative (HIPC). Classic and Houston terms offer debt rescheduling while Naples and Cologne terms provide debt reduction[9].

Among the other methods of external debt reduction there distinguished the so–called debt conversion (Debt Swap), which may have the following forms[10]:

- debt purchase is the provision of opportunity to the debtor country to purchase its own debt obligations on the secondary debt market (usually, at discount from their nominal price);
- debt capitalization, that is the exchange of external debt on the property (share capital) at discount;
- the conversion "debt – debt", that is the replacement of existing debt obligations by the new ones. In this case, there changed the conditions of debt obligations[11].

In addition to the mentioned above swap mechanisms of restructuring of external public debt, there also may be used the schemes: "External debt – loan stock"; "External debt – shares"; "External debt – export"; "External debt – Internal debt"; "External debt – ecology"; "Purchase of external debt";

[9] M.A. Weiss, *The Paris Club and International Debt Relief*, https://www.fas.org/sgp/crs/misc/RS21482.pdf (accessed 11.12.2013).

[10] S. Budagovska et all, *Mikroekonomika. Makroekonomika,* [Microeconomics. Macroeconomics], Kyiv 1999, p. 518.

[11] V. Sidenko, V. Jurchyshyn, K. Markevych, *Borgy: chas braty i chas viddavaty. Globalni tendencii ta vyklyky dlja Ukrainy,* [Debts: time to take and time to give. Global trends and challenges for Ukraine], The analytical report, Kyiv 2015, p. 74.

"Forgiveness of external debt". They allow to ease the debt burden on the national economy and achieve the other socio–economic goals[12].

In developed countries there is no unified model of public debt management. There allocated three main models of institutional support for public debt management[13]:

1. The banking model – the central bank of the country manages the public debt.
2. The government model – the public debt is managed by the government institution (Ministry of Finance, State Treasury, etc).
3. The agency model – the separate institution (agency) chooses the most optimal methods of public debt management.

Analysis of the last researches and publications

The expediency and necessity of attraction of the foreign investments and their impact on the economy of recipient country is debated for a long time not only in the foreign scientific literature, but also in the native one.

At one time, the Western economists negatively commented the attraction of the government loans. According to their opinion, the foreign aid should be treated with caution, as it leads to financial and economic dependence[14]. Such conclusion may be done on the basis of experience of developing countries and with taking into account the recent events in the Eastern Europe. Negative effects of the foreign credits are:

- the policy of profit repatriation, which is conducted by the transnational corporations after the imports of its capital;
- discrimination of the local economic sector, as the country's legislation puts the foreign capital in more favorable legal terms than their own capital;
- direct investments are often used as the means of tax evasion;
- there happens an outflow of intellectual potential.

At the same time, the analysis of economic literature demonstrates that the majority of economists are prone to lobbying of attraction of foreign capital against the backdrop of transitional economies.

It is believed that during recessionary period the involvement of external sources is desirable, as it does not exclude, but adds resources for stabilization and economy recovery[15]. Efficient use of the borrowed resources for investment financing allows to implement the structural changes, and the sustainable growth in the country. On the contrary, inefficiency of use of external resources creates such debt obligations of the country, which significantly restrict opportunities of the country to conduct economic policy in the future.

Thus, it is admitted that the long–term goal of external debt management lies in maintaining of the growth of external obligations of the country within the framework of its ability to service the debt[16]. The short–term goal of external debt management is to regulate the amounts of external borrowings in such way, so that the total demand would correspond to the state of internal and external payments of the country. Realization of this goal allows to ensure the compliance of external borrowings with the common goals of macroeconomic policy.

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[12] N.V. Zrazhevska …, op. cit. pp. 47–55.

[13] O.P. Makar, G.Y. Ilnytska–Gykavchuk, I.S. Dulyn., *International experience of public debt management and the prospects for its use in Ukraine,* http://www.economy.nayka.com.ua/?op=1&z=2435 (accessed 07.05.16).

[14] N.V. Zrazhevska …, op. cit., pp. 47–55.

[15] M. Flejchuk, R. Andrusyv, *Vlyjanye vneshnyh zaymstvovanyj na socjal'no jekonomycheskoe razvytye posttransformacjonnyh stran,* [The influence of external borrowing in the socio economic development of the countries after the transformation], *Economy of Ukraine* 1, Kyiv 2012, pp. 16–26.

[16] S. Budagovska et all, *Mikroekonomika. Makroekonomika* [Microeconomics. Macroeconomics], Kyiv 1999, p. 518.

Paying tribute to the academic groundwork of scientists on this problematics, it should be noted that there is the need for its further research, because the formation of external public debt for each country happens under the specific conditions, inherent for transformational economy. Therefore, the theoretical approaches to the management of external public debt require the critical assessment, generalization and study of capabilities and prerequisites of usage with taking into account the features of transitional economies[17].

The presentation of the main research material

Specific features of dynamics of external debt of the post–Soviet countries

When forming the external debt policy, the country should adequately define not only amounts, but the structure of borrowing, as well as the cost of providing its service and potentially available sources of financing of obligations. At that, the amount of attraction of foreign loans should be determined, first of all, by the quantity of the foreign capital that the country can effectively absorb, secondly, by amount of debt that it can service without the risk of arising of the problems with external payments.

Important component of external debt management policy is the use of debt indicators or debt indexes, which are measuring various components of external debt. The ratio of amount of debt to the export of goods and services, and the ratio of amount of debt to GDP belong to the «standard» debt indicators[18].

Although there are no clearly defined criteria of "admissibility" of one or another ratios (except the Maastricht requirements of nonexceedance of 60% of GDP by the total debt), but the rapid deterioration of determined ratios is considered as the evidence of strengthening of the foreign economic risks. The dynamics of ratio of external and public debt and GDP (table 1) indicates the level of external obligations of some countries of the Central and Eastern Europe in 2008–2015 years, in comparison with Ukraine.

Although, when comparing, the correlative indicators of Ukraine do not look much worse than in the neighbouring post–Soviet countries, but characteristic negative feature of Ukraine is exactly the rapid build–up of relative indixes, which indicates the exacerbation of crisis[19].

In comparison with the other countries of the world, the amount of external debt per capita in Ukraine is insignificant. Ukraine belongs to the countries with the level of debt per capita that's below the average.

As is shown in the data of the table 1, despite the fact that the ratio of Poland debt to GDP doesn't exceed the limit of 60%, established by the Maastricht Treaty, the indicator tends to grow.

The experience of Poland's public debt management is interesting. The total public debt of Poland consists of the debt of Department of the Treasury and the debt of the public sector of economy.

Poland had the largest external debt among the former socialist countries: it was equal to $ 49 billion in 1990. In 1981–1989 years Poland managed to conclude four agreements with official creditors on restructuring of external debt and seven agreements – with commercial banks. During the 90–ties of the XX–th century the public debt of Poland was decreasing as the result of agreement, reached in 1991 year with the Paris Club, which opened the way of reducing 50% of the debt itself and its restructuring until 2009 year. The part of remaining debt was prolonged for 19 – 23 years with the grace period of 4 – 12 years and with progressive scale of depreciation, which provides only the gradual increase in the load of debt servicing. Moreover, the Polish debt was reduced in two stages under the IMF's supervision with the observance by Poland of the accepted obligations on implementation of market reforms. As the result, the external debt of Poland was equal to $ 33 billion in 1998 year.

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[17] N.V. Zrazhevska …, op. cit., pp. 47–55.

[18] V. Sidenko, V. Jurchyshyn, K. Markevych, *Borgy: chas braty i chas viddavaty. Globalni tendencii ta vyklyky dlja Ukrainy,* [Debts: time to take and time to give. Global trends and challenges for Ukraine], The analytical report, Kyiv 2015, p. 74.

[19] Ibidem.

Table 1. The ratio of amount of debt to the export of goods and services and the ratio of amount of debt to GDP in some post–Soviet countries (at the end of the year)

Specification	2008	2009	2010	2011	2012	2013	2014	2015
Poland								
External debt, % of GDP[1]	28.5	30.3	32.7	35.4	35.9	37.0	37.2	35.3
Ratio of amount of debt to the export of goods and services, %	116.7	155.3	156.3	154.6	160.8	152.2	150.0	188.6
Public debt, % of GDP[2]	46.6	49.8	53.3	54.4	54.0	56.0	50.5	51.3
Hungary								
External debt, % of GDP	67.7	79.1	50.2	69.0	69.6	60.2	57.2	39.9
Ratio of amount of debt to the export of goods and services, %[3]	144.7	198.3	174.0	154.1	147.7	133.8	126.3	115.6
Public debt, % of GDP	71.6	78.0	80.6	80.8	78.3	76.8	76.2	75.3
Ukraine								
External debt, % of GDP[4]	9.1	23.2	25.6	22.7	21.9	20.6	39.0	52.7
Ratio of amount of debt to the export of goods and services, %	118.7	190.6	169.4	140.7	147.8	163.8	183.4	290.8
Public debt, % of GDP	20.0	34.7	39.9	35.9	36.6	40.1	70.2	79.4

Source: own study on the basis of the following sources: EUROSTAT, 2015, *Net external debt – annual data, % of GDP*; EUROSTAT, 2015, *General government gross debt*; Credit Suisse, 2015, *Emerging Market Quarterly*; Ministry of Finance of Ukraine, 2016, *Summary on Public Debt and Government–Backed Debt of Ukraine*.

The rate of growth of the Polish economy at the beginning of XXI–st century was 4 – 5% per year; considerable amount of foreign exchange reserves, which was equal to $ 27,4 billion in 1998 year, contributed to the stability of financial condition. Such positive results of Poland development were achieved mostly due to the active and coherent implementation of programs of international financial organizations and large–scale financial aid, which was the forgiveness of large part of debt of the country and the inflow of foreign investments.

Another country with economy in transition – is the Hungary, in 1989 year it had the highest in Eastern Europe amounts of debt per capita. External debts of Hungary increased from 13.5 bln. USA dollars at the end of 1992 year, to 18,9 billion USA dollars (about 48% of GDP) at the end of 1994 year. In 1996 year 30% of budgetary receipts, or 9% of GDP, were used on the public debt servicing. Considering that the country stably performed its obligations on external debts, the IMF classified the indicators of external debt of Hungary as moderate.

During 1996–2000 years, the Hungary annually paid for external debt $10 billion in average – it exceeded the 20% of GDP. The stable performance of its obligations on external debt servicing gave the country an opportunity not to do its restructuring and to make their reputation as reliable borrower[20].

Effective management of the processes of use and servicing of debts requires the clear understanding of the current and prospective structure of financial flows, which are directed on covering of internal and external discontinuities and are generalized in the so–called funding needs.

[20] O. Kravchuk, *Istorija formuvannja borgovoi zalezhnosti Ukrainy* (The history of the formation of Ukraine indebtedness). http://cslr.org.ua/istoriya–formuvannya–borgovoyi–zalezhnosti–ukrayini/ (accessed 30.04.15).

The Ukrainian government was conducting unbalanced policy of foreign loans over the last decade, which has formed the high level of dependence of its economy from external debts. However, these issues were not representing the significant threat against the backdrop of accelerated economical growth, and therefore the debt problematics did not seem the critical a few years ago. Immersion of Ukraine into the deep crisis, which was caused by the serious political complications, made the question of international financial solvency of the country and probability of sovereign default topical. Thus, the government of Ukraine met the question of public debt management and the search of alternative ways of restructuring.

The practice of restructuring has already been applied to external debt of Ukraine in the early 2000s. Negotiations with the Paris Club creditors lasted from 2000 year until the summer of 2002 year. Practically, there was arranged delay in payments for 12 years with the three–year grace period and by 18 equal payments. The consequence of restructuring was the economic recovery and vanishing of distrust to Ukrainian financial market in the international field. During 2004 year, a number of leading rating agencies upgraded Ukraine's credit rating to B– B+ with the stable and positive outlook[21].

However, in recent years, with the growth of external debts, the amount of reserves was rapidly decreased, so that the amount of external obligations of the government and National Bank of Ukraine began significantly exceed the available international reserves, and this meant the substantial growth of risks of deployment of the debt and currency crisis during 2014–2015 years.

In 2015 year Ukraine again met the question of attracting the aid of international financial institutions. As the result, Ukrainian government managed to reduce public debt from 73 to 66 billion dollars due to restructuring and its replacement by the cheaper and long–term loans[22].

Among provisions of the mentioned above agreement are the following[23]:

- reduction of the principal of loan (for 20% or $ 3.8 billion);
- some increase in the interest rate of the debt obligations (from 7.22% to 7.75%);
- change of the debt repayment period (they are postponed from 2015–2023 to 2019–2027 years);
- emission by Ukraine of the new debt securities, the yield rate of which is tied to the GDP growth rate.

Restructuring allowed to avoid default. The total amount of planned for 2016 year payments on redemption and servicing of the public debt corresponds to the 35.08% of expenditure part of budget of the country for the current year. Considering the upward dynamics of public debt indicators and the expected in 2016 year growth of GDP at the level of 1–2%, the NRA «Rurik» expects the further growth of debt to GDP ratio[24].

Thus, the dynamics of public debt began to decline. The changes in the debt policy of the country contributed to this. As the result of successful restructuring, the sovereign ratings of Ukraine were raised by the leading rating agencies S & P, Fitch and Moody's from pre–default levels to the levels of B–, CCC and CAA3 respectively, where they remain till now[25]. Reduction of the debt burden on economy became the result of mentioned above.

It should be noted that restructuring does not necessarily mean refusal of debt payment or writing down of debt. Restructuring of Ukrainian debts, to which NBU is forced to resort, is beneficial, first of all, to the creditors, so they may preserve the chances of return of their investments. As the previous restructurings, such actions are only postponing the bankruptcy of the country, limiting its independence

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[21] O. Kravchuk …, op. cit.

[22] Golos Stolyci (GS), *Jak dosjagty rivnja rozvytku krain JeS*, [How to reach the the EU level], Comment of economist, http://newsradio.com.ua/2015_12_12/JAk–dosjagti–r–vnja–rozvitku–kra–n–S–Komentar–ekonom–sta–1283/ (accessed 12.12.2015).

[23] NRA RURIK, *The special analysis of Ukraine state debt in 2015,* http://www.rurik.com.ua/documents/analytic_articles/Gov_debt_2015.pdf (accessed 17.06.16).

[24] Ibidem.

[25] Tydzhen, *U Nacbanku rozpovily, jak za mynulyj rik skorotyvsja obsjag derzhborgu Ukrainy,* [In the National Bank told how last year reduced the amount of Ukraine debt], http://tyzhden.ua/News/164513/PrintView (accessed 05.05.16).

by the credit slip noose, without putting the main issue of unconditional refusal to pay the debts, accumulated by all previous "elites"[26].

Structural features of the public debt of Ukraine

Improvement of effectiveness of financial resources management is extremely important in the period of exacerbation of socio–economic and socio–political problems in the country. Every country, which is getting on the path of restructuring of economy, has specific historical, political and financial background. Thus, the formation of debt in Ukraine, during the years of its independence, was happening mostly due to non–economic relationship to the current budget expenditures; the need to provide the stability of unit of national currency; the need of financing of fiscal deficit; energy import; the needs of technical retooling of national economy[27].

Of course, the deficits, as well as the amounts of payments on debt obligations define the gross financing requirements, and also the new borrowing requirements. And the more debts are, the more frequent are requirements for additional borrowings. During the years of independence, Ukraine had the budget surplus only in 2002 – 0.6%, in other years there was the central government budget deficit. The analysis of public debt over the last nine years shows the steady upward trend of this indicator (Table 2.).

Table 2. Dynamics of economic safety indicators in Ukraine, 2007–2015 years
(as of the end of the year)

Years	Budget deficit	The total amount of public and government–backed debt	Public debt	
	in % to GDP	bln. $	bln. $	in % to GDP
2007	1.4	17.6	14.1	12.3
2008	1.32	24.6	17.0	20.0
2009	3.89	37.8	26.5	34.7
2010	5.94	54.3	40.6	39.9
2011	1.79	59.2	44.7	35.9
2012	3.79	64.5	49.9	36.6
2013	4.45	73.2	60.1	40.1
2014	4.98	69.8	60.1	70.2
2015	2.30	65.5	55.6	79.4

Source: own study on the basis of the following sources: MFU, 2016. *Summary on Public Debt and Government–Backed Debt of Ukraine*.

From analysis of the table 2, it may be stated that in recent years the government budget of Ukraine has significant underfunding, and the largest budget deficit had in 2010 year due to exacerbation of global economic crisis. Also the cause is the constant increase of dependence on import, foreign currency

[26] V. Sidenko, V. Jurchyshyn, K. Markevych …, op. cit., p. 74.

[27] A. Brzozowska, D. Bubel, A. Kalinichenko, *Tendencies in financing the agricultural and food sector under the common agricultural policy,* "Socio–Economic Problem and the State" [online] 2015, No 13(2), pp. 29–35; A. Kalinichenko, O. Minkova, V. Sakalo, *Main directions in development of organic industry in Ukraine and experience of innovation implementation: a comprehensive analysis*, „Technology audit and production reserves", 5/3(25): pp. 10–14. DOI: 10.15587/2312–8372.2015.50677.

predominance of economy, the negative balance of payments and erosion of capital abroad, which made by this the background for the future crisis[28].

According to the IMF statistics, in the countries with emerging markets, defaults are occuring when the ratio of external debt to GDP approaches the level of 30–35%[29] and when the ratio of total debt to GDP is 60%[30]. The ratio of public debt to GDP was gradually decreasing after restructuring and change of priorities in financial policy – from 61% in 1999 year to the minimum value of 12% in 2007 year, but again it reached the record value of 79% in 2015 year.

External obligations were prevailing in the structure of public debt. Thus, in 2007–2015 years, the share of public external debt in the total amount of public debt of Ukraine is ranging withing 45–66%.

Prior to 2014 year, the general indicators of external debt of Ukraine did not looked critically threatening: the gross external debt was at the level less than GDP of the country, and the total debt of the sector of general public management and the debt of the central bank did not exceed 30% of GDP. However, the crisis of 2014–2015 years and caused by it collapse of hryvnia resulted in the sharp deterioration of the relative indicators of debt.

Table 3. Dynamics of public debt indicators in Ukraine, 2007 – 2015 years (as of the end of the year)

Years	**Public internal debt**		**Public external debt**			**Govern–ment–backed debt**	**Includes the debt to the IFI**
	bln. $	in % to GDP	bln. $	in % to GDP	The share of the total volume of public debt	bln. $	bln. $
Threshold quantities		< 30 %		< 20 %			
2007	3.5	2.5	10.6	7.4	60.3	3.5	2.5
2008	5.8	4.7	11.2	9.1	45.4	7.6	3.2
2009	11.4	11.51	15.1	23.18	66.8	11.3	8.5
2010	17.8	14.36	22.8	25.56	64.0	13.7	10.4
2011	20.2	13.19	24.5	22.74	63.3	14.5	10.6
2012	23.8	14.66	26.1	21.93	59.9	14.5	10.0
2013	32.1	19.53	27.9	20.62	51.4	13.1	7.7
2014	29.2	31.20	30.8	39.04	55.6	9.8	10.7
2015	21.2	26.75	34.4	52.66	66.3	8.7	14.1

Source: own study on the basis of the following sources: MFU, 2016. *Summary on Public Debt and Government–Backed Debt of Ukraine*; *State Statistics Service of Ukraine*.

[28] O. Kravchuk …, op. cit.

[29] ARCHIVE. IS., *Bezpechnyj riven derzhavnogo borgu i vytrat na jogo obslugovuvannja,* [Safe levels of public debt and maintenance costs], http:// http://archive.is/SuJz0 (accessed 05.04.16); T.P. Vahnenko, *Zovnishni borgovi zobovjazannja u systemi svitovyh finansovo–ekonomichnyh vidnosyn,* [External debt in the system of world economic relations], Institute for Economics and Forecasting Ukrainian National Academy of Science, Kyiv, Feniks.

[30] ECOFIN, *Bezpechnyj riven derzhavnogo borgu,* [Public debt secure], http://ecofin.in.ua/debt–ratio/ (accessed 20.06.16).

Forecast of the public debt for the next years can be made using the statistical function "Tendency", which according to the least squares method approximates x and y data arrays by the straight line.

The equation for the straight line has the form $y = ax + b$, where dependent value y – is the function of independent value x, the value a – the coefficients, which are corresponding to each independent variable x, and b is the constant.

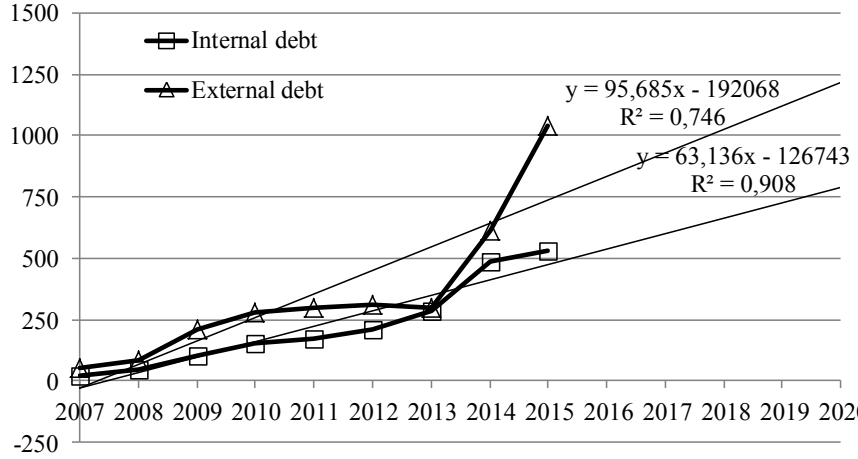
Table 4. Forecast of amount of public debt in 2020 year, bln. UAH

Years	Total amount of public debt	Government–backed debt	Public internal debt	Public external debt
2009	316.88	90.91	105.13	211.75
2010	432.24	108.83	155.49	276.75
2011	473.12	115.91	173.71	299.41
2012	515.51	116.29	206.51	309.00
2013	584.11	104.14	284.09	300.03
2014	1100.56	153.74	488.87	611.70
2015	1571.77	237.90	529.46	1042.31
2016*	1359.42	208.16	482.94	760.34
2017*	1514.14	227.49	534.95	841.51
2018*	1668.87	246.81	586.97	922.68
2019*	1823.59	266.14	638.99	1003.85
2020*	1978.31	285.46	691.00	1085.02

Note: (*) forecast.

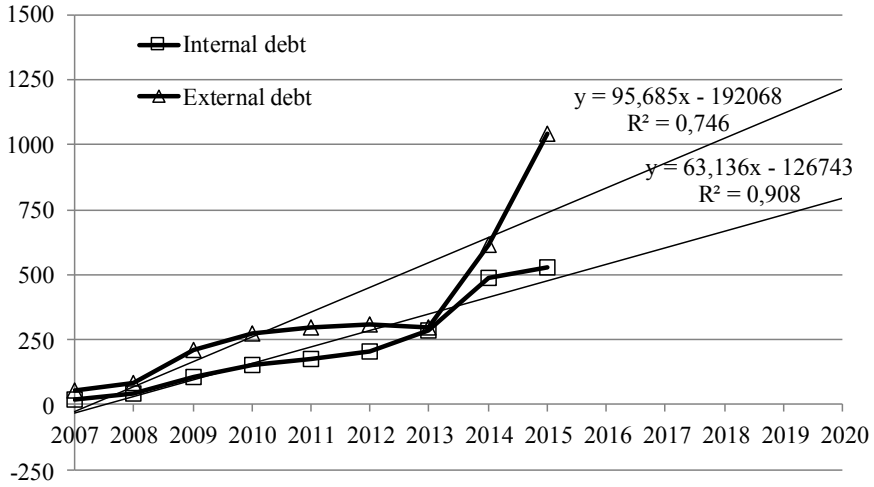
Source: own study on the basis of the following sources: MFU, 2016. *Summary on Public Debt and Government–Backed Debt of Ukraine*; *State Statistics Service of Ukraine*.

Figure 2. Forecast of changes in amount of internal and external public debt, bln. UAH



Source: own study on the basis of the following sources: MFU, 2016, *Summary on Public Debt and Government–Backed Debt of Ukraine*; *State Statistics Service of Ukraine*.

Figure 3. Forecast of changes in amount of the total public debt, bln. UAH



Source: own study on the basis of the following sources: MFU, 2016, *Summary on Public Debt and Government–Backed Debt of Ukraine*, *State Statistics Service of Ukraine*.

The conducted study showed that since Ukrainian economy has the great dependence on external resources, which is not compensated by the existing in the country level of export capacity, then the especially rapid growth of external debt occurs exactly in the periods of significant economic recessions. Therefore, justification of the forms and methods of borrowing is necessary at the stage of mobilization of financial resources.

Based on the performed research of modern instruments of foreign public borrowing, there were revealed the features of their use and impact on amount, cost of external borrowings and conditions of their provision. Thus, the mechanism of external public debt management in Ukraine includes three main stages: mobilization of external financial resources; the use of borrowed funds; redemption and servicing of public debt.

Generally, this indicates that in Ukraine the problem of external debt is the sign of deep structural imbalance of Ukrainian economy, which was created as the result of wrong (in the recent years) ways of reformation in general.

It was found out that restructuring is one of the main directions of active debt management. It can be considered as the tool of improvement of debt structure towards increasing the period and reduction of cost of servicing. Since Ukraine is one of the low–middle–income countries and with the low level of external debt, it may count on the "Houston" or "Standard" terms of debt restructuring from the Paris Club.

The scheme "external debt – loan stock" is determined as the most promising instrument of restructuring of external public debt of Ukraine. Its usage can greatly expand the target audience and influence the final cost of privatising enterprises towards its increase.

Attraction of financial resources for effective implementation of the programs of institutional and investment development of Ukraine with the simultaneous providing of the stable ratio of public debt to GDP should become the strategic goal of the national debt policy of Ukraine. Implementation of effective management of external public debt of Ukraine involves development of concept of such debt

strategy, in which the public debt will be considered not as the debt burden on the national economy, but as the tool in the mechanism of providing the economic growth of the country[31].

Conclusion

By generalizing of considered material, we come to the following conclusions:

1. The countries of the Central and Eastern Europe in the post–socialist period had encountered the serious problems in relation to external debt, and were forced to use different methods of reducing and restructuring to support their creditworthiness.
2. The programs of financial and economic stabilization in the post–socialist countries were based on the principles of clear budgetary and monetary restraints, reduction of inflation, the purpose of which was the stabilization of entire internal economic system and external economic position, including the one at the global financial markets.
3. Delay and restructuring of payments by external debts turned out to be the important source of financing of the post–socialist countries. The debt restructuring eased financial and economic situation of the countries of Central and Eastern Europe, and helped to restore their financial solvency, stimulating the attraction of new sources of financing.
4. The world experience confirms that, irrespective of organizational structure, the effective system of debt management should be based on such principles as: the establishment of specific goals of the debt policy; the clear division of areas of responsibility and accountability between the monetary and debt policies; identification of strategic boundaries of the debt policy.
5. The major obstacle in formation of effective strategy of public debt management in Ukraine is the lack of integral system of legislative provision of regulation of expenses on servicing and repayment of debt. It is necessary to reduce the amount of debt and interest payments to the international official creditors and develop the strategy of reorientation towards the market sources of borrowings with the usage of wide set of tools, which were tested in the international practice.
6. The strategy of public debt management should be based on comprehensive approach, which involves the strengthening of coordination of the debt policy with the fiscal and monetary policies, and improving of effectiveness of asset and liability management of the country. Considerable attention should be paid to development and continuous improvement of issues of risk management of the country's debt solvency. The definite measures will help to avoid liquidity crisis, the dangerous debt load, wil help to optimize the structure of public debt and its positive impact on the functioning of economic mechanism of the country.

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INVESTMENT ACTIVITIES OF POLISH SMALL BUSINESSES AND SOURCES OF FUNDING THEM

Summary

Paper pays attention to issues related to the investments of the Polish small businesses. It has been indicated how important correlation between enterprise strategy and investment strategies occurs. They are treated as a sign of development strategy crucial to the growth of potential of an enterprise and in that way to increasing benefits to its owners. Investment strategies in general may relate to obtaining tangible assets to enterprises or may reflect financial investments. In the Polish enterprises still investments in tangible assets dominate and will dominate. The scale of these investments is not impressive, especially when the size of the incurred investment is compared with the generated surplus of the enterprise sector. This comparison indicates that in the operations of enterprises gradual and evolved retrieving the assets overrides, and investment depends to higher extent on external conditions rather than internal capital restrictions. Investment strategies are associated with the access of enterprises to capital. Therefore in this paper, possibilities of growth for small and medium businesses have been analyzed in the context of an access to external financing. Completed analysis discovers also areas where further investigation is required in order to better understand rules of management and investment in small enterprises.

The results presented in this framework are derived from research conducted by the Polish Agency for Enterprise Development (PARP) or to its order. The study was conducted on a large sample of Polish firms during the economic crisis which has been the worst for many years.

* * *

Introduction

Every business needs investments. Investments are cost–exhaustive, require the involvement of large equity or borrowed capital. In the conditions of modern saturated market and high and constantly evolving techniques, a choice of correct, most cost–effective concept of investing in a company is not an easy problem. The whole process of its preparation must therefore include thorough and skillful use of suitable methods of economic calculation and include formulating appropriate adapted to external conditions, strategy. Efficient allocation of resources is extremely useful, given the sustained high cash holdings and other assets constituting short–term liquidity buffer of safety for companies in difficult times.

It is worth to take care of both of it, generating the highest possible rate of return, with an adequate level of risk, and the issue of liquidity of these investments, in case there is a need to move some resources to areas in which the company may require cash.

According to the often postulated new paradigm of management – "chaotics"[1] – chaotic and unpredictable conditions of companies operations' will become in the coming years normal conditions, which require companies to appropriately change strategy, especially considering improvements in risk management. "Chaotics" require above all: analyze up to date sources of threats for companies to prepare various response scenarios, analyze new challenges and opportunities for development resulting from the unpredictable conditions, develop resources to ensure long–term success (including human capital), to avoid excessive risk exposure flexibly shape the company's balance sheet, adapt production to the new requirements of the consumer, use thought–out pricing strategy. These changes can be already seen in practice of the operation of enterprises in the world.

However, research conducted by Eilertsen and Wilson[2] on assessing the degree of preparedness of the organization to an economic shock, the types of reactions and factors affecting the readiness and how to react indicate that only 22 percent of the companies surveyed were prepared to changes in the global economic environment, and as many as 32 percent of respondents said that their organizations were largely or completely unprepared, and did not have a developed strategy behavior in difficult conditions.

"The strategy is something that has a fundamental impact on the success or failure of the company"[3]. Existing managers therefore have to struggle with strategic questions about the meaning of existence of the company today and its vision for the future of markets and products and the dominant business model. The answers to these three key questions represent the general concept of the enterprise, named by[4] theory of the company. This is the basis for majority of the definition of strategies that[5] has allocated into two basic groups:

1. inclusion of strategy as a classic content of the plan – the strategy is to define the main, long–term goals of the company and the adoption of such courses of action and the allocation of resources, which are necessary to achieve objectives,
2. inclusion of strategy through substantial differentiator – the strategy is a way of shaping relations between the organization and its environment with consistent patterns in streams and organizational decisions concerning the environment.

The defined strategies are classified in several cross–sections. One of the most common criteria[6] is an organizational hierarchy and the nature of the strategy specialization. Among others, functional strategies relating to the various functions of the company can be distinguished in this structure. Among them can be distinguished[7] such strategies as: marketing, production, finance, logistics, human resources management, research and development. Implementation of specific functional strategies require collection and disbursement of appropriate measures. Therefore, it seems that a financing strategy for shaping the financial flows in the company integrates all the other mentioned types of strategies. According to[8] the primary objective of the financial strategy of the company is identifying future opportunities,

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[1] P. Kotler, J. Caslione, *Chaotics: The Business of Managing and Marketing in The Age of Turbulence,* Amacom, Nowy Jork 2009.

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[7] T. Gołębiowski…, op. cit.; K. Obłój…, op. cit.; *Zarządzanie strategiczne*…, op. cit.

[8] *Zarządzanie strategiczne*…, op. cit.

refining perspectives and making available options concrete in a frame of determined financial goals. These goals usually include[9]:

1. maximizing profits – short–term goal,
2. maximizing free cash flow (financial surplus) – mid–term goal,
3. maximizing corporate value – long–term goal.

These objectives are realized through decisions in the field[10]:

1. capital budgeting – determining directions of placement of funds into business assets,
2. building the financial structure of the company – assuming obligations and acquire new equity,
3. working capital management – determining levels of current assets in relation to short–term debt of companies in order to ensure adequate profitability and liquidity.

Therefore based on the classic definition of finance, the company's financial strategy can be defined as a decision–making model in terms of obtaining funds and investing them in assets, in a way that materializes the directions of the achievement of financial goals. In this perspective, the overall financial strategy will consist of financing strategy which purpose will be to determine the structure of sources of financing business activity and investment strategy that specifies the use of acquired funds in the company.

The role of investment in enterprise development strategy

Continuous undertaking of various development projects is a prerequisite for the existence and development of the company in the conditions of modern market economy, which deepens specialization of manufacturers and both national and international competition intensifies the impact of scientific and technological revolution etc. The recognition program of the company in the long term, thinking always about the future, the assessment of the chances of survival, conquer new markets and an advantage over competitors – are assumptions of a concept of strategic business management in contemporary market economy. Therefore, in front of each company, there are various possibilities to engage in real and financial investments. However, each company must develop its own development strategy, appropriate in relation to their abilities and needs.

Formation of development strategy is a complex multistage process in which one should formulate and develop subsequently:

- long–term general objectives of the operation and development of the company,
- forecasts of demand,
- programs, development of production and technology,
- balance sheets: personnel, income, capital, etc.

To select the optimal strategy for its development, the company must take into account many factors and processes outside and inside the company.

The choice of the development strategy of the company will be affected by such current and future assumed factors and phenomena, as: the importance and share of the company on the market, quality, modernity and flexibility of the range of products, current and future level of technology, capital intensity of production, the pace of scientific and technical progress, production organization, methods of sales and marketing, capital resources, the company's financial condition, etc.

Return on investment in a company depends on many factors, among other things: information about the environment and the market, information about the company (profitability, productivity,

[9] S.A. Ross, R.W. Westerfield, B.D. Jordan, *Fundamentals of Corporate Finance,* McFraw–Hill, New York 2013; *Zarządzanie strategiczne*…, op. cit.

[10] S.A. Ross, R.W. Westerfield, B.D. Jordan…, op.cit.

employees, assets), contractors, investments, suppliers. The main determinants of investment strategies of businesses are[11]:

- economic and financial condition of the company,
- main development strategy,
- availability of technological and economic progress (innovation)
- creditworthiness of banks,
- accumulation ability of enterprises,
- the use of foreign credit resources,
- infrastructure of market system,
- the risk in a given period of time.

In theory and business practice concepts related to the investment process are defined differently so that investments, taking into account their functional, financial and material aspect, can be defined as:

- all activities related to the preparation and implementation of development projects of the company, involving mainly the development, reconstruction and modernization of already operating assets of the company and various trading and financial operations carried out by a specialized team of workers in close liaison with other areas of business operations,
- the whole financial expenditures associated with the creation of new, reconstruction and modernization of production and non–production facilities of the company and the expansion of the capital's financial operations (purchase of shares, deposits, etc.),
- source of growth capital company in the form of new or upgraded machinery and equipment, vehicles, buildings etc.

As can be seen from the above definitions – company's investments consists of so many different activities that they can be classified from different points of view. The main criterion is the object, which is created with the use of financial resources of the company. From this point of view, there are three basic types of investments: tangible, financial and intangible.

The broad concept of investment can both relate to expenses incurred for the replacement of existing or creation of new fixed assets of a company, but also to "freezing" of surplus funds by investing them in securities of other entities (e.g. the purchase of shares), which is acquisition of ownership rights of the issuing entity. Indirectly, in the latter case we obtain the right to participate in the income of such an entity, and the influence on management. When considering investing in their own business, you can make a division into at least three groups:

- replacement investments also called restitution investments,
- modernization investments,
- new investments.

The first two investment groups may be generally considered to be so–called gross investments or expenditures incurred to restore the exhausted part of fixed assets, as well as on fixed capital, while the third is primarily so–called net investment, which is bringing the increase in fixed assets of more than existing size.

Replacement investments are investments which purpose is not to develop a business entity, or expanding its business scope. The main goal of this type of investment is to recreate depreciated assets, which in turn will allow for the continuation of the existence and behavior of its current market position. Looking at this type of investment through the lens of abandoning them it can be concluded that such investments are indispensable, which enterprises cannot suspend because lack of them may therefore lead to the loss of production capacity of the unit. Depreciated and exhausted assets which have little

[11] *Rola inwestycji w strategii rozwoju przedsiębiorstwa*, http://forumgospodarcze.com.pl/index.php?option=com_content&view=article&id=2960:rola–inwestycji–w–strategii–rozwoju–przedsibiorstwa–&catid=51:rachunkowo–i–podatki&Itemid=67, (access: 10.04.2015).

value in the long or even short term will make it rather impossible to continue production or provide services. So, if old machinery is not replaced with new equipment, representing at least the same level of technical capacity for obvious reasons, will lead to discontinuation of business activities.

The impact of the crisis on business operations

After years of dynamic growth, lasting almost until the end of 2008, we have been experiencing the effects of the global financial crisis and as a result of a significant global economic slowdown since 2009. The economic situation both in the country and in the wider area of associated economies, and in relation to the local market, which is the area of operation of most of small and medium–sized enterprises in Poland, are the key factors determining the possibility of the development of enterprises. In the years 1996–2008 the average GDP growth rate in our country was 4.7%. And although the Polish economy was hit by the crisis, up to date negative effects have been significantly lower than in other European countries. And so, while GDP growth in 2011 amounted on average in the EU to 1.5%, in Poland it was three times higher – 4.8% in 2011 and 3.7% in 2010. It is true that in Poland a slowdown in GDP growth occurred in 2012–2013 (1.7%), in 2014 there was an increase in the GDP growth rate and amounted to 3.3%[12].

Polish economic situation as well as other connected economies is an important factor affecting the development of enterprises. The impact of this factor depends of course on many other aspects, which in turn determine economic and financial situation of the entity, including the degree of development of the company, operating time, the multiplicity of its relationships with other entities, the territorial scope of business, the type of products / services, the potential of human resources, flexibility in adapting to changing conditions.

The impact of the crisis on the functioning of Polish companies should be considered as moderate. Most companies are not forced to radical restructuring. There are also not many events threatening the existence of companies which usually accompany recessions (mass overdue receivables, lack of access to credit, the strong decline in profitability). Almost one in ten companies in the SME sector does not see in its surroundings any direct competitor, another 11% in general can not comment on this issue. It can be assumed that one in five companies do not know the market environment in which it operates (specific cases of companies operating in niche markets do not explain the scale of the phenomenon). A clear strong dependence on the domestic market and domestic competition was undoubtedly one of the reasons for the relatively mild nature of the economic crisis in Poland.

The more conscious policy management (strategy, investment plans), the greater awareness of the presence of competition. Two–thirds of companies with a strategy to compete directly with domestic companies with supra–regional level, and the third – with foreign companies active in the region (each is at least 10 percentage points more than in the case of companies managed without specific plans). There is a clear and fairly consistent across study groups of enterprises opinion about the difficulties of running a business in Poland than in other parts of the world. On the one hand it confirms the stereotypical image of Polish entrepreneurs, who complains about unfriendly business conditions, no matter what changes occur in these conditions. On the other hand, one must not forget that these difficult conditions for enterprises in Poland are confirmed by real situation, because Poland offers companies relatively difficult conditions for running business. However it should be underlined that in this area in recent years it has been a significant improvement, which may indicate an increase in the Polish position in

[12] http://stat.gov.pl.

prepared annually by the World Bank ranking for ease of doing business (Rankings on the ease of doing business) from 76 place in 2009 to 32 in 2014[13].

The main reasons for problems of companies related to the economic crisis are due to fewer orders and a drop in turnover. However, among the effects of the crisis, in addition to decline in sales, there are also those that are typically associated with a time of recession and should appear among experienced by the company symptoms of the crisis, e.g. a drop in profitability, difficulties in obtaining payments from customers or difficulties in obtaining credit. These types of symptoms are mentioned by Polish entrepreneurs clearly less frequently than indicated by 85% of them fall in turnover. Every third entrepreneur among declaring that in view of the crisis situation of their company has worsened, mentions in this context, the decline in profitability; this result is all the more severe, the greater the scale of the business. For micro, companies operating at least at a trans–regional level, and for companies in the areas of low and medium urban areas, the decline in profitability is as severe as delayed payments from customers, which could result in the loss of liquidity. Relatively few, because only 9% of companies in the SME sector declared that because of the crisis have problems with obtaining the loan.

Among the euro zone SMEs difficulties with access to finance were indicated in 2009 by 16% of SMEs. Although that problem diminishes (11% of companies indicated in 2015), a sizable percentage of SMEs still indicates a tightening of collateral and other requirements of banks. With 30% of small and medium–sized enterprises that have applied for a loan in 2014, 64% received the full amount requested, and 8% said that their applications were rejected[14]. So, especially during the height of the financial crisis, access to external financing was the second in terms of importance (immediately after the question of finding customers) problem faced by small and medium entrepreneurs in the EU. Both the current and anticipated economic situation and the difficult situation on the financial markets are an important source of challenges faced by businesses and their plans for the development of business operations.

Financing of investment activities by Polish entrepreneurs

Polish economy has gone through a period of global crisis in a relatively mild way. The biggest positive role was played here: public funds, derived largely from EU funds (both finance infrastructure projects of substantial value, investments of companies and other development projects) and the flexibility of Polish businesses, resulting in the ability to adapt to changing external conditions. One should also not ignore a continuing for years precautions of Polish entrepreneurs when deciding on financing activities from sources other than their own, which meant that in a period of crisis, they entered with relatively low debt, and thus were less vulnerable to the negative effects of violent limitation of the availability of financing on financial markets and banks. However, the first factor (the high growth of investment in infrastructure) does not longer apply positively, with a persisting slow pace of economic growth in the euro area and negative trends in internal domestic economy (weakening consumption and private investment), which results in Poland in recent years in slowed economic growth compared to the period from before the crisis.

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[13] *World Bank. Doing Business 2009*, Washington, DC, Word Bank 2009, http://www.doingbusiness.org/~/media/FPDKM/Doing%20Business/Documents/Annual–Reports/English/DB09–FullReport.pdf, (access: 10.04.2015); *World Bank. Doing Business 2015: Going Beyond Efficiency*. Washington, DC, World Bank 2014. DOI: 10.1596/978–1–4648–0351–2. License: Creative Commons Attribution CC BY 3.0 IGO, https://openknowledge.worldbank.org/bitstream/handle/10986/20483/DB15–Full–Report.pdf?sequence=1, (access: 10.04.2015).

[14] *Survey on The Access to Finance of Small and Medium–sized Enterprises (SAFE)*, European Commission 2012, *Survey on The Access to Finance of Small and Medium–Sized Enterprises in The Euro Area,* October 2013 to March 2014, European Central Bank, 2014, https://www.ecb.europa.eu/stats/money/surveys/sme/html/index.en.html, (access: 15.06.2015).

EU funds represented a positive force supporting the Polish economy in conditions of limited access to financing from private sources. They provided essential support for major infrastructure investments, as well as smaller projects with a soft (advisory or training) or hard character (investments, innovative projects including R & D).

An important issue in assessing the investment activities of Polish small and medium–sized enterprises is cautious attitude of entrepreneurs in relation to the use of external financing for development–oriented activities, are investments. According to the CSO[15] data for years the main source of financing for business investments in Poland's were own funds, 69% of business investments and 65% of SME's have been covered from this source. The second most important source of funding for development projects are credits and domestic loans, whose share of the various sources of financing for all companies is 11.5%, while for SMEs – 17%. Budget funds cover only approx. 4.5% of the investment budget of enterprises and approx. 3% of small and medium–sized businesses. Compared to the background of trends in the EU, Polish enterprises from the SME sector are characterized by high reluctance to use external sources of development funding of their activities[16]. According to the *Survey on The Access to Finance of Small and Medium–sized Enterprises SAFE*[17], in 2011 as many as 56% of EU businesses benefited from external financing, while two years earlier the rate was almost half less, because 29%. One–fifth of the surveyed entrepreneurs finances its activities both from external sources, as well as its own funds. But what is most surprising, only 4% of EU businesses claim that their activity rely solely on their own resources – in a study carried out in 2009 rate was more than 3 times higher, i.e. 14%. When it comes to the most popular forms of borrowing among EU businesses – an overdraft dominates (40%), leasing / hire purchase / factoring are second source (36%), the other are trade credit (32%) and bank loans (30%).[18]

Economic weakness and the tightening of credit throughout Europe meant that less than one–fifth (19%) of EU SMEs applied for bank credit in the first half of 2011, which represents a decrease of 7 p.p. compared with 2009. The confirmation of the unfavorable situation in Poland, in terms of access to finance are the results of the Global Entrepreneurship Monitor (GEM)[19] conducted on experts from the business in 2011. In the opinion of these experts access to finance for young and growing companies on a scale from 1 to 5 has been assessed at 2.52. Out of 49 countries surveyed by GEM, Poland found itself in 16th place. Access to individuals funds other than the founders and access to venture capital funds have been assessed especially negatively.

The investment activities of Polish entrepreneurs

The formulation of investment policy is an essential element for constructing the financial strategy and a necessary condition for the development of the modern enterprise. In the rapidly changing business environment, this policy is a direct derivative of monitoring the business surroundings and the search

[15] *Raport o stanie sektora małych i średnich przedsiębiorstw w Polsce w latach 2013–2014,* Polska Agencja Rozwoju Przedsiębiorczości, Warszawa 2015.

[16] W. Załęski, *Raport końcowy: Badanie rynku wybranych usług wspierających rozwój przedsiębiorczości i innowacyjności w Polsce „Finansowanie zwrotne"*, PARP, Warszawa 2012.

[17] *Survey on The Access to Finance of Small and Medium–sized Enterprises (SAFE)*, European Commission 2012, https://www.ecb.europa.eu/stats/money/surveys/sme/html/index.en.html, (access: 15.06.2015).

[18] *Survey on The Access to Finance of Small and Medium–Sized Enterprises in The Euro Area*, October 2013 to March 2014, European Central Bank, 2014, https://www.ecb.europa.eu/stats/money/surveys/sme/html/index.en.html, (access: 15.06.2015).

[19] A. Tarnawa, D. Węcławska, P. Zbierowski, M. Bratnicki, M., *Raport z badania Global Entrepreneurship Monitor – Polska*, Polska Agencja Rozwoju Przedsiębiorczości, Warszawa 2012.

for competitive advantage. Key assumptions and investment policies are therefore a consequence of the processes of analysis and strategic planning.

On the one hand, slowing down the development of Polish market and among our EU partners, on the other hand low propensity for planning in conjunction with the perceived stabilization when it comes to company's business activities, translates to suspended investment decisions in companies. Almost every second (43%) tested entrepreneur from the SME sector had made investments in 2011. Whereas in 2009 percentage of such entities was 29%. It is also worth noting that those who have decided otherwise, focused primarily on simple investment – the purchase of equipment, e.g. of furniture and office equipment (25% in the structure of SME capital expenditure in 2011), machinery and equipment (22%), vehicle purchase (14%) or renovation of the building (14%).

Companies that often use repayable financing implement greater investments (from 500 thousand to more than PLN 1 million), while those who apply for a loan dominate when it comes to smaller investments (less than PLN 20 thousand)[20]. At the same time, as shown by PARP study, nearly 2/3 of entrepreneurs from the SME sector did not apply for funding in 2007–2011. Among these small and medium entrepreneurs who applied for repayable funding in 2011 39% have used overdraft. About half less (17%) of entrepreneurs benefited from working capital loan, while only 12% – with an investment loan. As the results of PARP study on the repayable financing, a major group of companies who experience a gap in debt financing were start–up companies. This effect is clearly the preference of banks that indicate a company with extensive experience in market and adequate history, which, according to lenders translates into greater credibility. And so most types of credit are easier to get for entrepreneurs with at least a 2–year history (although the differences in the percentages of companies that were founded before 2010 and after it are not significant – the largest 5 percentage points related to working capital loan)[21]

In the first quarter of 2015 credit growth has been visible both in the area of credits to large enterprises and credits to SMEs, and much of the increase (nearly 30%) resulted from an increase in investment loans. In subsequent periods, there is an opportunity to increase lending, which is supported by the improved economic situation, record low interest rates and stabilization of the loan portfolio. The government's program Portfolio De Minimis Guarantee Line is also important (over 80 thousand of entrepreneurs benefited from the program, and in which BGK has granted guarantees totaling nearly PLN 20 billion, which resulted in over PLN 30 billion credits from banks).

It is not without significance that most Polish entrepreneurs from the SME sector has provided a market for their products and services on the local market (73%). Sales in the domestic market accounts for nearly one quarter in the structure of sales markets and abroad only 4.4%. Probably the lack of links with partners from other countries affected by the crisis has meant that Polish entrepreneurs has previously treated crisis quite freely and not everyone saw it as a real problem. Every fifth entrepreneur felt a clear threat of bankruptcy due to the bad economic situation. Every third responding entrepreneur opted for a strategy of survival.

Regarding the use of the crisis to development activities, or to introduce organizational improvements in the company, it turns out that this attitude, according to a study of PARP, was adopt by every third entrepreneur. Most often the medium–sized companies were the supporters of the use of the crisis to the investment, as well as companies operating in the wider market than the local market[22].

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[20] W. Załęski, *Raport końcowy: Badanie rynku wybranych usług wspierających rozwój przedsiębiorczości i innowacyjności w Polsce – Finansowanie zwrotne*, PARP, Warszawa 2012, https://www.efs.2007–2013.gov.pl/documents/rk_finansowanie_zwrotne.pdf, (access: 24.01.2016).

[21] Ibidem.

[22] W. Orłowski, R. Pasternak, K. Flaht, D. Szubert, *Procesy inwestycyjne i strategie przedsiębiorstw w czasach kryzysu*, Unia Europejska Europejski Fundusz Społeczny, Warszawa 2010, http://www.parp.gov.pl/files/74/81/380/8038.pdf, (access: 24.01.2016).

Perhaps it is this peace, which is the cause, and also a kind of excuse for the absence of such an important element in the management of the company as planning – 36% of small and medium–sized businesses operate from day to day without any plans for the coming period, and 29% of companies surveyed had no development plans for the coming year. Plans in the strategic perspective (over two years) had only 7% of the surveyed companies. Significantly, the lack of long–term strategy in the company limits the potential for its development. More than 2/3 (67%) of entrepreneurs who live from day to day (i.e. do not have a development plan or have it only for the next 6 months) does not use repayable financing[23].

In light of the above, it is not surprising that every second entrepreneur in the planning of investment activity relies exclusively on its own intuition and experience in running a business, and 45% – on their own intuition and general knowledge about economic conditions. Much less, because 30% of entrepreneurs use for that purpose tool of financial analysis.

Conclusion

During the crisis there are restrictions on the supply of credit by banks and weakening demand for financing of development of enterprises resulting from the decline in demand in the economy and cautious attitudes of entrepreneurs to an increase of leverage. This caution was one of the factors that favored the defense of Polish entrepreneurs against the crisis. However, in the long run, companies will have to rely more heavily on external funding. Undoubtedly, this raises a strategic challenges for the future of Polish businesses and Polish economy.

The company's development, especially investment and raising the level of technology, requires adequate funding. Although over the past two decades there has been significant development of the Polish financial market, the companies from SME sector hardly seem to notice relatively significant opportunities opened to them because of this progress. Practice shows that on the one hand, companies typically maintain a fairly conservative financing method, on the other hand are able to engage in risky financial instruments which they do not fully understand. Tt should be emphasized that in the area of financial management, companies in the SME sector have very limited knowledge of possible sources of financing. Commonly known are only the simplest ways (own resources, bank credit, leasing) and because of the specific moment in the history of the country's economic development, also EU funds. Low awareness of the possibilities of finding financing is accompanied by really low use of existing sources. The vast majority of companies said they did not use any sources of funding, or base their activity only on their own resources which often means that these companies do not have a long–term strategy. Companies with long–term strategy much more often rely on external financing. Among those benefiting from external financing, a vast majority are indications regarding a bank loan or leasing contracts. However it should underlined that it is not a surprise if we take into account the specificities of the SME sector. It is also worth noting that among SMEs there is a fear associated with taking credit for SMEs, which is considered a risky operation for the company. A little less distrust prevails in relation to the different types of grants. Here, the dominant factor is the fear of complicated and time–consuming formalities.

Economic decline in more than half of the surveyed enterprises did not affect the change of strategy or investment plans, while 42% of surveyed companies have changed their investment plans because of economic weakness. Among them, more than half gave up part of the investment, and a third postponed all planned investments. The main area of investments planned for the period of the financial crisis was the modernization and development of production, expansion or modernization of buildings, investments

[23] Ibidem.

in new technologies and investments in fixed assets. Half of the respondents believed that the period of economic weakness is not favorable to investment in innovations.

In finance you can not miss the principle that with potentially high profits goes a high risk. You can, however, lead to a situation where the potential of each company will be used to the maximum extent.

Summing up the above considerations it can be stated that every company needs investment. In the existing conditions of a saturated market and high and constantly evolving technology choice of the appropriate, most cost–effective concept of investing in a company is not an easy task. The modern economy created a variety of opportunities to take real and financial investment. However, each company must develop its own development strategy, appropriate in relation to their abilities and needs.

An important role in company management perform investment and financial decisions. There is no one universal strategy of investing in the company. Please note that when it is determined, with consideration of a dynamic competitive environment, it is essential to achieve success and minimize the risk of doing business.

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CHANGES IN THE FUNCTIONING OF THE POLISH SPECIAL ECONOMIC ZONES

Summary

The paper contains a description of the functioning of Polish Special Economic Zones in the years 2010–2015. The aim of this paper is to present the extent to which developed Polish Special Economic Zones (PSEZ) in this period. The study was paid attention to the impact of PSEZ on the development of the polish economy. On the basis of selected indicators an attempt was made to assess how developed in various areas of the occupied zone. It was here assessed primarily the level of investments made by investors and the level of employment in the various zones. The use of selected indicators allows us to see the importance of special economic zones in Poland. Development gives the reader to understand the rules of the PSEZ and the impact on employment and the development of some polish areas. On the assumption that the recipient can assess the validity of the functioning of Polish Special Economic Zones.

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Introduction

The aim of this paper is to present the pace of development of the Polish Special Economic Zones. Effects of functioning of the Polish Special Economic Zones may be verified in various ways. These criteria may also be applied to assess all other enterprises operating outside the zones. In this paper it has tried to assess basic indices such as areas occupied by the zones, levels of investment outlays incurred by investors and employment figures within the zones by referring these values to total national indices, such as for example unemployment rate. The source of these basic indices comes from the ministry competent for matters of economy. The assessment allows to understand the size of the functioning of special economic zones in Poland and also to assess their impact on the national economy as the whole. The analysed indices come from reports collected every quarter of a year by the ministry from the special economic zones management and annual information on the implementation of the Act of Parliament – Special Economic Zones Law.

Functioning of the Polish Special Economic Zones in 2015

Pursuant to the provisions of the Act of Parliament – Special Economic Zones Law (SEZ Law), Special economic zone (also referred to as "zone" or "SEZ") is a separately administered area, not inhabited commercial part of the territory of the Republic of Poland where business activities may be conducted in compliance with the principles described in the said Law. Most frequently these business activities enjoy public aid in the form of tax exemption on legal persons under a permit issued by the management of the sub–zone (the minister competent for matters of economy grants to the SEZ managements authority for them to issue, on his behalf, the said permits and to conduct supervision of how these permits are performed)[1]. In addition, the Management of SEZ areas create investors almost ideal conditions for them to conduct their business activities. The Management – through a joint tender – provide investors intending to run business activities attractive pieces of land provided with all media and the whole necessary infrastructure together with administration support regarding legal and organizational issues related to the completion of the investment.

Terms of "zone" and "sub–zone" should be distinguished. Zone is referred to the whole area under one management of SEZ. The management, within their competence, divides the whole SEZ area into sub–zones.

The idea of economic zones in Poland emerged in the mid–nineties. The major argument for the establishment of special economic zones was the existence of regions with high unemployment that had to be economically activated. Issues resulting from restructuring of old industrial areas or challenges associated with the adaptation of properties and infrastructures left by the liquidated enterprises emerged. All these measures led to one goal, i.e. generation of new jobs by finding new investors, application of new technical and technological solutions and improvement of competitiveness of products and services[2].

The principles for functioning of special economic zones in Poland are based on a few major legal acts. The very basic is the Act of Parliament – Special Economic Zones Law. The Law defines principles and methods for the establishment of sub–zones on the territory of the Republic of Poland, for the management of these areas and specific principles and conditions for conducting business activities within these areas.

According to this Act of Parliament the basic goal of the establishment of these special economic zones is to enhance economic growth of the designated part of the country's territory. This goal is implemented by[3]:

1. development of designated areas of business activities,
2. development of new technical and technological solutions and their application to the national economy,
3. development of exports,
4. improvement of competitiveness of the manufactured products and supplied services,
5. adaptation of the existing industrial property and economic infrastructure,
6. generation of new jobs,
7. adaptation of not used natural resources with respect to principles of ecologic balance.

The first version of this Act comes from 20 October 1994 (Official Journal: Dz.U. No. 123, Item 600).

Currently valid legal act is Special Economic Zones Law of 20 October 1994 (Official Journal: Dz.U. No 123, Item 600). Apart from certain obvious changes, such as changes of the names for the government bodies, as for example: former Ministry of Industry and Commerce, and now ministry

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[1] Act of Parliament, *Special Economic Zones Law,* 20 October 1994, Official Journal: Dz.U. 2015, Item 282.

[2] Lizińska W., Marks–Bielska R., *Effects of functioning Special Economic Zones in Poland within the context of implementing the goals for which they have been established and the use of public aid, Periodical dedicated to the needs of science and practice,* "Studia Ekonomiczne – Economic Studies" 2013, No. 2 (62), OPTIMUM, pp. 92–105.

[3] Act of Parliament, *Special Economic Zones Law,* 20 October 1994, Official Journal: Dz.U. 2015, Item 282.

competent for matters of economy (Ministry of Development today) changes involve, above all, conditions for establishment and liquidation of sub–zones, conditions regarding the way the companies managing special economic zones, conditions for reversing and extinction of permits for business activities within the SEZ or, finally, limitation of the amount of the public aid. A new provision has emerged when compared with the original version of the Act, i.e. provision specifying maximum amount of costs of qualified investments. In addition, amendment to this Law in 2015 involved extension of the catalogue of public land where a zone may be established including areas belonging to one–person company of the State Treasury and increase of area limits of these zones from 20 thousand up to 25 thousand hectares. According to relevant provisions these zones will function till the end of 2026.

Another legal acts (more detailed) are Ordinances resulting from the Special Economic Zones Law. These regulate, inter alia, activities of companies managing special economic zones. These are:

- ordinance by the Council of Ministers regarding (…) Special Economic Zone,
- ordinance by the Minister of Economy regarding establishment of the development plan (…) of Special Economic Zone,
- ordinance of the Minister of Economy on the entrustment (…) authorizing Special Economic Zone Sp. z o.o. to grant permits for the conduct of business activities within the premises of the Pomeranian Special Economic Zone and to supervise implementation of permits conditions,
- ordinance of the Minister of Economy and Labour regarding tenders and talks as well as assessment criteria with respect to business projects that are to be undertaken by entrepreneurs within the premises (…) Special Economic Zone.

Pursuant to the SEZ Law the status of a zone is assigned to public land. These include pieces of land that are owned or are under perpetual usufruct of:

- the SEZ management,
- the State Treasury,
- one–person company of the State Treasury,
- a unit of territorial self–government and association of communes.

Criteria decisive for qualification of land for the zones were determined in the Conception for the Development of Special Economic Zones adopted by the Council of Ministers on 27 January 2009.

The status of a zone may be assigned to land owned by or under perpetual usufruct of other entities than these mentioned above. The so–called privately owned land is also included into a zone provided that at least one of the criteria stipulated in the Ordinance of the Council of Ministers is satisfied regarding criteria satisfaction of which allows to include certain pieces of land into a special economic zone[4].

At the end of 2015, without any changes within the last few years, 14 special economic zones operated in Poland. These are: kamiennogórska, katowicka, kostrzyńsko–słubicka, krakowska, legnicka, łódzka, mielecka, pomorska, słupska, starachowicka, suwalska, tarnobrzeska, wałbrzyska and warmińsko–mazurska zones. In the same year 2,177 valid permits for the conduct of business activities within the premises of SEZ were issued.

In 2015 within the total area of the Polish special economic zones, amounting to 19,836.9 hectares (173 towns, 248 communes and 11,796 hectares of developed land) the cumulated value of the invested capital was almost 111.7 billion zł, while employment oscillated around the total level of around 312 thousand employees employed on a full–employment base, what constitutes around 6% of the average employment in the sector of enterprises in Poland.

Almost 75% of the capital invested in the zones originated from six countries. Major investors in the special economic zones are companies coming from Poland, Germany, USA, Netherlands, Japan and Italy. An interesting parameter, of a considerable impact on the economy, is the amount of investment

[4] *Ordinance of the Council of Ministers of 10 December 2008 regarding criteria the fulfilment of which allows to include certain land in a special economic zone*, i.e. of 8 September 2015, Official Journal: Dz.U. 2015, Item 1473.

outlays incurred for the construction of infrastructure accompanying the operation of special economic zones. At the end of 2015 these amounted to 446.4 million zł.

