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Krzysztof WITKOWSKI[1], Mateusz KUROWSKI[2], Dariusz LESICKI[3]

CSR IN AUTOMOTIVE SECTOR - LEADERS OR DECEIVERS? THE CASE OF AUDI AG

Car production is a kind of activity that affects environment, society and global economy to a large degree. The most negative impact can be observed in the first of mentioned fields. Every day automotive companies consume big amount of energy and resources. What is more, their final products are considered as one of the main pollution sources. Nevertheless many car producers made effort to minimize negative external effects of their businesses. Year by year various CSR classifications and rankings showed that those efforts were resultful but Volkswagen emissions scandal and anti-diesel lobby shed new light on car industry in the terms of CSR. The aim of the article is to review CSR activities undertaken by Audi AG. Literature review and report analysis performed within the case study shows that the company is active in the field of ecology, society and corporate governance. In many terms Audi AG can be considered as the one of global CSR leaders. It is characterized by wide range of long term initiatives, high employee satisfaction and constant dialogue with stakeholders. On the other hand Audi AG can not be seen as a responsible company in the light of misleading customers to raise sales volume.

Keywords: CSR, automotive sector, dieselgate.

JEL Classification Codes: M14, L62.

Introduction

The main aim for each commercial player operating on the market is maximizing the profit. On the competitive market companies try to attract customers by offering higher

[1] Assoc. Prof., University of Zielona Góra.
[2] M. Sc., University of Zielona Góra.
[3] M. Sc., University of Zielona Góra.

quality or lower prices than competitors (Porter, 1985) – in other words by acquiring competitive advantage. According to J. Kay's theory the companies which are able to win the competitive struggle are characterized by three elements. Firstly, they create and maintain positive relations with internal and external players. Secondly, they implement organizational, product and process innovations. Finally, they have good reputation which enables them to communicate necessary information to customers (Kay, 1993). Corporate reputation can not be fully controlled but it can be formed by setting reputation programs and reporting not only financial information but also data concerning other fields of company's activity.

The emphasis on organizational transparency increases with the popularity of the concept of corporate social responsibility (CSR). Companies try to outdistance each other in social and environmental actions and reach high position in CSR rankings. Some companies implement CSR tools and procedures as a marketing measure but other consider it as a way to realize their social mission. Without regard for company's attempt to CSR it takes a lot of effort to become socially responsible and to work out good relations with stakeholders. Arduously achieved position inside the society can be revised when unethical behavior, fraud or corruption practices are revealed and publicized.

On the one hand it is easy to observe positive corporate initiatives – volunteering, financing scholarships, investment in renewable energy sources, participation in various ecological and social projects. On the other hand one can still hear about using child labour, forced labour, breaching health and safety regulations or problems concerning waste processing. The problem is most common in developing countries where global supply chain leaders make pressure on suppliers to lower production costs. As one can find in the literature it concerns many companies even these with top CSR ranks in global classifications.

In the light of above findings it is difficult to state if certain company can be considered as socially responsible. There are many important aspects of activity that should be taken into consideration during evaluation.

The purpose of this article is to review CSR activities undertaken by Audi AG and to find its relationship with financial performance of the company. Research hypothesis is the idea that single unethical behavior negatively affects the company even with extraordinary CSR performance. This hypothesis was verified by report analysis and literature review. It is expected this research will provide a wide image of Audi AG's CSR performance.

Before analyzing the case of Audi AG it is necessary to take a closer look at the concept of CSR and sustainable reporting.

CSR – the concept and reporting process

There can be found a wide variety of CSR definitions in the literature. They focus on different areas and cover various aspects of corporate activity. The problem with defining CSR results from different points of view represented by authors and institutions. They embody the field of economics, management, sociology and looking through the prism of these distinct theories it is impossible to understand the role of companies in society in the same way. This problem was noticed when the idea of CSR was developing (Votaw & Sethi, 1973) and is still actual nowadays (Smith, 2011). The differences are also observed among geographic regions (Williams & Aguilera, 2008). What is more in public debates CSR is sometimes used as a key word, slogan that equates for each action directed for reduction of poverty, social inequalities and environmental pollution.

As the concept of CSR itself, most its definitions base on the concept of stakeholder which is described as „*any group or individual who can affect or is affected by the achievement of the organization's objectives*” (Freeman, 1984, p. 46). The groups of stakeholders functioning in each organization’s environment can be divided into three categories (Rodriguez, Ricart & Sánchez, 2002):

- consubstantial – crucial for organization’s functioning, e.g. workers and owners;
- contract – related with organization through formal or informal contract, e.g. clients, suppliers, competitors, financial institutions;
- contextual – essential in developing image and position in society, e.g. administration, media.

Although the first group of stakeholders are conditional for the structure and performance of the company other two are also necessary to achieve corporate goals and to become competitive. Due to Hopkins (2002) CSR is about treating all stakeholders ethically. This mission consists of two parameters. The first is to remain profitable, the second to improve living standards of the groups inside and outside organization.

Care for stakeholders was encompassed also in one of the most common definitions of CSR proposed by European Comission (2001, p. 4): „*a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis*”. It means that being socially responsible means more that fulfilling law regulations what is obligatory and meeting financial expectations of shareholders what is necessary to retain the presence on the market. Due to this definition companies are expected to take into consideration also social and environmental aspects of their activity.

The new definition presented by European Commission (2011, p. 6) in *A renewed EU strategy 2011-14 for Corporate Social Responsibility* is more general and describes CSR as „*the responsibility of enterprises for their impacts on society*”. The specific areas of responsibility are named in the further part of the document: society, environment, ethics, human rights and consumer concerns. Comparing to the previous definition minor change was made – three areas were separated from the social dimension.

Social and environmental aspects next to corporate governance constitute three pillars of CSR assessment of companies (ESG factors). Due to CFA Institute (2017) investors pay more and more attention to all three areas of ESG. 73% of respondents declare that they perform ESG analysis in at least one area and in half of these cases analysis is run systematically. Assessing ESG factors in organization requires access to specific information which can be acquired directly from the company or from sustainability reports, policies, codes of conduct, internet sites and sometimes annual reports. Publishing ESG information in documents and through media is called social reporting.

The process of social reporting entails financial expenditures, the use of specific knowledge and it requires time to prepare and update information. Companies often point out the fact that resources used to create social reporting are the main constraint in implementing this process. They follow the logic that it is better to use the resources to do something good instead of displaying previous accomplishments. This way of thinking is reasonable but without social reporting it is impossible to monitor companies performance, compare market players and to follow progress in ESG factors. What is more social reporting leads to other benefits like improved credibility, better relations with environment and positive corporate image (Lament, 2016). It is worth to mention that the biggest part of the cost of social reporting is associated with creating procedures of collecting, computing and publishing data. Since then one defined methodology evolves in time in line with new requirements and gained experience.

Research showed that in average in European countries 74 out of 100 biggest companies create sustainability report. In Americas and Asia and Pacific this count was even higher, accordingly: 77 and 79. In all three cases there has been a positive dynamic for at least 3 years. The count for Africa and Middle East was 53 and it exhibits negative tendency (KPMG, 2016a). Companies which report point out specific advantages result from this process. The first thing is improved corporate image, it also increases employee and consumer loyalty, reduces inaccurate information about the company in media and helps to refine social strategy (Ernst & Young, 2016). Some companies also point out that CSR reporting directly affects financial aspect of their activity. They mention higher revenues and cost savings (Wolak-Tuzimek, 2016).

Unlike marketing information about undertaken projects, social reporting demands systematic and holistic approach. There are various standards and guidelines which define how socially responsible companies should behave and what should they disclose. The most popular reporting framework is Global Reporting Initiative (GRI) G4 (Ernst & Young, 2016). It is also the most complex guideline which covers many indicators in 46 social, environmental and economic aspects.

One of the leading industries in social reporting is automotive sector (KPMG, 2016b). Thanks to this fact it is relatively easy to monitor CSR performance of the companies.

CSR in automotive sector

After mining and technology, media, telecom (TMT), automotive is the third sector with the highest social reporting rate. Research showed that the generality of reporting goes in step with its quality (KPMG, 2016b). In average automotive companies got 65% of reporting quality points what was higher by 8 percentage points than result achieved by the whole sample of companies representing 14 sectors. The strongest points of social reporting in automotive sector are: independent assurance as a general practice and accuracy of GHG emission information – especially in scope 3 downstream. Automotive companies can be considered as a benchmark in many aspects of social reporting but there are also weaknesses. There is a problem with disclosing detailed information about e.g. environmental impact of products (KPMG, 2016b).

High level of social reporting in automotive sector is combined with good CSR performance what is confirmed by various rankings. The biggest annual CSR classification is RepTrak with a database including more than 7000 companies. In 2016 9 out of 100 companies with highest CSR rating represented automotive sector (Reputation Institute, 2016). It should be mentioned that it is difficult to make CSR performance comparisons between different industries because of different types of organizational structure, management styles, realized processes consequent to specific activity. For example logistics sector base on energy to perform its core business activity. It is impossible and aimless to compare freight company with banks in terms of GHG emissions and energy use. The same fact refers to social aspects of business. There is a significant demand for seasonal work in farming and tourism. In this case supporting as high social package as in the case of unfixed time contract is limited.

Automotive sector is characterized by well qualified workforce and in a result high demands from employees (Martinuzzi, Kudlak, Faber & Wiman, 2011). The first important issue is fulfilling restrictive health and safety standards especially in production plants. Companies also try to provide measures for work-life balance but in this area there is a problem in division workers into two groups: „Facharabeiter" – with unique knowledge and qualifications and „Massenarbeiter" – with low qualifications, who work mostly on production lines. The second group states for relatively big part of workforce but the character of their job and shift work system exclude them from deriving all benefits. They can not use flexible working hours or home office. Therefore there are other measures in place e.g. funding childcare and organizing kindergartens open even during night shift. Different social problem met in automotive industry is no gender parity in general and in managerial bodies. Companies realized that fact and its negative consequences and formulate specific targets and measures in this area.

Social activity concerns more aspects than showed above and they cover also external stakeholders. Automotive companies realize their social mission also through investment in education, culture and sport. They also try to predict future problems with logistics, mobility, product accessibility and quality, and debate on their solutions.

The most important problem which is a consequence of car production is pollution. Automotive companies' strong point is integrating environmental targets into CSR strategy and explaining plans for their realization (KPMG, 2016b). It is caused mostly by the social pressure on limiting GHG emissions. Average air pollution caused by single car decreased between 1975 and 2000 by 95% (Graedel, Allenby, 1998) with further negative dynamics in the XXI century. However total pollution related to car use and production grew because of high rise in the global number of cars and transport development. The specificity of automotive industry in terms of ecological footprint is the fact that the process of production is much less harmful than next phases of product lifecycle. It is important how companies produce but the crucial thing is what they produce. Thus closed water loops, efficient recycling systems, use of solar energy in factories stand for background improvements compared to modifications in car power supply.

More and more restrictive emission norms and diesel bans caused a technological pursuit among car manufacturers. Car weight reduction, straining engines and filtering combustion products have technological barriers which not always can be crossed in the short term. The moment with no progress in turbulent market of today is considered as moving backwards and losing competitive position. Practice shows that having no solution for a specific problem sometimes results in a finding shortcuts. The history of emission affairs starts in 1970's with temperature-sensing switch which affected emissions during engine warm-up period. In 1990's General Motors and Ford cars had specific engine control unit (ECU) programs which recognized test conditions and for the time of measurement it lowers the emission level (Beene, 2015). Considerable penalties and breached corporate image were not sufficient lesson for the others. In 2014 it turned out that Volkswagen Group used similar idea to misled ecological institutions and clients. Except the leader of the group – Volkswagen, other members used the same engines in their models: Porsche, Skoda, Seat and Audi which was considered as the one of the global CSR leaders.

Diesel emission scandal and its consequences for Audi AG

In 2011 European Commission's Joint Research Centre stated that all the cars powered by diesel engine they tested had higher emission levels than it is indicated in Euro 3-5 norms (Weiss et al., 2011). Usual tests performed to measure GHG emissions were detected by special programs in ECU which set the special engine mode necessary to fulfill the emission norms. This kind of manipulation could be detected only through different tests in real road conditions.

In 2014 International Council on Clean Transportation (ICCT) commissioned research on discrepancy in GHG emissions between American and European car models. Road tests showed that 2 out of 3 cars emited more NOx than it was previously measured in typical tests (Franco, Sánchez, German & Mock, 2014). Real life NOx emissions were 5 to 35 times higher than in test conditions depending on a model (Thompson, 2014). Environmental Protection Agency (EPA) found the results interesting and decided to repeat tests which led to similar conclusions and in a consequence to threat of homologation withdrawal for Volkswagen and Audi 2016 models. In this case Volkswagen decided to take the responsibility and admit that it was not an error but they manipulated ECU programs knowingly (Gardner, Lienert & Morgan, 2015).

Audi AG as a part of Volkswagen group was involved in emission scandal. 2.1 mln Audi cars were equipped with ECU cheating mode. More than 99% of this count was sold in Western Europe including Germany and the rest in the US (Reuters, 2015). The company didn't wait long to notice first consequences.

Diesel scandal negatively influenced Audi AG's financial situation. For many years the company continued the rise in car deliveries count. Even global financial crisis could not stop the selling progress. Continuous growth was broken in 2015 when year by year deliveries dynamics was negative (-6,74%). Lower demand translated into relatively low operating profit and inhibited revenue growth.

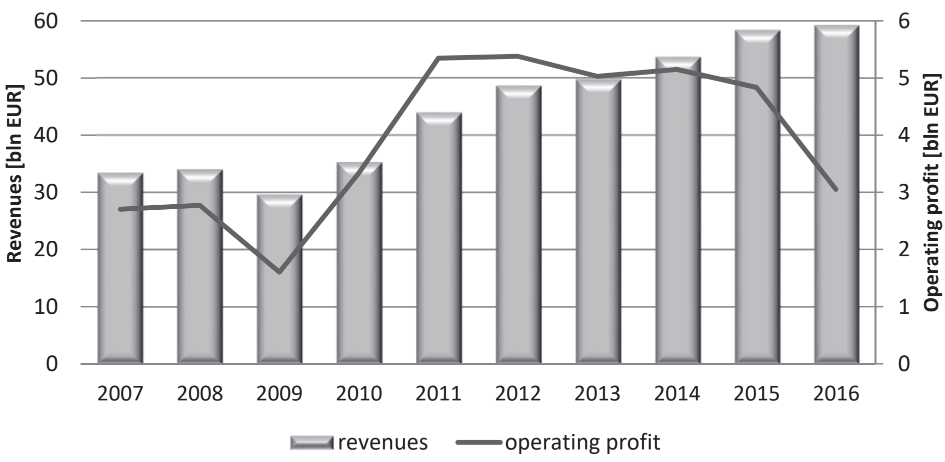

Figure 1. Revenues and operating profit of Audi AG in 2007-2016

Source: author's own work based on (Audi AG, 2009, 2011, 2013, 2015, 2017b)

Other negative financial repercussions were observed in stock market. In four day period after diesel scandal was announced Audi AG share prices fell by 18,2%. It reached its bottom in the first week of October 2015 with the total drop of a quarter. Two years turned out to be too short time for Audi AG shares to come back to prescandal price level. In November 2017 it managed to make up a half of the diesel scandal loss. For Audi AG it has been the biggest and the longest share slump since global financial crisis started in 2007. Then, in the first four days of the crisis share prices fell by 12,1% but the total drop was 60,1% in 16 months.

Audi AG will also wait for other financial repercussions to come. There is no official announcement on predicted costs of buy-backs, lease terminations and service actions, because it all depends on customers' decision. Theoretically the best option for Audi AG in terms of expenses is customers' acceptance of loading new program into ECU but then they also have to make payout depending on car value. What is more it is unknown if Audi AG will participate in penalties as a member of Volkswagen Group. The case is under investigation in many countries. For example in the USA Volkswagen Group will pay $4.7 bln for mitigation of GHG emissions effects and for supporting clean emission projects (Shepardson, 2017). By far there is no information what part will be paid by Audi AG.

Apart from financial consequences there are more negative side effects of engine mode manipulation for Audi AG. Higher NOx emissions are calculated for premature deaths and disability-adjusted life years (Barrett et al., 2015). The fraud affected something more than product durability, driving satisfaction and economical aspect of purchase, it lowered life quality of the society in general. Clients lost their trust in brand and its products.

Single fraud can undermine responsible attitude demonstrated during years of activity. Audi AG is an example of incoherent behavior which caused that all positive CSR aspects are now behind the latest incident.

Audi CSR performance

„*Sustainability of products and processes*" (Audi AG, 2015, p. 5) is Audi AG's strategic goal. Measures taken to realize it were worthwhile what was affirmed by high CSR ratings and prizes. In 2014 Audi AG was voted as the most sustainable German company (Audi AG, 2015). Year by year it is also considered as one of the best employers: the most attractive employer for engineering students, second-best for future economists, fourth for computer scientists. Audi AG was also called the best German employer in automotive industry (Audi AG, 2017c). This image consists of many elements from the field of ecology, social engagement and corporate governance. Being responsible pledges to set challenging but feasible targets in above areas and to plan the way to reach them.

In terms of ecology reduction of GHG emissions is the priority for automotive companies. Audi AG set the goal of limiting total emissions by 25% between 2010 and 2018 (Audi AG, 2017c). This goal seems to be reasonable but in case of rapid growth in production it can be impossible to reach despite noticeable progress in limiting GHG emissions. In this case it is better to take account of emission intensity per one vehicle. In 2010 it was 1030 kg per car and the count fell by 37% till 2016.

Realization of the reduction plan base on specific actions e.g. using railway transport powered by renewable energy sources in 60% of car deliveries, closing the loop of aluminium (Audi AG, 2017c) or using engine break-in process to heat the company buildings. Audi AG also try to limit scope 3 GHG emissions which are the biggest part of total emissions in automotive sector. There are some projects realized which can begin significant changes in private transportation system like developing hydrogen powered cars and energy supply infrastructure (Audi AG, 2017a). There are also projects which seemed to be only an ecological detail and turned out to be a significant possibility. Sunroof with solar panels has been mounted in cars as the energy source for cooling car interior when the engine is off. After years of developing solar panels technology in 2017 there is a plan to mount high effective solar panel on the roof of a car to provide energy for the engine (Audi Media Center, 2017).

GHG emissions is a result of fuel combustion in energy generation process. The use of energy is the second most important aspect of environmental activity of automotive companies. Audi AG set up a goal of reducing energy use intensity in production sites by 25% between 2010 and 2018. In 2016 it was still far from reaching the appointed level but the reduction by 8,4% is also significant (Audi AG, 2015; 2017b). In this case measures dedicated to reduce GHG emissions are also helpful. Additionally it is worth to mention actions which lead not only to change in the energy sources but to mitigation of energy use. 95% of parts and materials in typical Audi car can be recycled. It limits the need of production of new materials and semi-products (Audi AG, 2017c). Audi AG also realizes the determination of reducing the weight of models in each succeeding generation (Audi AG, 2017a).

The next important environmental factor is water use. In this area Audi AG plans to reduce the intensity by 25% in the period from 2010 till 2018. In previous years square meters required to produce a single car varied. It was decreasing till 2014 to reach the level of 2 and then it started to increase to 2,27 in 2016. The recent tendency is not promising but it is expected to change after activation of membrane bioreactor which will turn wastewater into freshwater in Ingolstadt production plant. There will also be a new water purification plant opened in Mexico (Audi AG, 2017b).

Except environmental actions Audi AG's strategy cover numerous social undertakings. Since 2012 it has been a member of United Nations Global Compact Initiative (Audi AG, 2013). It's code of conduct is created in accordance to International Labour Organization's conventions and it covers 26 issues important for employees (Audi AG, 2017d). Moreover there is a special human rights policy in place (Audi AG, 2017d). In a case of code of conduct breach or other unethical practices employees can use anonymous reporting channels. Working conditions are monitored for example by anonymous employees' satisfaction surveys which covers 70% of the workforce in Germany (Audi AG, 2017b). In 2016 94% of surveyed considered Audi AG as an attractive employer what complements expectations of students taking part in mentioned earlier surveys on potential future employers.

In terms of occupational health and safety the most important statistic is the accident rate. In 2016 there were 4.0 work-related accidents for million hours worked (Audi AG, 2017b) what is a positive result comparing to main market competitors (BMW AG, 2017; Daimler AG, 2017). Above typical health and safety measures there has been Audi Checkup program run since 2006. All employees can use help in detecting and mitigating health threats during their working time. In 2016 90% of workforce took a part in this project (Audi AG, 2017b).

Audi AG pays attention also to work-life balance supporting employees in childcare centers and flexible work possibilities. Those who return to the workplace after maternity and other long kinds of leave are reintroduced into duties through Job and Family Program. In 2016 company's management and General Works Council undersigned agreement on mobile work. What is important there is no distinction in access to benefits between full-time and part-time and temporary employees. It can only be limited by work character. For example when it comes to flexible work plans part-time employees working on a shift system on a production line are able to modify the time schedule or to choose the only satisfying shift (Audi AG, 2017b). Due to Charter on Temporary Work for the Volkswagen Group (Volkswagen AG, 2012) which covers also Audi AG, temporary workers have the right to equal pay an access to training programs. Signing permanent contracts with temporary employees is the one out of three base hiring paths for Audi AG. In 2016 433 temporary workers became permanent staff members (Audi AG, 2017b).

Employees are the most important stakeholder group for Audi AG, because their work leads to final market success or failure. In organizational environment there are more groups of stakeholders which affect Audi AG's activity. Audi Stakeholder Forum is a tool for finding out the needs of society, current and future problems of automotive market, logistics, environment and society in general. Annual meetings held in Ingolstadt gathers up to 100 representatives of various stakeholders groups who discuss important topics and help Audi AG to realize its social mission. During the last meeting guests and company's management gave attention to electric mobility – its perspectives and development in Europe (Audi AG, 2017b). Similar projects are run also in foreign business locations. For stakeholders worldwide there is also an online sustainable portal for communications and contact.

Sometimes communication is not enough to help certain groups in society and direct financial support is needed. Audi AG as the company and its employees run or participate in single actions e.g. for disaster victims and run long term charity projects. In Last Cents program employees voluntarily accept salary payment rounded down to full euro. The remaining cents are handed to social organizations. In 2016 workers gathered more than 1.2 mln EUR this way (Audi AG, 2016). 99% of workforce in main factories located in Ingolstadt and Neckarsulm participated in a Christmas donation. The total sum doubled by the company donation was 960000 EUR. There are many other examples of donations but it is unclear what is the total donation in previous year. A part of this sum is spent on education through financing lectures, courses and scholarships. For examples more than 140 doctoral candidates pursued their doctorates in projects financed by Audi AG. It also funds school program for young refugees helpful in getting educational background and knowledge about German culture (Audi AG, 2015). Direct help is also realized by volunteering programs. Audi AG allows workers to participate in social projects during working time. Audi Volunteers program stand for 30400 hours of work under 440 social initiatives (Audi AG, 2016).

Another aspect of CSR is corporate governance. One of the main important issues in this area is independence of management and supervisory bodies. In Audi AG board of directors is independent as existing audit committee. The negative point is the lack of nominating and remuneration committee (Audi AG, 2017a).

Individual remuneration of the members of supervisory board and board of management is presented in detailed report and it includes different components: fixed remuneration, fringe benefits, one-year and multi-year variable remuneration, and pension expenses (Audi AG, 2017a). The principles of calculating bonuses is also disclosed, but there is no information about the average salary so the ratio highest to average remuneration can not be calculated. Audi AG supports equal remuneration, working conditions and benefits for male and female workers.

Audi AG as an automotive company hires mostly male employees. Women stand for 14.9% of total workforce and 9.5% of managers and in both cases the trend is positive. In last two years mentioned indicators increased accordingly by 0.7 and 1.2 percentage points (Audi AG, 2017b). There are no females in the board of managers. The company goal is to reach 8% of women in top management and 18% in second tier management by the end of 2021. Exemplary measures are: educational camps for female students, cooperating with women's networks and organizing internships where 30% of participants are female what is the highest rate in the industry (Audi AG, 2017b).

