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SYSTEMIC COMPETITIVENESS – NEW CHALLENGES FOR ENTERPRISES IN THE 21ST CENTURY

Abstract

The presented study notes that in the period of ongoing globalization, it is necessary to look at the new rules of building competitiveness for the enterprises. Consequently, it is reasonable to present the basic assumptions of the overall international competitiveness paradigm adapted to the challenges of modern knowledge-based economy. In this study, the author undertook a critical analysis of five models of international competitiveness and attempted to identify the basics upon which, any organization wanting to meet the demands of the changing global environment, should be based on. In the paper is to draw the attention on the necessity of deepening analysis of new factors which are dedicated to assess competitiveness of modern business systems. The organizations implementing such a business model are determined to hold leading positions in the global system, because due to the use of the multidimensional potential of capital they are capable of continuous creation of added value. According to the author the concept of creating added value with the use of CSR is very important and it requires dissemination.

JEL Classification Code: **F23, D85, L14, M14**.

Keywords: competiveness, Corporate Social Responsibility, CSR, creating added value, globalization, knowledge-based economy, corporate strategy, sustainable development, development of enterprises.

Introduction

In the period of ongoing globalization, it is necessary to look at the new rules of building competitiveness for the enterprises – systemic competitiveness. Reasonable is to present the basic assumptions of the overall international competitiveness paradigm adapted to the challenges of modern knowledge-based

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economy. An attempt was made to identify the basics upon which, any enterprise wanting to meet the demands of the changing global environment, should be based on. It is emphasized that such actions demand continuous improvement of competitiveness and must apply to all areas – areas of capital organization. The challenge the 21st century is to shape international competitiveness in systemization terms. The concept of this challenge is considered appropriate in the case of suitable model of development of enterprises in this new world.

The purpose of this paper is to highlight the need for a new look at the issues of international competitiveness in the era of globalization and to focus efforts on creating a competitive system, which results from actions at the micro-, mezzo-, macro- and meta-economical levels. The presented study notes that in the period of ongoing globalization similar challenges with regard to creating competition, stand against all types of entities – states, groups, other types of organizations, including businesses. Consequently, it is reasonable to present the basic assumptions of the overall international competitiveness paradigm adapted to the challenges of modern knowledge-based economy. In this study, the author undertook a critical analysis of five models of international competitiveness and attempted to identify the basics upon which, any organization wanting to meet the demands of the changing global environment, should be based on. It is emphasized that such actions demand continuous improvement of competitiveness and must apply to all areas – areas of capital organization. In the paper is to draw the attention on the necessity of deepening analysis of new factors which are dedicated to assess competitiveness of modern business systems. It is due to the fact that building creative international teams also made direct competitors in the whole global market has become a requirement, not a choice. Changes in the global economy meant that enterprises have been forced to build their competitiveness on the basis of multi-layered coopetitive network structures. This resulted in the need to find a way to take into account new parameters in models for assessing their competitiveness.The paper presents the concept of the rate of creation of value added measure as a project of multidimensional assessment of network systems with international structures competitiveness. The measure of creation of value added is using multivariable statistical analysis to take into account the qualitative dimension of building international competitiveness based on available quantitative data. The essence of the presented method is to highlight the impact of all five separate layers of company capital on the effectiveness of coopetitive systems.

The paper is divided into five parts: introduction, three general parts and conclusion.

The second part outlines the theoretical concept of systemic competitiveness. It is the explanation of the assumptions of the new model of competitiveness strategy for enterprises – the requirement of international competitiveness in the

21st century. The author discusses the five basics models of international competitiveness of states. The purpose of this part is to highlight the need for a new look at the issues of international competitiveness strategy for enterprises in the 21st century. The analysis of selected models of international competitiveness of states would indicate basic requirements of the general model of competitiveness in the 21st century.

The third section shows Corporate Social Responsibility as a way to create value-added. The author is underlined requirement of inclusion CSR in strategy enterprise which would be still competitiveness in the 21st century. The purpose of this part is to highlight that innovative development based on the creation of added value, which means creating multiple values. It requires consideration of many areas of activity of the organization – the organizational, innovation and institutional aspects of corporate capital. This should be reflected in models for sources of market advantages and principles of creating competitiveness.

The next part of the article proposes an original approach for assessing the competitiveness of enterprises. It seems necessary to take into account the analysis of multiple layers of capital organizations, including those whose value, due to their qualitative nature, is difficult to quantify. For the purpose of this analysis the author takes into account the division into five basic subsystems: market, financial (two other subsystems determine the strength of economic capital) innovation, organizational and institutional (three other subsystems determine the strength of intellectual capital). Its advantage is the use of the available quantitative data to achieve the fullest possible picture of all layers of capital of the organization (including intangible assets). The indicator is based on quantitative indicators (measurable and comparable), which, as a result of proper configuration, make it possible, at least to some extent, to take into account quality measurement conditions for building competitiveness.

The final section it is conclusion, which is an attempt to present a model for the assessment of the competitiveness of enterprises in the 21st century. The author shows the general assumptions of the target model of competition for subjects/areas that want to meet the demands of a changing global environment, seeking long-term competitive position.

The requirement of international competitiveness in the 21st century

The thesis put forward is that in a period of deepening globalization and liberalization, to build competitiveness, in essence means confronting competition throughout the global market. This requires treating competition as a dynamic phenomenon. Competitiveness is associated with the continues building of competitive advantage – the search for its sources, assessing the significance of market position and the potential of existing resources for obtaining competitiveness

and finally, consolidating it. [Krzyżanowska, 2007a and 2007b]. The total amount of resources results from the current position, that is the location of the surrounding structures and is the competitive capital, which determines the choice of a competitive strategy. It includes the measured values of market and financial capital and the hardly quantifiable intellectual capital, including human, organizational and institutional [Rosińska-Bukowska, 2012]. The analysis of the surrounding environment should thus encourage individual enterprises to reinforce the foundations of the competitive potential that will allow them to systematically maintain specific advantages of stability and as a result, improve competitiveness in the long run. Competitiveness is thus the need to build a competitive system, allowing continues adaption to dynamic changes.

One must consider competitiveness in systematic terms, that is as a system of four elements [Gorynia & Łaźniewska, 2008; Gruszecki, 2002]: potential of competitiveness (resources), the ability to compete (instruments and tactics available and used to multiply its potential) competitive advantage (values which stand out in relation to other competitors) and long-term competitive position (strong, stable position in a particular area). The competitiveness building model, in any modern organization – of course, also the enterprise, should be based on the full analysis of the changing global environment, including the diagnosis of economic and intellectual capital. As a result, the competitiveness system consists of four related types of competitiveness [Rosińska-Bukowska, 2012]:

- competitive base – gathered resources;
- operational competitiveness – specific, 'technical' skills;
- competitiveness competence – permanent strengthening of core capabilities;
- systemic competitiveness – the ability to meet high quality standards, and even the creation of added value.

Thusly perceived, systemic competitiveness is the challenge of modern times – challenge to modern enterprises, which wants to meet the growing demands of the dynamic global economy.

In order to indicate new foundation for general model of competitiveness in the 21st century in article were discussed the five basics models of international competitiveness of states. The purpose of this analysis would indicate basic requirements of systemic competitiveness and to highlight the need for a new look at the issues of international competitiveness strategy for enterprises. The analysis includes five models of international economic competitiveness [Radło, 2008]:

- the model by World Economic Forum (WEF);
- the model by Business Environment Group (BEG);
- the model International Institute for Management Development (IMD);
- the model by W. Bienkowski (American Model – AM);
- the model by K. Esser, W. Hildebrand, D. Messner and J. Meyer-Stamer (Systemic Model – SM).

The basis for referring to the international competitiveness strategy for enterprises model is describing in its fullest range, factors of competitiveness and conducting the analysis on four levels [Esser, Hillebrand, Messner & Meyer-Stamer, 2008]: meta – socio-cultural, macro – state policies, mezzo – priorities of specialized areas, micro – enterprise activity – (systemic).

The WEF model distinguishes eight groups of factors existing „in the area" that affects the level of competitiveness: the degree of openness for cooperation, the role of the central body (the state, its parent corporations, supranational institutions) as a regulators of processes within the system under construction; the assessment of the stability of the market situation of the organizations created this way within the world economy system; infrastructure development factors; the quality of production and service base and its structural diversity; the ability to engage in an international system of innovation, creation and dissemination of new standards; the quality of management methods, or the ability to meet the demands of different interest groups; evaluation of the structure and potential of human resources; the managing institutional system – (regulatory).

The BEG model lists five determinants of competitiveness. The factors taken into consideration also apply to all subsystems of organization: market, financial, organizational, technological and institutional. The strength of production and service assets (physical infrastructure) and organizational and structural assets (information and communication networks) and acquired „infrastructure potential" are identified as a type of investment mood, essential for improving the position of the subject in the future.

Within the IMD model the following are identified as the basis for building competitiveness: the image of the initial „economic situation", basic „infrastructure", technical and scientific support underlying the decisions within the areas and the instruments of competition, and the „efficiency of government and management", (institutional model), principles and mechanisms for building the system and the control of intra-organizational flows (financial, human, knowledge). In addition, it is pointed out that the choice of a competitive strategy encourages the „infrastructure of followed values" as reflected in the rules setting out the general framework of building relationships (separate for the EU, U.S. and China). The model includes: basic resources, competence and skills, mechanisms and institutions.

The AM model indicates the following as key: the size and structure of productive resources, efficient use of these resources by selecting the right tools to compete, culture of the organization – a set of values, objectives and principles, reflecting the socio-economic, policy to combat the competition – a model of gaining advantage (cost, awards), the international position of the subject at a particular time – starting point for assessing the prospects of development, taking into ac-

count the openness of the system and its global engagement. The model also emphasizes the „overlap" of particular groups of factors and their interactions.

The SM model underlines the importance of these interactions between different areas and organizes elements of the system, by assigning them to further levels of regulation: the meta – cultural and social conditions, ability to adapt to different requirements of individual areas of global space, the macro – the impact of institutional settings (policies shaping the economic environment), the mezzo – conditions resulting from the specific nature of the area/sector, and the micro – factors related to current activities of the system components.

The advantage of the international competitiveness strategy for enterprises model is to draw attention to the need of considering all levels of the environment as determinants of long-term competitiveness – the systematic approach. Moreover it emphasizes the role of cultural and political environments as motivating competition, creating a social „mood" enforcing competitiveness. Furthermore, emphasis is put on quality, a flexible approach to change and the building of integrated networks.

Corporate Social Responsibility as a way to create value-added – inclusion of CSR with strategy enterprise in 21st century

The purpose of this part of the paper is an attempt to draw attention to the growing importance of CSR in business strategies as a consequence of the fact that the creation of added value is that which decides about the competitive ability of the company. This means that any organization wishing to secure long-term development is obliged to add new values to the generally applicable standard or otherwise create goods and services (economic value), while maintaining standards of „best practice", allowing its social actions to be dubbed responsible (socially valuable). In an attempt to identify areas in which projects implementing added value may be realized, certain theoretical issues related to corporate social responsibility were named, with reference to the latest guidelines in this area. Its essence is an indication that CSR is a new way of thinking, which is based on understanding the effectiveness of corporate social responsibility strategies and, more broadly, what one should pay attention to when assessing the development potential of different organizations. It is vital to mention that resources (financial and market capital), used for the creation of economic value are only competitive potential, which needs to be constantly refined and adjusted to the changes occurring in the environment; this happens thanks to its innovative capital, organizational and institutional, in order to be able to consistently deliver value, which is socially acceptable. That is how the concept of socio-economic value is created, as a new category of goods that customers require. In this way, the

special role of intellectual capital (soft) as a value is shown, without which the accumulated economic capital (hard) is rapidly devalued. It can therefore be said that in the course of economic development and especially the growth of social knowledge, progress has been made as a result of which competition moved to a new, higher level – added value to the already existing standard, yet it is a fact that at this stage it's not technology innovation but rather, organizational, social, environmental, etc.

The conception of strategic congruence is necessary to compete and develop in long term – companies must operate according to requirement of sustainable management. This conception includes: opportunities and threats in the environment, values and resources of the enterprise, which must be balanced to create good, successful corporate strategy. The congruence with the environment is the foundation for the creation of a permanent capacity for added value. Majority of the companies think that strong and socially responsible relations with the stakeholders increase their competitiveness [Coulter, 2005].

Actually the relations with the stakeholders have strong influence on the international competitiveness of company. From the point of view of the corporate strategy, the most important will be the stakeholders which operate in the competitive environment that is the closer the external ones such as competitors, suppliers, intermediary clients, final clients, partners. A certain importance can be also played by the external further stakeholders such as e.g. a government. Apart from the external stakeholders (the closer and the further ones), there are also internal stakeholders (president, board, accountant, employees, trade unions and so on). Another division is into primary stakeholders (in other words active stakeholders) who have a direct influence on the company and into secondary stakeholders (passive stakeholders) who have an indirect influence [Wheelen & Hunger, 2006]. We can additionally indicate two groups of stakeholders: current stakeholders (already existing) and the potential stakeholders (the so-called amorphous). Both groups should match up and can be created as a result of joining the different stakeholders if it is required by a market situation [Penc-Pietrzak, 2014].

Most important is to identify the stakeholders and describe their type. It is strength of the pressure exerted by them on the companies and present a possible evolution of this influence on the closest future. From this point of view one can differentiate [Johnson & Scholes, 1999]:

- the stakeholders who are not very much involved in the company issues and who have little influence on it and who require the minimum attention from the management;
- the stakeholders who are very much interested in the issues of the company but those which exert small impact and those who must be informed about the company's issues on an ongoing basis;

– stakeholders with very low interest in the company's issues but who exert significant influence on it which means that it is necessary to take care of a proper level of their satisfaction from the operation of the company;
– key stakeholders, very much interested in the company issues who have a lot of influence on it, who require a lot of attention from the management as well as taking their needs and requirements in the company's strategy.

In conclusion, CSR is an expression of a kind of innovative development based on the creation of added value, which means creating multiple values: economic, social, ecological, for all stakeholders. It appears that one may use the concept created by M. E. Porter and M. R. Kramer, which refer to creating socio-economic value – model: Creating Shared Value (CSV) [Porter & Kramer 2011]. The external stakeholders must focus on not only the implementation of the tasks which refer to the effectiveness and profitability (investors) but also the implementation of social activities (clients, employees, local communities). The company should get to know their features, aims, motives and mechanisms of the stakeholders activities and react properly to the needs and expectations. It is a concept of inclusive management (Mączyńska, 2015). Key areas for this modern approach to corporate strategy are:

– organizational order – principles of contracts, building intra-organizational relationships, safety and health, approaches to professional development and non-professional staff;
– fair practice – action with regard to anti-corruption education, promoting social responsibility programs creating standards of „good practice";
– human rights – constant monitoring of human rights of the 1st, 2nd and 3rd generation (freedom, equality, solidarity), that is, not only fundamental rights, but also social and living rights and cultural-educational ones; detecting situations which may give rise to danger of breaking any of these laws, especially taking constant supervision of vulnerable groups (gender, nationality, religion, etc.);
– the environment – refers to the prevention of pollution, mitigating the effects resulting from the organizations activity and adapting production systems to occurring climate change;
– consumer issues – honest marketing, including the implementation of educational promotional and advertising campaigns excluding those that mislead the consumer, the implementation of programs aimed at promoting sustainable patterns of consumption, protection of the consumers or even care about the availability of products and product-related services, spare parts and consumables for goods already sold;
– commitment to social and community development – activity in the region (such as creating new jobs and improving the quality of life of employees already working for the organization), to support local initiatives, philanthropic activities targeted especially at the most vulnerable members of the community.

The basic rules of inclusive management as the new approach to corporate strategy must include: accountability – proceedings in accordance with the highest adopted standards; transparency – transparent policy in all areas of activity; ethically – covering matters of governed behavior, including respect for customary and statutory law; congruence – indicating the formation of economic and social value.

The new approach shows that most important are:

- the systematic implementation of international standards, with emphasis on respect for human rights;
- the protection of vulnerable and socially sensitive areas;
- the use of so-called good practice and promoting that among partners and the creating more and more new models of such behavior,
- the overtaking the competition, thanks to the introduction of pro-social innovation;
- the effect of reconciling divergent objectives of many diverse groups of stakeholders, building on the model of common values.

The key issue seems to be the issue to highlight the need to integrate social responsibility in a strategy of modern enterprise. The second principle is that organizational excellence at one point can not be a „cover" for breaking the rules in other areas. The third rule, it should be noted that the incorporation of CSR into the strategy of an organization is not a single act, but is usually a complex and multilayer process. The most important is awareness – pointing the attention of every department and labor group in the organization to the issues of CSR as way to build its competitive advantage. The implementation of CSR in corporate strategy must be systematic and planned activity in further areas of the organization. It is characterized by the uneven emphasis on relations with different stakeholders, which means that there are areas of outstanding „ethics" and areas of business activity with lower levels of social engagement. The already rooted CSR action in the identity of the organization, its organizational culture of the 21st century. The recognition of the fulfillment of CSR standards as one of the key competencies of modern enterprises. This organization that can create added value and through such actions become an industry leader. The approach can be called innovative or interactive as it is based on formation of distinctive competence through actively obtaining information coming from the environment and using that to generate permanent value. The multi-level environment, both internal and external causes that impulses are generated continuously, which allows for continuous improvement of the business model [Jonker, Rudnicka & Reichel, 2011].

It would appear that the guidelines for CSR as a part of corporate strategy are in fact a set of recommendations adapted to the new requirements of the world economy in the 21st century. In dynamically changing environments it needs

to be mentioned that they are the standard for a new management system. The most important challenge is found a new way to identify general principles of an international competitiveness of enterprises.

The concept of evaluation of systemic competitiveness of enterprises

In the modern world the ability to construct a system of interconnections, generating knowledge and innovation and thereby improving the skills of individual members are of paramount importance. Competitiveness must be based on the initial position of the enterprise (core competitiveness). In order to maintain competitive position it is necessary to be creative and innovative (operational competitiveness). This shows the need to improve and consolidate core competence, which is a combination of cooperation and competition (competition competence). Only this allows for long-term advantages enterprise in terms of dynamic changes within the environment – systemic competitiveness. Gathering resources, enabling effective competitiveness in a global environment requires the adoption of the idea of the „interaction of resources", that is to develop different types of business relationships with other entities that control specific resources and/or can provide needed information for adaptation models in a given market. What followed was the reorganization of company structures in such a way that the actual boundaries inside and outside the organization became blurry [Ciabuschi, Perna & Snehota 2012].

Based on research, the author attempted to identify general principles of an international competitiveness paradigm, understood in terms of a „standard model of organization" capable of building a strong competitive position. The basic requirements are as follows:

- ongoing compliance with the criteria, which measure the ability to compete on a global level;
- functioning on the basis of value principles added on the account of solid, internal interactions of all subsystems;
- the local approach – effective combination of global and local (e.g. respect for „local" cultural and social organization);
- transparency of structures and activities – creating regulatory institutions as centers of competence;
- the model of „knowledge organization" – treating intellectual capital as the basis for multiplying accumulated potential (economic capital);
- expansion strategy based on assumptions, adequate to the requirements of economical knowledge – innovation, sustainable development, cooperation
- an active meta-economic policy – consistent with the principles of Corporate Social Responsibility.

