PL ISSN 1897-2721

Olsztyn Economic Journal

14(2/2019)

Wydawnictwo
Uniwersytetu Warmińsko-Mazurskiego
w Olsztynie

Olsztyn Economic Journal is indexed and abstracted in:
BazEcon, BazHum, Central and Eastern European Online Library (CEEOL),
Index Copernicus Journal Master List, POL-index, RePEc,
The Central European Journal of Social Sciences and Humanities (CEJSH)

The Journal is also available in electronic form on the websites
http://www.uwm.edu.pl/wne/olsztyn-economic-journal
http://wydawnictwo.uwm.edu.pl (subpage Czytelnia)
https://czasopisma.uwm.edu.pl/index.php/oej

The print edition is the primary version of the Journal

PL ISSN 1897-2721
e-ISSN 2083-4675

Wydawnictwo UWM
ul. Jana Heweliusza 14, 10-718 Olsztyn
phone: 89 523 36 61, fax 89 523 34 38
www.uwm.edu.pl/wydawnictwo/
e-mail: wydawca@uwm.edu.pl

Publishing sheets 8,3; printing sheets 7,0; edition copies 95
Print – Zakład Poligraficzny UWM w Olsztynie, order number 265

TABLE OF CONTENTS

SPIS TREŚCI

OLSZTYN ECONOMIC JOURNAL
2019, 14(2), 133–144
ISSN 1897-2721 e-ISSN 2083-4675 DOI: 10.31648/oej.3966

ORIGINAL PAPER

Received: 19.06.2018
Revised: 03.09.2018
Published: 28.06.2019

INTRODUCTION OF THE SINGLE CURRENCY AND INFLATION – THE CASE OF CENTRAL AND EASTERN EUROPEAN COUNTRIES

Janusz Heller[1], Rafał Warżała[2], Kamil Kotliński[3]
Faculty of Economic Sciences
University of Warmia and Mazury in Olsztyn
[1] ORCID: https://orcid.org/0000-0002-2596-9841
e-mail: j.heller@uwm.edu.pl
[2] ORCID: https://orcid.org/0000-0001-8677-977X
e-mail: rafal.warzala@uwm.edu.pl
[3] ORCID: https://orcid.org/0000-0002-5754-8363
e-mail: k.kotlinski@uwm.edu.pl

JEL Classification: E31, E63, F45, F15.

Key words: inflation target, euro currency, inflation.

Abstract

The study of price increases in five countries (Slovenia, Slovakia, Estonia, Latvia and Lithuania) aimed to assess the introduction of the single currency (euro) on the rate of HICP inflation in two short-term perspectives: after the first month and after the first year of the introduction of the euro in these countries. The following hypothesis was put forward: prices after the introduction of the euro are contained in the inflation target, that is, there can be no substantial increase, and contrasting views on the issue are only an effect of illusion, that is, the difference between actual and perceived inflation level. The research was carried out using the comparative method. They show that the inflation effect in the euro-adopting countries was clearly convergent with the level of price growth recorded at the same time in other European Union countries, including those already with a single currency. The result is that the reasons for excessive price growth in the short-term perspective should not be sought in connection with the introduction of the euro, but rather explained by e.g. the convergence of business cycles with these euro area countries in which HICP inflation target exceedance was recorded at the same time. There can be also any other conditions that affect price growth in all European countries, regardless of whether they belong to euro area or have its national currencies.

How to cite: Heller, J., Warżała, R., & Kotliński, K. (2019). Introduction of the Single Currency and Inflation – the Case of Central and Eastern European Countries. *Olsztyn Economic Journal*, *14*(2), 133-144. https://doi.org/10.31648/oej.3966.

WPROWADZENIE WSPÓLNEJ WALUTY A INFLACJA – PRZYPADEK KRAJÓW EUROPY ŚRODKOWO-WSCHODNIEJ

Janusz Heller, Rafał Warżała, Kamil Kotliński
Wydział Nauk Ekonomicznych
Uniwersytet Warmińsko-Mazurski w Olsztynie

Słowa kluczowe: cel inflacyjny, waluta euro, inflacja.

Abstrakt

Badanie wzrostu cen w pięciu krajach (Słowenii, Słowacji, Estonii, Łotwie i Litwie) miało na celu ocenę wpływu wprowadzenia wspólnej waluty (euro) na tempo wzrostu inflacji HICP w dwóch krótkoterminowych ujęciach: po pierwszym miesiącu oraz po pierwszym roku od wprowadzenia euro w tych krajach. Przyjęto hipotezę: ceny po wprowadzeniu euro mieszczą się w celu inflacyjnym, to znaczy, że nie może być mowy o ich nadmiernym wzroście, a odmienne opinie na ten temat są jedynie efektem iluzji, czyli wynikają z różnicy między inflacją faktyczną a postrzeganą. Badania prowadzono z wykorzystaniem metody porównawczej (komparatystyki). Wynika z nich, że efekt inflacyjny w krajach przyjmujących euro był wyraźnie zbieżny z poziomem wzrostu cen odnotowanym w tym samym czasie w innych krajach Unii Europejskiej, w tym również w krajach już dysponujących wspólną walutą. Z tego wynika, że przyczyn nadmiernego wzrostu cen w ujęciu krótkoterminowym nie należy szukać w związku z wprowadzeniem wspólnej waluty euro, ale raczej wyjaśniać na przykład zbieżnością cykli koniunkturalnych z grupą krajów strefy euro, w których w tym samym czasie odnotowano inflację HICP przekraczającą cel EBC, lub innymi uwarunkowaniami zwiększającymi wzrost cen we wszystkich krajach europejskich i to niezależnie od tego, czy dysponują one wspólną walutą, czy też wyłącznie walutami narodowymi.

Introduction

The European Union reveals the effects of two subsequent stages of economic integration. Historically the first was and still is a common market, the essence of which is to the relatively free flow of labour, capital, goods and services. Although this stage of integration has not revealed all its beneficial effects yet, the next one, i.e. monetary union, was already begun. Among the part of the EU member states – especially those with the euro currency – one can assume two parallel effects revealed, which are a consequence of both subsequent stages of economic integration. It is much easier, both in theoretical and empirical terms, to document the benefits of the country's participation in the common market, while the passage of time does not yet allow for the empirical and full documentation of all the effects resulting from membership in the monetary union. In this situation, the discussion takes place partly in the sphere of theory, while in the empirical approach the illusory, but strongly consolidated and negative price effects prevail. Hence, it is difficult for the objective argumentation ultimately settling this polemic.

Among the 10 EU Member States that geographically belong to Central and Eastern Europe – half have joined the Euro. If, then, we are going to empirically document the effects of introduction of the euro, there is no better opportunity to do such research in these countries. Literature on the issue provides a comprehensive study, which evaluates a broad spectrum of macroeconomic effects obtained after the adoption of the euro. Most often, it is about demonstrating how much the loss of independence in monetary policy has been compensated, for example, by economic growth, consumption and foreign trade dynamics, improvement of labour market relations, etc. The subject of this research is also inflation, understood as currency purchase stability. This approach has its justification in the expectation of the most objective response on the scale of economic benefits, as well as threats or disadvantages caused by introduction of the single currency (Kotliński, 2016, p. 67-75; Włodarczyk, 2016, p. 559-568).

These studies undoubtedly have cognitive objectives, but their results should also have a utilitarian character. They fit into the discussion about the future of the euro zone in the European Union, and can be helpful in making decisions by successive countries where national currencies still exist. Such discussion is also necessary in relation to Poland. Our country, according to the report of the Robert Schuman Fund, has one of three scenarios to choose from (Gorzelak *et al.*, 2017, p. 5):

– first, a quick political decision to enter the euro zone (by 2020), and then a smooth implementation of the accession process, so that it would be possible to join by 2024-2025;

– second is the lack of a political decision on the adoption of the euro, without specifying the date of the introduction of the euro;

– third is to take a formal decision not to introduce the euro in Poland, which means breaking the EU Treaty and the need to renegotiate the Accession Treaty or leave the European Union.

Prices are one of the key problems in this discussion. There is a perception that the introduction of the single currency is conductive to excessive price increases with this providing a sufficient justification against the introduction of the euro. However, it is worth using research results that can objectify evaluations, including those regarding price increases in countries that have already introduced the euro.

This is an occasion for the passing of time since the introduction of the euro in 5 countries of Central and Eastern Europe took place. These countries are similar to Poland in terms of the level of economic development and time of introducing a market economy. Above mentioned countries at the same time became members of the European Union. In contrast to the 12 EU countries that have already introduced the common currency in circulation in 2002, the above mentioned group of countries is more similar in economic terms. Therefore, there is some possibility that the changes that have occurred in these countries after the introduction of the single currency may also be revealed in other Central and Eastern European countries, which didn't adopt the single euro currency yet.

The aim of the presented research is to assess the impact of the introduction of the single currency (euro) on the inflation rate in 5 countries of Central and Eastern Europe, which in the years 2007-2015 adopted the common EU currency. The basis of this assessment is the analysis of HICP inflation in two short-term perspectives, the first of which includes inflation after the first month after the introduction of the euro, and the second – the average annual inflation in the first year after adoption of the euro.

During the work the following research hypothesis was formulated: prices after the introduction of the euro are contained in the inflation target, that is, there can be no excessive increase in inflation, and the different opinions on that subject are only an effect of illusion, that is, the difference between actual and perceived inflation level.

The main objective of central banks is to maintain price stability, but this is not the same as zero inflation (Issing, 2003, p. 6-11). The direct inflation target of the European Central Bank is below, but close to 2% of annual HICP inflation. The goal of the National Bank of Poland is to stabilize inflation at the level of 2.5% +/- 1 pp (that is, the range from 1.5% to 3.5%). The inflation targets of most countries implementing the direct inflation targeting strategy fall within the range of 1-3%. A small but positive inflation value is a better target of monetary policy than the stability of the price level (i.e. inflation equal to zero) for three reasons. The first argument is the rigidity of nominal wages and related wage adjustment, price and production adjustments. The low inflation rate enables the smooth functioning of the labour market by allowing a drop in real wages and thus preventing a decline in employment (Akerlof *et al.*, 1996, p. 1-76; Howitt, 2002, p. 125-138).

The second group of arguments against zero inflation is related to the resulting reduction in real interest rate changes (Yates, 2002, p. 24, 25) – nominal interest rates cannot be negative, so with zero inflation real interest rates cannot be negative either. With zero inflation, monetary authorities are not able to create a real negative interest rate (while setting a positive base rate of interest) to stimulate economic activity (Amirault & O'Reilly, 2001, p. 7-17).

The third, often advanced, argument against the zero level of the inflation target is the imperfection of the commonly used measure of inflation (CPI, HICP). Historically, the consumer price index has been built as a measure of changing maintenance costs. The problem is the distortions associated with the introduction of new products to the market, and with qualitative changes. There is a reasonable suspicion that the increase in the value of the typical consumer basket results not from inflation but from the growing standard of living (Kokoszczyński, 2004, p. 122-128).

Description of the research methodology

The subject of the research is HICP inflation (Harmonized Index of Consumer Prices) in 5 countries (Slovenia – 2007, Slovakia – 2009, Estonia – 2011, Latvia – 2014 and Lithuania – 2015), which adopted the common currency of the euro in years as stated above and in Table 1. HICP inflation is a measure of the average increase in prices of consumer goods and services throughout the year. This indicator is calculated on the basis of the average consumption structure in a given country. In addition to the information function, HICP inflation is an important measure of the effectiveness of the monetary policy of the European Central Bank. This bank implements the Direct Inflation Target Strategy, which assumes that the goal is to achieve, among others price increase "below, but close to 2% of HICP annual inflation". This means that in any euro area country, the average annual price increase should not exceed 2%. It is also worth noting that the inflation target of the National Bank of Poland amounts to 2.5% and may fluctuate within the range of +/- 1 pp. It follows that the goal of each of these central banks is low and stable, but, nevertheless, a slight increase in prices. In this paper the actual price effects after the introduction of the euro were compared with the ECB's inflation target. If this price effect was close to the ECB target or below, it meant a positive euro effect and the proper implementation of the ECB's monetary policy. However, while HICP inflation exceeded the target, attempts were made to look for the causes of this negative phenomenon.

The experience so far shows that the largest number of discussions, as well as emotionally expressed opinions, in which the negative assessment resulting from the perception of excessive price increase prevails, was formulated in the first phase of the introduction of the single currency (Hobijn *et al.*, 2006, p. 6-19; Marini *et al.*, 2007, p. 3-12; Angelini & Lippi, 2007, p. 2-15). Therefore, the research was conducted in two short-term perspectives: in the first month after the adoption of the euro and after the first year of it. Research in identical calendar years has not been possible. Each of the five countries surveyed, adopted a common currency in a different period. The research covered each time January, i.e. the first month after the adoption of the euro and the first year of the introduction of the single currency. In this way, a comparable phase of adoption of the euro by particular countries was achieved, but at the same time different price factors affected on price growth, which – depending on the study year – could shape inflation differently.

By adopting such a concept of research, we were aware of the fact that in different years in which more countries adopted the euro, external factors with a different impact on price growth may emerge. Thus, it could seemingly distort the results of the research in which the conditions of *ceteris paribus* could not be fully fulfilled. In order to use this fact for greater objectivity of research, it was decided – using the comparative method – to check the results of HICP inflation in the country introducing the euro against inflation occurring at the same time in the European Union as a whole, as well as in the euro area and in Poland. Presentation of the level of price growth in the country introducing the euro on this background is, next to the ECB's inflation target, an additional argument that in more detached way presents the impact of the euro on price growth.

HICP inflation after the introduction of the euro (description and interpretation of results)

The starting point for empirical research was the assumption adopted before the introduction of the euro into the cash circulation, which predicted that this fact would have a neutral impact on the economy. As a result of the conversion of the national currency into the euro, there is no increase in the money supply in circulation and the purchasing power of the society is not growing. The change of the national currency into the euro is nominal, and thus does not trigger significant economic stimulants of short-term price growth in this way. Therefore, there are no rational premises that could, based on economic considerations, explain the possible process of immediate price growth as a consequence of the adoption of the euro's common currency.

So much for theoretical assumptions. The empirical effects observed in the first year (2002) after adopting the common currency in cash circulation in 12 countries of the European Union slightly verified this view. Practice has shown that a slight price increase takes place, and their primary cause is the desire to obtain additional revenues by some producers and traders. In 2002, the annual HICP inflation rate in the euro area was 2.3%, of which the effects related to the introduction of the euro were assigned from 0.12 to 0.29% (Konopczak & Rozkrut, 2008, p. 3).

Therefore, if we compare this result with the inflation target of the ECB, it is an increase so small that it is difficult to expect that it will be widely perceived. However, it turned out that with the introduction of the single currency, the conviction that this is equal to excessive price increases is growing (Aucremanne *et al.*, 2007, p. 24). In the literature, it was accepted that this fact was perceived as the dispersion of inflation perceived from its actual size or the illusion of the euro (Del Giovane & Sabbatini, 2005, p. 4-54). The observed increase in prices after the introduction of the euro, although not excessive, may be justified by two reasons. The first is related to the fact that each country in the period immediately before entering the euro area is very precisely evaluated, among others from the level of inflation. Exceeding its upper limit, which is 1.5 pp over the arithmetic average of the three EU countries with the lowest inflation, it is threatened with rejection of the application for admission to the monetary union, as it was done in 2007 with Lithuania. After the country is admitted to the euro area, the European Central Bank is responsible for the effects of monetary policy, what means ECB does not always use instruments of similar effectiveness with which the central bank of the country applying for the adoption of the common currency has previously worked. As a result of such processes, prices could change, however with some delay, and not immediately after the introduction of the euro.

The second interpretation is more convincing, justifying the perception of excessive price increase almost immediately after the introduction of the euro. It has its psychological background and usually concerns goods and services from the low price group, which are purchased with high frequency. In this way, the myth of the euro's influence on excessive price increases is created. Psychologists have called it the "cappuccino effect" in Italy. In France, a similar effect was called the "baguette effect" and in Germany "teuro" (expensive euro), although the general inflation rate in Germany in 2002 was slower than in the previous year (Traut-Mattausch *et al.*, 2004, p. 3; Brachinger, 2006, p. 5; Gorzelak *et al.*, 2017, p. 2).

The awareness of inflation dispersion in reality after the introduction of the euro in 2002 with its perception has moved to the aspiring countries and to those in which the euro was adopted in later years. In some environments, and especially among opponents of progressive integration, it is a certainty that hits a fertile ground and as a deterrent element affects the attitude to the euro area and the entire European Union. It is a very catchy slogan, which – when scaring – can be very effective in limiting social acceptance for European integration in general.

Regardless of the scale of occurrence of this phenomenon, the results on actual inflation in countries that have adopted the euro in recent years should be examined and presented. Relevant data on this topic are summarized in Table 1.

Table 1

Time range of HICP inflation surveys in countries after the adoption of the single euro currency

Country	Inflation after 1 month from the adoption of the euro (in %)	Change in inflation in 1 month since the adoption of the euro (in pp)	Inflation after 1 year from the adoption of the euro (in %)	Change in inflation in 1 year from the adoption of the euro (in pp)	Year adoption of the euro. 1st of January	EU average annual inflation (in %)	Euro area average annual inflation (in %)	Poland average annual inflation (in %)
	1	2	3	4	5	6	7	8
Slovenia	2,8	-0,2	3,8	1,3	2007	2,4	2,1	2,6
Slovakia	2,7	-0,8	0,9	-3,0	2009	1,0	0,3	4,0
Estonia	5,1	-0,3	5,1	2,4	2011	3,1	2,7	3,9
Latvia	0,5	0,9	0,7	0,7	2014	0,5	0,4	0,1
Lithuania	-1,4	-1,3	-0,7	-0,9	2015	0,0	0,0	-0,7

Source: own statement based on Eurostat data: HICP (2015 = 100) – annual data (average index and rate of change) [prc_hicp_aind].

The figures presented in column 1 of Table 1 show that in the first three countries (Slovenia, Slovakia and Estonia), HICP inflation in the first month after the introduction of the euro was higher than the ECB's inflation target. A particularly large difference, which means even a significant increase in prices was recorded in Estonia. The inflation target of the ECB was exceeded even more than 2.5 times. However, there are two countries (Latvia and Lithuania), where the price change has not even approached the upper limit of 2%, and in the other country it was even negative, which is not a positive phenomenon, but it is certainly not an excessive price increase.

The results of annual inflation are slightly more favourable. The data presented in column 3 of Table 1 shows that, in turn, three countries – Slovakia and again Latvia and Lithuania – reached inflation well below the ECB's inflation target. It means that in the first year after the adoption of the euro, prices in these two first countries grew slower than the assumed inflation target, and in Lithuania, as in the first month – although a smaller, but still falling prices were recorded. However, there are two countries where the price increase in the first year of the euro's common currency exceeded the inflation target. A particularly large difference occurred again in Estonia.

Data from table 1 also show other regularities, which can be explained by the fact that in two countries (Latvia and Lithuania) price changes in both the 1 month and 1 year period were safely below the threshold set by the ECB inflation target. In two countries, the exact opposite result was recorded (Slovenia and Estonia), while in Slovakia the effect was mixed. If the data obtained in these five countries are compared with the results in columns 6 and 7, it turns out that some relationships can be found between the level of inflation in the entire European Union, the entire euro area and price effects in the studied countries. The most favourable results in the European Union, the euro area as well as in Poland were recorded in 2014 and 2015. In these two years, the euro was also introduced in Latvia and Lithuania. In turn, the two years that are least favourable in terms of inflation in Europe (columns 6 and 7) are in 2011 and 2007, i.e. when the euro was introduced in Estonia and in Slovenia. The year 2009 – as shown by the results in column 6 and 7 turned out to be relatively average from all the analysed years. Perhaps for this reason also an average result was obtained in Slovakia.

The association of facts alone does not explain the causes of the phenomenon yet, therefore it is necessary to focus on the search for conditions that may cause diversification of inflation and do not result solely from the adoption of the single euro currency. One of such factors may be the level of business cycles synchronization. The essence of the economic integration process is the growing range of interconnected economies of member countries. Intensification of trade exchange, flow of labour and capital are factors conducive to the convergence of fluctuations in economic activity. The economic situation in individual countries depends on the economic situation in the partner countries both in the periods of dynamic recovery (expansion) and the slowdown in economic activity (recession). Inflation is pro-cyclical and belongs to so called lagged variables. Hence, the similarity of fluctuations in inflation rates is correlated with the similarity of business cycles. The results of comparative studies of synchronization of economic cycles in 4 countries: Poland, Estonia, Slovakia and Slovenia with the business cycle of the euro area (12 countries in which the common currency in circulation has been in force since 2002) indicate that Estonia and Slovenia are characterized by the greatest correlation, while Poland appear slightly smaller correlation and the smallest took place in Slovakia (Kotliński & Warżała, 2013, p. 49).

The results of these studies may partly explain the cause of excessive price growth after the introduction of the euro in Estonia and Slovenia. The convergence of business cycles with the group of countries (the eurozone), in which HICP inflation exceeded of the ECB's inflation target, may have a greater impact on the rate of price growth than the very introduction of the euro. Perhaps the referenced studies – also at least partially – explain the mixed reaction in Slovakia. Unfortunately, there are no studies in which Latvia and Lithuania have been evaluated similarly.

Summary and conclusions

1. Based on the obtained results, the existence of cause and effect relationships between the introduction of the single euro and excessive price increases cannot be confirmed. In the first month after the introduction of the euro, the prices increased above the inflation target in three countries (Slovenia – 2.8%, Slovakia – 2.7% and Estonia – 5.1%), while in two countries HICP inflation was below the target (Latvia – 0.5% and Lithuania – minus 1.4%).

2. In the studies taking into account HICP annual inflation, the effect was reversed, i.e. in three countries the price increase was in the inflation target (Slovakia – 0.9%, Latvia – 0.7% and Lithuania – minus 0.7%), while in two countries the price growth was above the target (Slovenia – 2.8% and Estonia – 5.1%). There is, therefore no convincing evidence that with the introduction of the single euro in the short period there is an excessive increase in prices.

3. Comparative research shows that there is a correlation between the level of inflation in the European Union and the euro area and the price effects in the five CEE countries that have introduced the euro. The most favourable results in the European Union, in the euro area and in Poland were recorded in 2014 and 2015. In these two years, the euro was also introduced in Latvia and Lithuania. It can therefore be concluded that if the euro is introduced at the same time when in other European countries inflation was at a relatively low level and was in the inflation target, the price increase in the euro-adopting country was also relatively low and didn't exceed the ECB inflation target.

4. The presented research shows that the inflationary effect in the countries hosting the euro common currency was clearly convergent with the level of price growth in other European Union countries, including those that already have a single currency. Almost exactly the same HICP inflation (maybe except for 2009) was noted in Poland. This entails that the reasons for excessive price increases should not be sought in connection with the introduction of the single euro currency, but rather associated with other conditions that affect price growth in all European countries, regardless of whether they have a single currency or only national currencies.

5. From the available studies, which at least partially explain the reason for the excessive price growth after the introduction of the euro in Estonia and Slovenia, the convergence of business cycles with a group of European countries where at the same time the HICP inflation exceeded the ECB inflation target, may be the most probable cause. Perhaps this is the right direction of research, which may bring us closer to the answer to the bothering question about excessive price growth in the short term in the country after the introduction of the euro. It is also possible to explain the reason for inflation effects in the other three countries included in the study of price growth after the adoption of the euro.

6. Poland is among the five countries of Central and Eastern Europe, member states of the European Union, which still have national currencies. Admittedly, there is no obligation to state the date of the future of participation in the euro area, but it is a matter of time when it may turn out that silence in this matter (as it is currently practiced in Poland) will have a similar effect to the official decision not to accept the single currency. The consequence of such an attitude is the explicit exclusion of the first option, namely making a quick decision that will allow the adoption of the euro in 2024-2025. Regardless of the solution chosen and without indicating which of them is the most advantageous for Poland, it is the duty of scientists to examine the economic consequences, including the perceived and particularly irritable problem of excessive price increases as a result of the introduction of the single currency.

7. The applicative nature of the presented research may be particularly important due to the fact that one of the practical effects of the introduction of the single currency is the perception of it as a factor causing an excessive increase in prices. For this reason, it seems necessary to distinguish between rational and expected price increases, i.e. levels close to or below the ECB's inflation target ("below, but close to 2% of HICP annual inflation") and excessive price increases, i.e. HICP inflation exceeding this target.

8. Official results of research conducted in 12 EU countries that adopted the euro in cash circulation in 2002 confirm a clear discrepancy between perceived inflation and actual inflation. In Poland, it is also a widely accepted argument against the adoption of the single currency. If empirical studies confirm that in essence it is only or as much illusion, then the causes of this phenomenon should

be searched for and actions should be taken to minimize or completely eliminate its negative effects. However, if the introduction of the euro is accompanied by an excessive price increase (which is not tantamount to the existence of a cause and effect relationship), then the actual reasons for excessive inflation should be sought. The theory precludes the direct impact of adopting the single euro currency on short-term – excessive price increases.

Translated by Authors
Proofreading by Dimitrios Syrrakos

References

Akerlof, G.A., Dickens, W.T., & Perry, G.L. (1996). The Macroeconomics of Low Inflation. *Brookings Papers on Economic Activity*, *27*(1), 1-76.

Amirault, D., & O'Reilly, B. (2001). The Zero Bound on Nominal Interest Rates: How Important Is It? *Working Paper*, *01-6*, Ottawa: Bank of Canada.

Angelini, P., & Lippi, F. (2007). *Did Prices Really Soar after the Euro Cash Changeover? Evidence from ATM Withdrawals.* Central Bank of Rome: Research Department, Bank of Italy, University of Sassari, CEPR.

Aucremanne, L., Collin, M., & Stragier, T. (2007). Assessing the Gap between Observed and Perceived Inflation in the Euro Area: Is the Credibility of the HICP at Stake? *Working Paper Research Series*, *112*. Brussels: National Bank of Belgium.

Background Policy for the ECB. Monetary Policy Strategy. 2003. O. Issing (Ed.). Frankfurt am Main: European Central Bank.

Brachinger, H.W. (2006). *Euro Or Teuro?: The Euro-Induced Perceived Inflation in Germany.* Department Of Quantitative Economics, Working Paper Series 5. Switzerland: University of Fribourg.

Del Giovane, P., & Sabbatini, R. (2005). *The introduction of the euro and the divergence between officially measured and perceived inflation: the case of Italy.* Seminar on Inflation Measures: Too high – Too Low – Intrenationally Comparable? Paper *13*, Paris: OECD.

Gorzelak, G., Götz, M., Nowak, B., Nowak-Far, A., & Orłowski, W.M. (2017). *What's next with Euro? Three scenarios for Poland*. Warsaw: Robert Schuman Polish Fund.

HICP (2015 = 100) – annual data (average index and rate of change) [prc_hicp_aind]. Retrieved from http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=prc_hicp_aind&lang=en (22.05.2018).

Hobijn, B., Ravenna, F., & Tambalotti, A. (2006). Menu Costs at Work: Restaurant Prices and the Introduction of the Euro. *The Quarterly Journal of Economics*, *121*(3), 1103-1131.

Howitt, P. (2002). Looking Inside the Labour Market: A Review Article. *Journal of Economic Literature*, *40*(1), 125-138. https://doi.org/10.1257/0022051026994.

Kokoszczyński, R. (2004). *Contemporary monetary policy in Poland*. Warsaw: Polish Economic Publishing House.

Konopczak, K., & Rozkrut, M. (2008). *The impact of the introduction of the common currency on the cash flow on changes in the level of prices of the euro area countries*. In *Report on the full participation of the Republic of Poland in the third stage of the Economic and Monetary Union*. Projects research part VIII. Warsaw: National Bank of Poland.

Kotliński, K. (2016). *Macroeconomic effects of the introduction of the euro in Lithuania*. In K. Opolski & J. Górski (Ed.). *Challenges of economic integration in the European Union*. Warsaw: Faculty of Economic Sciences of the University of Warsaw, p. 67-75.

Kotliński, K., & Warżała, R. (2013). Synchronization of business cycles as a criterion for membership in the euro area. *Economics*: *Market, Economy, Society*, *34*, 49-64.

Marini, G., Piergallini, A., & Scaramozzino, P. (2007). Inflation bias after the Euro: evidence from the UK and Italy. *Applied Economics*, *39*, 461-470.