Table 1. Adaptation of Areas of the Zones as on 31 December 2015

Item	Zone	Zone area (hectares)	Adapted land (hectares)	Not adapted land (hectares)	Level of adaptation (%)
1	Kamiennogórska	373.8344	223.7722	150.0622	59.86
2	Katowicka	2 347.3429	1 523.1730	824.1699	64.89
3	Kostrzyńsko–Słubicka	1 868.0492	1 028.1531	839.8961	55.04
4	Krakowska	707.7833	542.6382	165.1451	76.67
5	Legnicka	1 763.7713	321.6678	1 442.1035	18.24
6	Łódzka	1 339.1727	1 009.2916	329.8811	75.37
7	Mielecka	1 495.6519	1 039.3994	456.2525	69.49
8	Pomorska	2 039.9903	1 366.2094	673.7809	66.97
9	Słupska	899.3694	293.6283	605.7411	32.65
10	Starachowicka	644.4646	437.1363	207.3283	67.83
11	Suwalska	635.0653	332.4790	302.5863	52.35
12	Tarnobrzeska	1 743.3045	1 269.1575	474.1470	72.80
13	Wałbrzyska	2 921.6993	1 641.2543	1 280.4450	56.17
14	Warmińsko–Mazurska	1 057.3826	768.3571	289.0255	72.67
Total		**19 836.8817**	**11 796.3172**	**8 040.5645**	**59.47**

Source: author's study based on: Information … (2015), p. 8.

Changes in Special Economic Zones within 2010–2015

Permits for conducting business activities in the special economic zone

The basis for conducting business activities within the premises of special economic zone is to hold valid permit. This is the basic condition to enjoy public aid in a form of an income tax exemption. Each permit is provided with terms and conditions individually specified for each one entity. Within its scope of activities and within a determined period of time, each entity is obliged to incur and maintain determined investment outlays, employ new persons or maintain the current employment and complete investment.

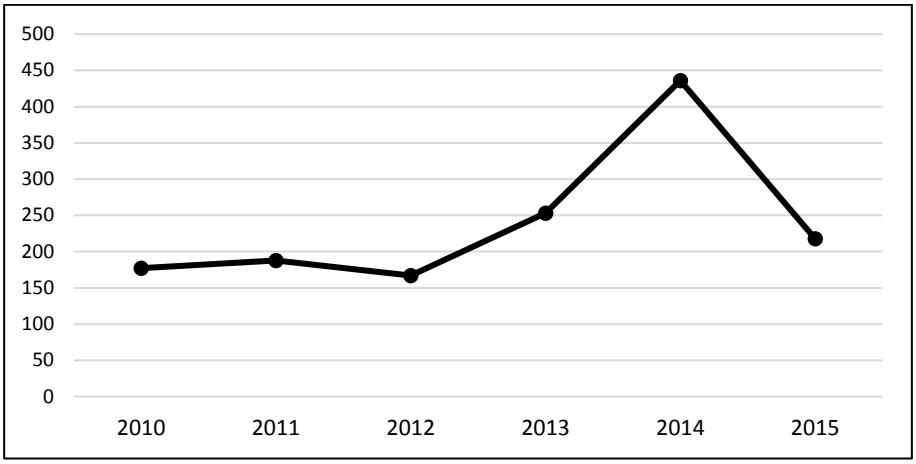
Each investor may lose previously obtained permit. The reason for losing permit may be withdrawal, extinction, cancellation or revocation.

Failure to satisfy conditions defined in the permit is the most frequent reason for the loss. This is associated with instituting, ex officio, procedure of withdrawal the permit by the Ministry.

Till the end of 2015 711 permits were withdrawn, that constitutes around 21% of all permits issued in Poland. The second, equally essential reason for losing a permit is its extinction. This occurs upon a request submitted by an entrepreneur or in case when he has lost his status of an entrepreneur (e.g.: Cancellation from Central Register and Information of Entities Conducting Business Activities). Till the end of 2015 535 permits was extinct (around 16% of the total number of permits issued in this time). Another reason for losing a permit is its invalidation or cancellation. This occurs in case when premises provided in Article 156, Article 145 §1, Article 145a or 145b or Article 145b of the Code of Administration

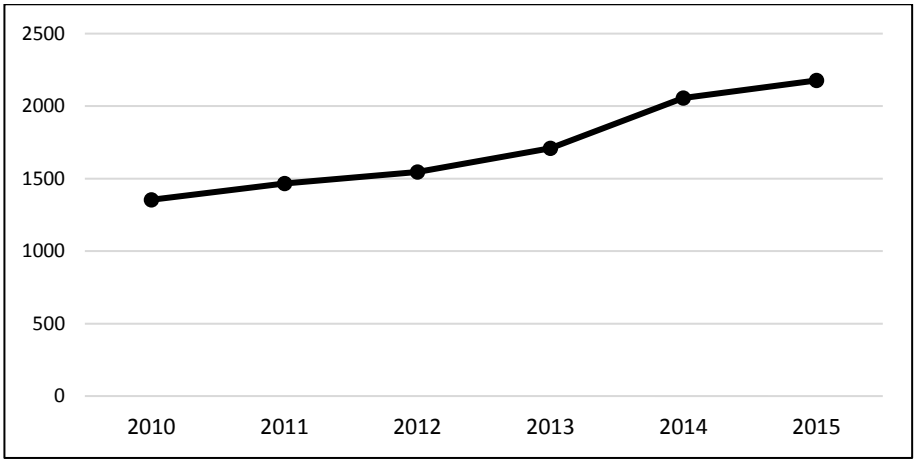
Procedure[5]. These are reasons referred to in case provisions regulating issuance of permits have been violated. Till the end of 2015 total of 7 permits were invalidated or cancelled. Attention should be drawn to the fact that in case of losing permit for the activities within the special economic zone investor is obliged to return collected public aid.

Figure 1. Number of Issued Permits for Conducting Business Activities in 2010–2015



Source: author's study based on Information …. (2011–2015), pp. (respectively) 9, 9, 9, 12, 10.

Figure 2. Number of Valid Permits for Conducting Business Activities within the Special Economic Zones in 2010–2015



Source: author's study based on Information …. (2011–2015), pp. (respectively) 9, 9, 9, 12, 10.

[5] *Code of Administrative Procedure*, 14 June 1960 (Official Journal: Dz.U. No. 30, Item 168), i.e. of 17 March 1980 (Official Journal: Dz.U. No. 9, Item 26), i.e. of 9 October 2000 (Official Journal: Dz.U. No. 98, Item 1071), i.e. of 30 January 2013 (Official Journal: Dz.U. 2013, Item 267), i.e. of 4 December 2015 (Official Journal: Dz.U. 2016, Item 23).

As it results from statistics the number of entrepreneurs conducting business activities under permits for business activities within the special economic zones continually increases. The fall of the number of issued permits in 2015 is associated mainly with lack of executory provisions, caused by necessity to adapt Polish law to regulations regarding public aid imposed by European Union. As authors of the amendment explain, current provisions did not regulate procedure on the return of public aid granted within the premises of a zone. The period of adjustment of changes in regulations translated, in 2015, into a few months of downtime in issuing permits. Statistical records show that the first half of 2014 proved to be very good. At that time, SEZ management companies issued almost twice as many permits for business activities than in the whole 2013. A new investment planned by Volkswagen company proved to be very interesting. Construction of a new manufacturing plant valued for 800 million Euro will result in an increase of employment by more than 3 thousand new jobs. The planned commencement of its operation is scheduled for 2016. It should be remembered that investments within the SEZ premises mean not only investments and employment performed under permits for the conduct of business activities, but also large public and private investments and a large number of jobs in the businesses accompanying special economic zones in Poland[6].

Table 2. Investment Outlays Incurred by SEZ Investors in 2010–2015

Item	Zone	2010	2011	2012	2013	2014	2015
1	Kamiennogórska	1 551.10	1 667.20	1 856.10	1 909.10	2 039.30	2 179.40
2	Katowicka	16 869.60	18 154.60	19 593.20	21 109.50	21 097.10	23 317.40
3	Kostrzyńsko–Słubicka	3 786.30	4 215.50	4 719.00	5 312.10	5 860.30	6 325.10
4	Krakowska	1 655.70	1 773.80	1 786.30	1 964.40	2 362.10	2 942.00
5	Legnicka	4 568.80	4 889.00	5 483.80	6 302.40	7 134.30	7 596.90
6	Łódzka	8 184.80	9 033.10	9 980.20	10 815.50	12 467.90	13 623.20
7	Mielecka	4 690.30	5 097.00	5 636.50	6 059.00	6 652.80	5 327.10
8	Pomorska	6 727.40	7 298.90	7 313.70	7 862.20	9 064.70	10 625.80
9	Słupska	963.61	1 106.51	1 176.30	1 231.90	1 383.60	1 492.10
10	Starachowicka	1 528.90	1 621.00	1 641.20	1 744.80	1 886.90	2 134.30
11	Suwalska	1 474.90	1 596.70	1 581.60	1 608.20	1 745.20	2 079.10
12	Tarnobrzeska	6 081.40	6 792.90	7 363.00	7 575.50	7 952.40	8 081.60
13	Wałbrzyska	12 105.40	13 095.00	14 599.30	16 342.80	18 619.10	21 738.00
14	Warmińsko–Mazurska	3 033.40	3 328.90	3 103.00	3 303.80	3 687.60	4 220.90
Total		**73 221.61**	**79 670.11**	**85 833.20**	**93 141.20**	**101 953.30**	**111 682.90**

Source: author's study based on Information …. (2011–2015), pp. (respectively) 11, 11, 11, 9, 11.

[6] *Information on implementation of the Special Economic Zones Law as on 31 December 2015*, Ministry for Development, Warsaw, May 2016.

As it results from the above summary the largest investment outlays are incurred in the following zones: Katowicka, Wałbrzyska, Łódzka and Pomorska. In 2015 they constituted around 62% of all investment outlays in the zones till then.

Table 3. Dynamics of the Increase of Investment Outlays Incurred by SEZ Investors in 2010–2015 (prior year = 100%)

Item	Zone	2011	2012	2013	2014	2015
1	Kamiennogórska	116.10	188.90	53.00	130.20	140.10
2	Katowicka	1 285.00	1 438.60	1 516.30	–12.40	2 220.30
3	Kostrzyńsko–Słubicka	429.20	503.50	593.10	548.20	464.80
4	Krakowska	118.10	12.50	178.10	397.70	579.90
5	Legnicka	320.20	594.80	818.60	831.90	462.60
6	Łódzka	848.30	947.10	835.30	1 652.40	1 155.30
7	Mielecka	406.70	539.50	422.50	593.80	–1 325.70
8	Pomorska	571.50	14.80	548.50	1202.50	1 561.10
9	Słupska	142.90	69.79	55.60	151.70	108.50
10	Starachowicka	92.10	20.20	103.60	142.10	247.40
11	Suwalska	121.80	–15.10	26.60	137.00	333.90
12	Tarnobrzeska	711.50	570.10	212.50	376.90	129.20
13	Wałbrzyska	989.60	1 504.30	1 743.50	2276.30	3 118.90
14	Warmińsko–Mazurska	295.50	–225.90	200.80	383.80	533.30
Total		**6 448.50**	**6 163.09**	**7 308.00**	**8 812.10**	**9 729.60**

Source: author's study based on Information …. (2011–2015), pp. (respectively) 11, 9, 11, 13, 11.

Table 3 and 4 show that the major zones with respect to the invested outlays in 2015 were the following zones: Wałbrzyska, Katowicka (despite low dynamics in 2010) and Pomorska. Certainly, high increase recorded in recent time may be understood because of the "break in issuing permits" in 2015, as mentioned above, because of cumulation of some investments and hasty performance in the second part of this period. However, according to cyclical reports from SEZ investors this increase is, above all, a result of investments made by the following companies[7]:

- Volkswagen Poznań (Wałbrzyska),
- NGK Ceramics Polska (Katowicka),
- Nexteer Automotive Poland (Katowicka),
- General Motors Manufacturing Poland (Katowicka),
- Mondi Świecie (Katowicka),
- Steico (Katowicka),
- CIECH Soda Polska (Katowicka).

[7] *Information…*, op. cit.

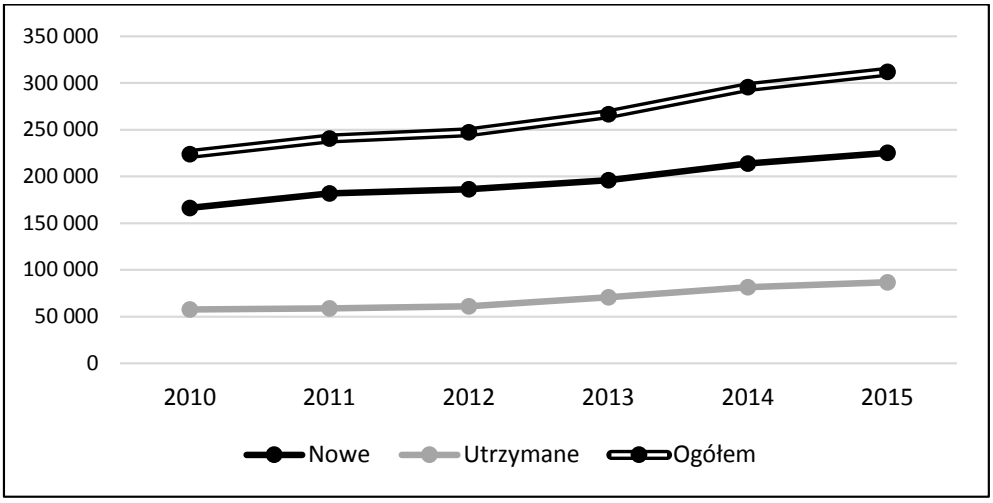
Unfortunately, in 2015 investments in Mielecka Zone were unfavourable. As a consequence of expiry of validity of 39 permits for the conduct of business activities in this zone, fall in investment outlays by around 1.3 billion zł was recorded[8].

Jobs

Changes in dynamics of increase of investment outlays within SEZ may also reveal an argument of vital nature to investors in their selection of locations for their activities associated with saturation of labour market and problems with attracting new qualified employees.

When analysing employment associated with business activities on the basis of permits difference should be made between maintained employment and employment of new employees. The first refers to investors that, at the moment when they got permits for their business activities, already conducted their businesses (e.g.: under a permit issued previously). In such a situation they are obliged to maintain employment status as for the day preceding the issue of permits and create new jobs. New investors must only prove new employments, i.e. a determined number of new jobs after the day when they were granted permits.

Figure 3. Employment in the Zones within 2010–2015 (calculated against full–time employment)



Note: *Nowe* – New, *Utrzymane* – Maintained, *Ogółem* – Total.
Source: author's study based on Information …. (2011–2015), pp. (respectively) 11, 11, 11, 13, 11.

Increase of investments in the Zones results in an increase of demand for new employees. This is caused not only because of provisions imposing investors obligation to employ new persons, but also because of development of the Polish economy. Within the period under analysis employment in the SEZ companies increased by around 90 thousand. The major reason for this increase was creation of almost 60 thousand new jobs. This is a very positive aspect for the Polish economy.

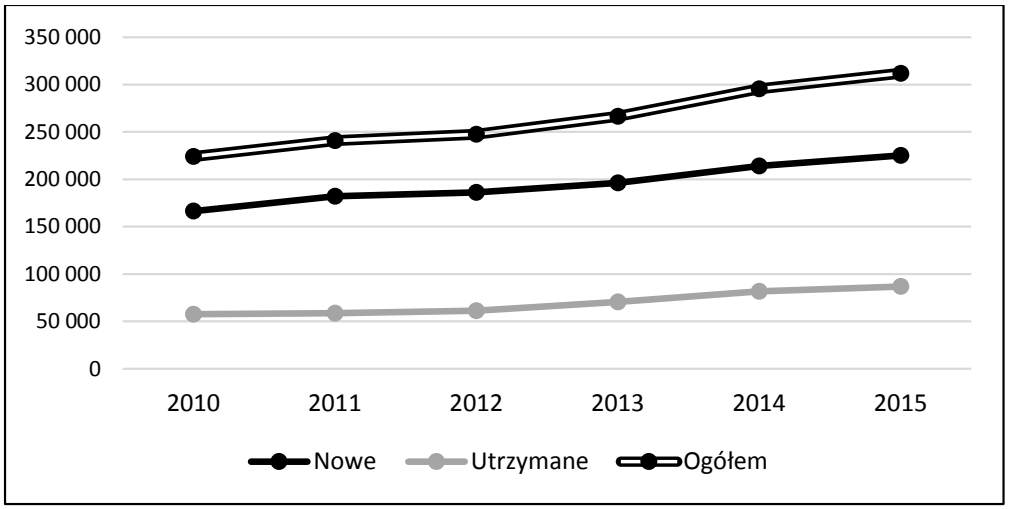
[8] *Information…*, op. cit.

Table 4. Created and Maintained, by SEZ Investors, Number of Jobs (Number of jobs in 2010–2015)

Lp.	Strefa	31.12.2010 r.			31.12.2011 r.			31.12.2012 r.			31.12.2013 r.			31.12.2014 r.			31.12.2015 r.		
		Ogółem	Utrzymane	Nowe	Ogółem	Utrzymane	Nowe	Ogółem	Utrzymane	Nowe	Ogółem	Utrzymane	Nowe	Ogółem	Utrzymane	Nowe	Ogółem	Utrzymane	Nowe
1	Kamiennogórska	4 349	273	4 076	4 618	205	4 413	4 790	245	4 545	4 864	242	4 622	6 259	751	5 508	6 736	769	5 967
2	Katowicka	43 473	9 181	34 292	48 541	10 861	37 680	49 934	11 897	38 037	52 576	13 443	39 133	54 498	13 974	40 524	58 976	14 422	44 554
3	Kostrzyńsko-Słubicka	17 252	5 309	11 943	19 089	6 720	12 369	20 144	6 701	13 443	22 630	7 568	15 062	28 157	11 228	16 929	30 907	12 228	18 679
4	Krakowska	8 151	2 515	5 636	8 984	2 755	6 229	9 572	3 174	6 398	16 779	8 851	7 928	19 792	10 075	9 717	21 896	10 393	11 503
5	Legnicka	8 803	254	8 549	9 300	254	9 046	9 565	254	9 311	10 237	254	9 983	11 573	254	11 319	12 607	254	12 353
6	Łódzka	23 248	6 531	16 717	24 824	6 733	18 091	25 921	6 836	19 085	28 882	8 347	20 535	32 230	8 666	23 564	33 719	7 761	25 958
7	Mielecka	16 516	3 827	12 689	18 387	3 822	14 565	20 934	3 781	17 153	23 562	3 831	19 731	26 763	6 178	20 585	22 182	10 009	12 173
8	Pomorska	19 275	4 987	14 288	18 812	3 702	15 110	15 536	3 551	11 985	15 394	3 546	11 848	17 709	4 364	13 345	19 654	4 547	15 107
9	Słupska	2 683	723	1 960	3 390	804	2 586	3 632	832	2 800	3 515	648	2 867	3 656	665	2 991	3 403	340	3 063
10	Starachowicka	6 349	3 403	2 946	7 270	3 183	4 087	7 104	3 215	3 889	6 380	3 012	3 368	6 315	2 991	3 324	6 973	2 917	4 056
11	Suwalska	5 471	401	5 070	5 452	188	5 264	5 288	195	5 093	5 425	255	5 170	6 317	376	5 941	8 004	1 521	6 483
12	Tarnobrzeska	27 832	7 749	20 083	28 710	7 863	20 847	30 023	9 388	20 635	27 230	8 223	19 007	27 225	7 464	19 761	25 270	5 828	19 442
13	Wałbrzyska	30 057	7 545	22 512	31 276	6 756	24 520	32 392	6 703	25 689	36 164	7 334	28 830	40 080	7 941	32 139	44 340	7 921	36 419
14	Warmińsko-Mazurska	10 558	4 963	5 595	12 135	4 896	7 239	12 616	4 392	8 224	13 063	5 022	8 041	14 995	6 703	8 292	17 355	7 890	9 465
	Razem	**224 017**	**57 661**	**166 356**	**240 788**	**58 742**	**182 046**	**247 451**	**61 164**	**186 287**	**251 307**	**70 576**	**196 125**	**295 569**	**81 630**	**213 939**	**312 022**	**86 800**	**225 222**

Note: *Strefa* – Zone, *Ogółem* – Total, *Utrzymano* – Maintained, *Nowe* – New.
Source: : author's study based on Information …. (2011–2015), pp. (respectively) 11; 11; 11; 13, 11.

Figure 4. Change in the Employment in the SEZ Zones within 2010–2015 against a change in unemployment rate (change in %)



Note: *Nowe* – New, *Utrzymane* – Maintained, *Ogółem* – Total.
Source: author's study based on Information …. (2011–2015), pp. (respectively) 11, 11, 11, 13, 11.

It is obvious that the fall in unemployment rate may not be directly translated into the increase of employment of new employees in special economic zones. Employment in the SEZ amounts to 6% of total employment in Poland. On the other hand, there are no statistical data that would describe the size of employment in businesses accompanying investments in the zones. Undoubtedly, such employment does exist and may be comparably larger than in proportion to employment within the zones. Is should be remained here that investors in the zones are, above all, manufacturers. If we imagine ourselves life cycle of each one product we can finally become aware of the impact of zone companies activities on the total employment in the whole country. Consequently, one can accept assumption that investments in the zones have indirect and direct impact on changes in unemployment rates.

The largest employers conducting their business activities in special economic zones are, above all, motor car companies.

Table 5. Leading Investors in Special Economic Zones

Item	Entrepreneur	Zone	Sector	Country of Capital Origin
1	General Motors Manufacturing Poland sp. z o.o.	Katowicka	Motor industry (cars)	USA
2	Volkswagen Poznań sp. z o.o.	Wałbrzyska i Kostrzyńsko–Słubicka	Motor industry (cars)	Germany
3	Toyota Motor Manufacturing Poland sp. z o.o.	Wałbrzyska	Motor industry (gear boxes)	Japan
4	Volkswagen Motor Polska sp. z o.o.	Legnicka	Motor industry (engines)	Netherlands
5	NGK Ceramics Polska sp. z o.o.	Katowicka	Motor industry (ceramic filters for Diesel engines)	Japan
6	Michelin Polska S.A.	Warmińsko–Mazurska	Tyre manufacturing	Switzerland
7	Mondelez Polska Production sp. z o.o.	Wałbrzyska	Food processing	Netherlands
8	Mondi Świecie S.A.	Pomorska	Paper industry	Netherlands
9	Bridgestone Stargard sp. z o.o.	Pomorska	Tyre manufacturing	Belgium
10	FCA Powertrain Poland sp. z o.o.	Katowicka	Motor industry (engines)	Italy
11	Electrolux Poland sp. z o.o.	Wałbrzyska i Katowicka	Household articles	Sweden
12	Gillette Poland International sp. z o.o.	Łódzka	Manufacturing of shavers	Luxembourg
13	LG Display Poland sp. z o.o.	Tarnobrzeska	Manufacturing of LCD panel	South Korea
14	Toyota Motor Industries Poland sp. z o.o.	Wałbrzyska	Motor industry (engines)	Japan
15	Sitech sp. z o.o.	Legnicka	Motor industry (car seats)	Netherlands

Source: author's study based on Information …. (2011–2015), pp. (respectively) 11, 11, 11, 13, 11.

Analysing data from previous years attention should be drawn to Volkswagen Poznań sp. z o.o. When compared with the preceding year the investor mentioned above, due to their new investment in Września became the second leading zone entrepreneur. For years now the leading positions in this ranking are taken by General Motors Manufacturing Poland sp. z o.o., Volkswagen and Toyota Motor Manufacturing Poland sp. z o.o.

Conclusion

Effects of Functioning of the Polish Special Economic Zones

Statistics reflecting the functioning of the Polish Special Economic Zones maintained by the ministry competent for economy matters are charged with statistical error. It is because there exists not possibility to assess indices regarding employment and size of investment outlays within the SEZ premises of enterprises operating without permits for conducting business activities within the SEZ. It results from this that in reality these indices represent underestimated values and effects of the Polish SEZs are even better.

Attention should be drawn to the fact that it is possible to verify companies operating under permits, however, it is not possible to asses indices for enterprises operating without permits, but within zone investors environment.

Undoubtedly, activities of Special Economic Zone in Poland is one of many instruments stimulating economy. Due to the zones the State may intensify economic development of certain selected areas granting the entrepreneurs appropriate privileges. Due to the zones the State may articulate precisely its economic interests and establish certain preferences for entrepreneurs (in the form of public aid), stimulate development of determined activities and gain benefits of economic and social nature. One of the fundamental ideas for establishing SEZs was reduction of unemployment and inviting investors to create, within determined regions, new jobs. These instruments are applied in many locations throughout the world. These are locations in such developing countries as: China, South Korea, India, Mexico, Malaysia and Russia. From economic point of view, Special Economic Zones constitute government economic instrument applied to stimulate economy by encouraging investors to conduct their business activities within defined areas that, from legal point of view, are classified as separately administered, and, pursuant to the provisions of Special Economic Zone Law, uninhabited economic part of the territory of the Republic of Poland, where business activities may be conducted under the principles determined in the SEZ Law.

Comparison statistical data with the goals of functioning of special economic zones grounds for their establishment are well justified. The fact is also confirmed that, according to geographical structure of capital engaged in the SEZs, majority of investments are made by Polish entrepreneurs. In addition, Polish special economic zones enjoy considerable interest from the part of German, American, Dutch and even Japanese or Korean entrepreneurs. Attention should be drawn to the fact that that such intensification positively influences development of economy as the whole. More than 111.6 billion zł of investment outlays have brought more than 312 thousand jobs mainly in the following sectors: motor industry, plastic materials and rubber products, other mineral non–metalized materials, paper products or alimentary products, but also outlays invested in development of infrastructure accompanying the functioning of special economic zones amounting to around 446.4 million zł (status on 31 December 2015).

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8. *Information on implementation of the Special Economic Zones Law as on 31 December 2013*, Ministry for Development, Warsaw, May 2014.
9. *Information on implementation of the Special Economic Zones Law as on 31 December 2014*, Ministry for Development, Warsaw, May 2015.
10. *Information on implementation of the Special Economic Zones Law as on 31 December 2015*, Ministry for Development, Warsaw, May 2016.
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PERSPECTIVES AND CONDITIONS FOR DEVELOPMENT OF POLISH EXPORT OF AGRI–FOOD PRODUCTS – GEOGRAPHICAL APPROACH

Summary

Since Poland's accession to the European Union, foreign trade in agri–food products has been developing dynamically. Both export, as well as import of these products has increased and, as a result, the positive balance of commercial turnover has significantly improved. The EU Member States remain the dominant partners in this exchange. The export growth perspectives of Polish agricultural and food products in the future years result from the impact of numerous factors. The most important ones are: limited possibilities of increase in export to the EU market and the resulting need for diversification of foreign markets, support for foreign expansion of producers by the public administration, preferential trade agreements concluded by the EU with third countries, development of veterinary cooperation, need for better organization of the exporters environment and for building strong brands of Polish products. Even though the EU will surely remain the main recipient of Polish food for a long time, the main drive for increase in export in the future seems to be expansion onto non–community markets, among others, Asian, African, North American and Middle Eastern. These are certainly promising markets for Poland.

* * *

Introduction

For years, the commercial relations between the Polish agri–food sector and foreign countries have been asymmetric, i.e. the most important partners in this exchange have been invariably the Member States of the European Union (EU). This is a result of full integration of Poland with the EU and introduction of the Common Agricultural and Commercial Policy. The European economic integration assumes free flow of goods, services, capital and people with the EU. Domestic food producers, who meet the specified sanitary, veterinary, phytosanitary, animal welfare and environmental protection standards, obtained unrestricted access to a huge market, characterized by high purchasing power of consumers. The dominant part of the EU in the geographical structure of export and the high value of

the turnover balance with the EU countries confirm the opinion that the Polish food sector is competitive and successful on the Single European Market (SEM).

Regional economic integration is both a stage of inclusion in the globalisation processes, as well as a form of reinforcement of internal forces, so as to ensure that it is possible to handle global competition and protect against negative effects of global changes[1]. In these conditions, strong economic connections between Poland and the European Union are thus very understandable. However, limited interest of producers in the European market and decreased activity and commercial expansion on other foreign markets may prove to be a threat to the Polish food sector in the future. Maintaining a strong connection with one market may be a risky export strategy. The EU market is undoubtedly enormous and relatively stable, but the possibilities of placing Polish agricultural and food products on that market are limited. Permanent increase in the production of food in Poland already forces undertaking vigorous actions focused on seeking new markets. The strategy of diversification of foreign markets seems to be an appropriate solution, also due to high fluctuations in the economic situation on external markets. However, it brings along many problems related, among others, to distribution, transport, logistics, as well as adjustment to different tastes and requirements of consumers[2].

The purpose of this paper is to indicate the main development directions of Polish export of agri–food products. The study presents the most important, in the opinion of the author, conditions for increase in export of these products and assesses the possibilities of diversification of foreign markets. The deliberations were preceded by a general analysis of the results of foreign trade in agri–food products, as well as its analysis in a geographic perspective.

General evaluation of results of foreign trade in Polish agri–food products

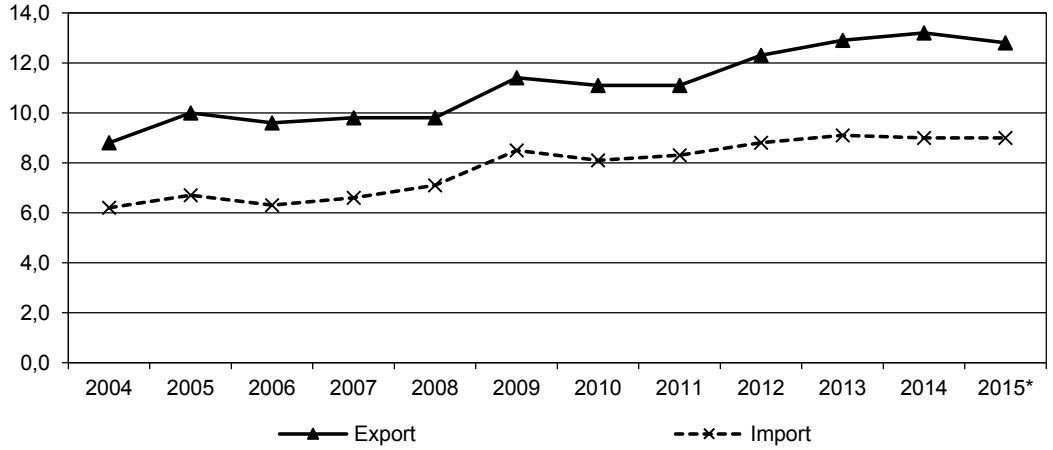
For years, trade in agri–food products has been playing an important role in Polish foreign trade, but since Poland's accession to the EU, it has clearly gained significance (Fig. 1). The proportion of agri–food products in the Polish export before Poland's accession reached 8–9%, then increased to nearly 10%, and from 2009–2012 fluctuated within 11–12%. Recently (2013–2015), it increased to ca. 13%. The proportion of import of agri–food products in total Polish import was lower, and in the period of 2003–2008, it fluctuated between 6–7%, and since 2009, it has been continuously exceeding 8%. In 2015, this ratio amounted to 9.0%. The difference between the share of agri–food products in export and their share in import throughout the whole analysed period has been increasing in favour of export and in 2015 amounted to 3.8 percentage points (p.p.).

The agri–food sector is one of the few sectors of the national economy that achieves a positive balance in trade. In the conditions of significant deficit, present in the Polish trade in non–food products (in 2015, EUR –4.0 million), the high surplus in the trade in agri–food products (EUR 7.7 million) is thus of tremendous importance for the national balance of trade and payments (Fig. 2). In 2015, this surplus covered the deficit in trade in agricultural products from other sectors almost two times and had a significant impact on the direction of changes in the trade balance of Poland.

[1] W. Szymański, *Globalizacja. Wyzwania i zagrożenia*, Difin, Warszawa 2002.

[2] I. Szczepaniak, *Wyniki handlu zagranicznego produktami rolno–spożywczymi*. /In:/ *Monitoring i ocena konkurencyjności polskich producentów żywności (5). Synteza*, scientific editor: I. Szczepaniak, series „Program Wieloletni 2011–2014", No. 115, IAFE–NRI, Warszawa 2014, pp. 25–50.

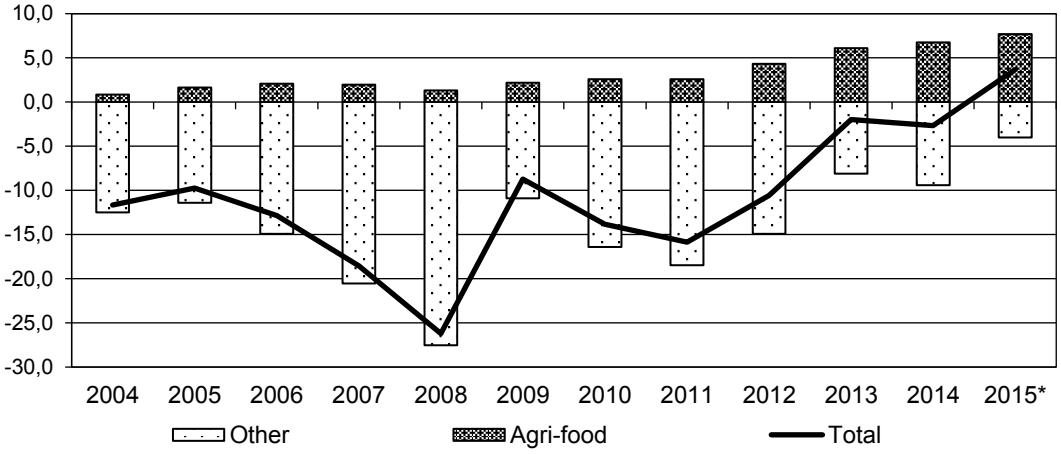
Figure 1. The percentage of agri–food products in Poland's foreign trade



Note: (*) preliminary data.

Source: prepared on the basis of data of the Customs Administration Analytic Centre (CAAC) and the Ministry of Finance (MF).

Figure 2. The balance of trade in agri–food products in comparison to the balance of foreign trade of Poland, in EUR billion



Note: (*) preliminary data.

Source: prepared on the basis of unpublished data of CAAC and MF.

According to the preliminary data, in 2015, the income from the export of agri–food products amounted to EUR 23.6 billion and was higher by 7.7% than in 2014, while the expenses for import increased up to EUR 15.9 billion, i.e. by 4.7% (Tab. 1). Therefore, the value of Polish export of agri–food products was nearly six times higher than before Poland's accession (2003), while in the case of import – four and a half times higher. As a result, the surplus of export over import reached the value

of EUR 7.7 billion, never reported before, which means growth by EUR 1 billion as compared to the previous year and by as much as EUR 7.3 billion as compared to 2003.

In 2015, the ratio of coverage of import of agri–food products with their export increased again (up to 148% as compared to 145% in 2014) and was still significantly higher than in total trade (102%). This means that the value of export of agri–food products was higher by as much as 48% than the value of import of these products, whereas the value of total Polish export exceeded the value of total Polish import only by 2%.

Table 1. Results of foreign trade in Polish agri–food products, in EUR million

Trade flow	Direction	2003	2005	2007	2009	2011	2013	2014	2015*
Export	**Total**	**4,010.4**	**7,028.0**	**9,942.5**	**11,277.6**	**15,223.5**	**20,427.2**	**21,876.5**	**23,558.3**
	EU	2,616.7	5,190.8	8,001.4	9,066.9	11,906.6	15,929.4	17,409.2	19,316.8
	EU–15	*2,041.6*	*4,063.0*	*5,941.2*	*6,698.8*	*8,789.0*	*11,956.2*	*12,976.5*	*14,354.4*
	EU–13	*575.1*	*1,127.8*	*2,060.2*	*2,368.1*	*3,117.6*	*3,973.2*	*4,432.7*	*4,962.4*
	Non–EU states	1,393.7	1,837.2	1,941.1	2,210.7	3,316.9	4,497.8	4,467.3	4,241.5
Import	**Total**	**3,556.9**	**5,373.5**	**7,972.3**	**9,111.0**	**12,628.2**	**14,312.5**	**15,134.4**	**15,850.5**
	EU	2,175.9	3,388.2	5,347.4	6,320.4	8,813.3	9,936.8	10,494.1	10,806.2
	EU–15	*1,848.5*	*2,938.0*	*4,484.6*	*5,448.9*	*7,511.4*	*8,472.3*	*9,013.1*	*9,236.0*
	EU–13	*327.4*	*450.2*	*862.8*	*871.5*	*1,301.9*	*1,464.5*	*1,481.0*	*1,570.2*
	Non–EU states	1,381.0	1,985.3	2,624.9	2,790.6	3,814.9	4,375.7	4,640.3	5,044.3
Balance	**Total**	**453.5**	**1,654.5**	**1,970.2**	**2,166.6**	**2,595.3**	**6,114.7**	**6,742.1**	**7,707.8**
	EU	440.8	1,802.6	2,654.0	2,746.6	3,093.3	5,992.6	6,915.1	8,510.6
	EU–15	*193.1*	*1,125.0*	*1,456.6*	*1,249.9*	*1,277.6*	*3,483.9*	*3,963.4*	*5,118.4*
	EU–13	*247.7*	*677.6*	*1,197.4*	*1,496.7*	*1,815.7*	*2,508.7*	*2,951.7*	*3,392.2*
	Non–EU states	12.7	–148.1	–683.8	–580.0	–498.0	122.1	–173.0	–802.8

Note: * preliminary data.
Source: prepared on the basis of unpublished data of CAAC and MF.

The export growth mainly resulted from high supply of agri–food products produced in Poland, as well as their competitive prices and good quality – these factors fostered increase in the demand for Polish food, both in the EU states, as well as outside the EU. On the other hand, development of trade in agri–food products was inhibited by the administrative restrictions (among others, the Russian embargo[3]) and the veterinary restrictions (among others, the ban introduced in connection with the African Swine Fever – ASF[4]).

Foreign trade became an important factor stabilising domestic markets of agri–food products. The dynamics of growth in national production of the agriculture and the food industry exceeds the dynamics of internal demand for food. A greater part of production growth in the sector was directed to foreign markets, and thus export became an important channel of surplus management. Therefore, it is an important source of income for the domestic agri–food sector, which, in turn, favourably affects the economic situation in many sectors of agriculture and the food industry.

[3] Ł. Ambroziak, I. Szczepaniak, *Skutki rosyjskiego embarga na import produktów rolno–spożywczych*, „Przemysł Spożywczy" 2014, No. 9, pp. 2–8.

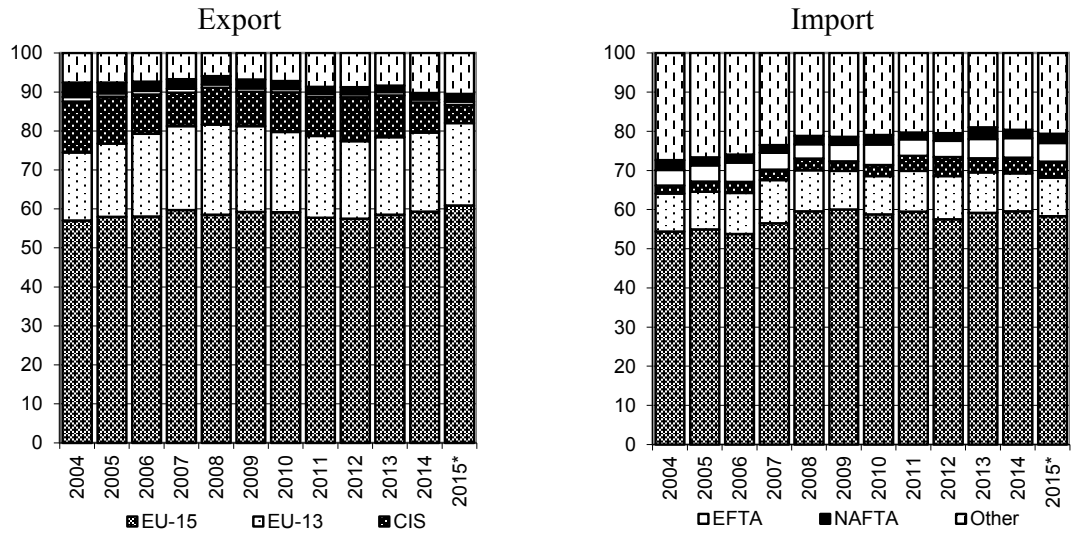
[4] M. Tereszczuk, *Handel zagraniczny produktami rolno–spożywczymi w 2015r*., „Przemysł Spożywczy" 2016, No. 3, pp. 6–10.

Geographical structure of foreign trade in Polish agri–food products

For years, the most important partners of Poland in agri–food products trade have been the European Union Member States. In 2015, the value of export of agri–food products to these states amounted to EUR 19.3 billion, i.e. it was 11% higher than in 2014. Thus, the share of the EU in the Polish export of agri–food products increased from ca. 80% to 82%. The value of export to EU–15 states increased over this period to EUR 14.3 billion, i.e. by 10.6%, and to EU–13 states – to nearly EUR 5.0 billion, i.e. by 12%. The share of EU–15 automatically increased to 60.9%, i.e. by 1.6 p.p., while in the case of EU–13 – to 21.1%, i.e. by 0.8 p.p. In 2015, the balance of trade in agri–food products with the EU improved again, amounting to EUR 8.5 billion as compared to EUR 6.9 billion the year before. The improvement in trade balance was a result of the significantly faster increase in export of agri–food products than in import of these products.

A different trend was seen in trade of agri–food products with other developed and developing countries, as well as with the countries of the Commonwealth of Independent States (CIS). The income from export of agri–food products to the aforementioned countries in 2015 amounted to ca. EUR 4.2 billion and was lower than the year before by 5.1%. The greatest decrease was recorded in export to CIS countries, with its value in 2015 decreased to EUR 1.1 billion, i.e. by 34.4%. Export to other third countries increased up to EUR 3.1 billion, i.e. by 12%. The value of import from countries from outside the EU (CIS, EFTA, NAFTA and other third countries) increased in 2015 to EUR 5.0 billion, i.e. by 8.7%. The share of those countries in the Polish import of agri–food products increased to 31.8%, i.e. by 1.1 p.p. The share of CIS countries increased to 4.1% (by 0.2 p.p.), EFTA countries – decreased to 4.7% (by 0.4 p.p.), NAFTA countries – increased to 2.3% (by 0.2 p.p.), while in the case of other third countries, it increased to 20.6% (by 1 p.p.) – see: Fig. 3.

Figure 3. Geographical structure of foreign trade in Polish agri–food products, in %



Note: (*) preliminary data. CIS – Armenia, Azerbaijan, Belarus, Kazakhstan, Kirghizia, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan; EFTA – Iceland, Liechtenstein, Norway, Switzerland; NAFTA – Canada, Mexico, USA.

Source: prepared on the basis of unpublished data of CAAC and MF.

In connection with the embargo on import of agri–food products from the EU, including Poland, introduced by Russia (from August 2014, prolonged until the end of 2017), and the restrictions on trade of pork in response to detection of cases of African Swine Fever (ASF) in Poland, as well as the economic and political uncertainty of Ukraine, the value of export of agri–food products to CIS countries decreased for another year in a row, and in 2015 constituted only 4.7% of the value of the whole Polish export of agri–food products, as compared to 7.7% in 2014 and 11.2% in 2013. The greatest decrease was recorded in export to Russia. In 2015, the income from sale of agri–food products to Russia decreased to almost EUR 398 million, i.e. by as much as almost 55%. As a result, it only came in fourteenth in the Polish trade in agri–food products, as compared to the third place in 2013 (the value of export amounted at that time to EUR 1.2 billion). The share of Russia in the Polish export of agri–food products decreased in 2015 to merely 1.7%, as compared to 4.0% in 2014 and 6.2% in 2013. The value of export to Ukraine and Belarus also decreased – respectively, to EUR 297 and 234 million, i.e. by 17 and 14%. As a result, the share of Ukraine in the Polish export of agri–food products decreased to 1.3%, i.e. by 0.3 p.p., while in the case of Belarus – to 1.0%, i.e. by 0.2 p.p. These countries once again became hardly significant markets for Polish food. On the other hand, import of agri–food products from CIS countries in 2015 increased to EUR 644 million, i.e. by 8.4%. Therefore, the balance of foreign trade in these products reduced to EUR 461 million (as compared to EUR 1,089 million in 2014).

The restrictions on export of agri–food products to Russia forced Polish producers to increase diversification of target markets. Polish food exporters began to seek alternative outlets, mainly in developing countries of Africa, Asia, the Middle East, and North America.

In 2015, the income from the export of Polish agricultural and food products to Middle Eastern countries[5] increased to EUR 720 million, i.e. by 6.3%, and to Asian countries[6] – decreased to ca. EUR 540 million, i.e. by 4%. The highest growth dynamics was recorded in export to Vietnam, India, Singapore, South Korea, Indonesia, and the highest decrease – to the Philippines, Thailand, Japan, China, and Malaysia.

In 2015, export of Polish agricultural and food products to Africa also increased by almost 18%[7]. Its value exceeded EUR 720 million. The highest growth in food export was recorded in trade with Egypt. Significant increase was also recorded in export, among others, to Kenya, Sudan and Tanzania.

Other important recipients of agri–food products from Poland were the countries of EFTA and NAFTA. Revenues from food export to EFTA countries in 2015 amounted to more than EUR 200 million, and the most important partner among those countries was Norway, which purchased food in Poland for more than EUR 100 million. The value of export of agri–food products to NAFTA countries in 2015 increased to nearly EUR 468 million, i.e. by 29%, including to: USA – to EUR 362 million, i.e. by 27%, Canada – to EUR 72 million, i.e. by 33%, Mexico – to EUR 33 million, i.e. by 37%.

The markets of African, Asian, Middle Eastern and American countries are extremely attractive for Polish exporters of agri–food products. They are very absorptive and prospective. However, cultural differences prove to be a problem, creating difficulties in adjusting the products and marketing strategies to the needs and requirements of these markets.

[5] Middle Eastern countries: Saudi Arabia, Bahrain, Iraq, Iran, Israel, Yemen, Jordan, Qatar, Kuwait, Lebanon, Oman, Syria, Turkey, United Arab Emirates.

[6] Asian countries: China, Philippines, Hong Kong, India, Indonesia, Japan, South Korea, Malaysia, Mongolia, Singapore, Thailand, Taiwan, Vietnam.

[7] African countries: Algeria, Benin, Egypt, Ghana, Guinea, Kenya, Kongo, Liberia, Libya, Morocco, Mauritania, Nigeria, South Africa, Senegal, Sudan, Tanzania, Togo, Tunisia, Uganda, Zimbabwe.

Directions of development of export of Polish agri–food products

The export growth perspectives of Polish agricultural and food products in the future years result from the impact of numerous factors. Below, you will find selected factors that, according to the author, will determine the directions of development of Polish export of food products.

Diversification of foreign markets

The main recipients of Polish food are European Union Member States (the share of the EU in the Polish export of agri–food products in 2015 amounted to 82%). Although this market is large, and the consumers wealthy, its development is limited. The import demand for agricultural and food products in the EU grows exponentially slower than the demand in countries with emerging economies or in developing countries. The research conducted in IAFE–NRI[8] demonstrates that, despite the clear increase in importance of the strategy of competing in terms of quality, the pricing advantages are still significant in the Polish food export to the EU market. Although the ban on import of agri–food products from within the EU, introduced by Russia, caused part of the deliveries of those products to be redirected to the EU market, in a long–term perspective, dynamic growth in food export to the EU is probably impossible.

The restrictions in import of agri–food products, introduced by Russia, made it apparent that focusing Polish food export on a limited number of recipients is not beneficial[9]. In order to minimise the risk related to strong focus of export on the EU Member States, it is necessary to intensify activities aimed at diversifying recipients of Polish food. Diversification should be understood as increase in deliveries of different types of products to countries with low share in export, as well as launching deliveries to new markets. Since Poland's accession to the EU, the degree of geographic diversification of Polish export has clearly increased. Polish food is sold to an increasing number of countries, and the exported product range is more and more diverse. However, the process of diversification is slow. Its intensification requires a number of activities, undertaken both by producers, as well as the public administration.

Support for foreign expansion of food producers from public funds

The process of expansion to foreign markets, including, above all, markets outside the EU, requires the producers and exporters to sustain additional costs. They often constitute a barrier in undertaking such activities. Therefore, actions undertaken by public administration and cooperation in this field with embassies are also important. These actions are to facilitate access to new foreign markets and ensure a stable, predictable and clear control environment, thus leading to reduction in costs and increase in sales on these markets.

The promotional activities carried out so far by the state on the food market focused on markets with a diverse potential. The following programmes were very important: "Go China"[10] and "Go Africa"[11], launched, respectively, in 2012 and 2013. These programmes were supposed to strengthen economic cooperation and increase trade between partners, among others, by substantive assistance of Polish producers with regard to economic law, business culture, etc. Other programmes of this type, initiated in 2015, are the following programmes: "Go India", "Go Arctic" and "Go Iran".

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[8] I. Szczepaniak, *System „konkurencyjność" – wybrane aspekty teoretyczne i empiryczne*. /In:/ *Monitoring i ocena konkurencyjności polskich producentów żywności (5). Synteza*, scientific editor: I. Szczepaniak, series „Program Wieloletni 2011–2014", No. 115, IAFE–NRI, Warszawa 2014, pp. 9–24.

[9] Ł. Ambroziak, I. Szczepaniak …, op. cit.

[10] http://www.gochina.gov.pl/.

[11] http://www.goafrica.gov.pl/.

In recent years, other actions were also implemented, focused on promotion of the Polish agri–food sector on selected foreign markets[12]. In the years 2012–2015, the Agricultural Market Agency (AMA) pursued, among others, the Sectoral Promotion Programme for Polish Food Specialties[13], under the systemic project of the Ministry of Economy, aiming at creation of strong brands, popular and associated with Poland all over the world. This programme covered the following states: Russia, Germany, China, France, Ukraine and United Arab Emirates. Under the programme, trade seminars and economic missions were organised, and Polish producers were ensured participation in foreign and national fair–exhibition events. In addition, since 2004, a mechanism of the Common Agricultural Policy has been in place, administered by ARR (Agency for Agricultural Market), entitled "Wsparcie działań promocyjnych i informacyjnych na rynkach wybranych produktów rolnych" ("Support for promotional and information activities in the markets of selected agricultural products"), which allows Polish producers to promote agricultural products on the markets of third countries. The actions can be in 80% subsidised from public funds[14].

Another action intended to build a good image of Poland and promote Polish food abroad was also the participation of Poland in the World Exhibition EXPO 2015[15] in Milan. Its key assumption was to promote the food industry, supporting Polish producers in searching for new markets and establishing permanent commercial relations with foreign partners.

In addition, exporters could be helped through some institutional changes related to support of export, e.g. establishment of one consolidated institution responsible for such actions, or increase in the number of Departments of Trade and Investment Promotion in those countries and regions, where their number is insufficient.

Preferential trade agreements between the EU and third parties

The commercial policy is currently considered to be the basic element of economic policy of the EU, which is supposed to stimulate economic growth and create jobs within the area of the EU. The EU seeks to strengthen the economic cooperation by concluding trade agreements not only with developed countries, such as: The United States, Canada, South Korea, Japan, but also with countries with a lower level of economic development (Vietnam, India, Thailand, Mercosur), or with other developing countries.

The highest spot in the hierarchy of trade preferences is taken by the agreement establishing the European Economic Area (EEA). Even though EEA is a free trade area (and thus not a customs union), with regard to industrial goods, it provides Norway, Lichtenstein and Iceland with access to the EU market on the terms similar to those prevailing on the Single European Market[16]. Slightly lower in the hierarchy are the customs unions concluded between the EU and Turkey, Andorra and San Marino. In the recent years, quite common are also association agreements, signed with countries, with which the Union wants strengthen its bonds due to historical or geopolitical reasons. The EU concluded Stabilisation and Association Agreements (SAA) with countries of the Western Balkans (Albania, Montenegro, Macedonia, Serbia, and Bosnia and Herzegovina). The Mediterranean association agreements (EuroMed)

[12] M. Bułkowska, *Otwarcie polskiego sektora rolno–spożywczego na kraje spoza UE*, „Przemysł Spożywczy" 2016, No. 5.

[13] The Ministry of Economy regarded the following as Polish food specialties: prepared or preserved red and poultry meat, meat products, fruit and vegetable juices, as well as other prepared or preserved fruit and vegetables, dairy products and cheeses, grain mill products, bread, pastries and cookies, pastas, tea and coffee products, cocoa, chocolate and confectionery, vodkas, ciders and other fruit wines, non–distilled fermented beverages and beer.

[14] https://www.arr.gov.pl/.

[15] https://www.expo.gov.pl/.

[16] Ł. Ambroziak, *Unijny system preferencji celnych w przywozie do Unii Europejskiej*, „Unia Europejska.pl" 2013, No. 6.

regulate commercial relations between the EU and the Mediterranean countries (Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, Palestinian National Authority and Tunisia). The binding agreements also include those establishing a deep and comprehensive free trade area (being part of association agreements) with Georgia and Moldova, as well as with Ukraine. Negotiations were also completed concerning establishment of a deep and comprehensive free trade area with Armenia, but the process of its implementation was suspended (Tab. 2).

A separate category is formed by economic partnership agreements, concluded by the EU with the countries of Africa, the Caribbean Islands and the Pacific (EPA)[17]. Through their implementation, the EU undertook to support sustainable development and increase the potential supply of particular countries, foster structural transformations of their economies, diversification and improvement in competitiveness, and hence to develop trade, investments, technology and create jobs. Until the end of April 2015, the EU concluded such contracts with fifteen countries of the Caribbean Islands – Cariforum, six countries of Central America (Honduras, Nicaragua, Panama, Costa Rica, El Salvador and Guatemala), and four countries of Eastern and South Africa – ESA (Madagascar, Seychelles, Zimbabwe and Mauritius), as well as with Cameroon, Papua New Guinea and Fiji.

The EU also introduced preferential trade arrangements with Switzerland, South Africa, Mexico, Faroe Islands, Chile, Iraq, Columbia and Peru. The free trade agreement between the EU and the Republic of Korea also already entered into force. It is the first of the new type of agreements concluded with an Asian country, the broadest in terms of the number of regulated issues, which has been so far negotiated in the history of commercial relations between the EU countries and third parties.

According to the situation at the end of April 2016, the European Union completed negotiations with several countries, concerning establishment of a free trade area, but the negotiated agreements have not yet been signed nor came into force. This applies to, among others, the Comprehensive Trade and Economic Agreement (CETA) with Canada, the Comprehensive Free Trade Area with Singapore, Vietnam and Ecuador. In addition, the EU completed negotiations concerning economic partnership agreements (EPA) with fifteen countries of West Africa – ECOWAS (Benin, Burkina Faso, Cape Verde, Gambia, Ghana, Guinea, Guinea–Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, Togo and Mauretania), with six countries of the Southern African Development Community – SADC (Angola, Botswana, Lesotho, Mozambique, Namibia and Swaziland), five countries of the East African Community – EAC (Rwanda, Burundi, Kenya, Tanzania and Uganda)[18]; see: Tab. 2.

In addition, the EU still conducts negotiations with several countries, concerning establishment of free trade areas. Since July 2013, the Transatlantic Trade and Investment Partnership (TTIP) has been negotiated with the United States. This agreement is potentially the largest regional free trade agreement in history, covering a number of issues within bilateral economic cooperation, going beyond the scope of traditional trade agreements, involving merely liquidation of tariff barriers and other border barriers[19]. Furthermore, the EU conducts negotiations with Japan, Thailand, Malaysia, India, and Mercosur countries.

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[17] E. Kaliszuk, *Wspólna polityka handlowa UE w latach 2007–2008. Wyzwania i rozczarowania*. /In:/ *Polityka gospodarcza Polski w integrującej się Europie 2007–2008. Raport roczny*, scientific editor: J. Kotyński, IBRKK, Warszawa 2008.

[18] Data of the Directorate General for Trade of the European Commission: http://ec.europa.eu/trade/policy/countries–and–regions/ (accessed at 4.05.2016).

[19] Ł. Ambroziak, M. Bułkowska, *Całościowe Gospodarcze i Handlowe Porozumienie z Kanadą (CETA) oraz Transatlantyckie Partnerstwo w dziedzinie Handlu i Inwestycji (TTIP) a konkurencyjność polskich producentów żywności*. /In:/ *Konkurencyjność polskich producentów żywności i jej determinanty (1)*, scientific editor: I. Szczepaniak, series „Monografie Programu Wieloletniego 2015–2019", No. 11, IAFE–NRI, Warszawa 2015, pp. 88–113.

Table 2. Free trade agreements of the European Union (as at 30.04.2016)

Binding agreements	– EEA – Iceland, Liechtenstein, Norway – Customs Unions – Turkey, Andorra and San Marino – Stabilisation and Association Agreements – SAA (Albania, Montenegro, Macedonia, Serbia, Bosnia and Herzegovina) – Mediterranean Association Agreements – EuroMed (Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, Palestinian National Autonomy, Tunisia) – Economic Partnership Agreements (EPA): – EPA Cariforum (15 countries of the Caribbean Islands: Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Dominican Republic, Grenada, French Guyana, Haiti, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Surinam, Trinidad and Tobago) – EPA ESA – Eastern and Southern Africa (Madagascar, Seychelles, Zimbabwe, Mauritius) – EPA Pacific (Papua New Guinea, Fiji) – EPA Central America (Costa Rica, Salvador, Guatemala, Honduras, Nicaragua, Panama) – EPA Cameroon – Columbia and Peru – Georgia and Moldova – Ukraine (Deep and Comprehensive Free Trade Area – DCFTA) – South Korea (Deep and Comprehensive Free Trade Area – DCFTA) – other free trade areas: Switzerland, South Africa, Mexico, Faroe Islands, Chile and Iraq
Negotiated agreements that came into force	– Canada (Comprehensive and Economic Trade Agreement – CETA) – EPA ECOWAS – West Africa (Benin, Burkina Faso, Cape Verde, Gambia, Ghana, Guinea, Guinea–Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, Togo and Mauretania) – EPA SADC – Southern Africa Development Community (Angola, Botswana, Lesotho, Mozambique, Namibia, Swaziland) – EPA EAC – East African Community (Burundi, Kenya, Rwanda, Tanzania, Uganda) – Ecuador – Singapore – Vietnam
Agreements under negotiations	– USA (Transatlantic Trade and Investment Partnership – TTIP) – Thailand, Malaysia – Mercosur (Brazil, Argentina, Paraguay, Uruguay, Venezuela) – India – Japan

Source: prepared on the basis of data of the Directorate General for Trade of the European Commission, and M. Bułkowska, *Potencjalny wpływ umów bilateralnych na wzrost gospodarczy UE – przewidywane skutki dla polskiego sektora rolno–spożywczego*, Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu, 2016, in print.

Cooperation of veterinary services

In the case of agri–food products, non–tariff barriers constitute an important barrier in export to third party countries. The possibility of exporting a particular product of animal origin to a third country depends on the company having the right to sell products on this market. Such rights are given by the Poviat Veterinary Officer. Their obtaining often depends on an inspection conducted by the veterinary

inspectorate of the third country. The efficiency of the whole procedure depends on the nature of cooperation of veterinary services of the two countries – Poland and the country of the importer.

Good organisation of the exporters' environment

In order for Polish producers to be able to compete with other EU states on the markets of third countries, it is necessary to ensure good organisation of exporters, which would guarantee good quality and stability of deliveries. Cooperation is necessary to limit competition between domestic producers, thanks to which they will be able to more effectively compete with producers from other states. As long as Polish exporters do not increase sizes and uniformity of food products batches they can offer at a time to foreign recipients, the development opportunities of Polish export of agri–food products to distant markets will be severely limited.

Building strong brands of Polish products

A challenging task for contemporary companies is building and maintaining a strong competitive position on the national, but also international market. It requires outstanding resources and competences comprising the competitive potential of companies, selection of effective competition strategies and instruments. The brand is this type of intangible resource of a company, constituting a strategic component of its competitive potential. A strong brand is also an important instrument of competing not only for end buyers, but also for commercial partners. It gives the company an advantage in trade negotiations and helps to, e.g., persuade buyers to purchase its products[20].

Conclusion

The analysis of the results of foreign trade in agri–food products since Poland's accession to the European Union demonstrates that, despite many constraints, export of these products is developing dynamically, and the positive balance of commercial turnover increases its value. General growth in trade resulted not only from growth in sales to EU countries, but also from the growing diversification of foreign markets. The Union European is and will be the largest recipient of Polish food products (currently with share in export at the level of ca. 80%), but the main drive for growth in the future seems to be expansion onto non–community markets, among others, to Asia, Africa, North America and the Middle East. These markets are certainly promising, characterized by a growing economic potential, offering the possibility of selling larger quantities of products in a more profitable way. Increase in export of Polish food to the countries from outside the EU will be in the years to come fostered not only by external conditions, but also by internal factors, such as good quality of Polish products, their competitive prices and European origin. On the other hand, cultural barriers may prove to be a significant hindrance, impeding adjustment of products and marketing strategies to the needs of these markets.

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[20] J. Bednarz, *Marka jako źródło przewagi konkurencyjnej przedsiębiorstw przemysłu spożywczego*. /In:/ *Konkurencyjność polskich producentów żywności i jej determinanty (1)*, scientific editor: I. Szczepaniak, series „Monografie Programu Wieloletniego 2015–2019", No. 11, IAFE–NRI, Warszawa 2015, pp. 114–134.

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4. Bednarz J., *Marka jako źródło przewagi konkurencyjnej przedsiębiorstw przemysłu spożywczego*. /In:/ *Konkurencyjność polskich producentów żywności i jej determinanty (1)*, Scientific editor: I. Szczepaniak, series „Monografie Programu Wieloletniego 2015–2019", no. 11, IAFE–NRI, Warszawa 2015.
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7. http://ec.europa.eu/trade/policy/countries–and–regions/.
8. http://www.goafrica.gov.pl/.
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ENERGY SECURITY OF UKRAINE AND THE EUROPEAN UNION ROLE

Summary

The paper describes the main trends of development of world energy. The current state of the energy market in Ukraine and other countries is analized. The main problems of the energy sector are highlighted on the basis of the analysis of the European Union energy policy. The essence and role of legislative and regulatory documents of the European Union and Ukraine in the energy sector are disclosed. The basic directions of diversification of energy supply in the context of cooperation between Ukraine and the European Union are presented. The purposes and the tools to implement the Roadmap are determined. Sources of funding for activities and projects in the field of energy conservation and energy efficiency are analized. Priorities for solving energy problems and ensuring energy security of the internal and external energy market are proposed.