What is also worth mentioning is the quality of social reporting in Audi AG. All relevant documents and reports concerning CSR issues are disclosed online and they are also available in printed version in company headquarters. Sustainability Report 2016 is compatible with GRI G4 guidelines what simplifies searching of necessary information. Disclosed data is up-to-date and in most cases it is presented in at least 3 year timeline what allows to set down the trend of the parameter. Audi AG also uses reliable methods of collecting data e.g. Greenhouse Gas Protocol and the information is assured by independent body (Audi AG, 2017b). The coverage of data is clearly specified, wide and there are no accidental changes what could suggest the data manipulation.

Conclusion

CSR impact on financial aspects of company's activity is often questioned. The case of Audi AG shows that customers' reaction on specific corporate practices can significantly influence financial condition of the company at least in short term. Audi AG was known as a company with high CSR performance. Involvement in emission scandal resulted in rapid share price drop. The year after fraud was announced, the positive trend of car deliveries continued for at least 8 previous years, was broke. It did not happen even during last global financial crisis when automotive industry was affected by many problems including decline of demand. Customers lost their trust in brands who cheated in emission tests and time will show if the image can be recovered.

Assessment of the CSR performance of the company should consist of two elements. The first is CSR alert monitoring – incidents like breach of law, human rights, environmental rules etc. The second is a fundamental analysis of CSR documents and reports. This is the only way to get the wide picture of company's responsibility. Materials disclosed by the company is a description of how it is managed and what processes are realized within its organizational borders. CSR alert monitoring is a practical verification of what company declares in documents.

Automotive companies set out standards in many CSR aspects. For example their reporting is relatively high quality and they pay a lot of attention to GHG emissions. Many car manufacturers are classified on the top positions in CSR rankings. Nevertheless they still need many improvements in their CSR strategies. Volkswagen Group case is an evidence that automotive sector is not free from fraud, manipulations and spreading false information. What is more later research showed that emission cheating programs is a common problem in the industry (Department for Transport, 2016).

A remark about social reporting should also be made. This is a process which requires certain amount of resources but it is the only way to communicate CSR data. It is a source of information necessary to make non-financial assessments of the company, comparative analysis and to monitor the progress in important indicators. Social reporting should be considered not as a voluntary action to present own advantages but as a part of social duty.

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Robin GOWERS[1], Anna PAJĄK[2], Edgar KLUSA[3]

CULTURAL DETERMINANTS AND PERSPECTIVES OF INTERNATIONAL EXPANSION OF ENTERPRISES FROM ECONOMIES IN TRANSITION (CASE OF POLAND)

Within this article the authors identify and analyze the key cultural success factors for companies when developing strategies to move out of their home market. Such strategies can often involve significant cost and risk. However, many companies fail due to overlooking the cultural aspects of entering new arenas. The approach used in the article analyzes culture in the wider perspective, from the individual to the national dimensions, looking for the important roots in the historical and institutional backgrounds that need to be considered when developing strategies. A focus on Polish companies is then developed. Poland, representing a post-transition economy, is an interesting case study in the context of cultural and social factors in internationalization, especially in the light of important ongoing transitions on the global scene. The aim of the authors is to highlight the most characteristic cultural determinants that may be seen as the most adequate when analyzing cultural issues in the context of internationalization processes of developing or in transition economies.

Keywords: globalization, cultural diversity, transition economies, entry strategies.

JEL Classification Codes: P31, F61.

Introduction

According to Dobbs et al. (2015) 2000 listed companies from developed countries spent nearly $4.5 trillion on increasing the scale of their operations around the world,

[1] PhD, Senior Lecturer, Writtle University College.
[2] Institute for Sustainable Technologies – National Research Institute.
[3] MA, PhD student, University of Technology and Humanities in Radom.

and most of those investments were dedicated to emerging markets, which have become an increasingly important source of profits. In 1980 the emerging market area accounted for 21% of global food and drinks sales, 14% of electronic equipment and 11% of cars. In 2013 these shares had increased to 53, 56 and 42% respectively. In reaction to this trend, many Western companies transformed from local operating enterprises into global organizations. Dobbs et al. (2015) state that in 2010 almost half of the revenues of firms from the S&P 500 index was coming from outside of United States.

The increasingly global connected world requires relevant studies that help the management of global organizations maintain positive international relations and establish long-term profitable cooperation for all stakeholders involved. In establishing successful entry and marketing strategies cultural aspects therefore play an important part. As Hofstede et al. (2010) pointed out, „all peoples have considered their country as the center of the world", and this ethnocentrism has many implications in business activities today. It is common that leaders of global organizations achieve poor performance because of the inability to adapt their management style and practices to a multicultural environment (Neeley et al. 2015). The assumptions made in one country very often are not applicable in other regions (Khanna, 2015). Globalization allows cultures to traverse national borders, causing many transitions or new phenomenon like culture diffusion or hybridization (Nakata et al., 2009) and depict a world more complex, conceivably less stable, and further interconnected. Technology development with big platform and digital networks provide new tools for reaching mass markets of customers. But, at the same time, we cannot deny the existence of boundaries and borders. As Tietze (2008) points out, some of them may become permeable or eroded, but others may be firmer and more defined. All the cultural phenomenon force global corporations with billions of dollars in revenues to think like smaller enterprises, thus requiring new hypotheses on the occasion of entering new markets (Khanna, 2015). It is clear that there is no one way to reach consumers and to build sustained relations. Culture is an ambiguous concept, at the same time complex and amorphous (Douglas and Craig, 2009, p. 127). Differences may manifest themselves in an alternative sense of justice, readiness to cooperate, conclusion schemes (either inductive or moral), and levels of trust (Khanna, 2015). At the same time, culture is expressed in different strata: country (and in relations between them), organization, group and, finally, individual, as well as in diverse forms. Therefore, the first two parts of the paper are dedicated the cultural aspects, presented through the prism of the 'culture in business' issues in part 1, and with the specific focus on the Polish culture analysis, based on the chosen theoretical frameworks and models briefly presented in part 2. Part 3 presents the international expansion perspectives and trends of Poland as an economy in transition with the comparison to the other economies of similar characteristics. Main conclusions are presented in part 4. The empirical base, such as the representative research describing characteristics of Polish enterprises' international activities in the timeframe of last 10 years, as well as the reports of international organizations monitoring international Trade and Foreign Direct Investments, provide the basis for analyzing the importance of socio-cultural and economic factors in international performance of Polish enterprises.

1. Culture in Business – Frameworks Overview

One of the dominant culture paradigms in the area of business studies is that of Geert Hofstede [vide: Hofstede, 1980] that was first presented in *Culture's Consequences. International Differences Work-related Values*. This paradigm, based on the cognitive construct, rate nations by the constant values and expressions within the societies. Hofstede (2001, p. 9) defined culture as „the collective programming of the mind that distinguished one group or category of people from another". According to Hofstede, culture is collective, learned and acquired and the national identity is the most distinguishing aspect of people's diversity as it reflects people's cultural mind programming, shapes the values, norms, attitudes, perception and behaviors. His model of national culture is based on six dimensions that represents specific characteristics and preferences of different nations: *power distance*, *individualism vs. collectivism*, *masculinity versus femininity*, avoidance *of uncertainty*, *long vs. short term orientation*, *indulgence versus restraint*.

Edward Hall (Hall&Hall, 1990) analyzes culture through the prism of communication. His concept of culture is embedded on characteristics of human communication styles and preferences and, similar to Hofstede's approach, refers to national (country) distinctions where, „Each cultural world operates according to its own internal dynamic, its own principles, and its own laws – written and unwritten" [vide: Hall 1984].

Richard Gesteland (2005, p. 17-18) emphasized the two I*ron Rules in International Business* in the context of international sales and marketing: 1) „In International Business, The Seller Adapts to the Buyer", 2) „In International Business, the Visitor Is Expected to Observe Local Customs". In his approach to cultural differences in international business relations („Cross-Cultural Business Behavior"), the classification of national cultures is built on four patterns (Gesteland, 2005, pp. 18-19): Deal Focus vs. Relationship Focus; Informal (Egalitarian) vs. Formal (Hierarchical); Rigid-time (Monochronic) vs. Fluid-Time (Polychronic); Emotionally Expressive vs. Emotionally Reserved.

Culture thus has a fluid nature and changes over time, therefore, the new approaches enrich the traditional theories deriving their inspiration from the existing frameworks and adding a critical evaluation. For example, Nakata et al. (2009, p. 12) offer various definitions and approaches to understanding the meaning of culture in the modern global business environment, e.g.: „the meanings that people attach to the world", „networks of systematically diverse principles of action and understanding", „adaptive systems rooted in social context", „continuously negotiated meanings of belonging".

Khanna (2015) underlined the importance of „contextual intelligence", as the ability to perceive the limitation of knowledge and the necessity to adapt it to the specifics of the environment that people are performing on. This contextual intelligence requires going far beyond analysis of the institutional context to exploring new, diverse areas such as intellectual property, aesthetic preferences, attitude to authority, free markets, as well as religious differences. The range of required adaptive changes may sometimes be so wide that it may be contradictory to essential business model (Khanna, 2015). Nevertheless, as Khanna argues, adaptation to the cultural and institutional context has a greater impact on future success on foreign markets than technology or finance resources. In the opinion of Brannen (2009), „global leaders find themselves stereotype rich and operationally poor where culture meets context" (for more, see: Nakata et al., 2009, pp.81-96).

Thomas and Peterson (2015, pp.11-20) highlight the problem of the limitation of present management studies and lack of universality, since most of theories grew out of United States based approaches. The universal ideas of management manifest themselves in various different ways in different cultural backgrounds, that is why implementation of best practices is not always possible. It is crucial for global organizations and the ones with international and global aspirations to recognize the differences between universal principles and their local manifestations and adapt accordingly. It is therefore important to analyze the internationalization processes from different perspectives, among which cultural aspects should have an important place. Analysis of historical aspects and national culture characteristics can therefore provide interesting foundations for identifying key factors of successes of international expansion.

2. Characteristics of Poland in Relation to Other National cultures

It is difficult to clearly characterize Polish culture since some tensions and contradictions appear in many dimensions which have their roots in important changes in the political system that still have their implications in people's behavior. Deep distinctions are seen not only between different generations, as takes place in many nations, but also between metaphorically named „beneficiary" and „victims" of transformation. These two groups represent different ethic codes and behaviors. The „beneficiary" group represent more cosmopolitan and liberal approach, they advocate for international exchange and at the same time are more, focused on deals and goals that long-term relationships and less formal. The „victims" group consist people directed to tradition, more passive and change reluctant (Stępień et al., 2011, pp.178-181). The ground of cultural differentiation and various behavior approaches within society can undoubtedly be found also in historical background, annexations and internal fragmentations through the ages.

2.1. Poland in Gesteland's framework

According to Gesteland's (2005) forty Negotiator Profiles, representing eight groups of countries, Poland is considered as: Relationship-Focused, which characterize cultures with the high concentration on personal relationships, where contacts with close relatives, friends and well know partners are preferred. Trust, connections and the good opinion of others is important while establishing new business partnerships. The deal, in contrast to Deal-Focused cultures, is less important than partner and personal bonds. What needs to be underlined here is deep distinction seen between different generations in Poland, since the younger generation has tendency to deal-focused attitude; Formal, what stands for cultures where social status and hierarchy is important, and power distance is high. Polychronic, suggests a liberal approach to time. It can manifest itself in paying less attention to deadlines and schedules when personal relations are stated in the first place. Whereas, more monochromic patterns of approach can be noticed in the younger generation. Variably Expressive means standing between highly emotional and reserved behaviors and communication style.

2.2. Poland in Hofstede's Framework

Poland, at a score of 68 can be recognized as a hierarchical society. It means that inequities between people (e.g. within organizations) are generally accepted, considered as reasonable and even desirable. At the same time, with an individualism score of 60, Polish culture may be considered as a medium individualist nation, while many collective tendencies can also be found. Collectivism underlines the importance of the group (family, nation, society), where building relationships is more important than achieving goals. This specific „contradiction" expressed in pretty high Individualism and power distance level at the same time is worth underlining. It shows the internal heterogeneity of attitudes while individuals deal with an ingrained tendency to high level of power distance within the society. With the score of 64 on masculinity dimension, Poland represents medium masculine culture with the slight indication toward masculinity. It can suggest the balance between different approaches to gender roles, but as well it can be the sign of dissection and underline differences within the society, what seems to be more true in case of Polish culture. Poland, as a country of very high preference for avoiding uncertainty (score 93) is the nation where control and predictability are important, as well as trust and written and unwritten rules play significant role. Poland's low score of 38 in the time dimension place the country in the position of short-time oriented, where traditions and norms are maintained and people tend to look for past to find general patterns for behavior, while at the same time looking for quick results in the future. Having a low score (29), Polish culture can be described as restraint. It suggest pessimistic attitudes toward people, tendency to control desires and respectability to the social norms.

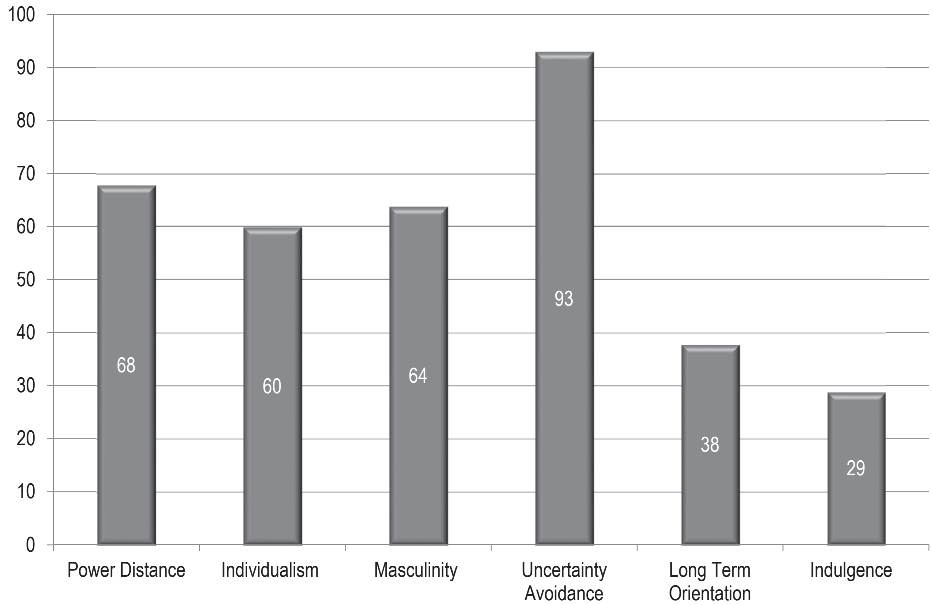

Figure 1. The Polish culture through the lens of Hofstede's 6D model

Source: authors, based on: https://geert-hofstede.com/poland.html

The specific cultural dissection of Polish society has implications to economic activity and business cooperation. It may bring light on the question why Polish enterprises can be successful at entering new markets. For example, as the representatives of a medium individual culture Polish enterprises may be more predisposed to communicate and cooperate with both, highly individual (e.g. United States) and collective (e.g. China) cultures. At the same time, living in highly differential society, representatives of Polish culture are facing the problem of dealing with diversity and different attitudes and beliefs within own society. Presented features and determinants may be seen as the important factors for the analysis of the international expansion of Polish companies, its potential, trends, characteristics and factors of success.

3. Poland: International Expansion Perspectives

Poland as a post-transition economy is an interesting subject of study in the context of cultural and social factors in internationalization and the global expansion of companies. Political transformation and hence, economic transition processes in the early nineties, liberated the market and opened new perspectives and opportunities for Polish enterprises. Accession to the European Union in May 2004 had a huge impact on the foreign activity of Polish enterprises. As a result since 2005 there has been big growth in Polish FDI. In 2014 the outward FDI of Polish investors abroad was equal €22.3bn, an increase of 73 times in comparison to 2003. Before accession the annual cumulative Polish FDI did not exceed €412m. It should be underlined that growth of Polish FDI is the reflection of both, deep economic transformations, and the increasing maturity of Polish enterprises.

The last decade brought a dynamic development of the number and amount of Polish companies' investments abroad as well as their export activities. The changes in Polish total export turnover are presented in Figure 2.

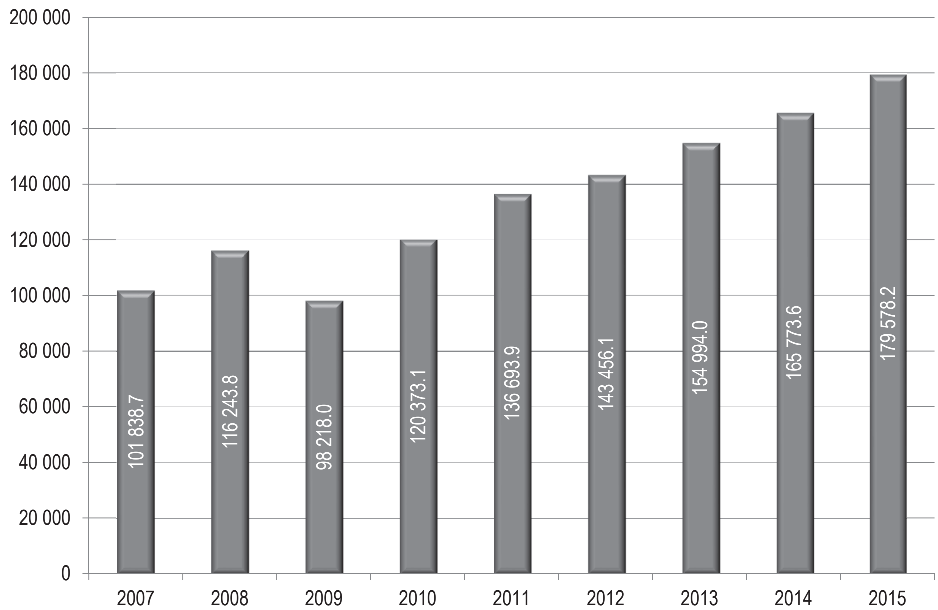

Figure 2. Polish total export turnover for 2007–2015 in € mln

Source: authors, based on: 'Year Book of Foreign Trade Statistics of Poland' (Warsaw 2012, Warsaw 2016), Central Statistical Office.

The most popular strategy of entering foreign markets by Polish enterprises, was the direct export of goods and services. But as the dynamic growth of foreign direct investment can be seen, Polish companies were also setting up operations overseas, taking over foreign firms or establishing joint ventures with them. This is a high risk, potential high return strategy. Figure 3 presents the numbers of polish entities and their foreign units in the years 2008-2014.

With regard to the location of their foreign entities, the most popular directions of investments by Polish companies were countries bordering with Poland: Germany, Ukraine, Czech Republic. As showed in Table 1, also the level of investments outside the EU has been increasing.

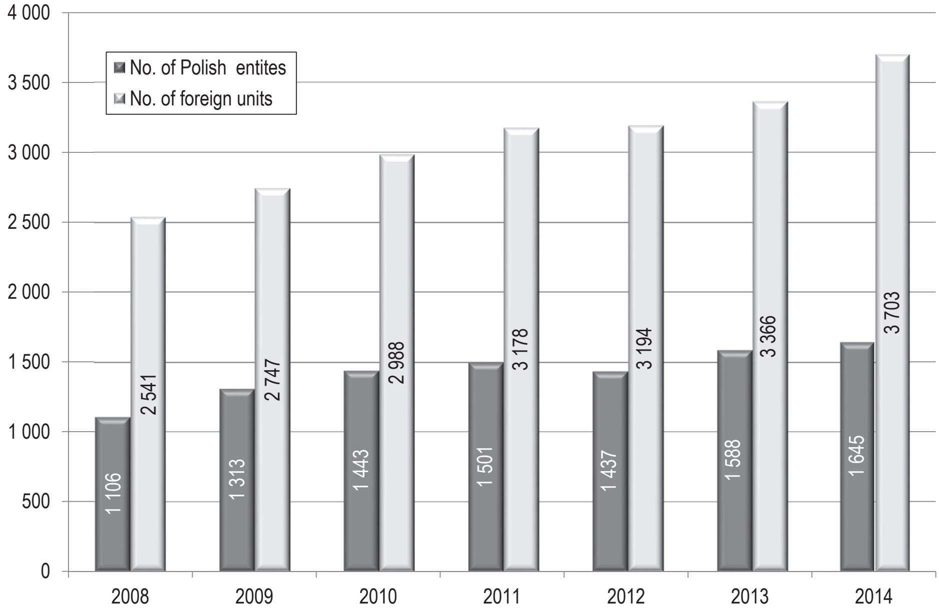

Figure 3. Number of Polish entities and their units abroad for 2008–2014

Source: authors, based on: 'Activity of enterprises having foreign entities in the years 2008 – 2014', Polish Central Statistical Office, Warsaw 2016

Table 1. Number of foreign units by continents for 2008-2014

Number of foreign units by continents							
	Europa	Asia	Africa	South America	North America	Australia & Ocenia	Total
2008	2 206	127	38	11	138	21	2 541
2009	2 411	122	35	9	150	20	2 747
2010	2 610	153	36	13	164	12	2 988
2011	2 794	160	32	16	164	12	3178
2012	2 762	179	44	22	173	14	3 194
2013	2 922	176	55	25	178	10	3 366
2014	3 109	258	69	29	217	21	3 703

Source: author, based on: 'Activity of enterprises having foreign entities in the years 2008 – 2014', Warsaw 2016 Polish Central Statistical Office (2016c)

For many Polish enterprises, capital investments abroad are still the matter of finding new markets and lower labor costs. Nevertheless, more firms' motives are connected with the ability to get access to alternative sources of raw materials, or other strategic resources, as well as buying shares or acquisitions of foreign entities (greenfield investments) (Ministry of Development, 2016). Furthermore, analysis of Polish companies listed on the Warsaw Exchange Stock shows that the internationalization processes of Polish companies combine experiences of both emerged and emerging markets, having many characteristics common for both of types of economies (Radło&Ciesielska, 2016). Polish enterprises also tend to increase their investments on the mature markets of the EU, what shall be indicated as the „reverse" FDI. This is opposite to the classical framework of FDI, from the less developed to more wealthy countries (Ministry of Development, 2016), In the last few years more investments have also been located outside Europe, e. g. in US, Canada or India.

It is worth noting that the share of Polish direct investment in the global economy is still very low and in 2014 covered only 0.38% of the total amount. Compared to the higher developed European economies, Polish FDI still equals to around 3% of the investment of the countries like United Kingdom, France or Germany. From the country perspective it is, nevertheless a vital indicator of important changes in growth and development. In 2004 the share of FDI abroad in Poland's GDP was 2.08% it grew to 10.64% in 2013 (Ciesielska et al., 2016). A point of reference for Polish FDI can be the other countries that joined the EU in 2004 or later, and most of which are characterized as a *transition economies*[4]. Similar to Poland, these are the countries that after accession to the EU structures gained new possibilities for international activities, flows of capital, goods and services. Nevertheless, the dynamic of FDI within those countries was not homogenous (UNCTD, 2012). Poland, besides Hungary, is the leading country in respect of cumulative value of FDI located abroad among the „new members" of European Union (Ministry of Development, 2016). In the period of 2002-2005 Hungary demonstrated the highest level of FDI. After this Poland took the dominant position to gain a level of FDI (UNCTAD, 2015). The comparison is presented on Figure 4.

The increasing financial engagement of Polish companies made many of them transform into multinational corporations (MNC), with a strong position in the region or investing in the global dimension. In many cases, Polish companies internationalized through the traditional evolutionary model: expanding exports at the beginning and then investing in other projects supporting international sales and then developing production abroad. By collecting experience and knowledge about foreign markets during the process they are better prepared to increase their efficiency of the internationalization strategies and expansions into other markets. Nevertheless, in practice, many Polish companies omit intermediate steps and move straight to more advanced forms of internationalization, making them similar to many emerging markets' companies (Radło&Ciesielska, 2016).