Changes in the global economy meant that companies have been forced to build their competitiveness on the basis of multi-layered coopetative network structures. Their essence is to combine cooperation with competition, which based on CSR-strategy. This resulted in the need to find a way to take into account new parameters in models for assessing competitiveness of enterprises in 21st century.

The aim of this part of paper is to present the concept of the rate of the creation of added value, using multivariable statistical analysis to take into account the qualitative dimension of building international competitiveness based on available quantitative data. The essence of the presented method is to highlight the impact of all five separate layers of company capital on the effectiveness of organization. The company business systems were division into basic subsystems: market, financial, innovation, organizational and institutional.

The market subsystem reflects the possible combinations of the most efficient allocation of scarce resources in the production and sale of goods and services – production systems used at any given time. The financial sub-system is used to evaluate the effectiveness through the prism of current profits, market value and the ability to maintain liquidity. These subsystems are the pillars of the economic capital.

Three other subsystems determine the strength of intellectual capital. The innovation subsystem is a source of improving the quality of individual proposals, especially on key competences (eg. specializing in handling specific segments). It's analysis is based on an examination of expenditures for research and development activities, to provide innovative solutions in terms of products and operations (eg. the production organization techniques). The essence of the organizational subsystem is, in turn, transforming their resources into capital by building pathways for company structures to adjust, based on opportunities offered by its surroundings. The choice of organizational forms that are adequate to the place of business, contribute significantly to improving the effectiveness of the system [Claver-Cortés, Pertusa-Ortega & Molina-Azorín, 2012]. The result of its performance is to change resource (quantifiable) in capital, generating added value (quality approach). The subsystem is responsible for the systematic modification of the value chain and must be taken into account in the study of competitiveness. It is also responsible for the creation of linkages adequate to the situation, including coopetitiveness. The creative use of multi-institutional potential of the surroundings is the role of the institutional subsystem. 'Institutions' create external (with business partners) and internal relations – eg. good practice in relation to employees that allow for more efficient use of their talents [Kim et. al., 2012].

The analysis of five subsystems is multidimensional and allows one to include a number of new factors integrated into the competitive strategies that were previously overlooked. This means analysing architectural relationships established

among the various subsystems (internal conditions) and the congruence principles with the surroundings (external conditions).

Within the proposed concept the element reflecting the state of the economic capital of the company is Return On Equity (ROE), which combines elements describing the area of finance, production and sales. This indicator considers the impact on the profitability of committed capital of three important factors: operational efficiency, expressed by return on sales, efficient use of acquired assets and leverage, reflecting the impact of the involvement of foreign capital to increase profit per equity unit: Equity multiplier.

When selecting elements that represent the intellectual capital, so called direct methods of valuation were used [Sveiby, 2015]: *Holistic Value Approach* [Pike & Roos, 2000], *Intellectual Capital* Dynamic Value [Bounfour, 2003], *Intellectual Capital Benchmarking System* [Viedma, 2001] and *Estimated Value Via Intellectual Capital Analysis* [McCutcheon, 2008]. It was found that the ability for the creation of added value is often connected with the strength of intellectual capital, but emphasizing that it is a potential for growth, which requires adequate implementation and support of adequate economic capital.

Based on research, the author attempted to create new concept of evaluation of systemic competitiveness of enterprises. In this model have been used five parameters: profitability index of equity [ROE], the cost of research and development per employee, engagement of intangible assets in the value of sales [(MV–SE)/S] and internationalization indicators of assets and employment. The key is to emphasize the importance of networks (four levels: meta-, macro-, mezzo- and micro-economic) and the international nature of these systems [Esser et al., 2008], which is intended to draw attention to the necessity to combine cooperation and competition in order to meet today's challenges.

It was equally important to introduce a parameter indicator [(MV–SE)/S]. In this way, they tried to „measure" the importance of a business network, entangling the enterprise, for sales volume being carried out by the central subject [MV–SE], that is the difference between the market value and own property valuation was considered as a key part of the intellectual capital – valuation of the CSR network system. The network capital is based on a system built by company relationships and business connections, not necessarily visible in materialized form, which includes owned holdings, joint venture or formal cooperation agreements. The company has possession many of these types of assets through a sustainable development. It is an attempt to quantify the hidden factors increasing the competitive potential through implementation of full CSR strategy.

The constructed synthetic indicator is designed to reflect the ability of the company to create added value through power connections of all categories of capital held within the network.

Conclusion

The proposed elements of the paradigm of international competitiveness appear to be a real challenge – opportunity for modern enterprises seeking ways to build its position in the global economy. Only through the consistent implementation of the following requirements competitiveness of the enterprise can gain the ability to compete effectively in the global space business. Only through consistent in the implementation of the following requirements competitiveness of the enterprise can gain the ability to compete effectively on the global business scene. Company must meet the basic condition for output – accumulated appropriate base growth potential. The next step is to create a system of transnational governance of regulatory nature – as a model of authority seems to be adequate as a mechanism of control of evolutionary networks. The modern enterprise must also function as a cooperation system encouraging competition, cooperation and multiculturalism, which is equivalent to local system structures. Paramount importance is of reform of the organizational structure of the enterprise – first of all the continuous a constant can be regarded as efforts to improve its transparency. Even more important seems to be taken by the enterprise challenges of building a knowledge-based economy. The implementation of an intelligent organization model based on „knowledge organization" is the recognition of intellectual capital as an important growth factor, which is reflected in the emphasis on involvement in innovative projects that contribute to sustainable development and exploitation of synergies and the diversity of 'local' specific regions.

Consequently, by adopting a systemic model of competitiveness, modern states by competing with „soft added value", such as projects of social responsibility, can improve its chances for development. For the enterprise to be recognized as having the capacity to build a competitive system it is, however, necessary to make wider use of management methods that involve diverse multicultural competence of the environment. The article is an attempt to present a model for the assessment of the competitiveness of enterprises in 21st century – as a view combining the properties of positional and resource streams [Gorynia & Dzikowska, 2012], taking into account the importance of the international context. The network capital of organization is based on a system built by company relationships and connections with all stakeholders.

The presented synthetic indicator is designed to reflect the ability of the company to create added value through power connections of all categories of capital held within the relationship network. The concept of synthetic indicator of creating of added value is an attempt to quantify the hidden factors increasing the competitive potential of organization in through implementation of full CSR strategy. Maturity in the field of CSR can attest the overall maturity of organization, which is why the analysis of aspects of corporate social responsibility are

becoming more and more part of the development potential of the assessment and valuation of companies. The purpose of the paper was among others an attempt to draw attention to the growing importance of CSR in business strategies as a consequence of the fact that the creation of added value is that which decides about the competitive ability of the company. Its essence is an indication that sustainable management is a new way of thinking, which is based on understanding the effectiveness of social responsibility strategies and, more broadly, what one should pay attention to when assessing the development potential of organizations.

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THE STABILIZING ROLE OF UNEMPLOYMENT BENEFITS IN POLAND

Abstract

This study examines the impact of unemployment benefit system in stabilizing the economy in Poland in 2008-13. The goal is to answer the question: by how much do the automatic stabilizers in the Polish unemployment benefit system lower the volatility of aggregate demand? The effectiveness of unemployment benefits` automatic response to demand decline is measured using short-term elasticities of employment and government expenses for unemployment benefits with respect to output and marginal propensity to consume out of temporary change in income. To evaluate if automatic stabilizers have no delayed impact on the economy the IRF function in three variable VAR model is used.

The paper concludes that unemployment benefits dampened consumption volatility by approximately 0,008% GDP. Impulse responses were used to simulate the dynamic response of disposable income and individual consumption to government's unemployment benefit payouts. Small stabilizing effectiveness of unemployment compensation can be explained by law rate of unemployed entitled to receive the compensation and also by the fact that insurance benefit payouts for unemployed people accounted only for 0,8% of total government expenses..

JEL Classification Code: **E62, E21, E32**.

Keywords: automatic stabilization, private consumption, business cycle.

Introduction

Stabilizing role of unemployment benefits is that they provide temporary partial compensation for the loss of earnings caused by unemployment. Since earnings decline often goes with the decline in households' consumption, increase in unemployment generally leads to dampen economic growth. Thus cyclical gov-

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ernment's expenses on unemployment compensation cushion the economy from the negative results of recession by helping to maintain the consumer purchasing power. Then, unemployment benefits do in a stabilizing manner. They increase automatically during recessions when the rate of unemployment is getting higher and decrease in periods when economic activity and employment rise.

This study examines the impact of unemployment benefit system in stabilizing the economy in Poland in 2008-2013. More concretely, the goal is to answer the question: by how much do the automatic stabilizers in the Polish unemployment benefit system lower the volatility of aggregate demand? The effectiveness of unemployment benefits` automatic response to demand decline is measured using short-term elasticities of employment and government expenses for unemployment benefits with respect to output and marginal propensity to consume out of temporary change in income. To evaluate if automatic stabilizers have no delayed impact on the economy the IRF function in three variable VAR model is used.

The paper is structured as follows. The first chapter provides a brief overview of the legislative enactments that affect the performance of unemployment benefit system in Poland in 2008-2013. Chapter II reviews relevant earlier studies concerning the stabilizing role of unemployment benefits. In chapter III model is estimated and the effectiveness of unemployment benefits as automatic stabilizers is calculated. The last chapter summarizes the results and concludes.

Unemployment benefit system in Poland in 2008-2013

Act of 20 April 2004 on the promotion of employment and labor market institutions introduces eligibility requirements to receive unemployment benefits in Poland. According to the Act unemployed is a person who is jobless, aged from 18 to retirement age, able and ready to work full-time and does not not possess agricultural land in excess of 2 ha.

The right to unemployment benefit is granted to a registered unemployed person if there are no proposals of suitable employment, no referral to subsidized job, apprenticeship, on-the-job-training. The person during the period of 18 months preceding the day of registration should be employed for a period of at least 365 days or perform other profitable tasks and reach remuneration that equals to at least of the minimum remuneration and from which the contribution to the Labour Found had been paid. Unemployed persons can receive unemployment insurance for 6 or 12 months. 6 months – in case of the unemployed who during the period of receiving the benefit, reside in district where the unemployment rate on the 30th June of the year preceding the date of acquiring the right to benefit did not exceed 150% of the national average unemployment rate. A year – in case of the unemployed who during the period of receiving the benefit, reside in the district where the unemployment rat on the 30th June of the year preceding

the date of acquiring the right to benefit exceeded 150% of the national average unemployment rate or in case of the unemployed at the age 50 or more who have at least 20 years of unemployment benefit eligibility period.

The amount of unemployment benefit depends on the seniority and the period of receiving the benefit. The level of benefit is calculated once a year, on the 1st of June, and also the benefit is a subject to indexation by consumer prices growth index in previous year.

Table 1. The monthly level of unemployment benefit in 2008-2013

Period of the validity		80 per cent of benefit (persons having less then 5 years of unemployment benefit eligibility period)	100 per cent of benefit (persons having from 5 to 20 years of unemployment benefit eligibility period)	120 per cent of benefit (persons having more then 20 years of unemployment benefit eligibility period)
2007.06.01-2008.05.31		430,70 PLN	538,30 PLN	646,00 PLN
2008.06.01-2009.05.31		441,50 PLN	551,80 PLN	662,20 PLN
2009.06.01-2009.12.31		460,00 PLN	575,00 PLN	690,00 PLN
2010.01.01-2010.05.31	In the period of first three months of unemployment benefit eligibility	573,60 PLN	717,00 PLN	860,40 PLN
	In the period of subsequent months of unemployment benefit eligibility	450,40 PLN	563,00 PLN	675,60 PLN
2010.06.01-2011.05.31	In the period of subsequent months of unemployment benefit eligibility	593,70 PLN	742,10 PLN	890,60 PLN
	In the period of subsequent months of unemployment benefit eligibility	466,20 PLN	582,70 PLN	699,30 PLN
2011.06.01-2012.05.31	In the period of subsequent months of unemployment benefit eligibility	609,20 PLN	761,40 PLN	913,70 PLN
	In the period of subsequent months of unemployment benefit eligibility	478,40 PLN	597,90 PLN	717,50 PLN
2012.06.01-2013.05.31	In the period of subsequent months of unemployment benefit eligibility	635,40 PLN	794,20 PLN	953,00 PLN
	In the period of subsequent months of unemployment benefit eligibility	498,90 PLN	623,60 PLN	748,30 PLN
2013.06.01-2014.05.31	In the period of subsequent months of unemployment benefit eligibility	658,90 PLN	823,60 PLN	988,30 PLN
	In the period of subsequent months of unemployment benefit eligibility	517,40 PLN	646,70 PLN	776,00 PLN

Source: Act of 20 April 2004 on the promotion of employment and labor market institutions.

Law changes concerning eligibility requirements to receive unemployment benefits which went into effect in 2010 do not improve benefits' stabilization function. According to Central Statistical Office of Poland people in Poland have been searching for a job for a year on average (Świech, 2013). Then most unemployed after three months period receive lower amount of compensation which reduces the level of their disposable incomes.

Stabilizing performance of unemployment benefits depends strongly on the rate of jobless people eligible for receiving the compensation and on the level of government expenses for unemployment insurance.

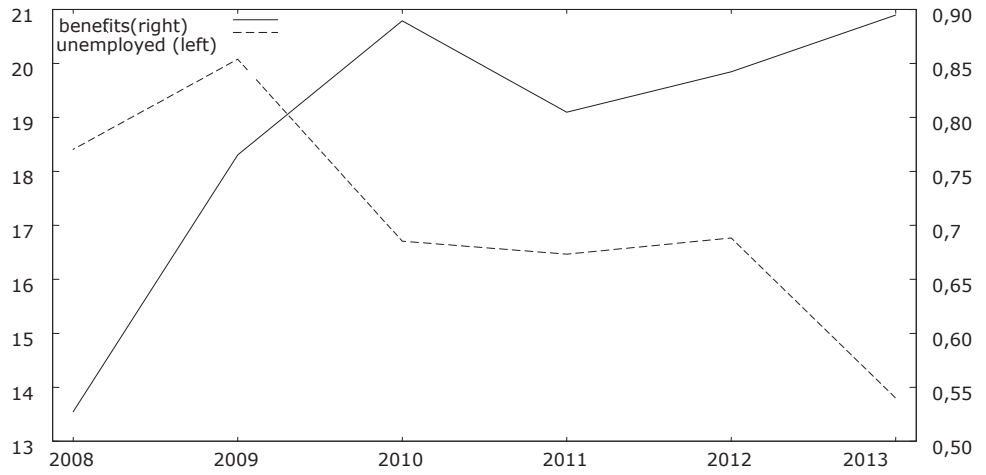

Figure 1. Share of eligible jobless for receiving the compensation in total number of registered unemployed and share of benefit payouts in total government expenses in Poland in 2008-2013.

Source: Calculations performed using GRETL based on source data from Public Employment Services.

In 2008–2013 benefit payouts for unemployed people accounted for 0,8% of total government expenses. In the same time, number of unemployed entitled to receive insurance decreased. In the analyzed period of time it was only 17% of all registered jobless in Poland. There are several reasons of that state of affairs. Firstly, majority of registered unemployed, these are long term unemployed who do not have rights to claim the benefits. Secondly, to be eligible for receiving the benefit, unemployed during the period of 18 months preceding the day of registration should reach remuneration that equals to at least of the minimum remuneration. According to Polish Ministry of Labor and Social Policy about 3,7% of employed people work for less than minimum salary on basis of junk contracts

(Marczuk, 2013). Thirdly, in the employment agencies there are registered from 30 to 40% people who officially have never worked. These unemployed are only interested in health insurance which they obtain while getting status of being unemployed. In fact they earn income in underground economy.

Literature Review

D.W Elmendorf and J. Furman (Elmendorf, Furman, 2008, p. 10-19) define criteria for a good stabilizer. As Elmendorf and Fuhrmann argue, fiscal stabilization should be timely, targeted and temporary. Fiscal policy tools can only stabilize the business cycle if they work in a timely matter. While automatic stabilizers usually have other, additional goals beyond smoothing the business cycle, the more targeted they are on macroeconomic stabilization, the larger the stabilization effect they can provide to the economy. Finally, by definition, their payments should only be temporary as by definition an economy will only be the downswing period for part of the business cycle and it is in the nature of automatic stabilizers not to increase the already large long-run budget deficit.

Politically, an automatic stabilizer should be transparent and robust to attempts of manipulation by national governments. Transparent here means that its payment flows should be easy to understand and logical not only to insiders, but at least to the interested public. Robust here means that it should not adversely affect the incentives of national governments for employment-friendly reforms and that it should not be possible by national governments to induce payment flows by altering minor details of their statistics or labor market legislation (European Commision, 2013, p. 3-4).

Over the last decade, the stabilization impact of the unemployment insurance system has not been a primary focus of attention for many economists. That is not surprising, given the fact that the 2000's have provided quite long period of uninterrupted economic growth in global economy. The latest studies were published by the way the assessment of fiscal policy efficiency after financial crisis which officially started with the collapse of Lehman Brothers.

Vroman, using the econometric model supported by Economy.com of Moody's Investor Service, examined the performance of unemployment insurance system as an automatic stabilizer of economic activity in the USA in the period from the third quarter of 2008 to the second quarter of 2009. In the USA the cyclical response of regular unemployment benefits during recessions is often enhanced through legislation. Specifically, during recessions, typically there has been some form of federally financed unemployment benefit extension. In 2008-2009 the unemployment benefit program incorporated three levels of benefits:

1. Regular unemployment benefits – they are paid up to 26 weeks for most eligible persons.

2. Temporary (or emergency) federal benefits – they flow to qualified claimants who have exhausted their regular benefits and are paid under conditions set by emergency federal legislation up to 53 weeks.
3. Federal-State Extended Benefits – are available in periods when unemployment-related triggers activate the Federal-State Extended Benefits program. They become available only by an act of the U.S. Congress These benefits are paid up to 73 weeks.

Combining all unemployment benefit system`s components, overall, the unemployment benefit program prevented roughly 18 percent of the decline that would have otherwise occurred in aggregate real output (Vroman, 2008, p. 4).

It is worth underlying that combined payouts under the unemployment benefit system total reached $128 billion in 2009. The $128 billion represented 0.9 percent of GDP in 2009, the second highest percentage over the 63 years between 1947 and 2009 (Vroman, 2008, p. 15).

Dolls, Fuest and Peichl, using microsimulation models for 19 European countries (EUROMOD) and the US (TAXSIM), analyzed the effectiveness of the tax and transfer systems in the European Union and the US to act as an automatic stabilizer in the latest economic crisis. They found that unemployment benefits alone absorb 19% of the shock in Europe compared to just 7% in the US (Dolls, Fuest, Peichl (2010), p. 15). In their study the Authors analyzed only the first level of American unemployment insurance system (regular unemployment benefits) which explains such a big difference between the US and European Union.

Chimerine, Black and Coffey stress that only the regular benefits program is the most fully automatic: regular UI benefits flow to qualified unemployed workers immediately, without any external policy intervention required. Extended and supplemental benefits go beyond the definition of automatic stabilizers (Chimerine, Black, Coffey, (1999), s. 12-13).