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Introduction

The energy sector is one of the areas of cooperation between Ukraine and the European Union (EU), based on shared interests, mutual parties, interdependence and supported by a number of legislative and regulatory acts and policies, under which full integration into the European energy space is ensured.

Based on analysis of fuel and energy complex Ukraine, one can identify important patterns and trends of both global and national power. In today's globalization process the attention focuses on the energy security of both Ukraine and the European Union, as it is the foundation of economic and national security. The system of energy security is objectified in the energy policy of each state by adding the concepts, principles and plans of the industry.

The main driving force of the world economy is energy. This fact suggests industrial revolution 19th century (commercial production and use of coal) and 20th century (oil and gas, and further development of nuclear energy). These energetic processes eventually led to radical changes in the world. In recent years, in the energy policy of the world there are new trends that set the stage for economic change in the energy industry because it is the most significant factor in the intensification of cooperation in Europe.

The ways of formation of energy security of EU and Ukraine

The modern concept of energy management system in the industry, innovation and investment in energy saving, diversification of energy are disclosed by different approaches and directions. Study of problem of energy security, project finance, innovation and investment development of industry to improve energy conservation and efficiency.

It should be noted that the issue of Ukrainian energy security requires a radical changes and it is the main condition for joining the European Union. To get the energy independence from other supplier countries, Ukraine has to achieve certain parameters to ensure the energy itself and the implementation of energy conservation, energy efficiency and diversification of energy appropriate. The above factors require consideration of European Union energy policy and its impact on the formation of Ukraine's energy security and to achieve the main objectives of public policy, which involves increasing the share of domestic production of energy resources, wider use of renewable energy and reduce foreign energy dependence by reducing energy imports. Ukraine Energy policy embodied in the Energy Strategy of Ukraine till 2030, which was approved by the Cabinet of Ministers of Ukraine on July 24, 2013 N 1071–r. The crisis in the global energy as well as in Ukraine, which emerged in the last decade, can promote the growth of investment in energy efficiency, which significantly affects the country's energy independence.

The rapid growth in demand for energy resources, unstable prices, late delivery, and reduce the negative environmental impact – are among the most important tasks of the European Union strategy and Ukraine in the sphere of energy, covering security of supply, market competition and sustainable economic development.

The analysis of European Union energy policy indicates that all measures implemented aimed at ensuring energy security and the internal and external energy market. The gradual increase in energy prices could threaten the economy of any country in Europe. That is why the European Union implements policies in the energy sector aimed at[1]:

- energy security,
- the timely supply of the EU energy and competitiveness in the energy market,
- ensuring uninterrupted energy consumers,
- develop measures for environmental protection,
- effective functioning of the energy infrastructure.

Energy consuming countries implement measures that increase its own energy security in the world markets, including[2]:

- move the United States, Canada and several European countries to the industrial production of shale gas and oil,
- Arctic exploration, offshore and deepwater oil fields for own needs and for export,
- implementation of energy projects and their financing,
- increasing oil and gas production in Europe,
- gas production from conventional, unconventional sources,
- development of industrial capacity of liquefaction and regasification of gas in the producing countries and consumers of gas,
- implementation of programs that reduce energy consumption through the widespread use of renewable energy sources (solar, wind and geothermal energy, biofuels),
- transition to thermal power coal consumption; use energy–saving technologies in industrial and municipal sectors,

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[1] EUROSTAT, *Overview,* available at: http://ec.europa.eu/eurostat/web/energy/overview.

[2] *The prospects of a new energy revolution in the world and its possible geopolitical consequences*, Independent Analytical Center for Geopolitical Studies "Borysfen Intel", 2012, available at: http://bintel.com.ua/uk/article/ perspektyvy–novoi–energetychnoi–revoljucii–v–sviti/.

- implementation of comprehensive measures for unification of energy markets and infrastructure that will efficiently redistribute energy in the event of unforeseen disruptions of supply.

Power is in the spotlight because of its strategic importance and the impact on economic growth of states. At the end of the twentieth century, the European Union faced a number of important energy issues that prompted the government to make strategic plans and implementation of national and European Energy Programmes.

European Union energy policy was formed in the 1970s of the XX century. The immediate impact for this was the oil crisis of 1973–1974's, which had caused the high rate of dependence on energy imports. By 1973, this policy was formed and carried out only in the coal and nuclear power, and now covers all energy sectors. EU energy policy is based on the principles defined in the "Paris Treaty establishing the European Coal and Steel" (1952) and laid the foundation for the unification of European countries for the purpose of capturing the energy market and institutions[3].

Ukraine's policy in the energy sector is regulated by the Energy Charter Treaty and the Energy Charter Protocol on Energy Efficiency (1994). The agreement is based on the fundamental principles of the European Energy Charter in 1991.

Thus, cooperation in the energy sector is carried out according to the principles of the European Energy Charter, "Plan of EU energy security and solidarity action", which brought together energy markets and includes the following areas of energy security:

- creation of reserves of oil and gas,
- consumption and the impact of energy production on the environment,
- prevent harmful effects of energy activities,
- improve the quality and security of energy supply, including diversification of energy resources,
- holding sustainable energy policy,
- improving management and marketing of the energy sector,
- promoting cooperation in trade growth of energy resources,
- working mechanisms to finance innovative energy projects and programs to promote energy savings and their efficient use,
- modernization, development and diversification of energy infrastructure,
- improving energy supply technologies and use of all forms of energy,
- management and technical training in the energy sector.

In 1987 the United Nations published the Brundtland Commission Report (International Commission on Environment and Development), which defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs"[4]. It was noted that the stability of state power is determined by the stability of energy supply. These definitions point to two main aspects of sustainability as energy supply and use in the European Union and in Ukraine. The first feature is related to the production of renewable energy, and the second –energy efficiency. Thus, the transition to sustainable energy states requires changes in both supply and use of energy, thus should be available the alternative sources of energy consumption and reduce harmful emissions in accordance with the standards and policies of the European Union. Sustainable energy is a major problem in most countries, which was seen under the Kyoto Protocol. Sustainable Energy aims to improve energy supply system by applying a systematic approach to energy innovation and energy efficiency in the European Union countries and Ukraine. In order to address these global issues in relevant sectors of the national economy in energy efficiency developments there are realized and future energy projects aimed at efficient use of energy resources; application of scientific advances

[3] L. Kytskay, *Energy security of the European Union and Ukraine*, "Naukovi studii" 2009, No. 6, p. 27.

[4] *Report of the World Commission on Environment and Development: Our Common Future*, UN Documents: Gathering a Body of Global Agreements, available at: http://www.un–documents.net/wced–ocf.htm.

to modernize energy consumer sectors of the economy, of housing and utilities sector at the regional and national level; development and use of advanced fuels; obtaining energy from waste industry, its transportation and efficient use for the purposes of centralized heating systems, reconstruction of buildings and other purposes; use of renewable energy based on Trias Energetica concept in the construction sector.

In 2006 the "Green Paper: A European strategy for sustainable, competitive and secure energy" is published which outlines the main principles, objectives, directions and means of dealing with energy policy. The attention is focused on stable energy supplies to the European Union from exporting countries, the liberalization of the energy market, the need for energy savings and the development of new technologies in the energy sector and the integration of environmental principles for power. The "Green Paper" states the main goals of the European energy policy, including: stability –the fight against climate change by promoting energy efficiency and the use of renewable energy; competitiveness – improving European energy grid by creating internal energy market; security of supply – controlling the supply of the EU and demand energy resources on international level.

Industrialized countries of the European Union (UK, Germany, France) significantly dependent on imports of energy resources. However, adjusted government policies is aimed at diversification of supply and the internal competitive environment of the country. It also ensured the functioning of energy markets gas and electricity (up to 2000 – United Kingdom, 1998 – liberalization of the energy market of Germany, 2000 – partial liberalization of the energy market in France from 2007 Poland introduced a free electricity market) on the basis of competitive and transparent tariff system for all stakeholders.

Thus, the energy market in the European countries started in 1990s with the adoption of a number of regulations of the European Union, and in Ukraine it started to function since 1998 with the approval "Of the Energy Charter and the Final Act to it" and the law on its ratification, which helped to significantly enhance the energy security of the European Union, enhance the competitiveness of the alliance prevent monopolization of energy, improve the environment, reduce energy prices, which one cann't say about Ukrainian energy. Creation of the Energy Charter was an important step in the formulation of a unified EU energy policy. "Green Paper: A European strategy for sustainable, competitive and secure energy" (2006) and the "Energy White Paper" (1995) were the main documents which outlined future challenges and activities of governments on energy policy, in particular on the internal energy market, ensuring consumer energy, implementation of energy conservation, energy efficiency and resolution of environmental impacts of energy and etc.

To implement the energy policy of the European Commission has adopted a number of documents, including: Strategy "Europe 2020 strategy for smart, sustainable and inclusive growth" (2010), "European Energy Security Strategy" (2014) and "European Union energy trends to 2030"and etc. It is aimed at "smart, sustainable and comprehensive growth"[5] whith enhanced coordination of national and European policies. European Union countries agreed on the implementation of commitments and ambitious policy objectives of the European Union for the period 2020–2030 in energy policy. Strategy "Europe 2020" complements "Energy Roadmap 2050" (2011). This contains all the possible ways of achieving the strategic objectives. Roadmap is part of the EU strategy in the energy sector, the main objectives and instruments for its implementation are[6]:

- ensure the competitiveness of the EU energy market, to achieve a more secure and sustainable energy system; increasing the share of renewable energy to 20%,
- reduce primary energy consumption by 20% by improving energy efficiency,
- reduce greenhouse gas emissions by 20% (2020), and then to 40% (2030) compared to 1990,

[5] *Europe 2020. A strategy for smart, sustainable and inclusive growth*, European Commission, 2010, available at: http://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%20%20007%20–%20Europe%202020%20–%20EN%20version.pdf.

[6] *A policy framework for climate and energy in the period from 2020 to 2030*, European Commission, 2014, available at: http://eur–lex.europa.eu/legal–content/EN/TXT/PDF/?uri=CELEX:52014 DC0015&from=EN.

- enhancing energy security,
- sustainable development of local energy sources, investment in the necessary infrastructure, energy saving, support for research and innovation,
- activation investment activity in the energy sector,
- development of cooperation between Member States to supply fuel and energy,
- improving the use of renewable energy, at least 27% of the total consumption of renewable sources.

European Bank for Reconstruction and Development (EBRD) in 2014 began implementing in Ukraine Sustainable Energy Lending program whith volume of 100 million US dollars. Program funding sustainable energy EBRD Board of Directors approved the board of directors of Bank in late 2013, whose goal was the introduction of international experience in the energy sector of Ukraine through energy projects and a network of Ukrainian banks. Attracting investment in energy efficient technologies the project has helped Ukraine to gradually reduce their overall energy needs and improve the environment. Program funding for sustainable energy is a continuation of the European Bank for Reconstruction and Development Ukrainian energy efficiency program (UKEEP), in which 77 successfully financed energy efficiency projects across the country in 2007–2013's. As part of one of these projects the EBRD has provided financing to leading Ukrainian fats, margarine, sunflower oil and biofuel pellets. The funds used to purchase new efficient equipment to save the company 9.1 million cubic meters of gas per year. UKEEP program has created a base for the development of carbon credit market in Ukraine.

The EBRD is the largest financial investor in Ukraine in the energy sector. Launched Program "IQ Energy" (2016) with a total loan of 75 million euros financed by the EBRD together with the Fund Eastern European Partnership for Energy and the Environment (E5P), Swedish International Development Cooperation (SIDA). The purpose of this program is improving energy efficiency in the residential sector and strengthening energy security of Ukraine. In 2016 the EBRD undertook the obligation to provide financial credit over 11 billion euros in 363 projects in Ukraine. Fund Eastern European Partnership for Energy and the Environment (E5P) allocated about 9.3 million euros, of which 1.5 million euros is an investment grant from E5P, which means to reduce, the amount of energy consumed; support costs and energy. In Ternopil, a project of reconstruction and modernization of urban infrastructure (2015–2017's) is supported by the EBRD and the Fund E5R. To implement the project the EBRD has allocated 10 million euros (irrevocable grant). Lviv it is expected to significantly improve the efficiency and environmental benefits through participation E5P to increase funding for Ukraine's first municipal biogas project "Project biogas from wastewater".

In December 28, 2015 a contract "Technical re–equipment of the 330 kV "Kirov" and 330 kV "Dnipro–Donbas'" with "A consortium ALSTOM/Cesme" (Germany/Ukraine) is signed 3.5years. The contract value is 18.1 million euro. Technical re–equipment is part of the project "Improving the efficiency of electricity transmission (substations modernization)", funding which is hold by the Government of Germany and the bank KfW. Contract is acted in cooperation "NPC "Ukrenergo" bank KfW and the German government in technical re–equipment of power facilities United Energy System of Ukraine.

Implementation of investment projects financed at the expense of European Union countries, will:

- increase the energy efficiency of Ukrainian enterprises by introducing energy–saving technologies and renewable energy,
- make the construction and modernization of electricity networks and gas transportation and gas distribution systems,
- increase the effectiveness of diversification of enterprises and the use of alternative fuels,
- strengthen the energy security of Ukraine.

However, common policy and identifying main areas of its achievement depends on the pressing challenges of energy security of the European Union member states. Perspective directions of EU energy policy determined by the nature of the energy sector in the European Union and trends in it, which can be caused by its expansion. EU energy sector analysis indicates significant dependence on

energy imports. According to expert estimates, the total European Union dependence on energy imports to 2030 could rise to 70%.

Thus, energy security is a state of energy that ensures safe technically and economically the current and future needs of customers in the energy and environmental protection[7]. Energy danger resulting from acute shortage of energy resources, wasteful use of energy, excessive dependence on imports, irrational deregulation and privatization of the energy system of the state. Under the energy security one can to understand the state's ability to provide end–users of energy in sufficient quantity and adequate quality in normal conditions.

Strategic directions of reforming the energy security of EU and Ukraine

The author of the work Y.V. Dzyadykevych notes that the main factors that led to critical energy security are[8]: lack of investment, excessive politicization of the energy sector, poor tariff and tax policy in the energy sector; not competitive energy market; monopoly pricing for energy and others.

In our view, the stability of the economies of the European Union and Ukraine is largely dependent on the task compatible energy supply customers in all sectors of the economy. Insufficient amount of their energy force governments to make decisions on significant imports. Analysis of Research in Energy National Institute for Strategic Studies showed that in a contraction of world's reserves of energy resources and increase in their prices on a national and international level solve energy problems, such as improving the process in terms of energy intensity of production, the development of energy efficiency, expand production generation by renewable energy and implementation of innovative investment policy.

Fossil fuel prices remain high, which negatively affects the energy balance and expenditure of the European Union. For example, in 2012 the cost of EU gas imports amounted to over 400 billion euros. Many consumers use fuel and energy products more efficiently and save energy and save financial resources. However, energy costs are expected to increase over the period to 2030 to a level of about 14% of gross domestic product (GDP) compared to 12.8% in 2010. This state of energy during the crisis situations of different countries allowed their governments to take radical, sound management decision to increase restructuring costs of housing and utilities and energy sector, energy conservation, energy efficiency and the development and implementation of efficient energy projects. So, in period to 2030, considerable attention must be paid to innovation and investment activities of power industry and the implementation of energy projects as in the European Union, Ukraine and as in the world.

The new energy management system the European Union and Ukraine must be based on national plans in this area, which involves investments (construction of new pipelines, power grids and energy efficiency technologies), enhance transparency and a coordinated policy in the EU. All costs aimed to replace the outdated energy system.

The economic security of the country by the energy component, in particular, the priority of national interests, which may be provided by an efficient international cooperation. This is especially necessary to take into account when determining the main directions of domestic and foreign policy on the development of the energy industry. This relationship should be established economic development and energy security, which is a very topical problem. The intense human pressure on the natural system has reached critical limits that adversely affects the ecological and economic stability of nations. In Ukraine there is a structure irrational use of energy in industry, energy and dominance intensive technologies. The effective solution of such problems will make it possible to combine economic growth and energy

[7] *Zakon Ukrainy Pro elektroenerhetyku*, Vidomosti Verkhovnoi Rady Ukrainy, 1998, No. 1, available at: http://zakon5.rada.gov.ua/laws/show/575/97–%D0%B2%D1%80.

[8] Y. Dzyadykevych, *The ways of guaranteeing the energy security of Ukraine*, "Innovatsijna ekonomika" 2014, No. 3 (52), pp. 25–26.

security, which will be based on the coordination of social, economic and environmental factors for the functioning of social production through optimization of its energy supply. The restructuring of the economy, including industry Ukraine should be based on economic integration and energy policies and strategies to enter into effective economic reforms. This activity is related to the introduction of new ecologically safe technologies, production of competitive products. Branch structure of industrial production must meet international standards and the needs of the economy and state power, to increase the volume of production. Application of energy–saving technologies increase competitiveness of production and energy efficiency, promoting economic stability in the country. The effects of large–scale changes in society show that along with the trend of increasing energy security have negative developments that may destructive impact on national security.

Certain historical type of state meet its peculiar type of energy security. It can be seen as the state's ability fully to ensure the functioning of the national economy bases its resource extraction and energy generation. Ukraine's energy security depends on the diversification and development of new energy sources, the efficiency of their use and conservation of progressive trends in the technological modernization of energy–intensive industries, the development of high–tech industries and economic restructuring. Ukraine, as a member of the Energy Charter Treaty, should use all opportunities to achieve open and competitive markets, a favourable investment climate, good safety and efficiency of production and consumption.

Thus, the strategic priorities for reforming Ukraine's energy security are:

- the monopolization of the energy market,
- fighting corruption schemes,
- modernization of energy infrastructure,
- attracting investments in the energy sector,
- of integrated communication campaigns for reforms of the Government of Ukraine on energy efficiency,
- revitalization and investment and support of investors,
- grid integration of Ukraine in the European electricity market,
- house accounting of consumed resources,
- certification of energy efficiency of buildings,
- energy efficiency measures in the residential sector and etc.

The European energy market has achieved considerable success in its development, based on simple and generally accepted principles: competition, energy efficiency and safety. It should be noted the main trends in energy supply of the EU:

- strategic planning of energy technologies,
- coherent external energy policy,
- development of its energy base, demand management, increased energy efficiency and finding new ways of energy supply,
- the gradual implementation of the principle of management of external dependence by ensuring the reliability of supply and mutually beneficial international cooperation,
- preserving access to coal reserves,
- optimization of energy and increasing the share of renewable energy in total energy consumption,
- improving safety and environmental acceptability of energy production.

In 2012 Directive 2012/27EU of the European Parliament and of the Council on energy efficiency is adopted, which analyzed the issue of optimal energy savings in 2030. The main objectives of energy efficiency in the EU are: the establishment of energy efficiency based on primary or final energy consumption, energy efficiency or energy intensity. Analysis of sections of Directive and basic energy indicators allows the following conclusions:

- energy consumption in the EU in 2020 should not exceed 1.474 billion t not primary energy or no more than 1.078 billion t of final energy,
- implementation of planned energy saving measures and other measures to encourage energy efficiency in the EU,
- consideration of Member States national circumstances affecting primary energy consumption (remaining cost–effective energy saving potential, dynamics and forecasts for GDP, changes in imports and exports of energy development of all renewable energy sources, nuclear energy, carbon capture and storage, etc.),
- the Commission assesses the progress made, and whether the Union is to achieve in 2020 the relevant rules of energy (1474 million t is not a primary energy 1,078,000,000 t final energy),
- exercise implementing National Action Plans for Energy Efficiency,
- encouraging the creation of new cogeneration power plants and promotion of existing ones,
- consideration based on analytical data, evaluating developments in energy consumption as well as energy consumption in relation to economic activity at European Union level; forecasting results compared with future trends in energy consumption at the level of the Union; compare the results with energy consumption in 2020.

With the adoption of Directive 2012/27EU European Parliament and of energy Rada amended the Directive 2009/125/EU, 2010/30/EU and repealing Directive 2004/8/EU and 2006/32/EU. In the European Parliament says that member states should promote and encourage the creation of new cogeneration power plants and promotion of existing ones. Implementation of these measures will contribute to maintaining a highly efficient cogeneration plants that help reduce greenhouse gas emissions and the sustainable development of countries. The Directive encourages the establishment of national support schemes for cogeneration European Union member states, including Belgium (green certificates scheme, quotas for cogeneration), Spain (Decision on sale of electricity cogeneration plants) and Germany (Cogeneration Act)[9]. Directive 2003/87/EU on emissions trading allows countries to stimulate their discretion cogeneration power by providing additional permits for greenhouse gas emissions. Preference is given with power plants that have efficiency, higher than the national average rate.

The main problem of the energy market is national isolation of power networks, power lines or gas pipelines. Governments and companies in each country importing energy independently negotiate with sellers of energy. EU cooperation in the energy sector will lower purchasing prices and improve the efficiency of energy supply. In this respect, Europe is losing every year to 40 billion euros.

The global energy market, each European Union countries conducts its own energy policy. For example, Germany is actively developing renewable energy and nuclear energy offset projects, and France, on the contrary.

The European Commission plans to establish or expand imports of natural gas from Norway, Algeria, the United States, Azerbaijan, Turkmenistan, potentially from Iran and Iraq. The amount in liquefied natural gas supplied to Europe by sea is increased. Today the concepts of a common system of procurement of gas are developed. Some states can not regulate and monitor energy markets and to compete with international companies, thus producing a long–term energy policy. Tendencies of globalization concentrate in the energy business, the growth of energy consumption in the companies controlling international energy markets. International structures form the world energy market, manage pricing system in the energy sector.

The main world producers of energy resources is the Middle East and North Africa (MENA), which it is concentrated 65% of global oil reserves, of which is produced 44% of the world; 45 global stocks of

[9] *Stepping up EU energy efficiency efforts–EUR–Lex*, 2012, available at: http://eur–lex.europa.eu/legal–content/EN/TXT/HTML/?uri=URISERV:l27021&from=EN.

gas produced – 25%. MENA oil and gas facilities and other mining areas requiring significant investments for modernization: experts estimate that only MENA 2030 will require 1.5 trillion US dollars[10].

Energy is a major support of European stability and security. EU energy consumption is 17% of the world, and the production of primary energy is 9%. The EU imports on average 50% of the necessary energy: Germany – 61.4%; Austria – 64.7%. European Union exports 85% oil, 40% natural gas, 35% coal. The main problem of some countries in the energy sector is dependent on energy imports, for example, in 2020 the EU's dependence on oil imports will rise to 90%, gas to 65% and coal – to 65%. By 2030 natural gas consumption could increase by almost half – to 700 billion. Cube. m. Currently, European countries provide its gas needs from its own resources by 37%, a share of it is added by Norway and Algeria.

Conclusion

Thus, it should be noted that the European Union, Ukraine and other countries are able to provide itself with its own energy resources, to implement their sustainable use and to ensure its energy security. In order for Ukraine to become a full–fledged European, competitive state in the energy it is necessary to reach certain parameters to ensure the energy itself and the implementation of appropriate diversification of energy sources.

Energy policy of the European Union aims to ensure their economic security. Energy Projects should focus on the efficient use of fuel and energy resources. Implementation of investment projects in the Ukrainian energy sector will improve its energy efficiency. Ukraine's energy security should cover the following areas: implementation of the development strategy of energy markets, energy cooperation with the European Union, diversification of energy sources and objectives of the Energy Strategy of Ukraine till 2030.

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[10] L. Chekalenko., *EU–Ukraina: enerhetychna zalezhnist*, "Viche" 2009, No. 18, available at: http://www.viche.info/journal/1639/.

7. *Directive 2012/27EU of the European Parliament and of the Council on energy efficiency*, "Journal of the European Union" 2012, Vol. 55, available at: http://ua.heating.danfoss.com/PCMFiles/65/other_files/DirectiveEU_27–2012–UKR. pdf.
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DISPARITIES BETWEEN MALE AND FEMALE EARNINGS IN POLAND

Summary

The paper discusses disparities between male and female earnings and the reasons for the gender pay gap. The main reasons for the gap are the low share of women in the highest, best–paying managerial positions, a disproportionate concentration of women in lower paying jobs, stereotypes of women's lower availability and their readiness to accept lower wages. Another reason may involve wage discrimination against women.

The Labour Code prohibits any form of discrimination, but in justified cases also admits differentiation between the wages of employees performing the same work under the same conditions. This differentiation may depend on the situation on the local job market, competitiveness and shortages of specific occupations in this market or regional differences in the cost of living. Across the EU, women on average earn about 16% less per hour than men. In Poland, the gender pay gap has been regularly closing. In 2014 it stood at 17.7%. The largest wage disparity occurred in the financial and insurance industries, other service activities, trade, information and communication technology.

* * *

Introduction

Ensuring equality of male and female employment and wages is an essential precondition for the economic development of each and every country. Yet, the gender pay gap continues to be large. It remains much higher in less developed countries. In statistics, the pay gap is viewed as the difference between the average gross earnings per hour of work of men and women compared to the hourly wage of men. In the European Union, the data concerning the gender pay gap are based on the Structure of the Earnings Survey abbreviated as SES. The difference between male and female wages is officially called "gender pay gap in unadjusted form" and does not take into account all of the factors that affect its size, such as differences in education, experience, number of hours worked or the specific nature of the job. The hourly wage as the basis for calculating the pay gap between men and women may also be distorted, e.g.by bonuses, performance related benefits or season related perks and benefits.

The paper aims to show the size of the pay gap in Poland in various areas of economic activity and determine the underlying reasons. The discussion is based on the hypothesis that the pay gap in Poland

is steadily closing, like in many developed countries. This is caused by a number of objective reasons, although it may be due in part to wage discrimination against women.

The essence and types of discrimination

The concept of discrimination and its types are set out in the general provisions of the Labour Code. Its article 18(3a).1 stipulates that employees should be treated equally as regards both the establishment and termination of employment, terms and conditions of employment, promotion and access to training enhancing professional qualifications, particularly without prejudice on the grounds of gender, age, disability, race, religion, nationality, political preference, trade union membership, ethnicity, religion, sexual orientation, as well as regardless of whether employment is for a fixed or indefinite period, be it full or part–time[1]. Equal treatment of employees means non–discrimination in any manner, either directly or indirectly, on the grounds of any of the above reasons. A direct form of discrimination occurs when –in a comparable situation – an employee was, is or could be treated less favourably than other employees for one or several reasons specified in art. 1". Some forms of discrimination can be easily proved. These relate to regular wage increments, lower bonuses or with holding them from employees, even though they have adequately met all the criteria. One distinctive form of discrimination involves hiring workers on part–time contracts– even though they work longer than set out in their employment contract, they do not receive pay for the work."[2]

Indirect discrimination is said to occur when, due to a seemingly neutral decision, criterion or action undertaken, there occur, or could occur, unfavourable disproportions or a particularly unfavourable situation in terms of employment, promotion and access to training enhancing occupational skills affecting either all or a substantial number of employees belonging to a certain group. The bias may be based on one or several grounds as laid down in art. 1, e.g. gender. "Identification of indirect discrimination is much more complex, since it involves a situation in which, by a supposedly neutral act (provisions, regulations, selection criterion, etc.) which is not directly related to the characteristics protected by law there occur differences in the actual treatment of persons and the effect is actually discriminatory."[3]

The principle of equal opportunities in labour relations means that employee's opportunities must not be differentiated on the grounds of discriminatory criteria. In practice, a one–of or ongoing discrimination occur. One–off discrimination is a singular act targeted at an individual. On the other hand, ongoing discrimination manifests itself in a number of discriminatory measures that continuously exclude an individual in certain circumstances. In practice, ongoing discrimination occurs on the grounds of gender, age, disability, sexual orientation, union membership or other characteristics listed in Article 18(3a).1 of the Labour Code[4]. Ongoing discrimination may occur on the grounds of several qualities simultaneously. A classic example of ongoing discrimination involves obstacles to women returning to work after their maternity or child rearing leave. After their return to work, women are often moved to a different position and paid lower wages. They can be moved several times and end up having their contract terminated. Women are usually dismissed within the framework of collective redundancies. Such management practices can be treated as manifestations of on–going discrimination.[5]

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[1] *Kodeks pracy*, stan na grudzień 2016, http://kodeks–pracy.org/I–przepisy–ogolne/rowne–traktowanie–w–zatrudnieniu.

[2] Z. Sekuła, *Struktury wynagradzania pracowników*, Oficyna a Wolters Kluwer business, Warszawa 2011, p. 60.

[3] *Równość szans kobiet i mężczyzn a rynek pracy. Poradnik dla Instytucji Rynku Pracy*, scientific editors: M. Borowska, M. Branka, Centrum Rozwoju Zasobów Ludzkich, Warszawa 2010, p. 56, http://phavi.umcs.pl/at/attachments/2014/0213/085637–poradnik–rownosc–szans–branka.pdf (accessed 15.11.2016).

[4] *Kodeks pracy* …, op. cit.

[5] *Ustawa z 13 marca 2003 roku o szczególnych zasadach rozwiązywania z pracownikami stosunków pracy z przyczyn niedotyczących pracowników*, Dz. U nr 90, poz. 844 z późn. zm.

Pay as a tool of discrimination

Employees are entitled to equal pay for equal work or work of equal value. Such pay includes all the components of remuneration, regardless of their name and character, or other work related benefits granted to employees in the guise of money or any non–cash perks. Work of equal value relates to jobs whose performance requires comparable professional qualifications and work experience from the employees, as well as comparable responsibility and effort. An individual whose employer breached the principle of equal treatment in employment is entitled to receive damages equivalent at least to the minimum wage determined on the basis of separate regulations. The exercise by the employee of his/her rights arising from a breach of the principle of equal treatment in employment must not lead to unfavourable treatment of the employee or justify his/her dismissal.[6]In some cases, male and female employees do not receive the same pay, despite performing equal work or work of equal value. This may be indicative of direct discrimination implying that women are simply treated less favourably than men. It can also result from a policy or practice which – although not designed to discriminate– causes unequal treatment of men and women.

The Labour Code permits differentiating between the wages of employees whose contract of employment provides for different duties, or the same duties but performed differently, as a result of employee's personal qualities. Sometimes employees occupying the same positions are not in exactly the same situation so as to justify equal pay. The length of their service, their qualifications and the job itself may all differ. They can differ in terms of numerous other factors affecting the work they perform e.g. factors associated with the economic environment. Therefore the principle of equal pay for equal jobs cannot be viewed as an absolute principle. Economic factors can therefore be the basis for wage differences among employees performing the same job. One should note that in addition to the quantity and quality of work performed, wage differentiation can be justified by the situation on the labour market which may impose the need for higher wages for work for which there is heavy demand on the local labour market and by an employer's expectations, such as mobility and increased availability, readiness to work in different places and during flexible working hours.

Undoubtedly, the following economic factors justify differences in pay:

- unemployment rate and its structure on the local job market,
- competitiveness and shortage of employees on the local market, which force employers to offer higher pay for a given job than in other regions. This justifies differences in pay between different parts of Poland,
- regional differences in living costs.

Wage discrimination can manifest itself in both the basic pay and perks and benefits. Discrimination relating to the basic pay destroys its motivational function. Pay not only motivates employees to improve efficiency in the area of operations, but is also a tool for integrating and motivating employees to implement the company's strategy. It is not only the level of wages that has a motivational value, but also the way in which this level is determined. Temporary form of wages motivates the least, because it links the effects of the employee's work with the wage level the least. A stronger incentive comes from pay based on: bonuses, piece work, piece–bonus work, day's work–task or commission–based pay. Bonus–based pay strengthens employees' motivation to achieve specific goals in the short term. It is complementary to time worked pay and piece based pay. A bonus can be obtained if and when employees meet pre–determined and validated criteria. The advantage of the piece–based pay system is that it effectively motivates employees to maximise performance, as the pay is dependent on such performance. Performance–related commission is a particularly popular form of pay in sales jobs. Pay is based on the value of trade transactions arranged by the employee and constitutes a percentage

[6] *Kodeks pracy* …, op. cit.

of the transaction value. The number of customers or new customers can also constitute the basis of calculation. Employees have control over the amount of their pay, while pursuing the objectives of the organisation for which they work. Another increasingly popular form of pay in Poland is the cafeteria form, also dubbed the flexible wage system. Under it, employees are offered various privileges from which they choose those they find the most appealing. Typical types of benefits under this system include a cell phone, company car, computer, home furnishings, rental of an apartment, insurance, medical check–ups, free meals, extra vacation days, child education allowances, sports activities, trips or holidays.[7]

Company employees differ a lot in terms of their needs, goals and hierarchy of values. All of these also determine the feelings around discrimination. In contrast to pay, which is a measurable and visible tool of discrimination, intangible motivators are more difficult to assess. "In terms of what they relate to, intangible motivational tools can be divided into organisational, psychological and technical ones."[8] Organisational tools involve an array of different forms of work organisation including flexible working hours, promotions or professional development. These forms are of particular importance for women burdened with family responsibilities. Household chores are repetitive and monotonous, hence preventing the monotony of work can help women increase efficiency and job satisfaction. "The possibility of development by way of enriching one's knowledge, capacity to shape values, attitudes, motivation and skills, and taking care of the physical and mental condition is undoubtedly an important motivator for employees. All these undertakings lead to increased job efficiency and the market value of human resources."[9]

Psychological methods of discrimination against women can involve the use of praise, recognition, power, access to information and execution of challenging projects for the company or self–actualisation. Technical tools include the possibility to work with newer machines and equipment, access to the latest generation software, properly organised workplace.[10]For women to feel less discriminated against, supervisors must have knowledge of personality traits and adopt and individualised approach to each employee.

Wage disparities in the business economy in selected countries and Poland

In the EU, women, on average, earn 16 % less per hour than men[11]. The pay gap between men and women varies from country to country. In recent years, the overall pay gap has narrowed significantly. The data in Table 1 allowed assessment of the wage disparities in 2007 –2014 in a number of countries. In most cases, wage inequalities decreased during the period but the decrease was not uniform.

In terms of the direction and pace of change in the pay gap, the analysed countries can be divided into two groups:

1. Countries where the wage disparity in 2014 was lower compared to2007, but the degree of decline varied. This group includes three distinctive sub–groups:

- countries in which the disparity decreased by up to 3 percentage points (Austria, Belgium, Switzerland, Germany, Denmark, Estonia, Finland, Hungary, Luxemburg, Latvia, Malta, Norway, Slovakia),

[7] A. Pocztowski, *Zarządzanie zasobami ludzkimi*, PWE, Warszawa 2003, pp. 374–378.
[8] Cz. Zając, *Zarządzanie zasobami ludzkimi*, Wyd. Wyższej Szkoły Bankowej, Poznań 2007, pp. 139.
[9] A. Pocztowski, *Zarządzanie zasobami ludzkimi*, PWE, Warszawa 2003, p. 294.
[10] Cz. Zając, Cz. Zając, *Zarządzanie zasobami ludzkimi*, Wyd. Wyższej Szkoły Bankowej, Poznań 2007, p. 139.
[11] *Przeciwdziałanie różnicy w wynagrodzeniu dla kobiet i mężczyzn w Unii Europejskiej*, Luksemburg, Urząd Publikacji Unii Europejskiej, 2014, http://europa.eu, (accessed 15.11.2016).

Table 1. Wage disparities in the business economy in selected countries in 2007–2014

Country/year	2007	2008	2009	2010	2011	2012	2013	2014
Austria	26.7	26.2	25.5	25.2	24.9	24.6	24.3	24.3
Belgium	15.3	15.2	15.1	15.1	15.1	15.0	15.0	14.9
Bulgaria	12.6	13.2	14.5	14.1	13.5	14.9	14.2	13.5
Switzerland	:	23.5	23.5	23.0	22.8	22.1	22.1	:
Cyprus	29.4	27.6	27.0	26.1	25.5	25.5	25.2	24.8
Czech Republic	24.5	21.1	21.0	16.1	16.1	15.0	15.0	15.7
Germany	26.0	26.0	26.0	25.7	25.7	25.6	24.9	25.0
Denmark	16.7	16.2	16.8	18.8	18.4	17.6	17.1	16.5
Estonia	30.5	28.3	27.7	28.5	26.9	28.9	29.0	27.4
Greece	20.5	21.9	:	19.7	:	:	:	:
Spain	22.8	21.3	22.7	22.4	23.7	24.1	23.8	23.8
Finland	19.4	19.9	19.8	19.4	18.7	18.6	17.9	17.1
France	16.8	17.0	15.6	15.6	14.4	14.1	14.0	13.5
Hungary	16.8	15.9	15.0	15.4	14.4	15.7	13.9	14.1
Ireland	25.8	21.6	21.4	22.7	20.8	20.6	:	:
Iceland	24.3	21.5	18.9	16.5	17.3	17.5	19.2	19.5
Italy	16.4	16.0	16.1	15.8	14.6	14.8	15.6	13.2
Lithuania	25.9	25.2	21.4	19.1	16.7	16.6	16.3	16.8
Luxemburg	15.3	14.8	14.2	13.7	13.6	13.6	13.3	13.2
Latvia	17.8	15.5	17.2	17.0	14.3	14.3	14.4	15.4
Malta	14.9	18.5	16.2	15.5	15.0	14.6	13.6	12.9
Netherlands	19.5	19.9	18.5	17.7	23.1	22.2	21.7	21.6
Norway	19.3	19.6	19.6	19.7	18.6	17.7	17.8	17.6
Poland	21.5	19.7	17.9	16.1	15.9	15.6	16.7	17.7
Portugal	21.4	22.6	21.0	22.8	20.2	21.4	20.9	22.0
Romania	13.3	11.2	9.8	6.9	8.5	7.4	8.0	8.7
Sweden	16.9	15.6	13.7	12.9	12.5	12.1	11.3	10.5
Slovenia	11.3	10.6	6.7	6.9	7.6	7.0	7.1	6.7
Slovakia	23.9	20.8	22.4	20.2	19.6	22.0	20.7	21.8
United Kingdom	24.0	24.3	23.1	22.8	23.3	21.5	22.0	20.0

Source: http://ec.europa.eu/eurostat/cache/metadata/en/earn_grgpg2_esms.htm#stat_pres1475670346324 (accessed 2.10.2016).

- countries in which the decrease in wage disparity stood at between 3.1 and 6.0 percentage points, (Cyprus, France, Ireland, Iceland, Italy, Poland, Romania, Slovenia, United Kingdom),
- countries in which the wage disparity narrowed by over 6 percentage points (Czech Republic, Latvia, Sweden).

The largest decrease in the pay gap between men and women occurred in Lithuania, where it declined from as much as 25.9% in 2007 to 16.3% in 2013, i.e. by 9.6 percentage points although in 2014 the gap widened slightly to 16.8 %. During the period, a big drop was reported in the Czech Republic, where the disparity reached 8.8 percentage points, although prior to 2013 it declined steadily from 24.5% to 15.0%, only to increase slightly to 15.7% in the last year of the research period. Notice must also be taken of the large systematic decrease in the pay gap in Sweden, where it reached 6.4 percentage points.

2. Countries where wage disparity increased slightly. These included Portugal (0.6pp), Bulgaria (0.9pp), Spain (1.0pp), Netherlands (2.1pp). The growth rate of wage disparity was not consistent. In Bulgaria, it increased between 2007 and 2012 from 12.6% to 14.7%only to fall to 13.5% in 2014. The same trend was evident in Spain, where the increase was from 22.8% in 2007 to 24.1% in 2012, followed by a decline to 23.8%. The Netherlands witnessed an increase in wage disparity from 19.5% in 2007 to 23.1% in 2011 and then a decline to 21.6% in 2014. The Netherlands also reported an increase from 19.5% in 2007 to 23.1% in 2011, followed by a decline to 21.6% in 2014.

Comparison of the level of change in the gender pay gap in the countries concerned indicates that in many countries, including primarily highly developed ones, the pay gap narrowed more slowly than in Poland. In 2007, in the vast majority of countries featured in the comparison, the pay gap exceeded 20%. In 2007, the highest level of the gender pay gap (over 25%) occurred in Estonia, Cyprus, Austria, Germany, Ireland and Lithuania. In 2014, the level was maintained in Germany, Estonia and Cyprus. In 2014, a gap similar to that of Poland (17.7%) was reported in Denmark (16.5%), Finland (17.1%) and Norway (17.6%).

Pay gap by area of economic activity in Poland

Between 2007 and 2014, the gender pay gap in Poland changed significantly in all areas of business activity (cf. Table 2). In the vast majority of the sectors in the national economy, the pay gap decreased, even though the rate of decline varied from year to year.

The gender pay gap narrowed from 21.5% in 2007 to 17.7% in 2014, and was the lowest in 2012 at 15.6%. In the manufacturing sector, the decline amounted to almost 10 percentage points. The biggest fall occurred in administrative and support service activities. In 2007, men's wages were higher than women's by 18.4%, while in 2014 women earned almost 1% more than men. A unique situation occurred in the construction, transportation and storage sectors. In the construction industry, women earned 2.7% more than men in 2007, and in 2014 as much as 11.4% more. In these sectors, low wages are typical of simple construction work and in the transportation and storage jobs female employees are almost non–existent. After graduation, they perform design work and construction supervision jobs which pay a much higher salary than simple jobs.

In several sectors, the pay gap actually increased. In the wholesale & retail trade, repairs of motor vehicles& motorcycles sectors, the wage disparity between men and women amounted to 27% in 2007 but then began to climb down until 2012. However, in 2014 it was higher than in the base year at 28.8%. In the financial and insurance activities sector, the difference stood at 35.2% in 2007, 38.5% in 2010 and 36.7% in 2014. In the real estate services, the disparity increased from 13% in 2007 to 14.5% in 2014.

Table 2. Gender pay gap in selected areas of economic activity in Poland in 2007–2014

Description	2007	2008	2009	2010	2011	2012	2013	2014
Industry, construction &services (except public administration, defence, compulsory social security)	14.9	11.4	8.0	4.5	5.5	6.4	7.1	7.7
Business economy	21.5	19.7	17.9	16.1	15.9	15.6	16.7	17.7
Mining and quarrying	28.5	25.4	22.7	20.0	20.9	21.8	21.7	21.5
Manufacturing	30.4	27.2	24.1	20.9	21.2	21.4	21.2	20.9
Electricity, gas, steam and air conditioning supply	7.2	7.9	8.7	9.4	8.3	7.2	4.5	1.7
Construction	–2.7	–5.2	–7.8	10.3	10.3	10.3	10.8	–11.4
Wholesale and retail trade, repairs of motor vehicles & motorcycles	27.0	26.9	26.8	26.7	25.6	24.4	26.6	28.8
Transportation and storage	–7.3	–6.1	–4.9	–3.7	–3.8	–3.9	–3.3	–2.8
Accommodation and food service activities	14.2	18.7	23.2	27.7	19.5	11.2	11.6	11.9
Information and communication	29.2	27.6	26.1	24.5	23.5	22.4	24.0	25.5
Financial and insurance activities	35.2	36.3	37.4	38.5	37.7	36.9	36.8	36.7
Real estate activities	13.6	13.1	12.7	12.2	13.1	13.9	14.2	14.5
Professional, scientific and technical activities	23.7	21.6	19.5	17.4	18.3	19.2	19.2	19.2
Administrative and support service activities	18.4	12.2	6.0	–0.2	1.1	2.3	0.8	–0.8
Public administration and defence	17.6	17.3	17.1	16.8	17.2	17.6	16.8	16.0
Education	6.4	4.6	2.8	1.0	1.3	1.6	3.4	5.1
Human health and social work activities	25.3	22.8	20.3	17.8	19.2	20.6	19.0	17.4
Arts, entertainment and recreation	17.0	15.3	13.6	11.9	10.1	8.3	9.0	9.7
Other service activities	34.0	28.8	23.6	18.4	24.5	30.6	30.4	30.2

Source: author's own calculations based on: http://ec.europa.eu/eurostat/cache/metadata/en/earn_grgpg2_esms.htm#stat_pres1475670346324 (accessed 2.10.2016).

The gender pay gap by age

The gender pay gap is well showcased by its age distribution. In certain periods, usually until 40 years of age, women are less economically active and busier with family matters than their male peers, and are also less often promoted, which affects their average salary per hour. The pay gap in different age groups is shown in Table 3.

Table 3. Gender pay gap in Poland in 2007–2014

Description	2007	2008	2009	2010	2011	2012	2013	2014
Employed persons: up to 25 years old	12.6	9.6	6.5	3.5	4.7	5.8	7.3	8.8
25 to 34	13.8	10.8	7.8	4.8	5.6	6.3	8.1	9.8
35 to 44	18.0	15.0	12.0	9.0	10.1	11.2	12.2	13.1
45 to 54	16.4	12.3	8.1	4.0	4.9	5.8	5.6	5.3
55 to 64	2.6	2.9	3.2	3.5	5.7	7.8	6.9	6.0
65 and over	35.0	25.1	15.3	5.4	10.3	15.1	5.1	–4.9

Source: author's own calculations based on: http://ec.europa.eu/eurostat/cache/metadata/en/earn_grgpg2_esms.htm#stat_pres147567034632 (accessed 2.10.2016).

Analysis of the data in Table 3 reveals some regularities. In the analysed period (2007–2014) one can distinguish two sub–periods covering 2007–2011 and 2012–2014 respectively. During the first sub–period, wage disparity declined in almost all age groups, where as in the subsequent years it grew.

The largest decline was reported among employed men and women aged 65 or more. While in 2007, the pay gap amounted to 35%, in the last year of the period it stood at minus 4.9%. This means that in 2007, men in this age group earned 35% more than women, while in 2014 women earned almost 5% more than men. This reversal was due to the fact that many women retired and those that continued to work boasted high qualifications and earned much more than those doing unskilled work.

Among employees in the two age groups under 34, the gap declined until 2010, only to grow in the subsequent years until the last year of the study period. In the 35–44 age group the gap declined from 18% in 2007 to 10.1% in 2011, only to widen again to 13.1%, the highest among all the age groups in 2014.

The gap narrowed by as much as 11 pp. in the 45–54 age group. Wage disparities deepened among employed men and women in the 55–64 age group: in 2007 they were insignificant and amounted to a mere 2.6%, but in 2014 they reached 6.0%.

Reasons for the gender pay gap

The reasons for the pay gap between men and women are many and varied. One important reason for this gap seems to originate in the social stereotypes that largely affect the situation of women in the labour market and their wages. The ingrained social stereotype involving the belief that women are less suited for positions of power translates into women less frequently assuming leadership positions, which in turn affects their average pay levels in a given economic area. This view seems to have originated in the fact that women are less available to work flexibly because they are burdened with family responsibilities. In this context, it is also pointed out that they are more inclined to take care of subordinates, rather than delegating. For this reason, women are perceived as being insufficiently strong and too soft in negotiations.[12] However, existing literature has divergent views on this subject. It is believed that it is women who have the desirable characteristics of the twenty–first century leader, if only due to the fact that they more easily inspire trust, establish contacts and maintain relationships, strive to gain knowledge and build success through collaboration and mutual support, rather than engaging in

[12] B. Budrowska , D. Duch, A. Titkow, *Szklany sufit: bariery i ograniczenia karier polskich kobiet*, Instytut Spraw Publicznych, Warszawa 2003, p. 52.

destructive competition. This means a tremendous opportunity for women in terms of their development perspective. Modern organisations base their success on the ability to adapt, on intuition and sensitivity to changes in the environment.[13]

Looking for reasons of lower wages for women than men one should also acknowledge the problem of the glass ceiling. On their career path, women often encounter invisible barriers that prevent them from promotion to higher positions. Despite their qualifications and professional experience or socially accepted stereotypes, women reach a certain stage in their career path and are not able to move to higher positions. This is certainly reflected in the average pay, which is the basis for determining the pay gap.

Access to vocational training that would enable women to improve skills appropriate to the needs of the market is unequal. Return to the labour market after dismissal, e.g. due to downsizing, is therefore much harder in times of a crisis. Hence women are often resigned to accepting low wages just to get a job or looking for a job in the informal economy. Employers estimate that the problems surrounding women's return to the labour market result from legal regulations, e.g. extension of the maternity leave to twelve months or the unpaid child rearing leave. After a period of about two years, women lose competences. A stereotype lingering among employers indicates that women are more prone to use sick leave and are therefore less efficient. However, one must admit that what is the most important for employers is employee availability. This is the reason why men are more likely to receive in–house training than women. This is turn affects their pay, position at work and possibly their dismissal.

One of the reasons for lower wages for women is that women put priority to the very possession of a job than to the pay level. Employees associate the opportunity to achieve other benefits having an economic and non–economic dimension with job security and long–term employment. Consequently, women often agree to accept inferior pay terms and do not voice expectations of high wages during job interviews because they fear that extravagant expectations will deprive them of the opportunity to be recruited in the first place. The desire to have a job, especially in the face of unemployment and the greater problems with getting a job, is one of the reasons for women's lower wages.[14]

Women and men perform different jobs and often work in different sectors. Women work in occupations where wages are inherently lower – in healthcare and social assistance, administration, education, services for the population, e.g.in cosmetology, hairdressing, care for the elderly. There are few women in construction, mining, or at assembly lines in factories where wages are higher. For example, women account for 81% of healthcare and social assistance employees and 70% of hotel and restaurant staff. This high rate of female occupation of specific areas of the economy is associated with lower female occupation of other areas, e.g. technical ones. This signals the existence of barriers to achieving success, such as the velvet ghetto or the sticky floor, which consist in assigning specific social and professional roles to women, roles which hold them back from reaching out.[15] Generally, it can be assumed that women work in sectors and occupations where work is compatible with their family responsibilities.

Women work shorter**,** not infrequently part–time, to be able to juggle family responsibilities with paid work. They account for the majority of EU employees working part–time: part–time work occurs with 34.9% of women and only 8.6% of men. This has a negative impact on their career progression, training opportunities, pension entitlement and unemployment benefits – all these factors bear on the pay gap between women and men.

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[13] A. Kirejszys, *Dyskryminacja kobiet* …, op.cit., p. 136.

[14] J. Czapiński, A. Sierpińska–Sawicz, M. Sierpińska, *Dyskryminacja płacowa kobiet w jednostkach organizacyjnych w Polsce,* „Ekonomika i Organizacja Przedsiębiorstw" 2015, No 1, pp. 41–54.

[15] A. Kirejszys, *Dyskryminacja kobiet na rynku pracy jako wyzwanie zarządzania w XXI wieku*. /In:/ *Gospodarowanie, finansowanie i zarządzanie w XXI wieku*, scientific editors: B. Czerniachowicz, B. Kryk, Uniwersytet Szczeciński, Szczecin 2011, p. 134.

Their family responsibilities also affect women's opportunities of promotion and higher wages. Women spend more time performing household chores and caring than men. Women are better educated, more thorough and dutiful. They are also better at time management. This is due to the fact that typically women need to reconcile work and home.[16] Despite the above, they are employed in lower–paid jobs and they do not occupy managerial positions.

The gender pay gap means that women earn less throughout their entire career, which results in a lower pension and the risk of poverty in their old age. In 2012, 21.7% of women aged 65 or more were at the risk of poverty, compared to 16.3% of men. Europe's overall employment rate in the 20–64 age group stood at 63% for women and 75 % for men.[17]

Conclusion

The analysis of the gender pay gap reveals that the discrepancy exists in all countries and further that it is steadily decreasing. Only four countries showed a slight increase. The level of wage disparities is influenced by a number of factors. Existing literature highlights mainly stereotypes perpetuating the perception of women as being less available to do work than men and having inferior qualifications and skills. These differences are also caused by a low share of women in the top, highest paying management positions, excessive concentration of women working in lower paid jobs (social welfare, education, services, etc.) or their putting more value in the very fact of having a job than in the level of pay when applying for a job.

The phenomenon of wage disparities has its negative effects. Lower wages have implications in the form of disparity in the amount of male and female pensions. Older women have difficulty in maintaining financial independence and are more prone to poverty than men. Reducing the negative effects of gender wage disparities is a complex task, but one must bear in mind that they have an impact on the economic development of the whole country and on demographics.

The implementation of the principle of equal pay for equal work or work of equal value is essential for parents to make informed decisions about child care. Today, men rarely go into paternity leave because they have more opportunities to earn better money than women, especially at the beginning of their career.

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[16] *Przeciwdziałanie różnicy w wynagrodzeniu dla kobiet i mężczyzn w Unii Europejskiej*, Luksemburg, Urząd Publikacji Unii Europejskiej, 2014, http:// europa.eu, (accessed 15.11.2016), p. 8.

[17] Ibidem.

7. *Równość szans kobiet i mężczyzn a rynek pracy. Poradnik dla Instytucji Rynku Pracy,* scientific editors: M. Borowska, M. Branka, Centrum Rozwoju Zasobów Ludzkich, Warszawa 2010, http://phavi.umcs.pl/at/attachments/2014/0213/085637–poradnik–rownosc–szans–branka.pdf.
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GREEN JOBS AND CHANGES IN MODERN ECONOMY ON THE LABOUR MARKET

Summary

The paper presents green jobs as solution for two main challenges of modern economy: young people unemployment and care about environment. Development of technology and youth are the principal agents for socio–economic changes which demand now to empower young people with a supportive environment and appropriate opportunities for employment. In this paper it is proved that reduction of unemployment can be achieved by creation of new green jobs, which are also available for not qualified young people or other unemployed candidates, who need to change their occupation.

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Introduction

The last quarter of the twentieth century saw the creation of nearly a hundred million green jobs in the labour markets of the advanced industrialized world. This achievement, in which every economy shared, testifies to the apparently enduring power of capitalism to generate the prosper of paid work for the employers. Therefore, green jobs are element of ongoing social and economic change which takes place in modern economy[1]. This change has two dimensions. First, a shift from isolated and centralized economies to open and cooperative societies, which mainly want to live closer to nature and keep work–life balance. Second dimension is taking action in mobilizing the potential of young Europeans. Young people when productively employed are an asset to their communities and to the world. Youth is vibrant, creative and energetic. Ironically the same qualities in young people, if thwarted, lead to social unrest, conflict, and economic instability.

It is imperative that structures should be generated to ensure sustainable employment for young people and sustainable development of modern economy. However a large group of young people cannot be absorbed in an urban and industrial employment, at least in a short run. High levels of youth unemployment contribute to poverty, discontentment, alienation, social unrest, conflict and urban

[1] F. Green, *Demanding work, the paradox of job quality in the affluent economy*, Princeton University Press, Princeton 2007, pp. 1–5.

migration, all of which hinder economic growth and threaten political stability. Therefore, the idea of green jobs can be a solution for both mentioned key trends in economy – sustainable development and enhance of young people employment. Moreover, green jobs are workplaces of the future because they involve *knowledgeable workers* which are part of development of industrial capitalism[2].

Green jobs

The literature does not provide a wide accepted definition of green jobs. For the purposes of the paper it is assumed that *green jobs*, according to the United Nations Environment Program[3], can be defined as "work in agricultural, manufacturing, research and development (R&D), administrative, and service activities that contribute substantially to preserving or restoring environmental quality. Specifically, but not exclusively, this includes jobs that help to protect ecosystems and biodiversity; reduce energy, materials, and water consumption through high efficiency strategies; de–carbonize the economy; and minimize or all together avoid generation of all forms of waste and pollution"[4].

Renewable energy is energy that is generated from natural processes that are continuously replenished. Renewable energy includes biomass, solar, wind, hydro–power and geothermal sources. This energy cannot be exhausted and is constantly renewed. A distinctive feature of renewable energy, in comparison to the typical conventional energy, is lack (or a significantly smaller range) of its impact on the environment. According to the definition of International Energy Agency (IEA) renewable energy is obtained as a result of natural processes and constantly replenished[5]. Energy can be called renewable when:

- its source cannot run out (like the sun) or can easily be replaced (like wood, as we can plant trees to use for energy),
- their sources are carbon neutral. This means they do not produce carbon compounds (such as other greenhouse gases),
- they do not pollute the environment (air, land or water).

The Renewable Energy Policy Project breaks down roughly how many jobs could be created per megawatt of different types of renewable energy, it means:

- solar could provide the most at 22 jobs per megawatt,
- manufacturing could provide 15 jobs per megawatt,
- geothermal could provide 15 jobs per megawatt.

Construction and installation of solar panels would be next at seven, followed by wind at six jobs per megawatt. A large wind turbine produces one to three megawatts, for example, so a large wind farm of such turbines could produce up to several hundred megawatts[6].

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[2] P. Thompson, Ch. Warhust, *Hands, hearts and minds: changing work and workers at the end of the century*. /In:/ *Workplaces of the future*, scientific editors: P. Thompson, Ch. Warhust, Macmillan Press London 1998, pp. 7–9.

[3] *Towards decent work in a sustainable, low–carbon world,* United Nations Environment Programme, 2008, http://www.unep.org/PDF/UNEPGreenjobs_report08.pdf, (access: 18.09.2016), p. 36,

[4] *Towards decent work in a sustainable, low–carbon world,* United Nations Environment Programme, 2008, http://www.unep.org/PDF/UNEPGreenjobs_report08.pdf, (access: 18.09.2016), p. 38,

[5] *Directorate of Sustainable Energy Policy and Technology*, IEA, https://www.iea.org/topics/renewables/, (access: 10.09.2016).

[6] K. Lydersen, *What the Economy needs now are good, green jobs*, 2008, http://www.alternet.org/story/100343/what_the_economy_needs_now_are_good,_green_jobs, (access: 25.09.2016).

Goals and methods

This paper presents the youth employment opportunities in the renewable energy sector: the green job possibilities. As a positive step towards understanding their role in solving the problem of the energy crisis, it is essential that youth first understand what the problem is, where the solution lies and how some organizations have already started working on this issue (i.e. European Commission). They are working towards creating an environmentally sustainable world, while also providing employment opportunities.

The number of jobs created by renewable energy sector and their impact to the labour market can be analysed based on historical statistic data and researches. In this paper some of this data collected by the International Renewable Energy Agency (IRENA) for 2014–2015 and data collected by European Commission for the years 2004–2014 were used respectively to quantitative analysis. This analysis covered jobs created directly by renewable sources, especially wind energy. We assume that jobs created by other branches of economy, involved in services related to this energetic sector, can be described in other publications[7].

Wind energy as an example of RES

Wind power next to solar photovoltaic still remains the most dynamic renewable energy technology[8]. From historic point of view the wind energy with the burning of wood was soon exploited AS humans' renewable energies. In ancient Babylon (2000 years BC) it helped windmills pump water, water its fields and drain wetlands, long before it was used in shipping. In India (400 years BC) there is the first record of using the fan to transport water, and 200 years BC the Chinese used windmills in the shape of winches to irrigate fields. With the advent of our era windmills began to appear in the Mediterranean countries. First documented mention of windmills appears in the year 644 AD – with their help people in Middle East ground their grains in windmills. In Europe (XVIII c.) windmills were built also. One of the specialists in their construction were Dutch. English designer Edmund Lee, who constructed a wheel automatically directing the windmill into the wind in 1745. The development of the steam engine in the late nineteenth century led to the disappearance of the drive–wind in many fields of industry, which resulted in a lull in the art. With the discovery of electricity windmills can find a new use. American scientist and businessman Charles F. Brush in 1888 built a turbine comprising a rotor diameter of 17 m and 144 wooden shovels, and the same as the first advantage of wind energy to produce electricity[9]. As presented the wind energy was know and used much earlier. For example, wind energy is certainly not new to the State of Pennsylvania – the earliest European settlers arrived on wind–powered ships, and many windmills were used during colonial times, including a 1746 octagonal windmill on "windmill island" in the Delaware River (Joseph Jackson, Encyclopedia of Philadelphia, 1931). In 1950, engineer Johannes Juul built the first wind turbine generator of alternating current. "Before 1970's energy and especially fossil fuels, were considered as cheap and amply available. In 1972, the report "Limits of Growth" was published, stressing the limited resources of, among others, fossil energy carriers, and discussing the limits this would impose on future economic growth"[10]. Shortly after this publication, the first energy crisis occurred, presenting the world economy with shortages and rapidly increasing fuel prices. This lead to economic crisis since the energy intensive industries, which were very important to western economy, were hit very hard by this sudden increase in price of the one of their raw materials. Therefore, because of the energy crisis in 1973, there has been renewed interest in renewable energy sources and wind energy especially. Since then, wind power is one of the fastest growing industries[11].

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[7] *Youth Employment Opportunities in Renewable Energy – A report*, Education Development Center of European Commission, Youth Employment Summit 2002, http://shuraako.org/sites/default/files/Youth%20Employment%20Opportunities%20in%20Renewable%20Energy–%20A%20Report.pdf , (access: 02.10.2016).

Nowadays, that is, from the end of the last century, they created a device that can produce energy on an industrial scale at acceptable prices. Today turbines are available range from tens of kW, after a large number of megawatt unit. At the end of 2008 the total installed capacity amounted to 1,5GW, acting 1.5% of global electricity consumption. Wind energy will play an increasingly important role in the global energy balance, decide first and foremost the development of large wind farms[8].

With UN agencies issued a report REN21 (Renewable Energy Policy Network for the 21st Century) shows that renewable energy sources – primarily solar and wind power – already responsible for 27.7% of global installed capacity (equivalent to meet 22.8% of global energy demand)[9].

Wind energy and young people as the agents of change in modern economy

Wind energy jobs sector remain relatively stable at 0.8 million jobs created across EU every year[10]. Its growing demand is constantly absorbing a large amount low skilled unemployed people, and can be also an opportunity for young people looking for their first stable employment[11]. But the reality is that there are about a billion young adults and youth between the ages of 15 and 24, which are unemployed in the European Union today[12]. 85% of them live in communities providing only few opportunities for productive work. This young people can be involved in green jobs sector and this is proposed in this paper. If the youth get involved with conserving the environment by producing clean energy, then we will simultaneously solve the problem of youth unemployment and environmental degradation.