[4] Countries accessed EU in 2004: Poland, Slovakia, Cyprus, Slovenia, Hungary, Czech Republic, Estonia, Lithuania, Latvia, Malta; Countries accessed EU in 2007: Bulgaria, Romania; Croatia accessed EU in 2013

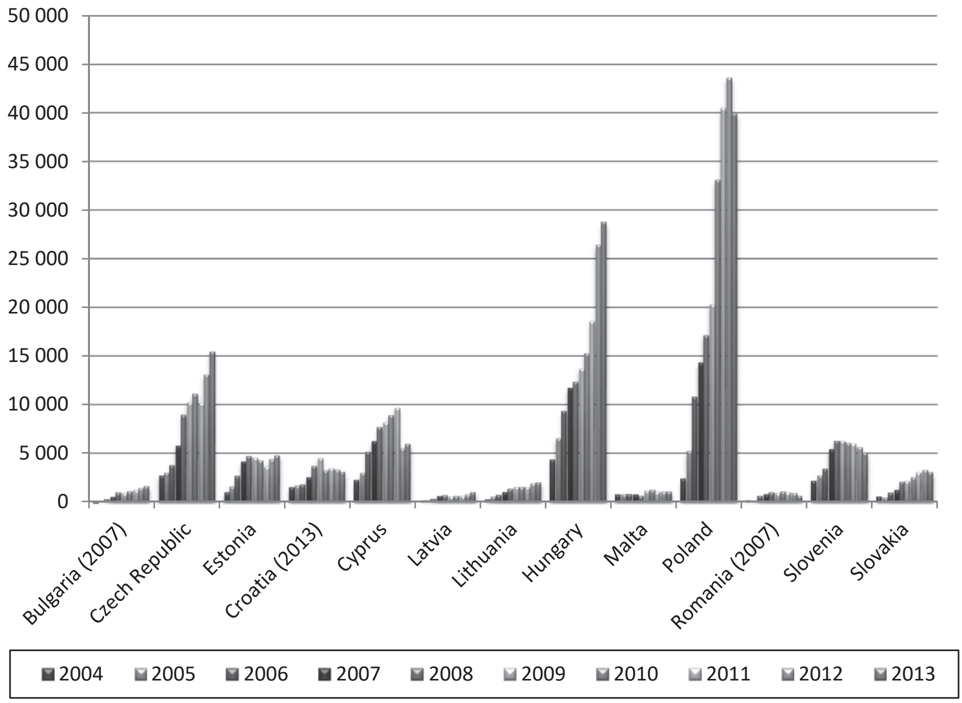

Figure 4. Total direct investment abroad (net position) of 13 „new" EU countries for 2004-2013 in € mln

Source: authors, based on: EUROSTAT

Table 2. Number of different FDI international projects of Polish companies for 2005-2014

	The number of greenfield projects	The value of greenfield projects in $ m	The number of mergers and acquisition projects	The value of mergers and acquisition projects in $ m
2005	30	642	28	559
2006	40	1,175	24	2,557
2007	51	2,237	52	189
2008	46	1,754	60	1,090
2009	38	1,045	29	229
2010	45	1,851	36	201
2011	39	833	37	511
2012	52	1,353	31	3,399
2013	57	854	30	243
2014	50	1,400	63	1,140

Source: authors, based on Ministry of Development, 2016

It is clear that Polish companies choose more advanced forms of expansion when investing on emerging markets, where they more often establish formal distribution partnerships or setting manufacturing agreements. Whereas it is more popular to start activities with export sales on the emerged markets (Radło&Ciesielska, 2016). Among companies listed on the Warsaw Stock Exchange, the most popular strategy of entering foreign market was greenfield investment (83%). Acquisition of overseas companies was chosen by 50% of listed companies. As a result, in the last decade, Polish companies made acquisitions of several hundred firms. Figure 5 and Table 3. show the share and the number of Polish companies with export sales in terms of the size of the enterprise.

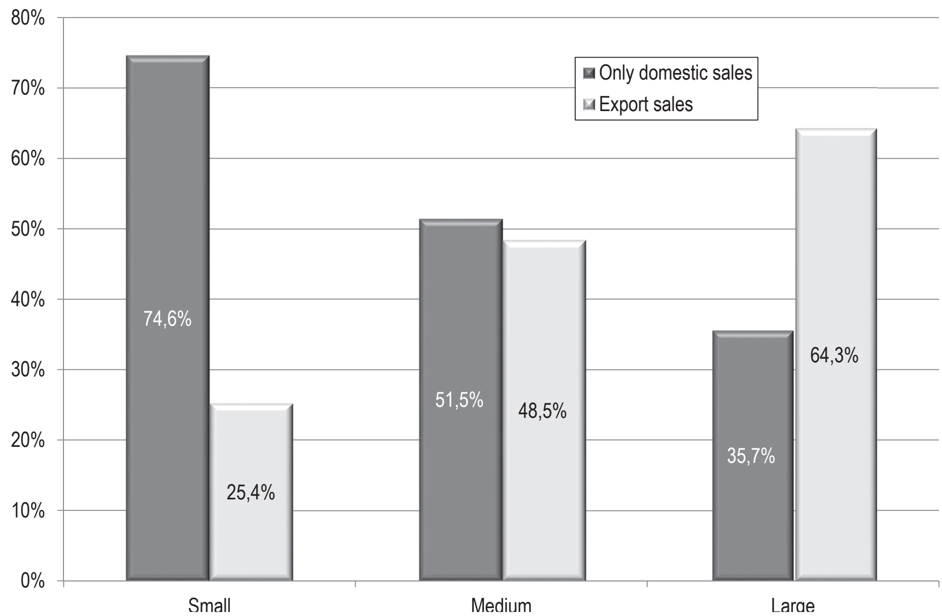

Figure 5. Polish Companies with Export Sales in 2015

Source: authors, based on: Financial results of economic entities in I-XII.2005Central Statistical Office, Warsaw 2016

Table 3. Polish Companies with Export Sales in 2015

	Small	Small	Medium	Medium	Large	Large
Only domestic sales	25 149	74,6%	7 190	51,5%	1 159	35,7%
Export sales	8 545	25,4%	6 758	48,5%	2 087	64,3%
Total	33 694	100,0%	13 948	100,0%	3 246	100,0%

Source: authors, based on: Financial results of economic entities in I-XII.2005Central Statistical Office, Warsaw 2016

Research on Polish enterprises shows that the experience gained even in a country with very similar business environment (e.g. Polish company investing in Czech, is then using this experience in entering Slovak market) cannot be treated as a factor of future success. Contrary, it shows that companies with lower experience, paradoxically are much more successful in dealing with a new business environment. This can come from the fact that they are more aware about the potential differences and putting more effort in preparing strategy of entering new market, including cultural differences (Barłożewski&Trąpczyński, 2016). Khanna (2015) underlines that it is more difficult to give up a working model and completely develop a whole new structure. This is especially true for enterprises that have already succeeded on foreign markets, have a well-developed operating model and possess a consistent business culture that worked in different local institutional contexts.

Conclusions

Almost 90% of Polish entrepreneurs still choose Western European countries as their direction of international expansion, this naturally results from the geographical and cultural proximity (Poland Go Global, 2016). Nevertheless high competition on European markets make them consider emerging markets as a future destination. Transition processes, formation of new institutional and economic reality, accompanied by painful reforms, followed by almost three decades of economic growth, can make Poland an interesting case to study in the context of the new global economy and the place of emerging and transition economies on its map. Activity on foreign markets is one of the determinants of economic development. As Khanna (2015) argues, adaptation to the cultural and institutional context has a greater impact on the future success on foreign markets than technological prowess or finance resources. It is therefore important to analyze the key determinants of success in entering new markets in the case of emerging and transition economies.

Analysis of data according to the international activities of Polish companies abroad combined with an analysis of the characteristics of Polish culture (based on two theoretical frameworks by G. Hofstede and R. Gesteland) provide the foundation for the main conclusions and thesis of this paper, which at the same time are the foundations for more in depth empirical studies and further areas of analysis. The key factors of successful entry strategies into new markets by Polish companies (in the context of socio-cultural and institutional aspects) can be summarised as follows:

1. Poland, as a Central European Country, places it in the middle of measures according to the some different criteria and determinants of cultural differences. As a representative of a medium individual culture Polish managers may be more predisposed to communicate and cooperate with both individual and collective cultures and be

able to successfully adjust to the conditions in the new markets. It may be also a matter of characteristic tensions and contradictions within the Polish nation, that make people confident in dealing with high levels of diversity inside the home country.

2. Companies from markets in transition, facing lack of traditional advantages in comparison to developed economies' companies, can build competitive advantage by having specific knowledge about markets with similar institutional conditions to those that they were growing on. The difficult conditions of growing make them more resistant to a changing environment. At the same time they are more elastic and open to new strategies of expansion based on different forms of cooperation. These experiences yield a big advantage in comparison to their Western based competitors as well as emerging market rivals who are in the process of transformation. They are used to performing in less stable, dynamic and demanding institutional and administrative environment. Transformation can be a good lesson of necessity for adaptation.
3. Most of Polish companies' expansion strategies involve an approach based on establishing partnerships in new country or by acquisitions of local companies.

The strategy based on the cooperation with good local partner plays significant role in entering new markets (Vide: Khanna, 2015) and, at the same time, minimizes the risk of failure. At the same time, Polish enterprises, especially small and medium, represent different organizational structures than most of the Western multinational companies, hence are less hampered by corporate rules and boundaries. What may be seen as an important advantage whit the reference to the international processes.

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Nalan TERZIOGLU[1], Turan SUBASAT[2]

IMPORT DEPENDENCY OF EXPORTS AS A CAUSE OF CURRENT ACCOUNT DEFICIT

The rapid increase in import dependency of exports (IDE) and current account imbalances in many countries over the last two decades led many researchers to argue that they may be correlated and the increase in IDE may be the main cause of current account imbalances. This argument is important because historical evidence suggests that large and persistent current account imbalances often lead to subsequent corrective crisis. If the increase in IDE is a major cause of current account imbalances, reducing it becomes an important policy option to prevent further crisis. While there is a large literature on both global value chains (the main cause of IDE) and current account imbalances, the literature that investigates the link between them is very new and limited. This paper aims to contribute to this limited literature.

Keywords: import dependency of exports, current account imbalances, global value chains, International trade.

JEL Classification Codes: F32, F13, F14, F15, F23.

Introduction

The rapid increase in import dependency of exports (IDE – facilitated by global value chains) and current account imbalances in many countries over the last two decades (Figure 1) led many researchers to argue that they may be correlated and the increase in IDE may be the main cause of current account imbalances. This argument is important because historical evidence suggests that large and persistent current account

[1] Postgraduate student, Mugla Sitki Kocman University.
[2] Professor, Mugla Sitki Kocman University.

imbalances often lead to subsequent corrective crisis. If the increase in IDE is a major cause of current account imbalances, reducing it becomes an important policy option to prevent further crisis[3].

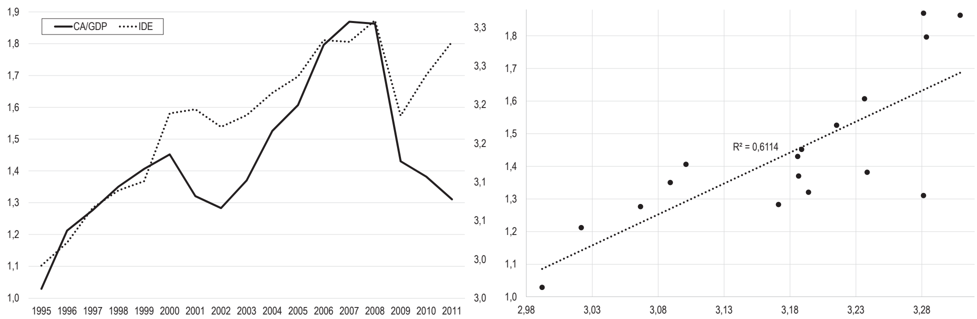

Figure 1. Current account imbalances (% of GDP) and import dependency of exports (%)

Note: The chart shows the average absolute value of current account imbalances to GDP ratio for 62 countries. Figures are in logarithmic scale.

Source: OECD and World Bank.

Identifying the main causes of current account imbalances is a major task. While there is a large literature on both global value chains (the main cause of IDE) and current account imbalances, the literature that investigates the link between them is very new and limited. This paper aims to contribute to this limited literature by focusing on a selection of 62 countries and for the period of 1995 to 2011, which are both determined by the availability of data.

It argues firstly that the increase in IDE and current account imbalances over the last two decades largely resulted from separate sources and the relationship between them is largely coincidental fed by conjunctural factors. While the increase in IDE has been largely driven by enduring global factors (global value chains), the increase in current account imbalances have been due to various temporary conjunctural factors. Secondly, even if (in some countries) there may be a causal relationship between these two variables, the direction of causality (which has not been tested in this limited literature) may run from current account imbalances to IDE. The paper, therefore, concludes that the increase in IDE is not a cause but a consequence of current account imbalances.

[3] Sydor (2011) argued that global value chains significantly contributed to the spread of the 2008 crisis while reducing the pain for individual countries. The impact of crisis, however, was greater on trade than GDP.

Import dependency of exports and current account imbalances

The first notable article in this literature by Georgiadis, Grab, and Trottner (2014) suggests that participation in global value chains should have a positive effect on a country's current account balance because the process involves adding value to imports and then exporting them, which would mathematically increase the trade balance. Brumm, Georgiadis, Grab and Trotter (2016) provide empirical evidence, which show that economies that exhibit stronger Global Value Chain Participation also display larger current account surpluses. Similarly, Cingolani, Felice and Tajoli (2015) argue that while exporting intermediate goods and reimporting finished goods could result in trade deficit, the net effect on trade balance is uncertain since participation in global value chains could also improve efficiency and competitiveness. They find that the current accounts of the EU countries improve (deteriorate) the higher the offshoring to high-income (low-income) partners implying that the gains in competitiveness are higher (lower). These articles, therefore, claim a positive correlation between higher levels of import dependency of exports and current account surpluses.

Haltmaier (2015), conversely, suggests that higher IDE causes current account deficits but the magnitude of the coefficients signifies a small impact over the sample period. The large increase in the current account imbalances during the 2000s, therefore, cannot solely be explained by the increase in IDE.

The literature on Turkey has been much larger which is not coincidental since Turkey experienced very rapid increase in both variables during the 2000s. Indeed, amongst the 62 countries (that we have data for), Turkey was ranked the fourth in terms of increase in IDE and the first in terms of increase in current account deficit between 1995 and 2011. Many economists in Turkey seem to agree that Turkey's current account deficit has become „structural" and persistent due to the increase in IDE, which has caused trade deficits to become less elastic to the changes in exchange rates (Yeldan 2005, Saygılı and Saygılı 2009, Dogruel and Dogruel 2009). These researchers argue that high levels of IDE significantly reduced the trade equalising impact of real exchange rates. This is mainly because a devaluation, on the one hand, directly increases the profit margins of exporters but, on the other hand, increases the imported import prices for exports and neutralises the profit gains. The net gains for exporters, therefore, are minimal if they exist at all. Also, a devaluation would not always reduce imports, since imports are essential for exports (see Riad et al. 2012).

Ersungur, Ekinci and Takim (2011), for example argued that because exports are insufficient to finance the imports of raw materials, increase in exports stimulates more imports, which increases trade and current account deficits. Similarly, Ozenc & Altayligil (2013) argue that although parts and components trade increased sharply since 2001, exports failed to keep up with these trends and has led to intensified import dependency, trade and current account deficits. Finally, Dincer & Yasar (2015) simply asserted that increase in import dependency of production and exports led to a deterioration of the trade and the current account balance.

Figure 2 seems to support these arguments in the case of Turkey. Figure 2a shows the development of these variables through time and Figure 2b shows the simple correlation between them. While the figure indicates a very strong correlation between the variables (R^2 is 0.582) for the entire period, the correlation is even stronger (R^2 is 0.863) for the period after 2001 where Turkey experienced a structural break. The strong correlation between these two variables is not specific to Turkey and observed in many other countries. For example, R^2 is 66% in Greece, 80% in Spain, 86% in Italy and 92% in Norway.

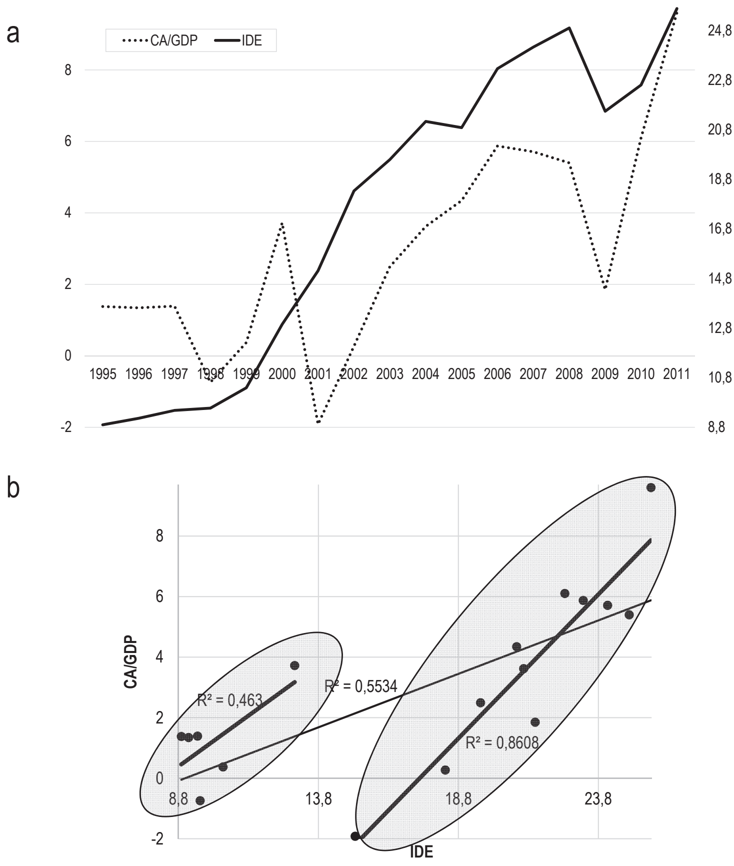

Figure 2. Current account deficits and import dependency of exports in Turkey: a) current account deficits and IDE, b) correlation between current account deficit and IDE

Note: The chart shows „current account deficits" rather than „current account balances". Normally, a negative (positive) sign in the balance of payments statistics indicates a current account deficit (surplus) but for convenience, we show the current account deficits (surpluses) by a positive (negative) sign.

Source: OECD and World Bank

The above figures indicate that increase in IDE may indeed be an important determinant of current account deficits. However, the fact that both variables increase together in a given period does not mean that the increase in the IDE is a source of current account deficits due to the following reasons.

First, a third factor may influence both variables. For example, the rapid increase in oil prices from the beginning of the 2000s to the 2008 crisis may have increased both IDE and current account deficits in many countries.

Second, the increases in IDE and current account deficits may have been driven from different sources, and therefore the relationship between these two variables may have been coincidental determined by conjunctural factors. For example, while the increase in IDE is driven by permanent global factors such as global value chains, the increase in current account deficits is due to some temporary conjunctural factors[4]. The increase in global value chains stemming from the fact that multinational companies have dispersed different stages of their production across countries, which is a more permanent element of globalization. The same cannot be said for current imbalances. Of course, the process of globalization may have created conditions for increased current account instability but they are nevertheless temporary in their nature. It is then possible to argue that the strong correlation observed between these two variables may have been a coincidental relationship due to cyclical factors in the 2000s.

Third, even if there is a (partial) causality relationship between these two variables, the causality may be running in the opposite direction. In other words, increase in IDE could be a result (not a cause) of current account deficits. For example, the rapid capital inflows into Turkey since 2002, which financed large current account deficits, caused overvaluation of the Turkish Lira, cheapened imports and increased the import dependency of both exports and domestic production. None of the above-mentioned articles tested the causality between these two variables.

Finally, it is theoretically not very meaningful to relate high IDE to current account deficits. For example, assume that Turkey's only export was oil, imported from its Eastern neighbours and re-exported to the Western neighbours with a 20 percent profit margin. In this case, the IDE would be 100 percent but this would not require Turkey to experience any current account deficit. The current account deficit would occur only if Turkey's non-oil imports exceeded the revenue generated from oil re-exports. Increase in IDE would certainly reduce the trade equalising impact of real exchange rates since adjustment takes place mainly outside of the supply chain (Haltmaier 2015). However, it would not necessarily cause current account imbalances.

[4] See Subasat (2016) for a review of these conjunctural factors.

Empirical tests

The above arguments can be tested with the employment of some simple methods. First, if there was a meaningful relationship between high IDE and current account deficit, countries with high IDE would experience high current account deficits whereas current account surplus countries would experience low IDE. Simple observations fail to confirm such a relationship. For example, while Luxembourg experienced the highest IDE rate (59%) within the 62 countries in 2011 had a current account surplus of 6%, Brazil with a very low IDE rate of 10.7% (ranked 59th) experienced 2.9% current account deficit. It is possible to reproduce similar examples. Singapore, Malaysia, Thailand, Hungary and South Korea had high IDE but current account surpluses while Australia, Colombia, Greece, Cyprus, the USA had low IDE but current account deficits.

Second, a comparison of the average IDE trends in countries that have systematic current account deficits and surpluses with countries that have current account balances produces some meaningful results[5]. As seen in Figure 3, there have been significant increases in the IDE in all three country groups. It is also interesting to note that the countries with current account surpluses have higher average IDEs than the countries that have balanced current accounts. Although there are temporary declines in the early 2000s and after the 2008 crisis, the increase in IDE continued in all three country groups. Therefore, it is not possible to establish an unambiguous relationship between the IDE and current account deficits. Considering these trends, it is natural to see a conjunctural and accidental relationship between these two variables in the account deficit and surplus countries in the 2000-2008 period, when the current account imbalances (deficits and surpluses) rapidly increased.

Third, the causality between these two variables can be tested by using the same country groups. Table 1 presents the results of this investigation. It is instructive to examine the link between these variables for the 1995–2007 and 2000–2007 periods separately due to the structural breaks observed in many countries during the 2000s and exclude the period after 2007 due to the global crisis that has caused yet another structural break. The partial R^2 values[6] in the table indicate the power of the correlation between the two variables, and the plus and minus signs indicate the direction of the relationship.

[5] We define countries with an average current account deficit or surplus of less than 2% in the period under consideration (1995-2011) as countries that have balanced current account. Accordingly, countries with larger average current account deficit (surplus) than 2% are considered as current account deficit (surplus) countries.

[6] The use of partial R^2 values is essential to assess the direct link between the variables since a trend is added into the correlations to remove the impact of conjectural factors.

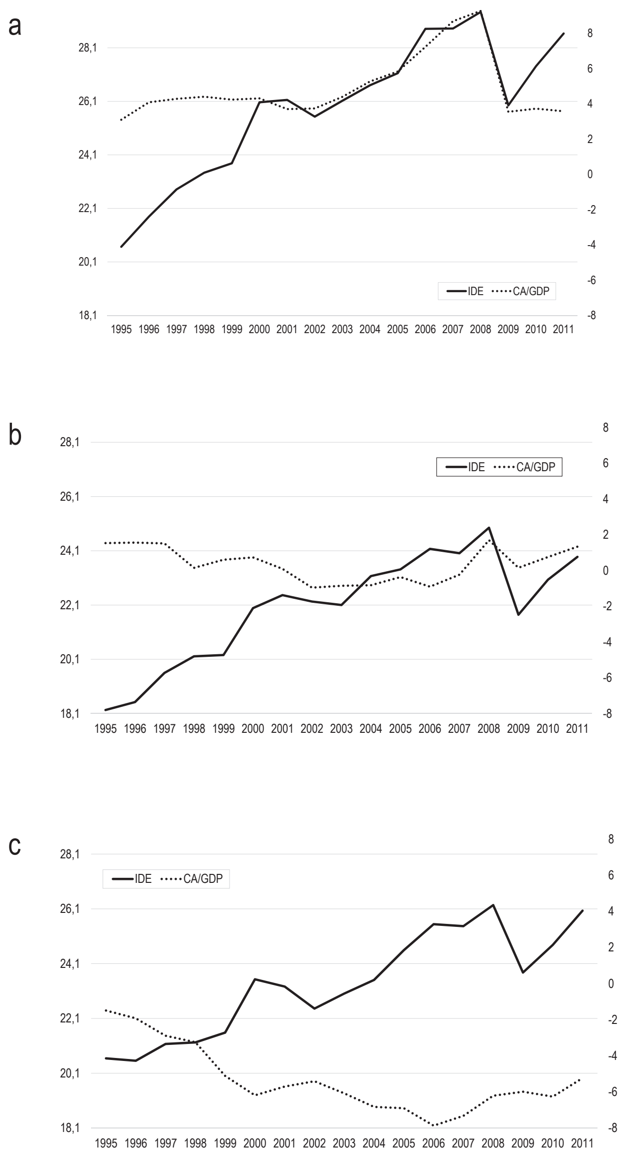

Figure 3. The average current account and import dependency of exports by current account groups: a – current account deficit countries, b – current account balance countries, c – current account surplus countries

Note: The variables reflect the average values of the country groups. See the note in Figure 2 for the signs of current account deficit and surplus.