Traut-Mattausch, E., Schulz-Hardt, S., Greitemeyer, T., & Frey, D. (2004). Expectancy Confirmation in Spite of Disconfirming Evidence: The Case of Price Increases Due to the Introduction of the Euro. *European Journal of Social Psychology*, *34*(6), 739-760.

Włodarczyk, B. (2016). Macroeconomic effects of the introduction of the euro in selected EU member states. *Annales Universitatis Mariae Curie-Skłodowska. Section H*, *Oeconomia*, *50*(4), 559-568.

Yates, A. (2002). *Monetary Policy and the Zero Bound to the Interest Rates: A Review.* Frankfurt am Main: Working Paper, ECB,190.

OLSZTYN ECONOMIC JOURNAL
2019, 14(2), 145–155
ISSN 1897-2721 e-ISSN 2083-4675 DOI: 10.31648/oej.3967

ORIGINAL PAPER
Received: 12.03.2018
Revised: 16.07.2018
Published: 28.06.2019

FACTORS UNDERLYING THE ECONOMIC MIGRATION OF GERMAN WOMEN TO POLAND

Renata Marks-Bielska
Faculty of Economic Sciences
University of Warmia and Mazury in Olsztyn
ORCID: https://orcid.org/0000-0001-7319-1918
e-mail: renatam@uwm.edu.pl

JEL Classification: A10, F22, L26, O15.

Key words: migration, entrepreneurship, German businesswomen.

Abstract

The aim of the research and analysis was to identify the factors which contribute to stimulating *entrepreneurial* spirit among women. Special attention was paid to German women who had undertaken business activity in Poland. Based on a survey, it was determined that apart from such barriers to developing business as experienced by all businessmen (e.g. ensuring cash flows, having a sound knowledge of laws and regulations connected with business, and being competitive in the market), a female entrepreneur must meet other challenges arising from the position of a woman in society. Women's determination in the pursuit of business did not depend on gender or émigré status, but on their willingness to start a business in a culturally foreign environment. The respondents emphasized that they were highly active and goal-oriented. Women would rather be perceived as entrepreneurs than as women or migrants, because the characteristics assigned to the two latter roles do not coincide with the typical image of 'male entrepreneurship'.

UWARUNKOWANIA IMIGRACJI GOSPODARCZYCH NIEMEK DO POLSKI

Renata Marks-Bielska
Wydział Nauk Ekonomicznych
Uniwersytet Warmińsko-Mazurski w Olsztynie

Słowa kluczowe: migracja, przedsiębiorczość, niemieckie przedsiębiorczynie.

How to cite: Marks-Bielska, R. (2019). Factors Underlying the Economic Migration of German Women to Poland. *Olsztyn Economic Journal, 14*(2), 145-155. https://doi.org/10.31648/oej.3967.

Abstrakt

Celem podjętych badań i analiz była identyfikacja czynników, które kształtują przedsiębiorczość gospodarczą kobiet. Szczególną uwagę zwrócono na grupę Niemek, które podjęły działalność gospodarczą w Polsce. Na podstawie przeprowadzonych badań ankietowych stwierdzono, że kobieta-przedsiębiorczyni, oprócz typowych dla wszystkich przedsiębiorców barier prowadzenia działalności gospodarczej (m.in.: zapewnienia płynności finansowej, znajomości przepisów i zmian zachodzących w gospodarce, dorównaniu konkurencji), musi sprostać wyzwaniom wynikającym z pozycji kobiety w społeczeństwie. O determinacji w podejmowaniu działań przedsiębiorczych przez kobiety nie przesądza płeć czy status emigrantki, lecz ich gotowość do podjęcia działalności gospodarczej w środowisku obcym kulturowo. Respondentki podkreślały swoją aktywność i zdolność do realizowania własnych planów. Kobiety chcą być postrzegane przede wszystkim jako przedsiębiorczynie, a nie jako kobiety czy migrantki, ponieważ cechy przypisane do tych ról nie pokrywają się z typowym wyobrażeniem o „męskiej przedsiębiorczości”.

Introduction

Markowski (2010, p. 9) made an accurate observation when he stated that human nature is associated with teleologism, which means the constant pursuit of an aim. Each person has their individual aims. According to Aristotle (2007), the most ultimate goal that everyone desires to attain is happiness. The difficulty lies in the fact that happiness lacks an unambiguous definition; nevertheless, it is certain that happiness is what we strive towards (Tatarkiewicz, 2012). Securing happiness for oneself and one’s nearest and dearest, according to individual definitions thereof, will often involve making difficult decisions. Sometimes, it will require abandoning one’s place of birth and leaving family in order to secure the means necessary to achieve the aim; such as happiness for oneself and of those with whom one shares life. Consequently, decisions about migrating are not rare (Markowski, 2010, p. 9).

Previously, Poland was predominantly a country of emigration with a so-called zero immigration. The flow of foreigners to Poland (immigration) is a relatively recent development. In the post-war years, we have been witnessing the process of an outflow of Polish population abroad (emigration). Immigration to Poland did not occur until the state and economic transformation took place, i.e. until the turn of the 1980s and 1990s (Organiściak-Krzykowska, 2013, p. 11).

Over the past three decades, the process of migration has intensified. The reasons are rooted in economic, cultural and social transformations, although some arise from international ethnic conflicts as well. Current migration is characterized by previously unobserved events, for example feminization of migration flows. Migration of women is connected with the position they occupy in the society of their native country, which in turn depends on living conditions, shaped by the state’s social and economic situation. Among the benefits from migratory journeys there are material gains, which later contribute to a change in the migrant’s position, her role in the family or in the local community, as well as a growing sense of autonomy and emancipation (Głażewska, 2010, p. 11; Marks-Bielska *et al.*, 2015, p. 7, 8).

Grabowska-Lusińska and Jaźwińska-Motylska (2013, p. 85) rightly noticed that the question of the gender of migrants is a relatively new problem mentioned in international studies on migration. Since 1970, that is since the so-callled G*astarbeiter* migration to Germany, women have been distinguished in migration research as a separate group, but mostly as wives of migrating men or as members of migrating families, and not as individual, independent migrant actors (Morokvasic, 1983; Kindler & Napierała, 2010). Women gained an independent position in research into migration once they started to be active economically in foreign labour markets (Kindler & Napierała, 2010). Earlier analyses concerning women-migrants stemmed from cultural stereotypes, where traditional roles assigned to women were associated with home and work (Smagacz-Poziemska, 2008), but also with the everyday struggle (*Migracje kobiet…*, 2008), a transnational approach to motherhood (Urbańska, 2008), an increased share of women migrants in the household labour sector (Kindler, 2012), marital migrations, women trade (Krzaklewska & Ratecka, 2008), and migration with children (White, 2011).

Setting up a company, securing adequate sources of funding, having a sound knowledge of regulations and transformations in the economy, as well as successfully competing with others are the challenges that all entrepreneurs face. However, a female entrepreneur must also meet the challenges arising from her position in a society (Ben-Yoseph *et al.*, 1994, p. 28).

The research conducted in Poland among businesswomen and their partners (*Zawód prezeska…*, 2017, p. 3) implicates some discernable cultural changes and gradual divergence from the traditional model of a relationship, where the principal (and oftentimes the sole) breadwinner is a man; consequently, the social roles of women and men are being redefined. The research results have proven that a mere 14% of husbands/partners would rather women did not work professionally but only look after home and children. No more than 8% of the respondents started their own business against the will of their husband/partner.

In general, however, the economic activity of women remains under a strong influence of social seterotypes, which determine how the workload is shared and what social roles the two sexes play. The social and cultural conditions are particularly significant when the development of entrepreneurship among women is considered (Godowska, 2011, p. 66). In the vast majority of countries analyzed it has been observed that women encounter problems in their search for employment, presentation of own skills or professional promotion. These needs can be satisfied by establishing one's own company, and the autonomy and independence thus gained appeal to a growing number of women (Balcerzak-Paradowska *et al.*, 2003, p. 110).

For the purpose of this article, economic immigration was defined as an influx of German women arriving in Poland in order to run their own companies.

Man-oriented research methods attribute a decision to start one's own business mostly to the motivation of an individual person. In this approach, personality traits shaped in a cultural or social context play the same role as social influences, e.g. education and upbringing, subjective perception, lack of alternative solutions or family patterns (cf. Brüderl *et al.*, 1998).

The problem of German businesswomen migrating to Poland has been only poorly explored. There are statistics dealing with the inflow of German capital to Poland, which are published by the National Bank of Poland (2012) and the Polish Information and Foreign Investment Agency (2012), and which reveal that most (about ¾) of the 500 biggest foreign enterprises in Poland are companies with German capital. However, it is difficult to assess what percentage of German entrepreneurs in Poland is made up of women. Our analysis of the boards of directors in companies with German capital suggests that women occupy positions in the boards of just 5% of the said companies. Representatives of the institutions operating in Poland that have had the most profound knowledge of German entrepreneurship in Poland (e.g. the Polish-German Chamber of Commerce and Industry) claim that the business conducted by German women in Poland is not the subject of their analyses or data collection. This has been confirmed by a female member of the board of the European Forum of Female Business Owners. Hence, it is difficult to establish the number of German entrepreneurs in Poland.

At first sight, comparison between Germany and Poland should reveal numerous similarities between the two countries in the professional status of women. However, certain differences will emerge when a deeper insight is gained. In both countries, an unequal attitude to women at work can be seen, for example with respect to differences in earnings. The Eurostat (2012) data suggest that in 2011 women earned less than man did in both Germany and Poland. Germany belongs to these European countries where the said disproportions are the greatest (women earn around 22% less than men). Poland is one the countries where this difference is the smallest (4.5%) (Kruse *et al.*, 2014, p. 27).

Women play an increasingly important role among migrants, a fact which is acknowledged by both politicians and researchers alike, and which finds its manifestation in the current research. The growing role of migrant women also pertains to female business owners. Their engagement in business is the subject of public and scientific debates, in Poland as well as in Germany.

The aim of this article has been to provide an insight into the migration by German women leaving for Poland in order to start business activity in our country. The paper draws on the results of a broader research project, entitled *German female entrepreneurs in Poland and Polish entrepreneurs in Germany. Comaprison of the social and cultural phenomenon of Europeanisation*[1].

[1] The project was funded by the Polish-German Foundation for Science. It was performed by UWM in Olsztyn and Fachhochschule des Mittelstands (FHM), Bielefeld, Deutschland.

The research aim, such as exploring the conditions underlying decisions made by German women to start business in Poland, was achieved through a survey conducted among German female entrepreneurs running their own companies in Poland.

To reach German businesswomen active in Poland and to include them in our study, both direct and indirect methods of data acquisition were employed. The following Polish and German institutions were contacted: the European Forum of Female Company Owners in Warsaw, Foundation of Polish-German Cooperation in Warsaw, the FIKA Foundation of Active Women in Olsztyn, the Foundation for the development of Silesia and Support of Local Initiatives in Opole, the Association of Polish Women in Economy and Culture (seated in Köln), and the Polish Information and Foreign Investment Agency, as their scope of responsibilities and functions suggested they could be helpful in making contact with potential research participants.. The information provided by these institutions was verified by confronting it with data collected in the National Court Register. In total, 55 German businesswomen in Poland were identified. Personal contacts of the research team were invaluable in reaching the potential respondents. Direct contact with 12 female entrepreneurs with whom questionnaire surveys were carried out was managed. Eventually, 12 correctly filled in questionnaires were analyzed. The research was conducted in 2014. The tabular-descriptive form of data presentation was used in this article.

Economically motivated immigrations of German women to Poland, in the light of the research

The reasons why women decide to migrate change and, as is the case for men, are mostly determined by economic circumstances (Pillinger, 2007, p. 14). One of the basic changes noted in the contemporary migration of women is that they are more and more often autonomous migrants. Women make their own decisions to migrate rather than follow men, as wives, mothers, daughters or fiancées (i.e. dependent persons), which until recently was very common. A professional career and work ensure higher prestige and more power than housework and child care (Święćkowska, 2010, p. 1).

Most of the companies run in Poland by the German female entrepreneurs who participated in the study employ no more than 10 employees. None of the companies

---

The project's number was 2013-17 (2013-2014). Its objective was to explore the presence of women in the German and Polish markets in a socio-cultural context. From the perspective of Europeanisation and globalization, it was important to examine whether and to what extent German women were active participants of business activity in the Polish market and, possibly, vice versa. On behalf of the Polish partner, the project manager was dr hab. Renata Marks-Bielska, and the persons involved in the project's execution were: prof. dr hab. Roman Kisiel, dr hab. Wiesława Lizińska, dr Karolina Babuchowska, dr Krzysztof Szulborski, and mgr Izabela Serocka.

has staff of over 100 employees. Nine of the twelve respondents are either owners or co-owners of the companies they run, while two occupy managerial positions and one is the founder of a foundation.

With respect to business domains, the surveyed group was rather heterogeneous. There were two representatives of each of these branches: education and science, agriculture, catering/food industry and tourism. Such branches as retail trade, employment services and advisory services had one representative each. Noteworthy is the fact that all the German businesswomen who took part in the study had several years of experience in business. All the respondents who answered this questionnaire reported having over 10 years of experience while six had been working in their jobs for over 20 years.

The respondents admitted that their decision to start a business in Poland was mostly encouraged by state transformation (market economy and democratic changes in Poland) and such political circumstances as Poland's accession to the European Union. Economic factors as well as the opening of the labour market played a less important role (Tab. 1). The relevant literature often highlights the role of economic conditions in making a decision about starting business activity abroad, but this was unconfirmed by the analyzed sample.

Table 1

Economic and political motivation for undertaking business activity abroad (number of responses)

Factor	I strongly agree	I quite agree	I don't quite agree	I don't agree at all	No answer
Opened labour market	1	2	2	4	3
Economic factors	2	2	0	5	3
State transformation	5	2	1	3	1
Political change (the EU expansion)	5	3	0	1	3

Source: the authors, based on Kruse *et al.* (2014, p. 85).

Beside political factors, the German businesswomen also mentioned personal motivation, which most often included: an opportunity to implement an original business idea, gaining self-fulfillment, making a living or even becoming financially self-reliant (Tab. 2).

German women active in Poland have a positive image of female entrepreneurs. Both the views about Polish businesswomen and their self-perception as representatives of German female entrepreneurs contain many positive features, thus indicating a high level of self-respect and self-confidence shared by the migrant German entrepreneurs conducting businesses in Poland. The businesswomen who responded to our survey considered themselves as reliable

Table 2

Personal motivation for undertaking business activity abroad (number of responses)

Motivation	I strongly agree	I quite agree	I don't quite agree	I don't agree at all	No answer
New business idea	6	2	2	1	1
Make a living	4	4	2	2	0
Being financially self-reliant	4	2	1	3	2
Self-fulfillment	4	4	2	0	2
Better career	3	4	0	3	2
Both professional and family matters	1	3	1	6	1

Source: the authors, based on Kruse *et al.* (2014, p. 87).

(this opinion was expressed by 8 out of 12 respondents), goal-oriented (7 replies), well organized at work (5 responses) and professional (2 indications).

The German businesswomen working in Poland, when asked about the typical characteristics of Polish businesswomen, indicated: goal-orientation (5 answers), creativity (4 indications), being hard-working and flexible (3 indications each).

The female entrepreneurs showed a strong degree of socialization typical of their home country (Germany). Almost all the German respondents (except one, who did not answer this question) strongly or quite strongly identified themselves with the German image of an entrepreneur. In no way did any of them identify themselves with the Polish image of the entrepreneur.

Our analysis of the self-perception as a businesswoman demonstrated by the German women in Poland implicates their high self-esteem and self-confidence. This finding should be considered in the context of the success they have achieved in business. It turns out that half of the German businesswomen asked claim to have achieved a (very) high degree of success. Moreover, nearly all of them define success as client satisfaction (11) and a stable financial situation (10). For many (8), a determinant of success is the prestige and high position they enjoy in their environment.

The high self-esteem and positive self-image of German female entrepreneurs in Poland are also implicated by the women's responses to the question about what has helped them the most in their careers. For most (11 out of 12), the key factor was their own personality/character. Half of the respondents attributed their success to the support of family and friends and social contacts/networks. 8 responses suggested the importance of previous professional experience (5 – in the country of origin and 3 – in the country of emigration). The factors that they thought contributed the least to obtaining the current professional position were education (3 responses) and support by external institutions (1 answer).

Half of the surveyed German women who had previously conducted some business in Germany gathered information about Poland before leaving for our country. To this end, they mostly used widely available sources of information such as the Internet, newspapers, the radio and television. Contact with other entrepreneurs, as well as with associations and business environment institutions had also proven useful.

Apart from searching for information on their own, half of the respondents took advantage of external support institutions in Germany, both before and after their arrival in Poland. Before leaving, the support mostly consisted of language courses and intermediation in establishing contacts with Polish institutions as well as tax and legal consultancy. Once in Poland, the respondents most often resorted to tax, legal and business establishment consultancy (Tab. 3).

Table 3

Use of assistance provided by institutions before starting business activity in Poland (number of responses)

Specification	Before leaving Germany	After arriving in Poland
Legal consultance	2	5
Taxation consultancy	2	3
Information meeting for persons who are starting business activity abroad	0	1
Informational meeting for persons emigrating to Poland	0	1
Consultancy concerning the financing of a new company and conducting business	1	1
Consultancy concerning the establishment of a new company	0	3
Intermediation in contact with Polish institutions	2	2
Language courses	3	0

Source: the authors, based on Kruse *et al.* (2014, p. 97).

Among the respondents, businesswomen who used various forms of support assessed the economic success they achieved more highly than those who did not resort to such assistance. Especially the use of different assistance forms before travelling to Poland seems closely related to professional success.

German female entrepreneurs in Poland stated that in both Germany and Poland, businessmen enjoy a privileged position in relation to businesswomen. At the same time, slight differences in the evaluation of this situation in Poland and Germany were noticed. The literature emphasizes the presence of numerous obstacles in a woman's pathway to a career, attributing this state of affairs to the stereotypical perception of gender, whereby women are appreciated mostly as ideal homemakers and mothers.

Stereotypically, a woman should not pursue her career at the expense of her family obligations and housework. Unlike men, whose stable family status strengthens their professional position, women are often made to choose between their careers and family.

The German businesswomen who participated in our study claimed (9 responses) that female migrant entrepreneurs were in a more difficult situation than Polish businesswomen. This opinion was justified by the fact that there are more barriers (of a legal, administrative or tax nature) to business in Poland than in Germany. The German female entrepreneurs suggested that other causes of problems in running a company in Poland were the constantly changing legal regulations and the language barrier.

The respondents concluded that as migrant entrepreneurs in Poland their starting position was more difficult. At this point, it is interesting to notice that the surveyed women were well integrated within their professional and private circles. The degree of integration, both professionally and privately, was ranked as very high on a scale from 1 to 4 (1 – very well integrated, 4 – not integrated at all). The average satisfaction with one's integration in the professional field is 1.6, while in private life it reached 1.7. A possible factor that positively affects integration is the use of assistance offered.

Conclusions

Setting up a company, securing sufficient financial resources, knowledge of legal regulations and changes in the economy as well as successful competition with others are the challenges that all entrepreneurs face. However, a businesswoman must additionally struggle with the challenges arising from her position in society. The economic activity pursued by women remains under a strong influence of social stereotypes, which determine the division of work and social roles of both sexes. The social and cultural conditions are particularly significant in a situation where women attempt to develop their spirit of enterprise. In most countries they are seen to encounter obstacles in their search for employment, the presentation of own skills or promotion to higher positions. These aims can be achieved through entrepreneurship and autonomy, as well as through self-reliance with one's own company. This is appealing to an ever growing number of women.

Economic entrepreneurship among women is a vital ingredient of contemporary societies. It is also a complex issue. On the one hand, there is a distinctly economic context. On the other hand, the self-employment of women and their entering the role of business owners are strongly culturally conditioned. Countries that create opportunities for all their citizens (including women) to prove their capabilities in conducting business experience more rapid economic growth.

Thus, unleashing the entrepreneurial potential inherent in women can be one of the sources of increased prosperity for an entire society.

The results of our survey carried out among German female entrepreneurs in Poland proved that the determination with which women undertake entrepreneurial actions does not depend on the gender or status of an immigrant, but on their readiness to start a business in a culturally-alien environment.

The businesswomen we surveyed perceive their gender and migrant status as an obstacle to success in business. Their self-confidence and perseverance may be closely associated with the conditions in which they act as migrant entrepreneurs and which they deem difficult. The respondents stress their dedication and determination to implement their own plans. This conviction is rooted in the experience of successfully tackling obstacles on the road to success.

The positive image of women entrepreneurs, which has emerged from the current research, indicates one of the most crucial aspects of entrepreneurship among migrants to a neighboring country: women want to be seen primarily as entrepreneurs, not as women or migrants, because the features assigned to the latter roles do not coincide with the typical image of „male entrepreneurship".

Therefore, it is important to support entrepreneurial activities in Poland consisting in facilitating business operations at all levels of local government administration. It can be important not only for business, but also for foreign investors, including women.

Translated by Jolanta Idźkowska
Proofreading by Michael Thoene

References

Aristotle (2007). *Nichomachean Ethics*. Warszawa: Wyd. Nauk. PWN.

Balcerzak-Paradowska, B., Hebda-Czaplicka, I., & Kołaczek, B. (2003). *Rozwój sektora prywatnego a aktywność zawodowa kobiet*. In: *Praca kobiet w sektorze prywatnym. Szanse i bariery*. Warszawa: IPiSS.

Ben-Yoseph, M., Gundry, L., & Masłyk-Musiał, E. (1994). Kobiety, jako właścicielki przedsiębiorstw – w USA i w Polsce. *Kobieta i Biznes*, *2-3*, 25-35.

Brüderl, J., Preisendörfer, P., & Ziegler, R. (1998). *Der Erfolg neugegründeter Betriebe. Eine empirische Studie zu den Chancen und Risiken von Unternehmensgründungen*. Berlin: Duncker & Humblot.

Głażewska, B. (2010). *Feminizacja migracji we współczesnym świecie*. In K. Markowski (Ed.). *Reemigracja kobiet z terenu województwa lubelskiego*. Lublin: KUL, p. 11-40.

Godowska, M. (2011). Społeczno-kulturowe uwarunkowania przedsiębiorczości kobiet w Polsce, *Państwo i Społeczeństwo*, *4*, 65-77.

Grabowska-Lusińska, L., & Okólski, M. (2009). *Emigracja ostatnia*? Warszawa: Wyd. Nauk. Scholar.

Kindler, M., & Napierała, J. (2010). *Migracje kobiet. Przypadek Polski*. Warszawa: Wyd. Nauk. Scholar.

Kruse, A., Brickwedde, K., Bitzer, K., Gevorski, M., Zubikova, O., Marks-Bielska, R., Kisiel, R., Babuchowska, K., Lizińska, W., Szulborski, K., & Serocka, I. (2014). *German female entrepreneurs in Poland and Polish female entrepreneurs in Germany. Social and cultural comparison of the phenomenon of Euroepeanisation*. [*Niemieckie przedsiębiorczynie w Polsce i polskie *przedsiębiorczynie w Niemczech. Porównanie społeczno-kulturowego zjawiska europeizacji*]. Olsztyn: Polsko-Niemiecka Fundacja na Rzecz Nauki, UWM, Bielefeld: Fachhochschule des Mittelstands (FHM). Retrieved from http://www.fh-mittelstand.de/fileadmin/pdf/Projekte/14-008_FHM_Unternehmerinnen_digital.pdf (14.07.2017).

Krzaklewska, E., & Ratecka, A. (2008). *Handel kobietami w Polsce*. In K. Slany (Ed.). *Migracje kobiet. Perspektywa wielowymiarowa*. Kraków: Wyd. UJ.

Lista największych inwestorów zagranicznych w Polsce. (2012). Warszawa: PAIiIZ.

Markowski, K. (2010). *Wprowadzenie*. In K. Markowski (Ed.). *Reemigracja kobiet z terenu województwa lubelskiego*. Lublin: KUL, p. 9-10.

Marks-Bielska, R., Lizińska, W., Babuchowska, K., & Kaczmarczyk, M. (2015). *Conditions underlying migrations from Poland to Germany and the United Kingdom*. Olsztyn: Wyd. UWM. Retrieved from http://www.uwm.edu.pl/wne/katedry/kpgir/files/RMB_Conditions-underlying-migrations-PL-GER-UK.pdf (14.07.2017).

Morokvasic, M. (1983). *Women in Migration: Beyond the Reductionist Outlook*. In A. Phizacklea (Ed.). *One Way Ticket: Migration and Female Labour*. London: Routledge–Kegan Paul.

Organiściak-Krzykowska, A. (2013). *Popyt na pracę cudzoziemców w Polsce*. In A. Organiściak-Krzykowska, M. Piotrowski, K. Nyklewicz, A. Skórska, L. Kucharski. *Popyt na pracę cudzoziemców*. Olsztyn: Wyd. UWM, p. 11-38.

Pillinger, J. (2007). *The Feminization of Migration: Experiences and Opportunities in Ireland*. Dublin: Immigrant Council of Ireland.

Migracje kobiet. Perspektywa wielowymiarowa. (2008). K. Slany (Ed.). Kraków: Wyd. UJ.

Smagacz-Poziemska, M. (2008). *Między domem a globalnym rynkiem. Przegląd współczesnych perspektyw koncepcji w badaniach migrantek na rynku pracy*. In K. Slany (Ed.). *Migracje kobiet. Perspektywa wielowymiarowa*. Kraków: Wyd. UJ.

Święćkowska, T. (2010). *Migration and gender from the point of view of housekeeping and family care. Migracje i gender z perspektywy pracy domowej i opiekuńczej*. Warszawa: Instytut Spraw Publicznych.

Tatarkiewicz, W. (2012). *On Hapinness. O szczęściu*. Warszawa: Wyd. Nauk. PWN.

Urbańska, S. (2008). *Transnarodowość jako perspektywa ujęcia macierzyństwa w warunkach migracji*. In K. Slany (Ed.). *Migracje kobiet. Perspektywa wielowymiarowa*. Kraków: Wyd. UJ.

White, A. (2011). *Polish Families and Migration since EU Accesion*. Bristol: The Policy Press.

Zagraniczne inwestycje bezpośrednie w Polsce w 2012 r. (2012). Warszawa: NBP.

Zawód: Prezeska! – Diagnoza przedsiębiorczości kobiet. (2017). Warszawa: Sieć Przedsiębiorczych Kobiet, Uniwersytet Warszawski.

OLSZTYN ECONOMIC JOURNAL
2019, 14(2), 157–163
ISSN 1897-2721 e-ISSN 2083-4675 DOI: 10.31648/oej.3968

ORIGINAL PAPER

Received: 27.06.2018
Revised: 19.12.2018
Published: 28.06.2019

CHANGES IN THE LABOUR MARKET AND THEIR CONSEQUENCES

Eugeniusz Niedzielski
Faculty of Economic Sciences
University of Warmia and Mazury in Olsztyn
ORCID: https://orcid.org/0000-0002-5063-0348
e-mail: koiz@uwm.edu.pl

JEL Classification: J21.

Key words: labour market, work, employment.

Abstract

The study presents the characteristics of changes in the labour market, their causes and effects. The subjects under consideration are the consequences of technological and demographic changes, their impact on the size and structure of labour demand and on the employee-employer relationship. The relationship between these changes in the context of the role of work and employment in human life was discussed.

ZMIANY NA RYNKU PRACY I ICH KONSEKWENCJE

Eugeniusz Niedzielski
Wydział Nauk Ekonomicznych
Uniwersytet Warmińsko-Mazurski w Olsztynie

Słowa kluczowe: rynek pracy, praca, zatrudnienie.

Abstrakt

Opracowanie zawiera analizę zmian w rozmiarach i strukturze zatrudnienia w kontekście roli pracy zawodowej w życiu człowieka oraz relacji pracownik–pracodawca. Przedstawiono także wpływ zmian technologicznych na popyt na pracę oraz zmian demograficznych i migracji na podaż pracy.

How to cite: Niedzielski, E. (2019). Changes in the Labour Market and their Consequences. *Olsztyn Economic Journal, 14*(2), 157-163. https://doi.org/10.31648/oej.3968.