If we consider usage of wind energy as an innovation (basic and even imperfect one) then we can use the innovation theory model to explain future impact of this kind of investments onto the whole labour market (both its sides: supply and demand). Moreover, we assume that activities involving synchronous time–generated processes, result in socioeconomic development[13]. These activities are: the fundamental science, the applied science area, the production, and the use diffusion area[14]. Wind energy industry uses these four dimensions of development to increase its importance and therefore it can become an important agent of change for the labour market. According to the innovation theory model these four sectors and their respectively time–generated exponential process are only one part of the development picture. The other is the interrelationship among the different sectors. Socioeconomic development with wind energy usage entails a complicated macro exchange process among the various development sectors, and the output of each sector supplies the inputs for one or more of other sectors. Hence socioeconomic development can be thought of as a system with parts, in which each part's output provides an input of one or more other parts. The outputs are changing through time, because the entire economy network is in a dynamic equilibrium[15].

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[8] *Energia wiatru*, MAE, http://www.mae.com.pl/odnawialne–zrodla–energii–energia–wiatru.html, (access: 16.09.2016).

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[10] *Renewable Energy and Jobs: Annual Review 2016*, International Renewable Energy Agency, 2016a, http://www.irena.org/DocumentDownloads/Publications/IRENA_RE_Jobs_Annual_Review_2016.pdf, (access: 25.09.2016).

[11] F. Green, *Demanding work, the paradox of job quality in the affluent economy*, Princeton University Press, Princeton 2007, pp. 35–37.

[12] Fic, M. *Niedopasowanie kwalifikacji i bezrobocie ludzi młodych w Unii Europejskiej*, „Problemy profesjologii" 2015, Vol. 2, p. 53–65.

[13] R. Hammblin, R. Jacobsen, J. Miller, *A mathematical theory of social change,* A Willey–Interscience publication, New York 1973, p. 176.

[14] Ibidem, p. 177.

[15] M. Rutkowska–Podołowska, A. Sulich, N. Szczygieł, *Green jobs,* Proceedings of the 3rd International Conference on European Integration 2016, ICEI 2016, May 19–20, Ostrava, Czech Republic, Pt. 2, Eds. Eva Kovářová, Lukáš Melecký, Michaela Staníčková, Ostrava, VŠB – Technical University of Ostrava, pp. 822–829.

Table 1. Green jobs and registered unemployment in chosen countries

Country	Registered unemployment (%)						Green jobs as a % of all new created jobs					
	2010	2011	2012	2013	2014	2015	2010	2011	2012	2013	2014	2015
Belgium	8.3	7.2	7.6	8.4	8.5	8.5	x	x	0.1	0.4	0.5	0.3
Denmark	7.5	7.6	7.5	7	6.6	6.2	0.6	0.5	0.9	0.2	0.9	0.4
Germany	7	5.8	5.4	5.2	5	4.6	3.3	3.2	3.5	3.5	3.7	3.8
Netherlands	5	5	5.8	7.3	7.4	6.9	0.7	0.3	0.9	0.4	0.5	0.2
Poland	9.7	9.7	10.1	10.3	9	7.5	x	0.8	0.2	0.2	0.4	0.3

Note: (x) means no data.
Source: Eurostat 2016[16] and authors own calculations based on Eurostat 2016[17].

In table 1 registered unemployment rates and green jobs as % of all new created jobs of the chosen countries of the EU are presented. Germany is the only country with a decreasing unemployment rate and an increasing number of green jobs created in the same period. Moreover, this number (percentage of all new created job places) is stable in an observed period of time contrary to other countries.

In table 2 we present new green jobs created in the renewable energy sector in the years 2014 and 2015. Among the chosen countries of the northern coast of Europe, Germany is one of the leading countries in employment concerning wind energy sector (table 2). In Germany only in 2014 and 2015 there were respectively 148.6 and 149.2 thousands of people employed. In Poland in 2014 about 8,3 thousands of people worked in wind power energetic sector. This sector has a big potential, comparable with the cement industry where about 6 thousand workers were employed, when in the oil industry 9 thousands in 2014[18]. As presented in Table 2 there are also other renewable energy technologies, which have an impact on the labour market. And for example the solar photovoltaic technology in world classification stands on the first place, when liquid biofuels are on the second position. Moreover, it should be emphasized that each country specializes in developing one of the technologies using kinds of RES. For example, Poland specializes in biomass, when Belgium in liquid biofuels (table 2).

[16] *Unemployment by sex and age – annual average*, Eurostat 2016, http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=une_rt_a&lang=en, (access: 02.10.2016).

[17] *Research and innovation statistics at regional level*, Eurostat 2016, http://ec.europa.eu/eurostat/statistics–explained/index.php/Research_and_innovation_statistics_at_regional_level, (access: 02.10.2016).

[18] M. Bukowski, A. Śniegocki, J. Gąska. M. Kosuń, *Wpływ energetyki wiatrowej na polski rynek pracy*, Wyd. Warszawski Instytut Studiów Ekonomicznych, Warszawa 2014, p. 5.

Table 2. New jobs in renewable energy sector in 2014 and 2015 in thousands in chosen countries, European Union and World

Specifications	European Union		Belgium		Denmark		Germany		Netherlands		Poland	
	2014	2015	2014	2015	2014	2015	2014	2015	2014	2015	2014	2015
Solar PV	164.0	220.0	2.8	3.0	0.8	0.9	38.0	38.3	5.4	5.5	0.2	0.3
Liquid biofuels	98.0	106.0	7.9	8.3	1.3	1.4	22.4	23.1	3.0	3.0	4.8	5.9
Wind Power	320.0	306.0	3.4	3.7	29.5	30.0	148.5	149.2	1.8	2.0	8.3	8.4
Biomass	343.0	210.0	3.2	3.3	3.8	3.9	47.9	48.5	2.8	3.9	12.9	18.5
Solar Heating/ Cooling	37.0	43.0	0.4	0.5	1.7	1.8	10.2	10.3	0.4	0.6	1.9	2.6
Biogas	66.0	68.5	0.3	0.4	0.1	0.2	45.5	48.5	0.4	0.6	0.5	0.4
Small Hydropower	41.0	32.0	0.1	0.1	0.1	0.1	0.9	11.8	0.0	0.1	1.9	2.0
Geothermal	101.0	100.4	0.5	0.6	1.9	2.1	12.5	17.2	4.4	4.5	0.9	0.9
CSP	15.0	29.0	0.6	0.6	0.5	0.6	4.3	8.7	0.9	1.3	0.0	0.1
Total	**1185.0**	**1114.9**	**19.2**	**20.5**	**39.7**	**41.0**	**330.2**	**355.6**	**19.1**	**21.5**	**31.4**	**39.1**

Source: IRENA (International Renewable Energy Agency) 2014[19], and IRENA 2016[20].

Impact of green jobs on the labour market

Youth's or young people's unemployment is a problem in the economy, which is connected with both youth transition into labour market (or integration with labour market) and society expectations towards governments[21]. One of the reasons of youth unemployment can be also competency mismatch which may include also other mismatches: competency gap, candidates' qualifications and education (too low or too high, other mismatches (vertical and horizontal) or mismatches between demand and supply on labour market.

Therefore, some of the green jobs – especially the ones related to wind energy – do not require sophisticated and higher education on most levels (except of project works). Green jobs can be a new opportunity for both groups: those who are not involved in work and those who are employed to improve the quality of their work. Young people with competency gap can easily find their new employment in the wind energy sector during their internships and afterwards through full contracts. The green jobs also involve and promote research into youth work, forming a much–needed bridge between theory and practice in this area.

[19] *Renewable Energy and Jobs: Annual Review 2014*, International Renewable Energy Agency, 2014, http://www.irena.org/publications/rejobs–annual–review–2014.pdf (access: 25.09.2016).

[20] *Featured Dashboard – Employment*; *Renewable Energy Employment*, International Renewable Energy Agency, 2016, http://resourceirena.irena.org/gateway/dashboard/?topic=7&subTopic=10 (access: 30.09.2016).

[21] A. Sulich, *The young people's labour market and crisis of integration in European Union*, Proceedings of the 3rd International Conference on European Integration 2016, ICEI 2016, May 19–20, Ostrava, Czech Republic, Pt. 2, Eds. Eva Kovářová, Lukáš Melecký, Michaela Staníčková, Ostrava, VŠB – Technical University of Ostrava, 2016, pp. 926–934.

While some jobs require specific skills or education, such as: a solar engineer, an environmental scientist, a wind project manager or a sustainability consultant, other positions do not necessarily require a background as the role involves working for an organization in this sector.

Conclusion

Today's world faces challenges in the form of population growth, resource consumption and environmental degradation. The environment is threatened by the perils of global warming, climate change, and energy crises. Unless some immediate remedial measures are taken, things are only expected to get worse. There is a need to protect the environment and at the same time to provide young people with opportunities for sustainable livelihoods. If youth get involved with conserving the environment by producing clean energy, then we will simultaneously address the problems of youth unemployment and environmental degradation.

Green jobs can help young people to become expertise workers in areas ranging from structured dialogue, through effective communication skills to teamwork. They can also help young people to achieve better transition between school education and professional lives, to tackle the problems of unemployment among young problem, as well as to stimulate research on the impact of non–formal learning on key competencies for green jobs and lifelong learning.

While it is imperative to take corrective measures to combat climate change, equally important is the necessity for developing countries to produce increasing amounts of energy – energy being a vital need for the development of any modern society. One solution that allows production of energy to continue without any adverse effect on the environment is the use of renewable energy. Renewable energy makes use of natural resources like wind, sunshine, and water to create energy. It thus prevents the release of carbon emissions into the atmosphere, thereby mitigating climate change while at the same time producing the energy much needed for development.

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PART II

COMPETITIVENESS AND INNOVATIVENESS OF ECONOMY AND ITS ENTITIES

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INTERNATIONAL COMPETITIVENESS OF THE ECONOMY AND ITS IMPROVING IN POLAND

Summary

The object of the research presented in this paper has become the international competitiveness of the economy and improving it in Poland. It erected in the hypothesis that: a basic prerequisite for further rapid development of the Polish economy now is becoming a necessity to systematically raising its international competitiveness.

Raised the following issues and issues related to:

1. *measures competitiveness of the economy at the macro level,*
2. *discussion of selected issues related measures of international competitiveness of the country,*
3. *presentation of the elements which shows competitiveness of the Polish economy against the background of EU countries,*
4. *the wording of some (copyright) comments related to the assessment strategy for increasing the competitiveness of the Polish economy – realized and accepted for implementation.*

* * *

Introduction

Defining the term "competitiveness" and its measurement in the theory and practice of business encounters many difficulties. On the other hand, the diversity of determining the level of competitiveness of the international macroeconomic and effectively preventing the development of the synthetic measure. Competitiveness is largely qualitative phenomenon, which is influenced by factors immeasurable. When measuring competitiveness must therefore take into account not one but several indicators. At the same time remembering also occurring correlations between them. Competitive Analysis of the economy, sector, industry or company is therefore extremely complex issue. It should aim to investigate the changes in direction and intensity of a particular instrument or simultaneously used several measures of competitiveness.

The object of the research presented in this paper has become therefore international competitiveness of the economy and improving it in Poland. It erected in the hypothesis that: *a basic prerequisite for*

further rapid development of the Polish economy now is becoming a necessity to systematically raising its international competitiveness.

It raised in the following topics and issues related to:

1. measures competitiveness of the economy at the macro level,
2. discussion of selected issues related measures of international competitiveness of the country,
3. presentation elements of the competitiveness of the Polish economy against the background of EU countries,
4. application of some remarks about the strategy of increasing the competitiveness of the Polish economy – realized and accepted for implementation,
5. measures competitiveness of the economy at the macro level,
6. discussion of selected issues related measures of international competitiveness of the country,
7. presentation elements of the competitiveness of the Polish economy against the background of EU countries,
8. application of some remarks about the strategy of increasing the competitiveness of the Polish economy – realized and accepted for implementation.

Some comments about the nature and measures of competitiveness of the economy at the macroeconomic level

"Competition" comes from the Latin phrase *concurrere*. In the literal sense it means to run together, but its substantive sense boils down to competition between rivals. In theory and practice of business we have to deal with a variety of apprehension competitiveness. There is no single, universally accepted definition of competitiveness, which, depending on the level of analysis would identify it by the so–called criteria for competitiveness. The impossibility of harmonizing definitions, says N. Daszkiewicz, stems from attempts to extract the competition of the three economic theories and the handling of the phenomenon of competitiveness on the six levels of the hierarchy of economic systems.[1] There are many aspects of its definition and understanding. It can be considered on two levels: micro and macro. Micro level, the position of the internal market. In turn, the macro level, it's the position of the country in the global economy.[2] However, there is agreement that competitiveness should be recognized as a phenomenon evaluative, relative, and clearly defining the competitive battleground. Therefore, the competitiveness is sometimes seen as the ability to prevent competition or the ability to compete, i.e. Action and survive in a competitive environment.[3]

"Competitiveness" macroeconomic perspective was originally defined only on the basis of the results of the country in international trade. Therefore, it was determined as the ability to cope with international competition and maintain high pace of domestic demand without compromising the current account balance. While on the international market it is expressed acceptance of a country and enlarging its share in export markets. Yet another way of looking at competitiveness may be its division and the resulting factorial. The first is a collection of strengths and weaknesses of a company. In turn, the second consists of the ability for long–term advantage when compared to other operators. Yet another recognition of

[1] Daszkiewicz N., *Konkurencyjność. Poziom makro, mezo i mikro*, PWN, Warszawa 2008; Gorynia M., Laźniewska E., *Kompendium wiedzy o konkurencyjności*, PWN, Warszawa 2009, p. 51.

[2] Wysokińska Z., *Konkurencyjność w międzynarodowym i globalnym handlu technologiami*, PWN, Warszawa 2001, p. 37.

[3] Olczyk M., *Konkurencyjność, teoria i praktyka*, CeDeWu, Warszawa 2008, p. 15.

the competitive static and dynamic. It is in them for consideration of competitive advantage in the short and long term.[4]

In the simplest of shots competitiveness is identified with a positive balance of trade balance or a positive balance of current account balance of payments.[5] Thus, these definitions prejudge the same time also on how to measure it. Most definitions, however, are much more complex, according to economic theory, in which they were located.[6] According to the common definition of the OECD economic competitiveness is "the ability to rectify international competition, thus realizing significant exports and maintain a high level and rate of growth of domestic demand, without compromising current account balance."[7] Moreover, this is analogous to the definition adopted by the US Presidential Commission on Industrial Competitiveness. It also proposed a set of measures for assessing competitiveness. Included are: economic growth, price stability, employment, economic efficiency, trade balance and current account balance of payments. So this is a classic set of indicators for assessing the state of the economy.[8]

Competitiveness at the macroeconomic level can therefore be equated with the ability of the country's competitive So, with the ability to long–term economic development, which results in the production structures: economic and export in line with changes in the structure of the world economy and in the structure of international trade. So conceived competitiveness is strongly correlated with business competitiveness (competitiveness at the micro level). On the one hand, competitive processes, taking place at the enterprise level, impact on improving the competitive ability of the economy. On the other hand, the high competitive ability of the economy provides favorable conditions for enterprises to improve their competitiveness.[9] Competitiveness is the ability of enterprises to obtain greater added value converted international prices than the value used during the production of domestic resources of production factors.[10] The growth of so grasped the international competitiveness of the economy evidenced an increase in the number of competitive industries and a reduction in non–competitive industries. Complement the above definitions may be the definition of the so–called competitiveness of the system, which was proposed by German economists K. Esser, W. Hillebrandt, D. Messner and J. Meyer–Stammer. As the competitiveness of the system they understand the phenomenon the following conditions the competitive pressures (which is a constant challenge to improve production efficiency and product) as well as the integration of enterprises (appointed to the networks of cooperation, supporting the efforts of individual operators).[11]

You remain active both in terms of competitive pressures as well as cooperation between enterprises. Your competitive economic structures are at the level of meta mobilizing them for the competitiveness and level of meso–shaped. With these elements are formulated by the state policy support, as well as the company at the micro level are mobilized to efficiency, flexibility and quality maintenance. Inherent to structural changes in the macroeconomic measures are in enterprises to increase productivity by introducing m. in. technical innovation. Innovation thus become the core of economic development.

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[4] *Co decyduje o konkurencyjności polskiej gospodarki?,* scientific editor: Noga M., Stawicka M.K., CeDeWu, Warszawa 2008, p. 11.

[5] Żabiński L., *Przewaga konkurencyjna*, PWE, Warszawa 2000, p. 32.

[6] See: *Word Competitiveness Yearbook 2003*, IMD (a review of these theories, ranging from A. Smith to M. Porter, who has aggregated all the ideas in the form of a model called „Porter's rhombus").

[7] Skawińska E., Sobiech–Grabka K.G., Nawrot K.A., *Makroekonomia. Teoretyczne i praktyczne aspekty gospodarki rynkowej*, PWE, Warszawa 2010, p. 97.

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[9] Gorynia M., Łaźniewska E., *Kompendium wiedzy o konkurencyjności,* PWN, Warszawa 2009, p. 70.

[10] Olczyk M., *Konkurencyjność, teoria i praktyka*, Ce De Wu, Warszawa 2008, pp. 19–20.

[11] Esser K., Hillebrandt W., Messner D., Meyer– Stammer L, *Systemie Competitiveness – New Challenges to Business Politics,* Economics, Vol 59, Institute for Scientific Cooperation, Tiibingen 1999, p. 62.

According to the M. Strużycki's definition, competitiveness is "a phenomenon characterized by certain types of relationships between entities, which this phenomenon has been covered. These relations are based on competing. To compete effectively, that is, despite the obstacles created by the competitors achieve their goals, you have to be competitive."[12] One must agree with the views that the competitiveness of the economy does not automatically coincide with the already competitive than traders, as measured effectiveness of management. It depends on the conditions of macro–environment created by the state, including institutions, law, competition policy and the level of competitiveness of enterprises. Assessment of national competitiveness requires a comparison with other countries. It is therefore an international character.[13] Since competitiveness is derived from the competition as the basic economic mechanism of market economy and is its element, it can it also be the ability of the entity to compete.[14] In other terms, this means the ability to create a sustainable and high level of GDP and increase employment. As a result, an increase in the standard of living of citizens.

The scope of comprehension of competitiveness is so very very wide. This is due, according to J. Borowski, "with great intellectual capacity of this concept." [15] According to M. E. Porter it is limited to the measurement of productivity.[16] Therefore, the analysis should pay attention to determine the conditions and factors resulting in this category. In respect of international competitiveness in the literature distinguishes the two concepts: an international competitive ability (also referred to as the competitiveness of the type factorial) and competitive position (also referred to as the competitiveness of the result type). According to J. Bossak, competitive economy is one that: "on the one hand – adjusts its socio–economic objectives and the mechanism of functioning of not only internal conditions, but also to international conditions. On the other hand, it is able to take effective action that not only creatively use changes in the structure of the world economy to stimulate its own development, but also will affect the changes in the conditions of competition in a manner that increase the benefits of participation in the international division of labor."[17] Much narrower concept is the concept of the international competitive position. It refers mainly to the participation of a country's economy in the wider international economic exchange, i.e. In the international exchange of products (goods and services) and factors of production (labor, capital and technical expertise).[18]

Competitiveness is undoubtedly considered a basic economic categories. Thus, it is also analyzed from the point of view of the main economic theory – perhaps already visible signs of transformation in its separate discipline.[19] Under exceptional multitude of definitions of competitiveness, cited above, some of them certainly can not exhaust the full scope of their functioning in the foreign literature and gradually transferred to the Polish. However, there is even the slightest need and ability to accurately discuss them all in this paper. According to I. Bielski[20] many theorists, constructing models of competition, it does not even make an attempt to define the very concept of "competition". In this connection it is worth, the S. Kwiatkowski, at least cite the following sentence indicating the way to compete in the

[12] *Przedsiębiorstwo. Region. Rozwój*, scientific editor: Strużycki M., Difin, Warszawa 1998,ps. 173.

[13] Stankiewicz M.J., *Konkurencyjność przedsiębiorstwa. Budowanie konkurencyjności przedsiębiorstwa w warunkach globalizacj*i, Towarzystwo Naukowe Organizacji i Kierowania, Toruń 2002, p. 36.

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[15] Borowski J., *Globalizacja, konkurencyjność międzynarodowa i strategie przedsiębiorstw*, Wydawnictwo Uniwersytetu w Białymstoku, Białystok 2008, p. 45.

[16] Skawińska E., Sobiech–Grabka K. G., Nawrot K.A. …, op. cit., p. 98.

[17] Bossak J., *Społeczno–ekonomiczne uwarunkowania międzynarodowej zdolności konkurencyjnej gospodarki Japonii*, SGPiS, Warszawa 1984, p. 52.

[18] Bieńkowski W., *Oddziaływanie rządu USA na rozwój zdolności konkurencyjnej gospodarki amerykańskiej w latach 1981–1988,* „Monografie i Opracowania", No 378, Szkoła Główna Handlowa, Warszawa 1993, p. 10.

[19] Misala J., *Międzynarodowa zdolność konkurencyjna i międzynarodowa konkurencyjność gospodarki narodowej. Podstawy teoretyczne*, Politechnika Radomska, Radom 2007.

[20] Bielski I., *Konkurencyjność polskich przedsiębiorstw na globalnych rynkach*, Kongres PTE.

XXI century – "Global competition is not to contrast the product to a product's company, or commercial groups commercial grouping. It lies in the juxtaposition of thinking way of thinking."[21]

Just as it is impossible to clearly define the concept of competitiveness, so the measurement of this phenomenon poses many difficulties. Number of conditions for determining the level of competitiveness of macroeconomic effectively preventing the development of synthetic measure. Competitiveness is largely qualitative phenomenon, which is influenced by factors immeasurable. When measuring competitiveness must therefore take into account several indicators at the same time keeping in mind the correlations occurring between them. Proper analysis of competition in the economy, sector, industry or company is the study of changes in direction and intensity used measure of competitiveness. In the literature there are several divisions of measures of competitiveness. The most common, but not used in practice is a division of measures of competitiveness because of the time, the way to measure, how to compete, and the degree of aggregation of statistical data (see table below). Rationalisation measures of competitiveness undertook, among others, Peter J. Buckley, distinguishing three types:[22]

- measure the effects of competition, analyzing achieved competitive position,
- measure the potential of a competitive evaluation expenditures incurred,
- measure of the competitive process, the processes of management and organization.

P. Buckley J also drew attention to the interdependence between the various dimensions of competitiveness, and the selection of measures appropriate to the level of analysis. He has identified four levels of analysis: analysis at the national level, industrial level of the company and the product. Also interesting and useful measures of competitiveness division is split into two groups:[23]

I. Methods of measuring competitiveness through the prism of the results of international trade:

- coverage ratios,
- indicators of export,
- structural indicators.
- indicators based on net exports,

A comprehensive breakdown of measures of competitiveness proposed A. Zielińska– Głębocka, distinguishing (as shown in the table below) six shots measures of international competitiveness.

II. Methods of measuring competitiveness through the prism of the competitive process price indices relative:

- performance indicators,
- indicators of changes in shares industries / products in the market.

A multitude of measures of competitiveness in the literature makes for an appropriate and effective analysis of the use of several measures. However, constantly keeping in mind that they relate to a time horizon and the same aspect of competitiveness. There are still a standard method of measuring national competitiveness of business or industry, their selection depends on the chosen author's definition of competitiveness.

Selected issues of discussion related to the measures of international competitiveness of the country

Distinguishing between the concepts of "international competitiveness", "competitive ability" and "competitive position" will only go on longer gauges competitive ability, and on measures the international

[21] Kwiatkowski S., *O psie, płocie, paradygmacie teorii organizacji i przyszłości praktyki zarządzania*, „Przegląd Organizacji' 1996, No 1, p. 11.

[22] Włodarczyk–Śpiewak K. *Konkurencyjność przedsiębiorstwa a współczesne zachowania konsumpcyjne.* /In:/ *Co decyduje o konkurencyjności polskiej gospodarki,* scientific editor: Noga M., Stawicka M. K., CeDeWu, Warszawa 2008, p. 13.

[23] Ibidem, p. 13.

competitiveness of the national economy of the country. These meters, especially the international competitive position, can be divided into measures of an ex–post and an ex ante. Competitive capacity of the country is a relative assessment of potential players to take steps to increase the chances of achieving future better results than competitors. Thus, it refers, not to the real phenomena, but the economic system and economic policy. Competitive capacity is closely linked with the shaping of the institutional arrangements which, in the conditions of real or create more favorable conditions for the effective use of opportunities than do so in other countries. Unlike competitive capacity is a "long–term ability of the economy to withstand international competition."[24] Competitive national economy is also referred to as a competitiveness factor. Indeed, it exposes the ability to improve competitiveness, not only the ability to compete. It is a dynamic approach of competitiveness from the side of the factors and conditions.[25]

In theory and practice of assessing the competitiveness of the important role played by the so–called. Reports competitiveness. The most commonly used in these indicators are: GCI (Growth Competitiveness Index) of the World Economic Forum (WEF World Economic Forum–), and the competitiveness index calculated by the IMD (International Institute for Management Development). These indicators are a measure of macroeconomic competitiveness, and although much different. However, their task is to capture the complexity and multidimensional phenomenon, which is competitiveness. Analysis of indicators, based on which are estimated both indexes, shows the image of determinants affecting the level of competition in the macro economy.

GCI index value is calculated on the basis of: technology, public institutions and the macroeconomic environment. Each of these indexes is calculated on the basis of hard or soft data and the measurable or subjective (questionnaire). In order to calculate the GCI were divided countries: indigenous and stainless innovators whose methodology for calculating the index is different.

For countries considered to be indigenous innovators GCI index is calculated according to the formula: GCI = (l/2 index of technology) + (1/4 public institutions index) + (1/4 macroeconomic environment index).

For countries which are not native innovators formula is as follows: GCI = (1/3 technology index) + (1/3 public institutions index) + (1/3 macroeconomic environment index). Wherein:[26]

- the index of technology (indigenous innovators) = (1/2 innovation subindex) + (1/2 subindex information and communication technologies),
- index technology (nonindigenous innovators) = (1/8 innovation subindex) + (3/8 subindex technology transfer) + (1/2 subindex information and communication technologies),
- public institutions index = (1/2 subindex law and contracts) + (1/2 subindex corruption),
- the macroeconomic environment index = (1/2 subindex macroeconomic stability) + (1/4 subindex country's position in the rankings of credit) + (1/4 subindex mismanagement of government).

Analyzing the indicators on which the index is calculated GCI, you can assess which elements are crucial and can contribute to the competitiveness of the macro–economy. The second, a frequently used measure of this indicator is calculated by the IMD published annually since 1989. In the World Competitiveness Yearbook. This is an indicator for the assessment of macroeconomic competitiveness of the economy measures the ability of society to "create and maintain" economic environment and legal certainty, which will contribute to the competitiveness of the country's economy and the corporate sector. IMD index is calculated on the basis of more than 300 other sub–indices, which are considered

[24] *Konkurencyjność gospodarki Polski* …, op. cit., p. 49.

[25] Bambińska E., *Wybrane mierniki międzynarodowej pozycji konkurencyjnej kraju*, Zeszyt Naukowy Akademii Ekonomicznej w Krakowie, No 575, Kraków 2002, p. 9.

[26] Daszkiewicz N., *Konkurencyjność. Poziom makro, mezo i mikro,* Wydawnictwo Naukowe PWN, Warszawa 2008, pp. 22–25.

key elements of competitiveness. It is sensitive to the social environment, political and economic. The counting rate of IMD are used (as can be seen from the table above) factors:[27]

- the results of economic activity (77criteria),
- the efficiency of the government sector (72 criteria),
- the effectiveness of the business sector (68 criteria),
- infrastructure (95 criteria).

Both of these indices are used to draw up the international rankings of competitiveness. They are also used to compare the positions of individual economies worldwide. Both also point to the innovation and modern information technologies and communication as an important growth factors of economic competitiveness.

In turn, the international competitive position already refers to the share of the economy in the international division of labor and the broader economic exchange, i.e. The exchange of products and factors. It is also called competitive–type object. Specifies because competition from the effects in terms of static. With the problems of international competitiveness implies the necessity of the measure. Because of the multidimensional nature of the phenomenon particularly competitive ability to compete, it is difficult to provide with a single size. Therefore usually operates the sets of indicators. Result in an assessment can then be used to build ranking countries or create synthetic indicators of competitiveness. To measure competitiveness apply: indicators of overall economic development of the country (ie. The growth rate of gross domestic product (GDP), the formation of prices, costs of production, innovation, employment, etc. These are joined by indicators informing about structural changes and changes in the efficiency of use of factors production and on their free movement in the country and abroad, e.g. indicators of labor productivity, efficiency indicators of capital). Also used are built on the basis of synthetic indicators, which are supplemented by lights which show the commitment of the international economic exchange, and thus indicators of the competitive position of the country, including share of world trade, the rate of import penetration, revealed comparative advantage RCA like. It is important to aware of the occurrence of the major drawbacks of synthetic ingredients and need to take them into account when interpreting the results of appropriate analyzes and the formulation of proposals, in particular proposals for policymakers. The most important of these are: lack of general, universally accepted theory of international competitiveness, referencing a greater or lesser extent on the results unreliable surveys, limited so far taken into account in the analysis of mutual interdependence between the various economic categories in terms of space and time, making it difficult to compare results and formulate appropriate indicators 14 ex ante.

You can also talk about the type of quantitative gauges and type of cost–price:[28]

a. international competitive ability of the economy to decide first of all[29],
b. resources and performance production factor which are people with their skills and abilities,
c. resources and efficient use of natural resources,
d. resources and the effectiveness of physical capital,
e. resources, the level of development and use of technical knowledge,
f. efficiency of the socio–economic system, including the policies pursued by governments and the economic possibilities of the so–called impact, international economic environment.

These factors include the following groups of measures of competitive ability:[30]

- indicators of the overall economic development of the country, such as GDP growth, the evolution of unemployment, etc.

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[27] Ibidem, p. 27.

[28] Misala J. …, op. cit., p. 28.

[29] Szewczyk R., *Syntetyczne wskaźniki sytuacji gospodarczej w krajach zachodnich*, „Gospodarka Planowa" 1985, No 3, p. 8.

[30] Ibidem, pp. 8–9.

- indicators informing about structural changes and changes effective use of production factors, as well as their freedom of movement in the country and abroad,
- lights which show the commitment of the international economic exchange, which in turn are regarded as the main measure of international competitive position of the country.

Institute for Management Development, in assessing the competitiveness of individual countries used a slightly different set of indicators. In published regularly since 1980. Reports its competitive economies is assessed on the basis of the whole set divided into several groups of indicators. In 1994. It included 381 indicators. They were included in the eight groups defined as the following factors of competitiveness:[31]

1. internal economic potential (overall assessment of the economy based on GDP, GNP, investment, savings, etc.),
2. internationalisation – the extent to which a country is involved in international trade and investment flows, taking into account m. In. Current account balance balance of payments, shaping the terms of trade, the share of trade in GDP, and others,
3. the government – the extent to which government policy encourages competitiveness. The assessment is based on internal and external debt, expenses of the state sector and so on,
4. finance – performance of capital markets and the quality of financial services. This group includes such size as the functioning of stock exchanges, the degree of financial risk and central bank policy,
5. infrastructure – the degree of alignment of resources and systems to meet the basic needs of the business, eg. Production of primary energy, energy self–sufficiency and air pollutant emissions,
6. management – the extent to which businesses are managed in an innovative, profitable.
7. science and technology – scientific and technological potential and the success of basic and applied research, as measured m. In. The number of employees in research and development, expenditure on education, number of patents, etc.,
8. people – availability of labor and the quality of work, protection of health and the level of culture.

In each of these groups can be divided into static indicators of competitiveness. They have already collected by international organizations and the marks obtained on the basis of an annual survey of managers. The subsequent ranking of countries based on a set of measures. The resultant position of the country, determined on the basis of individual characteristics, determines the place occupied by him. The advantage of the method is that it gives an insight into how the various factors affecting competitiveness. A drawback, however, is the inability to determine the distance between the main competitors. Because in the ranking does not say anything about the scale advantages or losses in comparison to others.

Basic measures of international competitiveness can also be classified according to different criteria. In the studies, there are two approaches[32]:

1. construction and calculation of the indicators of the international competitive position of ex–post and on that basis, forecasting their development for the future,
2. construction and calculation of the indicators of the international competitive position of the country, taking into account the presence in the past, strong ties with the basic determinants of competitive position.

Staying on the so–called national level, we can distinguish the following quantitative indicators shaping the competitive position of the country an ex post:[33]

- share in global turnover of goods and services,
- trade balance,

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[31] Lubiński M., Michalski T., Misala J. …, op. cit., pp. 16–17.

[32] Pawlas I., *Teoretyczne podstawy konkurencyjności na poziomie makroekonomicznym*. /In:/ *Ewolucja przewagi konkurencyjnej polskiej gospodarki a procesy jej otwierania w drugiej połowie lat 90.*, scientific editor: T. Sporek, AE, Katowice 2001, pp. 21–23.

[33] Ibidem, p. 25.

- current account balance,
- exchange rate,
- resources and foreign exchange rate of the national currency.

Metrics, illustrating the international competitive position of the country, are also their share in world trade.[34] The simplest indicator is the development of its share in world imports. It is often assumed that the higher the share of the state in an appropriate import world, the lower international competitiveness. Others are measures of the competitive position of the country are called indicators import penetration.[35] In respect of the entire national economy rate is nothing else but a share of imports in the supply of the internal market. The share of the state in world exports also treated now as simple indicators of the international competitive position. Over the years, it constructed more and more complex indicators. This was done with replacement special attention to the development of appropriate relationships export–import. In this case it comes to analyzing the development of the balance of foreign trade turnover of the country in general and/or additional individual commodities.[36] This approach, however, is widely criticized for failing to extract many elements of non–price competition. Yet another measure of the competitive position of the country on trade, distinguished in 1975. K. W. Rothschild.[37] It is generally speaking about frequently used today called. Export hypothetical ratios (HE), which are much more dynamic.

In addition to multiple quantitative measures of the competitive position of an ex post that here have already been presented, also we identified measures and formulas by which examines the development of costs and prices. These are called. measures such cost–price. Most measures in this field to change the terms of trade indicators. It is contemplated then usually changes known nominal (price) terms of trade.[38] In other words, it is a relationship of export prices of the country in the period to the prices of imported goods. The evolution during the pricing terms of trade will give you a clue – as to the mutual advantage of, or changes in the benefits of trading with each party. It is worth noting that the price terms of trade are improving, if the prices of goods exported by the country grow faster every year since prices of imported goods. Such a direction of price changes is an increase in the purchasing power of the country. For the same export can yet be reduced to the state of foreign goods more or less pay for it. In addition to the pricing terms of trade you can extract also called real or quantitative terms of trade. In fact, they mean quantitative relations in which takes place trade.[39] By changes in real terms of trade meant a change in the quantity of goods that must export country, to thus be able to import a certain quantity of a given set of goods. It shall also apply to the so–called factorial terms of trade.[40] It indicates not only on the price relationships of these goods, but also to changes in the prices of factors of production used to produce them.[41]

When considering the terms of trade, as a measure of the competitive position of the country, take into account the most common indicators in nominal terms of trade, or otherwise money. The improvement of this type of terms of trade are also considered as an expression of improving the competitive capacity of the country in the short term. In the long run need to be taken into consideration are many additional factors and conditions affecting the structured type on the development of costs and prices.

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[34] Rymarczyk J., *Międzynarodowe stosunki gospodarcze*, PWE, Warszawa 2010, pp. 279–280.
[35] Stankiewicz M.J. …, op. cit., pp. 32–33.
[36] Ibidem, p. 42.
[37] Lubiński M., Michalski T., Misala J. …, op. cit., p. 25.
[38] Misala J., *Historia rozwoju teorii i polityki konkurencyjności międzynarodowej*, SGH w Warszawie, Warszawa 2009, pp. 188–189.
[39] Ibidem, p. 190.
[40] Budnikowski A., *Międzynarodowe stosunki gospodarcze*, PWE, Warszawa 2003, p. 213.
[41] Ibidem, p. 215.

The most developed so far measure the formation of international competitiveness at the national level an ex ante formulated economists from Germany.[42] At these measures can be stated that:

- the authors of these studies believe that the concept of international competitiveness of the national economy is a real economic category, the definition should be further developed,
- international competitiveness of the national economy must clearly be regarded as its ability and willingness to achieve the greatest possible benefits from active participation in the international division of labor,
- international competitiveness of the economy should be measured in terms of both global and for individual departments, branches, products and even to their constituents.

International competitiveness of the country depends on four basic groups of factors:[43]

1. level of mobility, dynamics and directions of development of the productive resources, so the savings rate and accumulation, investment in fixed assets, technologies and human capital, working time,
2. productivity, resource efficiency of capital, technology, human capital, labor,
3. economic progress related to entrepreneurship, innovation, dynamism, flexibility of supply relative to demand, quality of management, the effectiveness of corporate governance,
4. the state of economic balance and the strength of demand in the mutual economic relations with foreign countries.

It is shaped both by supply factors and demand factors. The force of mutual demand, the growth in demand, development of pricing conditions mean that price elasticity and income supply and demand associated with operating flexibility, entrepreneurship and the ability to quick identification of opportunities and risks of market and respond quickly to changes in current and long–term they are also important factors determining the competitiveness of. Examining the international competitiveness of the country must of course also take into account the results achieved in foreign trade. Competitiveness is thus a manifestation of the ability of the economy to maintain or enlarge the share of the world market.

In a simplified way (model) competitiveness of the economy can be determined using the following formula: The competitiveness of the economy = openness and structure of property rights + economic freedom, competition + market mechanism + low taxes + stable monetary system + flexible labor market + liberalization of the turnover of foreign trade, The market exchange rate. In respect of international competitiveness in the literature clearly distinguishes the two concepts: the international competitive ability and international competitive advantage. These terms refer to the same object of study. However, they highlight different aspects.

The competitiveness of the Polish economy against the background of EU countries

The World Competitiveness Yearbook 2011 released by the International Institute for Management Development (IMD) evaluates the competitiveness of 58 countries, based on 300 detailed criteria. According to the data contained therein Polish competitive position in the years 2006–2011 he drew more and more preferably. In the years 2006, 2007, Poland was in turn 50 and 52 to the position (55 assessed countries), a year later was promoted to the forty–fourth (but from the EU – 27, ahead of only Romania and Italy), and in 2010 reached already thirty–second (from the EU ahead of –27 for 11 countries). 2011

[42] Lubiński M., Michalski T., Misala J. …, op. cit., p. 66.

[43] *Konkurencyjność gospodarki Polski w dobie integracji z Unią Europejską i globalizacji*, scientific editor: Bossak J, Bieńkowski W, Instytut Gospodarki Światowej, Kolegium Gospodarki Światowej SGH, Warszawa 2001, p. 32.

years took place lower in comparison to the previous year, ranking 34th. Among the EU–27 took place on 17 ahead but only 10 countries.[44]

On the other hand, according to the Global Competitiveness Ranking, which is a major component of the annual report, The Global Competitiveness Report, the World Economic Forum (WEF World Economic Forum), Poland was not and is not known to be highly competitive countries. Last Report 2011 reports that Poland has improved its position by 7 places, moving up from 46 to 39th place among 139 countries. Thus, ahead of just 13 EU countries: Cyprus, Spain, Slovenia, Portugal, Lithuania, Italy, Malta, Slovakia Hungary, Romania, Latvia, Bulgaria and Greece. Of the 12 categories under consideration, the lowest rated i.a.: infrastructure (72 place), macroeconomic environment (61), and innovation (54). The highest scores achieved m.in .: market size (21), higher education and training (26), as well as the development of financial markets (32). Over the years, one can observe the changing competitive position of Polish, which studied the 5–year period is not favorable. In 2006–2007 Poland by rating GCI was ranked in place 48 to 125 countries surveyed. In 2007–2008, its position has deteriorated consequence of which was the decline in the place 51 among the 131 countries surveyed. In subsequent years (2008–2009) Poland took only 53 place (out of the 134 countries surveyed), while in 2009–2010 improved its position and moved up to 46 in subsequent years to the place of 39. Poland is gradually improving its competitive position, however, increase competitiveness especially in areas such as innovation, macroeconomic stability and market efficiency products and services it is still insufficient.[45]

The analysis of individual indicators chosen categories of competitiveness outlined in the Global Competitiveness Report of WEF shows that Poland is a distant place in terms of innovation (52 place), and especially state expenditures on high–tech products. In this area Poland ranks on position 100 among 139 countries evaluated and 23 against EU countries. The largest investment in modern technology to bear such EU countries as Luxembourg, Finland and Sweden. The greatest potential for innovation falls to countries such as Germany (1st place among EU countries), Sweden (2), Finland (3), France (4) and Denmark (5). Poland in terms of innovation potential takes the place of 21 of 27 EU countries. A similar situation in the case of the availability of scientists and engineers as well as the usefulness of patents granted, where Poland is in turn 21 and 26 position. Poorly presented the Polish position in the area of macroeconomic environment. In 2011, among the EU countries Poland took only 22 place in terms of the balance of the state budget, where the highest marks obtained Estonia and Sweden, and 18th place (ex aequo with France) in terms of growth of national economy, where countries are leading the Netherlands and Austria.

Alarmingly low because only 100 position in the world and 24 in Poland took the EU in terms of the use of technology by companies. Similarly, the availability of modern technology, where Poland ranks only 88 position in the world and 25 in the EU. European leaders in these areas are: Sweden (1st place in Europe and in the world), Denmark (9th in the world) and the Netherlands (21 sequentially and 6 in the world). The relatively high ranking (37th place in the world, 15 in EU) Poland is in the field of foreign direct investment and technology transfer. The quality of Polish education system is assessed as very low, because it puts Poland in 19th place among the countries of the Union. At a higher place is taken by the availability of research and training services (27 place in the world, 14 in the EU) and the number of high school students (28th and 15th). Poland occupies a relatively high position in the domestic market and foreign (6 and 7 in the EU). EU countries having the largest markets are Germany, the United Kingdom and France.[46]

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[44] Maksimczuk A., *Granice państwowe, relacje z sąsiedztwem…,* Vol. 1., Table 9, *Ranking konkurencyjności Polski i wybranych krajów Unii Europejskiej według indeksu IMD w latach 2006–2011,* p. 203; Report: *Polska – Raport o stanie gospodarki* (for each year).

[45] Ibidem, Table 10, *Ranking konkurencyjności Polski i wybranych krajów Unii Europejskiej według indeksu GCI*, p. 204; Report: *Polska – Raport o stanie gospodarki* (for each year).

[46] Ibidem, p. 205.

According to the Government Centre for Strategic Studies (RCSS) obstacle to increasing the competitiveness of the Polish economy is largely poor access to modern technological infrastructure and the inefficiency of the capital market, hinders rapid access to financial resources most effectively to investors sphere of production. Poland remains too far behind in terms of infrastructure development, construction of motorways, railways, etc. modern. RCSS presented by the analysis showed 2–3 times weaker competitive position of the Polish measured by GDP per capita 1 in relation to the economies of Western Europe. This has a strong relationship with a lower pace of technological progress and organizational and lower arms work.

Improve the competitive position will require increased investment in fixed capital and improve the functioning of the system of allocation of resources which will contribute to the efficient use of production factors. According to RCSS strong side of the Polish economy are the low labor costs in relation to labor productivity, moderate level of GDP redistribution through public finance as well as the high level of computerization of the country. It should also be noted that the value of Polish exports in the period 2000–2010 increased by almost 3.5 times, while the import of approx. 2.5 times. The largest Polish trade partner in terms of imports and exports is Germany, whose share in exports in 2011 amounted to approx. 30 billion €. In November of 2011. Inflation (rise in prices of consumer goods and services) wyniosła4,8% per annum. Compared to the previous month, prices rose by 0.7%. The inflation rate was above the inflation target set by the Monetary Policy Council at the level of 2.5%. Inflation in the year to a large extent affected by the increase of goods and services in the field of transport (11.0%), charges related to the dwelling (6.1%) and food prices (by 4.5%).[47]

Assuming GDP per capita as a measure of economic growth, it is clear that Poland is a country economically weaker compared to other European Union countries, both the EU15, as well as countries in the region. In 2009, GDP per capita in Poland by purchasing power parity, which was over 50% lower than the total in OECD countries. Other countries in the region, ie, the Czech Republic Slovakia and Hungary "achieved better results. Polish with a GDP per capita equal to 17294 USD took 24th place (Figure 1), ahead of only Latvia, Romania and Bulgaria. The best results were achieved by countries such as Luxembourg (84713 USD), Ireland (41493 USD) and the Netherlands (41063 USD) .30 in 2010. Polish GDP growth rate reached 3.9% and was one of the highest in the EU. in 2011, GDP growth in Poland was already 4.3%.[48]

Some notes about growth strategies competitiveness of the Polish economy

Analysis of the status and conditions to improve the competitiveness of modern Polish economy can not be separated from the reference to their past. After the war and the subsequent changes in the system had a strong effect on reducing the competitiveness of the Polish economy. To reduce the distance in relation to the strongly developed countries, and to improve the negative competitive situation of the country, the Polish Government took the first sample of operations, which was the fruit of Polish Economic Promotion Program for 2005 (PPGP), developed in 2003. In turn, in 2004, it was created the National Development Plan for the years 2007 to 2013 (NDP), relating mainly to solve the problem of low competitiveness of the Polish economy.

The main assumptions PPGP were:[49]

- improve the international competitiveness of Polish industry and agriculture,

[47] Borowski J., *Globalizacja, konkurencyjność międzynarodowa i strategie* …, op. cit., Chapter 10, *Polityka wzrostu poziomu konkurencyjności międzynarodowej*, pp. 97–99; Szymańska E., *Polityka proinnowacyjna w Polsce.* /In:/ *Przesłanki konsolidacji …,* op. cit., pp.100–101.

[48] Ibidem, pp. 100–101.

[49] See: *Narodowy Plan Rozwoju na lata 2007–2013*.

- effective promotion of Polish goods,
- a steady flow of foreign direct investment, in particular innovative and export–oriented;
- growth of Polish investment abroad.

These actions have contributed to increasing the share of trade policy in international economic relations. As a key duties NRP adopted increase the competitiveness of the economy based on knowledge and entrepreneurship, ensuring the improvement of social, economic and spatial as well as employment growth. This strategy covers four areas:[50]

- entrepreneurship – creation of new areas of economic activity, labor productivity growth, expansion of products and services,
- innovation – development of scientific research as sources of innovation, the inclusion of science in economic development, organizational innovations, innovations in marketing and management, creating a basis for innovation in society,
- liberalization of markets – eliminate the threat of unfair competition,
- national – marketing promotion of Polish as a country attractive for investors, promotion of tourism and exports.

In 2007, the Polish government adopted guidelines for the Strategy for the Promotion of Polish Economy in the years 2007–2015. Based on these assumptions, a strategy whose main objective was to increase the importance of the Polish economy in the world economy by getting her a single image. The strategy takes into account the actions of the government in the area: the promotion of exports, support for Polish investment abroad and attracting FDI. This document assumes thereby improving the functioning of the Polish representative offices abroad, in the promotion of Polish as an area of investment and tourism. As a source of financing in the strategy used funds from the Innovative Project Economy.[51]In the age of globalization and dynamic changes a very important factor in increasing the competitiveness of the economy is to advance scientific – technical expressing itself in the growth of technological innovation and product, accelerating the development of the leading sectors such as telecommunications, biotechnology and information technology. Technical and scientific progress has a long–term impact on the socio–economic processes. Poland as a country with a low position in terms of innovation and the use of modern technologies should be sought in technological progress and technological chance to increase economic competitiveness. Technical progress can be reflected in both the small but frequent improvements or upgrades of product and process, but also in the implementation of radical innovations in technology and products. Technological innovations are mutually stimulus may become the ground for the emergence of new industries and services.[52]

The development of the ICT sector, as well as the development of infrastructure for access to the Internet, which is already an essential element of economic, political, cultural and social processes of internationalization an accelerator. Rapid flow of information based on modern technologies allows for the coordination of activities of enterprises and transnational corporations in particular. The Internet and modern information technology to a large extent determine the international competitiveness of economies existing in the twenty–first century. Thanks to modern technology, there is an increase intensity of absorption–adaptability of enterprises and increasing their geographical coverage. The consequence of these actions are: an increase in supply, the diversification of the assortment, changes in the system and the structure of production, increase the share of innovative products and upgrades, as well as changes in the ownership structure and the spatial deployment of economic activities. Benefits of international cooperation reach those countries and companies that model their lines of specialization in order to

[50] Raftowicz–Filipkiewicz M., *Strategie rozwoju atrakcyjnej i konkurencyjnej gospodarki Polski.* /In:/ *Konkurencyjność gospodarki Polski,* scientific editor: Balcerzak A.P., Rogalska E, Wydawnictwo Adam Marszałek, Toruń 2008, p. 42.

[51] Ibidem, p. 43.

[52] Ślusarczyk B., *Międzynarodowa pozycja konkurencyjna Polski. Teoria i praktyka,* CeDeWu, Warszawa 2011, p. 119.

adapt them to the ever–changing competitive advantages. One of the main features of the system is so technical and economic flexibility through the possibility of using automated and sofwared devices. Its manifestation is the integration of all stages of the production process: research and development, production and distribution. Technical–economic system characterized by flexible specialization: the flexibility of production, personnel, organizational, as well as high capital intensity, absorption of new technical, technological and organizational, saving physical inputs and low demand for Routine workforce. This system is also associated with an increase in substitution of production factors, increase automation and robotics increase productivity.[53]

The system of flexible specialization requires the constant research and development and high expenditures on science. Science becomes the dominant factor in the development of the country and increase its competitiveness. Science–intensive economic activities can significantly accelerate the development of the economy, providing a source of obtaining one of the most important resource – knowledge. Competition for allocation of science–intensive sectors combines the struggle for technological leadership of effecting structural reallocation between sectors of traditional and high technology sectors. The interpretation of such competition takes into account the relationship between the sectors of high technology and the specificity produced by these product sectors. Important is the ability of enterprises to conduct R & D activity resulting in new products and reducing production costs. The factors determining the dynamics of the development of science–intensive sectors and the progress of innovation include:[54]

- qualified labor resources and their use,
- education system,
- physical capital and financial,
- transfer of foreign factors of production (knowledge, technology, etc.),
- scientific cooperation the technology with other countries,
- the efficiency of the market mechanism,
- active macroeconomic policy of the state.

Another extremely important factor and a chance to improve the competitiveness of the Polish economy is human capital, and all expenditures and investments that make up its resource.[55] These investments include funds earmarked ha environment, culture and health. Human capital is thus accumulated store of knowledge, qualifications, skills and abilities to increase the economic potential. Development of innovation and increased competitiveness of the economy requires a transformation of the economy towards the development of the production of modern, scientific–intensive and based on modern technology, especially related to data processing and telecommunications. Such actions are conditioned, however, considerable amount of financial capital to raise the level of education and the development of R & D centers.

Competition has long been considered to be a market phenomenon. It is also an element of competition. On the one hand, it is the support of economic progress. On the other hand, favors the harmonization of the interests of entrepreneurs and investors with the interests of consumers. May affect competition between various economic operators of businesses and industries across economic sectors – to the regional economies and the state. Competitiveness and refers to the ability of these entities to effective competition, which has lead to success in economic competition. Despite the differences in the selection of the factors that shape competitiveness in research WEF and IMD, both institutions have reported, not highly competitiveness of the Polish economy. Similarly, they identify the reasons. Poland has a very poor technical infrastructure and low levels of innovation. It is also necessary structural changes,

[53] Ibidem, p. 120.
[54] Ibidem, p. 122.
[55] Ibidem, p. 122.

including legislation economic, financial markets and public finances. An important reason for the low competitive position of the Polish economy are also low investment in education and R & D sector.[56]

An opportunity for economic development for the Polish funds are coming from the European Union. The financial resource in the form of budgetary and extrabudgetary sources is to abolish the distance between the various EU countries. Unfortunately, the skillful use of opportunities not conditional to long–term success and economic progress. One of the obstacles can be political action especially in the social sphere. Excessive social spending at the expense of funding for research and technology investments can lead to a waste of resources. Polish economy also stood in the end to the need to adapt to the challenges of globalization reinforced the prospect of Polish accession to the European Union, which abolished almost all the obstacles to the movement of capital, goods, services and people. With the free movement of factors of production, goods and demand for demand for domestic goods will increasingly so determine the competitiveness of domestic producers, and not the size of the domestic demand. Domestic demand can still be met by economic activity outside the country where it is more competitive than the national. Conversely, the high competitiveness of domestic producers, the scale of production will be significantly conditioned by external demand. Increase the competitiveness of the Polish economy has become the same factor for the survival and development of economic activities in Poland.[57]

Conclusion

At the time of integration with the European Union a low level of exports, the outdated structure, the lack of developed infrastructure of exports, high trade deficit were the main determinants providing that the Polish[58] economy at the time was still a little resistant to external competition. Insufficient competitiveness[59], of the Polish economy was also affected by the growing deficit in the state budget. More than a dozen years of the Polish in the structures of the European Community, according to the considerations being made in this study and based on data from the professional literature available reports of international competitiveness, indeed show some change in the situation for the better. However, the situation in this regard is still far from expectations.

Positively verified was previously put the hypothesis that: a basic prerequisite for further rapid development of the Polish economy now is becoming a necessity to systematically raising its international competitiveness. Also failed to formulate the following specific conclusions:

1. it is too early yet to speak about the existence in Poland of a coherent support system for innovation and competitiveness. You can see at most some directions of the government in this regard,
2. institutions supporting innovation and competitiveness and in this respect the applicable provisions of law currently derive still more of a necessity to adapt Polish economy to the requirements of the Internal Market than planned Polish government policy,
3. in addition to increasing spending on research and development is needed in this area closer cooperation within the EU and internationally – while optimizing the use of research results,
4. in Poland, inhibit innovation and competitiveness continue to influence institutions and infrastructure – also regarded as the weakest of its pro–innovation policy,
5. at least 3% of GDP should be spent on research and development – in a situation where now there are still difficulties with the achievement level of 1%,

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[56] Maksimczuk A. …, op. cit., p. 210.

[57] Radzymińska T., *Nie ma czasu do stracenia*, „Nowe życie gospodarcze" 2001, No 23, p. 29.

[58] Maksimczuk A., *Granice państwowe* …, Vol. 1, Tablw 11, *Ranking konkurencyjności międzynarodowej niektórych krajów objętych badaniami IMD,* p. 212.

[59] Ibidem, tables 9–10, pp. 203–204.

6. the competitiveness of EU economies (including Polish) and their investment attractiveness of significant impact must have a European Parliament resolution of 15 February 2011 on the implementation of the Services Directive. The efficiency of its implementation in individual countries may be largely dependent on their international competitiveness.

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NEW DIMENSION OF INNOVATION – THE SHIFT FROM CLOSED TO OPEN APPROACH

Summary

The aim of this chapter is to present the innovation concept in a new dimension. There has been a change in the paradigm of innovation in the context of new trends in this field, i.e. the shift from the closed to the open model. The chapter consists of the introduction, followed by the first part presenting the way innovative models have evolved from the closed to the open models, and the second part focusing on a new dimension of innovation in the modern economy.

* * *

Introduction

Nowadays, it is more and more difficult to create innovations on a world scale, taking advantage of own resources. Innovations on a company or state level (i.e. diffusion of innovations) are more common. Spontaneous inventions made by ingenious inventors working alone are rare. The traditional opinion that an innovation derives from one's great mind full of new ideas is not true anymore when we observe our reality. Modern innovations are the outcome of systematic, often very expensive research requiring cooperation among many units or bigger teams representing different fields of knowledge and various institutions. Our today's market with its global competition constantly make companies release new products. A new approach towards the innovation process has emerged: the open innovation model. [1]

The aim of this chapter is to present the innovation concept in a new dimension. There has been a change in the paradigm of innovation in the context of new trends in this field, i.e. the shift from the closed to the open model. New types of innovation are increasingly evident, e.g. social innovation. The changing nature of innovation is widely recognized and was reflected in *The Innovation Strategy* developed by the OECD**.**

[1] H. Chesbrough shows this approach giving examples of global concerns' innovation strategies (Xerox, IBM, Intel) in the book: *Open Innovation. The New Imperative for Creating and Profiting from Technology*, Harvard Business School Press, Boston 2003.

The chapter consists of the introduction, followed by the first part presenting the way innovative models have evolved from the closed to the open models, and the second part focusing on a new dimension of innovation in the modern economy.

Evolution of innovation models from the closed to the open model

The innovation landscape has changed since the new phenomena emerged, e.g. fast and easy information and technology transfer, technological progress, knowledge diffusion, electronic data exchange, global market, and global consumer. Hence, many enterprises have changed their innovation models.

Defining an innovation process we can distinguish two definitions. Following Schumpeter[2] the innovation process is a certain sequence of events: starting from an idea (invention), through implementation (innovation) and dissemination (imitation).

W. Janasz and K. Kozioł–Nadolna[3] define an innovation process as generating an innovation idea (regardless of what idea it is about or what area of innovation activity it is created on), then creating, designing and the first implementation. The main event in this kind of a process is the implementation of a new product or solution.

The innovation process, as the definition says, consists of phases, stages connected with each other by different interactions.

We can look at innovation processes from different perspectives: economy, enterprise or a separate innovation. No matter which analysis we use, an innovation process generally consists of two phases: the creation of an innovation and its dissemination.

Innovation models have evolved from simple linear models. Good examples are: the technology–push model (up to the second half of the 1960s) and the market pull model (in the 1970s). More recent innovation models try to build more complexity and interaction into the framework and explicitly stress the need for openness towards external partners in innovation and R&D. The "third–generation" innovation model combines the technology–push and need–pull models by stressing linkages and feedback loops between R&D and marketing. The subsequent integrated model of the 1980s ("fourth–generation") emphasised innovation as a broadly parallel process with cross–functional integration and parallel development within the company and with external collaborators.

R. Rothwell[4] claimed at the beginning of 1990s that there were five generations of innovation models. His last 'fifth–generation' model combines integration networking with information technology, based on networking of marketing, R&D, production and customers.

Can we already start talking about the "sixth–generation" innovation model? The answer seems to be positive[5]. The end of 1990s and the first decade of the 21st century brought new solutions, structures and, finally, new approach towards development. Thus, the 'sixth–generation' model is an answer to the changes in the global environment and its influence on enterprises. Moreover, the enterprises themselves have changed: their structure, ties (so networking enterprise emerged), emphasis on cooperation. In this model attention is paid to knowledge as a separate category and the processes managing the knowledge as well as learning processes. Innovation processes should be planned in a way to enable the following: creating new knowledge, managing existing knowledge, storing up knowledge, transfer of knowledge

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[2] J.A. Schumpeter, *Teoria rozwoju gospodarczego*, PWN, Warszawa 1960.

[3] W. Janasz, K. Kozioł–Nadolna, *Innowacje w organizacji*, PWE, Warszawa 2011.

[4] R. Rothwell, *Successful Industrial Innovation : Critical Factors for the 1990's*, "R and D Management" 1992, No. 22.

[5] See: P.K. Ahmed, *Sixth generation innovation: innovation management systems into the future*, "European Journal of Innovation Management" 2000, No 3, pp. 112–114; J. Baruk, *Zarządzanie wiedzą i innowacjami,* Wydawnictwo Adam Marszałek, Toruń 2006, p. 122; D. Nobelius, *Towards the sixth generation of R&D management*, "International Journal of Project Management" 2004, No 22 (5), pp. 369–375.

or using it again. Different kinds of boundaries are crossed: between enterprises, between sectors participating in innovation processes, in taking advantage of the experience of many organizations and their employees. Finally, new problems emerged, i.e. the protection of intellectual property and regulations in an innovation chain.

The 21st century strengthened the substantial changes on the market, which made enterprises change their innovation models. The innovation process is becoming more expensive and risky due to a global competition, a short product cycle, technological progress. As a consequence, enterprises start to share risk doing research with other enterprises and organizations, apply the open innovation model and enter enterprise networks.

In the open strategy of innovations the following rule is the most basic: the maximization of values coming from different ideas (both company's ideas as well as the external ones). This approach means that the formal framework of organization is just symbolic and does not stop the flow of knowledge between the organization and its environment. Companies that adopt the open innovation strategy both enthusiastically develop ideas which were created by others as well as make their own ideas available to other organizations which find them more interesting. Sometimes company's own ideas are (transferred) to other enterprises deliberately (e.g. start–ups) in order for them to be developed without the company's internal powers' influence[6].

The concept of the open innovation is new neither in the literature on the subject nor in enterprises' activity. However, only H.W. Chesbrough's book issued in 2003 under this title[7] started a broad discussion on the subject between theoreticians and practitioners.

The novelty of Chesbrough's concept is based on a fact that the process of open innovation became an integral part of the innovation strategy of an enterprise and its business model. In the first decades of the 20th century industrial enterprises in the USA cooperated and ordered solutions in outside R&D laboratories. We can say that they used the open innovation model[8]. However, the situation changed drastically after the 2nd World War. In 1950s and 1960s the first generation model of the innovation process with its closed approach was in the lead. The new open innovation model contrasts with this approach.

In the closed approach, organizations do not share their knowledge and, moreover, their ideas stay inside an enterprise, being assessed at various, a lot of ideas are rejected and never used. On top of that, they are eliminated, not by the market or consumers, but employees of the enterprise who find the ideas irrelevant or useless at some moment.

In this model, enterprises finance innovation processes only from their own resources, which are often very meagre, as the R&D activity is risky. And therefore, enterprises will rather tend to purchase ready–made material technology. On the market there is free capital, which may be intended for the development of innovation projects (e.g. through strategic alliances, cooperation agreements, venture capital, business angels' activity). However, this requires a radical change in thinking about innovation. One of the ways out of this situation is to be open to the environment, i.e. customers, suppliers, and institutions such as universities, by making them deeply involved in their innovation processes.

Therefore, it can be concluded that one of the elements of openness of an innovation process is "opening" oneself to resources from outside the organization – i.e. alternative resources to traditional ways of financing. Such a solution is crowdfunding.