Source: OECD and World Bank

Table 1A shows that the simple correlations between these variables are quite strong for the current account deficit and surplus countries and especially in the 2000-2008 period, which indicate the conjunctural nature of the relationship. Naturally, the correlation has a negative sign for the current account surplus countries that experienced an increase in their IDE and current account surpluses. The correlations are positive and weaker for the current account balance countries in both periods.

Tables 1B and 1C indicate two-way causality between the variables but for all the groups, causality is stronger from current account to IDE.

Staring from the current account deficit countries, the causality is stronger from IDE to current account deficit with a negative sign (increase in IDE reduced current account deficit) for the 1995-2007 period and is stronger from current account deficit to IDE with a positive sign (increase in current account deficit increased IDE) for the 2000-2007 period.

For the current account balance countries, the causality is stronger from IDE to current account deficit with a negative sign (increase in IDE reduced current account deficit) for the 1995–2007 period and it is stronger from current account to IDE with a positive sign (increase in current account deficit increased IDE) for the 2000-2007 period.

For the current account surplus countries, the causality is stronger from current account to IDE for both periods with negative signs, which implies that an increase in current account surplus tend to cause higher IDE.

The results for all the groups, therefore, contradict the view that increase in IDE is a main cause in current account deficit. Causality is often from current account deficit to IDE and when the causality is from IDE to current account deficit, increase in IDE tends to reduce (not increase) current account deficit.

Table 1. Simple correlation between current account deficit and import dependency of exports and Granger causality test (time series analysis)

Partial R square	A – simple correlation		B – CA causes IDE		C – IDE causes CA	
	1995-2007	2000-2007	1995-2007	2000-2007	1995-2007	2000-2007
Current account deficit countries	+0.579	+0.928	+0.040	+0.620	-0.150	+0.000
Current account balance countries	+0.168	+0.193	+0.168	+0.656	-0.210	+0.074
Current account surplus countries	-0.233	-0.617	-0.179	-0.213	+0.059	+0.071

The country case studies for a selection of countries in Table 2 support the results of Table 1. Table 2A indicates that the simple correlations are much stronger in the 2000-2007 period than 1995-2007 period and Tables 2B and 2C indicate a two-way causality between the variables.

In the 1995–2007 period causality is stronger from current account to IDE with positive signs (increase in current account deficit causes higher IDE) for 3 countries

(Greece, Spain and Portugal). Causality is stronger from IDE to current account with positive sings (increase in IDE causes higher current account deficit) for 2 countries (Turkey and the USA) and with negative signs (increase in IDE causes lower current account deficit) for the other 2 countries (Ireland and the UK). In this period, therefore, for only two countries (Turkey and the USA) support the view that increase in IDE could increase current account deficit but this evidence is only mildly strong for the USA (partial R^2 is 0.300) and very weak for Turkey (partial R^2 is only 0.062).

In the 2000-2007 period causality is stronger from current account to IDE with positive signs (increase in current account deficit causes higher IDE) for four countries (Greece, Spain, Ireland and the UK) and with negative sign (increase in current account deficit causes lower IDE) for one country (Turkey). The causality is stronger from IDE to current account with positive sings (increase in IDE cause higher current account deficit) for two countries (Portugal and the USA) and in both cases the partial R^2 are lower than 0.200. In this period, therefore, there is very little support for the view that increase in IDE causes higher current account deficit. Only for the USA IDE seems to increase current account deficit in both periods. The country case studies, therefore, also fail to support the view that increase in IDE causes higher current account deficit.

Table 2. Simple correlation between current account deficit and import dependency of exports and Granger causality test (time series analysis)

Partial R^2	A – Simple correlation		B – CA causes IDE		C – IDE causes CA	
	1995-2007	2000-2007	1995-2007	2000-2007	1995-2007	2000-2007
Greece	+0.310	+0.714	+0.387	+0.370	+0.017	+0.055
Spain	+0.454	+0.917	+0.306	+0.520	+0.070	+0.138
Portugal	+0.012	+0.841	+0.001	+0.062	+0.000	+0.183
Ireland	+0.008	+0.654	+0.001	+0.264	-0.017	+0.206
Turkey	+0.044	+0.132	-0.037	-0.517	+0.062	-0.089
UK	+0.015	+0.485	+0.201	+0.203	-0.219	+0.114
USA	+0.013	+0.035	+0.007	+0.028	+0.300	+0.198

Finally, the relationship between the variables can also be examined by cross-country analysis. This method aims to find out if countries with high (low) IDE experience high levels of current account deficits (surpluses). The calculations are based on four-year moving averages since year-by-year variations in current account can be very large. Figure 4 illustrates this relationship for a selection of three periods for the countries that experienced long-term current account deficit. In the 1995–1998 period the correlation between the two variables is close to zero (R^2 is 0.0002) and has a negative sign. In the 2000-2003 period it becomes stronger (R^2 is 0.1134) with a positive sign, before it becomes weak (R^2 is 0.0003) and negative once again in the 2008-2011 period.

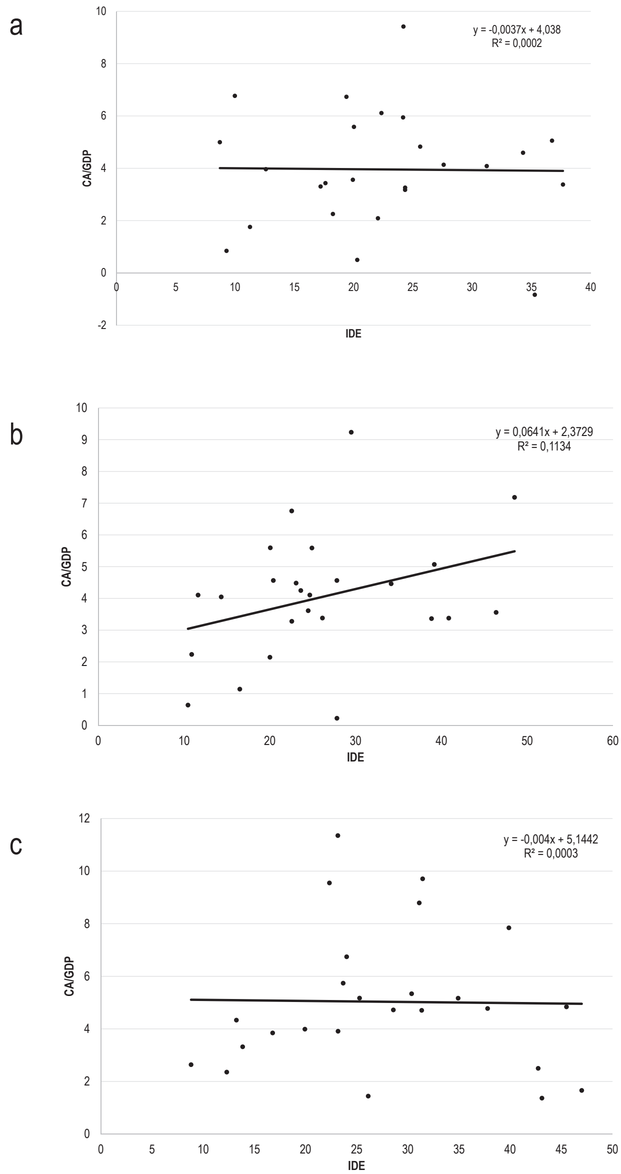

Figure 4. Simple correlations between the current account deficit and import dependency of exports for the current account deficit countries: a – average of 1995-1998, b – average of 2000-2003, c – average of 2008-2011

Figure 5 shows the correlations between the variables for the entire period (1995–2011) and for all the country groups (all countries, current account deficit countries, current account balance countries and current account surplus countries). The conjunctural nature of the relationship between these two variables appears clearly. The correlation starts weak, gets stronger during the early 2000s and gets weaker again, which implies that there is no permanent correlation between these two variables. Interestingly the correlation is stronger and lasts longer for the current account surplus countries.

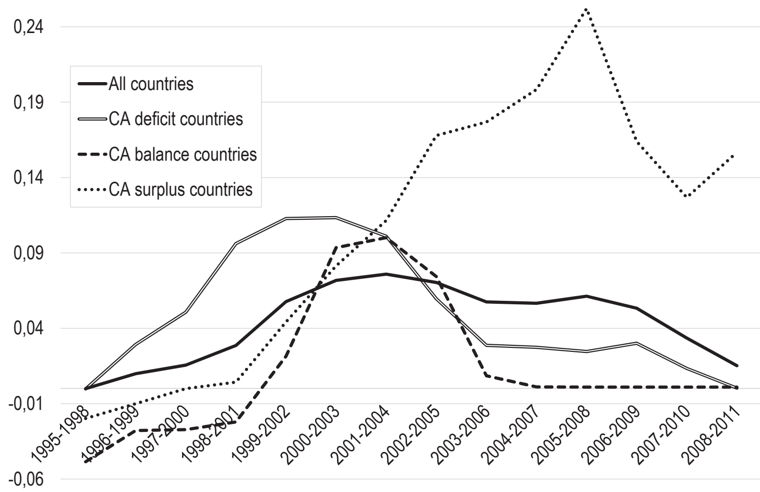

Figure 5. Change in simple correlations between the current account deficit and import dependency of exports for all country groups

Conclusions

The rapid increase in IDE and current account disequilibrium in many countries in the 2000s has led to the belief that IDE is a major cause of current account disequilibrium, subsequent problems and even crisis. These arguments, however, lacked a solid theoretical basis and empirical support. Our analyses have shown that the relationship between these two variables is conjunctural and therefore temporary. This is because the increase in both variables in the 2000s resulted from different sources. The increase in IDE is largely due to the global value chains facilitated by the global operations of MNCs, which is a permanent feature of the globalization process. The current account imbalances, however, are conjunctural and temporary problems by their nature. The temporary nature of the link between these variables is well demonstrated by figure 5 where the link is close to zero in the mid-1990s, significantly increases during the 2000s before getting back to zero after the 2008 crisis.

While the theoretical case for a causality from IDE to current account disequilibrium is weak, there may be a weak theoretical case for a causality from current account disequilibrium to IDE since current account deficit is associated with significant appreciation of local currencies which make imported inputs cheaper which may cause higher IDE. The causality tests provide evidence for this argument, which suggest that IDE may result from, rather than causing, current account disequilibrium. These findings suggest that IDE result not only from global value chains but also from current account imbalances. The decline in IDE after the 2008 crisis is compatible with these findings. The country studies are also compatible with the above arguments.

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Sławomir I. BUKOWSKI[1], Robin GOWERS[2]

AN ESTIMATE OF THE IMPACTS OF THE BANK OF ENGLAND'S QUANTITATIVE EASING PROGRAMME ON UK ECONOMIC GROWTH

This paper reviews the reasons for and impacts of quantitative easing by the Bank of England. It analyses the macroeconomic impacts of this policy tool on the UK economy across the period 2008–2016. It compares the impacts of each round of quantitative easing to assess how the impacts changed over time. The authors implemented econometric analysis based on the VAR model. This analysis indicated that the Bank of England's monetary policy influenced GDP growth by a relatively small degree during the period studied. The impact of changes in the monetary base (M3) explained a bigger part of GDP growth than the decreases in interest rates and exchange rates. Over time the impact of this policy response diminished.

Keywords: monetary policy, interest rates, monetary aggregate, foreign exchange, GDP, model VAR.

JEL Classification Codes: E32, E52, F31.

Introduction

The aim of this paper is to investigate the impact of the Bank of England's quantitative easing policy on GDP growth in the UK economy over the period of 2008–2016.

[1] Professor of economics, dr habil., Department of International Business & Finance, Faculty of Economics and Legal Sciences, K. Pułaski University of Technology and Humanities in Radom, Poland.

[2] Doctor of economics, senior lecturer, Writtle University College, Chelmsford, United Kingdom.

The following hypotheses were formulated:

1. Quantitative easing, expressed in the money aggregate M3 expansion, had a relatively poor impact on GDP growth, but changes in M3 explain bigger part of GDP growth over time compared to other factors.
2. The reduction in interest rates had a relatively stronger impact on GDP growth in the UK economy initially compared to the M3 expansion initially, but changes of interest rate explain smaller then M3 part of GDP growth in the longer run.

The authors implemented in the research econometric analysis based on the VAR model.

1. Quantitative easing policy – some theoretical reflexions

The roles of central banks and the need for their independence have been debated much over the centuries (see: Fischer 2015). The recent rise in the power of central banks was signalled by the defeat of inflation led by Paul Volcker at the Federal Reserve. On a Saturday night on October 6th 1979 Volcker signalled that the Fed was serious about defeating inflation by announcing they would target the money supply instead of interest rates. Consumer price inflation was indeed defeated but it was a brutal battle that resulted in the biggest downturn in the US since the Great Depression.

The great moderation period[3] came to an end with the financial crisis that peaked on 29th September 2008 (15 days after Lehman Brothers was allowed to collapse). Central banks came in and rescued the banking, financial and capitalist system. This rescue involved unprecedented levels of monetary policy implementation, initially with a move towards zero interest rates (ZIRP) and then injections of liquidity into the system (quantitative easing).

These policies gained further traction in 2012 when the European Central Bank had to join the party in order to prevent a second possible financial meltdown during the Eurozone crisis. On July 29th 2012 Mario Draghi stated, „Within our mandate, the ECB is ready to do whatever it takes to preserve the euro. And believe me, it will be enough." [4]

Without these interventions there is no way of estimating how much worse off the global economy would have become. However, such interventions by unelected groups are affecting the level of trust that underpins the financial system.

The complexity of the modern world economy has left central bankers relying on models that do not reflect this nor always capture accurate data inputs. Keynes realised this issue in 1930 when he stated that:

„This is a nightmare, which will pass away with the morning. For the resources of nature and men's devices are just as fertile and productive as they were. The rate of

[3] Sometimes called the NICE period. Non-Inflationary Constant Expansion

[4] https://www.ecb.europa.eu/press/key/date/2012/html/sp120726.en.html (access 09.05.2018).

our progress towards solving the material problems of life is not less rapid. We are as capable as before of affording for everyone a high standard of life–high, I mean, compared with, say, twenty years ago–and will soon learn to afford a standard higher still. We were not previously deceived. But to-day we have involved ourselves in a colossal muddle, having blundered in the control of a delicate machine, the working of which we do not understand. The result is that our possibilities of wealth may run to waste for a time–perhaps for a long time."

The fundamental task of central bank is influencing money supply for stabilisation of the economy, and then also consumer price inflation (see: Sławinski, 2014). „The central banks would emit money if the authorities of a country decided to monetize large-scale public debt; If the central bank started to directly lend to the government buying large amounts of treasury bonds immediately on the primary market" (Sławiński, 2014).

The central bank, in order to increase the money supply, has to persuade commercial banks to increase their bank loans. For this purpose, it increases the liquidity in the system. This can occur by swapping liquid reserves of commercial banks on accounts with the Central Bank on assets (securities) which are held by the commercial banks (Sławiński, 2014). If we assume that this type of central bank action will increase money supply, this should have two main affects. Firstly, on asset prices and secondly on GDP growth.

In terms of GDP, growth is affected by increase of money supply through the following channels:

Channel of interest rates: $M \uparrow \rightarrow i \downarrow \rightarrow K_k \downarrow \rightarrow I \uparrow \rightarrow D \uparrow \rightarrow PKB \uparrow$

Channel of foreign exchange: $M \uparrow \rightarrow E \uparrow \rightarrow NX \uparrow \rightarrow D \uparrow \rightarrow PKB \uparrow$

Channel of capital market: $M \uparrow \rightarrow i \downarrow \rightarrow D_o \downarrow \rightarrow D_a \uparrow \rightarrow P_a \uparrow \rightarrow I \uparrow \rightarrow D \uparrow \rightarrow PKB \uparrow$

Channel of credit: $M \uparrow \rightarrow V_d \uparrow \rightarrow K_r$

Where:
M – money supply,
I – interest rate,
K_k – cost of capital,
I – investment expenditure of the out of banking sector,
E – foreign exchange – price of currency expressed in home currency unit,
D – aggregated demand,
K_r – supply of banking loans for enterprises and households,
NX – net exports,
V_d – value of bank deposits,
D_a – demand for stocks,
D_o – demand for bonds,
P_a – rates of stocks.

In terms of asset prices, the huge increase in central bank demand for government bonds has had a positive effect. So much so that many believe there are a number of asset prices bubbles in many areas. However, one could argue that investors are acting rationally (bubble or not) given the signals from central bankers that interest rates will be kept low for a long time and if markets fall QE will be extended. Yardeni et.al (2017) provide evidence of a positive correlation between the S&P 500 Index and QE (see fig. 1).

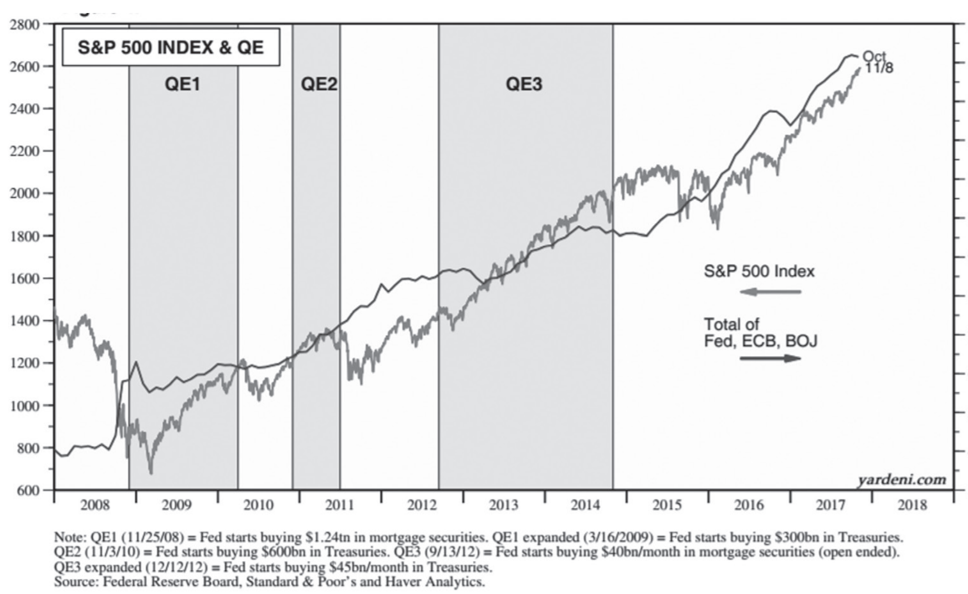

Figure 1. S&P 500 Index and QE

Source: Yardeni, et.al (2017).

When QE was first announced, and then expanded on, there was a belief that it would lead to inflation. However, it appears that the experience in the West is mirroring that of Japan – it appears that it has had little impact on consumer price inflation (many central banks are struggling to hit their inflation targets[5] despite unprecedented levels of monetary injections).

However, injections of money into the economy can be reflected in two ways. Either by chasing up the prices of consumer goods (consumer price inflation) or via asset price inflation. If QE is indeed being shown in higher asset prices then its impacts on the 'real' (consumer facing) economy might be limited. If indeed this is the case then QE might actually destroy economic growth in the long run. The econometric model that follows helps test this hypothesis.

[5] Typically 2%.

A problem occurs with analysing the effects of quantitative easing during a period of a recession in which two crises overlapped in an economy – a financial and fiscal crisis. Like the majority of countries that employed QE, the UK combined this monetary stimulus with austerity measures. QE helped to stabilise countries but has also resulted in making it easier to service debts as real interest rates fell.

The resulting rise in asset prices and debt levels impacts the ability of models to distinguish the effects of each policy measure. Even more concerning, QE may lead to a decline in trust in the financial markets and central bankers (whom many see as boosting and protecting the wealth of the richest with little evidence of any trickle down effects).

With interest rates low banks margins are hit. Then the banks, instead of extending loans, they undertake proprietary trading (investing in assets on financial markets, mainly in the treasury bonds with a rating of „A" group). With central banks signalling that rates will remain low for the foreseeable future banks focus on the higher margins to be made from proprietary activities compared to the lower margins derived from their traditional lending. As a consequence low interest rates does not necessarily affect an increase in business investment and thus GDP growth. At the end, under the conditions of the widespread phenomenon of „rollover" debt, new capital from the sales of government bonds is largely „unproductive", in the sense that it serves for the repayment the debt from the past rather than for any productive public investment. From the point of view of economic growth (via the transmission channels above), it would be ideal if the banks were creating loans for either new business ideas or to help successful business expand. Existing economic models have largely not adjusted to the fact that the dominant players in the financial markets are the central banks who have different incentives than just maximising their profits.

2. Literature review

There have been a number of studies into the quantitative impact of QE across a wide range of areas. Borio and Zabai (2016) provide a review of previous empirical studies in their paper. They come up with three main conclusions: „there is ample evidence that, to varying degrees, these measures have succeeded in influencing financial conditions even though their ultimate impact on output and inflation is harder to pin down; the balance of the benefits and costs is likely to deteriorate over time; and the measures are generally best regarded as exceptional, for use in very specific circumstances".

Borio and Zabai's findings relating to previous empirical studies of the impacts of QE on domestic bond yields and exchange rates (see appendix included in the end of paper) illustrate that there is a wide divergence in estimates of the impacts dependent on the underlying assumptions made within the models used.

Going into the financial crisis in the UK many borrowers were over-leveraged. Initially consumers took advantage of the lower interest rates to deleverage. However as real incomes stagnate in the UK consumers are maintaining their lifestyles by using credit again. It would appear that consumers in the UK (and this trend is also reflected in many other countries where QE has been in place for a number of years) initially decided to postpone borrowing as central banks signaled that it would become even cheaper to borrow in the future. It has been this rise in borrowing that has kept the UK economy growing despite the uncertainties of Brexit.

I. Fuijowara's (2006) research concerned the Bank of Japan's monetary policy. The model used is an implemented MS VAR with five variables: industrial production, CPI, monetary base (M), nominal effective currency rate of exchange and short-term loans interest rate on the interbank market. The period of research covers the years 1975–2002. The author indicated that the changes in monetary base and the interest rate influenced industrial production growth until 1996. However, when the Bank of Japan implemented zero-bound monetary policy after 1996 – there were no positive effects caused by interest rate reductions.

E. Griradin & Z. Moussa (2010) investigation covered the period between 1985–2006 (monthly data) using an implemented model MS-SFAR. The results of their research indicate on the positive impact of the monetary base changes on the price level increases and the growth of the real economic activity.

D. Giannone, M. Lenza, H. Phill, L. Reichlin (2012) investigated the impact of the ECB non-standard measures of monetary policy on the euro are economy. The results of their Bayesian VAR model indicate the statistically significant impact of that policy on the production (increase of 2%) and unemployment (decrease of the rate of unemployment by 0.6%).