Comparing the role of automatic stabilizers for demand smoothing in European Union: it is the biggest in Denmark, Sweden, Germany and Netherlands and the smallest in Estonia, Italy, Greece and Poland (Dolls et al. (2010), p. 16).

Darby and Melitz examined the cyclical responsiveness of government expenditure on health, retirement benefits, incapacity benefits and sickness pay as well as unemployment compensation in the group of 21 members of OECD from 1982 to 2003. They found that expenditures on health, retirement, incapacity and sick pay react prominently to the cycle and are more effective in demand stabilization than unemployment benefits. Automatic stabilization was estimated as the automatic impact of an extra percentage-point of output gap on an extra percentage-point of budget surplus relative to output. Darby and Melitz calculated that every percentage point of an output gap yields around 0.06 of a percentage-point of unemployment compensation. But there is also 0.3 of a percentage point of additional social spending on health, retirement, incapacity and sick benefits. The

extent of automatic stabilization through all elements of social expenditure on households therefore is five times larger than the part coming from unemployment compensation alone (Darby, Melitz, (2008), p. 722-723).

McKay and Reis estimated that transfer payments to the unemployed and those on food stamps have been quite effective stabilizers, contributing to a lower variance of output by 13% (McKay, Reis (2012), p. 35). They also found that the traditional Keynesian channel used to support automatic stabilizers is quantitatively weak. While raising the disposable income of consumers during recessions increases aggregate demand and output, this has a small effect over the business cycle. According to McKay and Reis a more important channel for stabilization was redistributing resources from richer agents, that have lower marginal propensities to consume and change their labor supply as their after-tax wealth changes, towards poorer agents, with higher marginal propensities to consume and are without a job so cannot decrease hours worked any further (Ibid., p. 31). At the same time, because this redistribution provides social insurance against idiosyncratic shocks, households hold fewer assets to self-insure, which raises the volatility of consumption in response to aggregate shocks (Ibid., p. 2).

Conclusions from presented literature on the countercyclical effects of the unemployment insurance program are presented below:

- the cushioning effect of unemployment benefits depends on the one hand on marginal propensity to consume and on the other on the value of government benefit payouts which usually is related to the size of public sector;
- the role of unemployment benefit as automatic stabilizer may be enhanced by extended programs aimed to unemployed but they are not completely automatic in their economic stabilization role;
- relatively low values for automatic stabilization effects of unemployment compensation are fund comparing to automatic movements in health spending, pensions, incapacity benefits and sick pay.

Estimating the automatic response of unemployment benefits in Poland in 2008-2013

Basis of the methodology to assess the automatic response of unemployment benefits is simple Keynesian model. Its main assumption is that the consumption is a function of disposable income. Disposable income is the amount left to a household after paying taxes and receiving transfers from government.

To estimate the cushioning impact of unemployment benefits, the methodology proposed by M. Mackiewicz and P. Krajewski (Mackiewicz, Krajewski, (2008), pp. 12-18) is used.

Value of government expenses for unemployment benefits can be calculated using the following equation:

$$WZ = U \cdot wz \tag{1}$$

where: WZ – denotes government expenses for unemployment benefits, U – denotes number of unemployed and wz – denotes the average value of unemployment benefit.

As mentioned above, unemployment benefits counteract business cycle fluctuations through changes in households` disposable incomes and smoothing the consumption. To estimate how effective unemployment benefits in reducing consumption fluctuations a simple "Keynesian-like" formulation is used:

$$\frac{\Delta C}{\Delta Y} = \frac{\Delta C}{\Delta Y^{dys}} \cdot \frac{\Delta Y^{dys}}{\Delta WZ} \cdot \frac{\Delta WZ}{\Delta Y} \tag{2}$$

where: Y – denotes GDP, Y^{dys} – denotes disposable income and C – denotes consumption.

Presuming that:

$$\frac{\Delta Y^{dys}}{\Delta WZ} = -1 \tag{3}$$

the following expression is obtained:

$$\frac{\Delta C}{\Delta Y} = -\frac{\Delta C}{\Delta Y^{dys}} \cdot \frac{\Delta WZ}{\Delta Y} \tag{4}$$

Short-term elasticity unemployment benefits payouts in relation to GDP is defined as:

$$E_{WZ,Y} = \frac{\Delta WZ}{\Delta Y} \cdot \frac{Y}{WZ} \tag{5}$$

The assessment of the effectiveness of unemployment benefits is performed using marginal propensity to consume (MPC) out of temporary changes in income, then:

$$\frac{\Delta C}{\Delta Y} = -\frac{\Delta C}{\Delta Y^{dys}} \cdot \frac{\Delta WZ}{\Delta Y} \tag{6}$$

and finally, the unemployment benefits' effectiveness as automatic stabilizers can be estimated using the expression:

$$\frac{\Delta C}{\Delta Y} = -c \cdot E_{WZ,Y} \cdot \frac{WZ}{Y} \tag{7}$$

The higher ΔC/ΔY in absolute value, the more effective unemployment benefits in smoothing consumption and GDP.
Developing the formula of short-term elasticity unemployment benefits payouts in relation to GDP, the following expression is obtained:

$$E_{WZ,Y} = \frac{\Delta WZ}{\Delta Y} \cdot \frac{Y}{WZ} = \frac{\Delta(U \cdot wz)}{\Delta Y} \cdot \frac{Y}{WZ} = \left(\frac{\Delta U}{\Delta Y} \cdot wz + U \cdot \frac{\Delta wz}{\Delta Y} \right) \cdot \frac{Y}{WZ} = \frac{\Delta U}{\Delta Y} \cdot \frac{WZ}{U} \cdot \frac{Y}{WZ} + \frac{\Delta wz}{\Delta Y} \cdot \frac{U \cdot Y}{U \cdot wz} = \frac{\Delta U}{\Delta Y} \cdot \frac{Y}{U} + \frac{\Delta wz}{\Delta Y} \cdot \frac{Y}{wz} \tag{8}$$

Presuming that the average unemployment benefit per unemployed does not change during the business cycle, i.e.: Δwz=0, the following expression is obtained:

$$E_{WZ,Y} = \frac{\Delta U}{\Delta Y} \cdot \frac{Y}{U} \tag{9}$$

Presuming that:

$$U = ZS - Z \tag{10}$$

where: ZS denotes labor resources and Z denotes number of persons employed.
Presuming that labor resources do not change in the short time, using (10), the formula of short-term elasticity unemployment benefits payouts in relation to GDP is given by:

$$E_{WZ,Y} = \frac{\Delta U}{\Delta Y} \cdot \frac{Y}{U} = -\frac{\Delta Z}{\Delta Y} \cdot \frac{Y}{Z} \cdot \frac{Z}{U} = -\frac{\Delta Z}{\Delta Y} \cdot \frac{Y}{Z} \cdot \frac{ZS - U}{U} = -\frac{\Delta Z}{\Delta Y} \cdot \frac{Y}{Z} \cdot \frac{\frac{ZS}{ZS} - \frac{U}{ZS}}{\frac{U}{ZS}} = -\frac{\Delta Z}{\Delta Y} \cdot \frac{Y}{Z} \cdot \left(\frac{1-u}{u} \right) \tag{11}$$

where: $u = \frac{U}{ZS}$

Base to estimate short-term elasticity unemployment benefits payouts in relation to GDP $\left(\frac{\Delta Z}{\Delta Y} \cdot \frac{Y}{Z} \right)$ is the following equation:

$$Z_{t,i} = \alpha_0 + \alpha_1 GDP_{t,i} + \varepsilon_{t,i} \tag{12}$$

where: $Z_{t,i}$ – denotes the dynamic of employment growth in relation to corresponding quarter of previous year, $PKB_{t,i}$ – denotes the dynamic of GDP growth in relation to corresponding quarter of previous year, t denotes number of year; i – denotes number of quarter.

Equation (12) estimation was performed with the classical least squares method using GRETL software. The estimation results show there is autocorrelation of the residuals in the model, so the relation between dynamic of GDP growth and the dynamic of employment growth was estimated based on the equation:

$$Z_{t,i} = \alpha_0 + \alpha_1 GDP_{t,i} + \tau_{t,i} \tag{13}$$

where: $\tau_{t,i} = \rho \cdot \tau_{t-1,i} + \varphi_{t,i}$, for $i = 1$

Table 2 reports the results of the regression:

Table 2. The equation (13) parameters estimations

	α_1	α_0
Parametr estimation	-0,28***	1,3
R^2	0,98	
DW	2,01	

Source: Calculations performed using GRETL.

Obtained the equation (13) parameters estimations show that GDP was statistically significant determinant of employment during analyzed period of time. Negative employment elasticity growth may reflect adjustment mechanisms on labor market caused by negative economic shock. Labor market adjustment mechanisms may have different forms: from the pressure to cut the wages through reducing of working time to employment reducing (Kwiatkowski, Wlodarczyk, (2013), p. 4-6). Scale of quantitative employment adjustment depends on institutional factors such as employment protection and fixed-term employment (Ibidem, p. 9). The stronger employment protection laws, the smaller unemployment growth in crisis. To assess the level of employment protection, described and calculated by OECD, Employment Protection Legislation (EPL) indicator is used. EPL indicator range in integer values from 0 to 6, with higher values representing stricter regulation. Value of EPL for Poland is 2 which means that Poland is amongst the most flexible economies for regular employment. There is a strong relationship between employment elasticity and fixed-term contracts. The higher rate of fixed-term contracts of employment, the higher level of employment protection. For employer work force reduction cost is so high that

more profitable for him is to stash away the labor force. In 2012 in Poland share of fixed-term contracts in total employment was one of the highest among OECD countries (Ibidem, p. 10).

Low level of employment protection in Poland has not enhanced employment stabilization in crisis. Although there was no recession in Poland (two consecutive quarters of negative economic growth), the output growth was so low that led to unemployment growth. Estimates show that a real GDP growth rate should be at least of about 3 per cent to create new jobs (Komuda, 2013).

Presuming that the average unemployment rate came in at 12 per cent and also estimation result of short-term employment elasticity in relation to GDP, short-term elasticity unemployment benefits payouts in relation to GDP on the level of 2,05 is received. It means that increase in real GDP by 1 per cent entails the increase in unemployment benefits payouts by about 2 per cent.

To assess the effectiveness unemployment benefits as automatic stabilizers, marginal propensity to consume out of temporary changes in income should be calculated (c). To calculate c parameter Keynesian consumption function was estimated:

$$W_t = \beta_0 + \beta_1 D_t + E_t \tag{14}$$

where: W_t – denotes households` expenses per person (in PLN), $D_t$ – denotes households` disposable income (in PLN).

Because of lack quarterly data concerning households` expenses per person and disposable income in 2008-2013, disaggregation of annual time series to quarterly figures was used to estimate the model.

Equation (14) estimation was performed with the classical least squares method. The estimation results show there is autocorrelation of the residuals in the model. To remove serial autocorrelation in residuals to a linear regression, Cochrane-Orcutt method was applied (Górecki, s. 131). The equation (14) parameters estimations are shown in Table 3.

Table 3. The equation (14) parameters estimations

	β_1	β_0
Parametr estimation	0,57***	312,5
R^2	0,95	
DW	1,62	

***Variable significant at significance level of 1%.

Source: Calculations performed using GRETL.

β_1 parameter describes marginal propensity to consume out of permanent changes in income. As mentioned above, to assess the automatic stabilizers effectiveness MPC out of temporary changes in income should be taken into account because it reflects output fluctuations during the business cycle. Then c parameter was calculated using the formula:

$$c = \left(\frac{\Delta W}{\Delta D} \cdot \frac{D}{W} \right) \cdot \frac{W}{D} \tag{15}$$

where: $\left(\frac{\Delta W}{\Delta D} \cdot \frac{D}{W} \right)$ – denotes elasticity of expenses per person with respect to disposable income. It was estimated as β_1 parameter in equation (14).

Having calculated expenses per person – disposable income ratio in analyzed period of time (0,84), the value of marginal propensity to consume out of temporary changes in income is 0,48. Estimated values of MPC (0,57 i 0,48) are close to Permanent Income Hypothesis (Friedman, 1957, Modgiliani i Brumberg, 1954) which postulates that marginal propensity to consume out of temporary changes in income is lower than out of permanent income.

Based on equation (7), the effectiveness of unemployment benefits in smoothing consumption fluctuations was estimated. The obtained score is 0,008 per cent. It means that from 2008 to 2013 1 per cent GDP decrease led to increase unemployment benefit payouts and households' disposable incomes and as a result to increase in consumption by 0,008% GDP.

Small amount of unemployment benefits and low rate of jobless people eligible for receiving the compensation decide that this tool of passive fiscal policy is the least effective comparing to other European Union countries.

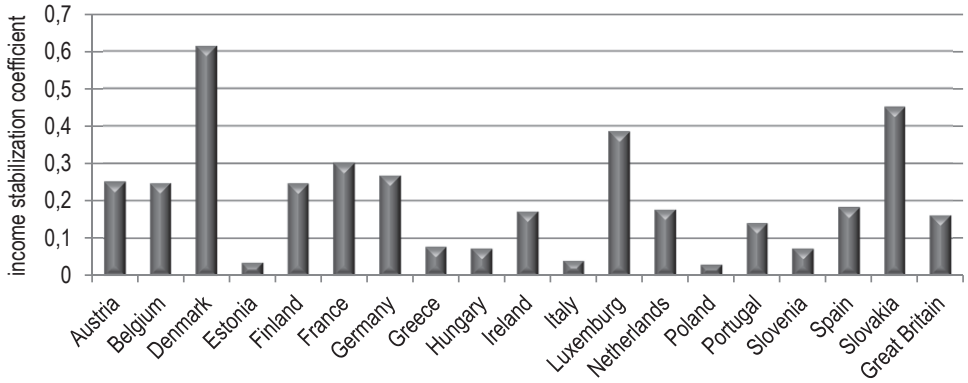

Figure 2. Stabilizing performance of unemployment benefit in European Union countries during financial crisis

Source: Dolls, Fuest, Peichl (2010), s. 16.

Stabilizing performance of unemployment benefits system depends on social policy model. Generally the more generous system of unemployment insurance, the bigger role of this system for demand smoothing. Negative relationship between the size of public sector and effectiveness of automatic stabilizers are confirmed by numerous empirical research . Baunsgaard and Symansky suggest that there are ways to enhance the automatic stabilizers without raising the size of government. This can be done by introducing targeted cash transfer programs and well-designed public work programs temporarily during economic crises (Baunsgaard, Symansky, 2009, p.13).

In order to assess if unemployment benefits work in a timely matter, the VAR analysis is presented. The three variable VAR is of the form:

$$CSWZ_{i,t} = \mu_1 + \sum_{i=1}^{k} \alpha_{1k} CSWZ_{i,t-k} + \sum_{i=1}^{k} \beta_{1k} C_{i,t-k} + \sum_{i=1}^{k} \varphi_{1k} Y_{i,t-k}^{dys} + \varepsilon_{1t} \tag{16}$$

$$C_{i,t} = \mu_2 + \sum_{i=1}^{k} \alpha_{2k} C_{i,t-k} + \sum_{i=1}^{k} \beta_{2k} CSWZ_{i,t-k} + \sum_{i=1}^{k} \varphi_{2k} Y_{i,t-k}^{dys} + \rho_{1t} \tag{17}$$

$$Y_{i,t}^{dys} = \mu_3 + \sum_{i=1}^{k} \alpha_{3k} Y_{i,t-k}^{dys} + \sum_{i=1}^{k} \beta_{3k} CSWZ_{i,t-k} + \sum_{i=1}^{k} \varphi_{3k} C_{i,t-k} + \lambda_{1t} \tag{18}$$

where: *CS WZ* – denotes cyclical element of unemployment benefits spending (in mln PLN); *C* – denotes individual consumption (in mln PLN) and Y^{dys} – denotes disposable income (in mln PLN).

All the above mentioned time series have a quarterly frequency and cover the period from the first quarter of 2008 to the fourth quarter of 2014.

The cyclical element of unemployment benefits spending was estimated on the basis of formula introduced by van den Noord (van den Noord, 2000, p. 18):

$$CSWZ = \frac{1 - \left(\frac{Y^*}{Y}\right)^{E_{WZ,Y}-1}}{Y} \cdot WZ \tag{19}$$

where: Y^* – denotes the level of potential output.

Before the VAR model estimation it was necessary to specify stationarity of the analyzed time series. To this purpose the Augmented Dickey-Fuller Test (ADF) was used.

Table 4. ADF test with constant and trend

Time series	Order of integration
CS WZ – cyclical element of unemployment benefits spending	I(0)
C – individual consumption	I(I)
Y^{dys} disposable income	I(I)

Source: Calculations performed using GRETL.

It can be seen from the table 4 that only the variable *CS WZ* is a stationary series. The ADF test also assumes that the variables: *C* and Y^{dys} integrated of order 1. Non-stationary variables might lead to spurious regression. In this case the results might suggest a statistically significant relationship between the variables in the model, when in fact this is just evidence of contemporaneous correlation. Non-stationary time series could be converted to a stationary time series by taking first differences of the *C* and Y^{dys}. The series that is stationary with the first difference is said to be integrated of order one.

For the purposes of the analyses, two lags period (two quarters) between explanatory variables was adopted. The choice of lag lengths is in line with results of the information criteria of the Akaike, Schwartz-Bayesian and the Hannan-Quinn models. According to these criteria, a model with two lags length is characterized by the biggest information capacity.

Another stage of the analysis was an estimate of structural parameters of the VAR model. Results of the parameter estimate of the VAR model consisting of 3 equations are in the Appendix 1. Obtained estimates confirmed statistically significant relationship between the cyclical element of unemployment benefits spending and individual consumption. Additionally, according to the reported Ljung-Box (Q) test, residuals from the VAR model have no *autocorrelation*. The Doornik-Hansen test for multivariate normality confirms the presence of a normally distributed random variable. Test for Multivariate ARCH Effects confirms homoscedasticity of random variables.

Below one can see respective graphs of the impulse response functions of individual consumption and disposable income to a one-time unit change of unemployment benefit payouts and also IRF of individual consumption to a one-time unit change of disposable income.

The impulse responses given in figure 2 indicate a sharp fall in disposable income after a shock to unemployment benefits payouts. This conclusion confirms that stabilization effect of unemployment benefit is rather small. Negative influence of unemployment benefits payouts to disposable income can be explained by the fact that data describing disposable income refers to all households in Poland during 2008-2013. The data does not describe the households which members

lost their job and have registered unemployed status. As mentioned above 17% of all registered jobless in Poland is entitled to receive insurance. Unemployment benefit system dampen fluctuations in the level of economic activity by its impact on disposable income and consequently on the level of consumption. It can be seen from the figure 2 that unemployment benefits transfer payments shock leads to immediate rise of individual consumption in the first quarter after the occurrence of the shock and after the next three quarters stabilization occurs. Although during 2007-2009 Polish economy experienced reduction in real output, the level of annual disposable incomes and individual consumption was not reduced. Hence, a shock change in disposable income by a unit leads to immediate rise of individual consumption in the first quarter, reaching maximum in the 4th quarter after the subsequent quarters stabilization occurs.