Introduction

Recent years have seen fundamental changes in various areas of socio-economic life, including the labour market. The causes, manifestations and effects of these changes have a number of aspects. Among others, in 2017 the unemployment rate reached its lowest level in many years (6.6%), approached the level of natural unemployment and was lower than the EU average (7.8%). A workforce shortage appeared, only partly alleviated by a growing scale of migration, mainly from Ukraine. The labour supply market changed into a market of demand for labour. This is beginning to have a significant impact on employer-employee relations. The shortage of workers is felt not only by businesses, but also by public institutions such as the police and health services. The situation in the labour market also changes employee-employer relations. When the demand for labour is growing, and its supply is limited, the problem is not only how to find a worker, but also how to keep him. Employers often act according to the rule which can be summarised in three verbs: hire, pay, and keep. Growing pressure on wages is a consequence of the shortage of labour. This is amplified by the life preferences of the Z generation, which is sometimes referred to as the "No" generation. The expectations of this generation are different from those of previous generations. These are just some of the symptoms of change and its consequences on the modern labour market. The present study analyses the rationale and scope of these changes as well as the current and anticipated impacts on the basis of the literature and statistical data.

Change in the role of employment

Axiological aspects aside, work (employment), including wage labour is regarded as a value in its own right. A person deprived of a job (employment) feels less valuable and this is also how he is sometimes viewed by people around him. However, opinions, including theories and even practical solutions, which deny this axiom, in the form of guaranteed income, shortening working time, etc., are becoming more and more common. Do you live to work or do you work to live? Work can be a need and a necessity. It is a necessity when work is a punishment or when it is the only source of income that makes it possible for an employee to support himself and his family. Work is not only a necessity when it satisfies the needs of a higher order, i.e. the need for recognition, development and self-fulfilment. Work is a source of income, whose level determines the ability to meet existential needs, as well as the various needs of a higher order. Thus, work indirectly affects one's social status, influences the structure of time and the way it is used, determines social relations and determines the possibilities of achieving professional and non-professional goals (Michoń, 2017, p. 42). Having satisfied one's basic needs, man will be physically and intellectually active, i.e.

he will work, not as a subcontractor, but to satisfy his need for self-fulfilment. However, it is not always the case that the necessity of having a job goes hand-in-hand with an inner need for it.

With the recent rise in wages, and extended social assistance (including the “500+” financial aid program), the number of citizens having an income below the poverty line has decreased, but such people still account for 7.4% of the population. With an average salary of PLN 4,255, the mode (the most frequent) of the monthly salary is only PLN 2,500, and over 20% of the workforce receives wages close to the minimum salary (PLN 2,000). The level of income of a significant part of the society allows only for satisfying the living needs at a limited level. The professional activity for these people results only from economic necessity.

If work becomes the only need that eliminates all the others, it is a pathology described as workaholism. On the other hand, if one does not have a job (i.e. does not have income), this brings about many negative emotional, existential and functional effects. It also has negative social and economic consequences for those who are alienated from the labour market (Grotowska-Leder, 2017, p. 2-4). However, not every job, including well-paid ones, meets the expectations of the professionally active population. It is not only about satisfying the most basic needs from Maslov’s hierarchy of needs. From a historical point of view, there are three phases in which the specific sources of forced labour are predominant (Orczyk, 2017, p. 4). These are:

– a period of physical coercion – slavery,
– a period of institutional coercion – class society, feudalism,
– a period of economic necessity.

Although there are still manifestations of slavery in some parts of the world (unfortunately sometimes also in Poland), direct coercion is replaced by indirect necessity. The possibility of enjoying one’s freedom, including in relation to one’s professional activity, depends on a number of external factors, including the situation in the labour market, but also on the ability to have the necessary resources to satisfy one’s needs. As the abolitionists – the supporters of the abolition of slavery (including Kościuszko!) – rightly claimed, it is not enough to free the slaves; they still need to be provided with the means and knowledge to be able to enjoy their freedom (Bendyk, 2017, p. 56). As income increases, more and more people see work not only as a means to provide for their families, but also as a condition for their personal and social development. Remuneration is still the most important factor affecting job satisfaction, but it is especially important for the younger generation, as is the opportunity for development, work-life balance and the organisational climate. The reality often falls short of employees’ expectations, and this is not just about salary. Surveys show that 75% of employees work more than the statutory 40 hours per week (Jackowska, 2017, p. 13). The annual working time in Poland (1,930 hours) is one of the longest in Europe. We work 150 hours more than the Americans and 650 hours more than the French (Bendyk, 2017, p. 15). A large part of the time out of work is also spent dealing with job-related issues. This is supported by technical devices (smartphones, tablets) and Internet connections. As a result, a large proportion of employees feel obliged to receive business messages even when they are on holiday. Corporate culture requires the 24-hour availability of an employee. Not only can you get information about your tasks, but you can also be dismissed by e-mail. In a metaphorical sense, it is slavery. An employee is a free person, at the same time enslaved by the corporate organizational culture, which uses the economic necessity caused by the situation in the labour market, the necessity for the employee to fulfil his obligations (debts, providing for the family, etc.), and the pressure of the environment. On the one hand, modern technologies make work easier, but on the other, they are a source of pressure on employees, forcing them to be constantly available and limiting their right to rest (Onstad & Jucewicz, 2017, p. 105). As a result, surveys have shown that the level of happiness (satisfaction) of employees, on a scale of 1-10, is 6.3 points on average, with the mode much below this indicator (Jackowska, 2017, p. 13). Excessive workload and the lack of a possibility to rest is a source of fatigue. This causes reduced effectiveness at work; and is also a source of stress and burnout.

Changes in the labour market

In the world of new technologies, the youngest generation of employees (referred to as generation Z) feels at home. People of this generation are only just beginning to enter the labour market. They value the atmosphere at work, access to information, the possibility of learning and development, they are mobile, and they are not afraid of change and travel. If their job does not meet these expectations, they are willing to find a new one (Kastro, 2016, p. 12). To acquire and use the potential of employees of this generation and to ensure loyalty, in the sense of sustainable employment, is a challenge to modern employers. A characteristic feature of the present employer-employee relations is their short duration resulting from the increasingly widespread flexible forms of employment, civil law contracts and outsourcing. In effect, job relations are those between an employer and a contractor (Orczyk, 2017, p. 5) and an employee is a temporarily hired labour force (Woś, 2017, p. 191). A large proportion of young workers experience occupational instability. Among people aged 20-24, over 70% are employed on temporary contracts. Most often they work through temporary employment agencies (Grotowska-Leder, 2017, p. 42). The instability of employment and income is extending the period for young people to enter adulthood and attain life stability. This is also reflected in the freelancer syndrome, which is characterised by an absence of loyalty to a temporary employer, an attempt to take advantage of opportunities for self-development and the maximization of benefits (Koźmiński, 2004, p. 53). Temporary employment makes it difficult, if not impossible, to create employee teams, i.e. a group of people who share knowledge, provide support, cooperate and respect each other. This restricts creativity and innovation, which is a prerequisite for a company's ability to compete (Santorski & Sroczyński, 2017, p. 27-31). In effect, the level of innovation in Polish enterprises is not high, and most enterprises follow imitative strategies, copying solutions seen in other companies. The stabilisation of employment is therefore not only in the interests of employees, but also of employers. This requires a change in the attitude of entrepreneurs, who in times of high unemployment, often treated employees as objects, saying things like "if you don't like it, you can quit", or "if not you, there will be others". Employees will have positive motivation if they experience affiliation, i.e. they identify with their workplace. Identifying with one's workplace usually results from experiencing a sense of influence and harmony. This excludes treating employees like objects. Surveys have shown that among people with a contract of permanent employment, as many as 60% are willing to change their job (Kastro, 2017, p. 11). The reasons include not only unsatisfactory pay or a stressful working environment, but also a search for opportunities for professional development, promotion and self-fulfilment.

The rate of unemployment in the domestic labour market is the lowest in many years. At the end of 2017, the unemployment rate amounted to 6.6%. As a result, many sectors, e.g. health care, the police and the construction industry, suffered from staff shortages. The employer's market has become an employee's market, which changes the employee-employer relationship. Staff shortages are now being alleviated by employing migrants (mainly from Ukraine) and wages are also rising. At the end of 2017, the vacancy rate (the ratio of vacancies to the total number of jobs) was 1.1, and it was twice as high in the construction industry (Dąbrowska, 2018, p. 6). Wages in the construction sector increased by 7.5% compared to 2016. Enterprises most often look for workers for manual jobs (29.6% of responses), operators and fitters (15.8%), and specialists (16%). There is also high demand for engineers, especially in the area of information technology. The shortage of employees, especially highly qualified ones, is also caused by the migration of young people. The general situation in the labour market is an effect of the good economic situation, changes in the demographic structure and the lowering of the retirement age. Demographic changes in society and the migration of young people have also resulted in a change in the age structure of the labour force. This is compounded by technological changes resulting from the increasingly widespread presence of robots, automatons and computers. The implementation and use of technological innovation requires appropriate competences, which are lacking in Generation X (people born in years 1965-1981), and Generation Z (people born after 2000), which is familiar with cybernetics, either migrates or is difficult to hire on a permanent basis. The contemporary economic reality (referred to as industry 4.0) is based on computer networks, robotisation and artificial intelligence. This results in the disappearance of traditional jobs and a demand for workers with the skills needed in emerging IT-related professions. According to some estimates, more than 30% of existing jobs can be replaced by robots and automatons within the next 10-20 years (Kowalik, 2017, p. 16). The liquidation of out-dated jobs and the emergence of new professions will be accompanied by the need to adapt a large part of the professions to new technological challenges. It is estimated that it will affect approx. 45% of jobs (Kastro, 2016, p. 16). Replacing human labour with work done by inanimate objects such as robots and automatons will lead to some jobs disappearing and new ones (programming, operation of robots, etc.) emerging. The problem will concern the proportion of the decrease and increase in the number of jobs, as well as the competence and organisational requirements of new jobs. It can be assumed that changes in this respect will be relatively rapid and widespread. Companies without executive employees in trade, logistics, banking, car manufacturing, etc. are already being set up. For example, Amica's home appliances warehouses in Wronki have no employees and the digital inventory control is available on a 24/7 basis. Although the scale of robotisation in Poland is much smaller than in highly developed countries, one can expect technological changes which employ robots to be widespread soon. In Poland, there are currently 20 robots per 10 thousand employees, in the USA the number is 176 robots and in South Korea – as many as 531 robots. Domestic companies are also likely to move in this direction. Automation and robotisation reduces employment in repetitive, boring and tedious jobs, while at the same time creating a demand for new, more attractive jobs requiring extended skills.

Summary

Changes in the labour market, reflected in a low unemployment rate, also bring about changes in employer-employee relations. It is becoming a problem for employers to recruit, and retain long-term, employees who have the appropriate skills. This necessitates not only increasing the salaries, but also ensuring that employees have opportunities for self-development and can achieve satisfaction with their jobs. Therefore, temporary employment will need to be restricted. Job security is a prerequisite for employee loyalty, without which it is impossible to create innovative teams. Changes in the labour market necessitate changes in social policies to provide social benefits to employees, to limit non-contractual forms of employment, to combine flexibility with security (flexicurity!), and to enable them to achieve a work-life balance. Technological changes will affect the size and structure of employment. These will be combined with demographic changes, economic migrations, the level and structure of education, and generational differences in job expectations. This requires changing the attitudes of some employers towards their employees and eliminating the slave-owner mentality.

Translated by Biuro Tłumaczeń Oscar
Proofreading by Michael Thoene

References

Bendyk, E. (2017). Testament Kościuszki. *Polityka*, *41*.
Dąbrowska, J. (2018). Pracownik fizyczny musi być doceniony. *Puls Biznesu*, 30 January.
Grotowska-Leder, J. (2017). Rynek pracy młodych Polaków w perspektywie cyklu życia na tle UE ogółem i wybranych krajów unijnych. *Polityka Społeczna*, *7*.
Jackowska, I. (2017). Zakładnicy zawodowego życia czyli całą dobę. *Puls Biznesu*, 14 December.
Kastro, P. (2016a). Nowe trendy zmienią oblicze wielu zawodów. *Puls Biznesu*, 2-4 December.
Kastro, P. (2017b). Pokolenie Z chce zdobywać doświadczenie. *Puls Biznesu*, 13 December.
Kowalik, F. (2017). Rewolucja technologiczna nabiera tempa. *Forbers*, *40*.
Koźmiński, A. (2004). *Zarządzanie w warunkach niepewności*. Warszawa: Wyd. Nauk. PWN.
Michoń, P. (2017). Wpływ bezrobocia na subiektywny dobrostan osób młodych w Polsce. *Polityka Społeczna*, *8*.
Onstad, K., & Jucewicz, A. (2017). Uwolnić weekend. *Psychologia Pracy*, *7*.
Orczyk, J. (2017). Indywidualizacja i elastyczność. Nowa cywilizacja prac? *Polityka Społeczna*, *8*.
Santorski, J., & Sroczyński, G. (2017). Głodni szacunku. *Psychologia Pracy*, *7*.
Woś, R. (2017). *To nie jest kraj dla pracowników*. Warszawa: Grupa Wydawnicza Foksal.

OLSZTYN ECONOMIC JOURNAL
2019, 14(2), 165–177
ISSN 1897-2721 e-ISSN 2083-4675 DOI: 10.31648/oej.3969

ORIGINAL PAPER

Received: 02.02.2018
Revised: 30.03.2018
Published: 28.06.2019

MATCHING NBP INTEREST RATES TO DIFFERENT VERSIONS OF THE TAYLOR RULE

Tomasz Grabia
Faculty of Economics and Sociology
University of Lodz
ORCID: https://orcid.org/0000-0001-7053-6618
e-mail: tomasz.grabia@poczta.onet.pl

JEL Classification: E43, E52, E58.

K e y w o r d s: interest rate, inflation target, economic growth, Taylor rule.

A b s t r a c t

The interest rate is the basic instrument of monetary policy, directly or indirectly affecting basic macroeconomic variables, such as inflation, unemployment and economic growth. The aim of the article is to compare the NBP reference rate with hypothetical rates calculated on the basis of different variants of the Taylor rule and to indicate which of those variants is best suited to the situation in Poland. The study period of 2000-2017 was adopted for the analysis. On its basis, it was found that in most cases the real interest rate of the central bank in Poland strongly coincided with rates that would have been set if one of the varieties of the Taylor rule had been in force. The best match coincided with the modified version of this rule, which was created after the economic crisis. That means that the NBP took into account both the deviations of inflation from the target and the GDP gap when making decisions regarding interest rates.

DOPASOWANIA STÓP PROCENTOWYCH NBP DO RÓŻNYCH WERSJI REGUŁY TAYLORA

Tomasz Grabia
Wydział Ekonomiczno-Socjologiczny
Uniwersytet Łódzki

S ł o w a k l u c z o w e: stopa procentowa, cel inflacyjny, wzrost gospodarczy, reguła Taylora.

How to cite: Grabia, T. (2019). Matching NBP Interest Rates to Different Versions of the Taylor Rule. *Olsztyn Economic Journal, 14*(2), 165-177. https://doi.org/10.31648/oej.3969.

Abstrakt

Stopa procentowa jest podstawowym instrumentem polityki monetarnej, mającym bezpośredni lub pośredni wpływ na podstawowe wielkości makroekonomiczne, jak inflacja, bezrobocie i wzrost gospodarczy. Celem artykułu jest porównanie stopy referencyjnej NBP z hipotetycznymi stopami obliczonymi na podstawie różnych wariantów reguły Taylora oraz wskazanie, który z tych wariantów był najlepiej dopasowany do sytuacji w Polsce. Do analizy przyjęto okres badawczy 2000-2017. Na jej podstawie stwierdzono, że w większości przypadków rzeczywista stopa procentowa banku centralnego w Polsce w dużej mierze pokrywała się ze stopami, które byłyby ustalone, gdyby obowiązywała jedna z odmian reguły Taylora. Najlepsze dopasowanie dotyczyło zmodyfikowanej, powstałej po kryzysie gospodarczym, wersji tej reguły. Oznacza to, że NBP podczas podejmowania decyzji dotyczących stóp procentowych brał pod uwagę zarówno odchylenia inflacji od celu, jak i lukę PKB.

Introduction

The interest rate is the basic instrument of monetary policy, exerting a fundamental impact on the volume of loans and deposits in the economy, as well as on the demand for and supply of money. The latter, in turn, has a significant influence on basic macroeconomic values, such as inflation, unemployment and economic growth.

The specialist literature emphasizes that the interest rate policy may be discretionary or rule-based. In the first case, decision-makers carry out a free judgment of the current and forecasted future economic situation and on this basis change the central bank interest rates, which then affect interest rates on the interbank market and those offered by banks to their clients. In the case of discretion, the decisions made are solely the result of independent opinions and decisions made by monetary authorities according to their own knowledge and conscience.

An alternative to discretionary policy is rule-based policy. In that case, the optimal interest rate could be calculated by inserting appropriate values of specific variables into a given formula. The specialist literature underlines that in such a case monetary policy would automatically react to changes in the most important economic categories that are assumed to be the central bank's objectives.

In Poland, as in most European countries, the main task of the central bank is to combat inflation. That results from the most important legal instrument, which is the Constitution of the Republic of Poland. It contains a provision according to which "the National Bank of Poland shall be responsible for the value of Polish currency" (the Constitution of the Republic of Poland, art. 227). Therefore, the aim of monetary policy is clearly defined, and the only constitutionally determined task of the NBP is to prevent the depreciation of the Polish zloty.

Nevertheless, it stems from a lower-level legal document, namely the Act on the National Bank of Poland that sometimes the central bank may also take into account an alternative goal. That Act contains a provision stating that the implementation of the main objective should take place "while supporting the economic policy of the Government, insofar as this does not constrain the pursuit of the basic objective of the NBP" (The Act on the National Bank of Poland, art. 3).

Considering the provisions contained in the two most important legal acts for monetary policy, their implementation should be examined on the basis of the Taylor rule. According to this rule, the central bank should change interest rates under the influence of inflation deviations from the target and GDP deviations from the potential level.

The aim of this article is to compare the basic NBP interest rate with hypothetical rates calculated on the basis of different variants of the Taylor rule. Moreover, the additional goal was to indicate which of those variants was best suited to the situation in Poland. The study period of 2000-2017 was adopted for the analysis. Due to the fact that changes in all NBP interest rates usually occur simultaneously and have the same directions, a reference rate was assumed to be a representative variable for the research. On the other hand, owing to the proximity of CPI and HICP inflation rates, only the latter (provided in international statistics, e.g. in the Eurostat database) was analyzed, as that rate is used to assess the fulfillment of the Maastricht inflationary criterion.

The study consists of this introduction and two main parts and conclusions. The first of the main parts presents the analyses of time series regarding the basic NBP interest rate compared with the most important macroeconomic variables specified directly as objectives in the above-mentioned legal documents. In the other main part, that rate was compared with rates calculated on the basis of different versions of the Taylor rule. The article ends with a summary containing final conclusions.

Changes in NBP interest rates in the context of changes in inflation and GDP

Interest rate versus inflation

In order to examine how the NBP responded to changes in the inflation rate, the latter was compared with the reference rate in Figure 1. The inflation rate was calculated as the 12-month average for April and October of a given year. In turn, the reference rate was that of June and December of the same year, respectively. The delay is caused by the fact that central banks, when setting interest rates, usually know the inflation rate for the previous two months.

The figure shows that changes in the two analyzed categories had almost always the same directions. What is more, the NBP's operations were to a large

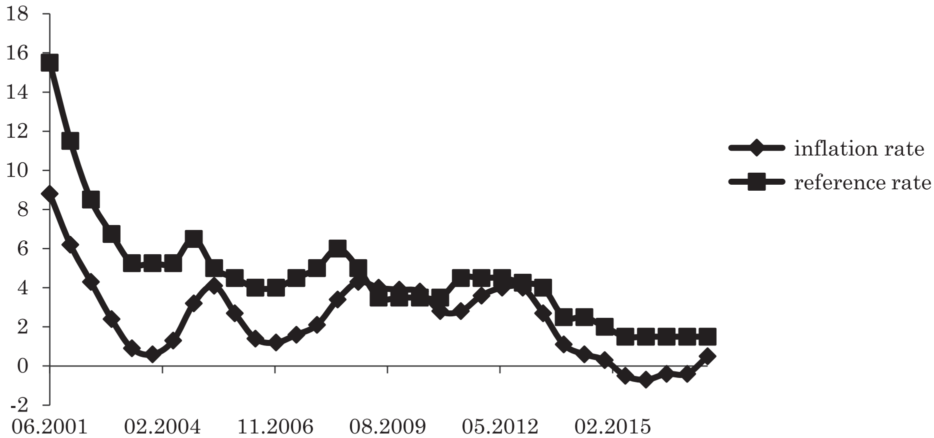

Fig. 1. HICP inflation rate and NBP reference rate in Poland in 2001-2017
Source: own study based on: *Podstawowe stopy procentowe NBP w latach 1998–2015* (2015), Eurostat, online (2017).

extent in line with the so-called Fisher hypothesis, according to which an inflation increase of 1 percentage point should cause the nominal interest rate (e.g. set by the central bank) to also increase by 1 percentage point – so that the real rate remains unchanged. This is also confirmed by the high correlation coefficient between the reference rate and the inflation rate, which for 33 (semi-annual) observations amounted to 0.807. The reaction of the interest rate to changes in the inflation rate was, therefore, strong; nevertheless, it did not take place as automatically as if based on the simple Fisher hypothesis. In this context, it is worth noting that striving to keep inflation as close to the target as possible each quarter would require frequent and considerable changes in interest rates, which would generate significant costs for the real economy (*Monetary Policy Guidelines for 2016*, 2015, p. 4).

Interest rate versus economic growth

The correlation coefficient between the interest rate and the inflation rate, being high, but below 0.81, may suggest that the central bank in Poland was also guided by other variables, based on the provisions of the *Act* on the National Bank of Poland, according to which it may sometimes also support the government policy focused primarily on GDP growth.

Figure 2 presents a comparison of the real GDP growth rate and the NBP interest rate in the years 2001-2017. The analysis was based on interest rates from June of the following year in relation to economic growth rates (due to delays

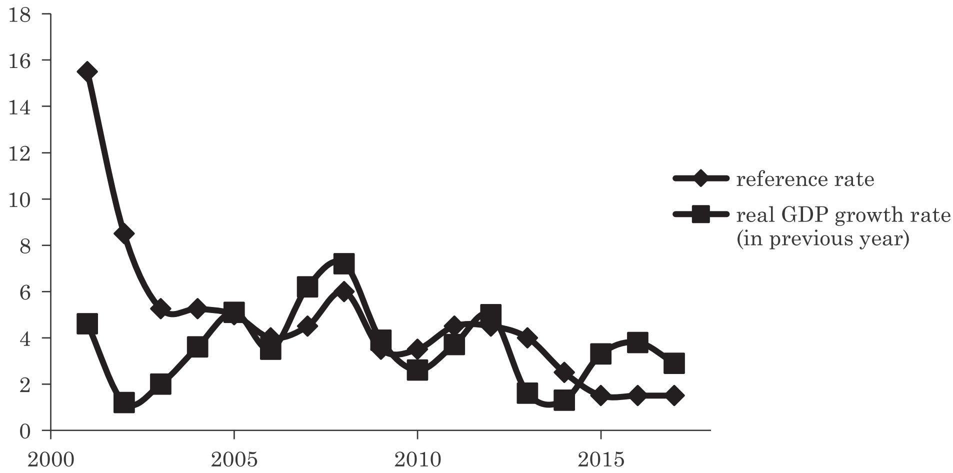

Fig. 2. Real GDP growth rate and NBP reference rate in Poland in 2001-2017
Source: own study based on: *Podstawowe stopy procentowe NBP w latach 1998–2015* (2015), Eurostat, online (2017).

in publishing GDP data). On the basis of the figure, it can be stated that changes in the basic interest rate seldom arose from the NBP reaction to fluctuations in the economic situation. However, that applies mainly to the initial and final years of the analyzed period, when changes in the rate of economic growth usually had the opposite direction to the systematically lowering reference rate. As a result, the correlation coefficient between the reference rate and the real GDP growth rate in the entire analyzed period was positive, but very low, amounting to 0.172 for 17 annual observations.

NBP interest rate versus interest rate resulting from different versions of the Taylor rule

Considering that the central bank clearly defines the priority in terms of the purpose of its activity, a separate analysis of the relationships between the interest rate and economic growth requires greater cognitive values. Therefore, the analysis should be carried out in a more comprehensive way, including simultaneous effects of changes in inflation and GDP on NBP interest rates. To that end, we can use one of the Taylor rule versions. It should be emphasized that none of the versions of that rule is officially used by central banks. However, they may sometimes play a useful auxiliary role in monetary policy.

Actual interest rate versus rate resulting from traditional adaptive Taylor rule

The original formula of the Taylor (1993, p. 202) rule is presented as follows:

$$r = p + 0.5y + 0.5(p - 2\%) + 2\% \quad (1)$$

where:

r – central bank interest rate[1],

p – inflation rate over the last four quarters,

y – GDP gap defined as the percentage deviation of real GDP from the potential GDP determined by the formula:

$$y = 100(Y - Yp)/Y \quad (2)$$

where:

Y – real GDP,

Yp – potential real GDP.

Formula (1) was used to calculate hypothetical optimal interest rates in the case where the traditional Taylor rule was applied. According to that formula, it was assumed that the coefficient of deviation of inflation from the target was 0.5. When calculating the output gap, instead of the percentage deviation of real GDP from the potential GDP, the deviation of the real GDP growth rate from the average for the ten-year previous periods was taken into account, e. g. for 2005 as an average of 1995-2004 (option I) and as an average of the entire 2000-2017 analyzed period (option II). Thus, in the latter case a non-moving but constant value of the potential rate (3.6%) was assumed. In addition, compared to formula (1), due to the other value of the inflation goal in Poland, the expressions: $p - 7\%$, $p - 5\%$, $p - 3\%$ and $p - 2.5\%$ were adopted for years 2001, 2002, 2003 and from 2004, respectively (instead of $p - 2\%$ existing in the original).

Figure 3 shows both the hypothetical rates calculated in the above-mentioned ways and the actual NBP interest rates. On the basis of the figure, it can be concluded that the latter were usually lower than what would arise from the presented rule. Therefore, that could suggest a slightly too expansionary monetary policy. However, that did not concern the initial and final years of the examined period, when we faced a reverse situation.

Nevertheless, it is worth noting that the direction of changes in the hypothetical and actual interest rates was usually the same. The correlation coefficient between those rates was also relatively high, which according to option I amounted to 0.736, and according to option II – 0.737 (in both cases with 17 observations). For both the options, that coefficient was, therefore, almost identical and slightly lower than in the analysis of simple relationships between

[1] In the original federal funds rate, as the proposal initially concerned the United States.

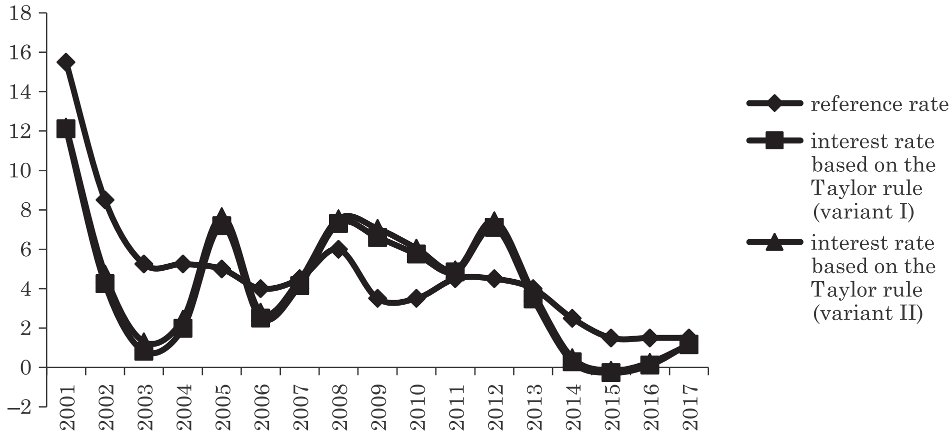

Fig. 3. Actual NBP reference rate and rate resulting from the traditional Taylor rule in Poland in 2001-2017

Source: own study based on: *Podstawowe stopy procentowe NBP w latach 1998–2015* (2015), Eurostat, online (2017).

the inflation rate and the interest rate, but much higher than between the economic growth rate and the interest rate.

Analyzing the sub-periods in which the actual interest rates were higher than those resulting from the Taylor rule, it is worth noting that they should be interpreted in a significantly different way. At the beginning of the 21st century, the monetary policy in Poland was probably too contractionary. According to many economists, interest rates were then reduced too slowly in relation to the needs of the economy characterized by low economic growth (see Fig. 2) and very high unemployment[2]. A faster reduction of interest rates would also be even more justifiable because inflation was then below the goal of 2.5% (see Fig. 1) (Grabia, 2015, p. 37).