H. Chen, A. Cúrdia, A. Ferrero (2012) research, based on the macroeconomic model DSGE estimated that for the USA economy, that decreases in the interest rate caused GDP growth of 0.13%, and quantitative easing policy caused GDP to grow by 0.6% and inflation by about 0.3%.

G. Kapetanios, H. Mumtaz, I. Stevens, K. Theodoridis (2012) applied to the models VAR (BVAR, SVAR, TVP-VAR). The analysis of the models estimation results allowed them to determine the probable effects of quantitative easing in the UK implemented by the Bank of England in the period of 2009–2010. The results indicate that without quantitative easing the fall in GDP in 2009 would be much bigger and inflation would have been transformed into deflation.

J.-G. Suhuc (2016) research indicated that quantitative easing policy in the euro area in the period of 2015–2016 induces growth of inflation by 0.6% and GDP growth by 0.6%.

3. Statistical data and model

In our research we used quarterly data from the period 2007:04–2016:04 concerning GDP, deflator of GDP, (GDP was estimated in constant prices from 1999), monetary aggregate M3, 3-moths interest rates LIBOR GBP, currency rate of exchange GBP/USD[6].

In order to examine whether and how the changes in money supply, interest rates (monetary policy effect), and the currency rate of exchange in the UK affected economic growth in the period of the financial and fiscal crises and post-recession period (2008–2016), the following model was formulated:

$$GDP_t = a_{10} + \sum_{i=1}^{4} a_{11i} GDP_{t-i} + \sum_{i=1}^{4} a_{12i} M3_{t-i} + \sum_{i=1}^{4} a_{13i} E_{t-i} + \sum_{i=1}^{4} a_{14i} I3_{t-i} + u_{19}$$

$$M3_t = a_{20} + \sum_{i=1}^{4} a_{21i} GDP_{t-i} + \sum_{i=1}^{4} a_{22i} M3_{t-i} + \sum_{i=1}^{4} a_{23i} E_{t-i} + \sum_{i=1}^{4} a_{24i} I3_{t-i} + u_{29}$$

$$E_t = a_{30} + \sum_{i=1}^{4} a_{31i} GDP_{t-i} + \sum_{i=1}^{4} a_{32i} M3_{t-i} + \sum_{i=1}^{4} a_{33i} E_{t-i} + \sum_{i=1}^{4} a_{34i} I3_{t-i} + u_{39}$$

$$I3_t = a_{40} + \sum_{i=1}^{4} a_{41i} GDP_{t-i} + \sum_{i=1}^{4} a_{42i} M3_{t-i} + \sum_{i=1}^{4} a_{43i} E_{t-i} + \sum_{i=1}^{4} a_{44i} I3_{t-i} + u_{49}$$

where:
GDP_t – log differences of Gross Domestic Product,
$M3_t$ – log differences of monetary aggregate M3,
$I3_t$ – first differences of – month interest rate LIBOR GBP/USD,
E_t – log differences of currency rate of exchange GBP/USD,
u – residuals.

The choice of the lag was based on the Akaike criterion (AIC) and Hannan-Quinn criterion (HQC).

4. Results of the model's estimation

The results Engle-Grnger's cointegration test indicate that the time series used in the VAR model are co-integrated (see below tab. 1).

Table 1. Results of Engle-Granger's cointegration test

Augmented Dickey-Fuller test for uhat including 4 lags of (1-L) uhat (max was 4, criterion AIC) sample size 32, unit-root null hypothesis: a = 1.

Model: (1-L)y = (a-1)*y(-1) + ... + e
Estimated value of (a - 1): -1.36835
Test statistic: tau_ct(4) = -4.57306
Asymptotic p-value 0.03382
1st-order autocorrelation coeff. for e: -0.102
Lagged differences: F(4, 27) = 2.213 [0.0942]

Sorce: own estimation.

[6] The source of data was *ECB Statistical Data Warehouse, data base of OECD*, data base stooq.pl

Also Johansen's cointegration test confirms cointegration of time series used in the VAR model (see below tab. 2).

Table 2. Results of Johansen's cointegration test: Number of equations = 4, Lag order = 4, Estimation period: 2007:4 - 2016:4 (T = 37), Case 3: Unrestricted constant

Log-likelihood = 737.906 (including constant term: 632.904)

Rank	Eigenvalue	Trace test	P-value	Lmax test	P-value
0	0.56069	56.882	0.0048	30.434	0.0177
1	0.34529	26.448	0.1189	15.672	0.2547
2	0.20346	10.776	0.2295	8.4169	0.3457
3	0.061774	2.3593	0.1245	2.3593	0.1245

Source: own estimation.

Results of tests indicated that autocorrelation and effect ARCH does not exist (see table 3 ad 4).

Table 3. Results of autocorrelation test

Equation 1:
Ljung-Box Q' = 2.24695 with p-value = P(Chi-square(4) > 2.24695) = 0.69
Equation 2:
Ljung-Box Q' = 1.59978 with p-value = P(Chi-square(4) > 1.59978) = 0.809
Equation 3:
Ljung-Box Q' = 5.39837 with p-value = P(Chi-square(4) > 5.39837) = 0.249
Equation 4:
Ljung-Box Q' = 2.27052 with p-value = P(Chi-square(4) > 2.27052) = 0.686

Source: own estimation.

Table 4. Results of test for ARCH of order 4

Equation 1:
Null hypothesis: no ARCH effect is present
Test statistic: LM = 4.64292
With p-value = P(Chi-square(4) > 4.64292) = 0.325935
Equation 2:
Null hypothesis: no ARCH effect is present
Test statistic: LM = 5.44478
With p-value = P(Chi-square(4) > 5.44478) = 0.244626
Equation 3:
Null hypothesis: no ARCH effect is present
Test statistic: LM = 0.812107
With p-value = P(Chi-square(4) > 0.812107) = 0.936818
Equation 4:
Null hypothesis: no ARCH effect is present
Test statistic: LM = 2.65983
With p-value = P(Chi-square(4) > 2.65983) = 0.616263

Source: own estimation.

All VAR inverse roots are lower than 1. This result indicates that the constructed VAR model can be used in practice and impulse responses does not create non-stationary processes with an explosive course (see fig. 2).

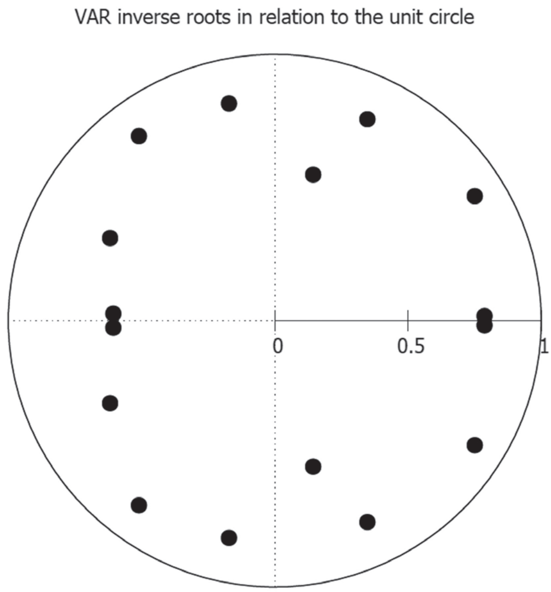

Figure 2. The roots of characteristic equation

Source: own estimation.

The analysis of the impulse responses (see fig. 3) indicates that the reaction of GDP growth in response to the impulse from the expansion in M3 was initially relatively weak. It appeared in the beginning of the 5th quarter and began to go out after the 10th quarter. The reaction of GDP growth in response to the impulse of the interest rate was much stronger initially and also appeared in the 5th quarter. It began go out after the 10th quarter. The reaction of GDP growth against the impulse of the currency rate of exchange was stronger than reactions against former impulses (M3 and interest rate) and appeared in the 5th quarter, but it began to go out after the 10th quarter.

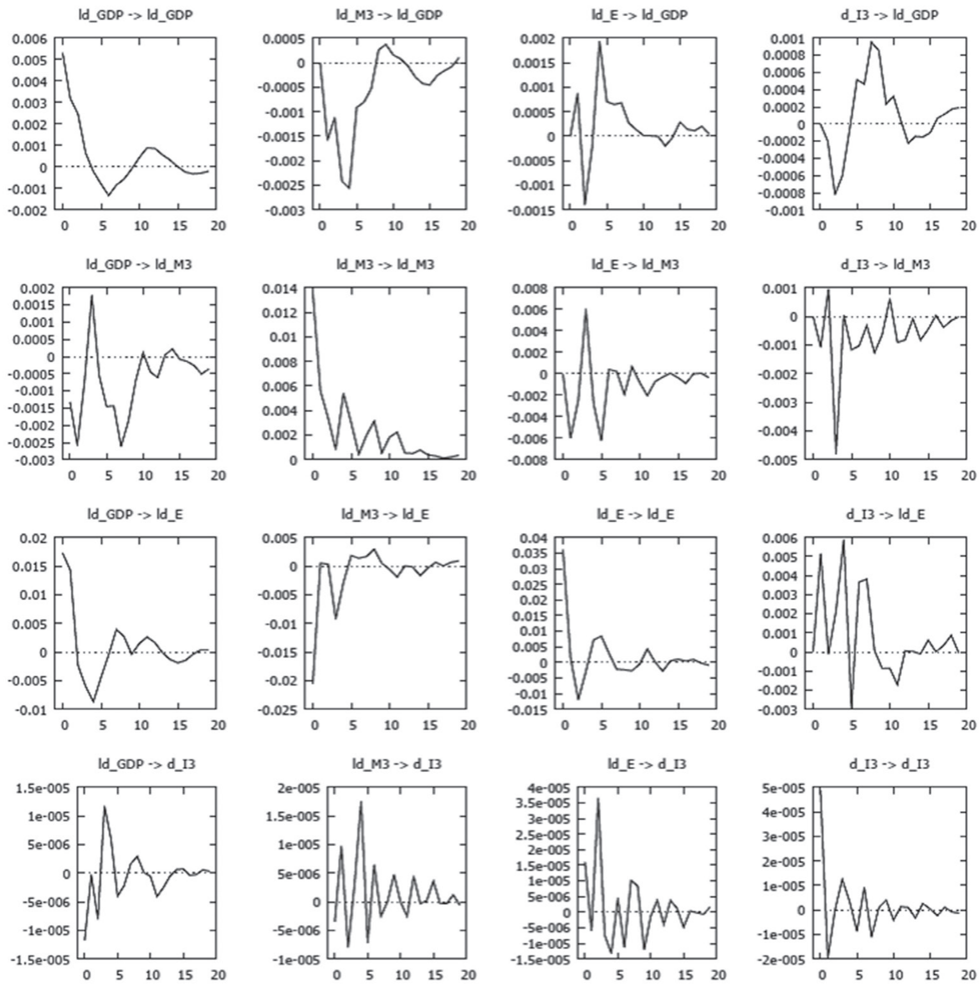

Figure 3. The impulse responses

Source: own estimation.

The analysis of forecast of variance decomposition indicates that changes of GDP growth was caused first of all by previous GDP growth (in 62,5%), in 23,0 % by changes of M3, in 4,4 % by changes of interest rates, and in 10,1 % by changes of currency rate of exchange (see fig. 4).

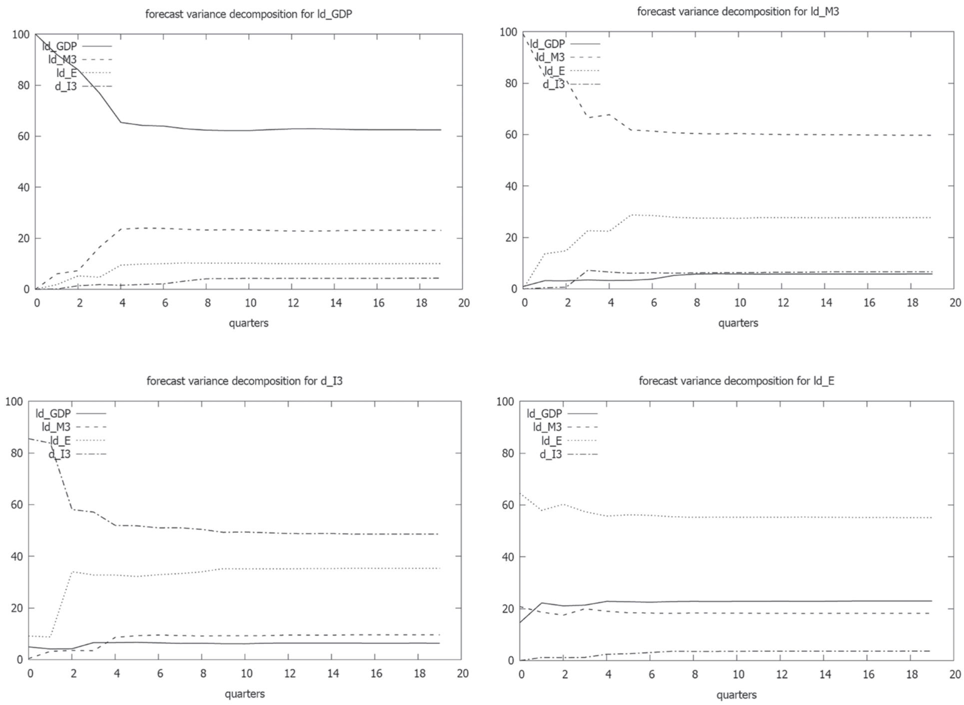

Figure 4. Forecast variance decomposition

Source: own estimation.

Concluding remarks

The analysis based on the model VAR allows us to formulate some important conclusions. First of all, the M3 expansion in the UK did not give so strong an effect in the stimulation of GDP growth despite expectations. If we look at the impulse response of GDP against M3, it explained 23.0% of the growth in GDP in the studied period. This was a larger impact compared to the effect of changes in the interest rate. The impact of interest rates on GDP was stronger than M3, if we look at the GDP impulse response against interest rate, but it explains a much smaller part of GDP growth. An important factor which influenced GDP growth was the exchange rate (GBP/USD). However, with both the US and the UK deploying QE programs at the same time it is hard to distinguish the individual policy effects. The explanation of the causes of that situation require further research in comparison with other countries as USA, Japan and also the euro area.

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Appendix

Impact of balance sheet policies on domestic yields and the exchange rate — Table 4

Study	Method	Estimates: Δ 10-year Treasury yield (bp)	Δ 30-year MBS yield (bp)	Δ FX (%)
United States				
QE1 – $1.75 trillion MBS; $300 billion Treasuries; $172 billion agency securities				
Krishnamurthy and Vissing-Jorgensen (2011)	Event study	−107[1a]	−107[1b]	
Gagnon et al (2011)	Event study	−91[2a]	−113[2b]	
Hancock and Passmore (2011)	Time series regressions			−44[3c]
Christensen and Rudebusch (2012)	Event study, affine no-arbitrage model of the term structure	−89[4a] (−60,−33,−7)		
D'Amico and King (2013)	Cross-section regression	−30[5a]		
D'Amico et al (2012)	Time series regression	−35[6a] (66,34)		
Bauer and Rudebusch (2014)	Affine no-arbitrage model of the term structure	−89[7a] (38,62)		
Neely (2015)	Event study	−94[8a]		−5.98[8c]
Chadha et al (2016)	Time-series regression	−90 to −115[9a]		
QE2 – $600 billion Treasuries				
MEP – $667 billion long-term Treasuries purchased; $667 billion short-term Treasuries sold				
Krishnamurthy and Vissing-Jorgensen (2011)	Event study	−30[10a]	−8[10b]	
Swanson (2011)	Event study	−16[11a]		
Hamilton et al (2012)	Time series regression	−22[12a]		
D'Amico et al (2012)	Time series regression	−45[13a] (78,22)		
All programmes (includes QE3, $823 billion MBS; $790 billion Treasuries)				
Swanson (2015)	Time series regression	−7.46[14a]		−0.26[14c]
United Kingdom				
QE – £375 billion gilts				
		Δ gilts yield (bp)		Δ FX (%)
Joyce et al (2011)	Event study	−100bp[15a] (10,90)		−4[15c]
Joyce and Tong (2012)	Event study, time series regressions	−97.6[16a] (2.5)		
Christensen and Rudebusch (2012)	Event study, affine no–arbitrage model of the term structure	−43[17a] (47,−135,−12)		
McLaren et al (2014)	Event study	−93[18a] (52)		

Source: Borio, C., Zabai, A. (2016).

Euro area			
APP – planned purchases of €1.14 trillion until September 2016			
		Δ 10-year Treasury yield (bp)	Δ FX (%)
Altavilla et al (2015)	Event study	−47[19a]	−12[19c]
Japan			
Monetary easing since 2008			
		Δ 10–year Treasury yield (bp)	Δ FX (%)
Lam (2011)	Event study	−24[20a]	−0.3[20c]
Ueda (2012)	Announcement effects	−9.9[21a]	−0.52[21b]
Hausman and Wieland (2014)	Announcement effects	−11.4[22a]	3.55[22b]
Imakubo et al (2015)	Models of the term structure	−80[23a]	

[1a,b] Cumulative change (Table 1). [2a,b] Cumulative effect based on baseline event set (Table 1). [3c] This is not a yield change but the change in abnormal MBS pricing (ie the difference between actual and predicted), in basis points, during the announcement period (Table 3, entry (1,9)). [4a] Actual yield change (first line) and split of actual yield change between signalling channel and portfolio balance channel (plus residual), in per cent, based on preferred term structure models (Table 4 and Table 8, last row). [5a] The first line reports the stock effect, based on comparison of actual and counterfactual yield curves (Figure 5), while the second line is the flow effect on eligible securities on purchase day (see Section 4.3.2). [6a] Yield change and split between local supply effects (66%) and duration effects (34%); see discussion at the end of Section 6. [7a] Actual yield change (first line) and split of model-implied yield change (-94 bp) between signalling channel and portfolio balance channel, in per cent, based on restricted risk pricing specification of the term structure model (Table 5). [8a] Cumulative effect of buy and sell events (Table 2). [8c] Average change in the exchange rate (measured as the foreign currency price of 1 dollar), cumulative effect of buy and sell events (Table 3). [9a] Impact on 5-year forward 10-year rate (Figure 3). [10a,b] Cumulative change based on two-day window (Table 5). [10b] Not significant. [11a] Cumulative change based on first four announcements (Table 3). [12a] A $400 maturity swap at the zero lower bound is estimated to reduce yields by 13 bp (Table 5); the actual swap was $667 billion and since the model is linear, one obtains 667/400*13 bp = 22 bp. [13a] Yield change and split between local supply effects (78%) and duration effects (22%); see discussion at the end of Section 6. [14a] Impact of a change in purchases about $300 billion larger than anticipated by markets (Section 3 and Tables 2 and 3). [14c] Average change in the exchange rate (measured as the foreign currency price of 1 dollar) after a change in purchases about $300 billion larger than anticipated by markets (Section 3 and Table 4, authors' calculations). [15a] Cumulative change in gilt yields and split across signalling channel (10%) and portfolio balance channel (90%) (Chart 9). [15c] Cumulative change in sterling exchange rate, measured as the foreign currency price of one pound (Chart 17). [16a] First row reports the average change in yield following QE announcement in medium- to long-term gilts (Table 3, average of last row excluding the first entry), while the second row reports the further yield reduction in eligible gilt yields that happened ahead of each auction (flow effects, see Section 6). [17a] Actual yield change (first line) and split of actual yield change between signalling channel and portfolio balance channel (plus residual), in per cent, based on preferred term structure models (Tables 12 and 15, last row). [18a] Total decline in five- to 25-maturity gilt yields, and share of local supply effect (Section 2.2 and Table 4). [19a] Cumulative change based on controlled event study with two-day window (Table 1). [19c] Percentage change based on controlled event study with two-day window, exchange rate measured as the dollar price of 1 euro (Table 6). [20a] Cumulative effect (Table 3a). [20c] Expressed as number of dollars per yen, not significant (Table 3a). [21a] Comprehensive Monetary Easing programme announcement (5 October 2010) effect (Table 5, penultimate row). This is not an event study, so a significance level is not provided. [21b] Comprehensive Monetary Easing programme announcement effect on the exchange rate, expressed as the yen price of 1 dollar (so a negative entry is a yen appreciation) [22a] QQE announcement (4 April 2013) effect (Table 2). This is not an event study, so a significance level is not provided. [22b] QQE announcement effect on the exchange rate, measured as the yen price of 1 dollar (Table 2). This is not an event study, so a significance level is not provided. [23a] Maximum impact of QQE programme computed as gap between actual and natural yield curve (Figure 8, bottom right panel).

Source: Borio, C., Zabai, A. (2016).

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Grażyna A. OLSZEWSKA[1]

FOREIGN CURRENCY LOANS AND STABILITY OF THE BANKING SYSTEM IN POLAND

The aim of the study was to answer the question whether and to what extent foreign currency loans may pose a threat to the stability of the banking system in Poland. The reason for exploring this problem is the situation in which Swiss franc mortgage loan parties found themselves. The problem concerned not only Poland, but also appeared in Hungary, Spain and Ukraine. The aforementioned countries have adopted various strategies in order to solve this issue. Currently, there is a discussion in Poland over the form of solution to the situation in which the Swiss franc debtors have found themselves. This article presents the following hypotheses:

- *The credit policy of banks, which includes mortgage lending in Swiss francs, was a typical action in terms of risk management which in this case was two-way in nature. In addition, banks did not have the opportunity to significantly impose its policies on customers, as evidenced by the degree of market development and market competition.*
- *Conversion of mortgage loans according to the CHF historic exchange rate can affect the stability of the banking system.*

The article presents the main types and sources of bank risks with particular emphasis on credit risk and foreign exchange risk. In addition, the paper shows the importance of this kind of risk in the context of the systemic stability of the banking sector in a situation of exchange rate stability disturbances. Verification of the research hypothesis was based on literature studies and analysis of statistical data.

Keywords: Banking system, bank risk, foreign exchange risk.

JEL Classification Codes: E58, E44, G21.

[1] Assistant Professor, Ph.D., University of Technology and Humanities in Radom, Faculty of Economics and Legal Sciences.

Introduction

Allocation of resources is the main task of banks in any market economy. It is often wrongly limited to accepting deposits and giving loans. However, to make it fully and effectively implemented, banks also have make payments and enable the same to other market participants, transform amounts and dates of money flows, collect and process information and provide other market participants with it, take the risk over from other market participants and create instruments serving the purpose of market management and offer them to market participants. Risk is a common phenomenon in bank activities. It is of a complex and multi-dimensional nature. Majority of risk factors derive from information asymmetry. This phenomenon consists in the fact that *the scope of information which is in the possession of the parties entering into transaction is varied* (Pietrzak, Polański, Woźniak, 2008, p. 21).

The banks which are involved in transactions establish with other market participants relationships at the macro-, mezzo- and microeconomic levels. At the macroeconomic level it is expected from banks to display behaviours of positive impact on economic growth and strengthening national economy. At the mezzoeconomic level banks should pursue their objectives giving due consideration to maintaining balance and long-term benefits for the region and entities within the area of their activities. Direct relationships with clients form for a bank a plane to meet microeconomic objectives. At this level the bank should aim at gaining profits while simultaneously observing the safety principle.

Ignoring the safety principle may lead to a loss of social confidence in a single bank and, consequently, the occurrence of the domino effect. Due to the significance of this phenomenon, every financial system has financial supervision guarding the safety of banks and other institutions belonging to the system.

Maintaining the safety of bank activities is in the best interest of all markets participants. However, bank clients, in particular depositaries but also borrowers, are very sensitive to the issue of safety because financially weak banks are not able to raise funds which would satisfy demand for loans. It can be said that the proper assessment of risk factors in the financial market determines evaluation of loan funds which are to be the subject of a transaction within the framework of bank activities at the microeconomic level. It determines the costs to be incurred by borrowers, interest rates on depositaries' deposits and profits which will be earned by a bank.

On account of the scale of their activities, banks have an advantage over individual clients in the field of gaining information indispensable for risk assessment as well as its diversification. However, they are not able to affect or fully control its development.

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Stability of the banking system and its significance for economic growth

In source literature the concept of the banking system appears very often, however, the way in which it is defined by particular authors concentrates around the same elements. The differences result from a different approach to the term defined.