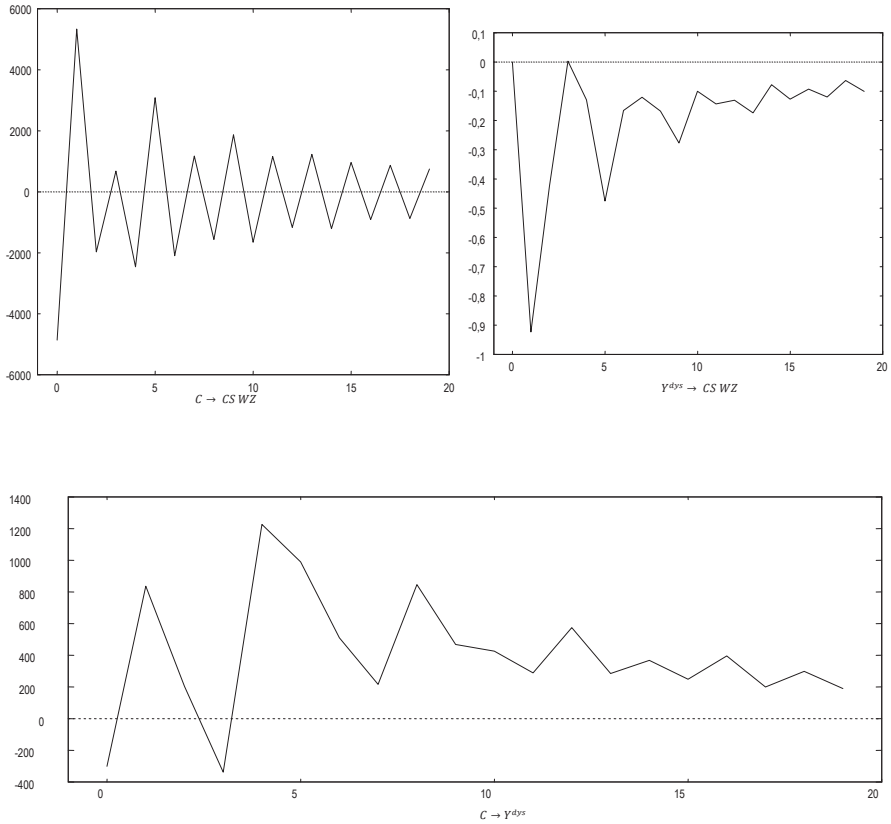

Figure 3. IRF of individual consumption and disposable income to a one-time unit change of unemployment benefit payouts and of individual consumption to a one-time unit change of disposable income in Poland in 2008-2013

Source: Calculations performed using GRETL.

The last stage of the analysis is the decomposition of the variance residual of subsequent factors which determines individual consumption, in order to estimate the impact of these factors on the variability of consumption in Poland.

Table 5. The error variance decomposition in the cyclical element of unemployment benefits spending equation (in %)

The number of quarters after shock	Y^{dys}	*CS WZ*	*C*
1	2,4198	97,5802	0,0000
2	2,4211	96,8343	0,7446
3	1,8396	73,2981	24,8624
4	3,4185	63,9614	32,6202
5	3,2777	66,1308	30,5915
6	3,2874	68,2337	28,4790
7	3,0932	66,0486	30,8582
8	3,0985	63,7580	33,1434
9	3,0939	63,6055	33,3006
10	3,0104	64,1367	32,8528
11	2,9336	63,8417	33,2247
12	2,8888	63,1721	33,9391
13	2,8757	62,9046	34,2197
14	2,8363	62,9609	34,2027
15	2,8013	62,8954	34,3033
16	2,7740	62,6927	34,5333
17	2,7608	62,5414	34,6979
18	2,7417	62,5053	34,7530
19	2,7252	62,4674	34,8074
20	2,7105	62,3966	34,8928

Source: Calculations performed using GRETL.

On the basis on the data from above Table, it can be noted that changes in cyclical element of unemployment benefits spending hardly explain disposable income variance in the short run as well in the long run. In the short- and long-run, only about 3% of changes in consumption in Poland can be accounted for by a change in disposable income. As mentioned above, it results from the law share of unemployment benefits payouts in total government spending. Much higher is the role of cyclical expenses for unemployment compensation in accounting for individual consumption variances in the short- and long-run. In the short-run, about 25% of consumption changes can be explained by changes in the cyclical element of unemployment benefits spending. This effect increases significantly

as the time passed from the moment of change in this factor. In the long-run, the change in cyclical expenses for unemployment compensation accounts for around 35% of individual consumption changes. It can be explained by multiplier effect of government spending. Unemployment benefits transfers payments affect disposable incomes of unemployed persons and consumption expenditures set off the chain induced derivative spending.

Conclusions

The paper performed empirical analysis of the stabilizing role of unemployment benefit compensation in Poland in 2008-2013. I found that the effectiveness of unemployment benefits in smoothing consumption fluctuations in Poland is very weak. In the time of reduced GDP growth, 1 per cent GDP decrease led to increase unemployment benefit payouts and households` disposable incomes and as a result to increase in consumption by 0,008% GDP. On the basis of VAR model estimations, I could affirm that the cyclical expenses for unemployment benefits were quite an important factor which substantially determined the level of consumption in Poland during 2008-2013. Furthermore, the analysis confirmed that unemployment benefits as automatic stabilizers work without any information and implementation lags. Small stabilizing effectiveness of unemployment compensation can be explained by law rate of unemployed entitled to receive the compensation and also by the fact that insurance benefit payouts for unemployed people accounted only for 0,8% of total government expenses.

According to research, the cyclical response of regular unemployment benefits during recessions can be enhanced through temporary programs directed to unemployed. However, this can create great a deal of controversy. Firstly, opponents of the temporary programs directed to unemployed indicate that these programs may weaken job search incentives. In case of Polish economy, where the average sum of unemployment benefit represents half of minimum remuneration, this argumentation is rather irrelevant. Secondly, in principle, extended and supplemental benefits go beyond the definition of automatic stabilizers. And thirdly, it is not without importance the consequences of enlarged public expenses for public finances especially that the frames of national fiscal policies are determined by Stability and Growth Pact and Maastricht Treaty. To improve stabilizing performance of unemployment benefits, the government should increase the sum of compensation, extend its duration and ease the compensation requirements` rules. But what will be the net effect of such operations? Will demand increase be enough to cover the negative impact of augmented public expenses? However, going into greater detail concerning these issues would be beyond the framework of this paper, nevertheless they make area for further research.

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Appendix 1. Results of the parameter estimate of the VAR model

```
VAR system, lag order 2
OLS estimates, observations 2008:4-2013:4 (T = 21)
Log-likelihood = -143,12372
Determinant of covariance matrix = 166,86741
AIC = 15,3451
BIC = 16,2404
HQC = 15,5394
Portmanteau test: LB(5) = 45,761, df = 27 [0,0135]

Equation 1: d_D_dys

                Coefficient       Std. Error     t-ratio     p-value
  ------------------------------------------------------------------
  d_D_dys_1       1,25457          0,246110       5,098      5,098   ***
  d_D_dys_2      -0,355373         0,232354      -1,529      0,1470
  d_csw_1      -417,605          1161,07         -0,3597     0,7241
  d_csw_2       574,772          1155,09          0,4976     0,6260
  d_spo_ind_1     4,13754e-05      0,000388273     0,1066     0,9165
  d_spo_ind_2     0,000223109      0,000285890     0,7804     0,4473

Mean dependent var             12,24452   S.D. dependent var            5,926329
Sum squared resid             263,3441    S.E. of regression
4,190021
R-squared                          0,931615   Adjusted R-squared
0,908820
F(6, 15)                34,05790   P-value(F)                            6,52e-08
Rho                     0,007398   Durbin-Watson                     1,930807

F-tests of zero restrictions:

All lags of d_D_dys             F(2, 15) =   42,240 [0,0000]
All lags of d_csw               F(2, 15) =  0,16083 [0,8529]
All lags of d_spo_ind           F(2, 15) =  0,31082 [0,7375]
All var variables lag order 2   F(3, 15) =  0,97349 [0,4312]
```

Equation 2: d_csw

	Coefficient	Std. Error	t-ratio	p-value	
d_D_dys_1	-1,29218e-05	0,000121672	-0,1062	0,9168	
d_D_dys_2	8,94089e-05	0,000114871	0,7783	0,4485	
d_csw_1	-0,571720	0,574009	-0,9960	0,3350	
d_csw_2	-2,20127	0,571056	-3,855	0,0016	***
d_spo_ind_1	9,36694e-08	1,91955e-07	0,4880	0,6326	
d_spo_ind_2	-5,42489e-07	1,41338e-07	-3,838	0,0016	***

Mean dependent var 0,000128 S.D. dependent var 0,003204
Sum squared resid 0,000064 S.E. of regression 0,002071
R-squared 0,687009 Adjusted R-squared 0,582679
F(6, 15) 5,487461 P-value(F) 0,003489
Rho -0,033951 Durbin-Watson 1,960026

F-tests of zero restrictions:

All lags of d_D_dys F(2, 15) = 1,3974 [0,2776]
All lags of d_csw F(2, 15) = 8,9447 [0,0028]
All lags of d_spo_ind F(2, 15) = 7,4717 [0,0056]
All var variables lag order 2 F(3, 15) = 5,3798 [0,0103]

Equation 3: d_spo_ind

	Coefficient	Std. Error	t-ratio	p-value	
d_D_dys_1	27,1104	368,987	0,07347	0,9424	
d_D_dys_2	-101,754	348,363	-0,2921	0,7742	
d_csw_1	2,47832e+06	1,74076e+06	1,424	0,1750	
d_csw_2	6,20055e+06	1,73181e+06	3,580	0,0027	***
d_spo_ind_1	-0,215760	0,582129	-0,3706	0,7161	
d_spo_ind_2	1,63267	0,428628	3,809	0,0017	***

Mean dependent var 2121,576 S.D. dependent var 11203,50
Sum squared resid 5,92e+08 S.E. of regression 6281,999
R-squared 0,772753 Adjusted R-squared 0,697004
F(6, 15) 8,501262 P-value(F) 0,000385
Rho -0,027058 Durbin-Watson 1,998319

F-tests of zero restrictions:

All lags of d_D_dys F(2, 15) = 0,15449 [0,8582]
All lags of d_csw F(2, 15) = 8,6660 [0,0032]
All lags of d_spo_ind F(2, 15) = 7,3132 [0,0061]
All var variables lag order 2 F(3, 15) = 5,2974 [0,0109]

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VERIFICATION OF THE HYPOTHESIS „TOO MUCH FINANCE" IN THE POLISH ECONOMY

Abstract

The last global financial crisis has affected the changes in the architecture of the global financial system. This aspect is particularly important and valid starting point for a deeper and broader analysis of the impact of the boom of the financial sector to economic growth. The aim of the study is to identify the optimal level of bank credits to the private sector to GDP in the Polish economy, over which the economic growth rate begins to decline.

In this paper we estimate parameters of the dynamic growth model in order to find an optimal level of the financial depth. Restrictions are imposed and verified on parameters concerning the level and square of financial depth. Results of estimation show that the optimal level of financial depth equals 0.44 for Poland.

JEL Classification Code: **A100, C400, E220**.

Keywords: Lucas paradox, international capital flows, neoclassical theory.

Introduction

Researches on the relationship occurring between financial development and economic growth gained rapid acceleration, especially in the second half of the 90s. The issue of researches focused in the area that has always accompanied the economy, namely the impact of the development of the financial system on the economic development of countries. The financial system in any modern economy plays an important role. The type of the financial system and its de-

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velopment determines the long term economic growth of countries. The effects of progressive financial integration, broader financial globalization are different across economies.

The evolution of financial systems and economic and social causes that the discussion on the optimal model of the financial system continues. The last global financial crisis has affected the changes in the architecture of the global financial system. This aspect is particularly important and valid starting point for a deeper and broader analysis of the impact of the development of financial sector on the economic growth. Particular attention is focused on an empirical analysis of the degree of development of financial intermediation, mainly bank credits. The aim of the study is to identify the optimal level of bank credits to the private sector to GDP in the polish economy, over which the economic growth rate begins to decline. The analysis was made based on the analysis of literature and define the role of financial development in the development of modern economies and to compare the degree of financial depth of selected economies.

In order to find an optimal level of the financial depth, parameters of the econometric model of the growth rate in Poland (assuming quadratic function) are estimated. In this growth model standard variables – which are commonly used in growth regressions – are included. In order to test the hypothesis about the existence of the optimal point, on parameters concerning the level and square of financial depth restrictions are imposed.

1. The finance – growth nexus – theoretical aspects and empirical studies

W. Bagehot (1873) and J. Schumpeter (1911) are considered the pioneers of research on the impact of development banking system in the long-term rate of economic growth and the search for relationships between them. The authors of this study hypothesize that provides that service the financial sector is one of the most important catalysts of economic growth. Owing to these services in the economy there is a reallocation of savings from investments having relatively lower income sectors with a higher rate of return, at the lowest possible transaction costs and an acceptable level of risk. J. Schumpeter (1911) analyzed the economic opportunities that arise as a result of the activities undertaken by financial intermediaries in the area of investments in new technologies. Financial intermediaries using their advantage had better and cheaper access to information, including tools for assessing technological innovation and its implementation in the individual corporations. At the time, particularly the influence of banks on economic development was significant.

At the turn to of the 19th to 20th century as a result of the evolution of the world financial system, two models have been developed. There are two classically separate financial systems: the Anglo-Saxon system (market-based financial system)

with the dominant stock exchanges and the continental system (bank-based financial system) with the majority of financial intermediaries – mainly universal banks. The primary function of any financial intermediary is to transform some financial assets in given conditions in other financial assets. An example of referring to this statement is mainly the activities of banks, which convert savings into loans. In practice, conversion function of homogeneous assets in other assets is filled by various financial intermediaries in the economy. Since then, in the literature, there are two separate models of classic financial system, whose meaning, essence and characteristics created by years of political and economic systems. The final form of these systems affected by a number of factors, which result in continuing their evolution, but the search for effective solutions to the institutional world is still ongoing.

Among theorists dealing with issues of financial systems, there are both supporters and opponents of the current solutions used in different countries. So far, empirical research did not clearly help prove which system is more conducive to the economic development of countries. In practice, this may mean opinion, according to which the optimal model for the financial system is considered to be the one that resulted from the evolution of the existing classic models. According to F. Allen (1993) the banking system ensures a lower rate of return, however, reaching it is accompanied by relatively lower risk. In countries dominated by the pro-market system it is preferred higher profitability, but at the cost of higher risk. The differences relate to individual characteristics lenders, namely an appeal to their preferences. That position is supported by R. Rajan and L. Zingales (2002), according to which market-oriented systems to access information about business entities is wider and therefore it is easier to assess the risk associated with the project. The pro-banking system, in turn, access to information is limited, higher risk and potential lenders require a higher rate of return, and this can cause the profitability resulting from the implementation of new projects is unsatisfactory. Therefore, it can bet the general thesis that in the banking oriented system there is a domination of traditional industries but in market system the predominance of new technologies is dominating.

R. W. Goldsmith (1969) made the description of the evolution of national financial systems in the process of economic development. He provided information about legal systems of individual economies and included an attempt to identify macroeconomic determinants which determine the financial structure. After analysis he drew conclusions. He believed that the development of the financial system affects the level of economic growth. He proved that there is a positive correlation between financial and economic development. He concluded that financial systems are more developed in richer countries and financial exchanges to banks are more active and effective. In addition, there is little impact of the financial structure on economic growth. The author added that

the financial structure does not play such a role to be attributed to it in literature. Economic policy should focus less on solving the dilemma of whether the country is dominated by a system of „market-oriented" and more on the legal system and and appropriate legal regulations and defining the orientation of reforms resulting in initiation of growth stimulation and effective functioning both markets and banks and the effective functioning of both markets and banks.

On the other hand, J. Kulawik (1997) defines financial development as improving financial systems components, ie. the markets, institutions and financial instruments. According to the author as defined financial development aimed to increase in the volume of financial transactions and their effectiveness. Used measure of financial development included indicator showing the ratio of total financial system assets to GDP. According to another approach, financial development is understood as a process resulting in the reduction of transaction costs associated with financial services by financial institutions involving the conversion of liquid assets on illiquid assets. In the literature, besides the abovementioned indicator there is also the ratio of bank loans granted by the private banking sector to GDP.

Financial development does not occur in a steady and continuous way. This is demonstrated by studies A. Demirgüc-Kunt and V. Maksimovic (1998), R. King and R. Levine (1993b), J. Jayaratne and P. E. Strahan (1996) and R. Rajan and Zingales L. (1998). Among the above economists on this issue, there is a common – as is clear from the study – the belief that the development of domestic financial sectors contributes to the economic development of a given economy. They undertake a broader aspect of the presentation a key for many researchers phenomenon of financial development and its relationship with economic growth. The starting point for these considerations is the thesis that the level of financial development is a good predictor of the level of future economic growth, capital accumulation and technological change in the country. Basing conclusions on an analysis of data in many countries, under which the financial development as well as its lack can make a certain pattern (possibly optimal), toward which many developing countries but also the most developed countries tend to. The experience of many countries may constitute a reference point for economic policy in the area of the financial system and the rate at which these changes should occur.

R. Levine, N. Loayza and T. Beck (2000) as well as T. Beck, R. Levine, N. Loayza (2000) in their studies have used linear models, and recent studies relate to the effect of financial development on the accumulation of capital, increase of productivity or real GDP per capita growth. The authors believe that the size of these variables may significantly depend also on other factors. F. Valev and N. Rioja (2004b) using the same methodology and data found that financial development stimulated economic growth in rich countries in the first place by increasing efficiency, while in developing countries, financial develop-

ment at first raised the level of capital accumulation. In further analysis F. Rioja and N. Valev (2004a) found that this effect is non-linear. Economy with a very low level of financial development experience very low levels of capital accumulation, while in rich countries, the impact is much greater. Attempt to explain the reasons for non-linearity of the relationship between financial development and economic growth have taken N. Loayza and R. Rancière (2006) subjected to empirical analysis of the relationship between financial development and economic growth. In their study they divided the effect of financial development and economic growth into short-term and long-term effect. They noted that the rapid rise in short-term of bank lending may be a signal of the coming financial crisis and economic stagnation. They use variable Private Credit/GDP as a measure of the development of financial intermediation and came to the conclusion that there is a positive long-term relationship between financial development and growth, while in the short-term, the relationship is generally negative. However, empirical studies suggest that very high credit relative small GDP may lower economic growth.

Figure 1 shows the statistical data for selected regions in order to make a preliminary assessment of the importance of credit intermediation measured by the share of credits to private sector to GDP for 2005-2014.