A vast majority of enterprises has no doubts that there has been a change in the perception of the innovation process and its implementation. A traditional approach to innovations – based on the results of own R&D centers, long lasting and expensive research protected against competition – is coming to an

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[6] H.W. Chesbrough, *Open innovation. The new imperative for creating and profiting from technology*, Harvard Business School Press, Boston 2003.

[7] Ibidem.

[8] D. Teece, *Technological change and the nature of the firm*. /In:/, *Technical change and economic theory*, scientific editors: G. Dosi, C. Freeman, R. Nelson, G. Silverberg, L. Soete, Pinter Publishers, 1988.

end. Other issues are important on the market: the time of reaction to consumer needs or the cooperation in an innovation chain, which enables to share costs and risk of the innovation undertaking.

The concept of lead users formulated by E. von Hippel is based on the openness of innovation processes.[9] The concept rests upon knowledge and understanding of explicit and implicit requirements and needs of consumers, using their ideas and solutions, making them involved in the process of product creation and taking advantage of information coming from customers. E. von Hippel assumed that a driving force behind innovation processes were dissatisfied consumers who improved a product. Empirical studies have revealed that 10–40% of users are involved in the development or improvement of products or services. Lead users are individuals or companies that create unique solutions to meet their own needs for none of the existing products satisfy them.

E. von Hippel also found that there had been a paradigm shift in the field of innovation – from the closed system based on the protection of intellectual property, with the main role played by producers, to the open system where intellectual property is at times available free of charge and authors of innovations are often users of products supported by the advanced ICT equipment.

Crowdsourcing is also based on openness. The term describes cooperation of many people, not connected with a company, seeking to find new or revolutionary solutions. Crowdsourcing, broadly defined, is thought of as collective sharing of information (any kind of information, including one's own tastes). Narrowly defined, it means that only professional knowledge is shared.[10] The mechanism rests upon the fact that instead of giving tasks to employees, a company gives them over to an undefined group of people in a form of an open invitation.

Some of the examples of a practical implementation of crowdsourcing are Dell, Starbucks or IBM. Dell created a website[11]enabling people to post their ideas, especially those for improvements of Dell's products. According to the company, it greatly benefited from several thousand ideas submitted by Internet users. Starbucks works in a similar way.[12] Thanks to its customers' ideas the brand appeared in grocery stores, introduced Happy Hours, and cappuccino can be bought in bottles. IBM holds open competitions for innovations in the form of an Internet brainstorming session **(***Innovation Jams)***.**

In their book, D. Tapscott and A.D. Williams give interesting examples of how open innovation is used in practice.[13] The authors found that knowledge coming from a network build up the world over is an inexhaustible source of innovative ideas. The title of their work hints that the traditional values (such as chain of command or age–based authority) are going to lose their importance, whilst cooperation (where anyone can join a project, even if one does not have formal qualifications), openness, knowledge sharing, honesty, interdependence and supporting global–scale activities are going to become increasingly significant.

The changing nature of innovation

Extensive changes in the practice of implementing innovations, in their kinds and forms or a character, notably observed since the beginning of the 21th century, prompted the OECD to announce *the Innovation Strategy*, a document describing new features of this phenomenon[14].

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[9] E. von Hippel, *Democratizing Innovation*, MIT Press, 2005, http://web.mit.edu/evhippel/www/books.htm, accessed: December 2011; *idem*, *Lead Users: a Source of Novel Product Concepts*, „Management Science" 1986, No. 7 , pp. 791–805.

[10] J. Howe, *The Rise od Crowdsourcing,* „Wired Magazine" 2006 June.

[11] http://IdeaStorm.com, accessed: November 2016.

[12] http://MyStarbuckIdea.com, accessed: November 2016.

[13] D. Tapscott, A. D. Williams, *Makrowikinomia. Reset świata i biznesu,* Studio Emka, Warszawa 2011.

[14] *2009 Interim Report On The OECD Innovation Strategy*, SG/INNOV(2009)1/REV1.

The following are the characteristics of a contemporary innovation:[15]

- it is created by the participation of a greater number of participants than before,
- it is created by overlapping and fusion of a greater number of areas of knowledge,
- it is created within more diverse mechanisms (open and closed innovations, demand–driven innovations, innovations created within consortia etc.),
- it takes place within an increasingly diversified environment (research consortia, technology transfer centers and technology platforms, new technology companies, venture capital companies, knowledge–intensive business services, clusters, non–profit organizations),
- in an innovation activity a stronger emphasis is put on decentralization of project management, plasticity of an organization, staff autonomy, stimulating creativity, building mutual trust, and on communication and leadership,
- customers and users are becoming co–authors of innovations,
- anonymous groups are authors of innovations (Wikipedia, Linux),
- the significance of non–technological innovations is growing steadily,
- one can observe the growing importance of eco–innovations, social innovations or 'modest' innovations,
- an emphasis is put on hybrid value chains – the cooperation aiming to integrate innovations and entrepreneurship of a business sector with that of a social sector,
- growing globalization of research and development.

In 2012 the OECD in its report *Science, Technology and Industry Outlook*[16] said that innovations, once seen as the domain of developed countries, are now appearing in many emerging countries and their share is constantly increasing. Even the implementation of new technologies from abroad requires some adaptation and adjustment, which can already be considered innovation. The report emphasizes that the concept of innovation goes far beyond the advanced technology as it also covers technology at a lower level, the service sector and social innovations. World–class scientific database is not a necessary prerequisite for innovation. Innovation can help in reducing poverty (which is a priority for many countries, in particular developing ones). Modest innovations exert a more direct impact as they make new products more readily available to households with low and middle–income, and poor people can modernize their businesses, often those "informal" ones and with a low level of productivity.

Nowadays, an increasingly important role is played by social dimension of innovations. Social innovations are innovative strategies, models and solutions designed in response to societal challenges. These are also macro–level phenomena and experimental social activities to improve life quality of individuals, communities, nations, businesses or social groups. Their experimental nature stems from the introduction of unique and one–off solutions on a large scale, where the end result is often difficult to be fully predicted.[17]

Innovations used to be seen as something beyond society, especially when considering technology. However, technological innovations may well be seen as social innovations due to their bigger or lesser impact on society. Thus, it ought to be emphasized that there is a thin line between technological and social innovations that is often difficult to determine. It is generally accepted that social innovations are a counterweight to the traditional way of investing in R&D sector. Modern social innovations no longer mean investing a lot of money and resources into products available to a small group of recipients, but its goal is to reach many customers using fewer resources.

According to the European Commission's definition, social innovations are those that are social both in terms of objectives and resources, at the same time remaining open to territorial or cultural differences

[15] K. Kozioł–Nadolna, *Internacjonalizacja działalności badawczo–rozwojowej w kształtowaniu procesów innowacyjnych przedsiębiorstw w Polsce*, CeDeWu, Warszawa 2013.

[16] *OECD Science, Technology and Industry Outlook*, Summary in Polish, OECD 2012.

[17] *Innowacje z ludzką twarzą,* www.pi.parp.pl, accessed: March 2014; K. Wygnański, *Innowacje społeczne*, http://www.liderzy.pl/img/52e51697.pdf, accessed: March 2014.

etc.[18] Another definition of social innovations[19] draws attention to a more efficient use of social innovations than their alternatives in order to meet social needs and to create new social relations and cooperation. These innovations are socially beneficial and improve a society's ability to act.

The idea of modest or frugal innovations (called jugaad innovation) was developed in India and Brazil. This kind of innovations began to attract more attention in 2009 after the publication of the article by J.R. Immelt, V. Govindarajan and Ch. Trimble from General Electric in Harvard Business Review[20]. In their article, the term *reverse innovation* was applied to describe frugal innovations used in emerging markets and being the opposite of the traditional approach of creating innovations that is mostly used by developed countries. The term r*everse innovation* is based on dealing with difficulties in an accessible and cheap way, using the already known solutions and applications. Frugal innovations indictate that the nature of innovations should be reconsidered. Thus, instead of *more*, the aim should be to increasingly pursue *less*. Frugal innovations mean that both a product and a changing supply chain are innovative.[21] Since frugal innovations are characterized by openness, flexibility and accessibility for both companies and their clients, being frugal should be considered one of the basic elements of any company thinking about innovation.

Conclusion

According to the latest theories and practice, innovations are the result of numerous and complex interactions among units, organizations and environment in which they operate. The development of innovation theories and processes shows further evolution of these phenomena and together with all processes in today's economy it will result in the emergence of more complex and realistic models of innovation process. Therefore, it can be concluded that the paradigm of innovation is changing from the closed to the open model, and because this change is a dynamic process, it will require further monitoring and evaluation.

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DEVELOPMENT PATH OF FAMILY BUSINESSES THROUGH INNOVATION AND STRATEGIC MANAGEMENT

Summary

The subject of this paper is an important issue of whether small and medium–sized family businesses can develop and even remain on the market by introducing strategic management and innovation in products, services and sales. The work also discusses the preparation and implementation of strategic management supported by innovation in various areas of activity of a family business. The results of empirical research in these areas has also been presented.

* * *

Introduction

There is a wide misconception that in family businesses there is no necessity to prepare and introduce a strategy and based on that strategy, strategic management, because it is a laborious task and later the actual situation does not correspond to the presumed vision from the period when the assumptions to the strategy had been designed. It is true that situation is always richer than the predictions and forecasts. However, if the analyses are not conducted and no predictions are made about the future, then when it becomes a reality, we are not prepared to take a proper stance and required actions. Therefore, performing analyses and searching for solutions to strategic management have a significant meaning. Alike in consulting to create innovation for small businesses, often to refine organizational solutions or to manage the company and above all to fine tune the products and services, an external assistance of consulting specialist is required.

Considerations on strategic management and innovation in family businesses are based on literature overview and research project results. The research consisted of analyses and diagnoses of the process of introducing innovative changes in small and medium–sized family businesses. Simultaneously, this work has contributed to understanding of methods, techniques and tools used to build competitiveness by family businesses.

The objective of this work is to show that the pursuit of innovation is the basis for managerial decisions regarding the development and implementation of competitive strategy in family businesses. An attempt was made to confirm the hypothesis that the choice and implementation of innovation in family–owned companies determines their concept of competition in the marketplace. The greater the emphasis is given to innovation in managing family business and, therefore, the greater the potential for innovation, the more opportunities arise to make favorable changes in the strategic market position.

The role of innovation in the development of family business's competitiveness

It is extremely important in development of family businesses, both in theoretical considerations and empirical research, to appropriately develop competitiveness through innovation. Unfortunately, this problem from such an approach has rarely been the subject of research. One reason for this may be a universal, but so far unverified scientific view according to which the nature of the property is not a factor differentiating the attitudes and behavior of business towards competitors. This conviction can consider any attempt to seek strategic actions typical for family–owned and family–managed entities as pointless and unnecessary.

It seems that a limited interest in this area of analysis also stems from the numerous problems faced by researchers of family businesses. These include difficulties associated with the identification of such entities and the negative attitude in relation to initiatives aimed at diagnosing the sphere of business management.

Currently, the attention of family business researchers focuses on a transfer of property rights and management responsibilities to successors representing the next generation in the family, as well as the topic of raising capital through stock exchanges and expanding the scale of operations in geographical terms. It is not hard to see that those areas embrace the process of family business development, which depends on the level of competitiveness. For the succession to run smoothly, market expansion to become possible, and the shares issued by the family business to become the focus of investors, family business must be competitive, i.e. must be able to meet customer expectations and achieve the goals no matter the conditions which are created by competitors on the market and the other entities in its environment. Competitiveness is a characteristic acquired as a result of activities involving competitive potential building and using that potential to implement appropriate competitive strategy. To create competitive potential, the enterprise must gather different kinds of resources (human, financial, tangible, knowledge and relations) and form the right mix of these resources. The attractiveness is assessed from the viewpoint of the decision–taker involved in creating competitiveness of the enterprise and involves characteristics such as: high quality, ability to increase earnings and/or decrease the costs of the company, rareness, limited ability to copy the product, specific functionality, no substitutes.

R. Śliwinski's research shows that in the case of Polish companies operating on the domestic market the resource list of great importance includes[1]:

- skills, experience, strength of character, motivation of employees,
- the leader who places the growth of the company above all, takes the most important decisions jointly with the staff, has a market acumen, can securely manage the enterprise and treat subordinates as members of the family,
- fixed assets (machinery), buildings, land that provides possibility to produce a specific range of assortment and use specific technologies, as well as to ensure a proper quality, cost reduction and innovation,

[1] R. Śliwiński, Zasoby kształtujące konkurencyjność polskich przedsiębiorstw, „Gospodarka Narodowa" 2012, No 4, p. 53.

- infrastructure (equipment, computer hardware and software),
- capital for development,
- adequate knowledge, competences, technical expertise and technology,
- registered patents, trademarks and other rights,
- modelling of sales and distribution system (which allows the company to reach a wide group of consumers and ensure constant contact with them),
- product and customer service,
- company culture that features a result–orientation, good working conditions and the possibility of direct contact with the management staff; flat organizational structure that allows for fast and efficient communication within the company,
- good reputation,
- creating barriers to entry (by quasi–monopolization or as a result of implementation and control of customer and contractor service standards).

When it comes to shaping the competitive advantage of these enterprises, the essential resources are: expertise, core competencies, modern technology, industry knowledge, reputation of the company and relationships with customers, code of conduct and organizational structure, tangible and financial resources, intangible assets (patents, copyrights, licenses, concessions, intellectual property rights to inventions, trademarks, designs and know–how), and information systems.

The review of the scientific literature shows that the competitiveness is most commonly identified with the ability of companies to pursue the market objective (i.e. to maintain or increase the current market share) in the competition with other companies offering the same or similar products and attempting to attract attention – at the same place and time – of the same group of buyers[2]. According to the definition formulated by S. Flejterski under this term hides the company's ability to distinguish itself from other players in terms of offer characteristics, the production methods and costs and the methods and speed of getting the product or service to the customer[3].

Forming such a sense of competitiveness is a complex process of taking the right management decisions or making choices. As part of this process, information is collected, problems are identified, objectives set and methods and tools selected for their implementation. All these activities and related decisions are more or less dependent on such factors as[4]:

- characteristics of decision–makers (level of their knowledge, possessed experience, managerial competences, beliefs, attitudes arising from the value system),
- organizational features (ownership structure of the company, system of power in the enterprise, legal form, scope and type of the organizational structure, relations with the groups of most important stakeholders of the enterprise, set of objectives, type of main operating activities, resources of the enterprise in particular knowledge),
- environmental features (influence of the main groups of external stakeholders of the enterprise and other elements of the environment that stimulate or de–stimulate certain competitive behaviors).

In a model the process of shaping the company's competitiveness starts with an assessment of the competitive potential that is tangible and intangible resources and capabilities, which can create a potential competitive advantage. The result of this process is the basis for the search for competitive strategy, a concept of competition adapted to the situation of the enterprise (its competitive potential) and the situation in the environment. This strategy consists of such elements as attitude towards competitors, competing methods and sources of competitive advantage.

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[2] M.J. Stankiewicz, Konkurencyjność przedsiębiorstwa. Budowanie konkurencyjności przedsiębiorstwa w warunkach globalizacji, Wydawnictwo „Dom Organizatora", Toruń 2005.

[3] S. Flejterski, *Istota i mierzenie konkurencyjności międzynarodowej*, „Gospodarka Planowa" 1984, No 9, pp. 390–394.

[4] http://www.e–mentor.edu.pl/artykul/index/numer/45/id/933.

Determinants of the choice of competitive strategy are described in the literature as part of the various theories of competitiveness and classified in various ways. In the light of the classical theory of the first half of the XX century, the forces connected to the environment of the enterprise, and more specifically – the market structure and the preferences and buying habits of customers are perceived as determinants of the competitiveness concept. Later theories of the second half of the XX century emphasize the importance of intra–organizational conditions that is the resource base and company skills. In turn, the contemporary theories do not determine the importance of individual groups of factors but instead emphasize the synergistic interaction of both types of factors.

At this point it is worth noting that the process of shaping competitiveness is directly affected by competitive factors – the components of the competitive potential that determine its current market position as well as currently implemented strategy. In an indirect way on the process impact conditions of strategic decision taking or the availability of specific sources of competitive advantage, positioning of the company against the competitors, situation in a given market (buyers' habits of a particular type of product and competitors offering this product), market prospects, etc.

Path of innovation in family businesses

Competing is a process whose driving force are changes taking place both in the environment and in companies themselves. In the latter case, changes can be twofold: adaptive – enterprises adjusting to the requirements of the new market situation, or innovative – when they are an effect of a new market trend, a new standard of customer service or an offer of a new value, which so far no one from the group of competing entities was not able to provide. Adaptive changes allow the enterprise to survive on the market but do not contribute to strengthening the position in relation to competitors, especially when the company is somewhat forced to implement them under the influence of economic, political, social and technological changes occurring in the national economy and in the behavior of entities in the competitive environment (in close proximity).

Modifications of the type of innovation are a potential source of competitive growth of the company, especially when they are taken with the intention of creating a future market reality. Of course, there is no guarantee that all such changes will be successful, but just undertaking the activity in this area is an important factor in shaping the competitive strength of the company. Long time passed are times when the main source of the strategic competitive advantage of Polish companies laid in labor costs. Currently, the most important factors for success in the competition for customers are, among others: innovation, quality, flexibility and speed. These are the characteristics of learning organizations, or enterprises capable of independently producing the necessary knowledge and able to commercialize that knowledge.

Although the road to innovation requires extensive resource base, preparation and is associated with high risk, especially when it comes to micro– and small enterprises, should not be given up easily. Failure to change and fear of innovation may in fact be harmful in its consequences and in short time can lead to the elimination of the company from the market. Most at risk here are companies that operate on a local market, but have to face competition from foreign companies with global operations.

Given the intensity of competition in the various sectors of the economy and the widespread desire to differentiate the offer, today it is improper to ask the question: Is it worth to attempt innovative projects? The answer is obvious because – who will not go beyond mediocrity, will die. This is evidenced by, among others, words of American scholar Ch. Freeman: "not to innovate, is to die".

Innovation – according to experts – today should be seen as a kind of skill that must be mastered as a required condition. Currently, attention of researchers should therefore be focused on the search for answers to the question: How to increase innovation and use innovation to strengthen the impact on the market?

Innovation is not necessarily linked to a revolutionary, dramatic change in organizational reality. Often seemingly minimal transformation leads to the solution of a serious problem or an effect that surpasses the expectations of the company management. The introduction of innovation can in fact take place in every area of the enterprise.

Innovation is defined as any change in production, involving the assimilation of acquired knowledge. In contrast, in the strict sense it is a change in production methods and products (possibly in the organization of the production process) based on a new or an unused existing knowledge.

Innovation can be divided into a number of types. The division is made depending on the purpose the innovation serves. In the context of pending issues related to competitiveness[5], an important division of innovation that should be considered is into: product, process, organizational and marketing.

Innovation is a key to increase profits and market share, an important tool for the development and competition of enterprises. It is a source of market success, a way to refresh company's offer, a way to differentiate the offer and provide a temporary competitive advantage. Innovation can be for the enterprise a specific remedy for the difficulties in connection with changes in the environment.

Regardless of the perception on innovation, it is always related to specific activities and processes, tools and ways of behavior in different circumstances. Innovation is therefore implementing discovery in the process of creative thinking, applying new combinations of factors of production and new forms of organization.

Innovation of Polish family business in light of empirical research

Analysing the results of international statistical surveys leads to the conclusion that Polish companies from the SME sector are characterized by large innovative backwardness in comparison to those from the other EU countries[6]. For example, product innovations are implemented only by a few percent of domestic small businesses, while in Denmark, Italy, Austria, the Netherlands, Luxembourg, the Czech Republic and Slovenia by 30 to 40%, in Belgium, Finland, Ireland, Estonia, Portugal, Sweden and Cyprus by over 40%, and in Germany by nearly 70%. For medium–sized enterprises the situation is even worse – in Germany innovative activity in this area is exemplified by nearly 80%, in Poland, slightly more than 30%[7].

Also, the data contained in the PARP studies confirms a very weak position of Polish SME sector in the European rankings of innovation. When it comes to technological innovation, the enterprises implementing innovations represent only 10% of the population and companies implementing non–technological innovations represent only 12%. This means that Poland ranks last – 29th place in the ranking. Among medium–sized companies proportion of enterprises implementing innovations is at the level of 12% when it comes to technological innovation and 29% – when non–technological innovations are considered[8].

Information published by GUS are also not optimistic. In the years 2011–2013, innovative companies (i.e. those that over a certain period of time introduced at least one product or process innovation) accounted for 28.5% of all entities grouped in the corporate sector. Percentage of innovative industrial

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[5] M. Żelichowska, Wybrane instrumenty i standardy zarządzania jakością wspierające proces rozwoju innowacji produktowych. /In:/ Przedsiębiorstwo przemysłowe wobec wyzwań XXI wieku, scientific editor: J. Staszewska, Wydawnictwo Unikat 2, Kraków–Warszawa 2013.

[6] Assessing innovation of the corporate sector generally is made on the basis of participation rate of innovative companies and active innovators in the total number of entities making up the sector.

[7] *Działalność innowacyjna przedsiębiorstw w latach 2010–2012,* Urząd Statystyczny w Szczecinie, GUS, Warszawa 2013, p. 7.

[8] Świt innowacyjnego społeczeństwa. Trendy na najbliższe lata, scientific editor: P. Zadura–Lichota, PARP, Warszawa 2013, p. 118.

enterprises totaled 17.1% and the percentage of innovative service enterprises tood at 11.4%. Industrial and service companies alike most frequently implemented process innovations. Especially worrying is the fact that compared to the previous three–year period covered by the GUS study, i.e. 2010–2012, the share of innovative companies in the enterprise sector in Poland has decreased by approximately 0.4 percentage points[9].

Active innovators, that is these companies that have implemented at least one innovation, as well as those that attempted to implement it, but for various reasons did not complete the project, amounted to 31.2% of companies in Poland (18.4% industrial enterprises and 12.8% service enterprises).

In 2012 the share of revenues from sales of new or significantly improved products in total sales revenue was in industrial sector – 1.9% for small firms and 4.7% for medium–sized companies, while in the service industry – 0.4% and 3.2%, respectively. It is also worth noting that the most innovative entities were recorded among large companies and the least innovative players in the small business community. In the process of implementing innovative development projects companies analysed by GUS benefited primarily from internal sources of knowledge (the results of their research and development, experience, and managerial knowledge, data collected by the sales department, marketing department, knowledge of employees). Only approx. 33% of active innovators benefited from external sources that is undertook cooperation with other companies and institutions to develop and realize innovation[10].

When it comes to the most commonly implemented strategies, enterprises studied by GUS indicated: the strategy for reducing material, component and service costs; strategy for reducing internal operating costs and strategy to increase flexibility and the speed of response of the company. This means that Polish companies generally base their ideas to compete on cost factors, although it is clear that a certain change in this regard is seen. About 20% of the surveyed companies has declared the use of other sources of competitiveness than costs[11].

Empirical research of innovation among family businesses

It is worth quoting the results of empirical research conducted in 2011 by a team under the direction of T. Kraśnicka and T. Ingram among small and medium–sized businesses located in Silesia. The aim of this project was to identify conditions and diagnose the innovative potential and assess the effects of implementing innovation in companies (mainly SMEs[1112]). The authors obtained the following results[13]:

a. 81% of the companies participating in the survey implemented marketing innovations, 76% – organizational innovations, 72% – process innovations and 54% – product innovations,
b. studied companies most frequently introduced product innovations, yet the size of the group of companies that have implemented such innovations was relatively small,
c. in regards to the frequency of implementing innovations, it was not very high in this group – about 50% of the subjects reported only 1 to 3 product innovations in the last three years and approximately

[9] Działalność innowacyjna w Polsce 2013, GUS, Warszawa 2014.

[10] Działalność innowacyjna przedsiębiorstw…, op. cit.

[11] Ibidem.

[12] In the research sample totaling 250 enterprises–small enterprises (with 10 to 49 employees) consisted of 77%, medium–sized – 14%, and large – 9%. Looking at the legal form, the percentage of companies operating as a sole proprietorship was about 35% of the total study sample, the percentage of limited liability companies was 33%, civil enterprises – 12%, incorporated companies – 10% and other legal forms – 10%. Looking at the main operating activity of the enterprises, dominated trading companies (31%), service companies (30%), mixed operations companies (24%), and production companies (16%).

[13] *Innowacyjność przedsiębiorstw – koncepcje, uwarunkowania i pomiar*, T. Kraśnicka, T. Ingram, Wydawnictwo Uniwersytetu Ekonomicznego w Katowicach, Katowice 2014, pp. 16–18.

20% of enterprises– about 4 to 8 of this type of innovation. As many as 46% of firms in the studied group did not introduce any product innovations,

d. the percentage of enterprises that have introduced innovations in the form of invention or a new pattern levelled off at 20%,
e. managerial innovations were most often introduced by the surveyed companies, these concerned the system to motivate staff (50% of cases), methods of organizing work (44%), strategy (43%), organizational structure (42%),
f. in order to realise the innovative processes the enterprises participating in the study benefited both from external and internal sources of information, although the most popular were publicly available sources of information,
g. the main incentives encouraging companies to innovate were the following factors: the desire to increase income, the desire to gain a competitive advantage and the need to reduce costs,
h. in order to obtain support to implement innovative projects only 7% of companies declared cooperation with scientific research institutions and universities, and 20% of subjects –cooperation with business partners,
i. the effects expected by entrepreneurs of implementing product and process innovations were: improving the image and quality and increasing income, while the desirable effects of organizational innovation and marketing were: improving the image of the company, revenue growth and gaining competitive advantage.

A review of literature and studies containing statistical data shows that the problem of low activity also applies to family businesses, which – according to expert estimates – in the SME group constitute the majority. Due to a lack of research in this area, it is difficult to determine what is the share of innovative companies among family businesses. Although the general opinion is that family businesses have a lower level of innovation than non–family companies and are less active in the field of innovation in comparison to non–family companies, there is a lack of scientific evidence to test the validity of this statement. One of the reasons for this is the lack of a universal definition of a family business, which would allow for identification of family businesses and determination of the community size of such entities.

Based on the analysis of databases on scientific SYNABA projects and analysis of literature one can say that the innovativeness of Polish family businesses has not been previously a subject of study. Available scientific data reports only a few studies about the innovation of small and medium–sized companies, among which there are also family businesses. For this reason, the possibility of comparing the results of the study "Innovation of family businesses in the Silesia region" made by J. Klimek and B. Żelazko with the results of other research are greatly limited.

The main objective of this study was to identify the conditions and creation mechanisms of innovativeness in family businesses, that is such companies which are managed by the family and are its property. The specific objectives of the project were defined as questions about the factors shaping innovation, scale and scope of innovative activity, the importance of innovation in the development of competitiveness and possibilities and ways to support the development of innovative activity in family businesses[14].

[14] In the study „Innovativeness of Family–enterprises in Silesia Region" triangulation test method was used that is combination of preliminary questionnaire research, in–depth interviews, market and product research and case studies. The research tools included: group interview questionnaire, online questionnaire and individualized questionnaire. The research sample was drawn with an objective – based on information gathered by entrepreneurial associations – companies which satisfied the following conditions were selected: minimum 51% of value of enterprise belongs to the founder's family; the founder or member of his/her family currently makes strategic decisions in the company; minimum two people in the family (including the founder or member of founder's family managing the enterprise) works in the company. Respondents that is the people managing the enterprise, owners or employees belonging to the founder's

To realise this study aim, it was assumed that innovation of any family business will be identified by firstly, the competence in creating and using tools of competition and responding to the changes in the macro–environment, secondly, an ability to acquire and develop knowledge and implement new things in the system of enterprise management, the processes that take place within it, the relations with the environment and the market offer.

This interpretation of the notion of innovation has become the basis for developing an analytical innovativeness model of family business. In light of this model the innovativeness of family business is signaled by its behavior and diagnosed competences. The factors that shape innovation are: potential for innovation, motivation of the company representatives to take innovative actions and willingness of managers and employees of the company to implement new changes.

The innovative potential of the company depends on the intangible resources and functioning of the system and concept of management, willingness to innovate stemming from creativity and openness to change by people working in the company, and the motivation to innovate – a bundle of objectives, which consists of individual team members' targets and the impact of external stimuli (for example, innovative activity support tools offered by the business environment)[15].

97 enterprises located in the Silesian voivodship participated in a study by J. Klimek and B. Żelazko, including 48% micro–enterprises, 33% small enterprises, 14% medium–size enterprises and only 4% large enterprises. In the structure of the surveyed population 79% were entities engaged primarily in manufacturing and 21% entities specialized in service activities. Among manufacturing companies dominated those representing the food and automotive industry. In the group of service companies there were mostly companies from industries such as construction, automotive and gastronomy. It is worth noting that companies conducting production activities – in particular those from the food industry – often indicated as the second important type of activity – wholesale and retail trade.

Among the companies surveyed, dominated companies run by individuals. In most cases – about 61% of enterprises – were managed by the founders, i.e. the first generation in the family business. The second generation took strategic decisions in 35% of the companies participating in the survey, and the third generation approximately 4%. As for the duration of companies on the market, in the structure of analysed population 50% of enterprises were 15 to 30 years old. The oldest company participating in the study was founded in 1910 and the youngest – a company with only 3 years of market experience.

As a result of the study, it has been determined that the most frequently mentioned main objective of the company was to "achieve the assumed (or higher) level of profit." Such a goal has been formulated by 18% of enterprises. In the second place in the ranking came in the target defined as "an increase in brand value" (17% of enterprises), and in the third "achieving a specific market position/gaining market share" (16% of enterprises). The "innovation" as the primary strategic objective was indicated only by 3% of enterprises. From the data presented here it can be drawn that the strategic goals of the study group varied considerably.

Among the specific objectives, which were sought after by the surveyed companies were: "extending the product and service offer" (63% of responses), "improving sales results" (51% of responses), "maintaining liquidity" (48% of responses). About 33% of respondents reported that increasing innovation is the goal, the achievement of which will help to fulfill the main strategic goal.

In the light of the research results, the activities most often undertaken by family companies as part of realizing the development strategy were: providing customers with high quality of goods and services

family answered questions about: strategic management, innovation system in the enterprise and creating relations of enterprise with the environment.

[15] J. Klimek, B. Żelazko, Innowacyjność przedsiębiorstw rodzinnych w regionie śląskim. /In:/ Innowacyjność przedsiębiorstw rodzinnych – uwarunkowania i przejawy, scientific editor: J. Klimek, B. Żelazko, Oficyna Wydawnicza SGH, Warszawa 2015.

(85% of responses), controlling costs and striving toward cost reduction (73% of responses), building an attractive image of the company (59% of responses), branding (54% of responses).

Implementing innovation as part of the process leading to the achievement of strategic objectives did not play a significant role in surveyed family businesses. However, it should be emphasized that there was a consistency of innovative activities with the specific objectives of the company. As many as 42% of companies implemented innovative projects in the field of customer service, while 33% of companies implemented innovative organizational and technological solutions.

Quite large turned out to be a group of family companies that perceived innovation as a determinant of market success. Approximately 42% of respondents identified its importance as great and 19% as very large. Only 7% of respondents rated its significance as small or very small.

52% of entities declared an introduction of changes in the area of business objectives in the three years preceding the survey. In general, these changes consisted of increasing the number of targets. As many as 76% of respondents admitted that their enterprises have made changes in the organizational structure, technological process and the product and service offer. The frequency of the changes in the surveyed companies was diverse – 27% of companies introduced changes at least once a year and 19% – every few months.

Approximately 36% of respondents declared frequent changes in product and service offer. At the same time 20% of respondents admitted that they do not make any changes in this respect, unless there is a pressure from customers or competitors. Particularly noteworthy is the fact that 72% of enterprises introduced only minor improvements, and 20% of family enterprises implemented radical changes.

The study shows that in the 2011–2014 period, innovative solutions in different areas of activity were introduced by 60% of enterprises. In general, these innovations were combined – consisting of new products/services offering, which production was possible thanks to application of the new technology. Not infrequently, this kind of innovation was accompanied by even introducing new marketing solutions as well as new organizational solutions.

The surveyed companies most often declared implementation of 2–3 innovations during the 2011–2014 period. This was the case at 46% of the enterprises participating in the study. The implementation of 4–5 innovations was reported by approximately 20% of enterprises. One innovation was realized by about 11% of respondents, while more than 10 innovations were implemented at 14% of family businesses.

Half of the respondents admitted that successfully finalised innovative projects are the result of the research and development carried out continuously. This group consisted of mainly food producers. It is worth noting that the success in the implementation of innovative projects was achieved by 60% of the surveyed entities.

Probably the factor that had an impact on this success was planning innovative activity. 46% of enterprises had an official document on the innovative project. Preparation of that document was connected with the search for external sources of funding for the project (for example, using EU funds, national funds allocated to development of innovation support programs, funds offered by credit and loan associations). The funds from the EU budget have been used by 44% of family enterprises that implemented innovations.

Adoption of measures for implementing innovation in family businesses was usually affected by the following factors:

- project connection to the primary objective of the company (59% of responses),
- pressure from customers (57% of responses),
- competitive pressure (53% of responses).

Ideas for implementing innovation very often had their source within the company (85% of responses). According to respondents, company managers and employees, especially those who worked in the R&D department were the creators of new solutions implemented in the company. Unfortunately, in a group of surveyed companies there was a small share of enterprises conducting continuous research and

development activities (16%) and having its own R&D department (8%). This means that an important role in stimulating innovation was played by the creativity of the founding family.

A valuable source of inspiration for family businesses looking for ideas and support in the process of implementing innovation may be establishing cooperation with the environment. Such a solution has been used by many family businesses. On one hand, in the course of the study 54% of respondents expressed the opinion that cooperation with the environment had large and very large impact on innovative activities of the family business. On the other hand, 60% of respondents believed that through networking, that is the exchange of information and resources within the network of business contacts, you can acquire the knowledge necessary to generate ideas and implement innovation in family businesses.

Based on the answers to the questions in the survey it can be said that 71% of enterprises drew benefits from the cooperation with customers, 70% from the cooperation with professional industry organizations, and 55% with other entrepreneurs. It is important to point out that family businesses rarely started cooperation with educational institutions such as high schools, community colleges (only 19% of responses), universities (16% of responses) and research institutions (14% of responses). Family businesses saw a source of growth in innovation in contacts and long–term relationships with end customers of its products and services (76% of respondents), contractors (62% of respondents) and suppliers (57% of respondents). As many as 65% of study participants had high hopes for implementing innovative projects with members in industry associations.

Conclusion

Innovation, as is evident from the above discussion occupies an important place among factors conditioning the choice of competitive strategy and factors shaping the competitiveness of the family business. This feature allows for a continuous and unlimited growth and progress in market competition. Innovative actions, undertaken in different areas of the family business, aid an realisation of market expansion strategy and trigger the potential necessary to achieve beneficial change in the competitive position. Those family businesses, which are opened to innovation and which often implement projects on innovation, are not threaten by stagnation and lagging behind its competitors.

Thanks to innovation, these companies may face competitive pressure from international or global entities. Innovation should be equated with the ability through which the company can efficiently and effectively pursue its strategic objectives and flexibly respond to changes in both the closer (competitive) environment as well as the further (macro) environment. This ability gives the company a tremendous power of impact on customers and market rivals. Data discussed shows that by choosing the approach to innovativeness the family business determines its concept of competition in the market. It is true that focus on innovation in management of a family business can expand the company's competitive possibilities and strengthen the strategic position of the enterprise.

As does a whole sector of small and medium–sized family businesses, so do family businesses have a problem with innovation. The cause of these difficulties is an incorrect approach in the perception of innovation. Few family businesses realise the importance of innovation as a factor shaping market advantage and providing dynamics for the development of the company. Most often the enterprises implement only minor improvements or innovations on a local scale. However, the fact that companies which implement innovative projects, do it in a conscious way, by adjusting the type of implemented innovation to strategic goals it should positively assessed. They are willing to take on new challenges and risks associated with them.

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INNOVATION AND INNOVATIVENESS – THE SCOPE OF THEIR LEGAL PROTECTION

Summary

In this paper an attempt was made to analyse selected aspects (matters) of theory and practice of innovation and innovativeness from the following angles:
1. the evolution of an approach to defining the notion of innovation,
2. the significance of research on innovation,
3. the scope of legal protection of innovation and innovativeness worldwide and in Poland.

Earlier presentation of these issues based on world literature was aimed at creating a methodologically prepared basis for an 'orientated analysis' under existing conditions of modern Polish economy. The so–called 'orientation' was also aimed at taking us closer to giving answers to the following two questions: Does the innovation market already exist in Poland? and: Is the existing scope of legal protection of intellectual property satisfactory?

* * *

Introduction

There is no doubt that the complexity of the functioning and development of modern economies arouses considerable interest in the issue of improving their innovativeness and competitiveness. These questions are not new – they have quite a long tradition. In our age – in the days of transformation, integration and increasingly intense globalisation processes encompassing most aspects of social and economic life, they assume a very special sense against a background of other issues.

In this paper an attempt was made to analyse selected aspects (matters) of theory and practice of innovation and innovativeness from the following angles:
1. the evolution of an approach to defining the notion of innovation,
2. the significance of research on innovation,
3. the scope of legal protection of innovation and innovativeness worldwide and in Poland.

Earlier presentation of these issues based on world literature was aimed at creating a methodologically prepared basis for an "*orientated analysis"* under existing conditions of modern Polish economy. The so–called "*orientation"* was also aimed at taking us closer to giving answers to the following two questions: *Does the innovation market already exist in Poland?* and: *Is the existing scope of legal protection of intellectual property satisfactory?*

A few remarks concerning the origin and history of the research into innovation in the world

Innovation and innovativeness have already their tradition. However, it was not until the 50s of the 20th century that the need for applying new ideas in business was realized. They were also referred to as innovations.[1] The classic definition of innovation was created by Joseph Schumpeter at the beginning of the 20th century, according to whom *innovation* meant:[2]

- introducing new brands or improving the existing ones,
- developing new, improved technology of production,
- using new methods of sales or purchase,
- opening new export and freight markets,
- using new raw materials or semi–finished products,
- introducing changes in the organization of production.

His theory, which was called *"creative destruction"* originated in days when in the economy production sectors and agriculture were still predominant. In turn, nowadays the services sector definitely predominates. Hence, in the so–called new "era of competitiveness" or at its successive stages of development, appropriate changes in our approach to innovation and innovativeness should be adopted. It is true that the so–called "era of competitiveness" began only in the late 40s of the 20th century, together with the intensification of globalization processes. However, the notion of competitiveness had already been considered by representatives of the Classical School.

According to M. Olczyk, the following four stages in the development of the theory of competitiveness can be selected:[3]

1. theories of international interchange of goods/services (Classical School),
2. understanding *competitiveness* to be the so–called *dangerous obsession* (P. Krugman),
3. further development of the competitiveness model (*inter alia*: M. Porter, J. Dunning *et al*),
4. contemporary competitiveness reports (WEF, IMD and others).

However, J. Schumpeter considered enterprise to be the area where innovation was realised. Therefore, his classification has lost none of its relevance up to now. What emerges from this definition is that innovation can involve: *product, production process, new technology, new system of management, organization in the broadest sense of the word, and also new markets and a new marketing policy.* In his article entitled ''The instability of capitalism,'' which was printed in ''The Economist'' in September 1928, he highlighted the importance of the issues of innovation. In turn, in his work from 1942, he emphasized the inadequacies of general balance. He also highlighted the significance of internal factors in the economy that destroyed its balance.

Indeed, it was J. Schumpeter who called the necessary changes innovations. However, during the second decade of the 20th century, A. Marshall analysed a possibility of applying various improvements in the economy that could enhance the effectiveness of production. It is worth mentioning that incessant

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[1] Jewkes J., Sawers D., Stillerman R., *The Sources of Innovation,* McMillan, London 1958.

[2] Shumpeter J., *The Theoiy of Economic Development,* Galaxy Book, New York 1932; Polish edition: *Teoria rozwoju gospodarczego,* PWN, Warszawa 1960 p. 45.

[3] Olczyk M., *Konkurencyjność, teoria i praktyka,* Ce De Wu, Warszawa 2008, p. 21.

changes constitute the essence of development, also according to K. Marks. They consist in destroying old elements and introducing new – cheaper and more effective ones. On the basis of the classical definition by J.Schumpeter, a number of other definitions of innovation were created. They made their contribution to the theory of innovation and competitiveness, which was systematically developed. Thus, together with the evolving views on innovativeness and competitiveness, P. Krugman distinguished four theses in the evolution of those theories:

1. a simple analogy between an enterprise and the economy as a whole does not exist. What is more, the competitiveness of the economy cannot be understood as the sum of the competitiveness of its domestic enterprises,
2. an increase in domestic productivity constitutes the essence of the notion of competitiveness. In his opinion, the growth rate of the standard of living (a variable that appears in numerous definitions of competitiveness), being analogous to the real growth rate of GDP, can be 91 % explained by a growth in domestic output,
3. there is a fundamental differencie when it comes to trade exchange between countries and that between companies. Countries do this in accordance with the principle of comparative benefits. Between companies it is only too often a game where the chances of making profits are zero as an increase in sales of one company equals to a decrease in sales of another,
4. emphasis placed by states on the necessity to enhance competitiveness on an international level can be risky for the global economy. It can even lead to economic wars and pricey, bad trade policy.

P. Krugman's theses gave rise to stormy discussions. It is worth mentioning that already at the beginning of the second stage of the development of the competitiveness theory (competition as a dangerous obsession) P. Krugman distinguished those four theses. What attracted criticism, was the issue of comparative benefits. However, the issue of productivity – as the only appropriate tool to measure competitiveness – aroused the most controversy. A large number of economic indices by which the level of competitiveness can be measured were indicated – the system of measurement was then improved and put into the economic practice. However, it was implemented much later, as it was put into practice gradually at the third stage of realization but, in fact, its full accomplishment took place at the fourth stage of the development of the theory of competitiveness.

P.F. Drucker[4] – a continuator of the research initiated by J. Schumpeter – already described innovations as: *a special tool used by entrepreneurs to initiate changes leading to taking up new business activities or providing services of new quality.* Ph. Kotler expressed a similar opinion claiming that: *the notion of innovation refers to any product, service or idea that is perceived as new.* An idea may not be new, but it constitutes innovation for a person who recognizes it as new. In turn, Ch. Freeman[5] recognized that: *innovation means the first launch of a new product, process, system or appliance.* We can find similar opinions with other authors,[6] e.g. D. Castenow claimed that innovation was about finding good ideas and their promotion, whereas D. M. Rogers was of the opinion that innovation processes also encompass many ''new applications of old solutions." He maintained that *''...innovation constitutes anything that is perceived by an individual as new, regardless of the objective novelty of a given idea or thing."* A slightly different definition was put forward by P.R. Whitfield.[7] He emphasized the functional aspect of innovation claiming that: *innovation constitutes a set of sophisticated activities aimed at solving problems.* As a result, a specific and completely worked out novelty comes into being. Also, P.F. Drucker presented a definition of innovation from a functional perspective: *''Therefore, systematic innovation depends on an intentional and organized quest for changes and on a systematical analysis of any opportunity for*

[4] Drucker P.F., *Innovation and Entrepreneurship: Practice and Principles,* Harper and Row, New York 1985, pp. 35–36.

[5] Freeman Ch., *The Economics ofIndustrial Innovation,* F. Ponter, London 1982, p. 7.

[6] Castenow D., *Nowy marketing w praktyce,* PWE, Warszawa 1996, p. 35; D.M. Rogers, *Diffusion of Innovation,* Free Press, New York 1962, p. 13.

[7] Whitfield P.R., *Innowacje w przemyśle,* PWE, Warszawa 1979, p. 26.

social or economic innovations that such changes could enable". Also other authors' approach in this respect is worth stressing. However, it is worth concentrating our attention on the views of: P.F. Drucker, T. Kelley, R.W. Griffin, M.E. Porter, J.A.F. Stoner, R.E. Freeman and D.R. Gilbert. Even if only to say that, compared to others, their achievements have become much more popular in publications issued also in the Polish language.[8] What is worthy of note in P.F. Drucker's views is that he does not perceive innovation as a stroke of genius, but as an intentional task depending on systematical and organized work. Of course, they concerned mainly enterprises. Needless to say that innovation is a process which is clearly orientated towards a goal. At the same time, by realization of an innovation process one should think in terms of verbs, not nouns – as T. Kelley recommended. The definition of innovation formulated by R. W. Griffin takes both subjective and objective perspective into consideration. From a productive perspective, innovation is uderstood as activities of an organization aimed at monitoring and encouraging their employees' performance; from a substantial perspective, it is understood as a product or service being the result of those activities. M. Porter thinks that innovation means a successful utilization of new ideas. J. A. F. Stoner, R. E. Freeman and D. R. Gilbert, thinking in a similar vein, understand innovation as: *transformation of a new idea into a new form, new product, new service, new process or a new method of production.*. This definition is unique in its character and is broad in scope. It implies that practically any change in an organization can fall into the category of innovation.

In the Polish economic literature we can also come across various definitions of which many are derived from J. Schumpeter. The definition by J. Czupiał and K. Wandelt is based on his theory.[9] The former claims that *innovation depends on manufacturing and launching a new product or on economic application of a new process in manufacturing of the existing products.* In his opinion, innovation means the first use of an invention or idea in business. Also K. Wandelt presented a definition of innovation in his *''Studia nad postępem technicznym i organizacyjnym*" and he based his findings on J. Schumpeter's work. He understands innovation as *utilization of an invention to achieve specific manufacturing targets, besides, innovation constitutes a scientific, technological and also economic fact.* Other Polish authors approach the issue of innovation in a similar way.[10] According to I. Domanowska, innovation means: *creation, implementation and popularization of novelties leading to developmental changes.* Therefore, they are undoubtedly the driving force of every economy. However, by definition innovation has to be*: decentralized, spontaneous, independent and on a microeconomic scale.* W. Nasierowski defines the issue of innovation briefly: *''Innovation means putting an invention into practice for the first time."* However, in practice it is difficult to indicate the first use of an invention. W. M. Grudzewski and I.K. Hejduk propose a broader notion of innovation. They define it as *''any idea, behaviour or thing that is new, in other words, qualitatively different from the existing forms".* Also, A. Gardocka–Jałowiec defines innovations broadly: *''Innovativeness is, therefore, an act of human activity aimed at achieving a specific*

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[8] Drucker P.F., *Innowacja i przedsiębiorczość. Praktyka i zasady,* PWE, Warszawa 1994, p. 29; T. Kelley, *Sztuka innowacji. Lekcja kreatywności z doświadczeń czołowej amerykańskiej firmy projektowej,* Wydawnictwo MT Biznes sp. z o. o., Warszawa 2003, p. 242; R.W. Griffin, *Podstawy zarządzania organizacjami,* PWN, Warszawa 1996, pp. 661–663; M.E. Porter, *The Competitive Advantage of Nations,* The Macmillan Press Ltd., London 1990; J.A.F. Stoner, R.E. Freeman, D.R. Gilbert, *Kierowanie,* PWE, Warszawa 2001, pp. 413–414.

[9] Czupiał J., *Zarys metodologii planowania i oceny przedsięwzięć badawczo–innowacyjnych,* PWN, Warszawa 1988, p. 50; Wandelt K., *Studia nad postępem technicznym i organizacyjnym,* PWN, Poznań 1972, pp. 22–23.

[10] Domanowska I., *Znaczenie innowacyjności i instrumenty wspierające innowacyjność przedsiębiorstw w kontekście integracji z Unią Europejską,* /In:/ *Zarządzanie innowacjami. Teoria i praktyka,* J. Szabłowski (ed.), Wydawnictwo Wyższej Szkoły Finansów i Zarządzania w Białymstoku, Białystok 2006, p. 198; Nasierowski W., *Zarządzanie rozwojem techniki,* Poltext, Warszawa 1997, pp. 45–46; Grudzewski W.M., Hejduk I.K., *Rozwój i implementacja organizacji inteligentnej.* /In:/ *Przedsiębiorstwo przyszłości,* Grudzewski W., Hejduk I. (ed.), Difin, Warszawa 2000, p. 139.

aim. /.../.That appropriateness, an inseparable relation to making a choice accounts for the subjective character of innovativeness".[11]

The influence of J. Schumpeter's theory is also noticeable in definitions by J. Baruk and S. Marciniak.[12] According to S. Baruk innovation means *an intentionaly planned change concerning:*

- *a product (new or modified products designed and launched on the market),*
- *production methods (application of new or significantly improved methods),*
- *organization of labour and production (new organizational solutions as regards structure and process or significant improvements of the existing ones),*
- *management methods (first applications in the community to achieve socio–economic benefits meeting definite criteria – technological, economic and social)*.

S. Marciniak defines innovation from a much broader aspect. He places emphasis on "creative changes" in the social system, in the economic structure, technology and nature.

With reference to innovativeness of enterprises in the Polish literature, definitions by A. H. Jasiński and S. Gomułka[13] can be quoted. According to the former *"an active innovative enterprise carries out research and development work, allots considerable financial outlays to this activity, systematically implements new scientific and technological solutions and possesses a great deal of novelties (products and technology) in the production volume."* There is a direct reference to enterprises in the definition formulated by S. Gomułka who understands innovation as an *act of a qualitative change in the economy when production of a new product begins or a new process is implemented as well as the product or process itself.* And finally, the definition of innovation suggested in Polish legislation is worthy of note. In the *Law on selected forms of promoting innovative activities,* innovation is understood as: *"… activity connected with preparation and implementation of production of new or modified materials, products, devices, providing services, processes or methods to be launched on the market or for other practical use."*[14] Thus, innovation can be interpreted as: *technological and organizational change resulting in modification of the existing products, strategies or processes.* Innovativeness, however, is a practical activity; it refers both to production, with respect to improvement or creation of a process/product, and to provided services and to the strategy of enterprise management. The definition is also used by Central Bureau for Statistics (GUS). It is an official practice concerning gathering, processing and utilization of data collected by GUS in Poland. It is based on guidelines by OECD[310] presented in Oslo Manual. Oslo Manual is an international methodological manual within the scope of statistical research into innovation. Its first edition from1992 was drawn up in cooperation with OECD and Nordisk Industrifond, Oslo. The second edition from 1997 was the result of the cooperation between OECD and Eurostat.

Summarizing the above–mentioned consideration, we can state that in the economic literature two different approaches to the issues of innovation can be distinguished. Some authors are supporters of a *narrow* approach. Others, however, prefer a *more general* definition of the phenomenon of innovation. In the latter case, the broad sense of the word innovation allows for different interpretations – practically speaking, everything new could fall into this category. This applies both to changes in technology, organization and the economy. It also encompasses new social and cultural trends and also changes in fashion and tradition. However, from a *detailed* perspective, only the so–called "first–use" innovations can be classified as innovation, i.e. such innovations that are the very first effect of an idea, imagination,

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[11] Gardocka–Jałowiec A., *Nakłady na działalność badawczo–rozwojową a innowacyjność polskiej gospodarki*, ,'Ekonomista'' 2012, No 1, p. 81.

[12] Baruk J., *Nauka i technika w rozwoju gospodarczym,* UMCS, Lublin 1997, p. 75; S. Marciniak, *Innowacje i rozwój gospodarczy,* Politechnika Warszawska, Warszawa 1998, p. 8.

[13] Jasiński A. H., *Innowacje i polityka innowacyjna,* Wydawnictwo Uniwersytetu w Białymstoku, Białystok 1997; Gomułka S., *Teoria innowacji i wzrostu gospodarczego,* Centrum Analiz Społeczno–Ekonomicznych CASE, Warszawa 1998, p. 17.

[14] Art. 2 ustawy z dnia 29 lipca 2005r. *o niektórych formach wspierania działalności innowacyjnej* (Dz.U.05.179.1484).

research or invention and have been put into practice for the first time. From a general perspective, innovations are defined on the plane of already mentioned detailed approach. Besides, they can also include diffusion, imitation or popularization.

The following variables can be applied to assess the innovativeness of enterprises:[15]

- new products,
- new services,
- new organization and management methods,
- new methods of production,
- new sources of supply,
- opening new markets.

With reference to Polish enterprises (still operating in the economy during the transformation period) we should, by applying these variables, be based mainly on the adopted definitions of innovation taken from studies by OECD (Oslo Manual), and particularly on the economic development theory by J. Schumpeter. It is a well–known fact that all phenomena – both positive and negative – that occur in an enterprise are ultimately reflected in its business results. Therefore, from an economic point of view, innovation means: *a change which is different in terms of quality from the existing forms, at least from the point of view of the enterprise which introduces the change and which results in an increase in the income from sales or in a decrease in prime costs.* Innovation as defined in this way assumes, first of all, a profit for the innovator. It can be a surplus profit when the innovator is the first to introduce an innovation. However, it can be an average profit if the same invention had already been implemented by many other companies. In addition to being novelties in terms of products, methods and forms of labour, the introduced changes can also refer to:[16]

- creating a new product,
- sales process,
- organization and management of enterprise,
- application of new technologies,
- production costs,
- changes in influencing the environment, including limitations on material consumption,
- marketing.

Thus, a definition adopted to work out a more effective system should be based on the classical definition by J. Schumpeter and refer to the interpretation of innovation used by OECD[17], according to which: *innovation encompasses transformation of an idea into a merchantable product or service, new or modified production or distribution process or a new strategy of providing social services.* In this definition, emphasis was placed on the economic achievements which should cause lowering of costs or higher income within an enterprise.

In many publications on innovation the authors emphasize that it can be perceived as *"a result"* or *"a process"*. Hence innovations are closely connected with innovativeness understood as: *the ability*

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[15] Johannessen J., Olsen B., Lumpkin G., *Innovation as newness: what is new, how new, and new to whom?,* „European Journal of tnnovation Management" 2001, No 1, p. 25; Shumpeter J., Teoria rozwoju gospodarczego, PWN, Warszawa 1960.

[16] Mott P.E., *The Characteristics of Effective Organizations*, Harper and Row. New York 1972; Nonaka I., Takeuchi H., *Kreowanie wiedzy w organizacji*, Poltext, Warszawa 2000, p. 74.

[17] Schumpeter J, *Teoria rozwoju gospodarczego,* PWN, Warszawa 1960, p. 45; www.oecd.org; see also: *Green Paper on Innovation*, European Commission, December 1995, p. 4; *Green Paper on Innovation – corecting assumptions of Lisbon Strategy*, introducing 10 new targets to be met during the period 2008–2010, www.europa.eu, after: Maksimczuk A., *Granice państwowe, relacje z sąsiedztwem gospodarczym i wschodnie pogranicze Polski w dobie transformacji, integracji i globalizacji, tom 1, Transformacja systemowa i kształtowanie się nowej jakości polskich granic państwowych,* Wydawnictwo Uniwersytetu w Białymstoku, Białystok 2013.

and motivation of entrepreneurs for constant search for the results of scientific research, research and development works, new concepts, ideas and inventions to put them into practce.[18] Innovativeness, as seen in this way, also means improvement and development of the existing technologies concerning production, operation and the services sector, introduction of new strategies of organization and management, improvement and development of infrastructure, especially within the scope of collecting, processing and dissemination of information.

Introduction of an innovation depends on innovativeness which in the literature is usually associated with the ability to implement innovations. Adopting a more specific approach, we can state at the same time that innovativeness means the following: *the ability to search for (create) new solutions aimed at enhancing the standard of living in every sphere of existence, adapting them to specific conditions, putting them into practice and finally, inseminating them.* Innovativeness of enterprises is also a process which means: *the ability of a given enterprise to search constantly for changes with a view to using them for creating innovations.* This process can be long–lasting and quite complicated. In the literature, authors also emphasize *the prospective dimension of innovativeness.* Hence describing it as a process is also justified. Finally, it should be noted that these are the most important definitions of innovation proposed by foreign and Polish economists. They often differ from each other. Generally, for the purposes of analysed selected issues of innovativeness in the economy in general and in enterprises in particular, they could be divided into two groups:

1. presenting innovation as the first application of an idea (invention) or research,
2. presenting innovations as imitation, dissemination and diffusion of new ideas.

Character and the importance of research into innovativeness – an outline

The influence of innovativeness and knowledge on economic growth and development is nowadays widely described in the economic literature.[19] Research on innovation and innovativeness as well as the information on the subject constitute now an extensive field of knowledge. For at least ten or fifteen years, in the writing on economics and management, knowledge and innovativeness as key development factors have been accentuated.[20] Therefore, it is worthy of note that, in accordance with the ‘’Europe 2020’’ strategy, the proposed model *European social market economy in the 21st century* is to be based on three interrelations and priorities complementing each other and, at the same time, consist of the following three types of development:[21]

1. inteligent (with the economy based on the knowledge of innovation,
2. sustainable (supporting effective economies – using resources, being more competitive and, at the same time, more environmentally friendly,
3. supporting social initiative (backing up economies with high employment, with economic, social and territorial cohesion). This can be noticed on the level of enterprise, region and the entire economy.

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[18] Grudzewski M., Hejduk I. K., *Zarządzanie technologiami. Zaawansowane technologie i wyzwanie ich komercjalizacji,* Difin, Warszawa 2008, p. 245; Skalik J., *Zmiana warunkiem sukcesu. Zmiana a innowacyjność gospodarki,* Wydawnictwo Akademii Ekonomicznej we Wrocławiu, Wrocław 2004, p. 536.

[19] Rutkowska E. E., *Wpływ wiedzy i innowacji na wzrost gospodarczy – teoretyczne ujęcie problemu.* /In:/ Meredyk K., Sikorski J., Turowski K. (ed.), *Rozwój gospodarczy a rynek i innowacje,* Państwowa Wyższa Szkoła Zawodowa w Suwałkach, Instytut Humanistyczno–Ekonomiczny, Suwałki 2009, pp. 11–29.

[20] Gardocka–Jałowiec A., *Nakłady na działalność badawczo–rozwojową a innowacyjność polskiej gospodarki,* „Ekonomista” 2012, No 1, p. 83.

[21] Glinka B., Pasieczny J., *Społeczny kontekst innowacyjności — wybrane aspekty.* /In:/ *Działalność innowacyjna przedsiębiorstw w warunkach globalnych,* Bogdanienko J, Kuzela M., Sobczak I. (ed.), Wydawnictwo Adam Marszałek, Toruń 2007, p. 39.

The origin of intensive research on innovativeness measurement methods dates back to the 60s of the 20th century. In June 1963 in Frascati, Italy the first version of *Proposed Standard Practice for Surveys of Research and Development* was issued. Now, it is known as *Frascati Manual.*[22] The most important manual from the Frascati family concerning statistical research into innovative activities is *Oslo Manuał – Proposed guidelines for collecting and inerpreting technological innovation data.* Its first edition (from 1992) was prepared by OECD and Nordic Industry Fund. The second edition (from 1997) was prepared in cooperation between OECD and Eurostat. Since 1994, researchers have paid more and more attention to research and development and innovativeness as a key element of the economy based on knowledge. At present, the third version of Oslo Manual 2005 is compulsory. At the moment, methodology contained in it, the so–called ''Oslo methodology,'' constitutes an international innovativeness measurement standard. *In the new version of Oslo Maual, updated due to increasing complexity of innovation processes in the world, the extension of typology concerning innovation constitutes the most significant change. Apart from innovative products and innovative processes, also non–technological innovations* were introduced *(i.e. organizational and marketing innovations),* as equivalent to the two mentioned earlier. Now, the Oslo Manual is not only a standard manual concerning evaluation and cooperation within the scope of R&D in member states of OECD. It is also worth mentioning that the cooperation takes place within the framework of the NESTI group *(the Working Party of National Experts on Science and Technology Indicators).* Hence, thanks to cooperation between this organization and UNESCO and the European Union and also other organizations, it has become a standard worldwide.

Long–standing experience of working out indices has resulted in a series of methodological manuals referred to as Frascati Family. The most significant of them which concerns research on statistical innovative activities is *Oslo Manuał – Proposed guidelines for collecting and inerpreting technological innovation data.* At present, the third version of Oslo Manual 2005 is compulsory. Methodology contained in it, the so–called ''Oslo Methodology,'' constitutes an international innovativeness measurement standard.[23] In the new version of Oslo Maual, updated due to increasing complexity of innovation processes in the world, the extension of typology concerning innovation constitutes the most significant change introducing, apart from innovative products and innovative processes, also organizational and marketing innovations as equivalent to the two mentioned earlier.

Transformation of the Polish economy, together with integration and globalization of most aspects of social and economic life (according to M.A. Weres[24]) generates interest in innovativeness and competitiveness, both among theoreticians and practitioners of economic life. Accordingly, many Polish and foreign analysts as well as many Polish and international institutions deal with research on the level of innovativeness of the Polish economy.[25] The most important in this field is the research by OECD. According to the report entitled *Policy mix for innovation in Poland* which was delivered by OECD in 2007 in cooperation with Ministry of Education and Schools of Academic Rank, Poland, to be competitive on international markets, has to develop cooperation between representatives of

[22] Janasz W. (ed.), *Innowacje w strategii rozwoju organizacji w Unii Europejskiej,* Difin, Warszawa 2009, p. 129.

[23] Ibidem, p. 130.

[24] *Polska. Raport o konkurencyjności 2006. Rola innowacji w kształtowaniu przewag konkurencyjnych,* Weresa M.A. (ed.), Instytut Gospodarki Światowej, SHG, Warszawa 2006, and next reports.