In the institutional approach, the banking system can be defined as a *collection of institutions which – depending on the adopted model – consists of different types of banks functioning in particular segments of the financial market* (Pietrzak, Polański, 1997, p. 39). Alternatively, it can be said that *the banking system is an organised set of elements being banks and relationships among them* (Milczewska, 1997, p. 7).

Still another way of approaching the problem of defining the place of the banking system in financial markets and the role of banks as financial intermediaries is the functional approach. This approach is represented by a view that development of the banking systems is passive or, in other words, it is an after-effect of the market economy development (Jaworski, 1998, p. 16). In this approach the definition of the banking system comes down to the definition of its role in economy of a given country. *The banking system activity focuses on allocation of resources gained from their depositaries into different kinds of investment in order to multiply them or keep their value* (Kaszubski, 2006, p. 56). In accordance with this approach *the banking system is a network of banking institutions inter-connected by money markets*. In this approach the place and role of the banking system in the financial market structure of a given country depends on the size of money aggregates (Jaworski, 1998, pp. 17–20). Thus, the banking system is a logical and coherent whole created from financial – banking and non-banking – institutions of a given country together with the legal regulations in force.

In the functional approach a very important element is referring by the authors of the definitions to the traditional role of the bank as an intermediary in transformation of savings of some economic entities into investment capital of others. And this financial intermediation between end-creditors and end-borrowers determines the unique role of banks in the market (Merton, 1995, pp. 23–24). An element which distinguishes banks from other financial institutions, such as, insurance societies, pension funds or investment funds, is the fact that banks are the only institutions which create money and organise circulation of money through implementation of inter-bank settlements. This explains their special role in the monetary impulse transmission to economy.

Depending on what in a given market is treated as money, considering all the functions fulfilled by it, it will decide about the number and type of these institutions. Such a way of perceiving the banking system is of dynamic character because it is based on analysis of continuous transformations of elements making up the banking system (Olszewska, 2013, p. 51).

The banking system products are monetary impulses and money flows carried out among different types of economic – financial and non-financial – entities. While analysing the place and role of banks in the financial system one must emphasise the fact that these are banks which in the system fulfil the roles, which non-banking financial institutions are not able to fulfil. These functions include:

- taking the risk over by giving bank guarantees,
- creating and servicing the system of money settlements between business entities,
- and the most important element distinguishing banks:
  possibility of money creation through accepting deposits and giving loans.

It is owing to the possibility of money creation which determines the volumes of money supply that banks are price-setting institutions in the money market. Additionally, due to its availability to an average customer, regardless of the fact whether it is a natural person or an economic entity, the „banking channels" of the monetary policy impulse flows to economy have the broadest reach. Therefore, the stability of the banking system is often identified with financial stability. The latter, in turn, constitutes a fundamental condition of every country's economy functioning. It forms a basis of rational decisions about capital allocation supporting effective operating of economic entities (Skrzypek, 2007).

One of the ways of defining financial stability is a negation-based statement, namely that financial stability must be understood as lack of the financial crisis threat, but also a situation in which there is no systemic risk (Lastra, 2006, p. 13). A systemic risk, means, in turn, a situation in which the crisis occurring in one country or region becomes a direct cause of the financial system instability in another country or region. In view of financial market globalisation the crisis often has an international dimension. It happened so on many occasions in the history of the financial market development. An example here can be the crisis in 2007. Turbulences in functioning of financial institutions important for the system is also an example of the systemic risk occurrence which can be accompanied by reduced or no confidence of the financial market participants in its particular institutions. In practice this can mean disintegration of the financial system as a result of a domino effect, external shock or loss of security of economic turnover due to a terrorist attack or organised crime (Solarz, 2008, p. 19).

In a positive approach generally the term "financial stability" defines a situation in which the financial system functions properly, i.e. its functioning is not disturbed in any way. The most important aspects of modern economy include: risk identification and assessment, creating conditions for effective management of the diagnosed risk and effective allocation of financial resources. All these elements lead to financial security (Książepolski, 2004, p. 160). However, the very creating of these conditions does not guarantee that particular market participants achieve expected results of undertaken activities. Thus, financial stability is not synonymous with effectiveness.

Financial crises which have occurred since the 1950s prove that the banking sector, which is a foundation of every country's financial market, is of key importance for financial stability. These are banks which can create money and these are irregularities in their functioning (especially those connected with credit policy) which happen to be the main cause of financial crises, determine their course and social and economic costs. As it is state budget which covers a major part of the financial crisis costs, the state must have at its disposal "the tools" for systemic risk monitoring, valuation and management in the form of the so called financial security network. At the national level, this network consists of the financial market supervision (frequently of integrated nature), the last-instance lender (it is the central bank on which this function is imposed directly by legal regulations) and the deposit insurance system. An obvious consequence of internationalisation of national financial systems is connection of national security networks with one another at the regional or international levels. Despite differences in the division of preventive functions, crisis management functions and management function among particular elements of national security networks, they can create "early warning systems" at the transnational level (Szczepańska, Sotomska-Krzysztofik, Pawliszyn, Pawlikowski, 2004, pp. 6–7). It is particularly important in the situation of the increasing supremacy of the financial system or kind of its breakaway from the real sector of economy. In some circumstances it may mean negative correlation along the line "financial development – economic development" (Krahnen, Schmidt 1994, pp. 9–10). It is possible in the situation when savings of economic entities instead of being a source of financing investment are intended to be used by banks or financial institutions for other purposes, like e.g. speculative operations on an international scale or a necessity to cover costs of non-standard risk. Many economic crises originated in speculative attacks on currencies of less developed countries. Interventions in the foreign exchange markets mean a loss of reserves and a possibility of refinancing weaker banks. This may result in the financial market destabilisation and necessity of state funding for particular institutions. An additional factor having an adverse effect on economic growth is absorption by the financial system of savings which otherwise could be transformed into investment but serve the purpose of maintaining frequently ineffective infrastructure of the system (Żyrzyński, 2006, p. 546). In the last decades solutions of different types dealing with restructuring processes of banks' credit portfolios, or even the entire banking systems, abounded (Majewska, 2001). Therefore, the projects presented by the Polish government aiming at helping these bank clients who took loans in Swiss francs seem to be irrational from the point of view of the role of state in maintaining financial stability.

Bank risk in the current situation in foreign exchange markets

In bank activities risk has always been present, however, together with the development of the banking sector and its environment, the sources and scale of risk to which they were exposed have changed.

Source literature presents several definitions of risk. The main difference is in the very understanding of variability of results. Some authors treat risk as a possibility of changes in a result in relation to the one assumed in the decision-making process. It is a positive risk, which can also be defined as speculative (Gątarek, Maksymiuk, Krysiak, Witkowski, 2001, p. 7). This type of approach to risk is usually applied in financial risk management. Financial risk is connected with the capital structure of the economic entity's balance sheet and it refers to both financial and non-financial entities (Janasz, 2013, p. 174). Among financial entities, financial market institutions are most exposed to this kind of risk (Williams, Smith, Young, 2012, pp. 41–43). We speak about negative risk when a change in a result is one-sided, which means only a possibility of its deterioration. This type of risk is also defined as "pure". In financial markets this type of risk refers mainly to banks and is connected with credit giving activities (Przybylska-Kapuścińska, 2001, pp. 31–33).

Bank risk results from performing different banking operations. Therefore, it cannot be restricted to credit giving activity reserved for banks only. We cannot treat it as a danger leading to deterioration of the financial result and occurrence of other irregularities which may result, for example, in bankruptcy (Rajczyk, 1997, p. 50). In banking practice there are quite a number of situations which may lead to both profits and losses. Uncertainty about the course of events related to banking activities is a complex problem and it requires a continuous and careful management process (Fedorowicz, 1996, pp. 6–7).

The authors of the bank risk definitions presented in source literature have not reached agreement on the issue whether in banking activities we deal with risk or uncertainty. One of the approaches assumes that risk appears when it is possible to determine a quantitative result of the decisions made (Jajuga, 1996, p. 99 and Stoner, Wankler, 1996, pp. 125–126). However, in the situation where a probability distribution of a specific result occurrence is not known we deal with uncertainty (Knight, 1971, p. 13). A complex nature of the bank risk and the fact that many of its components cannot be measured means that we can assume that banking activities (or broadly speaking, financial activities) are burdened not so much with risk but rather uncertainty.

For the purposes of this paper it was assumed that in their activities banks deal with risk whose multi-factor nature makes it impossible to measure it in its entirety. The factors of bank risk have a double nature. Firstly, they are technical and operational risks; secondly – a set of financial risks. Technical and operational risks result from work organisation, staff competencies or efficiency of IT systems. On the other hand, financial risk consists of: liquidity risk, interest rate risk, credit risk, exchange rate risk, operational risk, transactional risk and strategic and systemic market risks. The latter type of risk can derive from different – above mentioned – causes but it is the scale of effects, sometimes dramatic for market participants, that allows us to define them as systemic ones (Kaufman, 1996, p. 23). On many occasions these were market participants who through wrong risk assessment underlying their decision making provoked other entities to undertake specific activities and these, in turn, led to a loss of balance in the market and a change in the value of assets quoted on the market (Danielsson, Zigrand, Shin, 2009, p. 6).

In open economy, majority of financial institutions are international in nature. They conduct their business activities in several or more countries at the same time. Consequently, they are simultaneously exposed to the above mentioned risk factors rooted in different markets and assuming different values. In the situation of disturbed macroeconomic balance and recession resulting from the 2008 financial crisis, it was the foreign exchange risk that turned out to be particularly painful for market participants.

The foreign exchange risk means a possibility of suffering financial losses as a result of foreign exchange fluctuations. In the floating foreign exchange system this risk must be incessantly managed which is not synonymous with risk avoidance. Full foreign exchange risk management consists in using all information and abilities to evaluate it and ensure the expected yield in relation to the size of risk.

In the case of foreign exchange risk limited predictability concerns the value of foreign exchange rates in the future, however, potential losses may appear in the future in two areas:

- exchange rate losses noted,
- lost profits.

In the latter case the loss of profits from exchange rate gains can result from the entity's use of inappropriate in a given market situation, hedging instruments or other factors. It can be, for example, an administrative decision forcing an entity, in this case a bank, to recalculate its currency positions using the exchange rate different from the market one. If we assume that it refers only to the money due to a bank, it can mean not only lost profits but even a loss. Such a solution can be a real threat to the banking system stability. The ability to absorb losses incurred by a single bank, including its bankruptcy, may turn out problematic (Olszewska, 2015, p. 125). When this concerns many banks it can be impossible to carry out, especially in the situation of the freedom of deposit outflows from national banks to foreign markets. At present, in open economy, it is possible for the EU citizens without increased transfer costs. The outflow of savings can occur as a result of depositaries' reduced confidence in national banking institutions or in order to avoid costs passed on by banks to customers. The second variant is very probable. It is indicated by the solutions adopted in the field of financial supervision in the EU market (Olszewska 2012, pp. 228–229). Increased prudential regulations and costs related to them are passed on to other institutions creating the system and gradually they assume a transnational character.

Significance of the exchange rate risk for banks in Poland, as exemplified by CHF loans

In the Polish financial market the exchange rate risk plays a significant role. The Polish zloty is not a hard currency free of fluctuations. Despite the fact that after the 2008 financial crisis the GDP growth rate was positive, the zloty exchange rate against key currencies (USD, EURO, GBP or CHF) was strongly depreciated. Most probably speculations in the currency markets were responsible for that. The forecasts based on economic and political factors pointed to stability or even appreciation of the zloty exchange rate. Table 1 presents development of average exchange rates as of the last day of month.

In the analysed period CHF was the strongest in relation to the zloty. It was justified by political decisions of the Swiss government and the monetary policy strategy of the Swiss central bank. It was quite a surprise to market participants and resulted in changes in demand for financial instruments, especially loans, denominated in foreign currencies. The demand from households for loans denominated in the Polish zloty and in foreign currencies is presented in table 2.

Analysis of the data outlined in tables 1 and 2 shows that households reacted to changes in exchange rates with some delay. This can be accounted for by confidence in domestic currency and conviction about a temporary depreciation of the zloty. An additional factor was the interest rate which was twice lower in the case of loans denominated in zloty than in the case of foreign currency loans.

For the borrowers who were indebted in foreign currencies the depreciation of the zloty means higher costs of debt servicing. The borrowers who took loans in CHF felt them particularly severely. The data concerning changes in the value of CHF loans in relation to wage growth in the enterprise sector and general indebtedness are presented in table 3. On the basis of the data it can be concluded that the situation of borrowers having loans in CHF deteriorated because of higher instalment values expressed in PLN, however, their wages also rose in the same period. Our data cover the period from the beginning of 2005 till the end of 2010.

Table 1. Table of the NBP (National Bank of Poland) exchange rates, month end average, for USD, EURO, CHF, GBP in the period 2007–2015

	USD	EURO	CHF	GBP		USD	EURO	CHF	GBP
12-2007	2.4350	3.5820	2.1614	4.8688	**11-2011**	3.4248	4.5494	3.7112	5.3234
1-2008	2.4438	3.6260	2.2562	4.8593	**12-2011**	3.4174	4.4168	3.6333	5.2691
2-2008	2.3155	3.5204	2.2083	4.5901	**1-2012**	3.2032	4.2270	3.5054	5.0496
3-2008	2.2305	3.5258	2.2446	4.4266	**2-2012**	3.0730	4.1365	3.4318	4.8973
4-2008	2.2267	3.4604	2.1437	4.3822	**3-2012**	3.1191	4.1616	3.4540	4.9908
5-2008	2.1824	3.3788	2.0767	4.3004	**4-2012**	3.1509	4.1721	3.4731	5.1295
6-2008	2.1194	3.3542	2.0907	4.2271	**5-2012**	3.5372	4.3889	3.6545	5.4858
7-2008	2.0509	3.2026	1.9596	4.0637	**6-2012**	3.3885	4.2613	3.5477	5.2896
8-2008	2.2691	3.3460	2.0723	4.1581	**7-2012**	3.3508	4.1086	3.4206	5.2567
9-2008	2.3708	3.4083	2.1587	4.2885	**8-2012**	3.3353	4.1838	3.4839	5.2756
10-2008	2.8472	3.6330	2.4803	4.6092	**9-2012**	3.1780	4.1138	3.4008	5.1571
11-2008	2.9196	3.7572	2.4273	4.4943	**10-2012**	3.1806	4.1350	3.4249	5.1265
12-2008	2.9618	4.1724	2.8014	4.2913	**11-2012**	3.1585	4.1064	3.4088	5.0621
1-2009	3.4561	4.4392	2.9907	4.9311	**12-2012**	3.0996	4.0882	3.3868	5.0119
2-2009	3.6758	4.6578	3.1355	5.2182	**1-2013**	3.0874	4.1870	3.3890	4.8885
3-2009	3.5416	4.7013	3.1001	5.0546	**2-2013**	3.1679	4.1570	3.4072	4.8058
4-2009	3.2859	4.3838	2.9044	4.8926	**3-2013**	3.2590	4.1774	3.4323	4.9528
5-2009	3.1812	4.4588	2.9438	5.1148	**4-2013**	3.1721	4.1429	3.3821	4.9148
6-2009	3.1733	4.4696	2.9314	5.2745	**5-2013**	3.2953	4.2902	3.4569	5.0181
7-2009	2.9525	4.1605	2.7128	4.8832	**6-2013**	3.3175	4.3292	3.5078	5.0604
8-2009	2.8675	4.0998	2.7037	4.6546	**7-2013**	3.1929	4.2427	3.4465	4.8577
9-2009	2.8852	4.2226	2.7976	4.6443	**8-2013**	3.2209	4.2654	3.4632	4.9899
10-2009	2.8595	4.2430	2.8104	4.7228	**9-2013**	3.1227	4.2163	3.4500	5.0452
11-2009	2.7538	4.1431	2.7476	4.5544	**10-2013**	3.0507	4.1766	3.3875	4.8872
12-2009	2.8503	4.1082	2.7661	4.5986	**11-2013**	3.0846	4.1998	3.4084	5.0348
1-2010	2.9083	4.0616	2.7677	4.6971	**12-2013**	3.0120	4.1472	3.3816	4.9828
2-2010	2.9251	3.9768	2.7169	4.4615	**1-2014**	3.1288	4.2368	3.4644	5.1458
3-2010	2.8720	3.8622	2.7000	4.3491	**2-2014**	3.0254	4.1602	3.4211	5.0697
4-2010	2.9305	3.9020	2.7200	4.5042	**3-2014**	3.0344	4.1713	3.4192	5.0485
5-2010	3.3132	4.0770	2.8661	4.8047	**4-2014**	3.0440	4.1994	3.4433	5.1181
6-2010	3.3946	4.1458	3.1345	5.0947	**5-2014**	3.0435	4.1420	3.3924	5.0928
7-2010	3.0731	4.0080	2.9547	4.7997	**6-2014**	3.0473	4.1609	3.4246	5.1885
8-2010	3.1583	4.0038	3.1012	4.8714	**7-2014**	3.1094	4.1640	3.4225	5.2506
9-2010	2.9250	3.9870	2.9955	4.6458	**8-2014**	3.1965	4.2129	3.4930	5.3056
10-2010	2.8873	3.9944	2.9236	4.5950	**9-2014**	3.2973	4.1755	3.4600	5.3549
11-2010	3.1308	4.0734	3.1359	4.8638	**10-2014**	3.3459	4.2043	3.4860	5.3503
12-2010	2.9641	3.9603	3.1639	4.5938	**11-2014**	3.3605	4.1814	3.4788	5.2805
1-2011	2.8845	3.9345	3.0590	4.5769	**12-2014**	3.5072	4.2623	3.5447	5.4648
2-2011	2.8765	3.9763	3.1043	4.6583	**1-2015**	3.7204	4.2081	4.0179	5.6089
3-2011	2.8229	4.0119	3.0825	4.5530	**2-2015**	3.6980	4.1495	3.8919	5.6924
4-2011	2.6501	3.9376	3.0533	4.4215	**3-2015**	3.8125	4.0890	3.9110	5.6295
5-2011	2.7468	3.9569	3.2254	4.5312	**4-2015**	3.5987	4.0337	3.8438	5.5622
6-2011	2.7517	3.9866	3.3004	4.4102	**5-2015**	3.7671	4.1301	3.9910	5.7590
7-2011	2.8109	4.0125	3.5080	4.5768	**6-2015**	3.7645	4.1944	4.0412	5.9180
8-2011	2.8695	4.1445	3.5373	4.6728	**7-2015**	3.7929	4.1488	3.9355	5.9045
9-2011	3.2574	4.4112	3.6165	5.0832	**8-2015**	3.7780	4.2344	3.9238	5.8309
10-2011	3.1024	4.3433	3.5612	4.9683	**9-2015**	3.7754	4.2386	3.8785	5.7305

Source: Table of month end average exchange rates. Retrieved from http://www.nbp.pl/home.aspx?c=/ascx/archa.ascx

Table 2. Growth rate of housing loans year to year

	Zloty housing loans	Foreign currency housing loans	Total		Zloty housing loans	Foreign currency housing loans	Total
12-2007	86.3%	43.0%	58.9%	**11-2011**	24.2%	2.6%	10.3%
1-2008	80.6%	43.3%	57.1%	**12-2011**	22.8%	2.2%	9.6%
2-2008	75.5%	44.5%	56.1%	**1-2012**	22.1%	2.2%	9.4%
3-2008	71.1%	46.0%	55.6%	**2-2012**	21.6%	2.1%	9.1%
4-2008	62.7%	48.8%	54.2%	**3-2012**	20.7%	1.6%	8.6%
5-2008	53.7%	50.9%	51.9%	**4-2012**	19.9%	1.2%	8.0%
6-2008	44.4%	54.1%	49.8%	**5-2012**	19.3%	0.7%	7.5%
7-2008	35.6%	57.5%	47.8%	**6-2012**	19.1%	0.0%	7.0%
8-2008	28.1%	60.0%	45.7%	**7-2012**	18.8%	-0.6%	6.6%
9-2008	22.6%	63.2%	44.9%	**8-2012**	18.9%	-0.8%	6.6%
10-2008	18.0%	65.8%	44.2%	**9-2012**	18.2%	-1.5%	6.0%
11-2008	13.7%	63.5%	40.9%	**10-2012**	18.2%	-2.1%	5.7%
12-2008	12.3%	61.3%	39.1%	**11-2012**	18.4%	-2.7%	5.4%
1-2009	11.3%	57.5%	36.6%	**12-2012**	18.2%	-3.3%	5.1%
2-2009	10.8%	53.5%	34.4%	**1-2013**	18.4%	-3.8%	5.0%
3-2009	8.7%	48.3%	30.5%	**2-2013**	18.4%	-4.2%	4.8%
4-2009	9.4%	42.4%	27.5%	**3-2013**	18.0%	-4.4%	4.6%
5-2009	10.7%	36.5%	24.9%	**4-2013**	17.8%	-4.6%	4.5%
6-2009	12.7%	29.9%	22.1%	**5-2013**	17.6%	-4.9%	4.3%
7-2009	15.7%	23.2%	19.4%	**6-2013**	17.1%	-5.0%	4.2%
8-2009	18.4%	17.9%	17.2%	**7-2013**	17.0%	-5.1%	4.2%
9-2009	21.9%	13.0%	15.4%	**8-2013**	16.8%	-5.2%	4.2%
10-2009	25.5%	8.7%	13.7%	**9-2013**	16.9%	-5.3%	4.2%
11-2009	27.1%	6.9%	13.0%	**10-2013**	16.9%	-5.4%	4.3%
12-2009	28.1%	5.8%	12.5%	**11-2013**	16.8%	-5.4%	4.3%
1-2010	29.0%	5.3%	12.5%	**12-2013**	16.9%	-5.5%	4.4%
2-2010	29.7%	4.9%	12.5%	**1-2014**	16.9%	-5.5%	4.5%
3-2010	30.4%	4.9%	12.7%	**2-2014**	16.9%	-5.6%	4.6%
4-2010	30.7%	4.9%	13.0%	**3-2014**	16.8%	-5.7%	4.6%
5-2010	30.9%	5.2%	13.4%	**4-2014**	16.8%	-5.7%	4.6%
6-2010	31.0%	5.4%	13.7%	**5-2014**	16.7%	-5.6%	4.7%
7-2010	30.6%	5.7%	13.8%	**6-2014**	16.6%	-5.7%	4.7%
8-2010	30.5%	5.8%	13.9%	**7-2014**	16.3%	-5.8%	4.6%
9-2010	29.9%	5.8%	13.8%	**8-2014**	15.9%	-5.8%	4.5%
10-2010	29.4%	5.8%	13.7%	**9-2014**	15.5%	-5.9%	4.4%
11-2010	29.3%	5.7%	13.7%	**10-2014**	14.8%	-5.9%	4.2%
12-2010	29.5%	5.7%	13.8%	**11-2014**	14.4%	-6.0%	4.0%
1-2011	29.4%	5.4%	13.6%	**12-2014**	13.9%	-6.2%	3.8%
2-2011	29.1%	5.2%	13.4%	**1-2015**	13.5%	-6.0%	3.7%
3-2011	29.1%	5.0%	13.3%	**2-2015**	13.2%	-6.1%	3.6%
4-2011	29.1%	4.8%	13.2%	**3-2015**	13.2%	-6.1%	3.6%
5-2011	29.0%	4.4%	13.0%	**4-2015**	12.8%	-6.2%	3.4%
6-2011	28.4%	4.1%	12.6%	**5-2015**	12.6%	-6.4%	3.2%
7-2011	27.7%	3.8%	12.3%	**6-2015**	12.4%	-6.4%	3.1%
8-2011	26.6%	3.1%	11.5%	**7-2015**	12.3%	-6.5%	3.1%
9-2011	26.4%	2.8%	11.2%	**8-2015**	12.2%	-6.6%	3.0%
10-2011	25.4%	2.6%	10.8%	**9-2015**	11.8%	-6.6%	2.8%

Source: Retrieved from http://www.nbp.pl/systemfinansowy/rsf022016.pdf.