In turn, considering the end of the examined period, the difference between actual and hypothetical rates (calculated on the basis of formula 1) was mainly due to the fact that the latter were very low and even negative in the final years. Therefore, if that rule was inflexibly applied, the central bank would have had to deviate from one of the fundamental principles, according to which we should desire positive interest after lending money to another entity. Otherwise, nobody would be interested in granting loans, because keeping money "in a drawer" would be more beneficial. In such a case, as proposed by Rzońca (2014, p. 46), an additional clause should be introduced to the Taylor rule, according to which the central bank interest rate should never be lower than 2%.

Apart from the problem of too low interest rates resulting from a rule, it is worth noting that inflexible adherence to it could cause the necessity of very

[2] The average annual unemployment rate in Poland in the years 2001-2004 was: 18.3%, 20.0%, 19.8%, 19.1%, respectively (Eurostat, online, access: 1.04.2016).

frequent changes in interest rates, which, as mentioned above, would limit market stability and macroeconomic credibility. Therefore, the NBP, in many cases, did not decide to make such a move, retaining some interest rate inertia (McCallum, 2000, p. 9).

Actual interest rate versus rate resulting from traditional anticipatory Taylor rule

In the conducted analysis, it was assumed that the central bank, when setting interest rates, takes into account officially published, but thus sometimes slightly outdated, data on inflation and GDP. Delays in the operation of monetary policy lead to opinions in the specialist literature that current changes in interest rates should take into account forecast basic macroeconomic categories. Therefore, an alternative to the above-mentioned adaptive rule may be the anticipatory Taylor rule. In such a case, it would be based not on actual, but on expected data on inflation and GDP. However, a problem would then be the inaccuracy of predictions formulated in other conditions than those that would occur in the future (Baranowski, 2014, p. 41-45, 67-71).

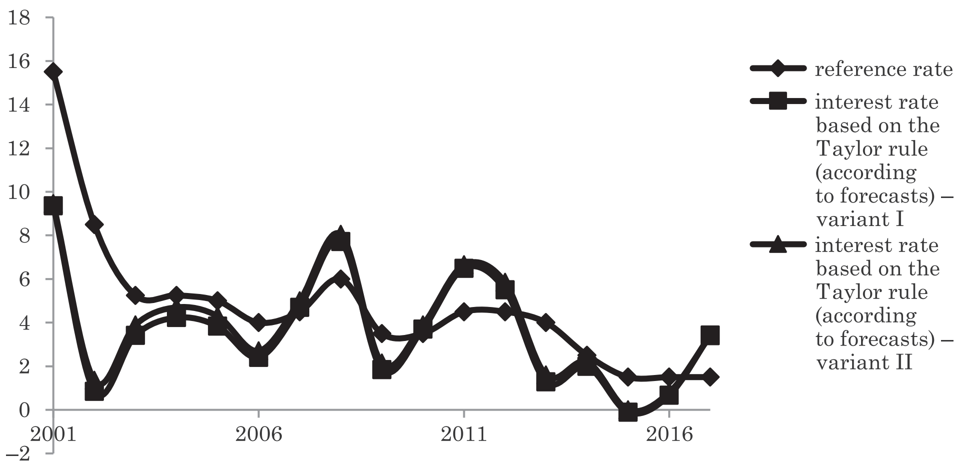

Fig. 4. Actual NBP reference rate and rate resulting from traditional Taylor rule on the basis of forecasts in 2001-2017

Source: *Podstawowe stopy procentowe NBP w latach 1998–2015* (2015), *Analiza wykonania budżetu państwa i założeń polityki pieniężnej w 2002 roku* (2002, p. 40, 46), *Analiza wykonania budżetu państwa i założeń polityki pieniężnej w 2003 roku* (2003, p. 32, 39), *European economic forecast* (Spring 2004, p. 113, 121, Spring 2005, p. 117, 124, Spring 2006, p. 131, 138, Spring 2007, p. 127, 134, Spring 2008, p. 138, 145, Spring 2009, p. 134, 141, Spring 2010, p. 182, 189, Spring 2011, p. 204, 211, Spring 2012, p. 152, 159, Spring 2013, p. 130,138, Spring 2014, p. 132, 140, Spring 2015, p. 154, 162).

Figure 4 presents a comparison of actual interest rates with rates consistent with the anticipatory (based on forecasts[3]) Taylor rule. The figure shows that, similarly to the previous version of the Taylor rule, actual interest rates were usually lower than the hypothetical rates calculated on the basis of the formula, but omitting the initial and final years of the analyzed period. However, the correlation coefficient between actual and potential interest rates in the case of the anticipatory rule was lower, amounting to 0.634 according to variant I and 0.646 according to variant II (for 17 observations). That may suggest that the NBP was more concerned with current data than economic forecasts.

Actual interest rate versus rate resulting from modified Taylor rule

In recent years, there have been proposals to introduce additional variables to the interest rate rule, such as the natural rate of unemployment (Blanchard, 2011, p. 829, 830), the real exchange rate, the deviation of the rate of monetary aggregate growth from the target rate or the prices of financial assets. However, empirical studies do not unequivocally confirm that those variables have a significant impact on interest rates (Baranowski, 2014, p. 46-48, 56, 57).

Nevertheless, in the face of the recent crisis, there have been proposals to extend the monetary policy rule to the difference between interest rates on loans and deposits (Curdia & Woodford, 2009a, p. 36-38) or the difference between the interest rate at which borrowers are able to finance their operations and the central bank interest rate (Curdia & Woodford, 2009b, p. 28-39).

With regard to the latter proposal, it is worth noting that Taylor himself has recently called for some modification to his rule. Namely, the target value of the central bank interest rate should be equal to the rate resulting from the standard Taylor rule minus the spread between the three-month interest rates offered on the interbank market and one-day overnight transactions, which can be largely treated as a market forecast of the average central bank interest rate over the next three months. If the spreads between those rates are considerable (e. g. during the recent crisis), the actual cost of short-term funds is significantly higher than the cost that would result from the official rates of the central bank. In that case Taylor suggests, according to the rule that he has modified, the need to lower the latter (Woodford, 2010, p. 20-26).

Based on that proposal, Figure 5 presents a comparison of the actual NBP reference rate with the rate according to the Taylor rule adjusted for the difference between the three-month and one-day rates on the interbank market. In some sub-periods, that difference reduced to some extent the optimal rate for the economy computed with the help of the classic Taylor rule. However,

[3] The forecasts come from the documents of the European Commission *European Economic Forecast*. Data were taken from budget projects only for the period 2001-2003.

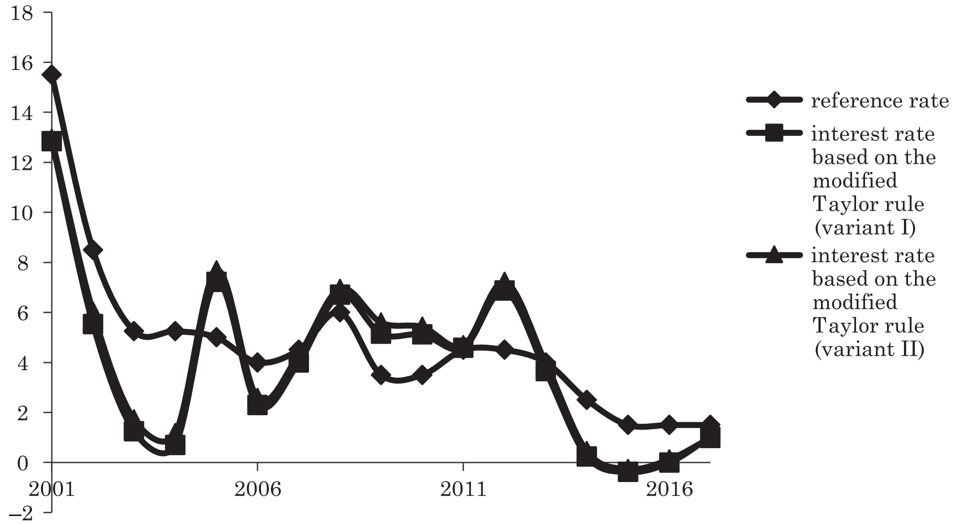

Fig. 5. Actual NBP reference rate and rate resulting from the modified Taylor rule in Poland in 2001-2017

Source: own study based on: *Podstawowe stopy procentowe NBP w latach 1998–2015* (2015), Eurostat, online (2017).

it concerned mainly recent years – during and after the economic crisis. In the remaining years, the difference was usually minimal.

On the basis of Figure 5, it can be observed that the interest rates resulting from the adjusted Taylor rule were usually also lower than the actual rates – again apart from the initial and final years of the examined period – as in the case of the classic Taylor rule. However, in the case of the adjusted rule, the correlation coefficient with the actual rate was higher than in the case of the traditional rule, amounting to 0.803 in variant I and 0.804 in variant II.

Actual interest rate versus rate resulting from Taylor rule with higher importance of inflation deviation from the target

In the case of the Taylor rule, it is not always known which values of deviations of inflation from the target and GDP from the potential level would be optimal for a given economy. Of course, values of coefficients for deviations may be set a little differently than in the original formula. For instance, in analyses concerning Europe, where, principally, the sole legally sanctioned objective of monetary policy is to combat inflation, a deviation of the latter is, as a rule, given more importance than the GDP gap (Giammarioli & Valla, 2003, p. 12; Fernandez & Gonzalez, 2004, p. 23-25). In such a case, the monetary policy rule could take the following form:

$$r = p + 0.5y + 1.5(p - 2) + 2 \tag{3}$$

Thus, the only difference would be the value of the coefficient assumed for the deviation of the actual inflation rate from the goal (1.5, instead of 0.5).

Figure 6 presents a comparison of actual interest rates with rates consistent with the Taylor rule with higher importance of deviation of inflation from

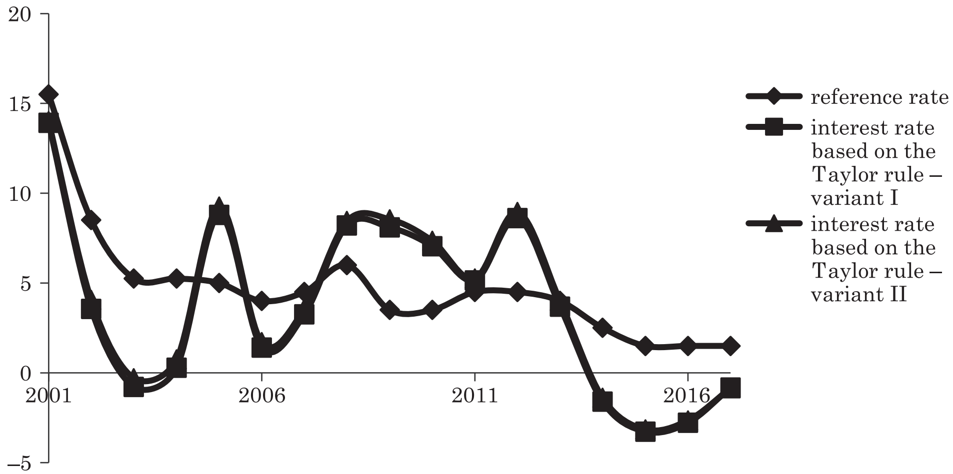

Fig. 6. Actual NBP reference rate and rate resulting from the Taylor rule with higher importance of inflation deviation from the target in Poland in 2001-2017
Source: own study based on: *Podstawowe stopy procentowe NBP w latach 1998–2015* (2015), Eurostat, online (2017).

the target. The figure shows that, similarly to the traditional version of the Taylor rule, actual interest rates were usually lower than hypothetical ones calculated on the basis of the formula, but again omitting the initial and final years of the analyzed period. However, the differences between actual and hypothetical rates were usually larger than in the traditional rule. It means the correlation coefficient between actual and potential interest rates in the analyzed case was lower, amounting to 0.672 according to both variants.

Conclusion

On the basis of the analysis, several basic conclusions can be drawn.

1. The main task of the NBP in the light of the existing law is to care for the value of the national currency. However, that does not exclude taking into account the phase of the business cycle, and thus supporting the government policy, if the basic goal is not threatened.

2. The analysis of time series and correlation coefficients indicates that out of the two above-mentioned central bank goals it reacted much stronger to inflation than to economic growth changes. That was consistent with the hierarchy of objectives enshrined in the national legislation and with the DIT (direct inflation target) strategy adopted by the NBP.

3. However, a comparative analysis of the actual NBP interest rate and the rates computed on the basis of different versions of the Taylor rule indicates that the economic growth and the GDP gap were also taken into account. Nevertheless, the central bank did not observe those variables separately, but in the context of simultaneous changes in GDP and inflation.

4. The monetary policy rules should rather be an auxiliary function (e. g. such as an inflation projection) and not really be inflexibly applied. The analysis of different versions of the Taylor rule based on the correlation of rates calculated on their basis with the actual reference rate indicates that the modified rule, created after the economic crisis, was the best adapted to the empirical data. A slightly lower correlation occurred between the actual rates and rates calculated according to the traditional Taylor rule.

Translated by Małgorzata Mazik
Proofreading by Michael Thoene

References

Analiza wykonania budżetu państwa i założeń polityki pieniężnej w 2002 roku. (2002). Warszawa: Najwyższa Izba Kontroli.

Analiza wykonania budżetu państwa i założeń polityki pieniężnej w 2003 roku. (2003). Warszawa, Najwyższa Izba Kontroli.

Baranowski, P. (2014). *Reguły polityki pieniężnej w Polsce*. Łódź: Wydawnictwo UŁ.

Blanchard, O. (2011). *Makroekonomia*. Warszawa: Oficyna a Wolters Kluwer business.

Constitution of the Republic of Poland from 2.04.1997 year, Journal of Laws, no 78, item 483.

Curdia, V., & Woodford, M. (2009a). Credit frictions and optimal monetary policy. *BIS Working Paper*, *278*.

Curdia, V., & Woodford, M. (2009b). Credit Spreads and Monetary Policy. *NBER Working Paper*, *15289*.

European economic forecast. (Spring 2004). European Commission. Economic and Financial Affairs. Economic publications. European Economy. Forecasts. Retrieved from http://ec.europa.eu/economy_finance/publications/european_economy/forecasts/index_en.htm.

European economic forecast. (Spring 2005). European Commission. Economic and Financial Affairs. Economic publications. European Economy. Forecasts. Retrieved from http://ec.europa.eu/economy_finance/publications/european_economy/forecasts/index_en.htm.

European economic forecast. (Spring 2006). European Commission. Economic and Financial Affairs. Economic publications. European Economy. Forecasts. Retrieved from http://ec.europa.eu/economy_finance/publications/european_economy/forecasts/index_en.htm.

European economic forecast. (Spring 2007). European Commission. Economic and Financial Affairs. Economic publications. European Economy. Forecasts. Retrieved from http://ec.europa.eu/economy_finance/publications/european_economy/forecasts/index_en.htm.

European economic forecast. (Spring 2008). European Commission. Economic and Financial Affairs. Economic publications. European Economy. Forecasts. Retrieved from http://ec.europa.eu/economy_finance/publications/european_economy/forecasts/index_en.htm.

European economic forecast. (Spring 2009). European Commission. Economic and Financial Affairs. Economic publications. European Economy. Forecasts. Retrieved from http://ec.europa.eu/economy_finance/publications/european_economy/forecasts/index_en.htm.

European economic forecast. (Spring 2010). European Commission. Economic and Financial Affairs. Economic publications. European Economy. Forecasts. Retrieved from http://ec.europa.eu/economy_finance/publications/european_economy/forecasts/index_en.htm.

European economic forecast. (Spring 2011). European Commission. Economic and Financial Affairs. Economic publications. European Economy. Forecasts. Retrieved from http://ec.europa.eu/economy_finance/publications/european_economy/forecasts/index_en.htm.

European economic forecast. (Spring 2012). European Commission. Economic and Financial Affairs. Economic publications. European Economy. Forecasts. Retrieved from http://ec.europa.eu/economy_finance/publications/european_economy/forecasts/index_en.htm.

European economic forecast. (Spring 2013). European Commission. Economic and Financial Affairs. Economic publications. European Economy. Forecasts. Retrieved from http://ec.europa.eu/economy_finance/publications/european_economy/forecasts/index_en.htm.

European economic forecast. (Spring 2014). European Commission. Economic and Financial Affairs. Economic publications. European Economy. Forecasts. Retrieved from http://ec.europa.eu/economy_finance/publications/european_economy/forecasts/index_en.htm.

European economic forecast. (Spring 2015). European Commission. Economic and Financial Affairs. Economic publications. European Economy. Forecasts. Retrieved from http://ec.europa.eu/economy_finance/publications/european_economy/forecasts/index_en.htm.

Eurostat. Your key to European statistic. Retrieved from http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do (access 1.09.2017).

Fernandez, M.J.A., & Gonzalez, J.U. (2004). Stabilization Policy in EMU: The Case for More Active Fiscal Policy. *Serie de Coleccion de Informes del Observatorio de Economia Europea del Instituto de Estudios Europeos*, *3*.

Giammarioli, N., & Valla, N. (2003). The Natural Real Rate of Interest in the Euro Area. *Working Paper Series*, *233*, European Central Bank.

Grabia, T. (2015). Interest Rate Policy of Selected Central Banks in Central and Eastern Europe. *Comparative Economic Research*, *1*.

McCallum, B.T. (2000). The present and Future of Monetary Policy Rules. *NBER Working Paper Series*, *7916*.

Monetary Policy Guidelines for 2016. (2015). Warszawa: Narodowy Bank Polski.

Podstawowe stopy procentowe NBP w latach 1998–2015. 2015. Narodowy Bank Polski. Retrieved from http://www.nbp.pl/home.aspx?f=/dzienne/stopy_archiwum.htm (access 1.09.2017).

Rzońca, A. (2014). *Kryzys banków centralnych. Skutki stopy procentowej bliskiej zera*. Warszawa: Wydawnictwo C.H. Beck.

Sprawozdanie z wykonania założeń polityki pieniężnej w 2000 roku. (2001). Warszawa: Narodowy Bank Polski.

Sprawozdanie z wykonania założeń polityki pieniężnej w 2001 roku. (2002). Warszawa: Narodowy Bank Polski.

Sprawozdanie z wykonania założeń polityki pieniężnej w 2002 roku. (2003). Warszawa: Narodowy Bank Polski.

Sprawozdanie z wykonania założeń polityki pieniężnej w 2003 roku. (2004). Warszawa: Narodowy Bank Polski.

Taylor, J.B. (1993). Discretion versus policy rules in practice. *Carnegie-Rochester Conference Series on Public Policy*, *39*.

The Act on the National Bank of Poland of 29.08.1997 year. Journal of Laws from 2013 year, item 908 (consolidated version).

Woodford, M. (2010). Financial Intermediation and Macroeconomic Analysis. *Journal of Economic Perspectives*, *24*(4).

OLSZTYN ECONOMIC JOURNAL
2019, 14(2), 179–194
ISSN 1897-2721 e-ISSN 2083-4675 DOI: 10.31648/oej.3970

ORIGINAL PAPER

Received: 10.07.2018
Revised: 26.11.2018
Published: 28.06.2019

THE FOOD EXPENDITURE IN POLAND AND OTHER EUROPEAN UNION COUNTRIES – A COMPARATIVE ANALYSIS

Grzegorz Maciejewski
Faculty of Economics
University of Economics in Katowice
ORCID: https://orcid.org/0000-0002-1318-0747
e-mail: grzegorz.maciejewski@ue.katowice.pl

JEL Classification: D12, O52, O57, Q18.

Key words: structure of household expenditure, food expenditure, changes in food consumption, diversification of food consumption, European Union.

Abstract

The purpose of this paper is to present the results and conclusions of a comparative analysis of Poland and other European Union countries regarding the level of food expenditure, the share of food expenditure in the structure of total expenditure and the direction of changes in these areas that took place in the years 2006-2016.

The conducted analysis employed the desk research method using logical inference methods, based on Eurostat data and academic literature. For a more detailed analysis of the research findings, a cluster analysis was carried out using one of the hierarchical methods – the Ward's method.

The obtained results of the analyses permitted the conclusion that disproportionate food consumption in the household sector between individual countries should still be considered as large – although the differentiation clearly decreased in the analysed period. The less developed countries from Central and Eastern Europe are still far from adopting the service consumption model that would allow for a more complete satisfaction of higher-ranking needs.

How to cite: Maciejewski, G. (2019). The Food Expenditure in Poland and other European Union Countries – a Comparative Analysis. *Olsztyn Economic Journal*, *14*(2), 179-194. https://doi.org/10.31648/oej.3970.

WYDATKI NA ŻYWNOŚĆ W POLSCE I INNYCH KRAJACH UNII EUROPEJSKIEJ – ANALIZA KOMPARATYWNA

Grzegorz Maciejewski
Wydział Ekonomii
Uniwersytet Ekonomiczny w Katowicach

Słowa kluczowe: struktura wydatków gospodarstw domowych, wydatki na żywność, zmiany w konsumpcji żywności, dywersyfikacja konsumpcji żywności, Unia Europejska.

Abstrakt

Celem artykułu jest przedstawienie wyników i wniosków z przeprowadzonej analizy porównawczej Polski i pozostałych krajów Unii Europejskiej w zakresie poziomu wydatków na żywność, udziału wydatków na żywność w strukturze wydatków ogółem oraz kierunków zmian w latach 2006-2016 w tych obszarach.

Badania na potrzeby wykonanej analizy przeprowadzono metodą *desk research* z wykorzystaniem metod wnioskowania logicznego, na podstawie danych Eurostatu oraz krytycznej literatury przedmiotu. W celu głębszego przeanalizowania otrzymanych wyników badań przeprowadzono *cluster analysis*, wykorzystując jedną z metod hierarchicznych – metodę Warda.

Uzyskane wyniki analiz pozwoliły na wyciągnięcie wniosku, że dysproporcje w zakresie konsumpcji żywności w sektorze gospodarstw domowych między poszczególnymi krajami należy uznać za wciąż duże – mimo że zróżnicowanie to w badanym okresie wyraźnie się zmniejszyło. Słabiej rozwiniętym krajom z Europy Środkowo-Wschodniej wciąż jeszcze daleko do realizacji usługowego modelu konsumpcji, pozwalającego na pełniejsze zaspokajanie potrzeb wyższego rzędu.

Introduction

Observations of contemporary societies lead to the conclusion that the higher the level of their wealth, the greater is their tendency to achieve an increasingly higher level and quality of life (Barcaccia *et al.*, 2013, p. 185-199; Andreoni & Galmarini, 2016, p. 227). One of the determinants of the level and quality of life, but also the level of modern patterns of consumption of society, is the share of food in the total value of consumption (Zlatevska & Spence, 2016, p. 380, 381). In countries with a high level of development, this share is at a low level, allowing for greater consumption of goods that meet the higher-ranking needs. In the opposite situation, when the value of food consumption is the main expenditure in the household budget, the possibility of satisfying higher needs becomes secondary.

The purpose of this paper is to indicate the differences and similarities between the individual Member States of the European Union in terms of the level of food expenditure, the share of food expenditure in the structure of total expenditure and the direction of changes which have taken place in these areas over the past ten years. The hypothesis, which was verified during the conducted research, assumed that despite the declining distance in expenditure on food products between the highly developed EU countries and new members from Central and Eastern Europe, the latter are still far from the consumption-based service model, allowing for better fulfilment of higher-ranking needs. The paper also presents the clusters of Member States with a similar structure of food consumption in the household sector, obtained thanks to the use of one of the cluster analysis methods – the hierarchical Ward method.

Research methodology and source materials

The desk research method was employed for the purposes of this paper using logical reasoning methods, based on a critical analysis of the literature and available secondary sources.

The source material used in the work is the Eurostat data aggregate collected as part of the Classification of Individual Consumption by Purpose (COICOP)[1]. The data collected as part of COICOP enabled the analysis of basic consumption indicators of Polish households and their reference to the average values of indices calculated for the all EU Member States (EU28) (Maciejewski, 2018a, p. 349, 350).

Moreover, to describe the collected research material, a cluster analysis was used, of which numerous applications in solving research problems are highlighted by Walesiak (2004, p. 344-347). The purpose of the cluster analysis was to group and describe the Member States of the European Union according to the level of expenditure on particular food groups. For this purpose, one of the hierarchical agglomeration methods was adopted – the Ward method – used with the square of the Euclidean distance. In this method, the variance analysis is used to estimate the distance between clusters. The measure of the distances between objects (clusters) is the intra-group variance for the group formed from the combination of these objects (clusters). The Ward method aims to minimize the sum of the squares of deviations within the clusters. The ESS (Error Sum of Squares) is a measure of the diversity of concentration in relation to the mean values. The applied method is considered very effective, although it aims to create small-sized clusters (Walesiak, 2009, p. 413-417; Migdał-Najman & Najman, 2013, p. 179-194). The IBM SPSS Statistics 24 program was used for the calculations.

[1] COICOP is one of the families of consumption classifications by purpose, developed and recommended by the United Nations (UN). COICOP is also used in other important areas of statistics, e.g. national accounts, household budget survey (HBS) and purchasing power parity (PPP). This classification, in the HBS, PPP and HICP studies, complies with the current version of COICOP published by the UN, at the two, three and four-digit levels, but for each of these three statistical domains, Eurostat has developed more detailed versions, adopting this classification to the needs of individual statistical surveys (COICOP/HICP, COICOP/HBS and COICOP/PPP) (*Systemy ważenia w badaniach…*, 2013).

Food expenditure against the level and structure of total consumption in the household sector

The comparison of consumption in individual countries of the European Union (EU) in terms of goods and service groups as well as changes taking place in this respect are possible thanks to Eurostat statistics (Addessi, 2018, p. 18-20). They present, among others, data on the level and structure of individual consumption in the household sector. Data on the level of consumption, expressed as expenditure per inhabitant in 2016, show apparent differences between the Member States (Tab. 1). The highest level of total consumption, EUR 31,000 per inhabitant, was held by Luxembourg. Luxemburg's leading position has been visible for the past few decades, which has also been indicated by other authors (Kuśmierczyk & Piskiewicz, 2012, p. 84). High consumption expenditure, exceeding EUR 20,000 per capita, was specific to highly developed countries, the so-called old EU: Great Britain, Denmark, Austria, Finland and Sweden. In turn, the lowest value of individual consumption in the household sector was recorded by the new EU Members from post-communist countries: Bulgaria (EUR 4,400), Romania (EUR 5,000) and Hungary (EUR 5,900). Poland, with the amount of EUR 6,500 per inhabitant, was in the 24^{th} position, just above the three previously mentioned countries. The difference between Luxembourg with the highest expenditure and Bulgaria with the least expenditure was sevenfold. Between Luxembourg and Poland there was more than a 4.5-fold difference.

The countries with a high expenditure on total consumption were also characterized as having a high expenditure on food and non-alcoholic beverages. Luxembourg is also here in the first place. In 2016, every resident of this country spent 2,919 euros on food consumption. The Swedes (2,488 euros), Finns (2,456 euros) and Belgians (2,454 euros) should be mentioned immediately after the inhabitants of Luxembourg. Poles only spent more on food products than Bulgarians and Hungarians. Analysing the level of expenditure on food and non-alcoholic beverages in the EU, the difference between the highest spending Luxembourg and the least spending Bulgaria was almost 3.5-fold, and between Luxembourg and Poland – just over 2.5-fold. Therefore, these differences are not as great as in the case of the described dissimilarities in expenditure on total consumption. This is obviously due to the necessity of purchasing food products to satisfy the basic needs of hunger and thirst, but also to the lower level of prices of these goods in less developed countries.