[25] Skawińska E., Zalewski R.I., *Klastry biznesowe w rozwoju konkurencyjności i innowacyjności regionów. Świat – Europa – Polska,* PWE, Warszawa 2009; Świtalski W., *Innowacje i konkurencyjność,* Wydawnictwo Uniwersytetu Warszawskiego, Warszawa 2005; Baruk J., *Zarządzanie wiedzą i innowacjami,* Wydawnictwo Adam Marszałek, Toruń 2006; Dolińska M., *Innowacje w gospodarce opartej na wiedzy,* PWE, Warszawa 2010; Bojar E., Frejtag–Mika E., *Objectives of competitive strategy of transnational corporations in conditions of globalization.* /In:/ *The Economics of Education and Innovation for Suistainabiliiy and Growth,* Congress of Political Economics International (COPE), 19th Annual Meeting, New Delhi, India, May 12–19 2008.

science and business.[26]. The report shows the biggest challenges Poland will face in the future. They will include: *strengthening of the technological and scientific base, concentration of public financing on institutions and organizations with the potential for conducting successful research.*[27] However, *The Global Competitiveness Reports* have the widest geographical range – they are prepared annually by The World Forum Economic based in Geneva. They are additionally supplemented by competitiveness measurements of national economies *(Global Competitiveness Index GCI)*[28]. It is based on micro– and macroeconomic measurements of domestic competitiveness. In turn, the research by economists of the World Bank, corresponding to those measurements, is based on three main sources of growth: *capital, labour and fluctuation in manufacturing indices.*[29]

In turn, *Foreign Direct Investment* (FDI) draws up *The Confidence Index* every year containing presentation of cyclical research conducted since 1998 by the company *A.T. Kearney.* Representatives of enterprises whose annual income amounts to more than $2bn answer questions concerning current and future investments. It is worthy of note that the results of the survay from 2011 were used to create the ranking for the most attractive location in terms of investment. The country where entrepreneurs invested most readily was China. The USA was second and India – third in the rankings. What is worth emphasizing is the fact that Poland had a high position – it was sixth in the ranking. Only one country of the Old Continent – Germany – was classified higher (fifth position). It is worthy of note that the World Intellectual Property Organization prepares a ranking list entitled *''The most innovative world economies"* based on research into the number of applications for a patent. The USA was first on the list for the year 2010. As many as 44, 844 patents were then registered. Japan was second (32,181 patents), and Germany third, with 17, 559 patents.[30]

In Europe, systematic research on innovativeness is conducted by Eurostat. In cooperation with OECD, Eurostat prepares annual reports entitled *Community Innovation Survey* (CIS).[31] In February 2011 The European Commission published a European innovativeness chart for the year 2010. The document presents the situation in the EU within the scope of innovativeness in comparison with its main rivals. It also presents a general notion of the innovativeness level in individual countries within the EU.[32] In 2011, *Innovation Union Scoreboard* (IUS) 2011 replaced the former chart *European Innovation Scoreboard* (EIS). The chart for the year 2010 was drawn up on the basis of 25 analyzed indices within the scope of research and innovations.[33] Also, every two years the European Commission issues a report on competitiveness in EIS. This report includes all 27 member states and six associated states. Thus, it makes a considerable contribution to the realization of the ''Europe 2020" strategy because it provides a detailed statistical and economic analysis which encompasses the most important aspects of effective solutions in the field of research on innovations. Besides standard research results, the scoreboard in EIS from 2010

[26] Maksimczuk A., *Granice państwowe, relacje z sąsiedztwem gospodarczym i wschodnie pogranicze Polski w dobie transformacji, integracji i globalizacji,* volume 1. chapter 5.

[27] *Przegląd polityk na rzecz innowacji w Polsce. Kluczowe kwestie i rekomendacje,* www.nauka.gov.pl, www.oecd.org, www.mg.gov.pl.

[28] *The Global Competitheness Report 2008, 2010–2011, 2011–2012,* Schwab K. (ed.), World Forum Economic, Harvard University, Genewa, available on: www.weforum.org, dates of issue: 15.01.2009, 10.11.2010, 30.08.2011, 07.09.2011.

[29] *Europa 2020 a Polska: intensyfikacja rozwoju i podnoszenie konkurencyjności poprzez zwiększenie poziomu zatrudnienia, podnoszenie kwalifikacji i innowacje, (Europę 2020: Fueling Growth and Competitiveness in Poland Through Employment, Skills, and Innovation),* Marzec 2011; *Report Doing Business 2011,* www.worldbank.org.pl, date of issue 02.09.2011.

[30] *Najbardziej innowacyjne gospodarki świata 2010,* available on: www.forsai.pl.

[31] Hollanders H., Arundel A., *European Sector Innovation Scoreboard,* European Commission, December 2005, p. 9.

[32] Szymańska E. *Polityka proinnowacyjna w Polsce.* /In:/ *Przesłanki konsolidacji sektora B + R,* Meredyk K., Wildowicz–Giegiel A. (ed.), Wydawnictwo Uniwersytetu w Białymstoku, Białystok 2012, pp. 91–92.

[33] http://ec.europa.eu/innovation–union.

also presents a special topic – Innovativeness of the public sector.[34] It should be highlighted that it is the first edition of the report. In accordance with the initiative supporting the *Innovation Union* (IP/10/1288), it replaces former European report on science, technology and competitiveness. The initiative is supposed to strengthen the knowledge base in Europe and, at the same time, to make it possible to transform innovative ideas into market products. The information and report on competitiveness concerning the *Innovation Union* are available on the following websites: http://ec.eiiropa.eu/iuc2011; *Innovation Union* http://ec.europa.eu/innovation–umon; *Europe 2020*: http://ec.europa.eu/europe2020/indexjpl.htm. *The result chart of Innovation Union from 2010,* Inno Metrics PRO INNO EUROPE, is available on the website: www.proHino–europe.eu/metrics; *Innobarometer 2010. Analitycal Report,* European Commission, 2011, wivw.proinno–europe.eu/page/innobarometer. In the case of Poland, 400 institutions were surveyed; they were divided into 3 groups: leading innovators, moderate innovators and non–innovative institutions; *Innobarometer 2010, Auditycal Reports Innovation in Public Administration Section,* available on www.ec.europa.eu.

Within the European Union the so–called *European Innovation Space* – EIS) was established.[35] After having been merged with former initiative ERA, it was transformed into the European Research and Innovation Space. However, *Allianz Economic Development and Research*[36] deals, among other things, with analysing economic growth and monitoring emplyment within the EU in cooperation with the European Comission. One of research institutions is also *the European Research Council.* It was established by the European Union in 2007 as the first European institution supporting the so–called *projects verging on knowledge.* It is worthy of note that one of the criteria for selecting projects is scientific research excellence of the researcher and the innovative potential of presented ideas, regadless of the scientist's nationality, age and also of the field of research. ERC also deals with the detailed programme called ''*Ideas".* It constitutes one of four parts of the seventh European programme in general outline for small and medium enterprises. Another initiative to support innovativeness is KIC (*Knowledge and lnnovation Cooperation).* It is an international agreement between universities, institutes and companies coordinated by European Institute of Innovation and Technology (EIT) [37].

The innovativeness of the economy is also measured by sectors. To measure the level of innovativeness of selected sectors of the European economy, the so–called *Innovation Sector Index* (ISI) was developed. This method (formulated on the basis of 12 indices) was prepared by the European Commission, OECD and Eurostat. However, it operates both in the full range of the European innovativeness indices *(European Innovation Scoreboard –25)* and in a reduced form of ranking *(Global Innovation Scoreboard – 12).* On the grounds of measurements by ISI, it was assessed that to the most innovative European sectors belong: *production of electrical appliances and optical instruments (D,63), ICT (0,61), computer science (0,59), production of chemicals and pharmaceuticals (0,59).* [38] It is worthy of mention that services were low on the list, i.e. they were only fifteenth with the index 0,39. So high innovativeness of producers of electrical appliances and optical instruments was first of all due to the highest among all sectors research expense indices (15.39), the highest percentage of enterprises using public funds (22.8), the expenditure on innovative activities in enterprises (7.64%) and the percentage of firms with a patent (21.1). Among member states, Scandinavian countries are the leaders in the field of innovativeness and competitiveness. Poland is among countries with the

[34] A. Maksimczuk, *Granice państwowe…*, op. cit.

[35] *Putting Knowledge into Practice: A Broad–Based lnnovation Strategy for the EU,* COM (2006), Brussels, 2006.

[36] *European Growth and Jobs Monitor 2009. Indicator for Success and Knowledge Economy,* Heise M. (ed.), The Lisbon Council, Allianz Economic Development and Research, Frankfurt/ Main 2008.

[37] www.eit.europa.eu/kiccs.

[38] Hollanders H., Arundel A., *European Sector Innovation Scoreboard,* European Commission, December 2005, pp. 70–71.

lowest innovativeness level. [39] However, Europe is not the leader in terms of innovativeness, either. [40] All the more serious are the challenges our economy is going to meet.

Also selected regions of the country are subject to research. It is worthy of mention that the Bureau for Statistics in Szczecin, which is a leading centre within the scope of research on the innovativeness of enterprises in Poland [41], besides conducting research covering the entire country also does many analyses concerning different regions. Comparing separate analyses, it is possible to indicate factors that constitute the innovativeness of the economy of a given country. However, moving on to final recapitulation of our deliberations on these issues, it is impossible to disagree with Peter F. Drucker that *innovativenes originates mainly within the enterprise* and also that, as defined by the Oslo methodology, *an innovative enterprise is such a company which, during the analysed – mostly three–year period, had introduced at least one technological innovation, a new or modified product or a new or modified process being a novelty, at least from the point of view of a given enterprise.* [42] Thus, these issues must be reflected in Polish economic policy as a whole concerning the transformation, integration and globalization period.

Remarks on the scope of legal protection of innovations and innovativeness abroad and in Poland

Now that selected economic aspects of innovation and innovativeness have been discussed, an attempt will be made to answer the following question: *What solutions do Polish and European regulations provide in the field of legal protection of goods being also innovations and how effective they are?* It is impossible to question the statement that *innovations mean new solutions being valuable for their authors and future users.* Hence it is an old–established rule in social and economic life to provide definite regulations aimed at effective protecting their holders against imitators. Such regulations should, at the same time, allow their commercialization (during different periods less or more effectively). On the other hand, they should form the basis for developing activity in this respect. According to A. H. Jasiński[43] innovation needs a good scientist and a good lawyer, which is logical, because: "a scientist/research team/ institute dealing with commercialization of their achievement also needs adequate legal protection".[44]

In this day and age, in the days of economy more and more based on knowledge, entrepreneurs' success does not only depend on their assets in the broadest sense of the word (material possessions), but they are also increasingly dependent on the so–called intellectual assets (intellectual property). Intellectual property is now a key issue in making daily economic decisions by entrepreneurs.[45] From an economic point of view, all elements (goods) included in intellectual property become the so–called

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[39] Lubieniecka M., *Pozycja konkurencyjna i wzrost gospodarczy Polski a potencjał innowacyjny sektorów rosnących.* / In:/ Meredyk K., Sikorski J., Turowski K. (ed.), *Rozwój gospodarczy…,* op. cit., pp. 47–57.

[40] Truskolaski T., *Kształtowanie się rynku innowacji na przykładzie Izraela.* /In:/ *Rozwój gospodarczy…,* op. cit., pp. 71–79.

[41] Ejsmont A., *Kooperacja jako czynnik podnoszenia innowacyjności w Polsce.* /In:/] *Przesłanki konsolidacji…,* op. cit., pp. 125–148; Grzybowska A*., Innowacyjność przedsiębiorstw w Polsce.* /In:/ *Przesłanki konsolid*acji…, op. cit., pp. 149–166.

[42] Drucker P.F., *Natchnienie i fart, czyli innowacja i przedsiębiorczość*, Wydawnictwo Studio EMKA, Warszawa 2004, p. 151; *Definicje pojęć z zakresu statystyki naukowej i techniki*, GUS, Warszawa 1999, p. 64.

[43] Jasiński A.H. (ed.), *Innowacyjność polskiej gospodarki w okresie transformacji. Wybrane aspekty,* Wydawnictwo Naukowe Wydziału Zarządzania Uniwersytetu Warszawskiego, Warszawa 2010, p. 261.

[44] Wnorowski H., *Ochrona własności intelektualnej jako determinanta innowacyjności.* /In:/ Meredyk K., Wildowicz–Giegiel A. (ed.), *Instytucjonalne aspekty rozwoju sektora B+R w Polsce. Od gospodarki imitacyjnej do innowacyjnej,* Wydawnictwo Uniwersytetu w Białymstoku, Białystok 2011, p. 164.

[45] *Własność przemysłowa w działalności gospodarczej*, Urząd Patentowy Rzeczpospolitej Polskiej, Warszawa, Nov. 2003, p. 5.

intellectual capital.[46] Like all goods being part of assets of an enterprise, they are also subject to legal protection. At present, legal protection plays a special role as regards high–technology sectors because what results from realized research projects is, first of all, new scientific and technological knowledge being part of intellectual capital.[47] It should be added that the approach to understanding the notion of capital in economic and legal sciences underwent constant evolution, not only because of the fact of the emergence of its separate, mentioned above category, thereby the approach in legal sciences to the issue of creating appropriate formal institutions which should examine questions to afford effective protection to separate forms of capital.

The protection of intellectual property abroad and in Poland has its long tradition dating back to at least the middle of the 15th century.[48] Together with the development of the market economy (capitalist) and, consequently, its increased internationalization, two fundamental legal acts were drawn up:[49]

- The Paris Convention (1883) for the Protection of Industrial Property,
- The Berlin Convention (1886) for the Protection of Literary Works and Works of Art.

For this reason, the realm of the protection of intellectual property is divided into these two branches. In our times, these matters have become more and more global in character. After World Trade Organization (WTO) had been established and developed, they were reflected in the so–called Trade Aspects of Intellectual Property Agreement (TRIPS) of 15 April 1994, as its amendment, whose clauses are binding upon all members of this organization.[50]

In Poland the fundamental regulation by law (Law of 30th June, 2000 *on Industrial Property,* The Journal of Laws from 2003, No 119, item 1117 with later amendments) within the scope of intellectual property stipulates that within the framework of industrial property the following items undergo legal protection: 1. inventions, 2. functional designs, 3. industrial designs, 4. trademarks, 5. geographic descriptions indicating the origin of goods and services, 6. topography of integrated circuits. It should be highlighted that the above–mentioned normalization of the law on the industrial property from the year 2000 was harmonized with the UE law. The principle of cumulative responsibility was adopted.[51] Thereby, for example, the fact of registration of a geographical name cannot exclude its legal protection pursuant to the law on suppression of unfair competition or another act within this scope. Additionally, in the case of the same actual state which falls within the scope of the regulation on the industrial property and another regulation, the application of the procedure of the type "expresis verbis", the dilemma of "lex specialis" of one of them will be pointless as both forms of protection included in those regulations are independent of each other. The fact of granting somebody the so–called proprietary right guaranteeing exclusiveness – distributing monopoly on definite intellectual goods has become a fundamental legal instrument of affording appropriate protection of intellectual property.

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[46] Lichtarski J. (ed.), *Podstawy nauki o przedsiębiorstwie*, Wydawnictwo Akademii Ekonomicznej im. Oskara Langego we Wrocławiu, Wrocław 2003, p. 131; Purgał–Popiela J., *Pomiar wiedzy w organizacji – problemy i wyzwania.* /In:/ *Kapitał ludzki a kształtowanie przedsiębiorczości,* Juchnowicz M. (ed.), Wydawnictwo Poltext, Warszawa 2004, p. 59.

[47] Gruszewska E., *Instytucje a proces tworzenia kapitału,* Wydawnictwo Uniwersytetu w Białymstoku, Białystok 2013, chapter 5, *Prawa własności a tworzenie kapitału*, pp. 302–360; Wnorowski H., *Instytucjonalne uwarunkowania działalności przedsiębiorstw w krajach Unii Europejskiej,* Wydawnictwo Uniwersytetu w Białymstoku, Białystok 2011, chapter 1., par. 1.3., *Próba oceny wpływu uwarunkowań instytucjonalnych na wzrost i aktywność gospodarczą w modelach endogenicznych,* pp. 34–40, chapter 5.

[48] See more: Szymanek T., Prawo własności przemysłowej, Europejska Wyższa Szkoła Prawa i Administracji, Warszawa 2008, p. 14.

[49] Ibidem, p.14 and subsequent.

[50] These clauses include 73 articles which were divided into 7 parts. For more see: Hoeckman B., Kostecki M.M., *Ekonomia światowego systemu handlu WTO. Zasady i mechanizmy negocjacji,* Wydawnictwo Akademii Ekonomicznej im. Oskara Langego we Wrocławiu, Wrocław 2002, p. 269 and subsequent.

[51] Nowińska E., Promińska U. M. du Vall, *Prawo własności przemysłowej*, Wydawnictwo Prawnicze „Lexis Nexis", Warszawa 2008, p. 19 and subsequent.

As regards other Polish regulations within this scope, apart from the Civil Code, one should also mention the following legal acts: 1. The Act of 16 April 1993 *on Suppressing Unfair Competition* (The Journal of Laws from 2003, no 153, item1503), 2. Regulation by the Prime Minister of 20.05.2008 *on Patent Registers Kept by Patent Office of the Republic of Poland* (The Journal of Law from 2008, no 91, item 564), 3. Regulation by the Council of Ministers of 29.08.2001 *on fees connected with protection of inventions, functional designs, industrial designs, trademarks, geographic descriptions and topography of integrated circuits.* (The Journal of Law from 2001, no 90, item 1000), 4. Regulation by the Prime Minister of 15.05.2008 *on Filing Applications for a patent, concerning medicinal and plant protection products, functional and industrial designs, trademarks, geographic descriptions and topography of integrated circuits and electronic mail* (The Journal of Law from 2008, no 89, item 540).

Thus, the above–mentioned solutions also allow commercial exploitation of intellectual property. It can, among other things, depend on:

1. making profits on selling intellectual goods,
2. gaining financial benefits.

Apart from the copyright, which deals with the so–called exclusive licence under pain of invalidity, a contract of sale has to be drawn up in writing. It is also essential, if necessary, to apply a legal principle stipulating that a more detailed regulation deriving from legal acts of equal legal validity, e.g. two acts being in force at the same time, should be applied before a more general regulation. Gaining financial profits can take place directly by virtue of individual use of particular intellectual goods within the framework of running a business activity. It can also take place indirectly through giving one's permission (licence) to other economic subjects to use them. The licence can be full in character and then the scope of the licensee's rights is identical to the licensor's rights. It can also be limited in character and then the scope of licensee's rights is narrower. In the case of such licences, exclusive rights can be granted and then the licensee possesses a guaranteed monopoly on use. However, in the case of non–exclusive rights, the licensor can (at the same time) grant a licence within the same scope also to other licensees.

In the above–mentioned first case (sale of patent or another protected right):

- payment for transfer is sometimes dependent on technological and economic value of a given intellectual interest and the scope of its guarantee,[52]
- right to protection of invention (protected right) can be sold before and after submitting an appropriate application [53] in the Patent Office,
- in the case of sale before submitting application in the Patent Office, the risks shall be transfered to purchaser.[54]

With reference to gaining financial benefits by virtue of giving other subjects permissions (licences) to use, proceeds gained by the licensor are most often in form of periodic fees or adequate share in the profits made by the licensee. In this situation, we can claim that an effective use of the economic potential of intellectual property depends, besides its marketable value, also on invention and business efficiency of both the licensee and the licensor.

Recapitulating our deliberations on selected legal aspects of innovation and innovativeness concerning also intellectual property in the broadest sense of the word, it is necessary to stress that regulations aimed at protecting intellectual property also include appropriate legal sanctions because of infringement of those rights and they are usually limited:

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[52] Other (additional) factors can also determine it – especially the scope of support by using these intellectual goods, which the seller is obliged to provide under a written agreement.

[53] Pursuant to the requirements that emerge from the Regulation by the Prime Minister of 20.05.2008 *on Patent Registers Kept by the Patent Office of the Republic of Poland* (The Journal of Law of 2008, no 91, item 564).

[54] Jasiński A.H. (ed.), *Innowacyjność polskiej gospodarki w okresie transformacji. Wybrane aspekty,* Wydawnictwo Naukowe Wydziału Zarządzania Uniwersytetu Warszawskiego, Warszawa 2010, pp. 262, 269–270.

1. in accordance with time, while the restriction periods are not uniform with reference to separate regulations,
2. by territory, which means that traditionally, they cover the entire territory of the country, however, under appropiate international agreements, they also provide an opportunity to extend the scope of that protection to territories outside Poland,
3. violation of the exclusive right, depending on illegal use of protected intellectual goods is amenable to the following sanctions:

- civil (order to cease infringement, to eliminate the effects of violation, to redress a damage, to return unduly gained benefits , etc.);
- penal (fine, restriction of freedom and even deprivation of freedom).

Conclusion

Moving on to summarize, it would be worth asking the following question (and once again make an attempt to give an answer): *Does innovation market already exist in Poland?* Especially that in Poland and other economies being at the same development level, imitations and the efficiency of the imitation process are still predominant. This stage, at least in Poland is nearing completion. The gap with regard to effectiveness, organization and technology between the Polish economy and the most efficient economies within the European Union and all over the world is narrowing fast. Thereby, stability of economic growth becomes increasingly connected with the upward trend in innovativeness. In Poland, we still cannot speak of the existence of the innovation market in the full sense of the word. According to K. Meredyk, without the market or outside the market, it is impossible to increase the level of innovation.[55] It is widely assumed that the efficiency of the R&D sector in a strategic system is a prerequisite for a permanent economic growth. If this condition is not met, the Polish economy will never be able to equal the foremost economies in the world.

And also in this respect, as never before, there is general agreement.[56] Thus, these issues must become the most important problems facing social and economic life of the present (already the third decade) stage of transformation of the Polish economy.

There is no doubt that, in our times, intellectual property understood from an economic perspective to be the so–called intellectual capital, is extremely important from the point of view of particular entrepreneurs, domestic and global economies, and different communities. Hence it must undergo legal protection. Polish legal regulations within this scope, if not yet *fully effective,* can be undoubtedly recognized – among other things because of the need for adaptation to solutions used in this respect in the UE – *as meeting the European standards* at the present development stage of the Polish economy. However, it does not exclude the need for their modification in the context of increasingly changing conditions, in our times of the increasing globalization of world trade.

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[55] See: Meredyk K., Sikorski J., Turowski K. (ed.), *Rozwój gospodarczy a rynek i innowacje*…, op. cit., pp. 7–8.
[56] See: Meredyk K., Wildowicz–Giegiel A. (ed.) *Instytucjonalne aspekty rozwoju*…, op. cit., p. 5.

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THE PLACE OF THE UNIVERSITY WITHIN THE CONCEPT OF THE INNOVATIVE ECONOMY

Summary

The concept of knowledge–based regions constitutes for universities, which are to play the key role in this concept, a source of new opportunities, but also considerable challenges. Universities operate in the more and more globalised environment which is subjected to continuous evolution and in the conditions of intensifying competition whose objective is to attract and keep talents as well as to react to new needs. There appears a question concerning the possibilities of meeting the regional economy's expectations regarding new technologies and patents, fighting off competition from the best universities, and ensuring a constantly high level of provided services.

* * *

Introduction

Higher education is an important element of the system of the innovative knowledge–based economy. Knowledge and education acquired by graduates during their studies not only allow them to pursue their individual career paths but also are the most important components of human and social capital determining the pace and quality of a given country's economic development. The potential of such capital increases in parallel to the growing quality of education and it is the university that assumes responsibility for this process, which requires special care from university authorities as well as both research and didactic employees.

The objective of the currently developing new model of higher education institutions is to educate entrepreneurial employees equipped with innovative tools, i.e. modern knowledge and the ability to use it in practice, experience obtained during internship programmes in innovative enterprises, skills necessary to conduct business activities acquired in cooperation with academic entrepreneurship incubators (AEI) and other academic entrepreneurship entities. This objective results from the thesis according to which entrepreneurship and innovations are keys to professional success and a career in business. In this context it is possible to indicate a considerable role of "academic entrepreneurship" in the process of shaping a new role of the university within the concept of the innovative economy. "Academic entrepreneurship" may be defined as entrepreneurship of all employees of a given university, its doctoral, master and bachelor

students, graduates and organisational structures (faculties, colleges, departments), and in particular its management centre (the rector, the senate). A perception of the university based on entrepreneurship and innovation allows a broad look at the topic of entrepreneurship of the academic community in Poland.

The modern institution of higher education

The modern university is based on the following premises[1]: – a school is an open system; – educational resources are located in other social systems; – education is a lifelong process in order to ensure complete development of both individuals and society; – education in an institution of higher education reflects and interprets society as well as shapes it through cooperation (an educational entity of this type has a creative and innovative character oriented towards the future); – education comprises all spheres of individual and social life: the social and cultural, ethical, moral, economic, occupational, scholarly and technological spheres.

Within the context of the process of intensive changes in higher education, a university may be perceived as a specific enterprise or an educational enterprise which becomes similar to enterprises in other sectors, specifying similar objectives and operating conditions, building a similar organisational structure, but at the same time maintaining its specific character[2].

The entrepreneurial university is a place where a change in "the borderline between the traditional role of an academic and the role of a quasi–entrepreneur takes place. If the former wants to conduct scholarly research, they have to acquire necessary financial resources, which also changes the criteria according to which their achievements are assessed."[3] In the light of the above, it is possible to distinguish the following three models of the entrepreneurial university oriented towards[4]:

- research – the university aims to commercialise the results of its research, therefore, it should establish networks of relationships with the economic environment,
- a product and its commercialisation – the university develops cooperation with its economic environment,
- the market – the university aims to broaden opportunities for the commercialisation of its product and for the establishment of institutional connections with its economic environment.

B.R. Clark has identified the following five fundamental features of the restructuring of "traditional" universities towards entrepreneurial universities:[5]

- strengthening the controlling centre and changing the way of its functioning,
- developing peripheral segments,
- diversifying sources of financing,
- stimulating the academic core,
- developing an integrated culture of entrepreneurship[6].

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[1] B.H. Banathy, *Projektowanie systemów edukacji. Podróże w przyszłość*, Wydawnictwo Politechniki Wrocławskiej, Wrocław 1994, pp. 112–123.

[2] T. Wawak, *Pro quality restructuring of management in higher education.* /In:/ *Current problems of university management*, scientific editor: Wawak, Wydawnictwo Uniwersytetu Jagiellońskiego, Kraków 2013, p. 8.

[3] K. Leja, *Koncepcje zarządzania współczesnym uniwersytetem*, Wydawnictwo Politechniki Gdańskiej, Gdańsk 2011, p. 47.

[4] J. Enders, Ch. Musselin, *Back to the future? The academic professions in the 21st century*, "Higher Education to 2030" 2008, Vol. 1: Demography, OECD, p. 145.

[5] B.R. Clark, *Creating Entrepreneurial Universities: Organizational Pathways of Transformation*, Pergamon, For IAU Press, Oxford 1998, pp. 5–8.

[6] K. Leja, *Koncepcje zarządzania współczesnym uniwersytetem*, Wydawnictwo Politechniki Gdańskiej, Gdańsk 2011, pp. 41–45.

Strengthening the controlling centre and changing the manner of its functioning

The entrepreneurial university should be dominated by the approach strengthening initiatives for independent search for reasons and opportunities for change. The centre has to react in particular to grassroots initiatives, which constitute a basic form of changes at the university. Therefore, the managing centre has to be open to new organisational forms. A change is required in the perception of the centre's role as the administrator of the university's resources towards the managerial approach[7]. At universities whose tasks include the creation and dissemination of knowledge, grassroots initiatives require coordination and strengthening on the part of the controlling centre. The strengthening of the decision–making centre may occur at the expense of depriving the basic organisational units of the right to decide about the main directions of development. Only then will those managing the university react properly to signals coming from the near and more distant environments. Simultaneously, the university management centre has to be flexible, agile, and capable of making effective and efficient decisions at a proper time.

The establishment of a strong centre managing the university will entail reduction in the importance of the academic collegial bodies. At the same time, however, it should lead to the strengthening of employees' entrepreneurship and to turning the entrepreneurship of the university's employees into a good academic custom[8].

Developing peripheral segments

Peripheral segments include those functioning within the university, on its fringes (e.g. spin–off companies, entrepreneurship incubators) or outside it (e.g. external mentors, institutions responsible for regional development)[9].

The objective of peripheral segments is to overcome the traditional divisions into disciplines and to develop cooperation with the environment with respect to knowledge transfer and the acquisition of funds in contact with the business sector (financial resources from the so–called third stream – third party funding), to protect intellectual property, to foster lifelong learning as well as to maintain contacts with graduates[10].

Diversifying sources of financing

The diversification of the university's sources of financing comes down practically to searching for new sources of financing from the so–called third source and streams of revenues from subsidies and fees for educational services. These revenues come from the business sector, the local government, associations, foundations, graduates, donors, sale of intellectual property and provision of other services

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[7] Ibidem, p. 41.

[8] B.R. Clark, *The higher education system. Academic Organization in Cross–National Perspective*, University of California Press, Berkeley 1983, pp. 234–235.

[9] P. Benneworth, *Seven samurai opening up the ivory tower? The construction of Newcastle as an Entrepreneurial University*, "European Planning Studies" 2007, Vol. 15, No. 4, p. 497.

[10] At present at the Jagiellonian University there are about a dozen important organisational units which may be classified as peripheral segments with respect to the main objectives pursued and tasks carried out by the university. These units include, among others, The Małopolskie Centre of Biotechnology, The Jagiellonian Pharmaceutical Development Centre, The Molecular Biotechnology for Health. These organisational units of the Jagiellonian University are growing in importance year by year and exert a very advantageous influence on its overall development. Their operations obviously require continuous improvement, better quality of management and considerable amounts of capital to ensure their quick development and contribution to the development of science and quality of education.

by, for example, campuses, hotels and academic catering establishments[11]. Receiving revenues from various sources makes universities independent of the state budget and increases their responsibility before other entities financing their activities.

Stimulating the traditional academic core

The entrepreneurial university should consist of entrepreneurial basic organisational units and a strengthened management centre. Traditional organisational units (faculties and institutes) should be supplemented and strengthened with new units such as research centres. Their objective should be to obtain funds from non–budgetary sources for the university's activities. Their significance at the university increases in parallel to the development of transfer between traditional units and new ones."[12]

An integrated culture of entrepreneurship

Universities should develop an organisational culture favourable to entrepreneurship. It is internal factors that constitute a starting point for the development of an entrepreneurial culture, which should facilitate the shaping of entrepreneurial attitudes at universities. This impulse can be an announcement that the university will be turning into an entrepreneurial university focusing on improving the transfer of knowledge among the university, society at large, and the business sector.

A regional system of innovations

The process of expanding the knowledge of the methods of acquiring innovativeness from the knowledge–based economy is gaining momentum. This issue not only is gaining in importance in the field of business management but also goes beyond its limits, becoming a matter raised and discussed in a particular region or country[13]. This may be exemplified by the concepts of innovation systems[14] developed at the national and regional levels. Their objective is to stimulate the innovativeness and competitiveness of the economy. From the point of view of the concept of regional development, it is very important to establish regional innovation systems (RIS) understood as groups of selected institutions founded for the purpose of promoting new technologies and creating an atmosphere favourable for policies supporting innovativeness in a given region. The achievement of better results in the building of RISs in the region depends on the shaping of interactions among entities which hold potential for innovation. This process allows the isolation of a group of entities, interactions and events which, in consequence of synergy, help to increase the region's innovativeness (Figure 1.).

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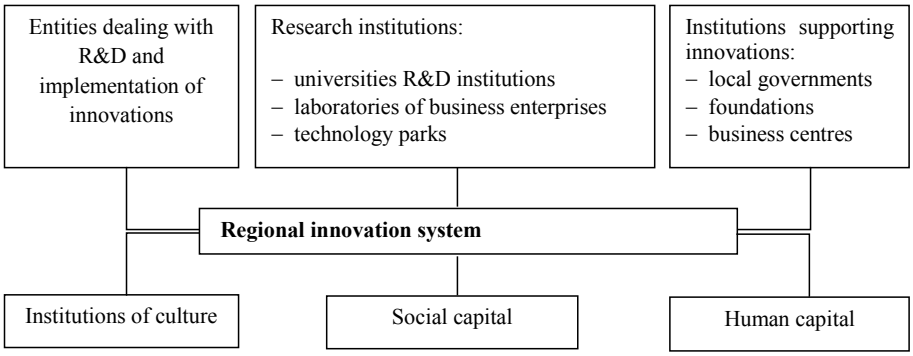
[11] N. Gjerding, C.P.M., Wilderom, S.P.B. Cameron, A. Taylor, K.J. Scheunert, *Twenty practices of an entrepreneurial university*, "Higher Education Management and Policy" 2006, Vol. 18, No. 3, p. 18. /In:/ K. Leja, *Koncepcje zarządzania współczesnym uniwersytetem*, Wydawnictwo Politechniki Gdańskiej, Gdańsk 2011, p. 44.

[12] M. Kwiek, *Transformacja uniwersytetu. Zmiany instytucjonalne i ewolucje polityki edukacyjnej w Europie*, Wydawnictwo Naukowe UAM, Poznań 2010, pp. 176–177.

[13] K.B. Matusiak, 2010, *Budowa powiązań nauki z biznesem w gospodarce opartej na wiedzy. Rola i miejsce uniwersytetu w procesach innowacyjnych*, Oficyna Wydawnicza Szkoły Głównej Handlowej, Warszawa, p. 61.

[14] The concept of an innovation system emphasises that the free flow of technologies and information among people, enterprises and institutions is the key to an innovative process.

Figure 1. The concept of a regional innovation system



Source: own work based on: K. Matusiak, *Budowa powiązań nauki z biznesem w gospodarce opartej na wiedzy. Rola i miejsce uniwersytetu w procesach innowacyjnych,* Oficyna Wydawnicza SGH, Warszawa 2010, pp. 106–107.

The outlined concept of a regional innovation system not only indicates the existence of mutual interactions among entities participating in the innovation process but also determines their roles and positions in the process of stimulating and shaping the awareness of innovativeness in the region. In the hierarchical structure of entities exerting influence on the process of transformations of the region, the dominant position is occupied by research institutions, in particular universities and R&D centres. The dominant position of universities and R&D centres in the innovative region is determined by their didactic and intellectual potential, networks of domestic and international connections, as well as the concentration of the laboratory base. Within the process of developing regional innovations, the research sector plays the leading role and the university is the major element of this sector[15].

Universities and R&D centres are involved in specific activities which allow them to carry out innovativeness missions in their regions. They include, among others, activities related to academic entrepreneurship, but require a change in the concept of how universities should function. Reorientation should be directed at an increase in the university's activeness whose effect should be obtaining a competitive advantage within the region and international structures. The implementation of the concept of regional innovativeness requires that its actors:

- increase the competitiveness of scholarly research, which should result in cooperation between science and business,
- strengthen the potential of the academic personnel dealing with research. The accomplishment of this objective requires improvement in financial conditions, a relationship between such conditions and achieved effects (e.g. patents, implementations, international awards, international cooperation, etc.),
- build the university's brand as a centre of science and high quality education whose graduates are demanded in the labour market,
- promote the profession of researcher as an entrepreneurial and innovative person who not only is involved in primary research but is also a market participant active in building relationships between science and business,
- intensify the flow of information about cooperation between the sectors of science and business,

[15] L. Kozioł, *System innowacyjności współczesnych przedsiębiorstw*, ZN MWSE w Tarnowie, No. 1 (12), Tarnów 2009, p. 11.

- increase social trust in science through marketing initiatives,
- acquire funds for universities from regional sources and search for external sources of financing.

Higher education institutions have conditions particularly favourable for creating a climate of innovativeness. According to R. Drozdowski, "during the course of conducted research and classes for students, academics have opportunities for shaping their students' innovative attitudes. The university creates conditions for contacts with academic authorities, for discussions on practically every topic, for flexible adjustments of teaching methods to students' individual needs resulting from the objectives of a particular course or project; also, the university may have an active influence on its graduates' subsequent professional activeness. The university may stimulate its students' entrepreneurship through targeted and subject–oriented occupational training programmes, the building of relationships between academics and students as well as between students and the external environment, which should encourage them to develop new ideas and ways of functioning. The scholarly research sector has opportunities for shaping creative thinking; acting through relevant back–up facilities (libraries, laboratories, workshops), it creates a favourable atmosphere and climate for various ideas, concepts, and styles of thinking. It is a place of inspiration through the very fact of the presence of a large number of specialists representing various scholarly disciplines"[16].

In order to develop students' entrepreneurial attitudes and to convince them that their chance for success is technical and technological progress leading to innovations, universities' didactic processes should focus on shaping the attitude of openness and self–assertion which determines behaviours oriented towards innovations. Students should be focused on achieving benefits related to the possibility of studying at the university. Studying at an institution of higher education allows one to develop innovation–oriented attitudes focused on activeness, initiation, creation and implementation of changes, and consequently on creation of conditions for improving economic and social efficiency. Students' pro–innovation attitudes need to be shaped and stimulated at the stage of acquiring knowledge at an institution of higher education. Academics working with students need to treat them as future entrepreneurs and employers or potential employees.

Such an attitude should be a condition for starting a discussion on the state of education at Polish universities. It is necessary to initiate a discussion on the model of education, proposing a hypothesis according to which the focus of education needs to shift from the teaching of theoretical knowledge to the following:

- occupational education,
- shaping of creativity,
- stimulation of creative thinking processes,
- promotion of innovative solutions constituting a foundation for the creative process.

An economic system based on knowledge causes the following:

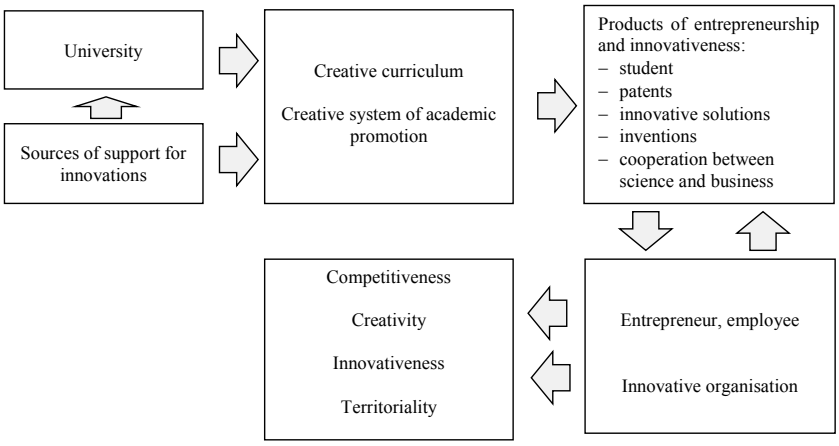
- flexibility of universities,
- society's orientation towards lifelong learning,
- development of skills related to interpersonal communication and team work,
- skilful use of all technological achievements in the field of information management,
- changes in educational and research policies followed by institutions managing this sector (Figure 2.).

Whether a particular university will take advantage of its scholarly and didactic strengths and assume responsibility for the shaping of pro–innovation attitudes among its students and thus exert influence on the levels of the economy's and the region's innovativeness will depend to a considerable degree on

[16] R. Drozdowski, *Wspieranie postaw proinnowacyjnych przez wzmacnianie kreatywności jednostki,* Wydawnictwo Polskiej Agencji Rozwoju Przedsiębiorczości, Warszawa 2010, p. 47.

support received from local governments, the marshal's office and national policies' convergence with the objectives of innovative universities and regions.

Figure 2. The entrepreneurial and innovative university



Source: own work based on: R. Drozdowski, *Wspieranie postaw proinnowacyjnych przez wzmacnianie kreatywności jednostki,* Wydawnictwo PARP, Warszawa 2010.

Conclusion

The entrepreneurial and innovative model of the university's activities is more and more willingly accepted by the academic environment, the business community, local government institutions, and in particular the Ministry of Science and Higher Education.

The university's position can be described as the role of an authority in the area of moral decisions, social conflicts or even political arbitrage. On the other hand, the university's role as an entity fostering economic development and innovations is being accepted very slowly; cooperation between science and business is still at its beginning stage. Despite the conviction that a given region's competitiveness depends on the degree to which regional entities have implemented innovations and entrepreneurial attitudes, the participation of the university in the achievement of the aforementioned objective requires support of local governments and changes within the university itself. The academic community is becoming increasingly aware of the fact that the creation of new solutions requires changes in the attitudes of university employees, students, graduates and authorities.

A process of gradual changes in the assessment of the acquisition of sources of innovations can be also observed in the business community. Enterprises more and more often initiate cooperation with universities, carefully commissioning academics to prepare expert opinions, diagnose their economic positions or develop new solutions. The scale of such cooperation is still rather limited. This results from a relatively small potential of enterprises and the lack of conviction that cooperation with the academic sector will generate expected results. Cooperation between SMEs and the R&D sector is decidedly the most difficult to achieve.

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INNOVATIVE CHARACTER OF VOIVODSHIP DEVELOPMENT STRATEGIES

Summary

This study, based on the related literature and development strategies of Dolnośląskie, Małopolskie and Mazowieckie Voivodships, discusses the following issues: the nature of and conditions behind voivodship development strategies, their objectives and innovative character, characteristics of innovation aspects in the development strategies of these voivodships, and assessment of innovative projects adopted thereunder. This paper intends to examine the scope, type and feasibility of innovative projects adopted under voivodship development strategies. The aim of this study was primarily cognitive, but also – as a supplement – applicative. The analysis of development strategies pursued by the three voivodships indicates that they may be a tool for restructuring. This is because such strategies determine the directions and magnitude of changes and places where they are implemented, on the one hand, and on the other – the adopted goals and tasks arise from the SWOT analysis of the voivodships examined and their development conditions as well as from innovation policies implemented in the European Union, including Poland. Therefore, there is a need to accurately define the tools for putting innovations into practice and supporting innovative behaviours of inhabitants in individual voivodships, including in particular entrepreneurs and research workers. Indeed, the analysed strategies contain many references to cooperation between business, science and administration, while insufficiently setting out cooperation support mechanisms.

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Introduction

The changes in voivodships are based on economic projects undertaken, on the one hand, and on their development strategies that set forth the objectives and tasks for their communities and organise and target the methods and instruments for strategy implementation, on the other hand. These strategies specify the scope and directions of changes, transformation of the socio–economic structure, introduction of new solutions, etc. Such solutions are diverse, ranging from the duplication of existing best practices in development to innovative actions. It should be noted that the nature of development strategies lies in

new quality, which should foster their innovative character. However, it is not always the case because of the resources and capacities of individual voivodships.

Given the circumstances being discussed, this study attempts to examine the scope, type and feasibility of innovative projects adopted under voivodship development strategies. The aim hereof is primarily cognitive, but also – as a supplement – applicative. These issues have been investigated based on the related literature and three development strategies of Dolnośląskie, Małopolskie and Mazowieckie Voivodships[1]. The foundation for drawing up this study was provided by data processing methods, i.e. analysis and synthesis.

The nature of and conditions behind voivodship development strategies

At the level of voivodship, the Marshal's Office is responsible, among others, for preparing[2]:

1. voivodship spatial development plan,
2. voivodship development strategy,
3. development policy and voivodship programmes, including the regional operational programme, as tools for strategy implementation and achievement of supra–local public objectives.

All these tasks are closely interlinked, setting directions of voivodships' activities and modes of implementation. They form a whole where the leading role is played by the voivodship development strategy as a set of goals, tasks and organisational projects to be implemented in the long term (over 5 years), taking into account the response to the internal and external environment and indicating entities, instruments and methods for their implementation. Various definitions of strategy exist, but all of them include formulating developmental problems, setting goals and outlining the operational model, together with tasks, methods and tools for implementation[3].

A voivodship development strategy comprises chiefly the following elements[4]:

- a description of the current and anticipated situation of the voivodship,
- a description of general and conditional objectives and strategic options of the voivodship resulting from its strategic analysis,
- a description of domain–specific development priorities and specific strategic objectives,
- directions of actions undertaken by the voivodship government to achieve strategic objectives of its development policy,
- a financial table showing the funds planned for the implementation of individual tasks and actions resulting from domain–specific development priorities.

The Voivodship Assembly (*Sejmik*) determines the rules, procedures and timetable for devising the voivodship development strategy, taking into consideration[5]:

- tasks of the voivodship government authorities in drawing up the development strategy,
- decision–making powers of voivodship governments in this regard,

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[1] In the case of Mazowieckie Voivodship, the analysed development strategy was that approved in 2013 as an elaborated strategy of 2006, including the expansion of innovation issues as evidenced by the title, where the words "Mazovia as an Innovative Region" were added (cf. *Strategia rozwoju województwa mazowieckiego do 2020 roku, aktualizacja*, Mazovian Voivodship Assembly, Warszawa 2006; *Strategia rozwoju województwa mazowieckiego do 2030 roku. Innowacyjne Mazowsze*, Mazovian Voivodship Assembly, Warszawa 2013.

[2] *Act of 5 June 1998 on Voivodship Government*, consolidated text, Journal of Laws (Dz.U. 2016, item 486, of 1 April 2016).

[3] See: M. Wójcik, *Strategia rozwoju województwa jako instrument rozwoju regionalnego na przykładzie województwa świętokrzyskiego*, "Studia i Materiały. Miscellanea Oeconomicae" 2014, No. 3, pp. 228–229.

[4] A. Klasik, *Strategia rozwoju regionu*, "Studia Regionalne i Lokalne" 2000, No. 3, p. 10.

[5] *Act of 5 June 1998 on Voivodship Government*, consolidated text, Journal of Laws (Dz.U. 2016, item 486, of 1 April 2016); A. Klasik…, op. cit., p. 9.

- the need to establish partnerships with the national government administration and units of local government,
- the need to establish partnerships between voivodship governments and private and social organisations, including economic and professional self–regulatory organisations in the area concerned,
- European Union requirements relating, in particular, to regions and principles of individual, especially regional, structural and cohesion, policies.

A draft development strategy is prepared by the Voivodship Board and referred for opinion to the Voivodship Assembly, which endorses its content and scope when approving it. The Voivodship Board bears full responsibility for strategy implementation, and the Assembly performs a control function. The tasks and decision–making powers of the voivodship government in the preparation of the development strategy determine the Board's and Assembly's mode of operation, indicating the directions of activities and setting the boundaries within which they can act. These boundaries may be expanded through cooperation with stakeholders and their consent to a certain mode of action. Such cooperation is necessary both with national and regional administrations and with private and social organisations. When devising voivodship development strategies, it is a good idea to obtain information about the needs, different views on development problems, preferences, etc., of the above–mentioned actors and organisations. It would be also desirable to invite them to get involved in formulating objectives of the strategy and preparing it, evaluating the initiatives undertaken, exchanging information in this regard, etc. All of these activities, by making the strategy preparation process more social, facilitate strategy development but also its acceptance by stakeholders and their participation in strategy implementation. Cooperation and public consultations concern all areas of activity, in particular those where solvable problems occur (for example, income, employment, retraining, etc., in problem regions) or new actions are taken (for example, relating to development, innovation and changes in the economic functions of a particular region). Major areas of strategic public consultations comprise the following issues:[6]:

- restructuring of social and economic activities, including development of services,
- development of technical, economic and social infrastructure,
- supporting the activity and innovative character of the voivodship population and improvement of their qualifications,
- method of environment and landscape use,
- waste management and recycling,
- quality of goods and services, in particular relating to health,
- citizens' security,
- social and economic support and its directions.

In cooperation with the various stakeholders in the process of devising and implementing development strategies, the Voivodship Board and Assembly should take into account the following principles[7]:

1. the principle of strategic management of voivodship development, namely preparing the strategy, specifying its mission and objectives and implementing it in an effective and efficient manner,
2. the principle of partnership, namely working together with different organisations and actors in the preparation and implementation of the voivodship development strategy,

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[6] A.P. Wiatrak, *Role of public consultations in strategic public management, "*Współczesne Zarządzanie" 2010, No. 1, p. 14.

[7] A. Wyczarska, *Miejsce i rola strategii rozwoju w systemie planowania regionalnego w Polsce*, lecture delivered at the Second International Conference on "Scenariusze rozwoju regionalnego" in Volgograd (Russia) on 7–8 October 2011, http://civic.edudemo.org.pl/nowosci/rosja/112–ii–midzynarodowa–konferencja–scenariusze–rozwoju–regionalnego–wystpienia–polskich–ekspertow–na–konferencji–w–federacji–rosyjskiej, (accessed on 22.06.2016), p. 7.

3. the principle of voivodship autonomy in devising regional development strategies, yet in compliance with the national policy of socio–economic development and policies of the European Union, particularly cohesion policy,
4. the principle of sustainable development in the social, spatial and environmental dimensions, i.e. shaping development processes with account being taken of various aspects and conditions.

Objectives of voivodship development strategies and their innovative character

The subjects of development strategies may encompass a range of areas and courses of action, depending on: available resources, requirements of the national socio–economic policy, economic and social situation, and development problems in a given voivodship, etc., but also on attitudes and commitment of the various stakeholders, in particular the Voivodship Board and Assembly. European (including Polish) experiences in this regard indicate that the most common subjects of the strategies are[8]:

- internal potentials of voivodship development and possibilities and directions of their exploitation,
- infrastructure supporting development of entrepreneurship and innovation in the voivodship,
- attracting external investors and tourists to the voivodship,
- developing networks of cooperation and various forms of public–private and public–social partnerships in the voivodship,
- management infrastructure at the voivodship level,
- promoting values and development potential of the voivodship,
- creating a new image of the voivodship and enriching it with new values.

The scope of a strategy depends on the conditions behind its preparation, on the one hand, and on the set objectives, directions and stages of its implementation, on the other hand. The main objectives of these strategies, regardless of the type of problem, can be summarised as follows[9]:

1. economic growth conducive to creating new jobs, reducing unemployment, increasing the purchasing power of residents and businesses, etc.,
2. restructuring and changing the functional structure of economic operators of a given voivodship by developing new fields of activity, etc.,
3. technological development and implementation of innovation by creating a favourable climate for innovation implementation and building regional and local innovation networks,
4. development of institutional infrastructure to support productive resources (in particular human capital) and business activities,
5. increasing investment attractiveness of the voivodship through the development of economic space for business operation, inflow of capital, etc.,
6. development of the services sector and social resources by increasing the availability of specialised educational, medical, cultural services, etc.,
7. improving the well–being and quality of life of the population through an increase in people's incomes, improvement of working conditions, housing, leisure, etc.,
8. increasing social and professional mobility through retraining, entering new professions, undertaking new jobs, etc.,
9. favourable qualitative changes in the natural environment through building environmental infrastructure and eliminating threats to the natural environment,

[8] Cf. A. Klasik…, op. cit., p. 10.

[9] A. Szewczuk, M. Kogut–Jaworska, M. Zioło, *Rozwój lokalny i regionalny. Teoria i praktyka*, Wyd. C.H. Beck, Warsaw 2011, p. 32.

10. developing a positive image of the area through actions listed above as well as cooperation and integration processes in the regional community.

The aim of voivodship strategies is to optimise the processes of managing voivodship development in the long term, defining the hierarchy of needs in the voivodship but also across individual districts and municipalities[10]. Afterwards, development directions are set and instruments to support them are established along with the scope of such support. A vital role is played by strategy stakeholders, in particular the voivodship population, including entrepreneurs. What should be borne in mind is knowledge – a rare good that is, nonetheless, necessary for effective and efficient economy and management of development processes, including innovative ones[11].

Characteristics of innovation issues in development strategies of Dolnośląskie, Małopolskie and Mazowieckie Voivodships

Development strategies of all voivodships, including Dolnośląskie, Małopolskie and Mazowieckie, contain a reference to innovation issues. Dolnośląskie Voivodship's development strategy states its mission as follows: "a modern economy and high quality of life in attractive environment" to be achieved by this voivodship as "... a region concentrating innovative manufacturing and service entities cooperating with developed research sector and intense development of a modern tourism based on the interregional and trans–boundary cooperation creating together attractive places to live for residents with increasing qualifications and developed civil culture"[12]. To accomplish the mission, 8 objectives have been adopted, including: "Objective 1. Development of knowledge–based economy"[13] implemented in eight macrospheres, in particular in macrosphere 8 "Entrepreneurship and innovations" targeted, inter alia, at[14]:

- development of existing and launching new businesses in the voivodship, with the preference for the sector of micro, small and medium–sized enterprises (MSME),
- support for development of innovative and creative companies,
- support for diffusion and adaptation of technologies, including key technologies,
- support for institutions stimulating growth of entrepreneurship and innovations, especially business incubators, academic business incubators, technology parks and networks of these institutions,
- development of networks of economic relations in the voivodship, including support for formation and operations of clusters,
- promotion of cooperation between enterprises and universities and R&D institutions in the field of transfer and absorption of innovations and new technologies, and stimulation of processes involved in companies' R&D activities (e.g. through public–private partnerships, development and use of financial engineering mechanisms and instruments, etc.),
- support for development of new technologies, including regional scientific and technological specialisations such as biotechnology and biomedicine, pharmaceutical industry, hydraulic and civil engineering, environmental technologies, etc.,
- support for placement of companies from the higher–order services sector using the high potential of the human capital,

[10] Cf. A. Sztando, *Istota i funkcje samorządowego planowania strategicznego w regionie*, Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu 2011, No. 180, p. 47.

[11] Cf. P. Niedzielski, I. Jaźwiński, *Polityka regionalna i innowacje w rozwoju społeczno–gospodarczym województwa zachodniopomorskiego*. /In:/ *Wiedza i innowacje w rozwoju polskich regionów: siły motoryczne i bariery,* scientific editor: S. Pangsy–Kania S., Fundacja Rozwoju Uniwersytetu Gdańskiego, Gdańsk 2007, p. 111.

[12] *Strategia rozwoju województwa dolnośląskiego 2020*, the Marshal's Office of the Dolnośląskie Voivodship, Wrocław 2013, p. 24.

[13] Ibidem, p. 24.

[14] Ibidem, pp. 56–57.

- creation of conditions favourable for international economic cooperation between companies, exchange of experiences and use of business models.

In turn, the development strategy of the Małopolskie Voivodship states its mission as follows: "Effective use of regional opportunity potentials for economic development and increase of social and spatial coherence of Małopolska in regional, national and European dimension"[15]. For the purposes of the mission implementation, 7 areas have been adopted, with the implementation of innovations being most broadly included in Area 1 "Activity and knowledge–based economy". The innovation actions under this strategy involve, inter alia[16]:

- development of intellectual capital and building the region of knowledge,
- institutional and financial support for development of business incubators and industry and technology parks operating in the field of modern technologies,
- building the network cooperation of technology transfer centres on the basis of integrated system of information management,
- creating infrastructure conditions for the enterprises dealing with creative activity and supporting actions aimed at popularising modern technologies,
- supporting cooperation between enterprises, universities and R&D units in terms of innovations and new technologies transfer and absorption,
- supporting the research activity oriented towards implementation goals, commercialisation and patent protection,
- active external promotion of the Małopolskie Voivodship as a region of knowledge and creativity.

In the development strategy of the Mazowieckie Voivodship, the mission is general and is stated as follows: "Reducing socio–economic disparities within the Mazovian region, increasing the role of the Warsaw metropolitan area in Europe"[17], yet through "Development of export–oriented production in the fields of medium and high–tech technology and the agri–food sector"[18] according to the primary goal of this strategy. The primary goal is to be attained through entrepreneurial and innovative actions such as[19]:

- supporting the creation and development of industrial companies,
- creating a business–friendly environment for investors and enterprises,
- creating favourable conditions for the generation and absorption of innovations.

In addition, two (out of three) strategic goals contain a reference to innovation, namely:

1. "Increasing the region's competitiveness via development of economic activity and transfer and implementation of new technologies"[20] to be achieved, among others, through actions comprising[21]:

- restructuring cities that are losing their economic functions and enhancing the development and absorption potential of rural areas,
- strengthening and making use of regional specialisations,
- supporting the development of new technologies, primarily biotechnology, biomedicine, nanotechnology, photonics, optoelectronics, information and communication (ICT) and cosmic technologies.

[15] *Strategia rozwoju województwa małopolskiego 2011–2020*, the Marshal's Office of the Małopolskie Voivodship, Kraków 2011, p. 85.
[16] Ibidem, pp. 89–96.
[17] Strategia rozwoju województwa mazowieckiego do 2030 roku. Innowacyjne Mazowsze, Mazovian Regional Assembly, Warszawa 2013, p. 1.
[18] Ibidem, pp. 2, 51.
[19] Ibidem, p. 51.
[20] Ibidem, p. 51.
[21] Ibidem, pp. 51–52.

2. "Improving the quality of life and building a modern economy through making better use of human and social capital" to be accomplished, among others, through actions aimed at[22]:
- developing human and social capital,
- developing the areas of science of key importance to the region,
- improving the functioning of social infrastructure and actions for healthcare and public safety.

Assessment of innovative projects adopted under development strategies of Dolnośląskie, Małopolskie and Mazowieckie Voivodships

In analysing the innovative projects to be implemented under development strategies of Dolnośląskie, Małopolskie and Mazowieckie Voivodships, it should be noted that they mostly overlap. The strategies indicate primarily:
- supporting entrepreneurial activities, in particular in the MSME sector,
- developing intellectual capital and building a region of knowledge,
- creating conditions for the generation and absorption of innovations and implementing modern technologies,
- innovation partnership of enterprises and cooperation with the fields of science and administration in this regard,
- supporting the development of regional smart specialisations, including regional scientific and technological specialisations,
- supporting the establishment of institutions implementing innovations, including financial institutions,
- using financial engineering mechanisms and instruments to stimulate innovation processes in the voivodship.

Innovative projects under voivodship development strategies are similar because of the needs in this respect, on the one hand, and because of the policies pursued in the European Union countries that support innovation of economies and regions, on the other hand. Such support involves creating conditions for innovation generation and absorption and developing new technologies, establishing cooperation between different actors in this field, etc., as reflected in the EU innovation policy and instruments for its implementation[23]. In the current 2014–2020 financial perspective, the issues of innovation are among fundamental ones to be addressed by the various regions under their long–term plans. It should be emphasised that the implementation of investment and innovation projects, introduction of development and restructuring programmes, establishment of innovative partnerships, etc., is combined with financing from the EU funds. Therefore, this leads to the mainstreaming of innovation issues in voivodship development strategies and has a positive impact on the implementation of innovative projects.

In addition to their compliance with the EU guidelines, the advantages of the innovation actions adopted under development strategies of the voivodships examined comprise, in particular:
- adopting intellectual capital development programmes, including social capital, in conjunction with the development of pro–innovative attitudes within regional communities,
- developing innovative potential of voivodships on the basis of existing productive resources, including human resources and research potential,
- planning the expansion of research infrastructure and creating conditions for the development of scientific fields and regional research specialisations that are of priority importance to voivodships,

[22] Ibidem, p. 52.

[23] Cf. E. Romanowska, *Ewolucja polityki innowacyjnej Unii Europejskiej. Strategia oraz instrumentarium wsparcia innowacyjności w kontekście integracji z UE*, "Przedsiębiorstwo we współczesnej gospodarce – teoria i praktyka" 2014, No. 2., p. 8 et seqq.; A.P. Wiatrak, *Innowacyjność w politykach Unii Europejskiej i kierunki wspierania rozwoju organizacji*, "Zarządzanie i Finanse" 2016, No. 2, part 2, p. 465 et seqq.

- building cooperation networks of companies and clusters,
- regional transfer of innovations through the partnership between the research community and business and administration,
- patenting and commercialisation of inventions, etc.,
- supporting not only technological but also organisational and social innovations targeting the activities of these actors at selected processes and types of actions (e.g. environmental technologies).

On the other hand, weaknesses of the innovative actions being devised that are included in the voivodship development strategies under analysis are, in my opinion, the following:

- lack of adequately defined implementation tools for the innovative projects adopted in voivodships, including those encompassing cooperation among the different stakeholders,
- failure to take account of costs of changes related to the implementation of the adopted innovation actions,
- too high expectations for external (including aid) capital to finance the implementation of the adopted actions,
- insufficient socialisation of the preparation of voivodship development strategies.

The range of innovative actions proposed under the examined voivodship development strategies is relatively large. Therefore, the question arises whether there they are feasible. It seems to me that they could, yet they need to be further clarified, in particular as regards the methods of implementation and financing. Moreover, the fact that some projects are already being implemented should be taken into account.

Conclusion

The analysis of the innovation issues contained in the development strategies of Dolnośląskie, Małopolskie and Mazowieckie Voivodships indicates that they can be a tool for regional restructuring. This is because such strategies determine the directions and magnitude of changes and places where they are implemented, on the one hand, and on the other – the adopted goals and tasks arise from the SWOT analysis of the voivodships examined and their development conditions as well as from innovation policies implemented in the European Union, including Poland. Furthermore, the issue of innovation is closely linked with the development of intellectual capital, knowledge and cooperation among interested stakeholders. The achievement of innovation goals may significantly contribute to the reconstruction of regional socio–economic structures. Therefore, there is a need to accurately define the tools for putting innovations into practice and supporting innovative behaviours of inhabitants in individual voivodships, including in particular entrepreneurs and research workers. Indeed, the analysed strategies contain many references to cooperation between business, science and administration, while insufficiently setting out cooperation support mechanisms.

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PART III

THE PROCESS APPROACH AND RESTRUCTURING IN BUSINESS MANAGEMENT

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IT TECHNOLOGIES AS A SUPPORT FOR ENTERPRISE RESTRUCTURING

Summary

Restructuring through which enterprises adapt to dynamic external environment increasingly benefits from solutions and tools offered by rapidly developing information technologies. IT systems based on these technologies support information flow within enterprises and business processes which form the overall image of enterprise activity. This paper is focused on the analysis on how modern integrated information system of management like Enterprise Resource Planning of second generation (ERP II) facilitate restructuring activities in main fields of enterprise activity.

* * *

Introduction

Implementation of IT system in enterprises is, in most cases, combined with deep restructuring of their processes and operations. Without this approach, implementation risks being simply ineffective[1]. Business processes embedded in ERP systems can be perceived as the best practices that may be used as the reference point in reengineering of processes a company undertakes during restructuring. These systems are nowadays foreseen as a backbone for information management in companies. Important role of IT solutions in restructuring processes results from the need to provide efficiency, flexibility and improvement in enterprise–wide financial reporting, control of costs referring to all function of an enterprise or management of multi–divisional companies[2]. The ERP system can serve as the important transformative investment that an enterprise can choose. Enterprise–wide data integration which is the main strategic feature of ERP can bind together function from manufacturing, finance and accounting to supply management or human resources. Organization changes which have to be an important step during ERP implementation bring competitive advantages for an enterprise who can adapt restructuring strategies to best practices which are built–in in the model business processes of Enterprise Resource Planning standards.