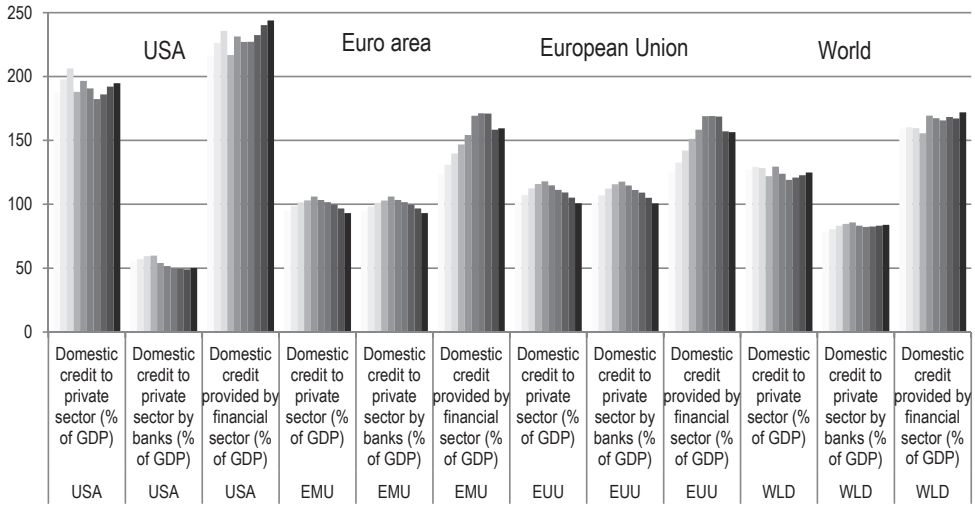

Figure 1. Domestic credit to private sector/provided by banks/provided by financial sector (%GDP) in USA, EMU, EUU and in the World in the years 2005-2014 (EMU – European Monetary Union, EUU – European Union, WLD – world)

Source: own calculations based on World Bank Indicators (access: 20.10.2015).

The data in Figure 1 can be deduced that in the period from 2005 to 2014 the volume indicator measuring the relative share of loans in financing the private sector by banks is relatively high and represents on average in the period approx. 110% of GDP in European Union countries, including countries in the euro zone (approx. 100%). In the USA share of bank credits in GDP is only approx. 50%, while the highest level is the height indicator represents the share of credits from the wider financial sector in GDP (nearly 230% of GDP) and it's important that the share of this sector in the provision of financial capital to the market is growing. The same indicator for the countries of the EU and euro zone average fluctuates within 152% of GDP in the period considered. It is interesting that the highest level of this indicator was recorded in 2011, it means in the period between the liquidity crisis in the banking sector and the sovereign debt crisis (approx. 170% of GDP). We can generally state the conclusion, that in European Union dominates a model of the bank-based financial system. Significant share of GDP is a bank credit, while the role of other financial intermediaries began to wane after 2011. In contrast, in the United States participation of the wider financial intermediation throughout the period increasing and is reducing the share of bank loans in GDP (50% of GDP in 2014.). On the other hand, the average for the indicator showing the ratio of credits extended by the banking sector for the world is approx. 82.8% of GDP, while the share of credits from the financial sector represents 164.4% of world GDP.

Over the past three decades, the size of the financial sector in the US to nominal GDP has increased six times faster. That was the basis to put forward a proposal which states that "instead of being a servant, finance had become the economy's master" (Wolf 2009). In the literature, studies were undertaken and a wide discussion on financial sector development boundary, beyond which the interaction and the development of the financial sector to GDP is negative and declining influence. The last global financial crisis revealed some irregularities in the functioning and development of the financial sector and its "overestimated" impact on economic growth.

Among some economists there is also a trend opposed to the existence of a causal link between the development of financial markets and economic growth. This trend has been pioneered by J. Robinson (Robinson, 1952, p. 86), who noted that banks passively react to economic growth determining this phenomenon by saying, "where enterprise leads, finance follows". According to R. Solow (1956) there is no casual relationship between financial development and economic growth. He said that the long-term rate of economic growth is the result of technological advances, from which this growth is dependent. Contemporary representative of this trend is the R. E. Lucas (1998), who claims that economists overestimate the role of the financial system, calling the phenomenon straightforward "badly overstress".

In the 70s of the last century perceived, the results also confirmed, expectations concerning the impact of the financial system on economic growth (Minsky, 1974; Kindleberger, 1978). It was thought that they might be exaggerated.

Excessive lending was the cause of many financial crises (sudden stop) in emerging economies. The name "sudden stop" comes from the phenomenon, which is characterized by dynamic growth of foreign capital inflow and its outflow, which causes financial crisis (Calvo, 1998). The subject of research Mendoza and Terrones (2008) were both developed countries and developing countries. They noted that in the years 1960-2006 credit booms were related to periods of economic expansion, an increase in shareholders' equity and real estate prices and appreciation of the exchange rate. According to the authors, the cause of many crises in developing economies were credit booms. According to other authors (Dell'Ariccia et al., 2012) about one-third of credit booms ended with the financial crisis but many credit booms contributed to sustained long-term economic growth in many countries.

The recent crisis has shown that both the stability of the financial system and the economic balance affects the rate of growth in lending. If in the long run growth rate of lending is significantly higher than GDP growth, this may lead to disequilibrium in the economy. This is particularly important when there is feedback between credit growth and property prices.

Studies of other authors (Arcand, Berkes, Panizza, 2012) similarly point to the negative effect of the financial system impact on economic growth and more specifically refer this request to the impact of directed credit to the private sector (financial depth) on GDP. They noted that the economies in which the level of loans reaches 100% of GDP, then there is vanishing and the negative effect of the impact of additional units of credit to GDP of the economy (Arcand, Berkes, Panizza, 2012); Rousseau and Watchel (2011). The authors applied their research to different methodological approaches (simple cross-sectional and panel regressions as well as semi-parametric estimators), which were in line at the sought optimum of financial depth in the range between 80-100% of GDP, depending on the length of the dataset.

Cecchetti and Kharroubi (2012) stress that beyond a certain level, financial deepening is associated with slower rather than faster growth. They examined 50 advanced economies in the years 1980 to 2009 and noted that when private credit exceeds GDP, the productivity growth is decreasing.

2. Empirical growth model enabling testing „too much finance" hypothesis

In order to measure the impact of the ratio of banking credit to GDP on the rate of growth of the real GDP we should estimate the parameters of the growth regression including banking credit on the right-hand side of the equation. In

studies examining the relationship between financial depth and economic growth it is assumed that below certain level the size of the financial system has a positive impact on the economic growth, however at high levels of financial depth, an increase in the size of the financial system results in lower growth rate (see e.g. Arcand et al. 2012). Therefore in the specification of the econometric model growth rate depends on variables traditionally used in growth regressions, the level and square of the financial depth. Such specification enables the estimation of the optimal point of financial depth maximizing economic growth. In order to verify whether the relationship between financial depth and growth has an U-inverted shape, we consider the estimation of the parameters of the following model:

$$Growth_t = \alpha_0 + \alpha_1 PC_t + \alpha_2 PC_t^2 + x_t\beta + \varepsilon_t \tag{1}$$

where PC_t denotes the ratio of banking credit to GDP and $\mathbf{x_t}$ is the set of other explanatory variables. It should be stressed that we are not interested in measuring impact of remaining variables, however we should estimate parameters using possibly wide specification in order to avoid omitted variables bias. $\mathbf{x_t}$ should consist of variables, which are included in specification (1) and turn out to have statistically significant impact on economic growth. We are aware that growth regressions very often include many sophisticated variables (see e.g. Moral-Benito, 2010; Cicone, Jarocinski, 2008), however we have limited sample of data and we are not interested in finding impact of them. Therefore we include in vector $\mathbf{x_t}$ only the most important variables, which are especially important according to economic theories. Hypothesis about the U-inverted shape of the relationship between economic growth and financial depth is as follows:

$$\begin{aligned} &H_0 : \alpha_1 = \alpha_2 = 0 \\ &H_1 : \alpha_1 > 0 \ \wedge \ \alpha_2 < 0 \end{aligned} \tag{2}$$

If the estimates of the parameters of model (1) are found and H0 hypothesis is rejected, then the optimal level of financial depth is calculated as follows:

$$Opt\_PC = -\frac{\hat{\alpha}_1}{2\hat{\alpha}_2} \tag{3}$$

3. Data and empirical results

Parameters of the model (1) are estimated for the Polish economy. We use quarterly data covering period from 2000Q1 to 2015Q2. Since the estimation is based on growth variables and we use growth between analogous quarters of neighbouring years, our sample covers the period 2001Q1 – 2015Q2. Table 1 presents the results of estimation of the parameters of the growth regression.

Table 1. Results of the estimation of the parameters of the growth equation

Variable	Estimate	Measuring goodness of fit and specification tests	
Cons	-0.225*	Goodness of fit	R-squared = 0.89 Adjusted R-squared = 0.86
$Growth_{t-1}$	0.196*		
Germany_Grt	0.001*	Testing hypothesis (2) using Wald test	Statistic = 3.93 p-value = 0.02
PCt	**1.132****	Breusch-Godfrey test for autocorrelation	Statistic = 0.61 p-value = 0.44
$(PC^2)t$	**-1.294****	Cointegration Dickey-Fuller test for stationarity of residuals	Statistic = -7.16 p-value = 0.00
Cap_Grt	0.097***		
Exp_Grt	0.063***		
U2012Q4_2013Q1t	-0.010*		

*,**,*** denote significance at the 0.1, 0.05, 0.01 level of significance respectively.

Source: own calculations.

It can be noticed that estimates of parameters have appropriate signs, which are in line with economic theory. There is some memory in the process of the GDP growth and lagged growth rate has a significant impact on the actual one. Moreover the rate of growth in Germany, the rate of growth of capital and the export growth rate have positive and statistically significant impact on the rate of growth of the real GDP. Lower rate of growth of the real GDP is observed at the turn of years 2012 and 2013. We reject H_0 hypothesis that $\alpha_1 = \alpha_2 = 0$, we do not have the problem of autocorrelation and residuals are stationary. On the basis of the results presented in table 1, we calculate optimal value of the financial depth:

$$Opt\_PC = -\frac{\hat{\alpha}_1}{2\hat{\alpha}_2} = 0.44 \tag{4}$$

It means that 0.44 is the optimal level of financial depth in the case of Polish economy. If the financial depth is below this level then an increase in the ratio of the banking credit to GDP has a positive impact on the economic growth. Above this level, financial system in Poland seems to be "too large" compared to the size of the domestic economy. Above this line the financial development hits negative social returns.

Our results are consistent with the results of other authors [Arcand, Berkes, Panizza, 2012] that there is a limit beyond which, as a result of a further increase in the level of lending in the economy appears "vanishing effect" of the impact on GDP growth, and then increase the share of bank credit / GDP may cause negative GDP growth, ceteris paribus.

4. Forecast of GDP growth

In the next part of this research, we conduct ex ante forecasts for the rate of growth of the real GDP in year 2016 assuming that explanatory variables take on the same values as in first two quarters of the year 2015 for different levels of the financial depth. Graph 1 presents these forecasts for optimal value of the financial depth (0.44), value observed in the last quarters of the sample (0.5), high value (0.6) and very low value (0.3). According to the presented forecasts, rate of growth of real GDP may be higher if credit action will be slightly limited, however significant limitation of the credit action seems to be very dangerous for the perspectives of growth of the polish economy. If the relation of banking credit is reduced to the level of 0.3, then a significant slowdown of the polish economy is expected.

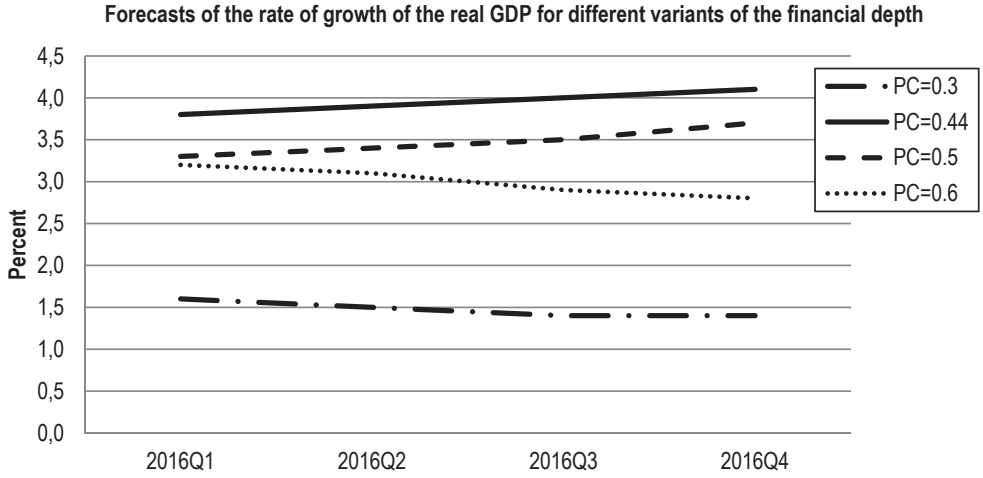

Figure 2. An impact of the financial depth on the growth perspectives in Poland

Source: Own calculations.

Conclusions

This research is aimed at analysing the role of the credit intermediation in prompting economic growth. The role of this factor is especially important in the European countries, since banking sector in the European countries plays very important role in raising funds for investments. In contrary, a dominating factor in the United States is the capital market.

After estimation of the parameters of the dynamic growth model, it turns out that the optimal level of growth is reached if the ratio of banking credit to GDP equals

0.44. For such value of the financial depth, predicted rate of growth of GDP in year 2016 equals about 4 percent. In contrary, if this level equals 0.6 or 0.3 in 2016, then the predicted rate of growth will be 3 per cent and 1.5 per cent consecutively.

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DETERMINANTS OF PROFITABILITY OF GENERAL INSURANCE COMPANIES PERFORMANCE IN POLAND

Abstract

Dynamic financial analysis has become an important tool for modeling operations of insurance companies. This analysis is used, among others, in revealing the main factors determining the financial performance of insurers. This paper identifies the determinants of the performance of general insurance companies in Poland using a panel dataset consisting of a firm specific factors and macroeconomic factors over the period 2006-2013. Six financial performance measures are used to capture different aspects of the insurance operations. These performance measures are related to nine cited business-specific and macroeconomic variables, chosen on the basis of relevant theory and literature. A weight least square (WLS) method and intergroup method for each of six performance models are used to estimate the parameters of these models. The empirical results prove that there is a statistically significant relationship between the following variables with profitability performance being- negatively affected by underwriting activity (represented the net claims ratio variable) and by the net operating expenses variable. It was also shown that the size of a company has positive relationship with its profitability. The study also confirmed a statistically significant and positive relationships between profitability ratio of technical activity and the macroeconomic variable (rate of GDP) as well as positive impact of the motor gross written premiums ratio variable on the profitability ratio of technical activity.

JEL Classification Code: **G22, G30**.

Keywords: Performance determinants, panel data analysis, underwriting risk, size, net operating ratio, general insurance.

Introduction

The insurance sector in Poland in the last 25 years has undergone a profound transformation as a result of privatization and de-monopolisation, foreign in-

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vestment flows, changes in equity, legal solutions – to adaptation to the EU requirements, and changes in the institutional framework, and the development of competitiveness.

The economic growth of the country was followed by accelerated growth in life insurance and stable development of the non-life insurance. At the same time, there has been a process of consolidation of companies mainly through M & As. The result of the consolidation of companies was, among other, things an increase in product competition and improved service quality.

The aim of the study is to demonstrate that there is a statistically significant relationship between profitability and business insurance companies specific factors and macroeconomic factors in the market of non-life insurance in Poland.

The paper is organized as follows: the first part of the paper analyzes the nature of the development of insurance industry in Poland in comparison with other EU countries. Section 2 focuses on literature review. Section 3 defines the character and the type of data and the methodology implemented. In the subsequent section empirical results are discussed and the final section includes conclusions.

Key development indicators in Poland insurance industry

Since 1990 a characteristic feature of the Polish insurance market was the process of its privatization and de-monopolisation together with certain restrictions for foreign entities on the entry to the market until 1999. Restrictions on entry of foreign capital have been abolished for foreign insurers from the EU after accession by Poland to the EU in 2004 and the adaptation of national legislation and the principles of functioning of insurance institutions to the EU requirements [Ortyński, 2010].

At the same time there was a steady process of de-concentration of the market (decrease in the market share of the former monopoly), but since 2004 an opposite process has begun, that is the consolidation of insurance companies through mergers and acquisitions. The process of consolidation mainly followed the decisions international insurance groups operating on the Polish market.

In turn, the occurrence of the global financial crisis (2008-2009) has placed before the European and national regulators the question of the validity of the paradigm of self-regulation of financial markets, including insurance [Monkiewicz, J., Monkiewicz, M., 2015].

The insurance market is conducive to raising the standards of quality and availability of insurance coverage, it affects price levels of insurance services, promotes aggregation of capital in the economy and facilitates the transformation of capital.

The development of the insurance market is connected to the economic growth. On the other hand, the development of insurance influences the growth and economic development of the country [Outreville, 2011].

The main measure of the degree of development of insurance in the national economy uses: gross written premium from direct insurance and indicators of density and insurance penetration and the size of the investment insurers.

Table 1. Gross written premium in insurance market according insurance branches in Poland 2006-2013

Years	Premium (€ billions)			The branch structure of premiums (%)		
	Total	L	NL	Total	L	NL
2006	9.8	5.5	4.3	100	56	44
2007	12.2	7.1	5.1	100	58	42
2008	14.2	9.4	4.8	100	66	34
2009	12.5	7.4	5.1	100	59	41
2010	13.6	7.9	5.7	100	58	42
2011	12.7	7.1	5.6	100	56	44
2012	15.2	8.9	6.3	100	59	41
2013	13.8	7.5	6.3	100	54	46

L – life insurance NL – non-life insurance.

Source: Statistics no 50-European Insurance Figures.pdf 2015, http://www.insuranceeurope.eu/statistics-n%C2%B050-european-insurance-figures-dataset (6.11.2015) and own calculation.

In the analyzed period the total gross premiums written showed no clear trends (periods of growth and periods of decline), however in 2013 compared with 2006 premiums increased by more than 40%.The main influence on the size of the total premiums written was written premiums of the life insurance industry. However, in the non-life insurance, there was a consistent growth trend in premiums (except for the year 2008) and in 2013 premiums grew by nearly 47% compared to 2006.

A characteristic feature of the Polish insurance market in that period was the dominant share of life insurance premiums in the whole insurance portfolio.

The dynamics of the amount of the premium per capita mainly results from the growth of gross written premium in total. In 2013, the density (premiums per capita) amounted to 357 €, of which 193 € was from life insurance and 164 € from non-life insurance. In total, the insurance density in 2013 increased by nearly 50% as compared to 2006.

The share of total gross written premium in GDP reached its maximum size in 2008 (4.6%), but in 2013 this indicator has returned to the level of 2006, which was, among other, things a consequence of higher GDP growth as compared to insurance.

Table 2. Density (premiums per capita) and penetration (premiums to GDP) according to insurance branches in insurance market in Poland 2006-2013

Years	Density (€)			Penetration (% of GDP)		
	Total	L	NL	Total	L	NL
2006	237	133	104	3.5	2.0	1.5
2007	277	161	116	3.7	2.2	1.5
2008	373	246	127	4.6	3.0	1.6
2009	324	191	133	3.8	2.2	1.6
2010	342	198	144	3.8	2.2	1.6
2011	354	198	144	3.7	2.1	1.6
2012	387	228	159	3.9	2.3	1.6
2013	357	193	164	3.5	1.9	1.6

L – life insurance, NL – non-life insurance.