Comparing the expenditure on food and non-alcoholic beverages in 2016 with the 2006 figures, it can be concluded that in general they were growing just as the total consumption expenditure (Tab. 1). The expenditure on food products grew much faster than the expenditure on total consumption mainly in post-communist countries, predominantly in Bulgaria, Estonia, and the Czech Republic, but also in Cyprus. The expenditure on food products grew much

Table 1

Household expenditure on total consumption and consumption of food and non-alcoholic beverages in EU

Countries	Total consumption			Food and non-alcoholic beverages		
	Expenditure per inhabitant (in euro)		2006=100	Expenditure per inhabitant (in euro)		2006=100
	2006	2016		2006	2016	
European Union (28 countries)	13,800	15,900	115.2	1,655	1,946	117.6
European,Union (15 countries)	16,400	18,300	111.6	1,864	2,123	113.9
Austria	17,300	21,300	123.1	1,708	2,060	120.6
Belgium	15,100	18,200	120.5	1,899	2,454	129.2
Bulgaria	2,500	4,400	176.0	416	852	204.8
Croatia	:	:	:	1,226	1,419	115.7
Cyprus	15,000	16,400	109.3	1,909	2,382	124.8
Czech Republic	5,900	8,000	135.6	858	1,287	150.0
Denmark	19,200	22,400	116.7	2,076	2,544	122.5
Estonia	5,700	8,500	149.1	1,004	1,725	171.8
Finland	15,700	20,500	130.6	1,859	2,456	132.1
France	15,500	17,600	113.5	1,956	2,345	119.9
Germany	15,900	19,200	120.8	1,692	2,032	120.1
Greece	13,200	11,900	90.2	1,992	2,042	102.5
Hungary	4,900	5,900	120.4	821	1,042	126.9
Ireland	18,500	18,700	101.1	1,720	1,706	99.2
Italy	15,900	17,000	106.9	2,334	2,423	103.8
Latvia	4,800	7,800	162.5	896	1,418	158.3
Lithuania	4,800	8,700	181.3	1,136	1,921	169.1
Luxembourg	27,800	31,000	111.5	2,533	2,919	115.2
Malta	9,400	12,400	131.9	1,324	1,546	116.8
Netherlands	16,000	17,900	111.9	1,673	2,092	125.0
Poland	4,400	6,500	147.7	918	1,103	120.2
Portugal	10,300	12,200	118.4	1,631	2,066	126.7
Romania	3,100	5,000	161.3	911	1,471	161.5
Slovakia	4,700	8,000	170.2	806	1,426	176.9
Slovenia	8,500	11,100	130.6	1,234	1,636	132.6
Spain	13,300	14,300	107.5	1,701	1,825	107.3
Sweden	16,000	20,200	126.3	1,926	2,488	129.2
United,Kingdom	21,700	22,700	104.6	1,726	1,832	106.1

: – data not available

Source: own elaboration and calculations based on Eurostat data (nama_10_co3_p3, naida_10_gdp, prc_ppp_ind) – extracted on 29.06.18.

slower in Malta and Lithuania, whereas it was the slowest in Poland, where in the analysed period food expenditure increased by 20%, and expenditure on total consumption by nearly 48%.

As already indicated in the introduction, one of the determinants of the standard of living and the level of modern consumption is the share of food products in the total value of consumption (Tab. 2). In countries with

The structure of individual household consumption

Countries	CP01		CP02		CP03		CP04		CP05	
	2006	2016	2006	2016	2006	2016	2006	2016	2006	2016
Austria	9.9	9.7	3.3	3.3	6.1	6.1	21.1	22.4	6.6	6.6
Belgium	12.6	13.4	4.1	4.3	4.7	4.3	23.6	24.5	5.7	6.2
Bulgaria	17.7	19.5	6.9	5.2	3.8	3.2	17.8	19.3	6.6	5.0
Cyprus	12.8	14.3	5.2	5.9	5.7	4.9	15.4	15.9	5.7	4.3
Czech Republic	14.5	16.0	7.1	8.4	4.1	3.6	24.7	25.6	5.7	5.5
Denmark	10.8	11.4	3.9	3.5	4.4	4.2	26.0	29.1	5.4	5.0
Estonia	17.8	20.3	8.1	8.5	6.5	6.8	18.1	17.6	5.1	4.5
Finland	11.8	12.0	5.1	4.4	4.9	4.3	24.3	28.4	5.3	4.9
France	12.8	13.4	3.5	3.8	4.6	3.8	24.2	26.5	5.4	4.9
Germany	10.6	10.6	3.4	3.2	5.1	4.5	24.5	23.9	6.9	6.8
Greece	15.1	17.2	3.9	5.0	5.1	3.8	17.6	20.5	5.3	2.8
Hungary	16.5	17.7	6.9	7.6	3.2	3.6	19.1	19.2	5.9	4.4
Ireland	9.2	9.1	6.1	5.6	4.7	3.9	19.5	23.3	6.6	4.3
Italy	14.7	14.2	4.2	4.1	6.8	6.2	20.7	23.6	7.0	6.2
Latvia	18.9	18.2	7.4	7.9	5.3	5.8	19.8	21.2	3.8	4.0
Lithuania	23.9	22.2	6.8	6.4	7.8	5.9	14.8	15.6	5.9	6.5
Luxembourg	9.0	9.4	9.4	8.5	5.2	5.6	22.1	24.3	6.2	5.7
Malta	14.1	12.4	4.5	4.0	5.4	4.6	11.1	10.4	7.8	7.0
Netherlands	10.5	11.7	3.0	3.2	5.4	5.1	20.4	23.5	6.3	5.4
Poland	20.9	17.1	7.0	6.1	4.6	5.2	22.1	21.2	4.3	5.3
Portugal	15.8	16.9	3.6	3.1	6.5	6.3	14.3	18.8	6.2	5.1
Romania	29.1	29.4	3.9	5.7	3.9	3.4	20.0	21.5	5.3	4.5
Slovakia	17.2	17.8	5.1	5.1	4.0	4.0	26.7	24.4	5.5	6.0
Slovenia	14.6	14.8	5.1	5.3	5.4	5.5	19.1	19.7	5.8	5.0
Spain	12.8	12.8	3.8	3.8	5.5	4.4	18.0	22.3	5.3	4.2
Sweden	12.0	12.3	3.5	3.6	5.0	4.8	26.6	26.0	5.1	5.4
United Kingdom	7.9	8.1	4.1	3.6	5.1	5.5	25.7	27.0	5.2	4.8

[a] No statistical data on Croatia; [b] data for Romania for 2015.

Where: CP01 – Food and non-alcoholic beverages; CP02 – Alcoholic beverages. tobacco and narcotics; CP03 – Clothing and footwear; CP04 – Housing. water. electricity. gas and other fuels; CP05 – Furnishings. household equipment and routine household maintenance;

a high level of economic development, this share is at a low level. In 2016, the United Kingdom (8.1%), Ireland (9.1%), Luxembourg (9.4%) and Austria (9.7%) had the lowest indicators, the highest, in turn, were in Romania (29.4%), Lithuania (22.2%), and Estonia (20.3%). In Poland, the value of consumption of food and non-alcoholic beverages accounted for 17.1% of the total consumption fund and was similar to those in Slovakia (17.8%), Hungary (17.7%), Greece (17.2%)

Table 2

in the European Union^{a} in 2006 and 2016^{b} (percentage of total)

CP06		CP07		CP08		CP09		CP10		CP11		CP12	
2006	2016	2006	2016	2006	2016	2006	2016	2006	2016	2006	2016	2006	2016
3.7	3.9	13.5	11.9	2.6	1.8	10.1	10.1	0.8	0.9	11.5	13.3	10.8	10.1
5.6	6.3	12.1	11.0	2.6	2.2	9.3	8.4	0.4	0.4	5.6	6.4	13.7	12.6
4.2	6.4	17.0	14.0	4.7	4.8	7.1	7.8	0.8	1.1	8.0	6.6	5.3	7.0
4.4	5.1	14.8	12.1	3.2	3.1	6.8	5.8	2.3	2.7	15.1	17.2	8.5	8.8
2.2	2.4	10.4	9.8	3.6	2.7	10.6	8.7	0.6	0.5	8.1	8.7	8.4	8.0
2.7	2.9	13.7	11.8	1.9	2.2	12.3	10.9	0.7	0.8	5.4	6.3	12.7	11.9
3.0	3.2	12.9	11.3	3.0	2.7	9.4	8.2	1.0	0.5	6.9	8.3	8.1	8.1
4.3	4.6	13.1	11.9	2.7	2.3	12.0	10.6	0.4	0.4	6.7	6.4	9.3	9.8
3.9	4.2	13.9	13.2	3.2	2.6	9.2	8.0	0.4	0.5	6.6	7.0	12.3	12.1
4.3	5.3	14.7	14.4	2.9	2.9	9.3	9.1	0.7	0.9	4.8	5.4	12.7	13.0
5.3	4.4	15.1	13.5	3.7	4.4	4.8	4.5	2.4	2.1	13.8	14.3	7.9	7.6
4.0	4.9	15.5	12.4	3.9	3.8	8.5	7.1	1.7	1.7	6.1	9.3	8.6	8.3
3.3	5.1	12.6	13.5	3.5	2.6	7.1	6.5	2.2	2.7	12.9	15.7	12.3	7.8
3.1	3.5	13.3	12.2	2.9	2.3	7.0	6.6	0.9	1.0	9.0	10.2	10.4	9.9
3.7	4.6	13.5	11.7	3.3	2.8	8.7	9.4	2.0	1.4	8.5	7.0	5.0	6.0
4.3	5.1	15.9	15.1	2.4	2.7	6.8	8.2	0.8	0.5	2.7	3.4	7.9	8.5
1.7	2.1	18.3	15.4	1.6	1.6	6.5	6.3	0.6	0.9	7.1	7.5	12.3	12.8
3.9	3.8	12.5	12.0	3.6	3.6	10.2	10.2	1.1	1.7	15.1	19.2	10.6	11.1
2.6	3.6	14.0	12.5	4.2	3.2	11.4	10.8	0.6	0.8	7.2	8.2	14.5	12.1
4.0	5.6	10.0	12.1	3.2	2.4	7.4	7.9	1.3	1.0	2.9	3.2	12.3	13.0
4.5	5.1	15.0	12.7	3.2	2.4	7.5	6.1	1.1	1.2	10.6	11.8	11.7	10.6
3.1	5.9	18.0	11.3	2.0	4.1	4.7	5.9	1.8	2.0	5.5	2.2	2.7	4.1
3.3	2.6	7.7	7.5	3.7	3.4	8.6	10.2	1.5	1.6	7.3	6.0	9.3	11.3
3.5	3.8	15.2	15.9	3.4	3.0	10.9	8.5	1.2	1.3	6.4	7.3	9.5	10.0
3.3	4.0	12.0	11.0	2.6	2.6	8.2	7.3	1.4	1.9	17.2	16.3	10.0	9.4
3.2	3.5	13.9	12.7	3.4	3.0	11.5	11.0	0.3	0.3	5.1	6.4	10.4	10.9
1.5	1.8	13.2	13.4	2.0	2.0	10.8	9.5	1.2	1.8	9.2	9.5	14.2	13.0

CP06 – Health; CP07 – Transport; CP08 – Communications; CP09 – Recreation and culture; CP10 – Education; CP11 – Restaurants and hotels; CP12 – Miscellaneous goods and services.

Source: own elaboration and calculations based on Eurostat data (nama_10_co3_p3) – extracted on 29.06.18.

and the Czech Republic (16.0%). What is worth noting, in 2016, compared to 2006, the share of expenditure on food and non-alcoholic beverages in the total value of consumption in the Member States was higher, although the change can hardly be considered significant. These shares only decreased in seven countries. The largest decrease was observed in Poland from 20.9% in 2006 to 17.8% in 2016.

Expenditures on food and non-alcoholic beverages are a significant item in the budgets of EU households. In 2016, in countries such as Bulgaria, Estonia, Lithuania, Romania and Malta, they were still the largest group of expenditure. In most countries, the amount of expenditure on food products gives way only to the expenditure on housing and energy. In a few countries, expenditure on food and non-alcoholic beverages falls to further positions, burdening household budgets to a lesser extent than expenditure on transport, recreation and culture, restaurants and hotels. However, this is the case only in countries with very high economic development, such as: Great Britain and Austria (Tab. 2).

The high share of expenditure on food products has a direct impact on the ability to meet other needs, especially higher-ranking ones. In such cases, one can speak of a 'food consumption model' (Kuśmierczyk & Piskiewicz, 2012, p. 85). As the level of wealth increases, the food model turns into 'an industry consumption model', in which expenditure on non-food goods predominates. Further development of societies and economies, and consequently the growing level of welfare, leads to a 'service consumption model' in which expenditure on services predominates, accounting for 50% and more of the total household's expenditure on consumption (Dąbrowska, 2008, p. 151; Ozimek & Żakowska-Biemans, 2011. p. 139, 140).

Based on the data presented in Table 3, it can be noted that countries such as Ireland, the United Kingdom, Finland, Denmark, the Netherlands or Austria have a consumption expenditure structure that is closest to the service consumption model (Healy, 2014, p. 796-802)[2]. These countries are characterized by a relatively low expenditure on food and non-alcoholic beverages (oscillating around 10%) and over 50% on services. Spain (54.4%), Greece (54.3%) and Cyprus (53.3%) have larger than a 50% share of expenditure on services in the general consumption fund. In these cases, however, such a large share of expenditure on services in the total consumption structure is influenced not only by economic factors (income situation, prices), but also by factors of a cultural nature, often related to the tradition of a given country (Godziszewski *et al.*, 2013, p. 52-54). On the other hand, the countries of the former USSR, such as Lithuania, Estonia

[2] The data included in Tab.3 were created as a result of COICOP disaggregation, visible in Tab.2, from two-digit level to three- and four-digit levels. This made it possible to clearly assign particular groups of expenditures to the category of food and non-alcoholic beverages, non-food items and services. Only sub-categories CP056 'goods and services for routine housekeeping' included in category CP05 are not included in the calculations due to the lack of further sub-categories of 'goods' and 'services'.

and the countries of the former Eastern Bloc, especially Romania, Slovenia and Slovakia, seem to be currently the furthest from the service consumption model. The group of these countries also includes Poland which, with expenditure on services amounting to 35.2% of the total consumption expenditure, is only ahead of Lithuania (28.0%) – Table 3.

Table 3

The structure of individual consumption of households in the European Union[a] in 2006 and 2016[b] – and consumption models (percentage of total)

Countries	Food and non-alcoholic beverages		Non-food goods		Services	
	2006	2016	2006	2016	2006	2016
Austria	9.9	9.7	42.0	39.8	48.1	50.5
Belgium	12.6	13.4	36.9	38.5	47.8	48.1
Bulgaria	17.7	19.5	40.5	38.5	41.8	42.0
Cyprus	12.8	14.3	39.7	32.4	47.5	53.3
Czech Republic	14.5	16.0	36.9	36.8	48.6	47.2
Denmark	10.8	11.4	43.3	37.9	45.9	50.7
Estonia	17.8	20.3	44.2	42.8	38.0	36.9
Finland	11.8	12.0	40.3	36.7	47.9	51.3
France	12.8	13.4	41.1	38.6	46.1	48.0
Germany	10.6	10.6	42.5	40.9	46.9	48.5
Greece	15.1	17.2	33.5	28.5	51.4	54.3
Hungary	16.5	17.7	43.7	39.6	39.8	42.7
Ireland	9.2	9.1	34.2	30.5	56.6	60.4
Italy	14.7	14.2	43.0	39.5	42.3	46.3
Latvia	18.9	18.2	40.8	41.3	40.3	40.5
Lithuania	23.9	22.2	50.2	49.8	25.9	28.0
Luxembourg	9.0	9.4	49.5	44.6	41.5	46.0
Malta[c]	14.1	12.4	47.1	44.0	38.8	43.6
Netherlands	10.5	11.7	41.5	37.7	48.0	50.6
Poland	20.9	17.1	41.1	47.7	38.0	35.2
Portugal	15.8	16.9	42.5	37.0	41.7	46.1
Romania	29.1	29.4	35.5	35.2	35.4	35.4
Slovakia	17.2	17.8	42.4	42.4	40.4	39.8
Slovenia	14.6	14.8	44.9	45.3	40.5	39.9
Spain	12.8	12.8	35.3	32.8	51.9	54.4
Sweden	12.0	12.3	41.1	39.7	46.9	48.0
United Kingdom	7.9	8.1	38.3	36.8	53.8	55.1

[a] No statistical data on Croatia; [b] data for Romania for 2015; [c] data for Malta do not account for social protection, insurance and financial services n.e.c.

Source: own elaboration and calculations based on Eurostat data (nama_10_co3_p3) – extracted on 29.06.18.

The level and structure of expenditure on food and non-alcoholic beverages

The aggregate of expenditure on food and non-alcoholic beverages, in comparison with other categories of consumption, provides a lot of information about changes in households of the individual EU Member States. Thanks to Eurostat statistics, it is also possible to analyse individual groups of expenditure on food products and conduct comparative research in this area (Ghinararu, 2017, p. 437-445).

The level and structure of expenditure on food and non-alcoholic beverages

Countries	Total food and non-alcoholic beverages		Bread and cereals		Meat		Fish	
	euro	%	euro	%	euro	%	euro	%
Austria	2,060	100.0	393	19.1	424	20.6	71	3.4
Belgium	2,454	100.0	459	18.7	625	25.5	140	5.7
Bulgaria	852	100.0	122	14.3	156	18.3	19	2.2
Croatia	1,419	100.0	266	18.7	235	16.6	55	3.9
Cyprus	2,382	100.0	449	18.8	427	17.9	104	4.4
Czech Republic	1,287	100.0	184	14.3	304	23.6	30	2.3
Denmark	2,544	100.0	332	13.1	530	20.8	98	3.9
Estonia	1,725	100.0	253	14.7	339	19.7	94	5.4
Finland	2,456	100.0	366	14.9	403	16.4	101	4.1
France	2,345	100.0	383	16.3	545	23.2	131	5.6
Germany	2,032	100.0	379	18.7	406	20.0	66	3.2
Greece	2,042	100.0	410	20.1	434	21.3	116	5.7
Hungary	1,042	100.0	151	14.5	234	22.5	12	1.2
Ireland	1,706	100.0	266	15.6	388	22.7	65	3.8
Italy	2,423	100.0	413	17.0	554	22.9	181	7.5
Latvia	1,418	100.0	238	16.8	268	18.9	59	4.2
Lithuania	1,921	100.0	255	13.3	451	23.5	117	6.1
Luxembourg	2,919	100.0	494	16.9	628	21.5	226	7.7
Malta	1,546	100.0	262	16.9	279	18.0	106	6.9
Netherlands	2,092	100.0	425	20.3	403	19.3	62	3.0
Poland	1,103	100.0	145	13.1	216	19.6	25	2.3
Portugal	2,066	100.0	374	18.1	412	19.9	325	15.7
Romania	1,471	100.0	194	13.2	524	35.6	78	5.3
Slovakia	1,426	100.0	252	17.7	324	22.7	42	2.9
Slovenia	1,636	100.0	259	15.8	344	21.0	39	2.4
Spain	1,825	100.0	290	15.9	388	21.3	220	12.1
Sweden	2,488	100.0	366	14.7	432	17.4	138	5.5
United Kingdom	1,832	100.0	270	14.7	357	19.5	69	3.8

Source: own elaboration and calculations based on Eurostat data (prc_ppp_ind) – extracted on 29.06.18.

Table 4 presents the level and structure of expenditure on food and non-alcoholic beverages of households in the individual EU countries. The largest share in the structure of expenditure on food products is related to expenditure on meat as well as on bread and cereal products. For example, expenditure on meat in Romania accounts for over ⅓ of total food expenditure. In Belgium, the Czech Republic and Lithuania constitutes around ¼ of this expenditure. On the other hand, the inhabitants of the Netherlands and Greece spend the most on bread and cereal products. In both cases, expenditure on these goods exceeds 20%

Table 4

of households in the European Union in 2016 (nominal expenditure per inhabitant)

Milk, cheese and eggs		Oils and fats		Fruits. vegetables. potatoes		Other food		Non-alcoholic beverages	
euro	%	euro	%	euro	%	euro	%	euro	%
268	13.0	60	2.9	331	16.1	281	13.6	232	11.3
292	11.9	49	2.0	416	17.0	265	10.8	207	8.4
122	14.3	33	3.9	146	17.1	182	21.4	72	8.5
215	15.2	54	3.8	159	11.2	223	15.7	212	14.9
422	17.7	78	3.3	446	18.7	231	9.7	224	9.4
216	16.8	47	3.7	228	17.7	149	11.6	129	10.0
349	13.7	78	3.1	407	16.0	453	17.8	297	11.7
345	20.0	36	2.1	260	15.1	263	15.2	136	7.9
459	18.7	60	2.4	368	15.0	468	19.1	231	9.4
303	12.9	46	2.0	474	20.2	264	11.3	199	8.5
285	14.0	51	2.5	315	15.5	291	14.3	238	11.7
349	17.1	121	5.9	398	19.5	109	5.3	106	5.2
192	18.4	37	3.6	162	15.5	111	10.7	144	13.8
205	12.0	29	1.7	391	22.9	188	11.0	174	10.2
319	13.2	82	3.4	532	22.0	154	6.4	188	7.8
236	16.6	53	3.7	224	15.8	202	14.2	138	9.7
337	17.5	79	4.1	351	18.3	196	10.2	135	7.0
447	15.3	77	2.6	381	13.1	300	10.3	366	12.5
130	8.4	46	3.0	315	20.4	186	12.0	223	14.4
249	11.9	38	1.8	423	20.2	308	14.7	185	8.8
136	12.3	32	2.9	207	18.8	234	21.2	107	9.7
240	11.6	99	4.8	338	16.4	157	7.6	121	5.9
168	11.4	41	2.8	278	18.9	111	7.5	76	5.2
243	17.0	60	4.2	215	15.1	166	11.6	124	8.7
286	17.5	51	3.1	342	20.9	168	10.3	147	9.0
228	12.5	52	2.8	348	19.1	149	8.2	150	8.2
380	15.3	63	2.5	473	19.0	375	15.1	262	10.5
210	11.5	36	2.0	397	21.7	279	15.2	215	11.7

of the total expenditure on food and non-alcoholic beverages. The third category of food expenditure which is a burden on the household budget is expenditure on fruit, vegetables and potatoes. These products have the largest share in the structure of expenditures of the residents of Ireland (22.9%), Italy (22.0%) and the United Kingdom (21.7%). The fourth group of expenditure in the structure of consumption of food and non-alcoholic beverages is expenditure on milk, cheese and eggs. These products hold the largest share in the structure of food expenditure in Estonia (20.0%), Finland (18.7%) and Hungary (18.4%). Other groups of expenditure on food products such as expenditure on fish, non-alcoholic beverages or oils and fats have a relatively small share in the household budget for food consumption, and in the case of oils and fats it is even marginal (Tab. 4).

Analysing the structure of expenditures on food and non-alcoholic beverages of Polish households, attention should firstly be given to the lowest, in comparison to other EU countries, share of expenditure on bread and cereal products. In 2016, it was 13.1%. In addition, Polish households are also characterized by one of the lowest shares of fish expenditure amounting to 2.3%. Only Hungarian households have a lower share –1.2%. The expenditure on milk, cheese and eggs also has a relatively small share (12.3%). On the other hand, the expenditures on meat (19.6%) and on fruit, vegetables and potatoes (18.8%) have a relatively high share in the structure of food expenditure in Poland.

On the basis of the data presented in Table 4, it is difficult to indicate to what extent the EU countries are similar or to what extent they differ in the area of expenditure on food and non-alcoholic beverages. It is also impossible to determine relatively homogeneous groups of countries due to the apparent consumption of food. Such goals are served by methods of multidimensional analysis, including the Ward's cluster analysis carried out for the purposes of this paper, described in more detail in the methodological part.

The analysis covered 28 countries, the current EU Member States characterized by 8 diagnostic variables, describing the level of expenditure on food and non-alcoholic beverages in 2016 according to nominal investment per inhabitant in euros. These variables are: bread and cereals; meat; fish; milk, cheese and eggs; oils and fats; fruits, vegetables, potatoes; other food and non-alcoholic beverages. The values of variables have been compiled and presented in Table 4 on the basis of Eurostat data collected as part of COICOP/PPP.

As a result of the adopted method, a dendrogram was obtained, reflecting the hierarchical structure of the set of objects due to the decreasing similarity between them. The diagram of a binary tree shown in Figure 1 illustrates successive clusters of increasingly higher order clusters. The obtained hierarchy allows the determination of the relative position of clusters and objects contained in them, whereas the adopted cut-off point is used to separate relatively homogeneous groups of countries.

The dendrogram (Fig. 1) made it possible to distinguish seven clusters of countries with a similar structure of expenditure on food in the household sector[3]. In cluster I are Austria, Germany and the Netherlands. Cluster II includes: Belgium, France, Italy, Cyprus and Greece. Cluster III contains the Scandinavian countries Denmark, Sweden and Finland. Cluster IV encompasses Luxembourg.

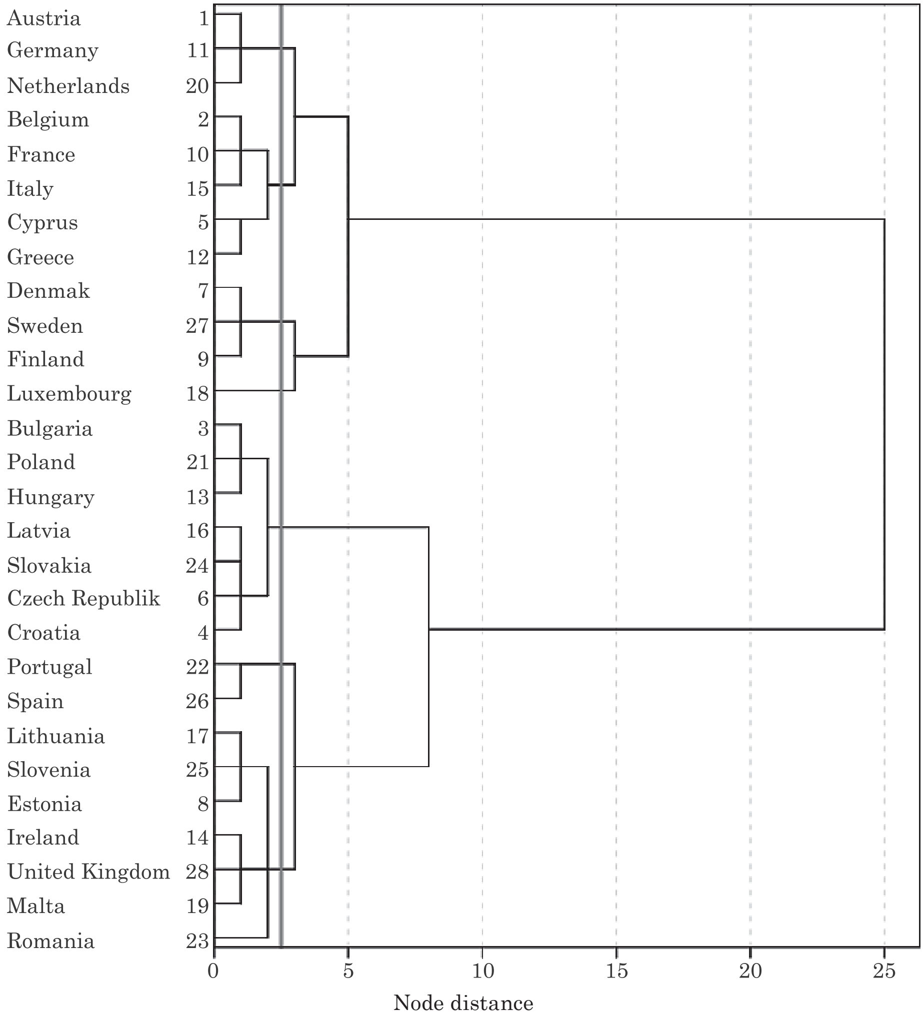

Fig. 1. Dendrogram using Ward's linkages for 28 EU countries
Source: own elaboration.

[3] When choosing the optimal number of clusters, it turns out that a graph of the shape of agglomeration is the most helpful, as it shows the distance between the groups when they were clustered. A clear step increase in the level of the curve usually indicates a good choice as to the number of clusters. This is the value closest to the left of this step increase (Dobosz, 2001).

Poland was among the countries in cluster V, which also includes Bulgaria, Hungary, Latvia, Slovakia, the Czech Republic and Croatia. Cluster VI consists of Portugal and Spain. The last, cluster VII is represented by Lithuania, Slovenia, Estonia, Ireland, Great Britain, Malta and Romania (Maciejewski, 2018b, p. 25-28). The conducted cluster analysis showed that the similarities and differences in the level and structure of food expenditure, and thus in the size and structure of food consumption, are significantly correlated with cultural factors (as was similarly demonstrated during the analysis of individual expenditure groups). In addition, the proximity or geographical distance between individual countries is important in this respect. The first cluster consists of descendants of Germanic peoples. The second cluster – countries of the Mediterranean and Belgium, culturally and geographically close to France. As has already been said, cluster III is made up of Scandinavian countries. The countries of Central and Eastern Europe make up the fifth cluster, whereas the sixth, with geographical and cultural proximity, consists of the countries of the Iberian Peninsula. Only countries that are in the seventh cluster contradict the proposed thesis. However, the position of Luxembourg should not be surprising. Due to the small area and a relatively large group of workers from many other countries who work there in numerous European or financial institutions, it is difficult to recognize Luxembourg as a country similar to any group of countries.