Table 3. Increase in the value of Swiss franc denominated housing loan instalment to instalment at loan origination against values of Swiss franc denominated loans and wage growth in the enterprise sector

	Increase in instalment - fixed principal	Increase in instalment – fixed total repayment	Rise in average salary until September, 2015	Values of loans (right axis)		Increase in instalment – fixed principal	Increase in instalment – fixed total repayment	Rise in average salary until September, 2015	Values of loans (right axis)
1-2005	0.03	0.32	0.70	0.51	**1-2008**	-0.02	0.24	0.37	3.15
2-2005	0.06	0.36	0.68	0.46	**2-2008**	-0.03	0.23	0.34	3.58
3-2005	0.05	0.34	0.64	0.64	**3-2008**	-0.05	0.20	0.29	4.38
4-2005	0.01	0.30	0.64	0.72	**4-2008**	-0.01	0.25	0.29	5.58
5-2005	0.01	0.28	0.67	0.83	**5-2008**	0.03	0.29	0.32	5.37
6-2005	0.03	0.32	0.62	1.08	**6-2008**	0.02	0.29	0.26	6.35
7-2005	0.04	0.32	0.62	1.11	**7-2008**	0.07	0.34	0.26	6.91
8-2005	0.05	0.33	0.64	1.06	**8-2008**	0.07	0.34	0.28	5.69
9-2005	0.08	0.37	0.63	1.10	**9-2008**	0.03	0.28	0.28	5.92
10-2005	0.07	0.36	0.60	1.20	**10-2008**	-0.10	0.12	0.25	4.83
11-2005	0.04	0.32	0.52	1.23	**11-2008**	0.00	0.22	0.22	1.82
12-2005	0.06	0.35	0.46	1.42	**12-2008**	0.06	0.27	0.19	1.32
1-2006	0.07	0.36	0.64	1.32	**1-2009**	0.03	0.22	0.26	0.73
2-2006	0.08	0.37	0.61	1.23	**2-2009**	-0.06	0.11	0.27	0.63
3-2006	0.04	0.33	0.55	1.96	**3-2009**	-0.03	0.13	0.22	0.71
4-2006	0.03	0.31	0.58	1.83	**4-2009**	0.03	0.20	0.23	0.51
5-2006	0.01	0.29	0.59	2.08	**5-2009**	0.03	0.19	0.27	0.49
6-2006	-0.03	0.24	0.55	2.32	**6-2009**	0.00	0.18	0.23	0.43
7-2006	-0.03	0.24	0.53	2.29	**7-2009**	0.06	0.24	0.21	0.41
8-2006	-0.01	0.27	0.55	2.14	**8-2009**	0.11	0.29	0.24	0.45
9-2006	-0.04	0.23	0.55	2.04	**9-2009**	0.10	0.29	0.24	0.99
10-2006	-0.03	0.24	0.53	2.25	**10-2009**	0.10	0.27	0.23	0.64
11-2006	-0.02	0.26	0.47	2.25	**11-2009**	0.11	0.28	0.19	0.38
12-2006	-0.02	0.25	0.34	2.77	**12-2009**	0.11	0.28	0.11	0.53
1-2007	-0.05	0.22	0.52	1.87	**1-2010**	0.12	0.28	0.26	0.46
2-2007	-0.05	0.21	0.51	1.86	**2-2010**	0.13	0.29	0.23	0.18
3-2007	-0.06	0.20	0.42	2.34	**3-2010**	0.15	0.31	0.16	0.25
4-2007	-0.04	0.23	0.46	2.43	**4-2010**	0.15	0.31	0.19	0.20
5-2007	-0.03	0.24	0.46	2.67	**5-2010**	0.10	0.25	0.21	0.21
6-2007	-0.05	0.22	0.41	3.08	**6-2010**	0.06	0.20	0.19	0.23
7-2007	-0.06	0.21	0.40	3.08	**7-2010**	0.04	0.18	0.18	0.23
8-2007	-0.09	0.17	0.41	2.86	**8-2010**	0.06	0.20	0.19	0.25
9-2007	-0.08	0.18	0.42	2.52	**9-2010**	0.04	0.18	0.19	0.03
10-2007	-0.04	0.23	0.38	2.98	**10-2010**	0.07	0.21	0.18	0.03
11-2007	-0.03	0.23	0.31	2.76	**11-2010**	0.07	0.21	0.15	0.04
12-2007	-0.01	0.26	0.25	2.84	**12-2010**	0.02	0.14	0.05	0.03

Source: Retrieved from http://www.nbp.pl/systemfinansowy/rsf022016.pdf.

Increased costs of debt servicing for households resulted in changes in the share of impaired credits in banks' portfolios in the analysed period 2010–2015. For housing loans which include CHF credits, it (the share) rose by less than 2 percentage points. However, in fact it means a periodic doubling of this value. The data concerning households' impaired credits classified by main categories are collected in table 4.

Table 4. Impaired loan ratios of main categories of loans for households

	Credit card lending	Other consumer loans	Housing loans	Other	Total		Credit card lending	Other consumer loans	Housing loans	Other	Total
4-2010	15.65%	15.34%	1.57%	6.96%	6.76%	**1-2013**	16.83%	17.46%	2.84%	10.56%	7.46%
5-2010	16.13%	15.60%	1.60%	6.97%	6.77%	**2-2013**	16.85%	17.44%	2.87%	10.62%	7.46%
6-2010	16.30%	15.79%	1.59%	7.26%	6.69%	**3-2013**	16.90%	17.34%	2.90%	10.72%	7.47%
7-2010	16.73%	16.22%	1.67%	7.20%	6.92%	**4-2013**	16.70%	17.39%	2.93%	10.85%	7.53%
8-2010	17.26%	16.56%	1.72%	7.47%	7.00%	**5-2013**	16.43%	17.25%	2.94%	10.91%	7.49%
9-2010	17.48%	16.94%	1.79%	7.63%	7.19%	**6-2013**	15.52%	16.10%	2.95%	10.90%	7.21%
10-2010	17.97%	17.06%	1.81%	7.97%	7.30%	**7-2013**	15.23%	16.05%	2.97%	10.89%	7.22%
11-2010	18.22%	17.24%	1.82%	7.90%	7.21%	**8-2013**	15.05%	15.96%	2.96%	10.91%	7.19%
12-2010	18.09%	17.18%	1.85%	8.14%	7.18%	**9-2013**	14.60%	15.59%	2.95%	10.63%	7.09%
1-2011	18.79%	18.28%	1.92%	8.11%	7.53%	**10-2013**	14.42%	15.16%	2.96%	10.98%	7.09%
2-2011	19.09%	18.20%	1.97%	8.16%	7.49%	**11-2013**	14.49%	14.93%	3.13%	11.03%	7.15%
3-2011	19.70%	17.99%	2.00%	8.19%	7.44%	**12-2013**	13.98%	14.68%	3.14%	10.98%	7.07%
4-2011	18.77%	17.69%	2.02%	8.17%	7.31%	**1-2014**	14.14%	14.73%	3.16%	10.99%	7.06%
5-2011	18.80%	17.79%	2.05%	8.19%	7.26%	**2-2014**	14.09%	14.76%	3.16%	10.90%	7.07%
6-2011	18.67%	17.77%	2.07%	8.13%	7.17%	**3-2014**	14.02%	14.39%	3.11%	10.90%	6.97%
7-2011	19.02%	17.99%	2.10%	8.15%	7.14%	**4-2014**	13.74%	14.39%	3.19%	10.95%	7.02%
8-2011	19.10%	17.92%	2.15%	8.56%	7.22%	**5-2014**	13.57%	14.42%	3.18%	11.01%	7.06%
9-2011	19.23%	18.21%	2.22%	9.13%	7.34%	**6-2014**	13.16%	14.20%	3.16%	11.01%	6.98%
10-2011	19.05%	18.14%	2.26%	9.24%	7.36%	**7-2014**	13.01%	14.01%	3.17%	11.05%	6.96%
11-2011	19.14%	18.18%	2.29%	9.22%	7.30%	**8-2014**	12.97%	13.99%	3.18%	11.12%	6.96%
12-2011	18.76%	17.85%	2.35%	9.27%	7.25%	**9-2014**	12.73%	13.89%	3.19%	10.94%	6.94%
1-2012	19.14%	17.97%	2.43%	9.36%	7.37%	**10-2014**	12.19%	13.21%	3.26%	10.69%	6.77%
2-2012	19.09%	18.23%	2.47%	9.37%	7.45%	**11-2014**	12.03%	13.21%	3.23%	10.67%	6.75%
3-2012	19.00%	18.25%	2.51%	9.38%	7.46%	**12-2014**	11.74%	12.82%	3.10%	10.53%	6.54%
4-2012	18.64%	18.25%	2.55%	9.49%	7.46%	**1-2015**	11.87%	12.89%	3.10%	10.66%	6.48%
5-2012	18.47%	17.86%	2.61%	9.52%	7.32%	**2-2015**	11.69%	12.76%	3.12%	10.64%	6.49%
6-2012	18.27%	17.75%	2.59%	9.55%	7.31%	**3-2015**	12.20%	13.04%	3.36%	10.88%	6.75%
7-2012	18.21%	17.87%	2.65%	9.67%	7.43%	**4-2015**	11.88%	12.76%	3.26%	10.68%	6.62%
8-2012	18.07%	17.98%	2.68%	9.87%	7.46%	**5-2015**	11.81%	12.73%	3.28%	10.72%	6.61%
9-2012	17.81%	17.93%	2.67%	10.15%	7.51%	**6-2015**	10.73%	12.26%	3.38%	10.79%	6.56%
10-2012	17.74%	17.82%	2.72%	10.25%	7.50%	**7-2015**	10.42%	12.16%	3.37%	10.71%	6.54%
11-2012	17.73%	17.69%	2.75%	10.28%	7.48%	**8-2015**	10.31%	12.30%	3.38%	10.69%	6.58%
12-2012	16.80%	17.27%	2.82%	10.47%	7.42%	**9-2015**	9.85%	12.18%	3.24%	10.70%	6.47%

Source: Retrieved from http://www.nbp.pl/systemfinansowy/rsf022016.pdf

Although growth of impaired loans was caused only to a little extent by changes in the CHF exchange rate, projects of helping bank customers who took the loans in this currency are widely discussed. Different assistance variants based on converting the loans into Polish zloty according to the historic exchange rate are discussed. The National Bank of Poland presented two most probable scenarios of the impact of these activities on the situation of banks measured by a change in the Return on Assets (ROA) indicator. Considering the fact that the share of mortgage loans, including those given in CHF, in banks' assets is varied, a percentage change in total bank assets for which the ROA indicator is within the accepted range was examined. Detailed data of the simulation are given in table 5.

Table 5. Results of the simulation of the impact of the introduction of restructuring of foreign currency loans on commercial banks' ROA

Share in domestic commercial banks' assets			
ROA	As of September 2015	Scenario I* all borrowers	Scenario II** borrowers who took loans in the years 2007–2008
< -3%	0.0%	35.7%	35.0%
< -3% ; -2%)	0.0%	20.3%	21.0%
< -2% ; -1%)	0.0%	11.9%	11.9%
< -1% ; 0%)	8.1%	3.0%	0.2%
< 0% ; +1%)	52.1%	24.8%	27.6%
>= +1%	39.8%	4.2%	4.2%

* Reimbursement of spreads and loan restructuring according to the historic exchange rate defined in the Act will include all borrowers who took loans in CHF regardless of the time when the credit agreement was concluded.
** Reimbursement of spreads will cover all borrowers who took loans in CHF regardless of the time when the loan agreement was concluded, however, restructuring loans according to the historic exchange rate defined in the Act will cover all borrowers who took loans in CHF in the years 2007–2008.

Source: Retrieved from http://www.nbp.pl/systemfinansowy/rsf022016.pdf

Conclusions from the simulations carried out by the National Bank of Poland (NBP) are rather pessimistic for the banking sector. According to the analysts' calculations the banking sector as a whole will lose ca. 44 billion zloty in the case of implementing the second variant of assistance for borrowers. In the case the first variant is implemented, this amount can be higher by ca. 20 billion (Report on the financial system stability, February 2016, p. 31).

Conclusions

The data presented in this paper let us formulate a conclusion that banks' credit policy including offering housing loans in CHF was a typical activity from the point of view of risk management, which in this case is of two-way nature. Banks did not have a possibility to affect the zloty exchange rate in relation to other currencies and similarly to other market participants took risks. If the CHF exchange rate depreciated in relation to the zloty, customers who had liabilities in the currency would gain additional profits on account of differences in exchange rates. The situation for banks would be unfavourable. The share of CHF loans in banks' credit portfolios does not threaten stability of the banking system.

Considering the degree of the financial market development in Poland, it is hard to believe that banks used their monopolistic position as they do not enjoy one. Thus, they do not have a possibility of imposing their policy on clients. This is also indicated by differences in the interest rates on the loans in zloty and in foreign currencies.

Restructuring of mortgage loans in CHF according to the historic exchange rate may undermine stability of the banking system and become a dangerous precedent in market economy.

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Andrzej GUMIENICZEK[1]

CLUSTER INITIATIVES AS MEANS TO IMPROVE THE EFFECTIVENESS OF REVITALISATION OF THE OLD TOWN URBAN UNITS

This article aims to indicate the possibility of implementation of innovative cluster initiatives in the process of revitalisation of the old town urban units. The article attempts to gather the most important aspects of a model cluster project aimed at the revitalisation of historic urban area. Reality of revitalisation and its effectiveness, as well as the use of the social, economic and cultural potential of historic urban units were illustrated by the example of revitalisation of Old Town in Lublin. It is proposed to change the approach towards the problems that the revitalisation of the old town units causes and emphasise the cluster initiatives which can accelerate the process of revitalisation and improve its effectiveness. In addition, the possibility of deviation from the plan which utilises the funds received from the municipality and the EU „aid" funds as entire funding sources was proposed.

Keywords: clustering, innovations, revitalization program, Old Town in Lublin.

JEL Classification Codes: C38, R58.

Introduction

The starting point in consideration of the importance of cluster in revitalisation of old town urban units is the identification of the term „revitalisation". It is commonly believed that revitalisation is identical to renovation of historic monuments in its definition. However, these two terms cannot be treated as synonymous.

[1] PhD Student, University of Technology and Humanities in Radom, Faculty of Economics and Legal Sciences.

In the Guide published by Ministry of Labour and Social Policy concerning the criteria for planning and administering the projects which involve revitalisation (Ministerstwo Gospodarki i Pracy, 2004), it was concluded that there was no standard definition of revitalisation, but the fundamental aim of revitalisation was the restoration of past facilities in an area that had been degraded socially, economically or environmentally; or the replacement of its past facilities to new ones. This general explanation also cannot be treated as a definition of revitalisation. In the quoted document, a definition proposed by K. Skalski (2004) was cited, according to whom revitalisation pertains to a holistic scheme of multiple renovations and redevelopment of public space and revaluation of historic monuments in a designated area, which is most often historic as well, together with economic and social development of this area. This demonstrates that revitalisation is a combination of technical actions, such as renovation, and programmes of economic revivification and actions aimed at managing social issues, which occur in these areas.

On the other hand, according to A. Billert (2004), revitalisation relates to a holistic process of renovation of a designated urban area, whose space and facilities experienced structural degradation, which either completely disenabled or substantially impeded the economic and social development of that area. What is particularly relevant in this definition is the affirmative that revitalisation is a reaction to a crisis situation, manifesting itself not only in degradation of the monuments, but also – and especially – in degradation of the whole area. Hence, revitalisation entails actions that are reconstructive in terms of architectural and urban sphere, social, economic, ecological and spatial in nature. In other place A. Billert acknowledges that revitalisation incorporates complex actions, which are coordinated and administered by the public sector (municipality), while the entirety of actions is based on active cooperation of organs and political and administrative institutions, together with social entities.

It is worthwhile to compare aforementioned definitions with the definition by W. Kłosowski (2004), according to whom revitalisation implies revivification of socio-economic processes in the area, where these processes withered away. As for this definition, it is vital that the areas in need of revitalisation are chosen not because of their historic value, but pre-eminently because of particular accumulation of socio-economic problems. In historical European cities it is very often that such areas are the oldest districts within the cities. Nonetheless, it is not their historic nature that predestine them to revitalisation, but precisely accumulation of social and economic problems in one place. According to this author, revitalisation has to engage all the locals, that is the municipal council and local authorities, the entrepreneurs and non-governmental organisations, but also the residents themselves.

According to art. 2 par. 1 of the Act of 9th October 2015 on revitalization (Journal of Laws 2015 item 1777, „Revitalisation is a process of leading the degraded areas out of crisis, which is conducted in a comprehensive manner through integrated activities in favour of the local community, area and economy, that are territorially-focused and conducted by the stakeholders of revitalisation on the basis of municipal programme of revitalisation”.

The stakeholders of revitalisation are, in accordance with art. 2 par. 2 of the referred act, in particular:

- residents of revitalization area and owners, users and real estate owners located in this area, including housing cooperatives, housing communities and social housing associations,
- dwellers of a given commune from outside of the area of revitalization,
- entities running or intending to run a business in the commune,
- entities running or intending to conduct social activities in the area, including non-governmental organizations and informal groups,
- the territorial self-government units and their organizational units,
- public authorities,
- other entities implementing the State Treasury's rights in the area of revitalization.

The aims of revitalisation are situated within the socio-economic and eco-spatial spheres, while infrastructural, architectural and urban ones are subordinated to these aims. Thus, revitalisation is not an activity that includes only renovation and construction, whose social, economic or eco-spatial aim has not been identified. Revitalisation has to be executed in cooperation with associates of various backgrounds, i.e. public sectors (usually municipal), non-governmental sectors, local entrepreneurs, e.g. local universities, etc.

Revitalization is therefore always a plan of multifaceted, mutually reinforcing (synergistic) actions aimed at provoking a qualitative change throughout the designated area, leading to a change of a negative image of this area. According to the next author (Bucka, 2007), the aim of revitalisation of degraded urban areas is their socio-economic recovery, including the development of their touristic potential.

The main goal of revitalization is therefore the economic and social recovery, as well as the augmentation of touristic and cultural potential of the area, together with the provision of new socio-economic facilities. The specific goal of revitalization is, among other things, creation of favorable conditions for development of new forms of economic activity, which in turn would generate workplaces, by offering infrastructure in revitalized facilities suitable for business establishment. A qualitative change of local conditions and radical improvement of the image of the area, which are the results of revitalization, create an opportunity for development of individual residents to such an extent that the mechanism of intergenerational transmission of social disadvantages can be interrupted. The „permanently problematic” area has the potential to become an area that is both developmental and self-sufficient in terms of addressing its own problems.

Taking into account the above premises, possibility of implementing innovative cluster initiatives in the process of revitalisation of old town urban units, was acknowledged as the main goal of the present article. The conducted research allowed verification of the thesis that the implementation of innovative cluster initiatives in the process of revitalisation of old town urban units does indeed enhance the effectiveness of their revitalisation.

Revitalisation of the Old Town in Lublin

Old Town in Lublin is unique architectural complex in which the oldest objects date back to XIII century. It retains its original layout, which is an exception in this part of Europe.

Old Town in Lublin and its surroundings survived the war in good condition. After the war, the buildings in the area constituted a reservoir of residential apartments. In the 1960s, the communist authorities „communalized" these housing resources, settling them with the poor inhabitants. In the 1970s, some renovation works were undertaken, directed mainly at the public facilities. Financial assets were insufficient for reconstruction of the entire complex and its surroundings. The problem of the Old Town was deteriorating over the years, while no new flats were found for tenants from the devastated townhouses. Inability to move them to new dwellings prohibited reconstruction of the Old Town as a whole. Up to now, solutions to the problems of the Old Town in Lublin consisted of renovation of the chosen objects that was financed almost solely from the assets of the Lublin Municipality or won by the Municipality for this aim.

Revitalisation (actually renovation) was conducted in the Old Town in Lublin in the period 1990–2014 by the Board of Communal Real Estate. The significant effect of this revitalization is serious advancement in modernization of technical infrastructure of this area. However, renovation works concerned on current repairs solely. They basically stop the process of degradation of real estates, but less frequently of entire buildings. In spite of some considerable advancement of the project, more than thirty townhouses belonging to the Municipality and twice as many belonging to the private owners, of joint ownership or of mixed ownership (municipal-private) are still pending for renovation.

Assessment of present state of revitalization of the Old Town in Lublin is not the subject of this study, but only a starting point for discussion of the process with the indication of their benefits and drawbacks. The benefits include the exhaustive maintenance documentation, directionality of revitalisation programme, advancement of work on the arrangement of public spaces (technical infrastructure, roads, greenery), advancement of work on the revaluation of individual objects, development of functions of the commercial space – mainly catering, yet office space, touristic service, guesthouses, bank offices and various cultural functions. The drawbacks include between others „special mode of lease of real estate", both municipal and private, a lack of a communal construction programme devoted exclusively to the liquidation of „special mode of lease of real estate" and insufficient funds for revitalisation. The Old Town in Lublin is inhabited by 2500 people, who live in approximately 900 flats. In the period 1990-2014, 80% of tenants did not pay the rent regularly and this continues up to now. One third of tenants have part of their rent financed on a regular basis. A similar number of inhabitants of the Old Town are on welfare received from the Municipal Family Support Centre.

In the quoted study (Uchwała Nr 735/XXIX/2017), in the chapter called „Housing Resources Reform Programme" it was proven that „Due to the events that occurred in the past decades, the programme is not top priority, yet is the most difficult to implement. Not only does it require municipal and private investments involving modernisation of flats and improvement in its living conditions, but also adoption of difficult solutions liquidating negative social phenomena observed in the Old Town". At the same time it was demanded to preserve the residential area – „the only departure from the rule is the permission to convert the flats on the ground floor into commercial space or conversion of tenements into businesses involving a constant presence of people, e.g. hotels, guesthouses, youth hostels, etc., which intended to keep the proportion of residential space at an appropriate level. That is, to ensure that the share of residential resources in the overall usable area of the Old Town in Lublin does not fall below 45%". It was also indicated that it was necessary to exclude the majority of residential resources under renovation in the Old Town from the pool of communal flats and evict people „causing social issues".

The surface of all buildings in the Old Town in Lublin is 88 780m^2. More than half of this surface (54%) are flats. The cost of renovation of a historic building in relation to the average construction cost of 1 m^2 of a new building was estimated based on 'Sekocenbud' publications. For living area this is PLN1600 while for commercial space it is PLN2000. As the minimum costs of renovation of buildings in the Old Town, an amount equal to 100% of construction costs of new buildings is assumed. The maximum values of these costs have been also determined based on the data of the General Conservator of Historic Buildings (Uchwała Nr 868/XXXIII/2017), assuming the cost of PLN3000/m^2. Taking the average of these outcomes allows a statement that the expenses of revitalisation of buildings will amount to PLN250–285 million.

In 2014, by the resolution of Lublin City Council, the Lublin City Revitalisation Programme for the years 2017–2024 (the Revitalization Program) came into effect, assuming new implementation costs (Table 1). Catalog of stakeholders of the revitalization program was also constructed (Table 2).

The Municipal Program for the Care of Monuments of the city of Lublin for the years 2015-2019 (GPOnZ), adopted by the resolution of the Lublin City Council in 2015, was included in the Revitalization Program. This program indicated the necessity of cooperation between individual entities, i.e. the city self-government and subordinate units (the Office of the Municipal Conservator of Monuments), state monument protection services, owners and users of historic buildings, scientific communities and non-governmental organizations. GPOnZ indicated The Old Town as an area that should undergo revitalisation saying: „The Old Town which requires special operations as a historic unit within the City of Lublin, particularly affected by arrears in the renovation of historical urban structure and exposed to strong pressure of depopulation and changes in residential areas for commercial purposes”. SWOT analysis concerning the possibility of protecting the cultural heritage of the city of Lublin showed that it is necessary to accelerate the process of revitalization of the historic buildings of the Old Town and increase the financing activities in connection with the new prospect of UE funds. Furthermore, it showed that the simultaneous implementation of both programs, i.e. GPOnZ and the Revitalization Program, will create a beneficial effect resulting from coordination activities and convergence of objectives.