Source: Statistics no 50-European Insurance Figures.pdf 2015, http://www.insuranceeurope.eu/statistics-n%C2%B050-european-insurance-figures-dataset (6.11.2015) and own calculation.

The insurance sector affects the process of capital accumulation in the economy and is becoming one of the major investors in the financial market, as a result of investment activities of insurers to broaden and deepen investment volume [Ward, Zurbruegg, 2000; Hass, Sümegi, 2008].

The source of financing investments of insurers are primarily technical provisions and their capital and own funds.

Table 3. Insurers' investment portfolio (Investments) according to insurance branches in Poland – 2006-2013

Years	L	NL	Total	
	(€ billions)	(€ billions)	(€, billions)	Investments/GDP (%)
2006	17.0	9.1	26.1	9.6
2007	21.2	11.4	32.6	10.5
2008	19.5	10.8	30.3	8.3
2009	20.4	10.5	30.9	9.9
2010	22.5	10.5	33.0	9.3
2011	19.0	10.2	29.2	7.9
2012	23.2	12.7	35.9	9.4
2013	22.9	12.9	35.8	9.2

L – life insurance NL – non-life insurance,

Source: Statistics no 50-European Insurance Figures.pdf 2015, http://www.insuranceeurope.eu/statistics-n%C2%B050-european-insurance-figures-dataset (6.11.2015) and own calculation

The years 2006-2013 were followed by a rise in the volume of investments, with the exception of the years 2008-2009 (due to the global financial crisis) and 2011 (due to a significant drop in the share of life insurance). In total, the share of investment in GDP insurers stood at 9-10%.

Table 4. Gross written premium (GWP), insurers' investment portfolio (Investments) and other key development indicators in Poland and selected European countries – 2013

	Poland	Portugal	Spain	Germany
GWP (total, € billions)	13.8	13.1	55.2	187.3
Density (total GWP per capita) (€)	357	1250	1182	2284
Penetration (total GWP/GDP) (%)	3.5	7.9	5.4	6.8
Investments (total, € billions)	35.8	35.8	252.9	1551.5
Total Investments/GDP (%)	9.2	21.6	24.7	56.7

Source: Statistics no 50-European Insurance Figures.pdf 2015 http://www.insuranceeurope.eu/statistics-n%C2%B050-european-insurance-figures-dataset (6.11.2015) and own calculation.

In international comparisons the analyzed indicators of the development of insurance situate Polish insurance market at some emerging markets countries. These measures show insurance development in Poland is much lower than the markets in the compared European countries.

Literature review

The attention devoted in literature to the determinants of profitability in insurance industry has been low if compared to the extensive studies of the banking industry and the financial sector.

Because of the various results obtained from different studies exploring the determinants of profitability in the insurance industry, the studies will be subsequently presented together with their main empirical results.

Cummins and Nini (2002) studying the determinants of ROE of insurers operating in the US market over the period 1993 to 1998 showed that company size has a significant impact on this indicator and this is consistent with the argument that larger companies generate higher profits.

Adams and Buckles (2003) examine the determinants of corporate financial performance in Bermuda insurance market. They applied a model of panel data to 47 insurance companies for 1993-1997 and found positive relationship between type of risk and insurers' operational performance.

Shiu (2004) analyzed the determinants of general insurance companies in the UK for 1986-1999 using company-year data. Author revealed that liquidity, unexpected inflation, interest rate level were statistically significant determinants of insurer' performance.

Malik (2011) examining the results of 34 insurance companies in Pakistan in 2005-2009 confirmed the positive relationship between ROA and the size volume of capital and negative impact of the leverage variable and the loss ratio variable on ROA.

Kozak (2011) analyzed the determinants of three indicators of profitability (profitability of technical, profitability of investment activity and sales profitability) of 25 non-life insurance companies in 2002-2009 in Poland. The author showed in particular that the volume of gross written premiums significantly and positively influence the profitability of technical companies. Reducing the level of operating costs had a positive impact on the increase of the technical profitability of the insurance companies. Also, the share of motor insurance in the company's insurance portfolio negatively affected their profitability.

Pervan, Čurak and Marijanović (2011) found that size, underwriting risk, inflation and equity returns had significant impact on the insurers' ROA.

Moro and Anderloni (2014) examined the results of 198 insurers in nine EU countries (ie. the old EU) for the years 2004 through 2012 and determined that ROA is impacted by variables related to operation of companies, it is negatively affected by asset size, combined ratio and variable referred to as internationalization (when shareholders are foreign companies or groups) and diversification (mixed companies operating both in non-life and in life insurance), while a positive impact was found for variables defined as reserves' dimension and asset turnover. Similar variables significantly influenced the size of ROE.

Data and methodology

Profitability is one of the most important objectives of financial management because one goal of financial management is to maximize the owner` s wealth and profitability is a very important determinant of performance.

The subject of the study were the results of the 8 largest insurers in the non-life insurance sector that represented the three quarters to 85% of gross written premium in this market. The study used company- level data for the years 2006 through 2013. From 2012 the number of respondent insurance companies decreased to 7, because there was a consolidation of the two insurers as a result of a merger.

A panel dataset have been collected from Polish Financial Supervision Publications, Polish Insurance Association Publications and Central Statistical Office of Poland- Information Portal.

The general model to be estimated is represented by the following linear equation:

$$\mathbf{y_{i,t} = \alpha + \beta X_{i,t} + u_{i,t}}$$

where $y_{i,t}$ is a vector of the profitability of the insurance firm i at time t, with $i = 1 \ldots N$, $t = 1 \ldots T$, α is the constant, $X_{i,t}$ is a matrix of k explanatory variables, β is

a vector of parameters of the k explanatory variables, and $u_{i,t}$ is the one-way error component model for the disturbances, with $\mathbf{u_{i,t}} = \boldsymbol{\mu}\mathbf{i} + \boldsymbol{\nu}_{\mathbf{i,t}}$ where μ_i denotes the unobservable firm-specific effect and $v_{i,t}$ the idiosyncratic error.

The study used six measures of profitability activities of insurers operating in the non-life insurance, namely: profitability ratio of technical activity, assets profitability ratio, equity profitability ratio, sales profitability ratio, profitability of subscribed capitals and profitability of gross premium written. The detailed method of determining the variables representing profitability are given in Table 5.

Table 5. Financial performance ratios (dependent variables)

Firm specific characteristics	
PROFTECH -Profitability ratio of technical activity	Technical result/ earned premiums-net of reinsures
ROA – assets profitability ratio	Net financial result/assets
ROE- equity profitability ratio	Net financial result/capital and reserves
PROFSALE – sales profitability ratio	Net financial result/gross written premiums
PROFCAPITAL – profitability of subscribed capitals	Gross financial result/capital and reserves
PROFGWP – profitability of gross written premium	Gross financial result/gross written premiums

Source: own study.

The most common ratios used to evaluate operating performance are the loss ratios and the expense ratios. Moreover, the explanatory variables included variables reflecting the size of the insurance company (assets, investment, GWP), the share of gross written premium of motor insurance at the insurer's total premiums written, leverage and variable rate GWP and the rate of GDP. Detailed definitions of these variables are included in table 6.

Table 6. Independent variables included in the analysis

Firm specific characteristics	
ASSET (size)	natural log of total asset
INVEST (size)	natural log of total investment
GWP (size)	natural log of gross written premium
CRNET (net claims ratio)	claim incured/earned premiums-net of reinsurance
COSTNET (net operating expenses ratio)	net operating expenses/earned premiums – net of reinsurance
MOTOR (motor gross written premiums ratio)	motor gross written premiums/gross written premiums total
LV (leverage – company financial structure)	gross technical provisions/capital and reserves
RATE GWP	the growth rate of gross written premium
RATEGDP	the growth rate of GDP

Source: own study.

To investigate the relationship between profitability and company specific factors and macroeconomic factors in the market of non-life insurance in Poland six panel models were constructed, defining the relationship between measures of profitability and the explanatory variables.

Empirical results

Model parameters were estimated using the method of weight least square (WLS) and intergroup method with the use of the GRETL program.

The estimation results of model parameters are presented in tables 7-12 for each of the models statistical tests were carried out to verify, the correctness of chosen method of parameter estimation and the choice of explanatory variables.

Table 7. The results of panel WLS estimation method of model 1, used 62 observations from 2006 to 2013 (Weights based on per-unit error variances)

Dependent variable: PROFTECH					
	Coefficient	Stand. Error	t-Student	p-value	Significance level
const	−0.436642	0.143147	−3.050	0.0035	***
CRNET	−0.740128	0.0415611	−17.81	9.93e-025	***
COSTNET	−0.405998	0.110866	−3.662	0.0006	***
Motor	0.0953863	0.0450094	2.119	0.0385	**
GWP	0.0459877	0.00503648	9.131	1.11e-012	***
RATEGDP	0.323640	0.152817	2.118	0.0386	**
Basic statistics for weighted data					
Sum of squared residuals		61.02845	Standard error of residuals		1.043932
R-squared		0.906069	Adjusted R-squared		0.897682
F(5,56)		108.0363	p-value of F		1.79e-27
The log of the reliability		−87.48457	Akaike info criterion		186.9691
Schwarz criterion		199.7319	Hannan-Quin criterion		191.9801
Basic statistics for the original data					
Arithm. mean of depended variable		−0.001284	Standard deviation of the depend variable		0.070962
Sum of squared residuals		0.044811	Standard error of residuals		0.028288
Test for normality distribution of residuals – the null hypothesis: random component has a normal distribution					
Test statistics: Chi-squared (2) = 0.529043 with p-value = 0.767573; critical value (Chi-squared tables (2)) = 9.210 34; level = 0.01					

*** Indicates significance: at 1% level, **at 5%, *at 10%.

Source: own calculation with the use of the GRETL program.

The results of the estimation model 1 indicate a statistically significant but negative impact of net claims ratio (underwriting risk) and net operating expenses ratio for the profitability ratio of technical activity. It confirmed a significant and positive relationship between profitability ratio of technical activity variables such as macroeconomic variable (rate of GDP) and motor insurance premiums in the total premium, as well as the positive impact of the size of total gross written premium (insurer's size).

Table 8. The results of panel intergroup estimation method of model 2, used 8 observations from 2006 to 2013

Dependent variable: ROA					
	Coefficient	Stand. Error	t-Student	p-value	Significance level
const	0.273098	0.291035	0.9384	0.4012	
CRNET	−0.467762	0.158874	−2.944	0.0422	**
COSTNET	−0.955499	0.260635	−3.666	0.0215	**
GWP	0.0173912	0.00765433	2.272	0.0855	*
Basic statistics for data					
Arithm. mean of depended variable		0.026852	Standard deviation of the depend variable		0.034934
Sum of squared residuals		0.000764	Standard error of residuals		0.013817
R-squared		0.910609	Adjusted R-squared		0.843565
F(4,57)		13.58238	p-value of F		0.014529
The log of the reliability		25.67583	Akaike info criterion		−43.35167
Schwarz criterion		−43.03390	Hannan-Quin criterion: −45.49487		
Test for normality distribution of residuals- the null hypothesis: random component has a normal distribution					
Test statistics: Chi-squared (2) = 4.77353 with p-value = 0.0919264 critical value (Chi-squared tables (2)) = 9.210 34; level = 0.01					

** Indicates significance: at 5% level, *at 10%.

Source: own calculation with the use of the GRETL program.

The estimation results of the above model is confirmed by a statistically significant negative relationship between changes in the size of ROA and changes in risk underwriting and net operating expenses ratio. However the insurer's size variable expressed in gross written premium has a positive effect on ROA.

Table 9. The results of panel WLS estimation method of model 3, used 62 observations from 2006 to 2013 (Weights based on per-unit error variances)

Dependent variable: ROE					
	Coefficient	Stand. Error	t-Student	p-value	Significance level
const	0.612884	0.247825	2.473	0.0164	**
CRNET	−1.07123	0.107768	−9.940	4.68e-014	***
COSTNET	−0.500830	0.252895	−1.980	0.0525	*
INVEST	0.308620	0.0836403	3.690	0.0005	***
ASSET	−0.289294	0.0875070	−3.306	0.0016	***
Basic statistics for weighted data					
Sum of squared residuals		60.87195	Standard error of residuals		1.033406
R-squared		0.702732	Adjusted R-squared		0.681871
F(4,57)		33.68660	p-value of F		2.03e-14
The log of the reliability		−87.40497	Akaike info criterion		184.8099
Schwarz criterion		195.4456	Hannan-Quin criterion		188.9858
Basic statistics for original data					
Arithm. mean of depended variable: 0.099369; Standard deviation of the depend variable: 0.130741 Sum of squared residuals: 0.390945; Standard error of residuals: 0.082817					
Test for normality distribution of residuals- the null hypothesis: random component has a normal distribution					
Test statistics: Chi-squared (2)= 3.96149 with p-value = 0.137966 critical value (Chi-squared tables (2)) = 9.210 34; level = 0.01					

*** Indicates significance: at 1% level, **at 5%, *at 10%.

Source: own calculation with the use of the GRETL program.

The main determinants of ROE (table 9) are the above mentioned variables of underwriting risk and net operating expenses ratio: they all have the negative impact and significance as determinants of ROE. The variable volume of investments of insurers has a statistically significant positive relationship with ROE. Size (measured in terms of total assets) shows a negative effect: it remains statistically significant.

Underwriting risk and net operating expenses ratio significantly and negatively affected the sales profitability ratio, while the investment activity of the insurance company (size) acts on it positively.

Table. 10. The results of panel intergroup estimation method of model 4, used 8 observations from 2006 to 2013

Dependent variable: PROFSALE					
	Coefficient	Stand. Error	t-Student	p-value	Significance level
const	0.239172	0.539521	0.4433	0.6805	
CRNET	−1.09088	0.322028	−3.388	0.0276	**
COSTNET	−2.54696	0.557927	−4.565	0.0103	**
INVEST	0.0637646	0.0116300	5.483	0.0054	***
Basic statistics for data					
Arithm. mean of depended variable		0.072142	Standard deviation of the depend variable		0.124075
Sum of squared residuals		0.003109	Standard error of residuals		0.027878
R-squared		0.971152	Adjusted R-squared		0.949516
F(3,4)		44.88570	p-value of F		0.001545
The log of the reliability		20.06040	Akaike info criterion		−32.12080
Schwarz criterion		−31.80303	Hannan-Quin criterion		−34.26400
Test for normality distribution of residuals – the null hypothesis: random component has a normal distribution					
Test statistics: Chi-squared (2) = 0.381349 with p-value = 0.826401 critical value (Chi-squared tables(2)) = 9.210 34; level = 0.01					

*** Indicates significance: at 1% level, **at 5%, *at 10%.

Source: own calculation with the use of the GRETL program.

Table. 11. The results of panel WLS estimation method of model 5, used 62 observations from 2006 to 2013 (Weights based on per-unit error variances)

Dependent variable: PROFCAPITAL					
	Coefficient	Stand. Error	t-Student	p-value	Significance level
const	0.689162	0.300923	2.290	0.0257	**
CRNET	−1.15368	0.141176	−8.172	3.16e-011	***
COSTNET	−1.01211	0.295863	−3.421	0.0011	***
ASSET	0.0235002	0.0115780	2.030	0.0470	**
Basic statistics for weighted data					
Sum of squared residuals		60.87654	Standard error of residuals		1.024498
R-squared		0.568522	Adjusted R-squared		0.546204
F(3,58)		25.47385	p-value of F		1.22e-10
The log of the reliability		−87.40731	Akaike info criterion		182.8146
Schwarz criterion		191.3232	Hannan-Quin criterion		186.1553
Basic statistics for original data					
Arithm. mean of depended variable: 0.122887; Standard deviation of the depend variable: 0.148582 Sum of squared residuals: 0.707456; Standard error of residuals: 0.110442					
Test for normality distribution of residuals- the null hypothesis: random component has a normal distribution					
Test statistics: Chi-squared (2)= 13.727 with p-value = 0.00104524 critical value (Chi-squared tables (2)) = 13.8155 level = 0.001					

*** Indicates significance: at 1% level, **at 5%, *at 10%.

Source: own calculation with the use of the GRETL program.

As expected, net claims ratio (underwriting risk) and net operating expenses ratio have a negative relationship with profitability of subscribed capitals and their impact remains statistically significant. Size (measured in terms of total assets) shows a positive effect.

Table. 12. The results of panel WLS estimation method of model 6, used 30 observations from 2006 to 2013 (Weights based on per-unit error variances)

Dependent variable: PROF GWP					
	Coefficient	Stand. Error	t-Student	p-value	Significance level
const	−0.623010	0.290670	−2.143	0.0416	**
CRNET	−0.626847	0.100741	−6.222	1.39e-06	***
COSTNET	−1.02115	0.222078	−4.598	9.71e-05	***
INVEST (-4)	0.0680904	0.0130055	5.236	1.81e-05	***
Basic statistics for weighted data					
Sum of squared residuals		24.77433	Standard error of residuals		0.976145
R-squared		0.770219	Adjusted R-squared		0.743705
F(3,26)		29.05035	p-value of F		1.85e-08
The log of the reliability		−39.69732	Akaike info criterion		87.39463
Schwarz criterion		92.99942	Hannan-Quin criterion		89.18765
Basic statistics for original data					
Arithm. mean of depended variable: 0.079307; Standard deviation of the depend variable: 0.169692 Sum of squared residuals: 0.212375; Standard error of residuals: 0.090378					
Test for normality distribution of residuals- the null hypothesis: random component has a normal distribution					
Test statistics: Chi-squared (2)= 10.1102 with p-value = 0.00637676 critical value (Chi-squared tables(2)) = 13.8155 level = 0.001					

*** Indicates significance: at 1% level, **at 5%, *at 10%.

Source: own calculation with the use of the GRETL program.

Variable profitability of gross written premium significantly and negatively impacted underwriting risk variables and net operating expenses ratio, while positive impact was related to the variable Assets delayed by 4 years.

Conclusions

The study provides new evidence on the determinants of six measures of profitability of insurers in Poland.

The analysis of the relationship between the measures of profitability and selected key factors (internal and external) for general insurance companies in Poland in 2006-2013 indicates the following facts:

- It finds that profitability performance is negatively affected by underwriting activity (as summarized by net claims ratio), and net operating expenses ratio.
- The cited firm-specific variables like size (measured in terms natural log of gross written premium, natural log of total assets or natural log of total investment) have a positive relationship with profitability ratio of technical activity, ROA, ROE (but at the same time negative relation with natural log of total assets), sales profitability ratio, profitability of subscribed capital and negative impact on profitability of gross written premium.
- It is worth mentioning the positive relationship of the variable rate of GPD with profitability ratio of technical activity.
- Show also be on the positive relationship of the variable motor gross written premiums ratio with profitability ratio of technical activity.
- In contrast, no significant statistical relationship has been noted between profitability and the following performance variables: LV (leverage) and Rate GWP.

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ENERGY IN SUSTAINABLE DEVELOPMENT

Abstract

Energy and its consumption effects still remain a strategic factor in pursuing sustainable development objectives. In addition to the noticeable advantages connected with the development and upgrading of various products, energy consumption, through generating harmful gas emissions, also causes climate changes and acid rain as well as quality deterioration in health foods.