In addition, analysing the matrix of squares of Euclidean distances of the countries according to their expenditure on food and non-alcoholic beverages, it can be concluded that Polish households are most similar to households from Bulgaria and Slovakia, while they differ most from households from Luxembourg and Italy.

Conclusions

The presented measures regarding food consumption in the household sector in Poland and the European Union indicate large disparities between individual countries. These disparities are especially visible between highly developed countries, the so-called 'Old Union' and its 'new' members from Central and Eastern Europe.

Despite the fact that the diversification clearly decreased in the period of 2006-2016, the less developed countries from Central and Eastern Europe are still far from realizing the service consumption model, allowing for better satisfaction of higher-ranking needs. The countries of this group also include Poland, whose food expenditure in 2016 fell to 17.1% of the total consumption expenditure, but the expenditure on services was at the lowest level among all the EU countries – except for Lithuania. The obtained results confirm the initially adopted hypothesis.

In turn, the results of cluster analysis, used for a deeper analysis of the collected data, lead to the conclusion that differences in expenditure on food products in the surveyed countries are largely determined by their economic situation, but the apparent impact of cultural and geographical conditions is also present (Kearney, 2010, p. 2798-2799; Maciejewski, 2013, p. 54; Necula & Mann, 2018, p. 942-943).

The research results and the conducted analyses presented in this paper can be an indication for the Community countries in the area of more effective cohesion policy-making. Continued support for the newly admitted EU members, especially from the former Eastern Bloc, will allow for a faster levelling of the standard of living and quality of life, and to reduce the distance in the civilizational advance between the 'old' and 'new' members of the Community.

Translated by Ewa Grzelewska-Jędryka
Proofreading by Michael Thoene

References

Addessi, W. (2018). Population age structure and consumption expenditure composition: Evidence from European countries. *Economics Letters*, *168*(C), 18-20. https://doi/org/10.1016/j.econlet.2018.03.033.

Andreoni, V., & Galmarini, S. (2016). Mapping socioeconomic well-being across EU regions. *International Journal of Social Economics*, *43*(3), 226-243. https://doi/org/10.1108/IJSE-09-2014-0178.

Barcaccia, B., Esposito, G., Matarese, M., Bertolaso, M., Elvira, M., & De Marinis, M.G. (2013). Defining Quality of Life: A Wild-Goose Chase? *Europe's Journal of Psychology*, *9*(1), 185-203. https://doi/org/10.5964/ejop.v9i1.484.

Dąbrowska, A. (2008). *Rozwój rynku usług w Polsce – uwarunkowania, perspektywy*. Warszawa: Szkoła Główna Handlowa.

Dobosz, M. (2001). *Wspomagana komputerowo statystyczna analiza wyników badań*. Warszawa: Akademicka Oficyna Wydawnicza EXIT.

Godziszewski, B., Kruszka, M., & Puziak, M. (2013). Income distribution and regional convergence in Poland and the European Union. *Olsztyn Economic Journal*, *8*(1), 45-60.

Ghinararu, C. (2017). The people are always right. A conceptual political economy essay into why countries in Central and Eastern Europe persistently remain at the periphery of socio-economic developments. *Olsztyn Economic Journal*, *12*(4), 427-450.

Healy, A.E. (2014). Convergence or difference? Western European household food expenditure. *British Food Journal*, *116*(5), 792-804.

Kearney, J. (2010). Food consumption trends and drivers. *Philosophical Transactions of the Royal Society of London*. Series B, *Biological Sciences*, *365*(1554), 2793-2807. https://doi/org/10.1098/rstb.2010.0149.

Kuśmierczyk, K., & Piskiewicz, K. (2012). Konsumpcja w Polsce na tle pozostałych krajów Unii Europejskiej. *Konsumpcja i Rozwój*, *2*, 78-93.

Maciejewski, G. (2013). Makrotrendy w konsumpcji a zachowania konsumentów. *Handel Wewnętrzny*, styczeń-luty, p. 53-60.

Maciejewski, G. (2018a). Ekonomiczna dostępność żywności w państwach Unii Europejskiej. *Problemy Rolnictwa Światowego*, *18*(4), 345-358. https://doi/org/:10.22630/PRS.2018.18.4.124.

Maciejewski, G. (2018b). Food consumption in the Visegrad Group Countries – towards a healthy diet model. Studia Ekonomiczne, *Zeszyty Naukowe Uniwersytetu Ekonomicznego w Katowicach*, *361*, 20-32.

Migdał-Najman, K., & Najman, K. (2013). Analiza porównawcza wybranych metod analizy skupień w grupowaniu jednostek o złożonej strukturze grupowej. *Zarządzanie i Finanse*, *3*, 179-194.

Necula, R.A., & Mann, S. (2018). Democratisation or individualisation? On the distribution of food consumption. *British Food Journal*, *120*(5), 942-951. https://doi/org/10.1108/BFJ-05-2017-0312.

Ozimek, I., & Żakowska-Biemans, S. (2011). Determinants of Polish consumers' food choices and their implication for the national food industry. *British Food Journal*, *113*(1), 138-154. https://doi/org/10.1108/00070701111097394.

Systemy ważenia w badaniach cen towarów i usług konsumpcyjnych. (2013). Warszawa: Główny Urząd Statystyczny. Retrieved from http://stat.gov.pl/gfx/portalinformacyjny/userfiles/_public/wyniki_wstepne/coicop_12_2013.pdf (23.11.2018).

Walesiak, M. (2004). *Metody klasyfikacji*. In E. Gatnar & M. Walesiak (Eds.). *Metody statystycznej analizy wielowymiarowej w badaniach marketingowych*. Wrocław: Wydawnictwo Akademii Ekonomicznej im. Oskara Langego.

Walesiak, M. (2009). *Analiza skupień*. In E. Gatnar & M. Walesiak (Eds.). *Statystyczna analiza danych z wykorzystaniem programu R*. Warszawa: Wyd. Nauk. PWN.

Zlatevska, N., & Spence, M.T. (2016). Parsing out the effects of personal consumption norms and industry influences on food consumption volume. *European Journal of Marketing*, *50*(3/4), 377-396. doi: https://doi/org/10.1108/EJM-09-2014-0574.

OLSZTYN ECONOMIC JOURNAL
2019, 14(2), 195–207
ISSN 1897-2721 e-ISSN 2083-4675 DOI: 10.31648/oej.3971

ORIGINAL PAPER

Received: 18.12.2018
Revised: 13.02.2019
Published: 28.06.2019

CONSUMER ENGAGEMENT AND THE PERCEPTION OF PACKAGING INFORMATION

Dobrosława Mruk-Tomczak[1], ***Ewa Jerzyk***[2],
Natalia Wawrzynkiewicz[3]

[1]Faculty of Commodity Science
Poznan University of Economics and Business
ORCID: https://orcid.org/0000-0002-4548-8260
e-mail: d.mruk-tomczak@ue.poznan.pl
[2]Faculty of Management
Poznan University of Economics and Business
ORCID: https://orcid.org/0000-0001-8474-3570
e-mail:ewa.jerzyk@ue.poznan.pl
[3]Faculty of Management
Poznan University of Economics and Business
ORCID: https://orcid.org/0000-0002-9864-4116
e-mail: natalia.wawrzynkiewicz@ue.poznan.pl

JEL Classification: D12, D91, H31.

Key words: consumer, decision making process, engagement, packaging, information, juice.

Abstract

Packaging is an important factor influencing purchasing decisions, especially in the case of food products. Packaging draws the consumer's attention and communicates with the consumer at a critical time in the purchasing process, providing information, while instructing and educating. The significance of the information varies depending on the product and on the information needs of the consumer stemming from his or her attitude. The level of consumer engagement in the purchase can significantly determine the perception of information – both emotional and factual - on the packaging.

The aim of the article was to research the perception of the emotional content and factual information on the packaging of fruit juice, taking into account the level of consumer engagement in the purchase. It was assumed that high consumer engagement would result in greater visual attention to the product information. The tools used achieve the goal included eye-tracking and a questionnaire.

The results have indicated that the level of consumer engagement in the purchase of fruit juice (purchase frequency and motivation) does not affect preferences regarding the type of the perceived information.

How to cite: Mruk-Tomczak, D., Jerzyk, E., & Wawrzynkiewicz N. (2019). Consumer Engagement and the Perception of Packaging Information. *Olsztyn Economic Journal*, *14*(2), 195-207. https://doi.org/ 10.31648/oej.3971.

ZAANGAŻOWANIE KONSUMENTA A PERCEPCJA INFORMACJI NA OPAKOWANIU

Dobrosława Mruk-Tomczak[1], ***Ewa Jerzyk***[2], ***Natalia Wawrzynkiewicz***[3]
[1]Wydział Towaroznawstwa
Uniwersytet Ekonomiczny w Poznaniu
[2]Wydział Zarządzania
Uniwersytet Ekonomiczny w Poznaniu
[3]Wydział Zarządzania
Uniwersytet Ekonomiczny w Poznaniu

Słowa kluczowe: konsument, proces podejmowania decyzji, zaangażowanie, opakowanie, informacje, rynek soków.

Abstrakt

Opakowanie produktu to ważny czynnik wpływający na decyzje zakupowe, zwłaszcza w odniesieniu do produktów żywnościowych. Opakowanie zwraca uwagę, za jego pomocą producent komunikuje się z konsumentem w momencie procesu zakupowego, przekazuje informacje, instruuje i edukuje. Znaczenie tych informacji jest różne, w zależności od produktu i potrzeb informacyjnych konsumenta wynikających z jego postawy. Poziom zaangażowania konsumenta w zakup może istotnie determinować postrzeganie informacji – emocjonalnych i rzeczowych – na opakowaniu.

Celem artykułu było zbadanie percepcji treści emocjonalnych i informacji rzeczowych na opakowaniu soku owocowego, z uwzględnieniem poziomu zaangażowania konsumenta w zakup. Zakładano, że wysokie zaangażowanie konsumenta będzie skutkowało większą uwagą wzrokową na informacjach rzeczowych o produkcie. Do realizacji celu zastosowano okulografię i kwestionariusz ankietowy.

Wyniki wskazały, że poziom zaangażowania konsumenta w zakup soku owocowego (częstotliwość i motywacja do zakupu) nie wpływa na preferencje w zakresie rodzaju percepowanej informacji.

Introduction

The end of the 20th and the beginning of the 21st century have brought an entirely new perspective on the model of decisions made by consumers. Earlier theories assuming the rationality of consumer choices (Mruk & Jankowiak-Kaczmarek, 2017, p. 81-98) are now being questioned by researchers. The conducted behavioural economic and linguistic studies and their results indicate increasingly often that many decisions made by consumers are of an emotional nature and that emotions, rather than rational arguments, influence consumer behaviour to a higher extent (Kahnemann, 2012, p. 481-497; Damasio, 2002, p. 153-229; Ariely, 2009, p. 278). Emotions are intertwined with rational thinking processes and both determine the ultimate consumer choices, however, emotions (phylogenetically older structures) are most often responsible for the stimulus to make a final purchasing decision (Zaltman, 2003, p. 35-37). In the decision-making model, emotions occur first and have a direct impact on the final decisions of buyers at the shelf (Ohme, 2017, p. 125-140). Enquired after the purchase about the reasons for their purchasing decisions, they start looking for rational explanations (Mruk & Jankowiak-Kaczmarek, 2017, p. 86).

According to behavioural economics, consumer behaviours are driven by various stimuli, some of which evoke emotions (Ohme, 2017, p. 127) and trigger the buyer's decision-making process (Heath, 2014, p. 175-189). During the process when the choice of a particular product is being made, the consumer is exposed both to sensory and non-sensory factors. Research results demonstrate that in the process of making purchase decisions the significance of sensory factors is higher, especially in the case of visual stimuli (Ares *et al.*, 2010, p. 417-426).

Significance of the product packaging

The packaging constitutes an important marketing communication instrument which carries appropriate information about the product, affects consumer perception and assessment of the product and influences the consumer preference and choice. The decision regarding buying a food product results from consumer expectations concerning quality which are shaped mainly by the packaging of the product and the information presented on it. The intention of buying a certain food product – such as an organic or a functional food – is mostly driven by consumer opinions and motives related to health (Mondelaers *et al.*, 2009; Grzybowska, 2012). Consumer views regarding the influence that food products have on health usually translate into the frequency of purchase, however the studies conducted by Verhoef (2005) show that in the case of organic meat the perceived quality positively influences the purchase intention, while purchase frequency is not affected by quality perception. Moreover, the nature of decisions may be intuitive or rational (Saher *et al.*, 2006), that is accompanied by a different way of processing information, where rational thinking is defined as unemotional, based on facts and rational information, whereas intuitive thinking is based mainly on the use of emotional sources of information, such as images, experiences and emotions. It may be concluded that there is a diverse consumer sensitivity towards the type and quality of information (emotional and rational) presented in the packaging, resulting from attitude and engagement in the decision-making process.

The packaging of a product is one of the stimuli influencing purchasing decisions (Jerzyk, 2016, p. 707-716). In the course of the decision-making process, the consumer compares many products based on their packaging, evaluating their quality and usefulness, or may rely on earlier learned behaviours and make habitual decisions. Consumers have developed a habit when they regularly exhibit the same behaviour in response to the same stimulus. The packaging and the label usually represent the first contact the consumer has with the product, on the basis of which the attributes of the products are determined

(Ankiel-Homa, 2012, p. 21-30). The conscious evaluation of products can, however, be skipped over since a great part of consumer decisions are automated – customers keep buying the same products in the same stores year after year (East *et al.*, 2014, p. 27).

The packaging includes graphical an informational elements. The graphic images play a key role in attracting the consumers' attention as they have a natural ability to evoke associations and emotions in consumers and make the product packaging stand out against the packaging of other products (Pradeep, 2011, p. 159-173). Buyers, in particular the ones from Generation Z, clearly prefer communication via images rather than by text (Weinschenk, 2013).

The impact of different packaging elements on purchasing decisions is not consistent. In the case of impulse and habitual purchases when the consumer does not engage in the purchase, the influence of structural and graphic elements of the packaging is stronger (Liao *et al.*, 2015, p. 48-55). On the other hand, consumers who are engaged in the purchase decision making process pay more attention to informational elements. An unengaged buyer who makes impulse-driven and habitual decisions based on graphic elements does not acquire knowledge about the product and may reach for the same product when shopping next time. An engaged consumer who analyses the packaging information acquires knowledge about the product and its attributes and develops a conscious attitude to the product which can determine his or her future choices (Pawlak-Lemańska & Mruk-Tomczak, 2018, p. 345-353).

The role of other factors in making purchase decisions

It should be noted, however, that there are also other factors influencing the decision to choose a specific product. Due to our pace of life and the need to make many decisions each day, the process is to a high extent automated and can be determined both by habits and by other subconscious factors (Zaltman, 2003, p. 34-36). In the case of habitual (routine) purchase decisions, also by people who are loyal to a certain product (brand), consumers are less engaged in the purchase and do not feel a need to analyse the information on the product packaging each time. The packaging becomes only the product's identifier and thanks to the graphic elements it is easier to find the product among many others on the store shelves (Ankiel-Homa, 2012, p. 40-45).

A positive attitude to the product and, in effect, the buyer's decision to choose it, can be induced by its repeated presentation (Zajonc, 1985, p. 27-72, Ohme, 2017, p. 248) and a properly designed product communication can influence the way in which consumers will remember the product (Zaltman, 2003, p. 99). The latest research shows that the consumer's contact with the product at the shelf is most often the last and not the first contact as it used to be in the past

(Scott, 2015, p. 40, 41). With the Internet, social media and unrestricted access to information, consumers can acquire exhaustive information about the product before its purchase, without spending any time on analysing it at the shelf. The significance of prior experience should also be appreciated since positive experience with a certain product in the past influences the consumer's decision to buy it again (Zaltman, 2003, p. 229). Another factor of importance in the process of choosing a particular product is merchandising, that is the way in which products are presented, displayed and arranged on the store shelves (Mruk & Jankowiak-Kaczmarek, 2017, p. 92-94), as well as sensory marketing activities.

The conclusion which can be drawn from all these considerations is that, on the one hand, the degree of consumer's engagement in the product purchase influences the perception of selected elements of the product packaging which can encourage the choice of a specific product; however, there are also other factors likely to determine the ultimate purchase decision.

Consumption of fruit juices in Poland

In the structure of non-alcoholic beverages in Poland in 2016, the second place (right after carbonated soft drinks) belonged to the category of fruit juices, nectars and drinks which had a market share of 31%. Since 2010, a rapid growth in the sales of this category of products has been observed. In 2016, the total sales value was PLN 7,703 m, up from PLN 7,207 m in 2015 and PLN 6,647 m in 2014. The research results show that the increase should mainly be attributed the consumers' growing interest in the subcategory 100% juices, which accounted for 53% of the total category sales in 2016 (Skalska-Józefowicz, 2017, p. 10), compared to 46% in 2015 (*Rynek napojów bezalkoholowych w Polsce*, 2016, p. 39).

The Polish juice market is considered to be mature. The range of products from this category appearing on store shelves is getting bigger all the time. Polish consumers are interested particularly in fresh juices (pasteurised and unpasteurised) and naturally unclarified juices (Balon & Dziadkowiec, 2016, p. 57). The consumption of fruit juices (and fruit and vegetable purees) in Poland is on the rise. In recent years the annual increase in per capita consumption of fruit juices amounted to 1 litre. Fruit juice consumption in 2016 showed a nearly 8% growth year-on-year and each Pole drank on average 14 litres of juice (compared to 11.4 litres per person in 2013) (*Konsumpcja soków wzrosła w Polsce o 8 procent*, 2017). The data show that Poland currently ranks slightly above the European average in terms of fruit juice consumption, but in Western European countries the consumption is still higher (Germans drink nearly 20 litres of fruit juice per person every year).

According to studies, one in four Poles (23.9%) drinks juice a few times a day, one in three (33.3%) every day and 25.9% of Poles reach for fruit juice a few times a week. Women and children are most eager to drink fruit juice as a snack between meals (73.1%) or when they are away from home (56.6%) (*Konsumpcja soków wzrosła w Polsce o 8 procent*, 2017). The most popular flavour of fruit juice and nectars is orange (25.4% of the total volume purchased), followed by carrot (22.7%) and apple juice (15.4%) (Balon & Dziadkowiec, 2016, p. 57).

The prospects for the fruit juice market in Poland are good. It is predicted that Poles will be drinking more and more juice, especially from the NFC (not from concentrate) category which means freshly squeezed or pressed (*Rynek napojów bezalkoholowych w Polsce 2016*, p. 41). The development of the market also fits well into the overall well-being and healthy food trend.

Research problem

In the foregoing considerations arising from the model of making purchase decisions, which take into account the stimuli affecting such decisions, in particular the product packaging, a view is presented that the degree of consumer's engagement in the purchase can determine the perception of particular elements of the packaging. A study was carried out to verify this view and check which elements of the packaging (informational or emotional) attract the attention of the consumer engaged in the purchase more effectively. So, the aim of this paper was to examine the impact of the packaging elements (informational or emotional elements) on the purchase decision, taking into account the level of consumer engagement in the purchase. The object of the study was a range of different orange juice packaging of two types (carton and plastic). Fruit juice generally belongs to the category of food products purchased habitually. Nevertheless, due to consumers' growing interest in having a good diet and healthy lifestyle, they may also make conscious and rational choices when buying juice. It has thus been assumed that the model of a habitual purchase in the case of consumers engaged in the purchase may be moderated by a need to find rational information.

The use of emotional elements, such as the fruit image on the juice packaging, is unquestionably omnipresent. It is assumed that unengaged consumers do not read verbal information (such as the flavour : "orange"). They only look at non-verbal elements (such as, pictures of the fruit denoting the juice flavour – image of an orange). In the literature, there is a consensus that 90% of consumers decide to buy a product on the basis of the appearance of the packaging front – without holding the product in their hands (Clement, 2007, p. 917-928).

The speculations concerning the existence of correlations between the degree of consumers' engagement and the perception of the structural packaging elements lead to the formulation of the following research hypotheses:

H1: There is a correlation between consumers' perception of the impact of drinking fruit juice on their health and the frequency of buying the product.

H2: There is a correlation between the consumers' degree of engagement in the purchase of fruit juice and the packaging elements to which they pay attention.

H3: Informational elements on the packaging attract more effectively the attention of consumers engaged in the fruit juice purchase compared to unengaged consumers.

Research method

For the purpose of verification of the aforementioned research hypotheses a questionnaire and eye-tracking technology was used.

By way of determining the position of the respondents' eye pupils, eye-tracking allows for the tracking of their eyeball movements and, as a result, for the identification of the direction in which they look and their eye fixation. Eye pupils of the study participants were exposed to infrared light which is reflected. The observation of the reflected infrared light enables the identification of the object which currently attracts the respondent's attention (Wąsikowska, 2015, p. 177-192). Through eye-tracking measurements, it is possible to track the entire movement of the respondents' eyes and to identify the elements of the packaging which attract their visual attention longer.

In order to verify the adopted hypotheses, experimental research was carried out in the Consumer Research Centre of the Poznań University of Economics and Business. Two different orange juice packaging items were used in the experiment, in which specific areas of consumers' interest were defined: informational elements (information about the product ingredients and number of calories) and emotional elements (fruit images, slogans such as "Source of Vitamins" or "Love Health, Love Life", the producer's logo). The pictures of the food products were presented on a computer screen for 7 seconds and, subsequently, the study participant was requested to answer the questions in the survey questionnaire.

The respondents answered questions concerning their engagement in the consumption of fruit juices by providing information about the frequency of purchasing the products and their attitudes regarding the impact of drinking fruit juice on health. Using the five-point Likert scale (from 1 – Strongly Agree to 5 – Strongly Disagree), they expressed their opinions on the positive/ negative impact of juice consumption on their body. The respondents were also asked to name their preferred product flavours, reasons for the consumption of products and the circumstances under which their consumption increases. The five-point Likert scale (1 – Strongly Disagree, 5 – Strongly Agree) was also applied to the identification of the packaging elements to which the respondents pay attention while making the purchase, taking into account such structural components as the product brand, its composition and nutritional value, definition of the product type, graphic elements, the use-by date, name of the producer, the packaging volume and the content of vitamins. The respondents were also asked to evaluate the presented packaging in terms of clarity, completeness and visual attractiveness (Tab. 1).

Table 1

Results of declarative studies (questionnaire)

Packaging information		Average	Standard deviation		Average	Standard deviation
Ingredients and nutritional value	engaged consumer	3.87	1.106	unengaged consumer	0.12	0.928
Brand name		3.70	0.952		0.65	0.702
Definition of the product type		2.30	1.055		0.59	1.064
Graphic elements		2.30	1.055		0.53	1.068
Use-by date		3.63	1.129		0.82	1.185
Producer		4.13	1.042		0.41	1.326
Volume		2.27	1.202		0.47	0.874
Fair Trade mark		4.07	1.258		0.76	1.300
Information about the website		3.47	0.973		0.18	1.131
Vitamin content		3.80	1.064		0.59	1.326
Environmental marking		1.93	1.015		0.53	1.281

Source: authors study.

Forty-seven persons took part in the experimental research. A sample of more than 30 persons, based on the experience of researchers using the eye-tracking technology, is considered as sufficient to meet the scientific requirements of representativeness (Kaczmarek, 2016, p. 96). The group consisted of 8 men and 39 women. The participants were rather young, with the average age being 23. The youngest participant was 19 years old and the oldest one was 31. All respondents confirmed having no visual impairments which could be an obstacle to the performance of eye-tracking studies.

Research results

The respondents said they most often drank orange juice (36 persons), apple juice (19 persons) and multi-fruit blends (11 persons). Grapefruit juice and blackcurrant juice was selected only by 7 consumers. With regard to declared reasons for consumption, most respondents said they drank juice because they liked its taste (33 persons). Twenty-six persons surveyed said they bought fruit juice when they meet with friends and 22 choose fruit juice because of the content of vitamins. The lowest number of consumers believed that fruit juice boosts energy. Only five respondents admitted to buying juice out of habit. The most frequently mentioned motivations for buying larger quantities of juice included confidence in the positive impact on the consumer's health, a high content of vitamins and the effect on maintaining ideal body weight. A few respondents (6 persons) mentioned the price of the products as a factor influencing their increased consumption of juice, saying that a reduction of the price would result in a more frequent consumption of the beverages. The sweet taste of juice (achieved without an additional content of sugar), family growth and local producers are the factors with the least influence on the increase in juice consumption by the respondents.

Based on the attitudes towards the impact of juice drinking on health, the consumers were divided into three groups: persons who believe that drinking juice is good for their health, respondents who do not have an opinion about the impact of juice consumption on health and the persons who are certain that fruit juice consumption is unhealthy. In order to test H1 regarding the existence of a correlation between the positive impact of juice consumption on the respondents' health and the frequency of juice purchases, the undecided persons were excluded from the analysis. Statistical chi-square tests were performed which showed that hypothesis zero assuming no correlation between the variables (the impact of drinking fruit juice on health and the frequency of buying fruit juice) must be rejected. Thanks to the conducted tests, it has been proven that the persons who believed that drinking juice was healthy bought the products more often. In other words, the study showed that they were engaged in the purchase of fruit juices which means that H1 should be accepted ($p < 0.05$).

The acceptance of H1 determined the comparison of answers to questions concerning the circumstances triggering higher juice consumption and the reasons for buying juice, broken down into engaged vs. unengaged consumers. Asked about the circumstances under which juice consumption rises, 19 engaged consumers said they would drink more juice if they could be certain of its positive impact on health. Only 10 unengaged respondents agreed with that statement. Twice as many engaged consumers (28 persons) emphasised the significance of a higher content of vitamins and mineral nutrients as a reason for increased consumption. The biggest difference between the two groups was recorded in the case of the answer "if it helped maintain ideal body weight". Thirty-three engaged consumers and 12 unengaged consumers agreed with the statement. In the case of other statements concerning consumer ethnocentrism (local producers), product prices, sweet taste and the respondent's family getting bigger, the differences between the answers given are insignificant (1 to 2 persons per statement).

With respect to factors determining the purchase of products, five engaged consumers said they were buying fruit juice out of habit while no unengaged consumer opted for habitual purchases. The biggest differences were noted in the case of the statement "I like its taste" – 17 persons (25 engaged consumers, 8 unengaged consumers) and "contains vitamins" – 12 persons (17 engaged consumers, 5 unengaged consumers). In the case of other questions, differences in the answers given were minor.

In the chi-square statistical test performed in order to verify the H2 hypothesis, the variable, which divides respondents into two groups, was the consumer's engagement (measured in terms of frequency of purchases and the declaration that fruit juice has a positive impact on health) and the next variables were the answers given to questions about the information checked in the product packaging (e.g. brand name, producer, graphic elements) (Tab. 1). It turned out that the degree of consumer's engagement in the purchase of food products was not correlated with the packaging elements to which consumers paid attention (as declared). H2 must then be rejected ($p > 0.05$) which means that the declared significance of packaging information is similar both for consumers who buy a product with high or low purchase frequency and also for consumers who believe that drinking fruit juice is good for health; as well as the ones who do not share that opinion.

In order to identify the areas of the presented packaging which attract the respondents' attention most effectively, eye tracking data were analysed, including the recorded entry time (the time when the element was noticed for the first time), the total time of gazing at specific structural elements of the packaging, number of times specific elements were revisited and the number of and average duration of individual gazes (fixations) (Tab. 2).

Table 2

Results of eye tracking studies

Area of interest	Eye tracking indicators	Consumer engagement			
		engaged		unengaged	
		average	standard deviation	average	standard deviations
Information (information about the product ingredients and number of calories)	entry time [ms]	4,150.18	1,288.53	4,177.50	1,772.75
	total gaze time [ms]	1,966.02	5,330.69	1,951.05	6,522.97
	number of revisits	1.65	1.74	1.64	1.93
	number of fixations	6.64	13.67	6.59	17.99
	average fixation duration [ms]	175.94	114.22	175.80	122.59
Emotional elements (fruit images, slogans such as "Source of Vitamins" or "Love Health, Love Life", the producer's logo)	entry time [ms]	4,081.64	2,545.02	4,081.64	6,725.01
	total gaze time [ms]	1,836.23	2,443.14	1,832.70	1,211.10
	number of revisits	1.65	2,49	1.64	1.71
	number of fixations	6.31	7.40	6.29	3.46
	average fixation duration [ms]	178.19	109.74	178.09	145.76

Source: authors study.