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[1] J. Gross, *Without Restructuring, ERP Implementation Is An Expensive Waste*, [Online], available: www.pemeco.com [09.11.2016].

[2] M. Szplit, A. Szplit, *Strategiczne uwarunkowania funkcjonowania systemów informatycznych w warunkach restrukturyzacji*. /In:/ *Restrukturyzacja. Teoria i praktyka w obliczu nowych wyzwań*, scientific editors: A. Jaki, J. Kaczmarek, T. Rojek, Department of Economics and Organization of Enterprises, Kraków 2011, p. 503.

Main areas of restructuring

Existence and development of a company depends to a great extent on ability to make changes which are oriented toward its own resources and at external environment of its business activity. [3] Once these changes are reflected in the strategy, organizational structure and culture of the company, then the term enterprise restructuring may be applied. Looking from more general perspective, restructuring is the radical change referring to economy, industry, branch, enterprise in at least one field from four areas of their activities: technics and technology, organization and management, economics and market, legal and organizational issues[4].

Restructuring processes have various character and be classified as follows[5]:

- change of the organizational and legal form,
- privatization of state–owned companies,
- rationalization of the scope of activity,
- rationalization of the employment level,
- financial restructuring,
- asset restructuring,
- organizational restructuring.

Referring to the lifecycle of enterprises we can talk about restructuring for repair and restructuring for development[6]. The second one embraces creative, anticipative and adaptive restructuring. The aim of both approaches is to raise efficiency and effectiveness of enterprises and – contrary to restructuring for repair – they are not enforced by the crisis situation. One of the important step during restructuring for development is to implement innovative technology solutions in production, management, marketing and other areas of the enterprise functioning. This type of restructuring provides basis for development of strong market position of enterprises. Restructuring activities are focused, inter alia, on implementation of new method and tools of management.

Modern integrated IT systems of information management may strongly support these processes. Implementation of these solutions is a challenge for enterprise, but also a chance for the thorough restructuring oriented at business processes. Modeling of these processes takes place at the very beginning of new IT system implementation.[7]

Aims of restructuring for development

Restructuring for development usually concerns enterprises which are characterized by economic indicators at relatively good level. Hence, one of the main aims of the restructuring concentrates rather on further raising of competitiveness and efficiency than responding to the critical situation and finding solution for the enterprise to survive on the market. Companies start this process when they look for

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[3] A. Nalepka, *Organizational restructuring of an enterprise*. /W:/ *Enterprises facing new economic challenges*, scientific editors: R. Borowiecki, A. Jaki, Department of Economics and Organization of Enterprises, Kraków 2010, p. 343.

[4] Z. Malara, *Restrukturyzacja organizacyjna przedsiębiorstw*, Prace Naukowe Instytutu Organizacji i Zarządzania Politechniki Wrocławskiej, Monografie, nr 32, Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław 2001, p. 16–17.

[5] A. Nalepka …, op. cit., p. 344.

[6] Kaczmarek J., *Wartość przedsiębiorstwa jako wyznacznik jego restrukturyzacji*. /In:/ *Restrukturyzacja. Teoria i praktyka w obliczu nowych wyzwań*, scientific editors: A. Jaki, J. Kaczmarek, T. Rojek, Department of Economics and Organization of Enterprises, Kraków 2011, p. 209–211.

[7] M. Grabowski, P. Soja, R. Tadeusiewicz, J. Trąbka, A. Zając, Systemy Informacyjne Zarządzania, Uniwersytet Ekonomiczny w Krakowie, Kraków 2012, p. 167.

widening their market share, improve their relations and methods concerning communication and interactions with customers or enrich methods and technologies used in product manufacturing.

These restructuring aims can be grouped around 5 enterprise subsystems[8]: mission and aims, people, structure, assets and technology, other activities. Below are the main restructuring activities related to each subsystem (Table 1.).

Table 1. Enterprise subsystems and main restructuring activities

Enterprise subsystem	Main restructuring activities
Mission	• rationalization of range of activities • income raising • enterprise development
People	• rationalization of human resources management • rationalization of motivation systems • upskilling of staff
Structure	• simplification and rationalization of structural solutions • gradual departure from functional structures • raising independency of some enterprise units and flexibility of organizational structures • rationalization of information systems
Assets and technology	• improvement of logistic processes • quality assurance • change in the management of finance, controlling and management accounting
Other activities	• financial restructuration, deleveraging, debt trading • ownership changes • setting up an participation in new economic entities

Source: author's own elaboration.

Integrated systems of enterprise resource planning (ERP II) – technological support for restructuring

The offering of IT systems for enterprises is growing fast thanks to the impressive revolution in the whole sector of microelectronics and IT technology. The method enterprises buy, build, manage, optimize and secure information technology is changing dramatically. From trends like cloud computing to big data analytics or mobile connectivity seen everywhere, corporate IT systems are getting faster, more efficient, cheaper to operate and easier to use. Increasing adoption of mobile devices results in better efficiency of enterprise workflows. "You can't manage what you don't measure" – famous saying attributed to both W. Edwards Deming and Peter Drucker is one of the answer why the area of big data is getting so much of importance. Combined with mobility, big data provide frontline employees with real–time access to any enterprise information in any time needed.

Enterprises benefit from IT integrated information systems of management to have enterprise–wide access to business knowledge, improve productivity of their employees and eliminate the duplication of enterprise data. These systems enable better employee collaboration and efficiency. They support decision

[8] A. Nalepka, *Restrukturyzacja przedsiębiorstwa. Zarys problematyki*., Wydawnictwo Naukowe PWN, Warszawa–Kraków 1999, p. 30.

making process at all levels of management. Enterprise Information Systems is the area characterized by the very fast development. One of the main IT solution which is used by enterprises because of its comprehensive structure is the Enterprise Resource Planning system (ERP). It is a complex set of tools which combines various integrated applications that concentrate on management of many front and back–office activities and functions referring to production, accounting, services, human resources etc. ERP integrates all aspects of enterprise operations (e.g. sales and marketing, manufacturing, supply chain etc.) in a common database, application and user interface, facilitating information flow between all enterprise units. ERP usually is built as a set of multiple modules that are focused on various aspects of enterprise activities and business processes. Typical ERP modules embrace Human Resource, Sales and Marketing, Engineering and Production, Finance and Accounting, Asset Management, Supply Chain Management and Customer Relationship Management, Business Intelligence. Present direction in the development of ERP systems is oriented towards external environment of enterprises (ERP II term is used in that context). The intention is to provide solutions for cooperation with other companies, suppliers, resellers or customers. As a result, ERP II is opened for interactions within common business environment, making step outside enterprise internal business processes[9]. The table below presents typical functional areas of ERP II system.

Table 2. Functional modules of ERP II system

Module	Sample types of functionalities
Engineering/ Production	Raw material usage, BOM (Bill of Materials) and production planning, machine scheduling, product development, manufacturing execution
Sales & Marketing	Sales order management, sales inquiry handling, sales contract handling, sales pricing control, sales invoicing
Finance & Accounting	Keeping track of all accounting related activities, inflow and outflow of capital, budgeting, tax management, management accounting, corporate governance
Supply Chain Management (SCM)	Goods and services flow controlling, sourcing supply management, supplier scheduling, warehousing, demand forecasting
Inventory	Inventory control, reporting on stock utilization, management of multiple storage centers and locations
Human resources	Talent management, workforce management and deployment, employee training, salaries management, travel expenses and reimbursement

Source: author's own elaboration.

One of the most important trends in ERP that can be observed recently is the very fast development of cloud–based systems[10]. In general, this model embraces two paths. The first one refers to SaaS approach (software as a service). This model is based on subscription through which company gets access for a multi–tenant version of the software, sharing the same version of the program with other enterprises. The data of each enterprise is protected, ensuring security of information stored in database repositories. The second model is a private–cloud approach in which ERP provider offers sole ownership of the software. The cloud–based model refers to usage–based IT deployment for enterprises that do

[9] E. Serova , *Enterprise Information Systems of new Generation*, "The Electronic Journal Information Systems Evaluation" 2012, Volume 15 Issue 1, pp 116–126.

[10] *Trend Spotting: ERP in 2016*, [Online], available: http://ww2.cfo.com [16 November 2016].

not want to concentrate on resources needed to host, manage and maintain ERP software and related infrastructure. This approach is, in particular, efficient solution for small companies or startups without strong IT department. Other trend observed nowadays is so–called consumerization which, for instance, means that the interface is designed in such a way that it resembles Facebook or Twitter layout. Another area of ERP which needs further development is the big data analytics. The wide use of IT in companies results in wide amount of data that is sometimes underutilized. Advanced analytical tools help to use this wide range of information for management purposes. Importance of these tools increases as the amount of data is growing very fast, especially in the era of Internet of Things (IoT) when more and more objects can transfer pieces of information over a network automatically, without a need of human action. The mobility and wearable technology is another direction toward which development of ERP is oriented. Main ERP user features like dashboards or reports work well on mobile devices. What is also important, ERP systems, as opposed to the past, are no longer exclusive to larger enterprises.

Functionalities of ERP may support restructuring in many aspects. The cause for restructuring a business often relates to problems or challenges in the field of information flow in an enterprise. Inadequate management decisions based on irrelevant data coming from various databases across the company without proper integration generate the need to consider ERP implementation as the important assisting tool in restructuring and reengineering business processes. In fact, this often the decision of ERP implementation which further brings ideas on how and in which areas restructuring is needed.

Table 3. Relation between restructuring activities and ERP functional areas

Main restructuring activities	**Relation to implementation, functional areas and modules of ERP system**
• rationalization of range of activities • income raising • enterprise development	Business Process Reengineering (preceding ERP implementation): • recommendations for rationalization and development of enterprise
• rationalization of human resources management • rationalization of motivation systems • upskilling of staff	ERP Human Resources module: • tools for workflow coordination, human capital management or training
• simplification and rationalization of structural solutions • gradual departure from functional structures • raising independency of some enterprise units and flexibility of organizational structures • rationalization of information systems	ERP implementation: • catalyst for shift from functional to business process orientation • support for multi–division business model (integration between divisions and corporate headquarters) • integration of information flow within enterprise (central database)
• improvement of logistic processes • quality assurance • change in the management of finance, controlling and management accounting	Modules: • Supply Chain Management • Inventory and Warehouse Management • Quality Control Management
• financial restructuration, deleveraging, debt trading • ownership changes • setting up an participation in new economic entities	Modules: • Financial Accounting • Management Accounting • Corporate Governance

Source: author's own elaboration.

Referring back to the main restructuring activities listed in the Table 1 it is possible to combine these items with possible support or assistance provided be modern ERP II system, their modules and functionalities. The table below presents main links between restructuring activities and relevant modules and functionalities of Enterprise Resource System.

With regards to first general area of enterprise subsystems which is the Mission, implementation of ERP – if procedures are well planned – requires prior steps of reengineering of business processes (BPR) related to an enterprise. Moreover, BPR is the fundamental step in rationalization of enterprise activities in all fields and provide solid foundation for enterprise development. Support for People subsystem offered by ERP Human Resources modules, for instance for multi divisional enterprise, can enhance improvements in knowledge and talent management and ease the processes of allocation of tasks, responsibilities and workload. Next, also structure subsystem is the area of direct connections with ERP implementation. The whole idea of ERP is to provide IT tools which coordinate and rationalize information flow within enterprise or organization. Hence, this part of restructuring process may directly benefit from integrated character of ERP with its common database allowing to share data across various units. Then, if taking into account assets and technology with restructuring activities focused on logistics process, improvements in the management of finance, controlling and accounting, it is again the area that is fully covered by modules of modern Enterprise Resource Planning solution. Supply Chain Management (SCM) software, which may be also implemented as the separate system, fully supports logistics operations and coordinates flow of goods. For instance, radio–frequency identification used by SCM, embedded in logistic objects makes the supply chain more precise and improves the efficiency or reliability of all his phases.

Conclusion

Enterprises competing on the globalized market need permanent changes to adapt to challenges posed by external environment. This is not a need of simple reorganization as a reaction caused by external factors but rather a systematic approach of restructuring based on the analysis and forecast of future market conditions and possible trends. Fast and intensive developments of IT technologies supporting management of enterprises and organizations provide many solutions to facilitate and enhance restructuring of business entities. Modern Enterprise Resource Planning system with its present version ERP II is a set of various modules which relate to all main business processes that can be identified in contemporary organizations and companies. Functionalities offered by these modules facilitate restructuring through improvement of data quality, customer services, production planning and many other business processes.

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IT RESTRUCTURING AS A REQUIREMENT TO IMPLEMENT THE PROCESS APPROACH IN ENTERPRISE

Summary

In the paper the implementation of the process approach has been treated as an element of the company's restructuring process. With the process approach implementation, IT systems which are used in the company also need to be adjusted to new requirements. The paper presents the role of ICT in the process–managed enterprise as well as the necessary IT systems types and modern technological solutions. Essential ICT restructuring actions which have to be taken in order to adjust the solutions to company's process maturity level were also presented.

* * *

Introduction

There are many various models of enterprise restructuring, which pursue different objectives. One of them assumes the implementation of the process approach in the organization activity. Such decision may result from a variety of reasons, however the consequence of the process approach introduction to the enterprise, is always a significant transformation of the existing way of organization functioning.

Process approach in the enterprise management also has an impact on existing solution in terms of Information and Communication Technology (ICT). With the implementation of this approach the requirements for ICT tools will significantly change.

The problem raised in the consideration concerns the restructuring of IT tools which are used in the company while it adopts the process approach. A special attention will be given to the identification of requirements for IT systems in the context of the enterprise process maturity and changes which should therefore be applied to ICT tools. The process approach requires a properly tailored information systems that enable simultaneous control of multiple various processes.

The purpose of this paper is to identify the necessary changes which should be made in ICT tool while restructuring the enterprise which adopts the process approach in the management strategy.

Considerations cover an analysis of the transformation of modern ICT tools and the need for their adaptation to users' needs.

The specificity of restructuring resulting from the implementation of the process approach

The implementation of the process approach should allow to increase the efficiency of the company, to facilitate customer acquisition and service and to improve the accuracy of defining the contribution of individual organizational units, employees and even suppliers in creating added value. However in order to achieve those goals, declaration of adopting the process approach is not enough, the adequate restructuring are required. These action should be held taking into account the vision of the company after the implementation of planned changes. The vision should correspond with the description of the expected level of enterprise process maturity after the restructuring.

There are various phases of enterprise process maturity discussed in the literature. According to two different models: Grajewski's[1] and Nowosielski's[2] the highest stage of process maturity is, respectively, when a company continuously improves processes (in the first model) or when it manages processes (in the second model). In the management practice, it can be assumed, that the aim of restructuring is to:

- develop models of processes,
- implement those models to business practice,
- control multiple instances of processes simultaneously,
- establish mechanisms of process models improvements or even self–improvements,
- develop the principles of registering ongoing instances of processes,
- create an incentive system for employees participating in the ongoing process instances,
- define the process execution in multi–organizational environments.

The implementation of the process approach is a complex restructuring action therefore it is not always possible to determine the expected results. The restructuring measures can be often implemented using the "small steps" method, allowing to reach next phases of process maturity step by step.

The starting point is to define the role of processes in a restructured company and build an appropriate, favourable for changes, organizational climate. The next step is to define the existing and potential sources of revenues. Business process models are developed using the existing "best practices" in the field of technological and organizational solutions. These models are the basis for the development of corporate rules which define the functioning of the company, and often outline the incentive scheme for the employees. From the employees point of view the search for teams implementing process instances in which they could participate is very important. The company appoints units aimed at the effective implementation of each process instance. These teams receive a certain degree of autonomy in operations, however on the other hand they need to gain adequate resources for the realization of the process instance. The management role is to coordinate the process realization. Both, the employees and the management, must have an access to necessary ICT tools, adapted to the users' new needs. needs.

The role of IT in a process managed enterprise

Transformations of modern enterprises are not without influence on changes in the use of ICT tools. The functional scope of IT systems is changing. Although the information and reporting aspects continuous to play an important role, more and more importance is given to the communication issues

[1] P. Grajewski, *Organizacja procesowa,* PWE, Warszawa 2007.

[2] A. Gębczyńska, A. Bujak, *Wykorzystanie modelu dojrzałości procesowej w doskonaleniu systemów zarządzania jakością*. /In:/ Zeszyty Naukowe Wyższej Szkoły Bankowej we Wrocławiu, Nr 20/2011, Wrocław 2011, p. 177–188.

relating to i.a. communication in multi–employer or network organization, communication in multi–organizational environment or communication using mobile technology. Moreover in the background there are new emerging technologies such as i.a.: Cloud Computing, Internet of Thinks, Grid Computing and others. Those solutions can be used to control business and technology processes.

The process management also requires a set of ICT tools. Generally they are essential in virtually every phase of the process management models, which is shown in table 1.

Table 1. Tools for process management

Management phase	Necessary tools
Business model design	Tools for designing business models based on formal notations, eg. BPMN (eg. ADONIS or ARIS Toolset)
Models conversion and implementation	Tools of process models transcription to IT systems and corporate portals eg. Based on BPEL
Business process implementation	ERP, CRM, CAD/CAM, GIS, Corporate portals
Process improvement	ERP/BI (i.a. in terms of PPI and KPI) and tools for process design

Source: own elaboration.

Information and reporting aspect is related to the need of keeping records of all original activities of the company. Some data is recorded immediately after the activity. The effects of each operation are described in databases or documents. The remaining part can be retrieved from the environment, eg. through various industry website or social networking sites. These data are then aggregated and serve for the reporting and analysis purposes. Basing on data, it is possible to estimate the economic condition of the organization, and as part of a process approach to determine the results of process realization at any level, from the individual operation effect and allocated resources, through the efficiency analysis of each instance, process type or actor. The collected data can serve to estimate the current efficiency of realized instance (the PPI (Process Performance Indicator[3]) can be used to make a decision on whether to continue their implementation or not), to develop a standard report, to carry out analytical and control actions, to create plans for subsequent periods and also to examine the improvements needs of process models.

Communication plays the decisive role in the area of process control. Modern technologies allow a continuous exchange of information resources at all stages of the process. The process owners, people who operate some parts of the process, have an access to on–line tools allowing them to observe the current process execution and can therefore react in the right way. Typical technological solutions for process control are:

- Internet platforms, corporate portals, CRM systems, etc.
- Internet Web 2.0 and supplemented with the aspect of context and semantics – Web 3.0,
- Workflow Systems – reflecting the processes and tasks,
- Document Management Systems (DMS) – reflecting processes information layer,

[3] A. del–Rio–Ortega, M. Resinas, A. Ruiz–Cort, *Defining Process Performance Indicators: An Ontological Approach (2010)*, http://tiny.pl/gc5pt; C. Stępniak, *Kształtowanie wskaźników efektywności zarządzania procesowego*. /In:/ *Wielowymiarowość podejścia procesowego w zarządzaniu*, scientific editor: A. Bitkowska, E. Weiss, Wyższa Szkoła Finansów i Zarządzania. Warszawa 2016, p. 139–154.

- e–groupware Systems – allowing groups of people who execute each process to use shared calendars, e–mail, calendaring, etc.

Information technology along with communication technologies are also the basis for the management and control of technological processes. Development of high–tech technology allowed the creation of production lines, where the whole technological process is controlled by computer systems. This automation allows for a quick identification of problems, incidents or situations that differ from defined standards. The technology not only allows early warning, but also supports the decision–making processes, thereby achieving self–improvement features.

IOT (Internet of Things) is other issue related to the technological process control. Due to the technological development, more and more things, machinery and equipment are equipped with a processor and has an access to computer networks through wired and wireless interfaces. Thereby those devices and machines stay connected to the Internet. This allows for current analysis of their condition and data exchange between various devices. As a result, things themselves control other devices, give feedback and interact.

Necessary technical and technological solutions

As mentioned above, modern enterprises use variety of ICT tools, which can be classified into two categories: internal and external tools. Internal tools are used for operating information processes within a company. These include mainly various types of IT systems used in companies such as i.a.: ERP/BI, CRM, CAD/CAM, expert industry systems and others (list of IS types[4]). The main task of these systems is to register current organization activities in accordance with the adopted rules of their description. In the case of process approach these tools should also have the ability to automatically call the next operation of the model, basing on the consequences of previous operations, this further emphasize the importance of the current analysis of the results using the PPI. Taking into account that, those who execute the operations can work in different organizational units using different systems, there should be an internal communication among tools. Process modelling tools (using eg. BPMN) are very useful to meet these requirements (list of modelling tools look at[5]) With these tools it is possible to build formalized process models, which should later be converted to IT systems procedures. Given that organizations usually use a few different systems, there is a need of their internal integration, which will protect the communication between the systems at least in terms of data and corporate semantic.

Efficient communication should provide the possibility of exchanging data between different systems, link together various types of data (eg. by describing the multimedia data stored in the databases with the meta dated created from data stored in IT system databases), link various functions of systems on the basis of business process models, build a common corporate semantic.

The above requirements enable the realization of a record function. However, they are not sufficient for an automatic process management and process self–improvement, which are the requirement of business process maturity. For this reason, IT systems should be equipped with analytical and control features, compatible with PPI described in business process models. In this case, the PPI are a system of indicators used for the assessment of operations carried out within individual instances. In practice, the results of the comparisons will serve not only to evaluate the actors who realize specific instances, but

[4] T.J. Chruściel, *Systemy informacyjne wspomagające efektywne zarządzanie przedsiębiorstwami komunalnymi*. / In:/ *Wiedza i technologie informacyjne w zarządzaniu procesami biznesowymi*, scientific editors: A. Brzozowska, I. Pawełoszek, T. Turek, Wyd. Wydz. Zarządzania Politechniki Częstochowskiej, Częstochowa 2016, p. 50–60.

[5] Bitkowska A., Weiss E., *Wykorzystanie systemów informatycznych w organizacja procesowych z perspektywy zarządzania wiedzą*. /In:/ *Wiedza i technologie informacyjne w zarządzaniu procesami biznesowymi*, scientific editors: A. Brzozowska, I. Pawełoszek, T. Turek, Wyd. Wydz. Zarządzania Politechniki Częstochowskiej, Częstochowa 2016, p. 20–29.

also a range of resources used by them, the effects of particular instance, the quality and feasibility of the models used and as a result the necessary improving actions of business models will be determine.

Modern business processes often extend beyond the organization. This is the case of dispersed organizations, networks, cooperation, supply chain management, join projects and initiatives. There, the process can run through more than one enterprise or the processes of different organization can be interleaved. Exceeding processes beyond company may also be a result of legislation. This occurs when enterprises establish relations with the public authorities and other institutions in accordance with the adopted legislation.

Inter–organizational process management forces a change of approach to IT solutions, and often requires restructuring in this area. It is because, the implementation of a process approach is impossible in a situation where the processes are partially supported by the ICT tools of different organizations, and the common, tangential and overlapping processes are performed manually without automation technology.

The ERP II type solutions play an important role in the execution of inter–organizational processes. They provide an extension (another proposed name is Extended Enterprise Resource Planning – eERP) of functions and features of ERP systems. ERP II systems are not only open to outside data and information, but also generate information resource for other systems themselves[6]. The Internet and corporate networks (intranet, extranet) are the basis for ERP II systems communication. This allows for process integration in cooperation, networking and dispersed organizations. Processes starting in one enterprise can be automatically continued by other entities.

An important aspect of the IT systems supporting the process approach in dispersed organizations is their administration, installation and sharing. Modern ICT technologies allow flexible and rapid sharing of selected functions or system modules with partners and suppliers by using Cloud Computing type solutions or their derivatives – SaaS. These solutions seem to be useful for organizations implementing processes in different places[7]. There is no need for a partner to install and configure systems, neither to update and administrate them. The systems can be quickly opened and run, via a web browser with installation. The main difference between those two technologies is that Cloud Computing resources are based "in the cloud". Systems are running on virtual servers and in virtual environments. In the SaaS model systems can also be run in a browser, however the provider is responsible for providing software, access to resources and databases. PaaS solutions (providing IT platforms in a sharing model) and IaaS (providing infrastructure such as for example servers) work similarly to those models.

IT tools restructuring

The implementation of the process approach in the enterprise results in introducing changes to the rules of its operation. Those changes will reflect in restructuring of ICT tools that are used in the organization. In another case, the information systems would constitute an element of an enterprise infrastructure changes. The restructuring will affect all business areas, within witch the process approach is adopted. With the increase in the process maturity, the restructuring should cover other business areas and other ICT tolls along.

Restructuring activities in the field of ICT should be multidirectional. These activities include i.a.:

- using tools to model formalized business process models,
- converting business processes to IT systems,

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[6] C. Møller, *ERP II – Next–generation Extended Enterprise Resource Planning* (2005), http://pure.au.dk/portal/files/32334597/0003167.pdf.

[7] W. Kapeliński, *Wpływ technologii Cloud Computing na organizację oraz efektywność procesu operacyjnego planowania produkcji*. /In:/ Zeszyty Naukowe Politechniki Częstochowskiej, Zarządzanie Nr 23, Tom 1, Częstochowa 2016, p. 83–91.

- organizing corporate dictionaries,
- integration of IT systems,
- implementation of analytical and control procedures,
- using network and mobile technology for communication within business process environment,
- using modern technological solutions for processes implementation and support (Cloud Computing, Internet of Things, Grid Computing).

The process approach especially in large or network organizations, where the number of simultaneously executed instances of processes reaches hundreds or thousands, and is spatially dispersed implies the need not only for appropriate IT systems but also for understandable and unambiguous for all corporate regulations. These regulations can be easily built on the basis of formal business process models. For this purpose a suitable set of process modelling tools should be purchased. The choice of tools should take into account previously used IT systems, so that the created new models could be easily converted to the procedures of ICT tools, that are in use.

The description of process models may have a various scope, depending on the level of enterprise process maturity. The starting point are the business procedures algorithms. However, with the increasing maturity of operation description within the model, next elements such as: actors, necessary resources, description of operations effects and performance indicators have to be additionally included. A broad description in built models allows not only to control the realization of instances, but also carry out analytical and control activities. Nevertheless it is very important to create a common corporate semantic. That requirement stems from the fact that IT systems which control the realization of instances, have to correctly interpret the effects of each operation. The semantic is partly built while defining IT systems databases, others are created as attributes semantic and moreover performers indicators (PPI) are also developed. All these elements should be interconnected.

These connections should facilitate the integration of different systems, where operations and data of each process model are included. In this case, restructuring will involve assigning the defined process model operations with a specific procedural tasks within ICT tools. The assigning process may be tedious and time consuming if the company does not have an appropriate set of tools for the procedures conversion. The lack of such procedures may prevent future analytical and control activities, which in turn hinders the implementation business process self–improvement mechanisms.

Process management always requires changes in social and technological communication approach. It is not just about the transition from traditional to electronic communication, because it is already commonly uses. ICT restructuring requires the use of tools which allows management of processes. For this purpose group work systems, corporate portals, semantic and mobile technologies which take into account the context of work and Web 3.0 technologies are of a great value. Moreover the process management enforces the use of systems referring to information processes, which reflect the business processes in the information system of the organization. Even though these conditions are in principal met by the ERP systems, the DMS (Document Management System) technologies are their valuable addition.

Due to the frequent dispersion of processes, IT restructuring entails the need to change the approach to IT systems. The place of the classical client–server and corporate data centres solution technologies is often taken by the in cloud solutions, which are characterized by flexibility, simple administration and management.

Conclusion

As shown in the paper the implementation of the process approach in the enterprise requires, on the one hand, organizational restructuring, and on the other hand, restructuring in the field of ICT.

Synthetic approach to restructuring changes in the area of ICT, resulting from the application of the process approach is presented in Table 2.

Table 2. Synthetic resume to restructuring changes in the area of ICT

Area	Classical approach	Process approach
Process modelling	No modelling tools due to lack of process formalization	The need for modelling tools such as BPMN, UML, etc.
Process formalization	Classical approach does not need a process formalization	Process approach requires a formalization of BPM processes and mapping of processes in the IT system (ERP, ERP II, BI)
Corporate semantic	Corporate semantic arbitrary, possibility of creation of separate semantics for each department	Need to standardize the semantic within the entire organization and network, all participants must use the same concepts
IT systems	Individual modules and functions of the systems can run independently, integration recommended, but not necessary	Need to integrate all IT systems, both internal and external, systems use a standardized semantics
Communication	Communication tools arbitrary	Need to use corporate portals, DMS tools, semantic technologies. As part of technological process need to monitor the automatic systems
Information and Communication Technology	ICT solutions based on the classic client–server technology and building own data centre	The use of flexible solutions basing on Cloud Computing, SaaS, IaaS, PaaS.

Source: own elaboration.

As shown in table 2, restructuring of ICT resulting from the process management runs in two directions. In terms of processes, a strict formalization, standardization of corporate semantic and integration of internal and external IT systems are required. On the other hand, it is necessary to use more elastic solutions, partially virtual, which allow for shared IT systems among suppliers, companies networks and dispersed organizations.

Achieving higher and higher levels of organization process maturity (from the random and unorganized process, to the highest level where processes are continuously improved[8]) requires ongoing improvements in the IT technology solutions used by the company. The ICT solutions of a "traditional" organizations, which are implemented in a haphazard and ad–hoc manners may not be sufficient. It is because the proper execution of social, business, information and technological processes requires a strategic approach in the field of ICT. Information and communication systems must be coherent and mutually coordinated.

[8] More in: A. Bitkowska, W. Żyłko, *Zarządzanie procesami biznesowymi w przedsiębiorstwie*, Warszawa 2009; P. Grajewski, *Uwarunkowania implementacji procesów do organizacji* /In:/ *Podejście procesowe w organizacjach*, scientific editor: S. Nowosielski, Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu, nr 52, Wydawnictwo Uniwersytetu Ekonomicznego we Wrocławiu, Wrocław 2009.

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CONTROLLING BUDGETING PROCESS ASSISTED WITH IT TOOLS*

Summary

Budgeting is an internationally recognized method of determining managerial objectives. This because it contributes to a more accurate planning of cash flows projections. The main goal of the planning process is to maintain cost control, and during the year, the budget acts as a guide for management. Budgets also record the progress of budget implementation, as well as enable management to take corrective steps if needed. The budgeting system is also an integral part of controlling and serves to establish the aims and objectives of separate responsibility centres. The budget, in turn, allows managers to monitor and verify the level of efficiency in each centre. The aim of the study is to bring into the light the different approaches towards presenting the stages of budgeting indicated in current national literature. In so doing, we also discern and assess the effectiveness of the most important tools commonly employed in budget preparation.

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Introduction

Budgeting is an internationally recognized method of determining managerial objectives. It does so by way of generating more accurate planning of cash flows projections, and, hence, by acting as a guide for managerial decisions. The main goal of the planning process is to maintain cost control, however, budgets also record the progress of the budget implementation and enable management to take needed corrective steps. Furthermore, the budgeting system is an integral part of controlling, and it serves as a means of establishing the aims and objectives for the designated separate responsibility centres. This system, in turn, allows managers to monitor and verify the level of efficiency in each centre. The incentive system of responsibility centre managerial remuneration is associated with the execution of the budget, and, at the management level, is recognized as helping to increase the efficiency of financial planning. The performance budget is as equally important as the more commonly prepared financial budget. Moreover, it is more intuitive for most employees. Performance budgeting also often brings

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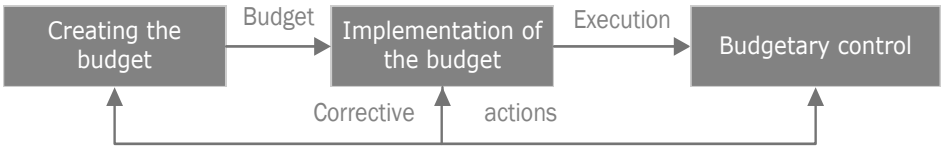
substantial savings in the area of resource management through generating improvements in the quality of logistics, production and sales operations.

The aim of the study is to bring to light the diverse approaches to the budgeting process as indicated in the national literature. In so–doing, the most important tools utilized by today's controllers for budget preparation are discussed.

The phases of the budgeting process

Budgeting involves three main phases: the preparation of the budget, the execution of the budget and the budget evaluation. The phase of creation is responsible for generating and approving the budget. Preparation of the budget defines the tasks of responsibility centres inside the company, and, simultaneously to the specific tasks, assigns the necessary financial resources and planned spending. The aim of the whole process is to transform the company's long–term intentions into particular post–evaluated tasks that are to be put into reality. The second phase, the execution of the tasks contained in the previously prepared budget, complements the budget's intended objectives as contained in the budget preparation. These are implemented by taking appropriate actions. During the execution of the budget, using the pre–allocated resources and the procedures set out in the budget, the degree of completion of the tasks is specified and any discrepancies are corrected[2].Within the follow–up control or evaluation phase, the budget is linked to an assessment of degree of budget implementation. The success or failure of this is based on a comparison of the current results of the assigned responsibility centres with the tasks that were formulated in the budget. By way of the specification, the deviations of actual values from that planned can be easily determined and evaluated. Furthermore, the cause of deviation may be readily identified. In the event of significant, unfavourable deviations, corrective actions can then be applied, which after implementation, allow for more effective realization of the budget[3]. The correlations between the three stages are shown on Figure 1.

Figure 1. The relationship between the phases of budgeting



Source: own study.

The budgeting process may be defined as being inclusive of all the actions which are undertaken in the process of creating budgets. All of these activities form the so–called procedure of 'drawing up the budget'. The stages of their preparation are described by Drury[4] and Karmanska[5] are presented in Figure 2.

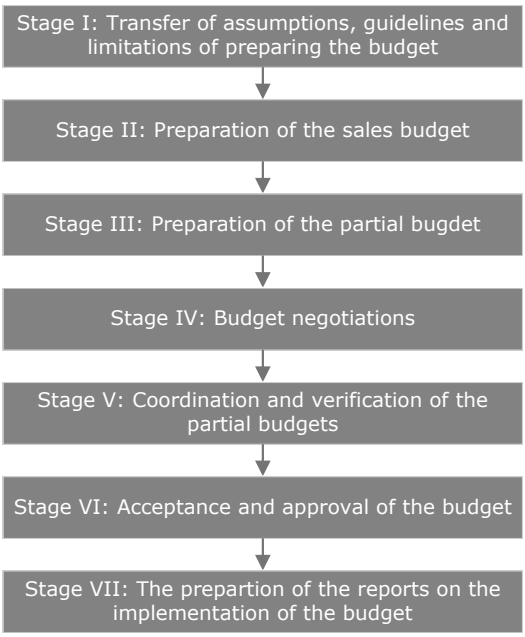
[2] J. Nesterak, B. Ziębicki, *Od Business Intelligence do Business Performance Management*, "Przegląd Organizacji" 2012, No 62, pp. 39–43.

[3] E. Nowak, *Podstawy budżetowania w przedsiębiorstwie*. /In:/ *Podstawowe koncepcje budżetowania, Budżetowanie w przedsiębiorstwie, organizacja, procedury, zastosowanie*, wydanie II, scientific editors: E. Nowak, B. Nita, Wolters Kluwer Polska, Warszawa 2010, pp. 42–43.

[4] C. Drury, *Rachunek kosztów. Wprowadzenie*, Wydawnictwo Naukowe PWN, Warszawa 1995, pp. 375–380.

[5] A. Karmańska, *Rachunkowość zarządcza i rachunek kosztów*, Difin, Warszawa 2006.

Figure 2. The stages of the budgeting process



Source: own study.

The first phase of the budgeting process is to provide the necessary guidelines, instructions and restrictions in the preparation of budgets. These are the specifics of the established policies and business objectives held by the company. At this stage, the guidelines are formulated for each centre (who are then responsible for generating partial budgets). In doing this, it is important to inform via dialogue, all managers about the need to implement the company's long–term business goals and to gain feedback about restrictions to the realization of said goals.

The second stage involves preparing the sales budget. This is the starting point for drawing up all of the enterprise's other budgets. This stage is crucial, in that all of the other budgets are strongly correlated with the accepted parameters stated within sales budget.

In the third stage, the remaining partial budgets are prepared. Depending on whether the budgets are linked or not, such budgets can be planned sequentially – that is one budget is prepared after the other – or planned in parallel – simultaneously. Mixed financial planning is also allowed. One recommended budgeting practice is to prepare partial budgets at centre–management levels, as this allows centre managers, who are responsible for the budget's implementation, to have influence on how the drafts are formulated[6].During the fourth phase, budget negotiations are carried out. The aim of this is to make all assumptions more realistic. In this phase, the budgets prepared by centre managers are handed over to central management. Subsequently, centre managers, together with central management negotiate the figures contained in the budgets, and the final numbers are the result of a compromise between the centre management and central management. Budget negotiations are a very important part of the overall budgetary process because such negotiations are a form of participatory management that keeps company practice firmly in reality.

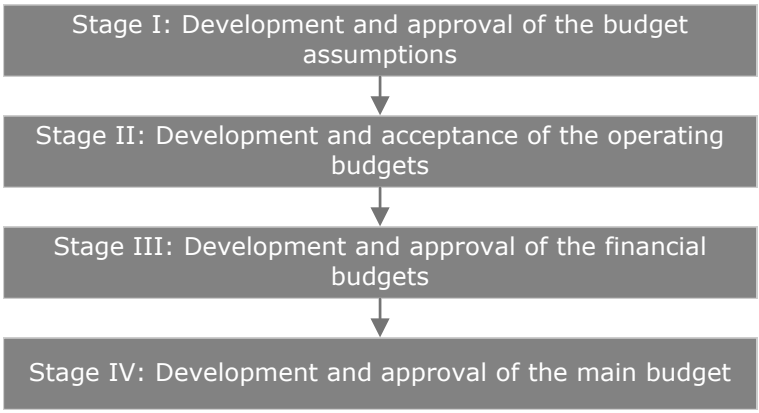
[6] J. Lubomska–Kalisz, *Budżetowanie i controlling w przedsiębiorstwie*, scientific editors: A. Owidia–Surmacz, M. Brojak–Trzaskowska, M. Porada–Rachoń, Wydawnictwo CeDeWu, Warszawa 2010, p. 67.

The fifth stage consists of the coordination and the verification of partial budgets. Since these budgets are determined by different teams, they need to be analysed with respect to their connectivity. Their coordination and aggregation is mandatory, and as a result of fifth stage activity, the generated partial budgets will create one consistent company budget[7].During the sixth phase, the main budget is passed over to gain final approval from the central budget committee. If the budget is rejected, the centre and central managers then must make the needed adjustments or the whole procedure is repeated. If it is accepted, it will provide guidance for implementing specific centre and central managerial activity.

In the last, the seventh stage, analysis is carried out. This practice reveals the degree of budget implementation. It involves a comparison of actual performance with the figures generated in the budget planning. Discrepancies between these values are presented in the form of reports that contain the location and cause of deviations. Corrective actions are then taken in order to prevent such deviations in the future[8].

Regarding the budgeting process, Naruć[9] distinguishes four main stages (Figure 3).

Figure 3. The stages of the budgeting process



Source: own study.

Dylewski, however, puts forward that the budgeting process consists of three main steps: preparation, planning and execution[10]. Dylewski's preparatory stage serves to gather planning information, to establish and coordinate the plan and the execution of the tasks, as well as to determine the form and the shape of the final budgets. The collected information is important for further work as it is the foundation for both strategic and operational decision–making within the company. With regard to this collected information, that from outside shows the position in the market the enterprise has, and the expectations of its consumers or clients. Among such information are the politics of the target country, its economic conditions (growth or inflation), the degree of obsolescence of technology, the need of environmental protection, the presence and type of legal regulations or loopholes in the law, the international marketing situation, as well as social changes and the strategies of competitors. Internal information, often made

[7] M. Krysik, *Controlling kosztów i rachunkowość zarządcza*, scientific editor: G. Świderska, MAC, Warszawa 2010, p. 467.

[8] J.Nesterak, *Controlling zarządczy. Projektowanie i wdrażanie*, Wydawnictwo Oficyna a Wolters Kluwer business, Warszawa 2015, pp. 45–46.

[9] W. Naruć, *Operacyjne planowanie finansowe. Ujęcie praktyczne*, Difin, Warszawa 2008, p. 79.

[10] M. Dylewski, *Budżetowanie w przedsiębiorstwie, aspekty rachunkowe, finansowe i zarządcze*, Wydawnictwo CeDeWu, Warszawa 2010, p. 58.

noticeable during the execution of specific budget tasks, reveals opportunities for development as well as operative limitations within the company itself. After gathering all data, the guidelines for the planned or intended tasks that are to be fulfilled, should be specified. Here, the general budget must be compatible with the objectives of the company and with reality. In this phase, a common model for planning of elements in the budget should be imposed and the people responsible for respective tasks need to be designated. Of note: the final result must be consistent and the task feasible. In addition, objectives should be clearly defined and accurately adjusted to the company's characteristics. The planning stage involves both putting in place plans of the field of activity based on main and partial budgets, and their implementation.

During the second phase, a forecast of the company's economic situation is generated. The basic factors responsible for projecting the scope of economic activity include: defining target markets, analysing the demand for the products offered by the company, analysing tasks performed in the past and identifying achievable goals for the future, e.g. acquiring a specified share of the market or a defining a particular price level. This stage also includes reconciliation and negotiation of individual partial budgets. This is a very important part of the budgeting process, and it decides whether the budget will be supported by the company's management. If all partial budgets are verified, these then form the main budget.

The last stage consists of implementing and controlling the tasks adopted in the budget, takes into account any changes that occur during the budgeting period. The realization of the budget is based on three key elements that determine the success or the failure of this method of management, namely: revenues and costs, the time specified for the execution of tasks, as well as the team and their accepted motivation system.

Support of the budgeting process by computing tools

Modern controlling is based on the necessity of processing information. The time in which the data are collected and processed significantly affects the quality and results of the controller's work. For this reason, implementing control involves utilizing a well–designed designated system for supporting budgeting within the company. This system can facilitate the creation, the updates and the settlement of the budgets. It may also help with forecasting and simulating the financial situation of the organization and accelerate internal settlement between the centres of responsibility.

One of the main problems of budgeting is the fact that this process is time consuming. By using current tools of information technology (IT), the duration of the process and the workflow in the company can be shortened. The most important tasks that such information systems must cover are to stabilize financial management, to facilitate the performance of the functions of budgeting, to adjust operating margins, to cover unforeseen situations with surplus cash, and to implement best accounting practices. IT systems allow for the efficient use of existing management systems. Furthermore, these enable permissions to merge data from different sources, accelerate the process of searching and compiling information, and automate the creation of charts and graphs. This last is what makes these great tools for the board, the managers, the controllers and analysts of the company.

In choosing IT system software, the needs of the enterprise must first be defined. Each company has different expectations, and each holds diverse ways of managing, thus, each company requires different functionalities from such systems. The first technical issue is the provision of an intuitive user interface. Applications should be equipped with an aid system adapted to the organization, and the software's menu must have structures that are transparent and clear. An important feature is that the program be capable of being adjusted to the enterprise's existing operating system (or to the adoption of an affordable, suitable operating system if needed) and to the other programs used by different departments within the company. This because a lack of harmonization could lead to difficulties in the use of the application. Another role that the software should meet is that it should hold the ability to use standard

budgeting tables, or for dedicate systems, tables that are specially designed for the company. In the case of ready–made systems, the harmonization of the environment will proceed during the implementation stage. What is more, the information system must allow, indeed, enable the cooperation of many users and ensure efficient communication between them. This significantly increases the speed of planning, and it simplifies the budgeting process. The possibility of changing and matching applications to fulfil the company's needs, as well as creating new templates and reports is a crucial technical property that such software must hold. By way of the possibility of being able to flexibly adjust IT applications to specific needs, the company's employees themselves can make changes in the structure of the program so as to tailor the specifics to the company's needs and realities. In addition, it must be possible that recalculating and inputting of data be done overnight because of the large amount of data that need be dealt with. In addition, the information system should allow the continuous monitoring of the budgeting process. Moreover, whereas substantive issues relate to matters such as the planning of data, controlling software should allow planning that is of equal dimensions within the responsibility centres, e.g., orders, products and product range. The last technical issue encountered in utilizing IT systems is protecting data from unauthorized access. Along with the development of the technology, the possibility of important information being stolen or tampered with has increased. Therefore, the role of the system administrator is to distribute appropriate employee authorisation. This should correspond to their competence level and to their held authority and need.

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The basic groups of applications and systems supporting business management include: spreadsheets, dedicated systems, integrated management systems and Business Intelligence tools.

Spreadsheets are primarily employed. These are commercially widely available and can be used in practically every company. Commercially available spreadsheets require a lot of effort and time when entering and editing data, however, of advantage is their compatibility with other programs and systems.

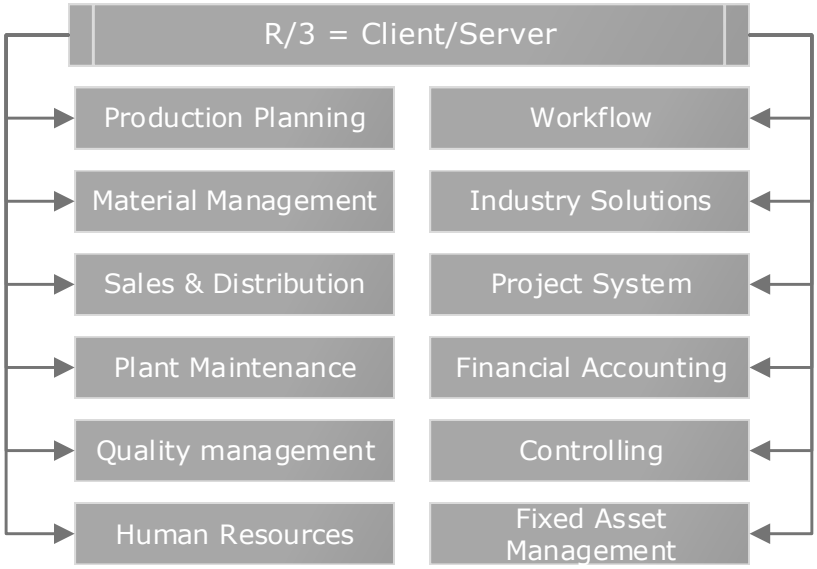
In turn, dedicated systems can be developed for a specific company. These are flexible and allow the creation of complex reports and analysis. Very often, these take the form of a data warehouse which collects data from accounting systems or HR and payroll systems. A crucial advantage of utilizing

[11] Z. Kes, *Informatyczne wspomaganie budżetowania w: Budżetowanie kosztów przedsiębiorstwa*, scientific editor: E. Nowak, Ośrodek Doradztwa i Doskonalenia Kadr, Gdańsk 2002, pp. 207–211.

dedicated systems is that such can be made to cooperate with any computer software specifically tailored to the requirements of the company's activities.

Integrated management systems are complex products that have several modules that support company management and budgeting processes. Unfortunately, such systems do not generate advanced controlling reports and are often inflexible. However, when well–designed, these hold the ability to import data from other modules, and this simplifies and accelerates the work of the financial controller (Figure 4).

Figure 4. Examples of components of the integrated management system – a module SAP R/3



Source: own study based on: http://www.script4admin.com/artykuly–it/46–opis–systemu–sap–r3 [date: 2016.12.08].

Tools such as Business Intelligence (BI) are a combination of several technologies and means of data recognition and analysis[12]. The use of Business Intelligence technologies within the enterprise increases the possibility of optimizing the business processes, enhancing the effectiveness of decision–making and quickening the responsiveness to customer needs[13]. All modules of the Business Intelligence system have the option of loading data from source systems, as well as presenting such in the form of analysis and reports that are adapted to the needs of the company. An important functionality is that well–designed BI systems display the contained data not only in "flat tables", but also as multi–dimensional structures called 'OLAP cubes'[14]. Today, Business Intelligence systems can be defined as being IT systems that, due to the large amount of available technological solutions, integrate data. What is more, these have the ability to store large amounts of data, and, hence, can generate reports more efficiently and more

[12] B. Smok, *Business Intelligence w zarządzaniu*, Wydawnictwo Uniwersytetu Ekonomicznego we Wrocławiu, Wrocław 2010, p. 93.

[13] C.M. Olszak, E. Ziemba, *Systemy inteligencji biznesowej jako przedmiot badań ekonomicznych*, Zeszyty Naukowe No 113, Uniwersytet Ekonomiczny w Katowicach, Katowice 2012, p. 11.

[14] *Informatyka ekonomiczna*, scientific editor: S. Wrycz, PWE, Warszawa 2010, p. 404.

quickly in a variety of ways. Thus, these allow sophisticated analysis using pre–defined formulas, and these show data in a transparent, user friendly manner.

Conclusion

Although the budgeting process is pretty standard, in practice, one universal method for ensuring successful implementation does not exist. This results from the fact that each company must be approached individually, and the recommended solutions should correspond to the specifics and the needs of the enterprise. Therefore, one should strive to develop a manual that contains a set of general yet tailor–made procedures which help implement the process of budgeting. Furthermore, all contained procedures should have visualization in the form of diagrams, as such makes carrying out in–house training easier. Additionally, a separate statement should be made of the duties and decision–making competences of any responsibility centres involved in the budgeting process, so these can be easily adapted within the personnels' occupation descriptions. Finally, all these actions should be supported by computer software and hardware that is appropriately matched so as to fill the needs and potentials of the company in the most.

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THE RETROSPECTIVE DESCRIPTION OF THE RESTRUCTURING OF THE STEEL INDUSTRY IN POLAND IN TERMS OF COMPETING IN THE GLOBAL SECTOR

Summary

The paper describes the restructuring process of the steel industry in Poland from a synthetic perspective, which is the result of a subjective choice made by the author to show the transformation of this industry from a centrally planned economy sector to becoming part of the global steel sector in the context of the crisis phenomena accompanying this transformation. The period of analysis shows that the restructuring, which is a condition for the privatisation of the sector, may become a tool of state interventionism in industry in times of globalisation.

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Introduction

Since the mid 2000s, the steel industry in Poland has been a component of a global industry, mainly as a result of horizontal and vertical consolidation processes leading to capital and organisation concentration. The global situation of the sector affects the conditions prevailing in Poland because the major producers of steel and steel products in the country operate on the world market simultaneously, therefore their actions are dictated by global trends[1].

In addition to new opportunities and development challenges, both for the entire economy and its individual sectors, the process of globalisation also entails the risks associated with the globalisation of crisis phenomena.

Steel enterprises needed marketing, structural and mental preparation to compete in the open, and then the global market. This process began in parallel with the political transformation after 1989.

[1] R. Dudała., *Zapowiada się lepszy rok dla producentów stali*, „Wirtualny Nowy Przemysł", wnp.pl, 4.02.2011.

Socio–economic changes after 1989 and a steel industry

The end of the Polish People's Republic and the formal dissolution of the Council for Mutual Economic Assistance (CMEA) in 1991 were also the end of coordinated market and the security of supply of raw materials and semi–finished products for the steel industry. The Polish economy became open and creative, but thus less stable as it was involved in free–market competition, entailing both development opportunities and new business risks. Socio–economic changes in Poland after 1989 and the situation in the European and global steel market proved difficult and were a threat for the steel industry as they revealed its inability to compete in terms of quality and price (cost) in the free market. This led to the crisis in the steel industry at the beginning of the 1990s, which lasted to 2004, except for 1995. Factors leading to crisis also included decline in steel consumption (it decreased by more than 50% in 1990–1992) by the defense industry and other heavy industries among others, to the needs of which the production structure of Polish steelworks was adapted, the collapse of exports to the former Comecon countries or the Polish government ceasing to treat heavy industries as a priority[2] in favour of the production of consumer goods[3].

In such conditions, the steel industry in Poland, including 26 metallurgical enterprises, required profound restructuring. Its goal was to create an economically healthy steel sector that would be competitive in the European market.[4] An important impulse to initiate this process proved to be *the Europe Agreement* concluded with the European Community in December 1991.[5] It declared, among others, the gradual establishment of an area for free trade of industrial products between Poland and the EC. It also aimed to prepare Poland for the European Union accession, by adapting, among others, the Polish steel industry to global quality standards and the principles of free market competition.[6]

The Government Restructuring Programme for the steel industry

The first operational strategy of the restructuring was adopted by the Polish government in 1992. It was *A study of the restructuring of the iron and steel industry in Poland until 2002*, developed by the Canadian Consortium.[7] As a result of the accusations made by the European Community of the tardiness in implementing the strategy, another restructuring programme was adopted in June 1998,[8] which was based on a concept developed two years before by the Institute of Ferrous Metallurgy.[9]

The main recommendations of the first restructuring programmes were as follows: to increase the economic efficiency of steel companies, to reduce production capacity, to make changes in the production structure (to adapt to customers' demand), to reduce employment (to adapt to production volume, to achieve productivity comparable with EU countries), to take protection action in the social and regional dimension, to fulfill requirements related to the protection of the environment (to adapt to

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[2] An example may be considering a steel sector as declining, in the opinion of H. Goryszewski, Deputy Prime Minister in 1992–1993.

[3] R. Brudzyński., *Analiza sektora hutnictwa żelaza i stali*. /In:/ *Charakterystyka wybranych sektorów infrastrukturalnych i wrażliwych w gospodarce polskiej oraz możliwości ich prywatyzacji*, scientific editors: B. Błaszczyk, A. Cylwik), CASE Network Reports, No 27, Vol. 5, Warszawa 1999.

[4] E. Czerwińska, *Problemy restrukturyzacji hutnictwa w Polsce*, Informacja nr 618, Kancelaria Sejmu, Biuro Studiów i Ekspertyz, Wydział Analiz Ekonomicznych i Społecznych, Warszawa 1998.

[5] *The Europe Agreement* was effective in full as of 1994.

[6] Arrangements for the steel industry (including trade liberalisation, public aid rules, the need to inform on restructuring programmes) were contained in Protocol No. 2 on the products of *the European Coal and Steel Community*.

[7] The Canadian Consortium included Hatch Associates Ltd., Ernst & Young and Steltech.

[8] *The restructuring programme of the iron and steel industry in Poland for the years 1998–2005 and the strategy for 2010.*

[9] IMŻ data.

EU regulations), to develop a plan for state aid and a crucial issue was ownership changes and ultimately, the privatisation of steel enterprises.[10]

The progress of privatisation until 1998 was as follows: ten companies were commercialised, nine were subject to banking conciliatory proceedings (debt–to–equity conversion), and five were included in the programme of the National Investment Funds.[11] In 1992, Huta Warszawa Steelworks was the first and only in this period to have been privatised (so–called privatisation involving a strategic investor). Its shares were bought by Lucchini, an Italian company.[12]

Adverse market conditions in the Polish steel industry were overcome for a while in 1995, when the net profitability of the sector reached 3.5%.[13] In 1996, however, there was a slump, intensified in 1997 and 1998 due to the crisis in Asia and Russia, which intensified the fall in prices of steel products (mainly due to imports from Russia, often at dumped prices) and the withdrawal of foreign investors. The restructuring having no effect in real terms and no progress in the privatisation of the steel industry, in conjunction with the difficult market situation resulted in the deteriorated economic and financial condition of the companies in the sector (increased debt, deteriorated liquidity and creditworthiness, and lack of working capital) in the late 1990s (five steel companies filed for bankruptcy, and one was in liquidation).[14]

The crisis in the steel industry in the years 2000/2001–2002

The consequences of a number of negative events for the steel industry in Poland accumulated and most painfully revealed in 2001, although the profits of steel enterprises had been decreasing since 2000. According to industry experts, this was wrong time as restructuring processes were not completed.[15] The accumulation of negative factors resulted not only from the internal problems of the sector, but also, to a large extent, from the slowdown of the entire Polish economy, which was the strongest until 2008. The main reasons for this slowdown were declining exports and reduced, particularly foreign, investment.

The crisis in the steel sector in the years 2000/2001–2002 was a crisis of supply and liquidity, and above all, a crisis of confidence. Recognizing the steel industry as a high–risk sector, banks demanded re–secured lending, the number of loans became marginal, the financing of current operations was stopped and the financing of planned investment was significantly limited. The crisis adversely affected the market and clearly slowed down the restructuring process.[16] The abolition of customs duties on steel products in January 2000 increased imports abruptly. Even the introduction of import quotas in 2002, as a result of lobbying activities by the manufacturers of steel and its products, was not able to slow down this trend. At the same time, the domestic production of steel and steel products decreased: in

[10] Cf. *A study of the restructuring of the iron and steel industry until 2002, the restructuring programme of the iron and steel industry in Poland for the period 1998–2005 and the strategy until 2010* (documents made available by the Institute for Ferrous Metallurgy IMŻ).

[11] According to experts in the Polish steel industry, who were interviewed by author, including a company in the NFI (the National Investment Fund) resulted in strong conflicts between short–term financial funds and long–term restructuring objectives of the sector that determined the continued existence of this company, which the boards of the companies privatised this way identified with. With the help of hired financial experts, NFI has tried to pursue the so–called controlled bankruptcy of companies (transferring the most valuable assets out of the parent company to a healthy daughter company in order to sell them for a profit, then restructuring the remaining assets and declaring bankruptcy).

[12] IMŻ data.

[13] R. Brudzyński …, op. cit.

[14] HIPH data.

[15] The interviews conducted in 2010–2012 with the representatives of management in companies in the steel industry in Poland.

[16] Ibidem.

2000–2002 it fell respectively by approx. 22% and 17%.[17] This led to a destructive price war. The market lacked cash and the financial liquidity of companies fell sharply. There were more and more problems with the supply of raw materials and semi–finished products as well as the interruptions in the supply of utilities. The situation was so bad that in approx. 90% of cases, the only possible form of settlement between steel enterprises and related industries was the set–off of mutual receivables. In this situation many technological investments were suspended as well investments related to reducing adverse effects of the steel industry on the environment.

The consolidation and privatisation of steel enterprises

Immediate privatisation involving strategic investors was a prerequisite for the further restructuring of the steel industry, and in order to accelerate it, it was necessary, in the opinion of the Ministry of Treasury, to consolidate the selected entities in the sector. In 2002 Polskie Huty Stali (PHS) S.A. (a joint stock company) was established, to which the shares of the following four steel enterprises were contributed: Huta Katowice S.A., Huta T. Sendzimira S.A. (two of the largest steel producers in Poland), Huta Cedler S.A. and Huta Florian S.A. The consolidated entity had approx. 70% market share in terms of production volume. Other companies had to develop individual restructuring programmes, which, along with the PHS S.A. programme, were to be submitted for approval to the European Commission. As a result of determined efforts of the Treasury, the years of 2002–2004 proved to be a period of intensive privatisation processes. However, it was definitely a better time for potential investors than a seller, because the valuation of shares of enterprises that suffered in crisis was significantly underestimated, in particular the shares of PHS S.A.

In January 2003, the Council of Ministers adopted another, final restructuring programme, *The restructuring and development of the iron and steel industry in Poland until 2006*, approved and supervised by the European Commission. Subsequently, the European Commission adopted *Protocol No 8 on the restructuring of the Polish steel industry* (2003), annexed to *the Treaty of Accession*, containing detailed arrangements, among others, on providing aid for steel enterprises in Poland. Under the explicit requirements[18] in the above document and as a result of restructuring programmes approved, eight metallurgical enterprises were eligible for state aid[19], six companies were not, because they failed to develop individual restructuring programmes or they were not approved and the other three companies were bankrupt.

In the second half of 2003, privatisation involving strategic investors gained momentum. PHS S.A. was sold to the Indian LNM Holdings (now ArcelorMittal). American Commercial Metals Company purchased the shares of Huta Zawiercie Steelworks, and Spanish Celsa Group acquired Huta Ostrowiec Steelworks. In addition, in the same year, Huta Ferrum Steelworks was privatised, and in 2004, Huta Baildon Steelworks. Negotiations also started with investors interested in the purchase of Huta Stali Czestochowa Steelworks, but due to the intense lobbying of numerous stakeholders,[20] the winning tenderer was selected in 2005. It was the Ukrainian Industrial Union of Donbass.

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[17] *Restrukturyzacja i rozwój hutnictwa żelaza w Polsce do 2006 r.*, Ministerstwo Gospodarki, Pracy i Polityki Społecznej, styczeń, Warszawa 2003.

[18] The main requirement was approving by the European Commission a restructuring programme of a company and achieving the so–called viability indices by the end of 2006. The main viability indices included: margin on operating activities rate (V1) and a profit rate before tax and finance costs charging (V2). Additional criteria related to the performance index.

[19] Huta Andrzej S.A., Huta Bankowa Sp. z o.o., Huta Batory S.A., Huta Buczek S.A., Huta Luccini–Warszawa Sp. z o.o., Huta Łabędy, Huta Pokój S.A. and Polskie Huty Stali S.A.

[20] A detailed description of the case of Huta Stali Częstochowa Steelworks sale can be found in: Sławik 2009, pp. 85–94.

The return of prosperity after the Polish accession to the European Union

The crisis in the Polish steel markets came to an end in 2004. As Poland joined the EU, the dynamic development of the Polish economy and its continued positive outlook resulted in increased demand for steel products. The production of steel products increased by a dozen or so percent year over year, the revenues of steel sector companies by more than 60%, and net profit margin[21] exceeded for the first time the profitability of the entire industry and economy, reaching 9.55%.[22]

During a slight slowdown in the Polish economy in 2005, the situation in the Polish steel markets was clearly less favourable than in industry and economy in general. However, in 2006, the steel industry overcame the downturn, and the market improved, mainly due to numerous investments, the implementation of which required steel; Polish economy also grew (GDP reached its highest level since 1997). In the same year, a profound process of the restructuring of the steel industry, i.e. steel enterprises receiving state aid was officially completed. Its results in figures, compared to 1989, were as follows: the annual production capacity of the sector decreased from 20.65 million Mg to 12.56 million Mg[23], productivity increased from approx. 160 Mg/employee (as of 2002) to approx. 290 Mg/employee per year, employment was reduced by 115 thousand people to 38 thousand and ten metallurgical enterprises went bankrupt[24].