This is the reason why the role of the process energy consumption (energy efficiency), translating into the product quality, is becoming really crucial. In Poland, GDP primal energy consumption is 2.7 higher than the EU-27 average and 3.2 times higher than the EU-15 average.

Poland and most of the countries will not solve their problems connected with the improvement in life quality or the impact of the power industry on the environment without an increase in economic energy efficiency. However, an upturn in energy efficiency (energy-saving) should not lead to a decrease in product quality.

The objective of this paper is to present energy and the effects of its consumption as the strategic factors in pursuing sustainable development goals.

JEL Classification Code: **A12, Q01, Q2, Q43, Q52**.

Keywords: sustainable development, energy consumption, energy efficiency.

1. The economy and the environment

Sustainable development is a 21st century challenge. The term itself is used to define interdependent relations between the economy and the environment both on a global scale and in particular sectors (sustainable fishery, transport, forestry or the power industry). That means that such an interdependence of the economy and the environment can be viewed from various perspectives.

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However, sustainable development should be considered comprehensively in all the process systems organised and managed by man. It should have a universal character and must be perceived in this way in the context of expanding globalization and environmental impact. Such a development is a continuous, extremely complex process which raises both hopes and concerns. The hopes are mainly associated with the solution to such environmental problems as climate change or water and soil pollution as well as the problems with shrinking reserves of strategic raw materials. The concerns relate to the economic area, especially to raising funds for environmental purposes. It is high time to forget about the domination of the economy over the environment and to start intensive development of "green partnership" for common benefits.

Sustainable development can be defined as a rational balance between the three basic orders: economic, social and environmental (Żuchowski, 2011, Brundtland, 1987). They are strongly linked with one another by common interests and are created and managed by people who are not devoid of a selfish element of desire for domination over nature and a fear for the loss of their possessions. However, a gradual shift to "green partnership" can be seen and the reason is not only a sentimental attachment but also a pragmatic attitude connected with one's own real benefits.

However, not all the regions and their inhabitants perceive such a partnership as profitable for them at the moment. Such an attitude results from the existence of poverty and wealth areas, unbalanced industrial, civilization and cultural development as well as from their perception of the future.

"Green partnership" allows to have deeper knowledge not only of the links between the economy and the environment but also of human needs, concerns, opportunities, prejudices and customs that make up a complex variety of impacts on our civilization.

2. Energy in sustainable development

Energy and the effects of its consumption remain strategic factors in pursuing sustainable development objectives. Generally, it can be said that modern civilization develops mainly due to the energy carriers based on solar energy (excluding radioactive sources) which are included in both renewable sources (food, biomass) and non-renewable ones (coal, oil, gas). Natural circulation of the matter and energy is a closed cycle created by three types of life forms existing in ecosystems.

All these life forms play a precisely determined role in the energy cycle. Autotrophs, mainly plants containing chlorophyll, convert and collect solar energy in chemical substances. This process is called photosynthesis (Żuchowski, 2010). The second type of organisms are animals and people who use these substances

and the energy stored in them for feeding purposes and for economic development. The third type of life forms such as fungi and bacteria make it possible to mineralize organic substances and close the inner circulation of the matter and energy in the system.

Energy consumption works in a simple way through releasing from the carriers energy medium which is useful for human and animal living functions as well as in economy processes (heat, electric power, machine and vehicle power drives). On the other hand, energy consumption is a cause of harmful gas emission, generates waste heaps and polluting liquid wastes. These pollutants are harmful to the environment, and this, in turn, is becoming a source of unhealthy food, antibiotic-resistant diseases, climate change and acid rain (Żuchowski, 2010).

These beneficial and adverse effects of energy consumption must be balanced in terms of both economic and environmental purposes. The energy-saving economy is a good move in this direction.

3. Use of energy in the Polish economy

At the 9th plenary session of the Committee on Energy of the Polish Academy of Sciences in June 2010 some important issues concerning energy efficiency[2] in Poland were raised and they provoked deep considerations and decisive actions.

First of all, the Polish National Energy Conservation Agency claims that:

- energy efficiency indexes rank Poland in the "average energy consuming" group,
- it is not possible to maintain the rate of energy efficiency improvement only through an increase in energy prices,
- Poland will neither solve the problems concerning energy security and commitments resulting from the "Climate Package" nor improve the competitiveness of economy and life quality without a rise in the energy economy efficiency (Wnuk, 2010).

Low energy efficiency results from numerous factors. The most important issue is the fact that Polish power plants generate energy at the average efficiency[3] of 36%) (Ministerstwo Gospodarki, 2009). This makes an annual loss of nearly 24 TWh. Such low efficiency generates a cost increase connected with the neces-

[2] Energy efficiency is understood as the relation of a functional effect quantity acquired under standard operating conditions to the consumed energy quantity necessary for achieving this effect.

[3] Energy conversion efficiency is the relation of the total amount of energy acquired in the conversion to the energy included in the carriers and delivered from the outside for the energy needs of this conversion.

sity of burning higher amounts of energy carriers which, in turn, increases CO_2 emission. All these expenses are covered by energy users.

The second factor is connected with grid losses which are estimated at the level of 9.36% in Poland. Heavier losses have been recorded only in Bulgaria and Romania. According to the Report prepared by the Forum of Electric and Gas Energy Users it means that, in comparison with a statistic EU energy consumer, an extra charge of 2.85 % is paid by Polish energy consumers (BCC Report. *Polish Energy Security*. www.bcc.org.pl).

Another factor determining economic efficiency is energy consumption by the Polish industry. GDP energy consumption calculated in fixed prices (Euro 95) without taking into account purchasing power parity[4] is 2.8 times higher than the EU-27 average and 3.2 times higher than the EU-15 average energy consumption (Wnuk, 2010).

To give a better picture of this problem, it is worth noting that the Polish GDP energy consumption is 6 times higher than in Switzerland, 5 times higher than in Denmark and 4 times higher than in such countries as Iceland, Austria or Germany. However, it can be said that the GDP energy consumption calculated in fixed prices (Euro 95) has decreased since 1995 by over 30%. When primary energy consumption[5] of the Polish GDP calculated in fixed prices (base year-2005) is estimated without considering the purchasing power, it was higher than the EU average by 25% in 2008 (Central Statistical Office, 2011, 2014). In the Polish processing industry the highest amount of energy is consumed by the metallurgic, chemical, mineral, food and paper-making industries. The first three of them consume as much as 60% of energy. The efficiency rates are improving most significantly in the engineering and food industries, whereas the slightest improvement is recorded in the metallurgic, paper-making, timber and chemical ones (Central Statistical Office, 2011, 2014).

Another factor which influences energy saving is insufficient awareness of the executives in this area as well as lack of a corporate policy concerning its rational consumption in accordance with sustainable development objectives (Pawłowski, 2011).

Finally, when discussing factors determining energy consumption, we cannot ignore the role of gas emission in climate change, CO_2 in particular. In 2011 anthropogenic CO_2 emission reached the peak of nearly 35 bn ton. To have a better picture, I can give an approximate estimate that over a million kg of CO_2 is

[4] Purchasing power parity is calculated by comparing fixed prices of a basket of goods and services in various countries at the same time in the local currencies.

[5] Primary energy consumption determines the energy delivered to the assessed object converted into unprocessed energy present in energy carriers.

released into the atmosphere within one second from all corners of the earth. Despite suggestions concerning investment in green renewable energy resources, developing countries such as China, India, Brazil, but also Poland admitted at the recent Climate Conference in Durban (December 2011) that their economic development will mainly rely on coal, oil and gas. In such circumstances there is no need to explain how important the process energy consumption is.

From the point of view of commodity science it would be worth considering whether to impose a product tax on CO_2 emission, taking into account the share of carbon footprint in a product. This is the only way to make companies reduce emission rationally and producers to use energy carriers efficiently. Pursuing objectives in the area of energy-saving management included in the bill on energy efficiency (August 2011) should be carefully observed (Ustawa z dnia 15 kwietnia 2011 r. o efektywności energetycznej).

4. Efficiency in Polish energy policy

On November 10th, 2009 the Council of Ministers voted to adopt an annexe to the Resolution no. 202/2009 on energy policy in Poland by 2030. Some of the issues presented there were goals and actions in the area of energy efficiency improvement and anticipated effects of these actions.

The strategy presented in the document makes an effort to confront the most important challenges which the Polish power industry faces. They are the following:

- high demand for energy,
- dependence on imported oil (over 95%) and gas (over 70%),
- environmental commitments ("3x20% package"),
- dramatic fluctuations in prices of energy resources (Ministerstwo Gospodarki, 2009).

Taking into consideration these basic guidelines of the Polish energy policy, focus should be put on both short-term and long-term (by 2030) goals such as:

- improvement in energy efficiency,
- improvement in the fuel and energy supply security,
- diversification of the electric power generation structure through introduction of nuclear energy,
- development in the use of renewable energy resources (including biofuel),
- development of competitive fuel and energy markets,
- reduction of the effect of energy industry on the environment (Ministerstwo Gospodarki, 2009).

The energy policy approved by the Polish government coincides with the Lisbon strategy and the strategy of sustainable development. Efficiency in the energy

policy is a priority. The objectives presented in the annexe to the Resolution No. 202/2009 „Polish Energy Policy by 2020" refer to:
- stimulating economic development without an increasing demand on the primary energy (pressure on energy-savings),
- reaching the EU-15 level by the Polish economy (reduction in energy consumption).

There is a correlation between these general objectives and the more specific ones connected with a two-fold increase in electric energy production by 2020 (compared to 2006) through the use of a highly efficient co-generation[6] technology, limiting grid losses and an increase in the final energy consumption.

From the point of view of commodity science, intended actions in the area of determining energy consumption levels in the energy-consuming appliances and products as well as introducing product energy-consumption standards are essential. In the commodity science area of quality management, intended techniques of demand management ("Demand Side Management") including installation of electronic meters which diversify daily distribution charge rate should be applied.

The indicative objective resulting from the Resolution 2006/32/WE (Directive 2006/32/EC of the European Parliament) will be pursued with a view to achieving by 2016 final energy[7] saving improvement by 9% compared to the average energy consumption in 2001-2005 (i.e. about 53.5 GWh).

Energy efficiency improvement will contribute to:
- reduced Polish economy energy consumption,
- improvement in energy security,
- implementation of new energy-saving processes and products,
- a reduction in emission of greenhouse gases,
- improvement in the Polish economy innovativeness ((Ministerstwo Gospodarki, 2009; *EU Green Paper a European Strategy for Sustainable Competitive and Secure Energy*, 2006).

The "Energy Policy" shows a strategic course of actions in which, in addition to hard bituminous and brown coal resources – stabilisers of Polish energy security, innovative diversification of technology in acquiring and producing energy from other sources will be introduced. It will comply with the EU guidelines on the decrease in CO_2, SO_2, NO_x and dust emission, in accordance with the commitments undertaken by Poland.

[6] Co-generation (Combined Heat and Power) is a technological process of generating electric and heat power simultaneously.

[7] Final energy is the ultimate, effective energy consumption to achieve an intended practical effect including the energy necessary to compensate for the inner installation system losses – calculated according to the Eurostat/IEA methodology.

5. Security of energy carriers supply

Fuel and energy supply at the level which guarantees meeting domestic needs at acceptable prices should be based on diversification of renewable and non-renewable fuels with a view to improving the final use of energy and power engineering services.

The Polish power industry is traditionally orientated to the consumption of domestic resources, mainly hard and brown coal. However, in accordance with a global trend, crude oil derivative fuels are becoming more significant. It can be seen in Fig. 1 that at the turn of the centuries consumption of such fuels in Poland exceeded the final consumption of coal (oil – 28%, coal – 26%).

Within the decade a clear shift in energy carriers consumption from coal (18%) to liquid fuels (33%) was recorded. Coal is still regarded as a strategic fuel in the Polish energy policy. Hard and brown coal account for 88% in the total electric power production in Poland. In Germany, for example, coal accounts for 45% of the electric power production, in the Czech Republic – about 60%, in Bulgaria – about 50%. Some important trends in coal consumption can be observed. Currently, China and India invest dynamically in new energy capacities based on coal, whereas the EU countries shift from coal to renewable energy (Chojnacki, 2011).

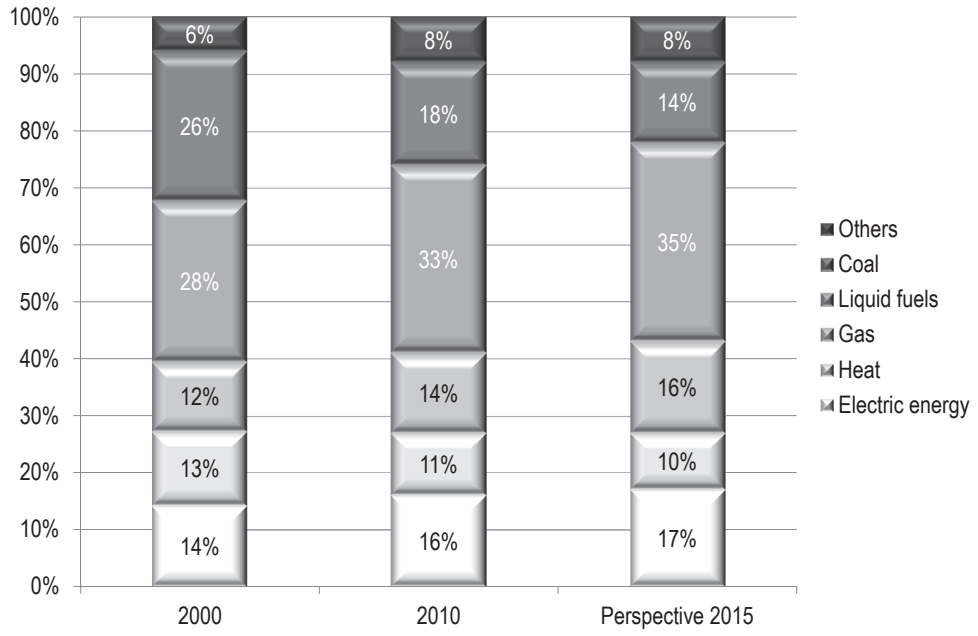

Figure 1. Final energy consumption structure in Poland

Source: GUS, Energy consumption efficiency in the years 2000-2010, Warsaw 2011.

An attitude to the coal-based energy industry in the future will depend mainly on the political decisions concerning global climate agreements, grid development for green energy needs and social acceptance for CO_2 underground storage. The global hard coal output and consumption have increased 2.5 times within the last 30 years (from 2.3 bn ton to 5.8 bn ton).

In the case of China, India, South Africa as well as Poland coal is the main energy resource and it is a strategic fuel for the electrical power engineering industry. However, in Poland – being an EU member – a shift towards renewable crude oil derivative and gas fuels can be noticed. To maintain the role of coal on the market of electric power production, low-emission and coal gasification technologies have to be applied as well as conversion into liquid fuels.

Currently, crude oil is still a dominant energy carrier. To provide energy security, Poland intends:

– to increase the level of oil resources diversification from various suppliers offering alternative transport routes,
– to build oil storage facilities which will guarantee a continuous supply in the time of a crisis [5].

In Poland, oil and oil derivatives play an important role in the service and road transport sectors (Fig. 2).

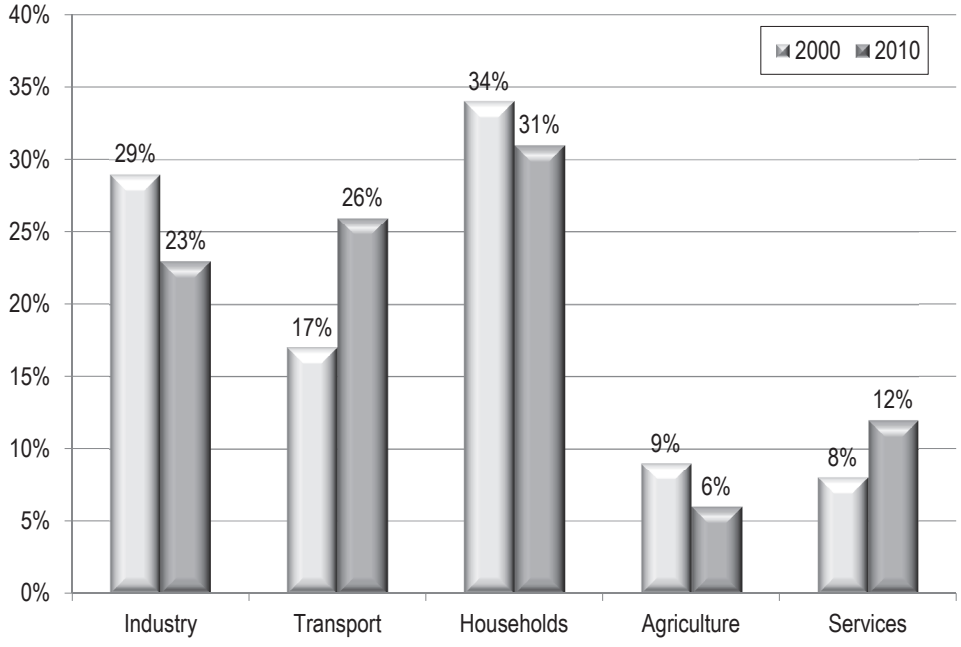

Figure 2. Final energy consumption structure according to sectors

Source: GUS, Energy consumption efficiency in 2000–2010, Warsaw 2011.

An increase in this type of energy consumption can be seen particularly in these sectors. However, industry restructuring based on energy consumption resulted in reduced energy consumption in this sector.

The natural gas supply plays a significant role in providing energy security. Poland consumes 13.5 bn m3 of this gas annually. However, its domestic output accounts for only 30% of the total demand. 50% comes from the Russian Federation and about 17% from Central Asian countries.

And this is the reason why the fundamental goal is to increase the capacity of the gas output and its production in Poland. It can be accomplished by:

- coal gasification,
- use of landfill gas,
- shale gas mining.
- The information about shale gas reserves aroused strong emotions in Poland. The reserves, studied by various consulting companies (Wood Mackenzie, Advanced Resources International or EIA) are estimated between 1.5 trillion m^3 and 5.5 trillion m^3. It would mean Polish gas self-sufficiency for over 200 years.

The USA can be a good model for us to follow. They have access to modern technologies of horizontal drilling and hydraulic fracturing which have helped them to triple the shale gas output within 5 years and become the largest gas producer in the world, outdistancing Russia.

Some EU countries and France, in particular, have expressed anxiety over the threats connected with a potential influence of mining technologies on the groundwater quality, which can be dangerous to our country. However, at this stage, such concerns are highly exaggerated because gas-bearing layers are located below 3,000 m underground, whereas the deepest underground water intake reaches about 200 m.

In the future, beneficial changes in diversification of the electric power generating structure can also be made by introduction of nuclear power and development of renewable energy resources. The renewable energy consumption is a good direction to pursue sustainable development goals. The energy coming from renewable sources is environmentally friendly in terms of emissivity and it is able to reduce a dependency on imported energy supply. A strong pressure will probably be put on the use of biomass and biogas, wind farms development, solar panels and photovoltaic technology, as well as on the use of geothermal energy and thermal water.

Poland is obliged, under the signed international agreements, to reach by 2020 the level of 15% in the final energy consumption from renewable energy sources. By 2020 biofuel will have to account for 10% on the transport fuel market.