The results of eye tracking studies showed that out of all analysed elements of fruit juice packaging, the respondents paid the same amount of attention to emotional and informational elements. The results of eye tracking tests did not change with the growing degree of consumer's engagement in the purchase. No matter whether the packaging was viewed by an engaged or unengaged consumer, both emotional and informational elements attracted respondents' sight. All parameters, such as the total gaze time, the entry time, the number of revisits and fixations were similar for both areas. Consumers paid attention both to fruit images and slogans, such as "Source of Vitamins" or "Love Health, Love Life" and to the information about the product ingredients and the number of calories. The results of eye-tracking measurements have proven that the H3 hypothesis must be rejected which means that the perception of packaging information is of an automatic nature and even engaged consumers do not need a conscious opinion to make a decision which juice to choose.

Conclusions

The packaging helps to identify the product, provides information about its quality, value and freshness and it's the most important source of information for the consumer at the time of purchase. From the point of view of effective marketing communication, it is important to identify the packaging elements which are evaluated in the course of the decision-making process. It was assumed that the consumer's attitude would have an influence on the types of information preferred and perceived by the consumer. The research showed, however, that despite the declared consumer attitudes regarding their engagement in the purchase, fruit juice is a typical product purchased habitually and automatically. The reactions of an engaged and unengaged consumer to the packaging and the information presented on the packaging are the same. Similar consumer behaviour proves that earlier experience and the habits acquired in the past make quick purchase decisions possible. Introduction of small changes to the artwork of fruit juice packaging will not change the purchasing behaviour and preferences of consumers. A chance to modify purchasing behaviour might be related to the market positioning of the juice brand, higher frequency of advertisements or creating a new product category

Such a category should be based on selected attributes of the product which are considered important from the consumer's point of view, such as health. It seems possible to change consumer preference by introducing new, original packaging labels that would draw visual attention and engage emotions.

Our study has limitations which lead to formulating the prerequisites of further studies. First of all, only two cardboard orange juice boxes were used in the study, which made the study very simple and atypical, since usually consumers choose from a significantly wider product range. Therefore, future studies should cover more products as well as other forms of packaging – plastic and glass packaging. Secondly, we analysed emotional and rational information collectively, without dividing them into individual components. Finally, in our studies we have assumed that engaged consumers are convinced of the beneficial effects of drinking juice to their health and that they buy juice more frequently. In future studies it would be useful to indicate other variables, such as e.g. the consumer's attitude towards ecology or information processing style (intuitive, analytic) that may determine the perception of emotional and rational information shown on the packaging. The maturity of the juice market in Poland and the threat of lower sales will trigger the development of various juice categories (especially the NFC category). Their positioning in the minds of consumers will be shaped by advertisements and packaging. It is predicted that the launch of new packaging forms, new pictograms and new information by producers will make their products stand out and be perceived as a market novelty. The desirable attributes of such behaviours will include information about the beneficial impact of the product on health, a higher content of vitamins and mineral nutrients and reduced calorific value. A producer who will position its products through such properties will have high chances for success.

Translated by Monika Depczyńska
Proofreading by Michael Thoene

References

Ankiel-Homa, M. (2012). *Wartość komunikacyjna opakowań jednostkowych*. Poznań: Wydawnictwo Uniwersytetu Ekonomicznego w Poznaniu.

Ares, G., Deliza, R., Barreiro, C., Gimenza, A., & Gambaro, A. (2010). Comparison of two sensory profiling techniques based on consumer perception. *Food Quality and Preference*, *2*, 417-426.

Ariely, D. (2009). *Potęga irracjonalności*. Wrocław: Wydawnictwo Dolnośląskie.

Balon, U., & Dziadkowiec, J.M. (2016). *Polski rynek soków, nektarów i napojów*. In T. Sikora (Ed.). *Jakość z punktu widzenia konsumenta i organizacji. Rynek soków, nektarów i napojów*. Kraków: Wydawnictwo Naukowe Akapit.

Clement, J. (2007). Visual influence on in-store buying decisions: an eye track experiment on visual influence of packaging design. *Journal of Marketing Management*, *23*(9-10), 917-928. https://doi.org/10.1362/026725707X250395.

Damasio, A. (2002). *Błąd Kartezjusza. Emocje, rozum i ludzki mózg*. Poznań: Rebis.

East, R., Wright, M., & Vanhuele, M. (2014). *Zachowania konsumentów*. Warszawa: Oficyna Wolters Kluwer.

Grzybowska, B. (2012). Innovations in food production – Status and directions of development. *Olsztyn Economic Journal*, *7*(2), 183-193.

Heath, R. (2014). *Uwieść podświadomość*. Sopot: GWP.

Jerzyk, E. (2016). Design and communication of ecological content on sustainable packaging in young consumers' opinions. *Journal of Food Products Marketing*, *22*(6), 707-716.

Kaczmarek, M. (2016). *Użyteczność serwisów internetowych banków*. Poznań: PWE.

Kahnemann, D. (2012). *Pułapki myślenia. O myśleniu szybkim i wolnym*. Poznań: Media Rodzina.

Konsumpcja soków wzrosła w Polsce o 8 procent. (2017). Wiadomości Handlowe, 9 listopada. Retrieved from https://www.wiadomoscihandlowe.pl/artykuly/konsumpcja-sokow-wzrosla-w-polsce-o-8-proc,43160 (15.04.2018).

Liao, L.X., Corsi, A.M., Chrysochou, P., & Lockshin, L. (2015). Emotional responses towards food packaging: A joint application of self-report and physiological measures of emotion. *Food Quality and Preference*, *43*, 48-55. https://doi.org/10.1016/j.foodqual.2015.01.009.

Mondelaers, K., Verbeke, W., & van Huylenbroeck, G. (2009). Importance of health and environment as quality traits in the buying decision of organic products. *British Food Journal*, *111*(10), 1120-1139. https://doi.org/10.1108/00070700910992952

Mruk, H., & Jankowiak-Kaczmarek, A. (2017). *Wiedza o konsumentach z perspektywy ekonomii behawioralnej.* In M. Bartosik-Purgat (Ed.). *Zachowania konsumentów.* Warszawa: PWN.

Ohme, R. (2017). *Emo sapiens, harmonia emocji i rozumu.* Wrocław: Wydawnictwo Bukowy Las.

Pawlak-Lemańska, K., & Mruk-Tomczak, D. (2018). Ocena postrzegania informacji na etykietach deserków jabłkowych dla dzieci. *Handel Wewnętrzny*, *2*(373), 343-355.

Pradeep, A.K. (2011). *Mózg na zakupach.* Gliwice: Helion.

Rynek napojów bezalkoholowych w Polsce. (2016). Warszawa: KPMG.

Saher, M., Lindeman, M., & Koivisto Hursti, U-K. (2006). Attitudes towards genetically modified and organic foods. *Appetite*, *46*(3), 324-331. https://doi.org/10.1016/j.appet.2006.01.015.

Scott, D.M. (2015). *Nie przeszkadzaj klientowi w zakupach.* Warszawa: PWN.

Skalska-Józefowicz, K. (2017). *Rynek napojów bezalkoholowych – morze zmian, ocean potrzeb.* Warszawa: KPMG.

Verhoef, P.C. (2005). Explaining purchases of organic meat by Dutch consumers. *European Review of Agricultural Economics*, *32*(2), 245-267. https://doi.org/10.1093/eurrag/jbi008.

Wąsikowska, B. (2015). Eye Tracking w badaniach marketingowych. *Zeszyty Naukowe Uniwersytetu Szczecińskiego. Studia Informatica*, *36*, 177-192.

Weinschenk, S. (2013). *100 rzeczy, które każdy projektant powinien wiedzieć o potencjalnych klientach.* Gliwice: Helion.

Zajonc, R. (1985). Uczucia a myślenie: nie trzeba się domyślać, by wiedzieć co się woli. *Przegląd Psychologiczny*, *1*, 27-72.

Zaltman, G. (2003). *Jak myślą klienci.* Poznań: Forum.

OLSZTYN ECONOMIC JOURNAL
2019, 14(2), 209–221
ISSN 1897-2721 e-ISSN 2083-4675 DOI: 10.31648/oej.3972

ORIGINAL PAPER

Received: 18.12.2018
Revised: 11.02.2019
Published: 28.06.2019

FROM INTERMEDIARY RELATIONSHIP TO MULTIPLE RELATIONSHIPS – OPTION OF DEVELOPING THE NETWORK POSITION IN THE INTERNATIONALISATION PROCESS. AN EXPLORATORY STUDY OF A POLISH FOOD COMPANY[1]

Łukasz Małys[1], ***Krzysztof Fonfara***[2]
Faculty of International Business and Economics
Poznan University of Economics and Business
[1] ORCID: https://orcid.org/0000-0003-3078-1170
e-mail: lukasz.malys@ue.poznan.pl
[2] ORCID: https://orcid.org/0000-0003-0327-486X
e-mail: k.fonfara@ue.poznan.pl

JEL Classification: D22, D23, F23.

Key words: internationalisation process, network position, business networks.

Abstract

Traditionally, the internationalisation process of a company has been analysed from the perspective of entering foreign markets. Currently, it is often analysed within the so-called network models, which take into account the importance of business relationships. The process of entry is not understood as a process of entering a foreign market, but a process of entering a network of business relationships on a foreign market. Insidership in such networks is necessary for successful internationalisation. Being an insider in the network means having a certain network position.

The aim of the paper is to identify based on a pilot study the possible way of building network position on foreign markets by Polish food companies. The paper will present a picture of one company, focusing on its operations on German market since the entry in 2006. The researched company started building network position on foreign markets by developing a strong relationship with one actor, who acted as key intermediary with the market. As a result of major change in the business environment, the company decided to revise the strategy and develop a number of weaker links with various actors. The paper presents a number of questions which raise from a pilot study and require further investigation.

How to cite: Małys, Ł., & Fonfara, K. (2019). From Intermediary Relationship to Multiple Relationships – Option of Developing the Network Position in the Internationalisation Process. An Exploratory Study of a Polish Food Company. *Olsztyn Economic Journal*, *14*(2), 209-221. https://doi.org/10.31648/oej.3972.

[1] The article was written with the financial support from the Polish National Centre of Science (Narodowe Centrum Nauki) – Decision no. DEC-2013/09/B/HS4/01145. Project "The maturity of the company internationalisation and its competitive advantage (network approach)" (Project leader: Professor Krzysztof Fonfara).

OD RELACJI Z POŚREDNIKIEM HANDLOWYM DO RELACJI WIELORAKICH – OPCJA ROZWOJU POZYCJI W SIECI BIZNESOWEJ W PROCESIE INTERNACJONALIZACJI. BADANIA PILOTAŻOWE POLSKIEGO PRZEDSIĘBIORSTWA BRANŻY SPOŻYWCZEJ

Łukasz Małys, Krzysztof Fonfara
Wydział Gospodarki Międzynarodowej
Uniwersytet Ekonomiczny w Poznaniu

Słowa kluczowe: proces internacjonalizacji, pozycja w sieci, sieci biznesowe.

Abstrakt

Tradycyjnie proces internacjonalizacji firmy był rozpatrywany przez pryzmat wejścia (sekwencji wejść) na rynki zagraniczne. Obecnie jest często analizowany w ramach tzw. modeli sieciowych, które uwzględniają znaczenie relacji biznesowych. Zgodnie z ich założeniami proces wejścia nie jest rozumiany jako proces wchodzenia na rynek zagraniczny, ale proces wchodzenia w sieć relacji biznesowych na rynku zagranicznym. Bycie członkiem takiej sieci jest konieczne do udanej internacjonalizacji, a „członkostwo" w sieci oznacza posiadanie w niej określonej pozycji.

Celem artykułu jest identyfikacja na podstawie badania pilotażowego możliwego sposobu budowania pozycji w sieci biznesowej na rynkach zagranicznych przez polskie przedsiębiorstwa branży spożywczej. W artykule przedstawiono przypadek jednej firmy oraz jej działalności na rynku niemieckim od czasu wejścia w 2006 r. Badane przedsiębiorstwo zaczęło budować pozycję w sieci na rynku zagranicznym, rozwijając silne relacje z jednym podmiotem, który działał jako ważny pośrednik z rynkiem. W wyniku poważnej zmiany otoczenia biznesowego zdecydowało się na zmianę strategii i rozwój słabszych powiązań z różnymi podmiotami. W artykule przedstawiono wiele pytań wynikających z badania pilotażowego, które wymagają pogłębionych badań w przyszłości.

Introduction

Studies conducted on the internationalisation process of companies constitute an important area of international business. Currently, intensification of globalisation processes at various levels of analysing economic and social actors – from national economies, through companies and other types of organisations, through to consumers – is observed (Kofman & Youngs, 2008; Buckley & Ghauri, 2004). In reference to companies, the share of actors with relatively small experience in international exchanges and the appearance of born globals are demonstrated (Knight & Cavusgil, 2004). International activity of small companies with small resources is also indicated (Ratten *et al*., 2007). Understanding of stimuli initiating the internationalisation process of a company, its course and factors affecting its course as well as conditions of successful international expansion constitutes one of the key issues for both the theory as well as the practice of international business.

Traditionally, the internationalisation process of a company has been analysed from the perspective of entering (or a sequence of entries on) a foreign market. In this context, the analysis of foreign expansion forms and selection of target expansion markets, and in particular their change in time, are especially important (Fonfara, 2012). In accordance with the initial version of the Uppsala model (Johanson & Wiedersheim, 1975; Johanson & Vahlne, 1977), a company goes through certain stages in the internationalisation process. Initially, it chooses simple entry forms (indirect export). A gradual increase in expansion forms consequently leads to opening production branches on foreign markets (Dymitrowski *et al.*, 2012). Selecting target markets, a company initially decides to enter markets of countries with a low psychic distance and subsequently enters markets, which are more culturally distant. Causes for such actions result from the will to reduce risks. The initial lack of knowledge about foreign markets as well as about the expansion process itself conditions the selection of relatively simple forms of entry and markets, which are culturally similar. With the development of knowledge, risks related to foreign expansion decrease, which leads to choosing more advanced forms and markets with a higher psychic distance. Despite some criticism (Anderson, 1993; Axinn & Matthyssens, 2001), the Uppsala model, as the prototype of stage models of internationalisation, has been developed and within such developments various numbers and natures of stages in the internationalisation process of a company are presenteed (e.g. Cavusgil, 1980; Reid, 1981).

Currently, the internationalisation process of a company is often analysed within the so-called network models. Such models take into account the impact of the business relationships developed by a company with various actors (both local and international). At the same time, the process of entry is not understood as a process of entering a foreign market, but a process of entering a network of business relationships on a foreign market. Business relationships determine the selection of target markets, forms of entry and actions undertaken by a company (Coviello & Munro, 1997; Hohenthal *et al.*, 2014; Fonfara, 2012). In accordance with the revised version of the Uppsala model (Johanson & Vahlne, 2009), also in this approach one can distinguish certain stages within foreign activities related to the reduction of business risks. However, such risk reduction has a different nature. In the revised model, markets are considered to be networks of relationships. Insidership in such networks is necessary for successful internationalisation. Being an insider in the network means having a certain position in the network. The network position and knowledge stemming from it allow for the identification of opportunities, which may lead to decisions to increase commitment in the relationships in the foreign network. A higher degree of commitment increases learning and trust-building, which in the end strengthen the company's initial network position. Thus, internationalisation is an incremental, objective process, connected with learning and increasing knowledge about foreign networks of business relationships, a gradual increase in commitment to foreign relationships and strengthening the network position (Johanson & Vahlne, 2009).

The position in the network of relationships changes independently of the actions undertaken by a company as a result of activities carried out on a foreign market and interactions with other actors. An interesting issue is the scope in which a company can consciously change their position in the network undertaking specific thought-through actions. Taking it into account, the goal of the paper is to identify based on a pilot study the possible way of building network position on foreign markets by Polish food companies. The intention of the authors was to diagnose the activities of the company, which was successful in the process of foreign expansion and an attempt to indicate on their basis recommendations for other companies in the food industry.

The article has the following structure. Firstly, based on available literature, interpretations of the networks of relationships occurring in the research practice will be presented. Then, the authors will provide considerations about the network position, methods of its measurement and benefits from various identified network positions. Further, the methodology of the conducted studies and their results will be presented. The paper will be completed with recommendations for further, in-depth research.

Interpretation of networks of business relationships

In literature, two general interpretations of networks of business relationships can be identified – emergent business network and strategic networks. The first one assumes that business network is created as a result of interactions between independent entities (actors) building long-term relationships, with no original plan as to the network structure (Håkansson *et al.*, 2009). Two specific approaches to analysing business networks can be identified within it. The first specific approach assumes that network of self-forming business relationships, by definition, have no limits and conceives the entire market as a network of business relationships (e.g. Johanson & Mattson, 1988). The second specific approach assumes a spontaneous formation of business relationships; however, it accepts the existence of a certain boundary of a business network – a network horizon (Holmen & Pedersen, 2003; Kawa, 2017), network picture (Abrahamsen *et al.*, 2016) or network context (Anderson *et al.*, 1994).

Interpretation of the market as a network of business relationships is a dominating research concept within the Industrial Marketing and Purchasing Group (IMP Group). It is particularly clearly underlined in elaborations discussing the internationalisation process of a company. Johanson and Mattson (1988) demonstrated that the degree of network internationalisation (national market or its part) is one of the factors determining the behaviour of a company in the internationalisation process. According to the authors, a high degree of network internationalisation means that between particular national networks, there are numerous strong relations. Johasnon and Vahlne (2009, p. 1412) also assume that "markets are networks of relationships in which firms are linked to each other in various, complex and, to a considerable extent, invisible pattern". This assumption is explicit and implicit for most researchers gathered within the IMP Group. Although their research often does not discuss the matters of the internationalisation of a company, conclusions made are universal for local and international markets (Ratajczak-Mrozek, 2017). As Johanson and Vahlne stated (2009, p. 1423), "networks are borderless, the distinction between entry and expansion in the foreign market is less relevant [than strengthening network position]".

In the assumptions of the market as a network of relationships, it is stated that a business network is created as a result of interactions between independent actors building long-term relationships. In the process of interactions, actors adjust, create cooperation standards, build trust and other relational values (Leszczyński & Zieliński, 2013). A business network is created in an evolutionary and unplanned manner. No actor has a dominating role. In accordance with this concept, a business network results from the interactions of actors and the history of the cooperation (Ford *et al.*, 2011, p. 18, 175; Håkansson *et al.* 2009; Håkansson & Snehota, 2017). A business network created in an evolutionary manner is not a result of a strategic plan of any of the companies included in the network. Actors become participants of such a network in an unintended manner, often accidental. Structures and quasi-organisational forms are created independently of the will and active consciousness of network participants. Such a network is usually deprived of a clear centre (dominating company); however, particular companies can have stronger positions than others. It shows that defining the boundaries and structure of such a network can be problematic.

Some researchers are trying to determine the boundaries of emergent business networks. The main assumptions regarding the emergence, development and interaction of the business network coincide with those presented above. The only difference is the attempt to mark a certain network limit. This concept is expressed in the terms: *network horizon,* which determines the scope of the network perspective of a given actor (Holmen & Pedersen, 2003; Kawa, 2017), *network picture*, in which boundaries are determined by the researcher (Abrahamsen *et al.*, 2016; Czakon, 2017) or *network context*, which points entities influencing the operations of the company (Anderson *et al.*, 1994). The boundaries may depend on the company's experience, characteristics of a given network or a specific purpose of the analysis. They are also subject to change over time, which results from running business activity.

The second general interpretation of networks of business relationships refers to strategic networks. In strategic networks business relationships are created purposefully by the dominating actor. The literature points to the number of specific forms which strategic networks may take (see Ikpen & Tsang, 2005; Schary & Skjøtt-Larse, 2002; Gulati *et al.*, 2012). Yet, they all share some general features.

Determining the structure and boundaries is much easier in the case of strategic networks. Jarillo (1988) defines strategic networks as long-term agreements between different but connected companies that enable them to gain a competitive advantage over competitors outside the network. They are consciously created by the network leader as a result of a chosen strategy. The main company of such a network (*focal company*, *hub firm*) specialises in the areas of the value chain within which it has the greatest competencies, which consequently allow it to gain a competitive advantage. The remaining necessary resources are obtained from other actors on the basis of subcontracting or outsourcing. The network leader imposes a strategy on other actors, consciously creates connections and influences the emergence of connections between other members of the network, coordinates the flow of goods, information and knowledge. Connections in such a network are usually of a permanent and formalised nature. Co-operators are selected in terms of their abilities to effectively achieve the goals set. During the cooperation, the participants of the strategic network adapt their behaviour to the behaviour of other partners, expanding the area of cooperation to informal relationships (Möller *et al.*, 2005; Jarillo, 1988, p. 31-41). Connections occurring in a strategic network are usually formalised in nature and may take the form of strategic alliances, joint venture and long-term buy-sell relationships (Gulati *et al.*, 2000, p. 203). Examples of strategic networks include supply chains (see e.g. Lambert & Cooper 2000; Giannakis *et al.* 2012; Green *et al.*, 2012), value networks (Möller & Halinen, 1999), extended companies (e.g. Dyer, 2000), and also clusters (e.g., Lin *et al.*, 2012).

Certainly, building (or strengthening) network positions can take various forms and activities depending on the assumed interpretation of the network. Interpreting the market as a network of connections favours analysis and (in business practice) strengthening of diadic business relationships. It is manifested in publications of the IMP Group. The question as to how much a company can consciously change its position in such a network seems to be open. Determination of boundaries of the emergent business network allows for a more precise analysis of the position occupied in the broader context of the existing market connections. However, such a perspective may be insufficient in the case of analysing the company's internationalisation process. The issue of building a position in the strategic network depends on the ability to coordinate and build connections, select partners, manage the information flow, so taking on the role of a network leader (Hedberg *et al.*, 1997).

Network position

The issue of the company's position in a business network is raised by a number of researchers. However, it is difficult to find a direct definition of the term *network position*. Definitely more often, one can find the concept definition through the adopted measures of the position in a network or through its description.

Johanson and Vahlne (2009, p. 1415) indicate that a company that does not have a position in the network is an "outsider" in relation to such a network, while a company with a position in the network is an "insider". This perception of the network position is identical to having at least one tie connecting a given company to a business network. However, the authors indicate that entering the foreign market should be analysed from the perspective of the "position-building process in a foreign market network" (Johanson & Vahlne, 2009, p. 1415). They also state that "internationalisation is seen as the outcome of firm actions to strengthen network position" (Johanson & Vahlne, 2009, p. 1423). Strengthening the network position is perceived through the prism of commitment to the individual relationships (partners in relationships), which allows knowledge to be built and consequently opportunities to be discovered or/and created (Deszczyński *et al.*, 2017). Following Morgan and Hunt (1994), they also admit that a high level of trust in essential in strong business relationships. Thus, the authors perceive the process of building the network position as strengthening key relationships based on increasing the level of trust and decisions regarding the growth of commitment to these relationships. Such activities should allow opportunities to be noticed and, as a result, the competitive advantage of the partners to be increased.

In the context of commitment-building decisions, Johanson and Vahlne (2009, p. 1424, 1425) indicate that they may concern only particular relationships, but also the network in its entirety. In such a case, they are related to the creation of new ties in a business network, within which a company has a determined position or relations connecting a given company with other business networks.

Another approach to understanding the network position is reflected in its measurements assumed by some researchers (compare: Dolfsma & van der Eijk, 2016). The network position is often measured by its centrality, reflected by the number of ties maintained in the network. It is assumed that companies with more relations obtain more important market and technological information, which affects the possibility to introduce innovations (Dymitrowski, 2014). In this context, it is important to have relations with various types of actors, also non-business actors (e.g. relationships with scientific units, influential bodies). This results in a diversification of the obtained information. At the same time, it is indicated that the strength of the maintained relationships is less significant than their number.

The two approaches to building the network position described above reflect two theoretical bases to explain it: the theory of strong ties (Coleman, 1988) and the strength of weak ties theory (Granovetter, 1977, 1985). According to the first one, a strong position in the business network is related to having strong business relationships characterised by a high level of trust, commitment (expressed in readiness to make specific investments in a relationship) and low transactional costs. Having such relationships gives access to important information and therefore, accumulation of knowledge. In compliance with this theory, the network position is also determined by the position in a business network of actors with which strong relationships are maintained. The stronger the position in the network of such actors, the more valuable information can be obtained by the analysed company, which affects the possibility to identify and use emerging opportunities (Li & Borgatti, 2009).

The second theory, the strength of weak ties theory, indicates that the position in a business network is determined by the maintenance of a large number of loose distant ties and a relatively small number of strong ties. A large number of weak ties is supposed to provide the company with access to unique and rare knowledge other actors in the business network do not have (Granovetter, 1977, 1985). The company occupying such a network position may use it to bridge the structural holes and act as an intermediary between unrelated parties (Burt, 1992).

Research methodology

The aim of the study was to identify based on a pilot study the possible way of building network position on foreign markets by Polish food company. In particular, the authors wanted to examine if the company follows the assumptions of the theory of strong ties or the strength of weak ties theory.

The qualitative research was carried out in the form of in-depth standardised interview (Easterby-Smith & Lyles, 2011). The interview was conducted with key informants from a deliberately selected food company to which the authors of the paper had direct access gained in previous studies. The company was selected based on 3 criteria: the headquarter of the company located in Poland (1), owned completely by the Polish capital (2) and sell products in at least one foreign market (3). The key informants were representatives of management in charge of international expansion – one of them was a director responsible for export activities, the other one was a manager responsible for operations on German market.

Prior to the survey, key informants were contacted by telephone to explain the aims and scope of the study. This was done to persuade them to take part in the interviews, as well as to prepare and collect all the necessary information.

In the interview, the company's operations on one selected foreign market were discussed. The market was selected before the meeting as a result of the analysis of the company's foreign operations, telephone conversations with the director responsible for export activities.

The interview was conducted personally in October 2016. It was recorded with the key informants' consent. Transcripts of the recordings were also prepared.

The standardised interview form contained open-ended questions, making it possible to explore and clarify the issues covered by the study. In the first place, key informants were asked to discuss the process of expansion for a selected foreign market. In particular, the questions concerned the form of entry (and their changes in time) and motives for entering the foreign market. Next, the key informants were asked to indicate the actors with whom they cooperated during the process of entering and developing the activity on the foreign market. A special attention was put to the changes of actors with whom the companies cooperated and the nature of the cooperation itself. Researches attempted to explore the strength of particular ties and the role of companies in building it.

Research results

ABC[2] is a production and trade company operating in the sector of chocolate products. Their assortment includes chocolates, chocolate bars, pralines, but also hard candies, fudge, marshmallows and jelly beans. The company was established in 1982 and it is owned by Polish capital. The internationalisation process began five years after the commencement of business activities and it was directed to eastern European markets, especially Russia. Currently, the company operates on sixty foreign markets. The value of sales on foreign markets in total sales is approximately 60%. Purchasers of ABC products on foreign markets are distributors; however, direct cooperation with large retail networks is established with an increasing frequency.

In 2006, responding to an initiative of a commercial partner, the company commenced foreign expansion into the German market. At the beginning, nearly all sales on the German market were carried out by one distributor. The relationship with that distributor was described by the key informants as very strong, characterised by a high level of trust. The company made certain adaptations to facilitate cooperation. The key informants pointed to the high knowledge transfer between ABC and the distributor. After the introduction of the company's products on the market and increasing interest, ABC entered into other relations with several other companies, which were competitors of the main distributor at that time. However, from the perspective of the company they were not relations the company was strongly committed to.

[2] Upon request of the company, the name has been changed.

The turning point was the bankruptcy of the main distributor on the German market in 2011. This fact resulted in the need to find new importers and to further penetrate the market. Currently, the company cooperates with a larger number of distributors who are competitors at least to some extent. The relationships with them are weaker, compared to the relationships with main distributor before 2011. The company also points to the development of relationships with different types of distributors on German market (wholesalers and retail chains, some of them international). Thus, ABC strives to build a position in the business network by adopting a strategy for the diversification of connections. This applies to types of actors and the number of actors of a given type with which they interact. According to management's declarations, current relationships with distributors are not as strong as the relationship with one distributor maintained by the company until 2011. Additionally, a decrease in the commitment in particular relationships and in readiness of ABC to adapt is observed. However, it should be highlighted that this applies to individual relationships and not the business network in its entirety. According to the key informants, the level of openness to communication understood as the readiness to share confidential information with particular distributors also decreased. On the other hand, openness to create new ties in the business network increased. The level of trust in business relationships has not changed.