Regardless of the evaluation of the data, restructuring processes put the market of steel and steel products in order, they created or increased the competitive capacity of the surviving companies in the sector, helped to minimize the social costs of transformation, increased the level of education of employees, improved the structure of employment by departments and reduced the adverse impact of this industry on the environment. Above all, a comprehensive restructuring programme for the steel industry resulted in the need for strategic management and also contributed significantly to the implementation of innovative management methods and tools.[25] The foregoing acquisitions of Polish companies by multinationals were favourable to this somewhat intellectual and organisational modernisation of the sector. In addition to implementing solutions in the field of organisation and management, foreign board members and executives introduced different management styles, ultimately trying to modify the organisational culture of the entities acquired.[26]

The year 2006 was also important for the global steel industry because of the merger of the two largest steel producers in the world – Mittal Steel and Arcelor concerns. The merger had an impact on the steel industry in Poland due to the fact that approx. 70% of the Polish steel market belonging to Mittal Steel became part of a new global largest steel producer and its products. The main effect of the merger for the Polish market was broadening the product range offered by the company, and subsequently, further investments of the company in plants in Poland.

The year 2007 was a continuation of the boom on steel markets. Net profit ratio for steel companies reached a record level of 13.21%, exceeding the profitability of the entire industry and economy more than twice.

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[21] Net turnover profitability rate is the ratio of net profit and total revenues.

[22] CIBEH and CSO data.

[23] W. Szulc, *Restrukturyzacja techniczno–technologiczna sektora w latach 1992–2006*, conference proceedings „Hutnictwo w Polsce przed i po restrukturyzacji", Konstancin–Jeziorna, 18–19.06.2007.

[24] M. Kardas, I. Kłos, J. Paduch, *Restrukturyzacja zatrudnienia w sektorze hutniczym w latach 1992–2006*, conference proceedings „Hutnictwo w Polsce przed i po restrukturyzacji", Konstancin–Jeziorna, 18–19.06.2007.

[25] Expert opinion based on interviews the author conducted in 2010–2012 with representatives of management in companies in the steel industry in Poland.

[26] Ibidem.

The effects of the global financial crisis of 2008–2009

The crisis of the global financial system in 2008–2009 resulted in the further slowdown of the Polish economy. The major direct factors of the slowdown were similar to those of 2001: a decline in exports and foreign investment due to declining demand and limited capital expenditure in highly developed countries. The global crisis directly affected the Polish economy and enterprises operating in it, as a result of the strong relationship between an economy, a domestic financial sector in particular, with a global market.

The first responses to the global crisis were visible on the Warsaw Stock Exchange, which recorded a decline in 2007–2008, not because of the bad performance of listed companies, but due to the global trend of investing capital in low–risk investments, both in terms of products (government bonds) and geography (withdrawal from emerging markets and moving to countries with a developed market economy, which are safer in the opinion of investors).[27] This means that the financial crisis did not affect the shares in Polish companies in a selective manner, based on their economic valuation, but it affected the entire Polish capital market only because it was part of the so–called basket of emerging countries.[28]

Subsequently came the crisis of confidence in the interbank market; commercial banks tightened the credit policy gradually, which led to difficulties in the access to credit for businesses. The symptoms of a slowdown in real terms became apparent in the fourth quarter of 2008.[29]

The rapid depreciation of the zloty in the second half of 2008 revealed the problem of financial derivatives, mainly toxic currency options, leading to crisis in many enterprises in Poland, including companies in the steel industry.

The steel industry in Poland felt the crisis in late 2008, and it was the most severe in 2009, when the market of steel products fell by several dozens of percent.[30] A drop in demand with an extensive cost base after the period of growth, in conjunction with the rising cost of financing and a given scale of a slowdown rate resulted in the fact that the steel sector, as one of the first links in the production chain (added value), was not able to prepare to overcome these barriers in such a short period, which resulted in decreased profitability and risk of bankruptcy for some companies. Steel consumption in Poland fell in 2009 by 30% compared to 2008, forcing a drop in production in the steel sector by 26%.[31] SWIP *(Steel Weighted Industrial Production)* index determining the level of activity in the sectors using steel products was lower in 2009 by 3.6% compared to the previous year.[32] This illustrates the impact of the difficult situation of customers on the steel industry.

Stagnation in the steel industry

While in 2010 a new wave of crisis reached Central and Eastern Europe, initiated by the bankruptcy of Greece and related to a global debt crisis[33], the steel industry in Poland stabilised, mainly due to the upturn in the domestic construction industry. Forecasts for 2011 and 2012 heralded an increase in demand

[27] The volume of decreases in indices listed on the Warsaw Stock Exchange was higher, compared to American, German or British indices, even by 20 percentage points.

[28] cf. eg. C. Adamczyk, D. Walewska., *Gospodarcze wstrząsy*, „Rzeczpospolita", dodatek „Ekonomia i Rynek", 12.08.2011.

[29] According to PWC Poland, changes in trends in equity markets were ahead of changes in the economic cycle by 4–6 months ((PWC 2009).

[30] Gruza M., *Rynek stali najgorsze ma już prawdopodobnie za sobą*, „Puls Biznesu", 22.02.2011.

[31] HIPH data.

[32] Ibidem.

[33] cf. eg. *Twarde lądowanie 2. Raport z transformacji. Europa Środkowa i Wschodnia w obliczu kryzysu zadłużeniowego*, XX Forum Ekonomiczne, PWC, Krynica Zdrój, 8–11.09.2010, http://www.pwc.com/pl_PL/pl/publikacje/Twarde–ladowanie–2.pdf, (access: 15.06.2016).

(both an increase in apparent and actual consumption at approx. 4% per annum)[34] and improved market sentiment in the entire Polish economy[35]. In light of forecast for 2011, an increase in demand for steel depended on the growth of the Polish economy, and the global links in the steel industry manifested mainly in the price level of steel products, which were expected to be at the global level in Poland.[36]

Forecast improvement on steel markets was postponed from quarter to quarter, and the market situation did not improve, either. In fact, since 2010 these markets and steel enterprises have been in stagnation (except for the first half of 2016) resulting from the import of cheaper steel products, mainly from China (intensified during the oversupply of steel in the country) and other regions not covered by the environmental restrictions, fluctuations in prices of raw materials and semi–finished products, the persistent overproduction of steel among European producers, expensive technology energy, and delays in public and private infrastructure investment.

In 2014, an armed conflict in Ukraine had a significant impact on competition on the steel market. First, it caused the revival of the Polish steel market by increased prices and reducing, and then stopping the low–cost supply of finished products from Ukraine, which allowed for the temporary reconstruction of the domestic market for steel products.

Moreover, the completion of investments related, among others, to road and rail infrastructure, and the implementation of projects in the energy and petrochemical sector, as one of the factors that improve the economic situation in the steel industry were forecast in 2014 and 2015. However, in 2016, many ongoing projects have not been finalized yet, and the new ones have not started. The main reason was problems that many entities have had with liquidity and generally, limiting the possibilities of financing development projects.

Both during the crisis and in the post–crisis period, steel enterprises in Poland conducted restructuring processes and implemented recovery programmes. However, most of them did not bring the desired effects. The entities that are outside the structures of ArcelorMittal Poland (controlling approx. 70% of the market) fought for market survival, often functioning on the verge of bankruptcy.[37]

Some entities [38] tried to adopt the strategy of expansion, development and innovation. However, in the conditions discussed, development restructuring was approached with more caution, and the projects that had not started, were re–assessed.

Conclusion

In current business conditions, restructuring has become a process that is necessary to meet the requirements of modern economic changes, particularly in the conditions of globalisation. One can identify sectors that clearly prove this thesis. These include the capital goods industry, and in particular, its so–called traditional branches like steel or mining industries, where almost permanent restructuring is necessary for companies to be able to compete.

During the period of political and economic transformation in Poland, the restructuring of steel enterprises was seen as a prerequisite for the privatisation and consolidation of the sector. When it became a reality, open and globalising markets revealed new challenges and threats, not allowing

[34] Eurofer, *Economic and Steel Market Outlook 2011–2012. Q1–2011 Report from EUROFER's Economic Committee*, February 3, 2011, http://www.eurofer.org/ index.php/eng/content/download/12435/64158/file/Market%20Report–2011–January.pdf, (access: 22.02.2011).

[35] *Global CEO Survey. 14. badanie. Polska perspektywa. Przemyślany wzrost*, PWC, 26.01.2011, http://www.pwc.com/pl_PL/pl/publikacje/ CEO_Survey_Polska_14.pdf, (access: 15.06.2016).

[36] R. Dudała, *Wzrosty bez hossy w światowym hutnictwie*, „Wirtualny Nowy Przemysł", wnp.pl, 1.03.2011.

[37] Among others Pietrzak Holding, the owner of Walcownia Batory Rolling Mill declared bankruptcy, and Huta Częstochowa Steelworks suspended production temporarily.

[38] The examples known to the author are ArcelorMittal Poland, Huta Łabędy Steelworks and Huta Pokój Steelworks.

market players to stop the process of change. To a large extent, they were not ready for it after a period of intense management transformation. Lack of the continuity of restructuring processes resulted in the fact that companies were surprised by the pace and scale of crisis phenomena, and as a result, the limited possibility of responding in the short term. Consequently, steel enterprises were not only forced to optimise the cost of their activity, but also (since the end of 2008) to continuously adjust the adopted strategy, or even redefine business objectives.

In the current period of stagnation in the steel industry in Poland, its entities face the challenge of development restructuring as in many cases the possibilities of further cost reductions are clearly limited.

In the context of the insufficient competitiveness of steel enterprises that are not part of international concerns or holding companies, the author has observed an interesting trend of the share of the state in the restructuring and consolidation of this segment of the industry. Leaving this topic as a subject of further research, she mentions, as a manifestation of this trend, the project supported by the Ministry of Energy to create Śląskie Huty Stali (Silesian Steelworks) – an entity composed of several steel enterprises. One of them, privately–owned Walcownia Batory Rolling Mill, which is in bankruptcy, is going to be bought from the receiver by a state–owned company.[39] The structure of Silesian Steelworks will also include Huta Łabędy Steelworks, bought in 2011 by the state–owned company, Węglokoks S.A. from Kampania Węglowa, to which the steelworks was included in 2010 in the form of recapitalisation.[40]

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[39] Węglokoks S.A. and companies included in the Węglokoks Capital Group take part in negotiations.

[40] The shares of Huta Łabędy Steelworks were transferred to Kompania Węglowa in the form of recapitalisation by the Treasury provided that they are disposed of within two years of receipt, and funds from the sale of shares, Kompania should allocate to the repayment of debt taken over from the former coal mining companies.

12. *Kryzys na rynkach finansowych. Wyzwania stojące przed spółkami*, PWC, marzec 2009, http://www.pwc.pl/pl/publikacje/raport–kryzysowy.pdf.
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15. *Twarde lądowanie 2. Raport z transformacji. Europa Środkowa i Wschodnia w obliczu kryzysu zadłużeniowego*, XX Forum Ekonomiczne, PWC, Krynica Zdrój, 8–11.09.2010, http://www.pwc.com/pl_PL/pl/publikacje/Twarde–ladowanie–2.pdf.

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EVOLUTION OF CONSOLIDATION PROCESSES IN POLISH HARD COAL MINING INDUSTRY IN THE CONTEXT OF ENTERPRISE LIFE CYCLE

Summary

The main objective of the paper is to present the consolidation processes in Polish hard coal mining industry in the context of enterprise life cycle in years 1990–2016, taking into consideration the specificity of the industry, which determines the course and duration of particular phases of the life of a mining enterprise. The paper was prepared based on literature and document study from the area of economic cooperation and the functioning of hard coal mining industry in Poland.

* * *

Introduction

The hard coal mining industry in Poland is an industry of strategic significance and for many years it has been subjected to consecutive restructuring processes. Restructuring systematically carried out did not bring a permanent and sufficient effect in the form of achieving, and then, maintaining the profitability of the industry, as at the moment we are dealing with the greatest crisis in the industry since the times of system transformation. As a part of implemented restructuring processes, organizational changes have been conducted a number of times, mainly focused on maximizing the sector concentration. Taking into account the significance of hard coal mining industry for Polish economy and for the development of the Upper–Silesian region, in this paper the course of the consolidation processes is presented in Polish hard coal mining industry in the context of the enterprise lifecycle in years 1990–2016, including the specificity of the industry which dominated the course and duration of the particular phases of the life of a mining enterprise.

This paper was prepared based on literature and document study from the area of economic cooperation and the functioning of hard coal mining industry in Poland. In the first part the objectives, types and ways of creating concentration relations are presented. Next the life cycle of a mining enterprise is described, including in its course the processes of vertical and horizontal consolidation. In further considerations the focus is on the stages of consolidation in Polish hard coal mining industry in years

1990–2016. In the conclusions the models of functioning of mining enterprises in the contemporary economy are systematized and the effects of the consolidation changes conducted in Polish hard coal mining industry are summarized.

Characteristics of the forms of consolidation

Consolidation forms of enterprises cooperation apply to wide ties between cooperating subjects. When deciding to cooperate as a part of activity concentration the enterprises set ambitious and multithreaded goals for themselves to be achieved, that are synthetically presented in table 1.

Table 1. Characteristics of the concentration ties

Name	Goals
Consolidation (concentration)	– Utilizing free production capacities in order to launch a different production than the basic one, but connected with it technologically – Business costs reduction – Achieving tax advantages[1] – Entering new markets[2] – Increasing market share – Adapting products for new groups of recipients – Decreasing the prices to a level significantly lower than of the competitors[3]

Source: own work.

All the actions pointed out above require establishing a close cooperation and creating a central decision–making unit, which would coordinate the activities of the cooperating enterprises. Therefore, in the forms of concentration cooperation there is a dominant subject, overseeing other members and the decision–making, legal and economic independence of the cooperating enterprises in restricted.

Among the basic forms of consolidation one can distinguish the following types of concentration:

- capital, when the enterprises combine capital they own,[4]
- organizational–technical, consisting in on combining various management functions, in various areas of operations and using them together for the entire group,
- functional–spatial, as a part of which the companies develop a network of subsidiaries subordinate to common management.[5]

The aforementioned types of enterprises concentration may penetrate each other, creating integrated groups both in the functional–spatial area as well as organizational–technical and capital areas.

The aforementioned concentration ties are created by the way of:

- internal development, when subsidiaries dependent on the parent company are created,

[1] T. Falencikowski, B. Nogalski, *Partnerstwo podatkowe przedsiębiorstw*, „Przegląd Organizacji" 2002, No. 7–8, pp. 47–49; A. Dębiec, *Przerzucanie dochodów pomiędzy podmiotami powiązanymi*, „Finansista" 2004, No. 3, pp. 58–59.

[2] T. Radzimińska, *Największe korporacje transnarodowe*, „Nowe Życie Gospodarcze" 2001, No. 20, pp. 8–9.

[3] M. Rószkiewicz, *Wyniki badania ankietowego,* /In:/ *Koncentracja produkcji i zachowania rynkowe przedsiębiorstw*, scientific editor:A. Sosnowski, Szkoła Główna Handlowa, Warszawa 1998, pp. 210–213.

[4] I. Dryll, *Kupą mości hutnicy...*, „Nowe Życie Gospodarcze" 2002, No. 6, pp. 16–17.

[5] *Koncentracja w handlu a współpraca producentów i dystrybutorów*, scientific editor: M. Strużycki, IRWiK, Warszawa 2000, p. 14; *Koncentracja produkcji i zachowania rynkowe przedsiębiorstw*, scientific editor: A. Sosnowski, SGH, Warszawa 1998, pp. 52–70.

- external development, when the concentration occurs in the way of mergers and takeovers.

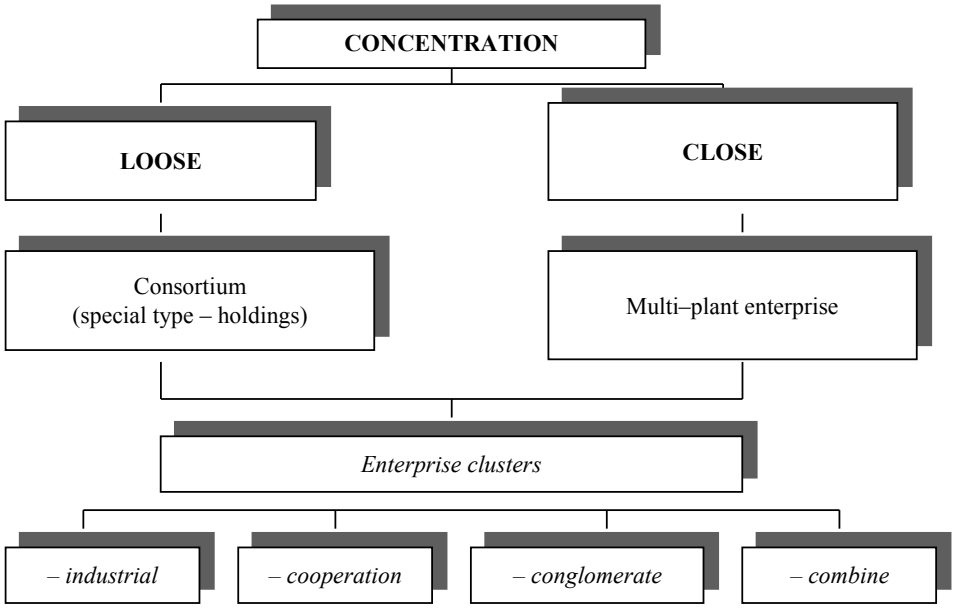
In the first case the newly–created subsidiaries are in some ways a natural continuation and extension of the activities of the parent company, while the external development through mergers and takeovers is based on integrating the already existing subjects into the structure of the dominant enterprise and is not always a natural, uninterrupted process.

The enterprises created as a consequence of the concentration processes, being the result of mergers or takeovers or also of internal development, can take various organizational forms, which are often determined by a common term of enterprise clusters. Among the most commonly existing clusters one may list:

- consortium (special type – holdings),
- multi–plant enterprises.

The division of the consolidation relations is presented in figure 1.

Figure 1. The division of consolidation relations of enterprises

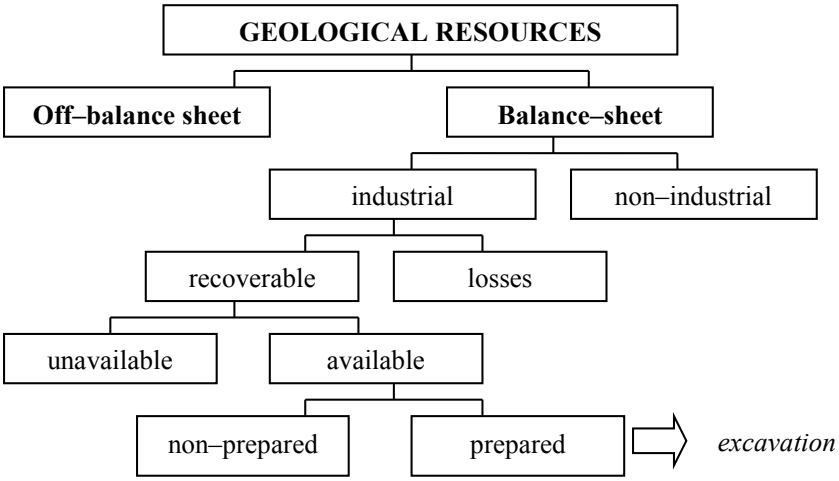


Source: own work.

Life cycle of a mining enterprise

The specificity of mining enterprises is manifested in their life cycle, which is determined by the abundance of deposits and their natural parameters deciding about the possibility and scale of hard coal excavation. The basic classification of geological resources gathered in a deposit is presented in figure 2.

Figure 2. Classification of geological resources in a mining enterprise



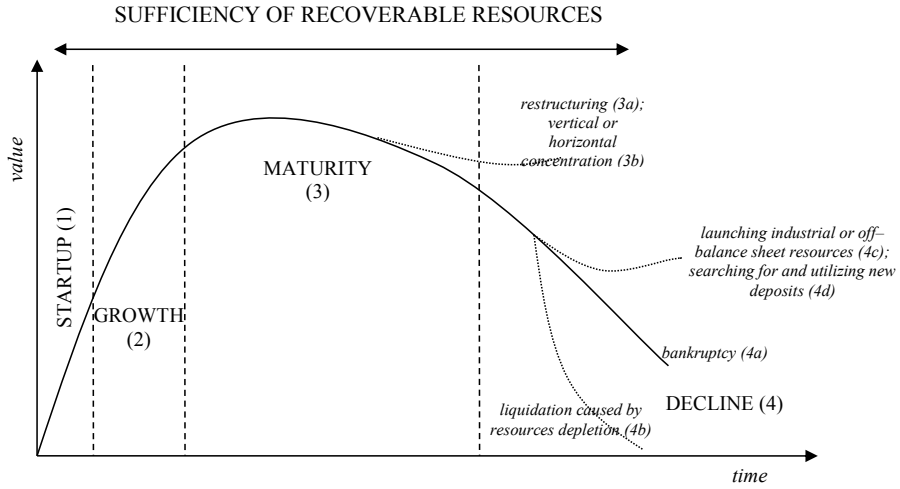
Source: own work based on: *Regulation of the Minister of Environment of 18th December 2001 on the balance–sheet criteria of mineral deposits*, "Journal of Laws" 2001, No. 153, item 1774.

According to figure 2, the geological resources are the total amount of ore that is embedded in the deposit. They may be divided into resources for industrial purposes and the ones that cannot be currently exploited due to technical or economic reasons. The former are balance sheet resources and the latter are off–balance sheet ones. However, it should be emphasized that in future the excavation of off–balance sheet resources is not excluded as the result of a change in the economic or technological conditions. In terms of balance sheet resources one may distinguish industrial resources that are going to be mined and non–industrial resources that cannot be mined for technical reasons (e.g. inter–layer contamination of tailings, high content of sulphur, minimal size of mining plot requiring a separate access). During excavation of industrial resources only a part of them may be mined, the other part left is a loss. The amount of losses depends on the excavation system adopted. Industrial resources reduced by losses are recoverable resources which, after granting access and preparation, may be exploited.

The life span of a mining enterprise is therefore determined by the sufficiency of recoverable resources and the possibility of future utilization of non–industrial and off–balance sheet resources. Nevertheless, such possibilities remain beyond the control of a mining enterprise to a great extent as they depend on natural conditions or a breakthrough in the mining technology[6]. The life cycle of an enterprise taking into account the specificity of mining industry is presented in figure 3.

[6] I. Jonek–Kowalska, *Challenges for long–term industry restructuring in the Upper Silesian Coal Basin: What has Polish coal mining achieved and failed from a twenty–year perspective?*, „Resources Policy" 2015, No. 44, pp. 135–149; I. Jonek–Kowalska, M. Turek, *Ścieżki restrukturyzacji w polskim górnictwie węgla kamiennego*. /In:/ *Restrukturyzacja przedsiębiorstw i gospodarek w warunkach rozwoju rynków globalnych*, scientific editors: R. Borowiecki, A. Jaki), Uniwersytet Ekonomiczny w Krakowie, Kraków 2013, pp. 235–248.

Figure 3. Enterprise life cycle with the inclusion of mining industry specificity



Source: own work.

Accordingly, a natural ending of a mining enterprise is defined by the liquidation due to recoverable resources depletion (4b). The mining enterprise may also be closed–down as a result of bankruptcy (4a), the same way as any other economic subject, regardless of the condition of recoverable resources. If the mining enterprise moves from the phase of maturity to the stage of decline because of recoverable resources depletion, it may use an economically justified option of launching industrial or off–balance sheet resources (4c). It may also search for new deposits in the area of current or new location (4d), however, this option is much more costly because of the necessity of establishing a new mining enterprise.

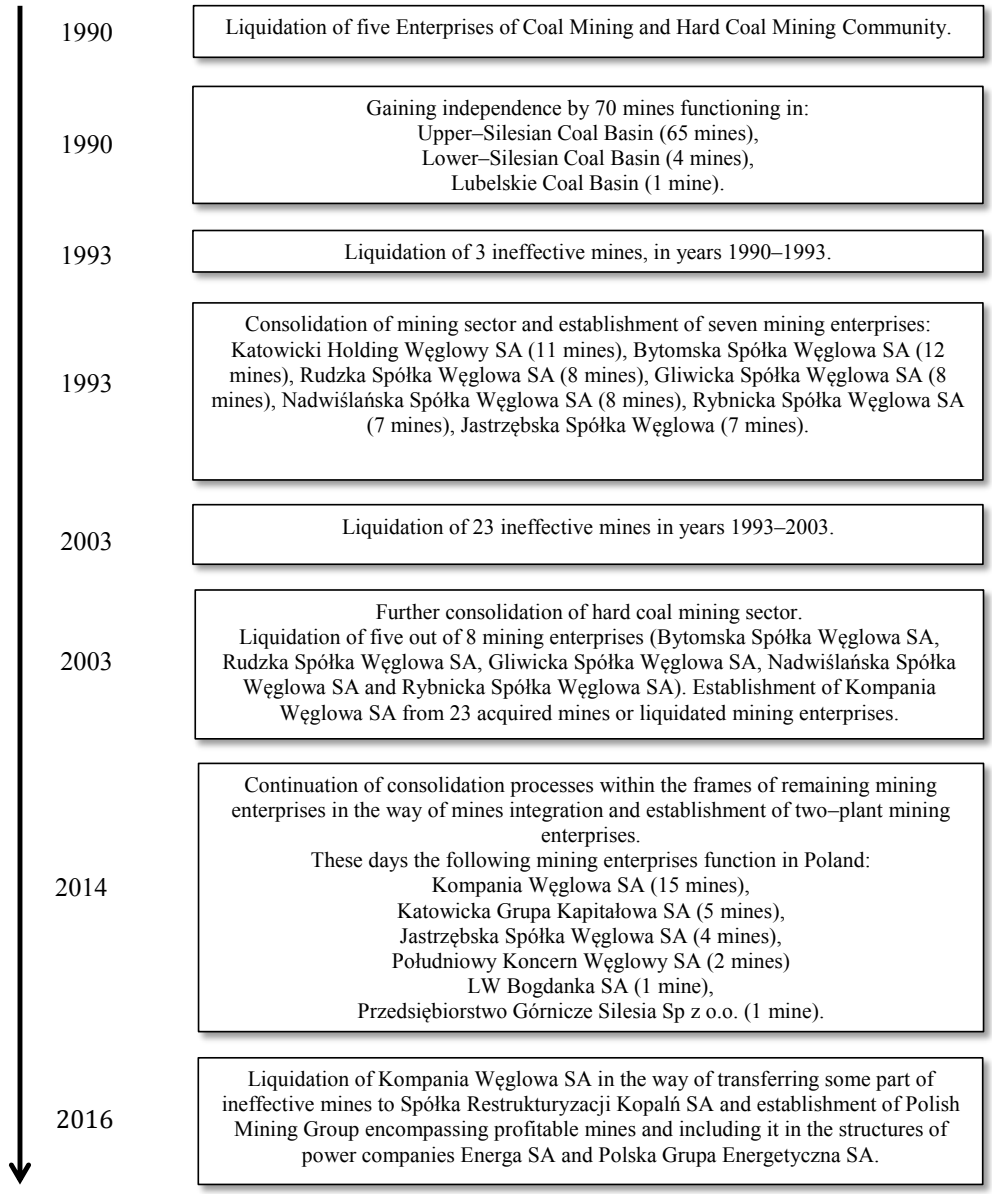
An opportunity to extend the maturity phase in a situation when the enterprise has appropriate recoverable resources at its disposal, but is in a bad economic and financial situation, usually lies in a deep restructuring[7] (3a), very often embedded in the process of the whole industry restructuring[8], or also a vertical or horizontal integration (3b)[9]. The first option – in the case of success – allows the mining

[7] I. Jonek–Kowalska, M. Turek, *Restrukturyzacja jako źródło redukcji kosztów w przedsiębiorstwie – działania i efekty*. /In:/ *Zarządzanie wartością przedsiębiorstwa*, Zeszyty Naukowe Uniwersytetu Szczecińskiego 2013, No. 686 – Finanse, Rynki Finansowe, Ubezpieczenia, No. 47, pp. 1733–2842; I. Jonek–Kowalska, M. Turek, *Restrukturyzacja zatrudnienia w polskim górnictwie węgla kamiennego – cele i efekty*. /In:/ *Restrukturyzacja przedsiębiorstw i gospodarek w warunkach rozwoju rynków globalnych*, scientific editors: R. Borowiecki, A. Jaki, Uniwersytet Ekonomiczny w Krakowie, Fundacja Uniwersytetu Ekonomicznego, Kraków 2013, pp. 249–266.

[8] I. Jonek–Kowalska, M. Turek, *Finansowanie procesów restrukturyzacyjnych w górnictwie węgla kamiennego w latach 2003–2006*. /In:/ *Zarządzanie restrukturyzacją w procesach integracji i rozwoju nowej gospodarki*, scientific editors: R. Borowiecki, A. Jaki, Uniwersytet Ekonomiczny w Krakowie, Katedra Ekonomiki i Organizacji Przedsiębiorstw, Fundacja Uniwersytetu Ekonomicznego w Krakowie, Kraków 2008, pp. 561–572.

[9] I. Jonek–Kowalska, *Koncentracja a restrukturyzacja przedsiębiorstw.* /In:/ *Nowoczesność przemysłu i usług. Relacje i wartość w strategiach zarządzania przedsiębiorstwami*, scientific editor: J. Pyka, Towarzystwo Naukowe Organizacji i Kierownictwa. Oddział w Katowicach, Katowice 2008, pp. 103–111; I. Jonek–Kowalska, M. Turek, *Koncentracja przedsiębiorstw przemysłowych. Przyczyny – przebieg – efekty*, Wydawnictwo Politechniki Śląskiej, Gliwice 2010; M. Turek, I. Jonek–Kowalska, *Koncentracja przedsiębiorstw i jej efekty na przykładzie Kompanii Węglowej SA*. /In:/ *Zarządzanie restrukturyzacją w procesach integracji i rozwoju nowej gospodarki*, scientific editors: R. Borowiecki, A. Jaki), Uniwersytet Ekonomiczny w Krakowie, Katedra Ekonomiki i Organizacji Przedsiębiorstw, Fundacja Uniwersytetu Ekonomicznego w Krakowie, Kraków 2008, pp. 573–587.

Figure 4. Evolution of organizational changes in Polish hard coal mining in years 1990–2016



Source: own work based on: I. Jonek–Kowalska, *Challenges for long–term industry restructuring in the Upper Silesian Coal Basin. What has Polish coal mining achieved and failed from a twenty–year perspective?*, „Resources Policy" 2015, No. 44, pp. 135–149.

enterprise to retain autonomy and economic and legal independence, the second one means functioning in the concern structures and loss of ability to self–rule.

Consolidation in Polish hard coal mining industry

The consolidation processes of Polish hard coal mining industry have always been included in restructuring since the beginning of system transformation. Initially, mostly independent hard coal mines were functioning in Polish economy that were independent mining enterprises. Next, these mines were consolidated and 7 large regional mining enterprises were established. Later 5 of them were integrated into the largest mining cooperative in Europe – Kompania Węglowa SA. In the course of all these processes also a systematic reduction of excavation and liquidation of ineffective mines took place. Additionally, in the structures of mining enterprises functioning at that time, internal mergers of mining companies took place and in consequence, so–called two–plant hard coal mines were established. In this way it was possible to reduce excavation in the plant with low profitability without liquidating the given mine. Therefore, it may be stated that the external and internal consolidation processes were mostly aimed at workplaces protection in Polish hard coal mining and at preventing social protests. Nonetheless, excavation reduction was not accompanied by workforce reduction, what in turn triggered a rise of unit production cost and deteriorated economic crisis in the industry. In the last three years it was so deep that the only opportunity to prolong the declining stage of hard coal mining was mines consolidation with power sector. A detailed course of consolidation in the sector is presented in figure 4.

Conclusion

The analysis of the contemporary forms of conducting a mining activity by mining enterprises allows distinguishing four models of their organization and functioning: MODEL 1 – one–plant mining enterprise, MODEL 2 – multi–plant mining enterprise, MODEL 3 – global mining concern and MODEL 4 – mining enterprise in the structure of power concern. In the first model the mining enterprise functions as one hard coal mine, also called as mining plant. One–plant mining enterprises most often perform on local markets and their activity is not internationalized at all or poorly internationalized. In the second model, many mining plants are incorporated in the mining enterprise, they are usually situated in the same region, operating on a local and regional and also on an international market, what is possible thanks to the scale of activity. In the third model, the mining enterprise works as a global concern, situating its branches in all geographical locations where it searches for attractive deposits or mines them. The concern may also take over the local mining enterprises. The activity of a global mining concern is not usually concentrated on hard coal excavation only, it also regards other energy or mineral resources. In the fourth model, the mining enterprise functions in the structures of power concern within the frames of vertical integration, delivering the resource mined to the producer of electricity, heat and metallurgical products. Such configuration allows the mining enterprise to sell its production on a local or regional market defined in advance. These days some mines of previous Kompania Węglowa SA are working in such configuration. The works on consolidation with power or metallurgical sector are being carried out for other mines functioning in the Upper–Silesian Coal Basin.

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ENVIRONMENTAL MANAGEMENT INSTRUMENTS IN THE RESTRUCTURING PROCESS OF POLISH ENERGY ENTERPRISES

Summary

The paper presents chosen environmental management instruments (legal and administrative ones as well as economic ones and the ones concerning voluntary use and social impact) applied in the restructuring process of Polish energy enterprises in order to limit greenhouse gasses emission. In the empirical part the Author has assessed the trend function of granted ISO 14001 certificates and number of registrations in the EMAS system for Polish enterprises. On this basis the Author has created forecasts of the number of entities interested in certified systems of environmental management, which indicate that their popularity is growing.

* * *

Introduction

A vital aspect of Polish environmental energy policy was the gradual introduction of market energy prices and limitations imposed on subsidizing energy carriers mining and energy production, which was favoured by the deregulation processes of the energy market, including creation of the Polish Power Exchange in Warsaw (1999). These actions were directed at decreasing the energy intensity of the industrial sector through more effective use of primal and final energy carriers as well as a search for innovative solutions in the scope of limiting emission of pollutants at particular production stages. Due to the structure of fuel carriers used in the process of electricity and heat production in Poland, which is dominated by fossil fuels characterized by a high emission index for the unit of produced energy, as well as more and more tightened climate and energy policy of the EU the aim of which is to reduce greenhouse gases emission (GHG), a priority task is becoming to limit the burden to the environment coming from the energy sector enterprises.[1] Power plants and heat and power plants have always had

[1] A. Włodarczyk, M. Zawada, *Restructuring Energy Enterprises in Poland in the Light of the Climate and Energy Policy of the European Union*. /In:/ *Contemporary Look and Challenges of Restructuring*, scientific editors: A. Jaki, M. Kowalik, Fundacja Uniwersytetu Ekonomicznego w Krakowie, Kraków 2015, pp. 343–354.

their share in the national structure of greenhouse gasses emission as in 2014 the energy sector in Poland was responsible for 80.99% of the total greenhouse gasses emission. In addition, the GHG emission coming from burning fuels in the process of heat and electricity production constituted 52.84% of the total emission in Poland generated as a result of burning conventional energy carriers.[2]

In the context of the above mentioned problem domain the goal of the paper is to present chosen environmental management instruments applied in restructuring processes of Polish energy enterprises to limit greenhouse gasses emission. The presented in the paper empirical analysis concerns identifying the development trend of granted certificates which confirm the compliance of conducted activity with the ISO 14001 standard as well as the number of registrations in the Community Eco–Management and Audit System for Polish enterprises, which will help to assess the change of interest of Polish enterprises, in this the ones representing the energy sector, in certified environmental management systems.

Environmental aspects in restructuring processes of Polish enterprises

Restructuring processes of Polish enterprises, which involve a system reconstruction or modernization of their organizational structure and principles of functioning, were conditioned by, among others, changes taking place in the external environment in the economic system transformation period, and connected with laying the institutional foundations of market economy, building particular segments of financial market, restructuring the assumptions of macroeconomic policy and sectoral liberalization of internal markets and trade relationships with foreign countries[3]. Environmental aspects of restructuring enterprises at the initial stage of moving from the order and distribution economic system to the market one were treated marginally. A priority task was to maintain the growing trend of industrial production and carry out ownership transformations, without an important rule of industry restructuring, which concerned liquidation of environment degradation sources through modernization and replacement of previous production technology. Lack of clearly defined priorities of environmental policy with reference to various time horizons and coherent goals of particular sectoral policies with goals of environmental policy, lack of institutional division of ownership, legislative and control as well as regulatory functions of the state in the area of environmental protection undoubtedly contributed to slowing down the changes in the structure of industry. Limiting the share of resource and energy intensive branches in favour of a larger share of high processing industry and modern technologies in the structure of the economy favours achievement of stable and environmentally sustainable economic growth. Structural changes derive from introduction of price and allocation mechanisms in the transformed economy, in particular marketing the prices of fuels, energy and resources, which prevents their excessive exploitation and increases microeconomic optimum of their use.[4] Moreover, structural changes are connected with environmentally beneficial investments into modern production technologies, which facilitate implementation of the principle to liquidate pollution at its source.[5] Investments into clean production technologies are characterized by low pollution generation, constitute an economically more effective form of actions directed at protecting the environment in comparison to undertakings aimed at limiting the harmful effects of already created pollution, according to the end–of–pipe approach to liquidate pollution.

Another potential source of environment degradation limiting, connected with transition to the market economy, apart from the change of the industry structure and accompanying it reduction of energy and resource intensity of the Polish economy, is an increase in economic efficiency and environmental

[2] Own calculations on the basis of data from the European Environmental Agency, www.eea.europa.eu (access: 24.06.2016).

[3] R. Borowiecki, *Managing Economic Processes Restructuring. Theoretical and Practical Aspect*, Wyd. Difin, Warszawa 2003, p. 77; *Basics of Environment and Natural Resources Economy*, scientific editors: B. Fiedor), S. Czaja, A. Graczyk, Z. Jakubczyk, Wydawnictwo C.H. Beck, Warszawa 2002, p. 447.

[4] B. Fiedor, S. Czaja, A. Graczyk, Z. Jakubczyk …, op. cit., pp. 426–456.

[5] S. Dinda, *Environmental Kuznets Curve Hypothesis: A Survey*, "Ecological Economics" 2004, Vol. 49, pp. 435–436.

effectiveness of the instruments of environment protection policy.[6] Restructuring of Polish enterprises understood as "a strategy of growth and reorientation, fundamental, conceptual redesigning of business processes" comprises "complex processes of fundamental changes in enterprises, the aim of which is operational and strategic shaping the attributes of their recognition" with regard to, among others, tightening the law regulations and the policy of environment protection in the whole of the European Union, growth of restrictiveness and consequence in executing the requirements resulting from legal environmental regulations by administrative bodies and supporting these actions with properly adjusted indirect instruments of environmental management.[7] In addition, replacing the pure market paradigm by the new economy paradigm, based on the triad economy–society–environment, has contributed to extending the restructuring areas, evolution of management methods and a change of the scope in which they are used in restructuring processes directed at sustainable development of enterprises.[8] Energy enterprises which want to successfully compete and function in the contemporary conditionings, characterized by constant volatility influencing the growth of uncertainty and risk that accompanies the decision–making processes, have to create new attitudes in response to the constantly changing reality, also in the environmental aspect.[9]

Environmental management instruments supporting the energy sector decarbonisation process

The priority goals that Polish energy enterprising are facing include: reduced emission of greenhouse gases, improved energy efficiency, increase in the share of energy produced in renewable energy sources and dissemination of technologies used to capture and store carbon dioxide (the CCS technology). In the light of defined in this way goals, the nature of energy enterprises restructuring constitute fundamental changes which enable to strengthen their competitive advantage on the deregulated energy market and adjusting enterprises to changes in the framework of climate and energy policy of the European Union. The basic element of this policy is the European Emission Trading Scheme (EU ETS), which comprises almost 10 thousand installations, by means of which financial value has been assigned to each saved tonne of CO2 emission, which was supposed to be the cheapest way to reduce greenhouse gases emission and implement the postulate "the polluter pays". The functioning principles of the European Emission Trade Scheme have been established in such a way that the emission of gases included in the system is allocated at the enterprise level. What follows, enterprises covered under the EU ETS have been obliged to surrender every year a particular number of allowances to cover own greenhouse gases emission. The most important changes in the principles of the climate and energy policy of the EU for the years 2013–2030 have been summarized in Table 1.

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[6] B. Fiedor, S. Czaja, A. Graczyk, Z. Jakubczyk…, op. cit., p. 440.

[7] J. Staszewska, *Restructuring Energy Sector Enterprises in the Process of Building Its Competiveness*, Zeszyty Naukowe Politechniki Śląskiej, Seria: Organizacja i Zarządzanie 2014, No. 73, p. 598.

[8] S. Marciniak, *Enterprise Restructuring and Economy Paradigm*, „Przegląd Organizacji" 2016, No. 10, p. 57; J. Czekaj, *Methods of Organization and Management,* Wyd. AE w Krakowie, Kraków 2007.

[9] B. Nogalski, *Business Models as Tools of Strategic Reorientation of Enterprises*. /In:/ *Critically and Creatively About Management. Selected Issues*, scientific editor: W. Kieżun, Wyd. Oficyny Wolters Kluwer Business, Warszawa 2011, p. 447.

Table 1. Priorities and reduction goals in the climate and energy policy of the EU

Task name	Package 2013–2020		Package 2021–2030	
Reduced greenhouse gases emission	By 20% compared with the level from 1990		By at least 40% compared with the level from 1990	
	Sectors covered under the EU ETS system	**Sectors outside the EU ETS system**	**Sectors covered under the EU ETS system**	**Sectors outside the EU ETS system**
	By 21% compared with 2005	By 10% compared with 2005	By 43% compared with 2005	By 30% compared with 2005
Growth of the RES in total energy consumption	20% share in 2020		At least 27% share in 2030	
Growth of energy efficiency	Reducing by 20% the demand for energy with reference to the forecasts for 2020		Reducing by 27% the demand for energy with regard to the forecasts, with an option to increase the reduction to 30% after an initial analysis conducted until 2020	

Source: own analysis on the basis of: www.kobize.pl.

Achieving the abovementioned goals of greenhouse gases emission reduction is favoured by implementation of various environmental management instruments, which have been comprehensively described in the domain literature. Below, the Author presents a classification of instruments applied in environmental protection including the way, scope and subject of their impact:[10]

- overall legal regulations, especially the ones referring to political system, which by regulating the issue of making use of natural resources and environmental values characterize the relationship between the economy and environment. Introducing the institutional separation of ownership, legislative and control and regulatory functions of the state in the area of environmental protection during the period of Polish economy restructuring contributed greatly to the efficiency growth of remaining instruments of environmental operations of enterprises,
- legal and administrative instruments establishing object limits on emission of pollutants or valid technological standards, introduction of which should take place according to the adopted schedule. In other words, these instruments determine the way and intensity of making use of natural environment resources,
- economic instruments influencing through pricing mechanisms the improvement of emission indexes of the energy sector enterprises. They include both cost instruments burdening entities which fail to operate according to the adopted climate and energy policy of the EU, as well as the revenue instruments generating additional financial resources for entities implementing the priorities presented in Table 1. It should be stressed that economic instruments fulfil a supplementary or enhancing function towards

[10] *Environmental Management*, scientific editor: B. Poskrobko, Wyd. PWE, Warszawa 2007, pp. 129–174; B. Fiedor, S. Czaja, A. Graczyk, Z. Jakubczyk…, op. cit., pp. 280–339; T. Nitkiewicz, *Ecological Evaluation of Product Life Cycle in Decision–Making Processes of Manufacturing Enterprises*, Wyd. Politechniki Częstochowskiej, Częstochowa 2013, pp. 40–46.

Table 2. Examples of using environmental management instruments to reduce CO_2 emission in energy enterprises

Instrument category	Examples of implementing the instruments in the energy sector
Legal and administrative instruments	– emission standards presented in Table 1, – technological standards – the concept of best available technology (BAT) used in order to determine optimum emission of the given pollutant as an equivalent of an energy unit produced from the particular energy fuel (the new allocation principle for CO_2 allowances in the EU ETS system is based on this principle), – integrated allowances for fuel burning installations, allowances to participate in the EU system of trading CO_2 emission allowances – the obligation to purchase energy from RES, which promotes renewable energy industry development.
Economic instruments	– financial support of the investment in the scope of conjugated heat and electricity production, – trading CO2 allowances on primary and futures market, – derogation mechanism and free allocation of allowances for Polish installations covered by the EU ETS, – flexible Kyoto mechanisms allowing for reduction of GHG emission abroad, provided that economic conditionings allow to decrease incurred cost with reference to similar actions in the country: clear development mechanism (CDM) and joint implementation mechanism (JI), – Green certificates programme which supports development of renewable and conjugated energy industry, – financial penalties for exceeding the allowed emission level.
Voluntary application instruments	– environmental management procedures compliant with the requirements of the ISO 14001standard or the EMAS system, – energy management programmes compliant with the guidelines of the ISO 50001 standard, – recommendations concerning the carbon footprint measurement in the product life cycle.
Social impact instruments	– petitions, social demonstrations: demonstration defending wind energy, – environmental sponsoring: the programme "A platform for a stork", – informative actions: publishing CSR reports.

Source: own analysis on the basis of: *Poland's Climate Policy. The strategies of greenhouse gas emission reduction in Poland until 2020.* The Ministry of the Environment, Warszawa 2003, www.mos.gov.pl (access: 23.06.2016 r.); *Managing the Environment*, scientific editor: B. Poskrobko, Wyd. PWE, Warszawa 2007, pp. 129–174.

legal and administrative ones, as they make it possible to achieve economic benefits due to compliance with legal regulations on polluting the environment and exploitation of its resources,[11]

- voluntary application instruments, which include voluntary environmental contracts or agreements, voluntary application procedures resulting from various documents of non–obligatory nature or environmental recommendations. Their aim is to impose limits on anthropogenic burden to the environment. Their especially popular form includes unilateral obligations concerning accepting environmental programmes by enterprises and implementing their goals according to established by enterprises schedules, which often constitutes the beginning of implementing in enterprises certified systems of environmental management,[12]
- social impact instruments, which stimulate efficiency of other instruments operations (e.g. economic and legal ones) through creating pro–environmental attitudes of various stakeholders groups of the energy sector enterprises. This group of instruments includes in particular instruments of social pressure, sponsoring, lobbying, information instruments disseminating knowledge on available low–emission technological solutions in the energy industry or instruments of educational nature which facilitate recognition or understanding of environmental problems.

In Table 2 the Author has aggregated chosen environmental management instruments directed at reducing greenhouse gases emission by the energy sector enterprises.[13]

It is also worth stressing that voluntary initiatives undertaken by the energy sector enterprises which aim at implementing environmental management systems, compliant with the ISO 14001 standard or the Community System of Eco–management and Audit (EMAS) produce additional benefits in the form of fulfilling the legal requirements in the scope of environment protection, showing the legislator that the enterprise conducts its activity according to the law regulations and showing the stakeholders that the enterprise cares for the natural environment.[14]

Evaluation of trends in implementing certified environmental management systems in the Polish energy sector

Within the last years the awareness as to damages caused by conventional energy has grown in the Polish society and Poland's membership in the European Union created an additional impulse to consider environmental aspects in the restructuring process of the Polish energy sector. As a result of the conducted in Poland reorganization and consolidation of energy enterprises, the production, distribution and sales market of electricity has been divided among four large, vertically integrated energy groups: Polska Grupa Energetyczna S.A., Tauron Polska Energia S.A., Enea S.A., Energa S.A (see Table 3).

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[11] A. Graczyk, A. M. Graczyk, *Introducing Market Mechanisms in Environmental Protection*, Wyd. PWE, Warszawa 2011, pp. 40–43; Z. Liu, X. Mao, J. Tu, M. Jaccard, *A comparative assessment of economic–incentive and command–and–control instruments for air pollution and CO_2 control in China's iron and steel sector*, "Journal of Environmental Management" 2014, No. 144, pp. 135–142.

[12] M. Khanna, Y. Liao…, op. cit., pp. 141–145**.**

[13] The importance of environmental management process in energy enterprises operation has been indicated, among others, by: B. Skowron–Grabowska, A. Kurp, *Managing Polish Energy Enterprises in the Aspect of Environment Pollution*, Prace Naukowe Wałbrzyskiej Wyższej Szkoły Zarządzania i Przedsiębiorczości" 2014, No. 30(5), pp. 405–408; A. Mesjasz–Lech, A. Włodarczyk *Modelling of Air Micropollutant's Fluctuations on the Background of the Primary Air Pollutants Emissions as a Tool Supporting Environmental Management in Thermal Power Plant*, "Desalination and Water Treatment" 2016, vol. 57(3), pp. 993–995.

[14] More information on advantages for enterprises that implement certified environmental management systems can be found, among others, in the papers of: M. Khanna, Y. Liao…, op. cit., p. 141–145; O. Seroka–Stolka, J. Gajda, *Environmental Management According to ISO 14001 Standard in coal mining enterprises – chosen aspects*, „Gospodarka w Praktyce i Teorii" 2015, No. 2(39), pp. 15–20.

Table 3. Indexes characterizing operations of energy groups in Poland in 2015

Characteristics	Enea S.A.	Energa S.A.	PGE S.A.	Tauron Polska Energia S.A.
Number of energy consumers	2.4 mln	2.9 mln	5.26 mln	5.42 mln
Electricity production	13.1 TWh	4.1 TWh	55.58 TWh	16.64 TWh
Total length of power lines	134 000 km	184 000 km	283 804 km	258 000 km
Energy sales to final consumers	17 TWh	21.5 TWh	39.00 TWh	35.94 TWh
Structure of fuels used to produce electricity	COAL – 64.41% LIGNITE – 15.61% RES – 16.55% GAS – 1.78%	COAL – 31.68% LIGNITE – 29.59% OZE – 33.23% GAS – 2.22%	COAL – 50.39% LIGNITE – 33.43% OZE – 8.56% GAS – 7.61%	COAL – 83.61% LIGNITE – 7.83% OZE – 6.54% GAS – 0.79%
Emission index for sold electricity	0.8651 Mg/MWh (COAL) 1.0608 Mg/MWh (LIGNITE)	0.80609 Mg/MWh (COAL) 1.07308 Mg/MWh (LIGNITE)	0.78227 Mg/MWh (COAL) 1.06298 Mg/MWh (LIGNITE)	0.80941 Mg/MWh (FUEL MIX)
Environmental Management System	Integrated System of Quality, Environment and Health and Safety Management, compliant with, among others, requirements of PN–EN ISO 14001:2005 standard	Environmental Management System compliant with the EMAS directive, compliant with the requirements of ISO 14001:2004 standard	Integrated System of Quality, Environment and Health and Safety Management, compliant with, among others, requirements of PN–EN ISO 14001:2005 or ISO 14001:2004 standard	Integrated System of Quality, Environment and Health and Safety Management, compliant with, among others, requirements of PN–EN ISO 14001:2004 standard
Registration at EMAS	–	15.06.2016 covering, among others: Energa S.A., Energa–Operator S.A., Energa Wytwarzanie S.A., Energa–Obrót S.A., Energa Elektrownie Ostrołęka S.A., Energa Kogeneracja Sp. z o.o.	Elektrownia Opole –02.09.2005, Zespół Elektrowni Dolna Odra – 09.04.2009	Elektrownia Łaziska – 22.02.2008, Elektrownia Jaworzno III – 19.10.2010, Elektrownia Siersza w Trzebini – 10.01.2011, Elektrownia Łagisza w Będzinie – 27.09.2013

Source: own analysis on the basis of information posted on the websites: www.gpw.pl, www.gkpge.pl, www.tauron.pl, www.emas.gdos.gov.pl, www.energa.pl, www.enea.pl.

While analyzing chosen characteristics concerning production size and electricity sale as well as the number of consumers and power lines length one can notice that the largest share in electricity production, distribution and sale in Poland in 2015 belonged to two capital groups: PGE S.A. and Tauron Polska Energia S.A. Unfortunately, the structure of fuels used to produce electricity by particular energy groups in 2015 were still dominated by hard coal and lignite, the share of which in the summary of energy carriers amounts from 80.02% (Enea) to 91.44% (Tauron). Only the fuel structure at the Energa S.A. group shows a significant share of energy coming from RES (33.23%) in the production portfolio. Table 3 also includes information on the impact of particular energy groups on the environment in the scope of CO2 emission equivalent to the unit of sold electricity. The lowest ratio of carbon dioxide emission for electricity produced from hard coal characterizes PGE S.A. (0.78227 Mg/MWh), and for electricity coming from burning lignite – Enea S.A. (1.0608 Mg/MWh).

The presented above structure of fuels for particular energy groups in Poland indicates the problem of excessive emission of carbon dioxide in the process of electricity production compared with benchmark installations in the EU making use mainly of gas fuel. This causes a necessity to incorporate into the business operations of energy sector companies programmes and initiatives connected with monitoring and managing their influence on the natural environment. Apart from complying with the law regulations concerning carbon dioxide emission more and more frequently this sector enterprises undertake voluntary initiatives directed at limiting their pollution generation, and at the same time increasing transparency of actions in the scope of environment protection. Namely, majority of the energy sector companies have improved in recent years the transparency of informing the stakeholders about forms of the company's activity in the CSR area, publishing annual CSR Reports compliant with the standards of Global Reporting Initiative G4 (GRI G4). Moreover, all analyzed energy companies possess environmental management systems compliant with the ISO 14001 standard or the EMAS system, which constitutes an important signal for their customers, investors and government administrative bodies about implementing actions to limit their negative influence on the environment in the process of electricity and heat production and transmission. In particular, energy enterprises registered at the EMAS system are obliged to reveal to the public the accepted by the organization policy and environmental programme, a description of the implemented Environmental Management System, prepare and publish regularly reports concerning actions they carry out for the environment, and first of all conduct regular audits of the Environmental Management System (max. every 3 years). Such requirements cause that some organizations decide to resign from the participation in the EMAS system, especially when they experience financial difficulties or less pressure from the stakeholders to improve the environmental results of the conducted operations.

In order to evaluate the interest of Polish organizations in certified environmental management systems the Author has analyzed development trends of registrations in the EMAS system[15] (period 2006–2015) and the number of granted the ISO 14001 certificates[16] (period 1999–2014). The Author has also assessed parameters of the polynomial function and the power function of the trend in the form:

$$y_t = \alpha_0 + \alpha_1 t + \alpha_2 t^2 + \alpha_3 t^3 + \varepsilon_t \quad (1)$$

$$y_t = \alpha_0 \cdot t^{\alpha_1} \cdot e^{\varepsilon_t} \quad (2)$$

where:

y_t – number of organizations (parties) registered in the EMAS system or number of granted the ISO 14001 certificates,

t – time variable,

ε_t – random element of white noise nature, α_i – structural parameters of the model (i=0,1, 2, 3).

[15] Data comes from Eurostat (www.europa.eu/eurostat/web/products–datasets/–/tsdpc410).

[16] Approximate data comes from the website of International Standardization Organization (www.iso.org/iso/iso–survey).

For each time series representing the number of subjects registered in the EMAS system in Poland or representing the number of granted ISO 14001 certificates the Author has assessed polynomial and power trend functions and then each model was verified according to:[17]

- adjustment level of theoretical and empirical values (determination coefficient),
- relevance of model parameter assessment (t–Student test and F–Snedecor test),
- occurrence of the autocorrelation effect in the model residuals (Durbin–Watson test, Breusch–Godfrey first order test),
- homoscedascity of the random element (White test),
- normal distribution of the residual element (Jarque–Bery test),
- model parameter stability (CUSUM and CUSUMSQ tests).

In case when model verification was positive, point forecasts have been determined on its basis through extrapolation of the assessed trend function for 2016, 2017 and 2020, and relative incorrect forecasts have been calculated ex ante as well. Table 4 includes evaluations of parameters of chosen development trend functions (assessed with the use of the KMNK method in the Gretl programme) which best described the trend of interest in certified environmental management systems in Poland.

Table 4. Results of estimating the trend function for the number of organizations (parties) registered in the EMAS system and the number of granted the ISO 14001 certificated in Poland

Parameter/Statistics	**Number of organizations registered in EMAS**	**Number of parties registered in EMAS**	**Number of granted ISO 14001 certificates**
	Square trend	**Power trend**	**Linear trend**
Evaluation α_0	–1.842 [0.137]	1.033 [0.830]	–199.4 [0.000]
Evaluation α_1	1.467 [0.032]	2.024 [0.000]	157.19 [0.000]
Evaluation α_2	0.291 [0.000]	–	–
Determination coefficient	0.983	0.953	0.982
F–Snedecor test	684.02[0.000]	338.7 [0.000]	2088.99 [0.000]
Durbin–Watson test	2.324 [0.402]	1.657 [0.161]	2.093 [0.458]
Breusch–Godfrey test (1)	0.321 [0.589]	0.196 [0.671]	0.240 [0.632]
White test	5.058 [0.281]	1.522 [0.467]	1.455 [0.483]
Jarque–Bery test	0.302 [0.860]	1.062 [0.588]	1.731 [0.421]
CUSUM test	–0.024 [0.98]	0.218 [0.83]	1.251 [0.233]
Forecast/forecast error for 2016	57.72/4.66%	132.25/37.1%	2630.09/4.18%
Forecast for 2017	66.47/4.57%	157.71/37.5%	2787.29/3.99%
Forecast for 2020	96.22/5.10%	247.72/38.6%	3258.87/3.54%

Note: *p–value* in brackets.
Source: own calculations.

[17] T. Kufel, *Econometrics. Problem Solving with the Use of Gretl Software*, Wyd. PWN, Warszawa 2013, pp. 81–83, 100–119.

When analyzing data concerning number of organizations and parties which were registered in the EMAS system in the period of 2006–2015 and considering the assessments of development trend parameters, one can conclude that the popularity of formalized environmental management systems in Poland has grown. Accepting the assumption of maintaining the previous trend of the number of registrations in the EMAS system the Author forecasts that the number of organizations participating in the European Eco–Management and Audit System will grow from 48 recorded in 2015 to 57 next year and 96 in 2020. The average forecast error in each case does not exceed 10%, which can confirm admissibility of the estimated short–term forecasts of the number of Polish organizations participating in the EMAS system. In order to obtain the full picture of the interest of Polish entities in the EMAS system the Author has also created forecasts of number of parties registered in this system. This is connected with the valid since April 2001 registration procedure dedicated to corporations, which makes it possible to register in EMAS all or a part of enterprises constituting a given corporation under one collective number. The forecasted for 2016 number of parties in Poland participating in the EMAS system is 132, which would indicated growth of interest of Polish entities in implementing formalized environmental management systems by 8%. It is also forecasted that the number of entities participating in the EMAS system in 2020 will grow up to 247, if the trend of the analyzed phenomena does not change. Due to the high ex ante forecast error the estimated relative volume of parties in Poland participating in the EMAS system should be treated with a limited credibility. The estimated parameters of the linear trend function show a potential growth in the number of entities applying for certificates confirming that the implemented by them environmental management systems are compliant with the ISO 14001 standard. This number will grow from 2213 units recorded in 2014 to 2630 units in 2016 and 3259 in 2020.

Conclusion

The goal of Polish energy sector restructuring, which included, among others, vertical consolidation processes of this sector, privatization processes connected with admitting to public trading on the Warsaw Stock Exchange shares of energy companies, investment processes into low–emission and energy saving technologies of electricity and heat production, was aimed at not only adjusting this sector companies to conduct activity in the market condition economy and on the deregulated electricity market, but also in the uncertainty conditions connected with changes in the principles of the EU energy and climate policy. Energy companies include in their operational strategies strengthening their competitive position in the region through carrying out both economic and environmental goals.[18] In particular the environmental goals set by the energy groups in Poland include, among others: modernization of possessed infrastructure in order to improve efficiency of energy production, development of co–generation as an effective way of energy production, development of dispersed energy sources and supporting prosumers, involvement in research projects aimed at decarbonisation of Polish energy industry (energy production segment), and also development and modernization of transmission networks in order to limit losses during transmitting energy and enabling connection of newly created RES, implementation of intelligent measurement and other elements of intelligent networks which improve reliability of energy supplies (distribution segment). In the light of the above mentioned, a properly selected set of environmental management instruments (legal and administrative ones) should create incentives for undertakings aimed at decarbonisation of the Polish energy sector, and also enable gathering resources to finance such undertakings. It is also worth stressing that the growing interest of Polish enterprises in voluntary environmental initiatives, which are connected with implementing environmental management systems compliant with the ISO

[18] S. Marciniak turns attention to the way management methods are selected due to their application usefulness in the aspect of restructuring actions conducted in the conditions of contemporary turbulent environment, see: S. Marciniak…, op. cit., pp. 58–61.

14001 standard or EMAS system. In the near future preventive measures to limit emission of greenhouse gases which accompany processes of electricity production and distribution may be reinforced through implementing an energy management system compliant with the ISO 50001 standard.

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Changes in the economic systems and their structures, progressing currently with great speed and intensity, bring about a need to adapt enterprises and institutions, national economies, integration systems and the global economic system to new conditions and factors of development.The changes, of fundamental significance, are a sign of our times, the times of the new economy and new challenges.Three categories – innovativeness, competitiveness and development – have become the foundation of contemporary economies, their entities and views of their functioning. These categories, being interdependent, give character to the undertaken actions, set the directions of functioning as well as the strategies of operations and managing resources.

The entirety of the Authors' deliberations in the book is divided into three thematic parts:

- Economic development, functional policy and structural changes.
- Competitiveness and innovativeness of economy and its entities.
- The process approach and restructuring in business management.

The publication came into existence on the basis of many years' cooperation of Department of Economics and Organization of Enterprises at Cracow University of Economics with representatives of various Polish and foreign scientific centres and individuals coming from economic practice. Within the framework of this cooperation are organized, among others, conferences, seminars and symposiums, which are a platform for exchanging ideas and views. Results of such cooperation are the following English–language books published by the Foundation of the Cracow University of Economics:

- Borowiecki R., Jaki A. (eds.) (2008), *Enterprises in the Face of 21st Century Challenges. Development – Management – Entrepreneurship,*
- Borowiecki R., Jaki A. (eds.) (2009), *Global and Regional Challenges for the 21st Century Economies,*
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