Table 1. Estimated costs of the Lublin City Revitalization Program in thous [PLN]

Partial R square	Public				Private	In total
	Municipality's own	UE	National	Repayable*		
The revitalization projects included in the program resulting from the estimated value, the credibility of which allows detailed calculation	219 243	452 069	3 765	22 500	400	697 977
Estimated funds for the implementation of other revitalization projects, whose credibility or uncertainty of implementation makes detailed calculation impossible	35 000	40 000	40 000	45 000	249 600	409 600
In total	254 243	492 069	43 765	67 500	250 000	1 107 577

* definition of repayable assets.

Source: study commissioned by Lublin City Hall 2014.

Table 2. Catalog of stakeholders of the revitalization program

inhabitants of the revitalisation area	inhabitants of the remaining area	municipal office and subordinate units	government administration and subordinate units	provincial government and subordinate units
consultative body of the city president	non-governmental organisation and informal ones	entrepreneurs and their organisations	district councils	other public institutions
charity organisations	educational institutions	universities	cultural institutions	landlords
developers	housing cooperatives	housing communities	churches and religious associations	sports clubs and sport institutions

Source: study commissioned by the Lublin City Hall 2014.

As described above, previous method of solving the problems of the Old Town in Lublin consists in financing renovation, not revitalization. Only buildings belonging to the commune and free from inhabitants were covered by complete overhauls. For now, the Municipal authorities uses a program focused on „urban" purposes, showing what the Old Town could look like after renovation. The current and future functions of particular parts of the Old Town, the main goals and stages of revitalization are described in it exhaustively. However, the possibilities of implementing this program end where the „public space" ends. Municipal authorities focus on renovation of technical infrastructure and few facilities that they own. The current method of financing the revitalization process from the Municipal budget and EU assistance funds is ineffective and does not allow for comprehensive revitalization of the Old Town Complex in Lublin. Establishment of the old town complex revitalization program should be supported by new financial resources. The revitalization programs described above do not indicate additional sources of financing.

The solution may be the introduction of a revitalization program (not renovation one), which would include construction of several hundred apartments that would meet the needs of the Old Town residents over the years, move the tenants out of the Old Town, renovate most of the municipal and private tenement houses and modernize the technical infrastructure. Revitalization should be carried out in its entirety, because partial implementation will not bring the expected final result. Existing financial resources should be used or new instruments should be created to support this project. The result of revitalization of the „devastated" historical areas is to restore them to the proper level of their economic values. Degraded real estate, inhabited by poor people, is of low value. However, following reparation works, real estate that is inhabited by the middle class or used by institutions and small or medium-sized businesses can generate profits. The greater the interest in historic districts from potential customers, tourists and residents, the greater these profits. This is an appropriate task for specialists in renovation of historic buildings and for specialists in economics.

Analysis of the financing sources for revitalisation shows that the money will be available when renovations are in the economic interest of investors (owners) interested in the renovation of their property. The current value of real estate in the Old Town is relatively low in relation to the value of buildings in the nearby city center. Real estate that has been renovated and is operating in „good surroundings" should gain in value. In this situation, banks may be more willing to finance renovation and revitalisation works. The value of real estate depends on their surroundings and function. This is the reason why the Old Town has to regain commercial significance as an attractive district of the city. The primary objective of the restoration works in the Old Town is therefore the „economic" revitalisation, which is not a simple result of renovation. The renovation of individual facilities and technical infrastructure are a means to achieve the goal, not an end in itself.

Rapid revitalisation depends on the construction of several hundred apartments for the purpose of transferring the tenants from all tenement houses that require renovation and creating mechanisms for organizational and financial assistance in renovating the buildings. Dwellings being currently at the disposal of the Municipality allow the transfer of a number of tenants from the Old Town. Another source may be rental apartments built by the Social Housing Association (TBS) and financed by the National Housing Fund.

Financial assets for revitalisation can be obtained from many sources. The largest ones are in banks that are willing to finance repairs, provided that it is economically efficient. Moreover, the General Conservator of Historic Buildings has funds for the restoration of monuments in the form of direct subsidies. The issue of bonds underwritten on renovated buildings may be another source of funding. The budgetary resources are available to local and government authorities, i.e. the President of the City, the Marshal of the Voivodship, the Voivode. These authorities may use subordinate units to act as financial guarantors. There are also opportunities to obtain funds from EU „aid" funds, governments of other countries and international organisations.

Innovative cluster initiatives in the revitalization of old town complexes

„A cluster is geographical concentration of related enterprises, specialized suppliers, service providers, enterprises in related industries and affiliated institutions (e.g. universities) in specific areas that both compete and conduct mutual cooperation" (Porter, 2001) Clusters adopt different legal formulas. They can function as non-governmental organizations (associations or foundations) or limited liability companies.

In the years 2006-2012, there was a cluster called „Cluster of Culture of the Lublin Region – strengthening the socio-economic potential of culture and tourism communities of the Region", co-financed from the European Social Fund under the Integrated Regional Development Operational Program and the state budget, with headquarters located in Lublin. This initiative has been described in the publication „Good practices of implementing regional innovation strategies in Poland", published by the Polish Agency for Entrepreneurship Support (PARP). In 2009 this project was indicated as the only innovative cluster initiative in the Lublin province.

The analyzed cluster was a network of cooperation between cultural and local self-government units, scientific and research institutions as well as non-governmental organisations and entrepreneurs, working for development of the region. The leading entity, i.e. the Lublin Foundation for the Restoration of Historic Monuments (LFOZ) was an entity that revitalized historic buildings in Lublin and the Lublin province. Its activities included renovation of historic buildings, renovation of sanitary, gas, electricity and road infrastructure, as well as social infrastructure (trainings raising qualifications and thus enabling get a job and exit from poverty). At the same time, LFOZ cooperated in the field of revitalisation with many entities.

In order to check whether the cluster initiatives can have a measurable effect in the process of revitalisation of historic urban complexes, a verification methodology for entities participating in the cluster as well as entrepreneurs operating outside the cluster was developed. Groups were selected using the data collected in several EU projects conducted by LFOZ. The study covered two groups of enterprises – a research group and a control group. The research group consisted of micro and small enterprises (employing 5–50 people) operating in a formalized cluster structure as defined by the Polish Ministry of Economy (Plawgo, 2007). The control group consisted of micro and small enterprises, operating outside the formalized cluster structure. However, they operated in similar activities with activities within the cluster participants, especially in the field of revitalisation. The research and control groups were selected on the basis of similarity in the size, location of the headquarters (the Lublin province) and the main subject of activity while the dependent variable was a membership in the formal cluster structure. The empirical material was collected in 2012-2014 using questionnaires. The survey was distributed via direct contact or via e-mail. The structure of the surveyed enterprises is presented in Table 3.

Table 3. The examined enterprises and their business activities

No	Initiative in a cluster or outside the cluster	Leading business activity	Total numer of enterprises	No of surveys (research group)	% Enterprises in a cluster (research group)	No of surveys (control group)
1	„Cluster of Culture of the Lublin Region – strengthening the socio-economic potential of culture and tourism communities of the Region”	Cultural units, universities, construction and tourism companies	95	85	89.47	85
2	„Construction of e-information center about cultural and tourist cross-border investment heritage of Poland and Ukraine”	Cultural units, universities, construction and tourism companies	55	34	61.81	34
3	„Organizational and promotional support of LFOZ as an institution of the business environment and the leader of the Cluster of Culture in the Lublin Region”	Cultural units, universities, construction and tourism companies	30	19	63.33	19
4	„New competences of employees of the tourist industry in the Lublin province”	Tourism companies	50	31	62.00	31
5	„Advisory support for micro-enterprises as an opportunity for their development”	Construction and tourism companies	45	27	60.00	27
	Total		275	196		196

Source: research conducted by LFOZ during the project: „Cluster of Culture of the Lublin Region – strengthening the socio-economic potential of culture and tourism communities of the Region”.

As a part of the conducted research, an attempt was made to assess the activity of the enterprises in achieving their efficiency through the implementation of product, process, organizational and marketing innovations.

Among the surveyed companies from the cluster, 85 entities (89.47%) implemented such innovations and increased their efficiency over four years. At the same time, 111 entities (61.66%) of the surveyed enterprises functioning outside the cluster implemented efficiency through the introduction of innovations. Thus, the percentage of innovative active enterprises was larger in the cluster by 25.63 p.p. (Table 4).

Table 4. The activity of enterprises in the area of increasing efficiency through implementation of innovations

Efficiency and competitiveness of through implementation of cluster innovations	Enterprises in the cluster		Enterprises outside the cluster		Enterprises in total	
	No	Percentage in the research group	No	Percentage in the control group	No	The percentage of respondents
Competitively active enterprises implementing innovations	85	89.47	69	38.34	154	56
Inactive companies not implementing innovations	10	10.53	111	61.66	121	44
Total	95	100	180	100	275	100

Source: as in Table 3.

The main hypothesis (H0) for the present study was that the percentage of enterprises active in implementing innovations by operating in a cluster is equal to the percentage of enterprises active in implementing innovations outside the cluster, against the alternative hypothesis (H1) that the percentage of enterprises whose efficiency increased through innovations implemented in a cluster is higher than percentage of enterprises whose efficiency increased through innovations implemented outside the cluster. Statistical verification for different levels of significance was carried out using the test for two proportions for large samples. Based on the obtained results, it should be stated that the difference demonstrated is not statistically significant at the significance level of 0.05. When the scope of the permissible error was widen (with 92% probability), it was concluded that the percentage of enterprises with increased efficiency by implementing innovations within a cluster is higher than that of enterprises remaining outside the cluster (Table 5).

Based on this verification, it can be concluded with 97% probability that in the cluster the percentage of achieved effectiveness of enterprises is higher than among enterprises remaining outside the cluster. This applies to the whole of innovative cluster initiatives when a more tolerant significance level was accepted. The claim is then true with a probability of 94% (Table 6). However, this does not prejudge that presence of enterprises in the cluster influenced the formation of the difference found. It was only decided that the percentage of enterprises active and effective in the area of implementation of innovations is higher in a cluster than outside the cluster.

Table 5. Increased efficiency of enterprises by implementation of innovations within a cluster or outside the cluster

Significance level α	Statistics n1 = n2 = 85, m1 = 10, m2 = 69	Critical interval < zα/2;+∞)	Verification result	Probability (1 – α) × 100%
0.01	1.765	< 2.676;+∞)	there is no reason to reject H0	98
0.05	1.765	< 1.965; +∞)	there is no reason to reject H0	95
0.06	1.765	< 1.780; +∞)	there is no reason to reject H0	94
0.07	1.765	< 1.832; +∞)	there is no reason to reject H0	93
0.08	1.765	< 1.741; +∞)	H0 rejected for H1	92

Source: as in Table 3.

Table 6. Verification of the hypothesis about the increase of the efficiency of enterprises in a cluster and outside the cluster

H0: The percentage of enterprises' efficiency among enterprises from the cluster is the same as among enterprises outside the cluster H1: The percentage of enterprises' efficiency among enterprises from the cluster is higher as among enterprises outside the cluster				
Significance level α	**Statistic n1 = n2 = 85, m1 = 10, m2 = 69**	**Critical interval < zα/2;+∞)**	**Verification result**	**Probability (1 – α) × 100%**
0.04	1.942	< 2.058;+∞)	there is no reason to reject H0	96
0.05	1.942	< 1.960;+∞)	there is no reason to reject H0	95
0.06	**1.942**	< **1.887**;+∞)	H0 rejected for H1	94
H0: The percentage of enterprises implementing innovative initiatives among enterprises in the cluster is the same as among enterprises outside the cluster H1: The percentage of enterprises implementing innovative initiatives among enterprises in the cluster is higher as among enterprises outside the cluster				
Significance level α	**Statistic from n1 = n2 = 85, m1 = 10, m2 = 69**	**Critical interval < zα/2;+∞)**	**Verification result**	**Probability (1 – α) × 100%**
0.01	2.298	< 2.583;+∞)	there is no reason to reject H0	99
0.02	2.298	< 2.336;+∞)	there is no reason to reject H0	98
0.03	**2.298**	< **2.169**;+∞)	H0 rejected for H1	97

Source: as in Table 3.

In the present study, enterprises from the cluster defined whether they would be able to be effective and competitive on the market, being outside the cluster.

It was stated that the most companies would be able to introduce product innovations to the market, even acting outside the cluster, which would increase their efficiency. On the other hand, some companies would not be able to do it. For them, it can be assumed that being in the cluster had a positive impact on their activity in the field of implementing product innovations. Some enterprises that would be able to improve efficiency by introducing these innovations even being outside the cluster indicated that implementing them would be than longer and more expensive. These enterprises constituted the majority of the surveyed enterprises from the cluster. Taking into account the estimation error made at 95% probability, it can be concluded that the benefit of the presence in the cluster in implementing product innovations reached from 10-35% of enterprises from the cluster.

The vast majority of enterprises that implemented process innovations would be able to implement such innovations even being outside the cluster. However, as many as 70% of these enterprises pointed out that beyond the cluster the time of implementing these innovations would be longer. In addition, some entities indicated that acting outside the cluster would incur higher costs of implementation of these innovations, and therefore, their efficiency would drop. Thus, presence in the cluster influenced positively the activity of 60% of enterprises in the field of implementation of process innovations. For 15-35% of enterprises from the examined cluster, it can be assumed with a 95% probability that presence of enterprises in the cluster influenced positively their activity in implementation of process innovations.

As far as organizational innovations were concerned, a part of the surveyed companies from the cluster admitted that being outside the cluster, they would not be able (definitely or rather not) to use innovative cluster initiatives. In relation to these enterprises, it can be stated that the cluster influenced positively their activity in this area. Moreover, among enterprises acting outside the cluster, almost half of them would not be able to implement organizational innovations or would probably encounter some difficulties. They pointed out that if they implemented the same organizational innovations being outside the cluster, the time of their implementation would be longer.

The percentage of enterprises that benefited from the presence in the cluster and conducting product innovations was too small to perform a reliable statistical test for one proportion. With the population size N equal 180 and the sample size n equal 95 at the assumed significance level $\alpha = 0.05$, the maximum estimation error was 7.0%. Because the estimated percentage cannot be less than 15/180 = 8.3%, hence the lower limit was established at this level.

Enterprises from the cluster declared to make innovations that increase their efficiency. These innovations were implemented as changes in work organization, introduction of IT systems supporting management and introduction of outsourcing. At the same time, they declared that being outside the cluster, the implementation time for these innovations would be longer, the scale of innovation would be smaller and the development costs would be higher. Therefore, it can be concluded that participation in the cluster was beneficial for at least 50 surveyed enterprises constituting 40% of all surveyed entities from the cluster. It was estimated with a probability of 95% that presence in the cluster had a positive impact on the efficiency and functionality in the field of innovations implementation for 10-40% of enterprises from the surveyed cluster (Table 7).

Table 7. Effectiveness and competitiveness among the enterprises from the cluster

Competitiveness	Yes 100%	Yes 50%	No 100%	No 50%	Don´t know
Product competitiveness					
Number of enterprises competing with products = 100%, (N = 34)	46%	20%	4%	20%	15%
Number of enterprises in the cluster = 100%	15%	7%	1,5%	6%	5%
Process competitiveness					
The number of enterprises competing in terms of process = 100%, (N = 19)	45%	37%	1%	22%	1%
Number of enterprises in the cluster = 100%	9%	8%	1%	5%	1%
Organizational competitiveness					
Number of enterprises competing organizationally = 100%, (N = 31)	30%	38%	4%	13%	19%
Number of enterprises in the cluster = 100%	10%	13%	1%	5%	7%
Marketing competitiveness					
Number of enterprises competing in terms of marketing = 100%, (N = 27)	19%	30%	4%	17%	25%
Number of enterprises in the cluster = 100%	7%	10%	1%	6%	9%

Source: as in Table 3.

Conclusions

The network structure of clusters facilitates introduction of innovative solutions by participants of the clusters and improves their functional efficiency. This allows not only to offer unique categories of products and services based on synergic cooperation between entities, but also increases competitiveness over other enterprises in the same industry. The present study exposes the importance of clusters in stimulating the effectiveness of enterprises through implementation of innovations. The research shows that formalized cluster structures, supported by the innovativeness of enterprises, can result in acceleration of efficiency, in comparison with enterprises active in innovation implementation, but not associated in a formal cluster structure. In the present study, the positive role of clusters was observed in relation to organizational, process and marketing innovations. Because the surveyed entities took part in revitalisation of old town complexes, a thesis about the beneficial impact of cluster initiatives for such activities can be pointed.

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Robert Jakimowicz: *Geostrategiczny wybór Rosji u zarania trzeciego tysiąclecia. Polityka Federacji Rosyjskiej wobec regionu Azji i Pacyfiku, Azji Centralnej i Arktyki* (*'The Geostrategic Choice of Russia at the Dawn of the Third Millennium. The Policy of the Russian Federation Towards Asia Pacific, Central Asia and the Arctic'*), [Wydawnictwo Uniwersytetu Jagiellońskiego/Jagiellonian University Press, Kraków 2015, 367 pages].

The reviewed monograph was published by the Jagiellonian University Press in Krakow as part of the series: *Geostrategiczny wybór Rosji u zarania trzeciego tysiąclecia* ('The Geostrategic Choice of Russia at the Dawn of the Third Millennium'; all the titles in English contained in this review are own translations), comprised of the following papers: Joachim Diec, Tom I: *Doktryna rosyjskiej polityki zagranicznej. Partnerzy najbliższi i najdalsi* (Vol. I: 'The Doctrine of Russia's Foreign Policy. The Closest and the Furthest Partners'), Rafał Lisiakiewicz, Tom II, *Część I: Unia Europejska jako partner strategiczny Federacji Rosyjskiej na początku XXI wieku, Aspekt polityczny*,(Vol. II, Part I: 'The European Union as a Strategic Partner of the Russian Federation at the Beginning of the 21st Century. The Political Aspect,'); Karolina Kotulewicz, Tom II, Część II: *Unia Europejska jako partner strategiczny Federacji Rosyjskiej na początku XXI wieku. Aspekt gospodarczy*, (Vol. II, Part II: 'The European Union as a Strategic Partner of the Russian Federation at the Beginning of the 21st Century, Part 2'); and the publication under review: Tom III: *Polityka Federacji Rosyjskiej wobec regionu Azji i Pacyfiku, Azji Centralnej i Arktyki* (Vol. III: 'The Foreign Policy of the Russian Federation Toward the Asia-Pacific Region, Central Asia and the Arctic Area'). The project was co-financed by the National Science Centre (2011/03/B/HS5/00573).

Volume III of the series is a study of the Asian and Arctic orientations in Russia's foreign policy. The monograph analyses the behaviour of the Russian state at the international scene in 2000–2015 with a view to finding an answer to the question whether Russia's foreign policy, in the aforementioned areas of activity, has allowed to attain the fundamental goal of that state, i.e. Russia's status as a superpower in the medium- or long-term. It takes account of strictly political as well as of economic and military considerations in relationships of the Russian Federation with Asian and Arctic actors in international relations.

The Author adopts the hypothesis that Russia's attempts to restore its position as a superpower are bound to be unsuccessful in the decades to come. The use of hard power, i.e. military measures, as in the case of Ukraine, moves Russia away from its desired purpose instead of bringing it closer. The research question is answered and the adopted hypothesis is verified using systems analysis and the comparative method. The study employs an environment model including three values: the environment, actors and their actions. On the basis of that model, the Author examines various source materials using a number of research methods, from empirical techniques, e.g. the observation, description and analysis of phenomena, to theoretical ones such the historical method, abstraction, source and document analysis.

The structure of the paper is determined by its intended purpose. It is divided into six chapters forming a coherent whole, in accordance with the adopted key describing the pursuit of Russia's foreign policy objectives along three vectors: the eastern orientation (the PRC, Japan, both Koreas, the ASEAN and the APEC), southern 'Near Abroad', also including Central Asian countries (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan) and the northern (Arctic) direction, comprising – apart from Russia – the United States, Canada, Norway and Denmark as well as non-Arctic new actors intensifying their policies in the region: China, Japan and South Korea.

Chapter 1, entitled *Chiny jako najważniejszy partner azjatycki Federacji Rosyjskiej w Regionie Azji i Pacyfiku* ('China as the most important Asian partner of the Russian Federation in the Asia-Pacific Region'), primarily concerns the process of changes in the Russia–China political relations. Further, the chapter presents other aspects of cooperation: the economic, military and cultural areas.

Chapter 2, entitled *Wielowymiarowe znaczenie Azji Centralnej* ('The multidimensional importance of Central Asia'), discusses the evolution and the current status of (political, economic and military) relations between Russia and Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan and Turkmenistan, with an emphasis on the role of the Shanghai Cooperation Organisation (SCO). That part of the study also addresses the issue of the process of de-Russification in Central Asian states, taken poorly by Russia.

Chapter 3, entitled *Problem przełomu w stosunkach japońsko-rosyjskich* ('The issue of breakthrough in Japan–Russia relations'), shows the essence of the still unresolved bilateral territorial problem (the 'Northern Territories') and characterises dynamically developing – despite the above – mutual economic, scientific and technical relations.

Chapter 4, entitled *Koree Południowa i Północna w wymiarach politycznym, gospodarczym i militarnym jako partnerzy Federacji Rosyjskiej* ('North Korea and South Korea in the political, economic and military dimensions as partners of the Russian Federation'), presents the findings from the analysis of political and economic relations between Russia and both Korean states. Much attention in Chapter 4 is also given to the depiction of North

Korea's nuclear programme, thus to the Three-, Four- and Six-Party Talks (initiated in 2003 and involving both Koreas, China, Japan, the United States and Russia).

Chapter 5, entitled *Arktyka – współczesny wymiar rywalizacji Rosji na arenie międzynarodowej – wybrane aspekty* ('The Arctic – the present-day dimension of Russia's competing at the international scene'), presents the rising economic importance of the Arctic, resulting from global warming and the related melting of ice in ever-larger areas. Climate change makes the Arctic a field of competition for both the so-called Arctic Five (Denmark, Canada, Norway, Russia and the United States) and new actors increasing their activities in the region: China, Japan and South Korea, which is also reflected upon by the Author in that part of the monograph.

Chapter 6, *Problem obecności Rosji w regionie Azji i Pacyfiku jako ważnego gracza międzynarodowego* ('The issue of Russia's presence in the Asia-Pacific Region as a major international player'), constitutes a certain recapitulation of the content presented in the study. It describes Russia's ambitions to become an important international actor in Asia Pacific. The Author considers the relations of the Russian Federation with the Association of South-East Asian Nations (ASEAN) and the Asia-Pacific Economic Cooperation forum (APEC), the latter also including Russia.

Undoubtedly, the paper under review significantly contributes to the discussion on political and economic developments in the modern world. The book is a publication seeking to answer geostrategic questions inspired by the policy choices of Russia, whose various actions taken in the 21st century have been aimed to regain the superpower position. The Author's original approach to the subject, objectivity and profound knowledge are particularly worthy of notice. Professor Jakimowicz forms his judgements after quoting various statements by politicians and a critical analysis of a number of scientific publications. In doing so, he relies on both Polish and foreign language sources, including many studies published in Russian.

The monograph contains important and topical considerations and successfully attempts to present significant geopolitical problems, of which the part concerning the Arctic is particularly worthy of notice as the subject has not been very frequently addressed in the Polish scientific literature. Simultaneously, the rather minor attention given to the BRICS forum as a platform for pursuing Russia's interests together with its Asian partners – China and India – including for the formation of new financial initiatives on a global scale, seems insufficient. Nevertheless, the book remains very useful for understanding the geopolitical changes observed in the 21st century and has an indisputable merit of being 'compact and transparent'. Certainly, the publication is addressed to political and economic scientists, students of political science, economics, European studies, journalism as well as to politicians, policy makers, journalists and business people to whom I honestly recommend it.

Joanna Garlińska-Bielawska