It is worth noting that Poland, for fear of adverse effects which can result from stricter requirements of the Climate and Energy Package, decided to veto the EU proposals. Therefore, it is not surprising that the energy consumption problem

of our economy is not only a matter of economic and environmental effects but also of innovative development, life quality and political image.

6. Energy management

An improvement in energy efficiency can be generally defined as an increase in its final consumption due to technological, economic and behavioural changes ((Directive 2006/32/EC of the European Parliament). In the middle of 2011 the European Commission proposed a plan of a new directive on the improvement in energy efficiency, which is to be implemented by the EU members by 2013. The European Commission is planning, as a part of its legislative operations, a wider look at the issue of energy efficiency in terms of energy supply, the introduction of a market mechanism which can trigger increased effectiveness of the end users as well as emphasizing the role of the public sector, which is responsible for the annual 3% energy savings (Kalinowski, 2011).

ISO 50001:2011, derived from the British standard BS EN (Energy Management Systems), is connected with energy efficiency. ISO 50001:2011 "Energy Management Systems – Requirements with Guidance for Use" is currently a new basic standard arousing an intense interest of the companies in all sectors (ISO – 50001:2011). It includes specific requirements which allow the companies to implement and sustain a system of identifying the areas where energy consumption is high and reduce it rationally with a view to increasing energy efficiency of an organisation. The implementation of this standard can provide economic and environmental benefits by reducing greenhouse gas emissions (Hui, Cham and Punk, 2001).

The most significant requirements of the standard mentioned above refer to: formulating an energy policy of a company, identification of the current and anticipated energy consumption and the introduction of monitoring and energy consumption measurement systems.

The so called "white certificates" are one of the measures which can improve energy efficiency. Such certificates are granted to the organisations involved in the implementation of various measures which have a beneficial influence on energy efficiency in the process of energy transmission and consumption. All the companies which sell energy will be obliged to have a specified number of white certificates resulting from the overall amount of energy sold.

Another measure facilitating the system of energy management could be the energy audit "Walk – Through". It should be noted that, despite a process and product diversity in various organisations, opportunities for energy efficiency improvement usually refer to similar areas, such as: electric drives, lighting, ventilation, air-conditioning, compressed air and so forth. The energy audit can become

essential for the analysis of these areas as it consists in watching the main streams of energy flow with a view to indicating possibilities for their efficiency improvement, which allows companies to reduce their energy costs. Practice proves that such an operation allows the companies to save up to 10–15% of energy annually (Pawełoszek, 2012).

Effectiveness defined in terms of economic efficiency discriminants is important in the process approach to the energy management. The application of such discriminants in the area of the tanning industry will be presented in the next part of the paper.

Conclusion

- Energy and the effects of its consumption, especially in Poland, are a strategic factor in pursuing sustainable development goals.
- Poland will not solve the problems of energy security or meet the obligations included in the "Climate Package" without an increase in energy efficiency.
- GDP energy consumption calculated at fixed prices (Euro 95) without taking into account purchasing power parity is 2.8 times higher than the EU-27 average and 3.2 times higher than the EU-15 average energy consumption.
- Energy policy by 2030 planned by the Polish government intends to strive for economic growth without an increase in demand for primary energy and achieve the level of energy efficiency in the EU-15 countries.
- Basic objectives of Poland in this period will be: diversification of the oil sources, shale gas mining, the development of nuclear energy and renewable energy resources as well as a reduction in CO_2 emissivity.
- In order to reduce energy consumption rationally and improve the energy efficiency, proposals included in ISO 50001:2011 should be supported.

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SELECTED THEORETICAL ASPECTS OF THE INTERNATIONAL INTEGRATION OF UNDERDEVELOPED COUNTRIES[2]

Abstract

The key theoretical problem related to integration of less developed countries is the possibility of legitimate application of the existing theoretical framework of international economic integration to developed as well as developing countries (the question of its universality).

The article aims at presenting selected theoretical approaches to the economic integration of less developed countries in the context of the general theory of international integration. With the use of an historical approach to the descriptive analytical method, the relevant international and Polish literature on the topic spanning from the middle of the past century until the beginning of the 21st century were thoroughly analysed.

JEL Classification Code: **F150**.

Keywords: International Economic Integration, Less Developed Countries.

Introduction

Questions surrounding the international economic integration of underdeveloped countries have long been the subject of scholarly debate. Since the second half of the twentieth century there has been a basic academic consensus (Balassa, 1973, p. 5-6; Robson, 1987, p. 3; El-Agraa 1989, p. 11; Miklaszewski 1999, p. 14;

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Makać 2001, p. 30), that the main objective of international economic integration is to exert a positive impact on the economic growth and development of countries involved in the process[3]. The theory of economic integration formulated by B. Balassa (the conditional convergence hypothesis) has now entered the canon of development theory (Bartkowiak, 2013, p. 159-162) and it is difficult to argue with Balassa's view on the economic issues that face underdeveloped countries, which holds that "in underdeveloped countries, considerations of economic development are of basic importance ..." (Balassa, 1973, p. 6).

On the level of theory, however, a number of differences can be observed among scholars, especially in their approach to the possibility of using current theories of regional integration (their universality) to analyse both highly developed and underdeveloped countries.

The purpose of this article is to present selected theoretical aspects of the international economic integration of underdeveloped countries in the context of the general theory of international integration. The analysis is based on an analytical-descriptive method used in a historical perspective, and relies on important Polish and international literature on the subject published between the middle of the 20th and the start of the 21st century. Due to formal constraints, the article only focuses on the main themes of the debate.

The integration of underdeveloped countries in light of the traditional theory of international economic integration

The first part of this discussion aims to determine whether it is appropriate to analyse underdeveloped countries in a traditional framework, based on the standard theory of customs union proposed in the middle of the 20th century by Viner (1950), whose ideas were further elaborated by Meade (1956) and Lipsey (1960), as well as by scholars such as Johnson (1962), Makower and Morton (1953). Their research was static and limited to analysing the direct effects of customs unions based on the price mechanism; the reason was that dynamic (indirect) effects were believed to be linked to the establishment of a single market, i.e. a more profound form of economic integration (Czepurko, 1972, p. 93-121).

J. Viner supplemented the theory of the customs union, and hence the theory of integration, with the basic concepts of *trade creation and trade diversion*. Trade creation is understood as the emergence of new trade flows between member

[3] The first attempts at linking the theory of economic integration with the theory of economic development were undertaken at the beginning of the 1960s., (Czepurko, 1972, p. 94). The relationship between international economic integration and economic growth and development have since become the subject of numerous empirical studies, including: Rivera-Batiz & Romer, (1996); Vamvakidis, (1998); ion (2004).

states as a consequence of introducing free trade within the union. Trade diversion, on the other hand, involves replacing cheaper imports from non-member states with local products or products from the territory of the union, whose prices have become competitive thanks to the liberalisation of internal trade and the simultaneous imposition of uniform external customs duties[4].

Subsequent research (Meade, Lipsey) allowed one to distinguish two additional effects (sub-effects): production effects, whereby higher-cost local products are replaced by cheaper imports from a partner country, and consumption effects, whereby the consumer potential of a given society grows as local prices go down to the price level of the customs union. The growth of consumer demand and the attendant rise in imports are currently bracketed under the concept of trade creation. As remarked by Bijak-Kaszuba (2003, p. 79), "it is assumed to have a production aspect (replacing local production with imports) and a consumption aspect (relying on imports to satisfy increased consumer demand)". As a consequence of trade creation in this sense, trade volumes grow and welfare increases, which has led many to interpret trade creation as a clearly positive effect of the customs union, both from the perspective of individual member states and the entire world economy. In trade diversion, on the other hand, the direction of supply is shifted from more to less efficient producers; accordingly, the use of production factors decreases in efficiency, and the process can be analysed as a negative effect of the customs union (Siwiński, 1976, p. 36). In traditional theory, whether a given customs union creates or diverts trade (i.e. whether trade expands or shrinks on a global scale) is an important determinant in allowing an estimation of its benefits.

It should be noted, however, that under certain circumstances, and especially from the perspective of individual member states, trade diversion can also generate important positive results. Zielińska-Głębocka (1997, p. 218) refers to a situation "when higher-cost imports from third parties or less efficient member states are replaced with lower-cost supplies from a new country that joins the union. Once the structure of trade changes, prices in the customs union go down, and production and consumption effects of trade set in. Losses in the export share of higher-cost countries promote an increase in allocation efficiency and foster the growth of welfare in individual member states"[5].

Some scholars claim that the general theory of economic integration can also be fully applied to underdeveloped countries. These include A. M. El-Agraa

[4] The traditional theory of a customs union is widely discussed in relevant literature, including: El-Agraa (1983); Chacholiades (1978); Robson (1987); Bożyk & Misala (2003); Misala (2001); Zielińska-Głębocka (1997).

[5] The interpretation of trade creation and diversion effects was discussed by, among others: Kowalczyk (1999); Schiff & Winters (2003).

(1989, p. 98-99), whose theory, based on the verification of Brown's model (Brown, 1961), places particular emphasis on the static benefits that accompany resource reallocation. On the level of theory, he claims, there are no differences between customs unions established by developed and developing countries.

Scholars who take issue with this claim, to mention but a few, include Allen and Meier; both reject the applicability of the standard customs union theory to developing countries (Andic, Andic, & Dosser, 1971, p. 15). Balassa (1968, p. 90) believes that "the traditional theory of a customs union has limited applicability to the integration of developing economies", and calls for a new theory to address the issue. Linder (1968, p. 91), in turn, maintains that the traditional view cannot be unreservedly applied to trade between underdeveloped countries, but at the same time dismisses the possibility of creating a theory of customs unions and economic development that would have a universal application. Thus, he belongs to a group of scholars who do not reject the theory of the customs union as altogether inapplicable to developing countries, but who dismiss a particular version of it that only deals with developed economies. This approach drives home the fact that there can be "variants" of the customs union and that their success criteria may be different than conventionally assumed. It can also be valuable for the analysis and politics of underdeveloped countries. Scholars in this group focus on the issues of industrialisation, the protection of international trade resources, and the interpretation of the static effects of the customs union.

Kitamura (1968, p. 56) emphasises that trade diversion is an essential component of integration policy and discrimination can be seen as an inherent feature of such agreements. Hence, he views trade diversion as "rather positive than negative", adding that "especially in underdeveloped regions, the margin of preference must be extensive enough to promote economic growth through creating a broadened regional market".

This is supported by the Polish economist, Dobosiewicz (1976, p. 226), who maintains that for developing countries trade diversion is not only beneficial but even necessary. It decreases their dependence on a narrow group of suppliers, and above all, creates better conditions for long-term development. This allows them to move away from one-sided specialisation and achieve independence from developed countries.

In contrast to the traditional theory of customs union, in which trade creation is seen as positive and trade diversion as negative, Andic, Andic, and Dosser (1971, p. 25-26) conclude that in reality both can have positive and negative implications for the welfare of the union. Therefore, both effects should be divided into individual components and not taken as a whole to improve or decrease the welfare of the group.

Linder (1968, p. 105) suggests something else entirely; in his view, when studying expected integration benefits and putting them to the best use, trade creation

and diversion should be treated as a single concept, labeled as a "beneficial change in trade direction". Following Linder, Sakamoto claims that when trade diversion occurs from a developed country to a relatively more efficient developing country, the group's overall welfare need not decrease. He also uses the term of *efficient trade diversion* to signal that resources generated in this way could not be acquired by the given region or country without integration (Hosny, 2013, p. 142).

Literature does not ultimately settle the question of how the static effects of the union are affected by economic competitiveness and the complementarity of individual member states (Wysokińska, 1995, p. 871). There is a general agreement that actual or potential complementarity in the economic structures of partner countries promotes integration (Bożyk & Misala, 2003, p. 28-29). This corresponds with the view of many contemporary researchers studying the economic integration of underdeveloped countries (Langhammer & Hiemenz 1990, p. 68; Inotai 1991 p. 5-6; Shams 2003 p. 2), who claim that differences in the ownership of production factors and complementary economic structures are generally conducive to the process.

The integration of underdeveloped countries and a new theory of international economic integration

Attempts at dynamising the theory of the customs union were first undertaken at the beginning of the 1960s by Balassa, who introduced the income mechanism into his analyses of the customs union's impact on international trade. This meant undertaking research on the influence of the customs union on the growth rate of national income in particular member states and its feedback influence on their trade (Czepurko, 1972, p. 121).

Principal dynamic effects include: strengthening competition within the integrated area, understood especially as new opportunities for producers to enter hitherto inaccessible markets; accelerating technological progress and innovation; (company-internal and company-external) scale benefits linked to the growth of market size, and investment effects (Chacholiades, 1978, p. 558-559)[6].

When a union is formed, new opportunities are created for "internal" and "external" investors, which, in the long run, may lead to investment creation and diversion (Machlup, 1986, p. 163). Investment creation is understood as a rise in total investment throughout the global economy, while investment diversion involves moving investment from third parties to member states (Misala, 2001,

[6] An extended discussion of the dynamic effects of integration can be found, for instance, in: El-Agraa (1983); Balassa (1973); Robson (1987); Bożyk & Misala (2003); Misala (2001); Zielińska-Głębocka (1997).

p. 359). The economic interpretation of investment effects differs from the interpretation of short-term trade effects. Investment diversion can be a positive event, signaling a more efficient use of capital in places where its marginal efficiency is higher, which leads to a growth in the total income of member states (which does not preclude that losses may be sustained by the owners of production factors in third party countries, from which capital is diverted). Investment creation causes a surge in GDP, on the condition that potential savings are greater than the opportunities for investment or when it is possible to stimulate a greater trend to save and thus maintain their high level. Otherwise, investment creation can generate losses by contributing to recession (Machlup, 1986, p. 164-165). Despite these risks, stimulating investment effects (and attracting investments that do not incur a debt relationship – FDI) is now considered one of the main economic goals of member states in a union (Zorska, 2007, p. 38) and has particular importance for underdeveloped countries.

Dynamic effects are much more difficult to analyse than static effects (Chacholiades, 1978, p. 558) nevertheless, many scholars suggest it is the dynamic, and not the static approach that is better suited to analysing the integration of developing countries. Kitamura (1968, p. 38) writes: "...for developing countries, it is not the change in foreign trade revenues as such, but the need to speed up economic development that provides the essential impetus and yardstick for regional economic integration. Since the economic growth of countries in these regions requires fast and far-reaching transformations in the structure of production and trade, an analysis of welfare growth that follows certain changes to existing structure and trade can be less important than an analysis of their impact on investment and technological progress".

In his book on economic integration in Africa (*Economic Integration in Africa*), Robson (1968, p. 56-58) delivers a trenchant critique of the traditional theory of the customs union, which he considers to have very limited applicability to the integration of developing countries. He maintains, however, that just because traditional theory largely focuses on the analysis of integration problems within a static framework does not mean that it has no relevance for less developed countries, where the focus is on economic growth and development.

In this context, as Jaber (1971, p. 256) recapitulates, most authors agree that the traditional theory of integration has limited (if any) applicability to the integration of underdeveloped countries. In their view, it should be approached as an issue of economic development rather than a tariff problem; in order to assess the expediency of economic integration among the least developed countries, emphasis should be put on dynamic effects above all.

Rueda-Junquera (2006, p. 4) concurs, adding that the basic justification for the integration of underdeveloped countries is provided by the dynamic approach. He sees the provisions made as part of integration agreements as a means of

accelerating the growth rate of members states and promoting their long-term development. He also believes that integration programs can contribute to creating auspicious economic conditions for overcoming the structural problems of underdeveloped countries.

Conclusions

The analysis warrants the conclusion that the bulk of the debate about the applicability of the theoretical framework of international economic integration to underdeveloped countries focuses on the static aspect of the process. Opinions are divided over its usefulness in this context; most scholars approach it with many reservations. There is a much broader consensus with regard to the dynamic approach. Scholars agree that the latter can be expected to lead to the long-term growth and development of partner countries and should thus be the primary justification for the economic integration of underdeveloped countries..

It should be noted that the theoretical framework elaborated for developed countries specifically highlights the positive effects of integration. Experience dictates, however, that its costs are very high and net profits extremely difficult to achieve under the specific conditions of underdeveloped countries. In the latter, integration additionally requires that comprehensive, country-specific subsidiary measures be taken; in the context of the institutional inefficiency of many underdeveloped countries, such (usually spontaneous) initiatives are often doomed to failure. The numerous unions created by African countries are a good case in point. In existence since the 1960s, they have only brought very modest short- and long-term effects. Because the exports portfolio of individual countries is very limited, (for the bulk of African states, a single product accounts for more than half of all exports), partners' demands often cannot be met within the region, which means that union-external exports continue to predominate. In terms of long-term effects, investment effects are now the most noticeable. These, however, can hardly be attributed to the actions of the groups; to a much greater extent, they stem from the "new investment philosophy", implemented mainly by the Chinese.

At the same time, it seems that the theoretical framework created to analyse international economic integration in the previous century, which continues to furnish the foundation for the economic cost-and-benefit analyses of economic integration, also requires a certain adjustment to the conditions of the present-day world economy. In particular, it should focus on stimulating positive feedback between regionalisation and globalisation and harnessing both for the improvement of the economic situation of underdeveloped countries.

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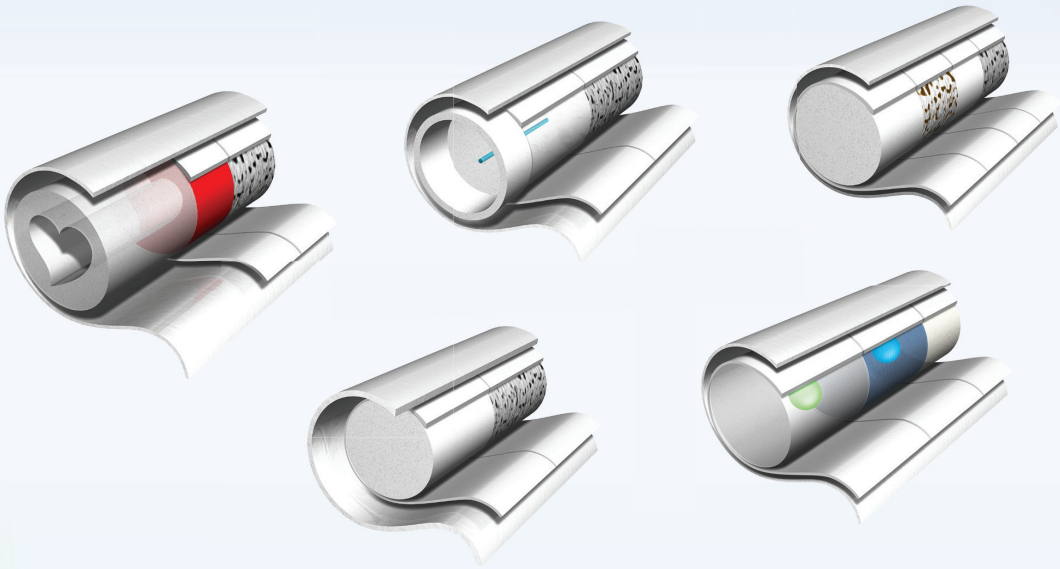

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