The success achieved by ABC on the German market was reflected in the overall competitive advantage of the company, increasing its recognition. The fact of carrying out effective business activities on the German market positively affects the perception of ABC by potential commercial partners, which, in the case of commercial networks from other countries, is particularly important.

To conclude, the company was following both of the identified theories when developing a network position on a Germen market. At the early stages of its operations on the market, ABC was building its network position according to the theory of strong ties. A major event, which was a bankruptcy of the main business partner on the market, encouraged ABC to change the strategy. Currently, it is following the strength of weak ties theory principles. The company was operating within emergent business network throughout the entire analysed period.

Conclusions

Based on the conducted study, it can be concluded that both of the identified strategies of building the position in a business network – strengthening selected ties and diversification of ties – was successfully used in the foreign expansion by a Polish food company. However, it must be emphasised, that since the study was limited to one company it is not representative for the entire industry. It was intended that a pilot study carried out can be an impulse to design further, in-depth research concerning Polish food industry.

The analysed company seem to consciously implement and adjust selected strategies to build its network position. At the beginning of the operations on the German market, ABC was developing very strong relationships with one selected partner. The management of ABC decided to diversify ties on the market and maintain their relatively small (or average) strength after the bankruptcy of the partner. It must be underlined that the company decided to change its strategy of building network position using recognition of the ABC company on the market and the position it already had. The actions of the company were guided by deliberate decisions, but it reacted to an important event. The strategies assumed to build the network position are objective in nature – they were "imposed" on the company through a combination of circumstances. However, within the strategies, the companies behave in a though-through manner, trying to consciously strengthen its network position.

The presented conclusions demonstrate a possibility for further studies. Firstly, it should be verified how common is the observed behaviour in the internationalisation process for food market companies and is it specific for the food market. Secondly, it is worth exploring if the behaviour is dependent on certain company characteristics (e.g. size, experience in international business). Thirdly, the antecedents of observed behaviour, that is application of the strategies and the change of the strategy after major event (e.g. willingness of risk limitation, lack of knowledge) should be clarified. Finally, a future quantitative study may give an answer to the question whether any of the strategies lead to a better company's performance, especially in a longer period of time.

Except for the listed above, some additional research possibilities may be mentioned. It is worth verifying whether companies for which foreign expansion has a spontaneous and unplanned nature also try to strengthen their position in international business networks in a conscious manner, or whether they remain inactive minor actors in them. It is also worth exploring how non-relational activities (e.g. marker share, strong brands) influence a network position of the company.

Translated and proofreading by Justin Nnorom

References

Abrahamsen, M.H., Henneberg, S.C., & Huemer L. (2016). Network picturing: An action research study of strategizing in business networks. Review article. *Industrial Marketing Management*, *59*, 107-119. https://doi.org/10.1016/j.indmarman.2016.02.006.

Anderson, J.C., Håkansson, H., & Johanson J. (1994). Dyadic Business Relationships within a Business Network Context. *Journal of Marketing*, *58*(4), 1-15. https://www.jstor.org/stable/1251912.

Anderson, O. (1993). On The Internationalization Process of Firms: a Critical Analysis. *Journal of International Business Studies*, *24*(2), 209-231. https://doi.org/10.1057/palgrave.jibs.8490230.

Axinn, C.N., & Matthyssens, P. (2001). Limits of internationalization theories in an unlimited world. *International Marketing Review*, *19*(5), 436-449. https://doi.org/10.1108/02651330210445275.

Borgatti, S.P., & Li, X. (2009). On network analysis in a supply chain context. *Supply Chain Management*, *45*(2), 5-22. https://doi.org/10.1111/j.1745-493X.2009.03166.x.

Buckley, P., & Ghauri, P. (2004). Globalisation, economic geography and the strategy of multinational companies. *Journal of International Business Studies*, *35*(2), 81-98. https://doi.org/10.1057/palgrave.jibs.8400076.

Burt, R. (1992). *Structural Holes*. Cambridge: Harvard University Press, Mass.

Cavusgil, S.T. (1980). On the internationalization process of firms. *European Research*, *8*, 273-281.

Coleman, J.S. (1988). Organizations and Institutions: Sociological and Economic Approaches to the Analysis of Social Structure. *The American Journal of Sociology*, *94*, 95-120. https://doi.org/10.1086/228943.

Coviello, N.E., & Munro, H.J. (1997). Network relationships and the Internationalisation Process of Small Software Firms. *International Business Review*, *6*(4), 361-386. https://doi.org/10.1016/S0969-5931(97)00010-3.

Deszczyński, B., Fonfara, K., & Dymitrowski, A. (2017). The Role of Relationships in Initiating the Internationalisation Process in B2B Markets. *Entrepreneurial Business and Economics Review*, *5*(4), 91-109. https://doi.org/10.15678/EBER.2017.050404.

Dolfsma, W., & van der Eijk, R. (2016). Network position and firm performance – the mediating role of innovation. *Technology Analysis & Strategic Management*, *29*(6), 556-568. https://doi.org/10.1080/09537325.2016.1216095.

Dyer, J.H. (2000). *Collaborative advantage: Winning through extended company supplier networks*. Oxford: Oxford University Press.

Dymitrowski, A. (2014). *The Role of Innovations Created in the Internationalization Process for Company Performance*. Warszawa: Wyd. Nauk. PWN.

Dymitrowski, A., Małys, Ł., & Ratajczak-Mrozek, M. (2012). *Forms of internationalisation and company performance (research results)*. In T. Rynarzewski (Ed.). *Modern World Economy. Micro- and Macroeconomic Issues*. Zeszyty Naukowe Uniwersytetu Ekonomicznego w Poznaniu, *219*, 212-222.

Ford, D., Gadde, L.E., Håkansson, H., & Snehota, I. (2011). *Managing Business Relationships*. 3rd Edition. London: John Wiley.

Giannakis, M., Doran, D., & Chen. S. (2012). The Chinese paradigm of global supplier relationships: Social control, formal interactions and the mediating role of culture. *Industrial Marketing Management*, *41*(5), 831-840. https://doi.org/10.1016/j.indmarman.2012.06.008.

Globalization: Theory and practice. (2008). 3rd edition. E. Kofman & G. Youngs (Eds). London: The Continuum International Publishing Group.

Granovetter, M. (1977). *The Strength of Weak Ties*. In S. Leinhardt (Ed.). *Social Networks. A Developing Paradigm*. London: Academic Press, p. 347-367. https://doi.org/10.1016/B978-0-12-442450-0.50025-0.

Granovetter, M. (1985). Economic action and social structure: The problem of embeddedness. *American Journal of Sociology*, *91*(3), 481-510. https://doi.org/10.1086/228311.

Green, K.W., Whitten, D., & Inman, R.A. (2012). Aligning marketing strategies throughout the supply chain to enhance performance. *Industrial Marketing Management*, *41*(6), 1008–1018. https://doi.org/10.1016/j.indmarman.2012.02.003.

Gulati, R., Nohria, N., & Zaheer, A. (2000). Strategic networks. *Strategic Management Journal*, *21*(3), 203- 215. https://doi.org/10.1002/(SICI)1097-0266(200003)21:3<203::AID-SMJ102>3.0.CO;2-K.

Gulati, R., Puranam, P., & Tushman, M. (2012). Meta-organization design: Rethinking design in interorganizational and community contexts. *Strategic Management Journal*, *33*(6), 571-586. https://doi.org/10.1002/smj.1975.

Håkansson, H., Ford, D., Gadde, L.-E., Snehota, I., & Waluszewski, A. (2009). *Business in Networks*. Chichester: John Wiley & Sons.

Handbook of organizational learning and knowledge management. (2011). M. Easterby-Smith & M.A. Lyles (Eds.). London: John Wiley and Sons.

Hedberg, B., Dahlgren, G., Hansson, J., & Olve, N.G. (1997). *Virtual Organizations and Beyond: Discover Imaginay Systems*. Chichester: John Wiley & Sons.

Hohenthal, J., Johanson, J., & Johanson, M. (2014). Network knowledge and business-relationship value in the foreign market. *International Business Review*, *23*(1), 4-19. https://doi.org/10.1016/j.ibusrev.2013.08.002.

Holmen, E., & Pedersen, A.-C. (2003). Strategizing through analyzing and influencing the network horizon. *Industrial Marketing Management*, *32*(5), 409-418. https://doi.org/10.1016/S0019-8501(03)00014-2.

Inkpen, A.C., & Tsang, E.W. 2005. Social Capital, Networks and Knowledge Transfer. *Academy of Management Review*, *30*(1), 146-165. https://doi.org/10.5465/amr.2005.15281445.

Jarillo, J.C. (1988). On Strategic Networks. *Strategic Management Journal*, *9*(1), 31-41. https://doi.org/10.1002/smj.4250090104.

Johanson, J., & Vahlne, J. (2009). The Uppsala internationalization process model revisited: From liability of Foreignness to Liability of Outsidership. *Journal of International Business Studies*, *40*(9), 1411-1431. https://doi.org/10.1057/jibs.2009.24.

Johanson, J., & Mattsson, L.-G. (1988). *Internationalisation in Industrial Systems – A Network Approach*. In N. Hood & J.E. Vahlne (Eds.). *Strategies in Global Competition*. London: Croom Helm.

Johanson, J., & Vahlne, J.-E. (1977). The Internationalization Process of the Firm. A Model of Knowledge Development and Increasing Foreign Market Commitments. *Journal of International Business Studies*, *8*(1), 23-32. https://doi.org/10.1057/palgrave.jibs.8490676.

Johanson, J., & Wiedersheim-Paul, F. (1975). The internationalization of the Firm – Four Swedish Cases. *Journal of Management Studies*, *12*(3), 305-323. https://doi.org/10.1111/j.1467-6486.1975.tb00514.x.

Kawa, A. (2017). *Orientacja sieciowa przedsiębiorstw branży usług logistycznych*. Poznań: Wydawnictwo Uniwersytetu Ekonomicznego w Poznaniu.

Knight, G., & Cavusgil, S. (2004). Innovation, organizational capabilities, and the born-global firm. *Journal of International Business Studies*, *35*(2), 124-141. https://doi.org/10.1057/palgrave.jibs.8400071.

Lambert, D.M., & Cooper, M.C. (2000). Issues in supply chain management. *Industrial Marketing Management*, *29*(1), 65-83. https://doi.org/10.1016/S0019-8501(99)00113-3.

Leszczyński, G., & Zieliński, M. (2013). The impact of misaligned business communication on the quality of salesperson-buyer relationships. *Poznan University of Economics Review*, *13*(2), 106-135.

Lin, H.-M., Huang, H.-C., Lin, C.-P., & Hsu, W.-C. (2012). How to manage strategic alliances in OEM-based industrial clusters: Network embeddedness and formal governance mechanisms. *Industrial Marketing Management*, *41*(3), 449-459. https://doi.org/10.1016/j.indmarman.2011.04.003.

Möller, K., & Halinen, A. (1999). Business relationships and networks: managerial challenge of network era. *Industrial Marketing Management*, *28*(5), 413-427. https://doi.org/10.1016/S0019-8501(99)00086-3.

Möller, K., Rajala, A., & Svahn, S. (2005). Strategic business nets – their type and management. J*ournal of Business Research*, *58*(9), 1274-1284. https://doi.org/10.1016/j.jbusres.2003.05.002.

Morgan, R.M., & Hunt, S.D. (1994). The Commitment-Trust Theory of Relationship Marketing. *Journal of Marketing*, *58*(3), 20-38. https://www.jstor.org/stable/1252308.

No Business is an Island: Making Sense of the Interactive Business World. 2017. H. Håkansson & I. Snehota (Eds.). Emerald Publishing.

Ratajczak-Mrozek, M. (2017). *Network Embeddedness. Examining the Effect on Business Performance and Internationalization*. Cham, Switzerland: Palgrave Macmillan,.

Ratten, V., Dana, L.-P., Han, M., & Welpe, I. (2007). Internationalisation of SMEs: European comparative studies. *International Journal of Entrepreneurship and Small Business*, *4*(3), 361-379.

Reid, S. (1981). The Decision-Maker and Export Entry and Expansion. *Journal of International Business Studies*, *12*(2), 101-112. https://doi.org/10.1057/palgrave.jibs.8490581.

Schary, P.B., & Skjøtt-Larse, T. (2002). *Zarządzanie globalnym łańcuchem podaży*. Warszawa: Polskie Wydawnictwo Ekonomiczne.

The Development of Business Networks in the Company Internationalisation Process. 2012. K. Fonfara (Ed.). Poznań: Poznań University of Economics Press.

OLSZTYN ECONOMIC JOURNAL
2019, 14(2), 223–236
ISSN 1897-2721 e-ISSN 2083-4675 DOI: 10.31648/oej.3973

ORIGINAL PAPER
Received: 23.10.2018
Revised: 15.02.2019
Published: 28.06.2019

THE CONSEQUENCES OF OZONE LAYER DEPLETION ON THE HEALTH OF POLES – A CASE STUDY OF SKIN MELANOMA

***Stanisław Wieteska*[1], *Małgorzata Jabłońska*[2]**
Faculty of Social Sciences
[1]Jan Kochanowski University in Kielce, Branch in Piotrków Trybunalski
ORCID: https://orcid.org/0000-0002-6578-9861
e-mail: s.wieteska@unipt.pl
[2] Faculty of Economy and Sociology
University of Lodz
ORCID: https://orcid.org/0000-0003-1465-8818
e-mail: malgorzata.jablonska@uni.lodz.pl

JEL Classification: I112, I113, Q54.

Key words: ozone layer, skin cancer, prevention.

Abstract

This article presents the results of the observation of cases of skin melanomas in Poland. Dermatologists raise the problem of increased sunlight penetration and the unreasonable use of solar radiation. This causes numerous cases of skin cancer. The aim of the article is to signal the threat posed by the depletion of the ozone layer in Poland. The article uses a research method based on an analysis of statistical data on skin cancers, supported by the available research in this area. Studies show that the incidence of skin cancer in Poland in 2007-2016 nearly doubled. Women are more prone than men to skin neoplasms. The mortality rate due to skin melanoma also increased dramatically. In the article, we point to the need of raising awareness of the hazards, and consider the coverage of treatment costs by life insurance as one of the options to protect the health of insured persons. We also raise the problem of prophylaxis on the basis of sunscreen cosmetic products.

How to cite: Wieteska, S., & Jabłońska, M. (2019). The Consequences of Ozone Layer Depletion on the Health of Poles – a Case Study of Skin Melanoma. *Olsztyn Economic Journal*, *14*(2), 223-236. https://doi.org/10.31648/oej.3973.

KONSEKWENCJE WPŁYWU ZMNIEJSZANIA SIĘ WARSTWY OZONOWEJ NA ZDROWIE POLAKÓW NA PRZYKŁADZIE ZACHOROWAŃ NA CZERNIAKA SKÓRY

***Stanisław Wieteska*[1], *Małgorzata Jabłońska*[2]**
[1]Wydział Nauk Społecznych
Uniwersytet Jana Kochanowskiego w Kielcach, Filia w Piotrkowie Trybunalskim
[2] Wydział Ekonomiczno-Socjologiczny
Uniwersytet Łódzki

Słowa kluczowe: warstwa ozonowa, zachorowania na nowotwory skóry, prewencja.

Abstrakt

Przedmiotem artykułu jest obserwacja zachorowań na czerniaki skóry na terenie Polski. W opinii lekarzy dermatologów dostrzega się problem wzmożonego oddziaływania promieni słonecznych, a także nierozsądnego z nich korzystania. Skutkiem tego są liczne zachorowania na nowotwory skóry. Celem artykułu jest zasygnalizowanie zagrożenia, jakie niesie za sobą zmniejszanie się warstwy ozonowej na terenie Polski. W artykule zastosowano metodę badania polegającą na analizie danych statystycznych zachorowań na nowotwory skóry, wskazanie na dotychczasowe dostępne wyniki badań w tym zakresie. Z przeprowadzonych badań wynika, że w Polsce w latach 2007-2016 nastąpił prawie dwukrotny wzrost zachorowań na nowotwory skóry. Bardziej podatne na zachorowania są kobiety niż mężczyźni. Również radykalnie wzrasta liczba zgonów na czerniaka skóry. W artykule wskazano na konieczność podnoszenia świadomości zagrożeń oraz objęcia kosztów zachorowań przez ubezpieczenia na życie jako jedną z opcji ochrony zdrowia ubezpieczonych. Podniesiono także problem działalności prewencyjnej na gruncie produktów kosmetycznych promienioochronnych.

Introduction

Global warming is caused by several factors, including the emission of greenhouse gases to the atmosphere. A direct consequence of these phenomena is the depletion of the ozone layer. A thinner ozone layer means that UV radiation penetrates to the Earth's surface more intensively. This in turn causes numerous effects on humans, plants and animals.

The aim of this article has been to signal the risk caused by the diminishing ozone layer to people living on the territory of Poland. The hypothesis is that the depletion of the ozone layer contributes to a higher incidence of skin cancers, especially melanoma.

The research method applied in this study consists of an analysis of statistical data, where results of the most important studies on the ozone layer conducted at different research centres have been taken into consideration. The article also draws on the literature specified in the attached list of references. The article is addressed to actuarial and risk assessment departments and to persons dealing with health and personal insurance policies.

Ozone, the ozone layer and its properties

Ozone is an allotrope of oxygen. It is a colourless gas with a density higher than that of air. About 90% of ozone in the atmosphere is at the altitude of 10-50 km, where it forms the so-called ozone layer. Ozone is a non-flammable gas, but it has an ability to sustain a combustion processes (the same as oxygen), and it dissolves well in water. In addition, it has a characteristic smell as in the air after a storm, caused by its formation. For example, it is formed from the high temperatures of a lightning strike during thunder storms (Dobrzański & Opaliński, 2009).

The ozonosphere – 'the ozone layer, a layer of the Earth's atmosphere with an elevated content of ozone; it lies in the stratosphere at 15-50 km above the Earth's surface, reaching the maximum ozone concentration at an altitude of 20-30 km' (*Encyklopedia PWN*, online). This layer acts like a filter for the Earth, absorbing much of the solar radiation within the ultraviolet band. It plays a very important role in the atmosphere because it protects our globe from biologically harmful ultraviolet radiation, and a shortage of ozone gives rise to the formation of the so-called ozone hole.

An ozone hole is a considerable decrease in the concentration of ozone in the Earth's atmosphere (up to 90% of the average concentration) (*Encyklopedia PWN*, online).

UV radiation is ultraviolet solar radiation reaching the upper strata of the Earth's atmosphere. It is comprised of optic radiation in the range of wavelengths between 180 and 400 nm. It is divided into three bands of different wavelengths; ultraviolet A (UV-A 320-400 nm), ultraviolet B (UV-B 280-320 nm) and ultraviolet C (UV-C 180-280 nm) (Skórka, 2000, p. 7).

Freons are mainly used as a cooling factor in refrigerators and air conditioners, and (less and less often nowadays) as a carrier gas in aerosol cans.

Halons are non-flammable gases or liquids. They do not conduct electric current, do not cause corrosion, and are used for firefighting (halon extinguishers contain pressurised halons); the most popular halons are bromotrifluoromethane CF3Br – halon 1301, bromochlorodifluoromethane CF2ClBr – halon 1211, and dibromotetrafluoroethane C2F4Br2 – halon 2402. The use of halons is being reduced because it is thought that these compounds, in the same way as freons, have a damaging effect on the ozonosphere (*Encyklopedia PWN*, online).

Greenhouse gases are components of the atmosphere, originating from both natural and man-made sources, which absorb and emit radiation of specific wavelengths within the spectrum of thermal infrared radiation emitted by the Earth's surface, the atmosphere itself and clouds. The principal greenhouse gases in the Earth's atmosphere are: water vapour (H_2O), carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4) and ozone (O_3).

There are other greenhouse gases present in the atmosphere that are exclusively of anthropogenic sources, such as halohydrocarbons and other substances containing chlorine and bromine (Baede, 2009, p. 79).

Ozone levels have been measured for years in Poland, namely since 1963. The measurements have been taken in the near-earth atmospheric layer (Jarosławski, 1993, p. 255-259) at the Polish Academy of Sciences, specifically at the PAN Geophysical Observatory in Bielsk[1]. In 1979, the Centre of Aerology at the Institute of Meteorology and Water Management in Legionowo undertook to monitor ozone levels, too. Globally, the worst loss in the ozone layer (ca 60%), which was named the Antarctic ozone hole, was observed over the South Pole (Lityńska, 1992, p. 5).

Studies have pointed to the cyclic occurrence of ozone depletion over a one year period. The highest losses are recorded in summer, with the lowest losses occurring in autumn and winter. Also, the time of day has an effect on the amount of ozone (Tab. 1).

Table 1

Total content of ozone in the atmosphere

Years	01	02	03	04	05	06	07	08	09	10	11	12	Annual average
	in Dobson units [D]*												
	monthly average												
1970	334	442	420	417	378	373	345	328	319	305	305	320	357
1980	341	358	402	425	404	374	373	331	305	296	298	326	353
1990	314	328	350	383	368	356	–	–	320	276	296	307	330
2000	314	341	346	340	335	324	328	298	286	261	258	306	311
2010	343	377	395	396	367	346	333	316	316	300	300	338	344
2013	348	383	392	373	350	347	344	317	305	278	281	279	333

* Dobson units D = 1 millicent atmosphere, a unit corresponding to the pressure produced by the mass of ozone filling 1 cm3 under standard conditions, i.e. the pressure of 1 atmosphere and temperature of 0ºC.
Source: Polish Main Statistical Office GUS. Tab. 32(158).

In Poland, the highest losses in the ozone layer were recorded on 28 January 1992, at about 193 D (Dobson units) (Degórska, 1982, p. 12, 13). Unfortunately, the variability in the ozone layer's thickness for the geographical latitude at which Poland lies lacks clarification.

[1] Ozone is measured in Dobson units. Dobson unit (du) = 1 millicent atmosphere, a unit corresponding to the pressure exerted by the mass of ozone occupying 1 cm^3 under standard conditions, i.e. the pressure of 1 atmosphere and temperature of 0ºC. The name of the unit comes from the name of G.M.B. Dobson, the inventor of the spectrophotometer used for measurement of ozone (Kożuchowski, 2018).

Observations of the ozone layer in Poland (the station in Legionowo) in 1992 (Lityńska & Kois, p. 9, 10) showed that:

– there were strong fluctuations in the atmosphere at the altitude of 10-18 km, which distorted the normal course of ozone content variation. The greatest anomalies occurred on the following days: 9 January, 10 February, 5 and 9 March, and 5 and 7 August of that year; the deficit of ozone was estimated at 70-80%;

– the UV radiation intensity at the Polish latitude was 10-fold higher in summer than in winter;

– fluctuations in the ozone layer in the stratosphere at 18-30 km in height were small.

These fluctuations and anomalies can be called by convention 'ozone mini-holes'[2].

In 1979, the ozone hole covered a small area above Antarctica. Until 1992, it grew larger, and became equal to the size of the entire Antarctic (Lityńska & Latosińska, 2000, p. 109).

Causes of the depletion of the ozone layer and methods for controlling this process

The disappearance of the ozone layer increases the risk of exposing the entire biosphere to ultraviolet (UV) radiation. The negative consequences of more intensive ultraviolet (UV) radiation affect agriculture, fisheries, forestry and human health.

The ozone layer is depleted due to the use of freons[3], the emission of greenhouse gases, flights of aeroplanes, or the production of chloro derivatives of hydrocarbons.

Research concerning ozone found in the atmosphere has been conducted for many years (Dziewulska-Łosiowa, 1989). It has been hypothesised that the ozone layer is affected by: the sun's activity, dynamic processes in the atmosphere, and anthropogenic events, such as nuclear explosions, carbon dioxide generation, the application of artificial fertilizers and the production of chloro derivatives of hydrocarbons.

Scientific studies on the ozone layer have proven that the condition of this layer depends on an 11-year-long cycle in the Sun's activity. It is claimed that

[2] The ozone hole was detected around 1985. In 1987, 37 states signed the Montreal Protocol, which envisaged the reduction in freons by 50% until the year 2000. At the moment, there are 150 states which have signed the Montreal Protocol.

[3] Freons – 'saturated fluoroorganic compounds, fluoride derivatives of methane and ethane, also containing chlorine and less often bromide.'Freons are non-flammable liquids with a low boiling point and are durable molecules; despite having favourable properties, freons are now used very sparingly because once these compounds enter the ozonosphere they contribute to the expansion of the ozone hole (*Encyklopedia PWN*, online).

the durability of the ozone layer also depends on the amounts of gases emitted by a series of volcanic eruptions (Dziewulska-Łosiowa, 1989).

Forecasts on the degradation of the stratospheric ozone implicate an unfavourable future progress of these tendencies (mainly due to chlorofluorocarbons), despite the numerous measures undertaken.

On 28 September 1995, the Foundation for the Protection of the Ozone Layer was established. The foundation plays a major role in the performance of Poland's international obligations concerning environmental protection. The foundation's mission is to protect the ozone layer by organising a national network of recovery and regeneration of cooling factors (Dobrzyński, 2007, p. 9-11). In addition, proposals were submitted for the certification of refrigerating and air-conditioning appliances, and the personnel serving devices which use gases that deplete the ozone layer (Kurcz & Steindel, 2009, p. 6-9).

Agenda 21, in the section entitled Conservation and Management of Resources for Development, points to the fact that air conservation, including the protection of the ozone layer, is one of the priorities. The protection of the ozone layer is an international responsibility. Numerous actions have been implemented (e.g. studies on the ozone layer, monitoring, improvement of legal regulations) in order to protect this layer (Górski, 1997, p. 79-90). The Montreal Protocol introduces the concept of 'controlled substances'. This concept embraces 'new substances, pure, mixed or isomers, in containers for transport or storage.' The Montreal Protocol, in its part regarding the ozone layer, served as the basis for developing the European Union regulations, which are binding for all EU member states.

Pursuant to Regulation (EC) no 2037/2000 of the European Parliament and of the Council of 29 June 2000, on substances that deplete the ozone layer, all member states are obliged to report to the European Commission the information about (Purski, 2007, p. 13, 14):

– the use of methyl bromide (in agriculture),
– the use of halons in critical situations (in Poland, to extinguish fires),
– replacement of halons by other substances, less harmful to the environment,
– controlling illegal trade,
– the recovery of used controlled substances.

In 2001, a law concerning the handling of ozone-depleting substances became effective (Act of 2 March 2001 on Handling Substances that Deplete the Ozone Layer; Journal of Law No 52, item 537). This law was passed in response to the obligations specified in the Vienna Convention with respect to the protection of the ozone layer, which was signed in Vienna on 22 March 1985 (Journal of Law of 1992, No 98, item 488), and in the Montreal Protocol on substances that deplete the ozone layer, signed on 16 September 1987 (Journal of Law of 1992, No 98, items 490 and 491). The Polish law regulates:

– production of ozone-depleting substances,

– trade (purchase and sale) abroad of substances that deplete the ozone layer and products that contain these substances,

– the introduction of substances that deplete the ozone layer to the domestic trade and use of such substances in business enterprises.

The attachments to the act contain a list of ozone-depleting substances. Several important decisions regarding the protection of the ozone layer were made in 2004.

1. The Polish law on substances that deplete the ozone layer was amended (Act of 20 April 2004 on Substances that Deplete the Ozone Layer; Journal of Law No 121, item 1263 as amended in 2004).

2. Guidelines for the education of personnel handling ozone-depleting substances, with templates of certificates confirming qualifications, were issued (Regulation of the Minister of Economy and Labour, of 16 August 2004, on curricula, conducting examinations and a certificate template in the field of controlled substances (Journal of Law of 2004, No 195, item 2009 as amended). The regulation specifies, *inter alia*, the curricula of introductory and supplementary courses concerning controlled substances. In the same year, another regulation concerning examination of the leakproofness of appliances containing controlled substances became effective in the same year (Regulation of the Minister of Economy and Labour of 16 August 2004 on examination of the leakproofness of appliances and installations containing controlled substances (Journal of Law of 2004, No 195, item 2008 as amended). This regulation imposes a requirement on the users to inspect the leakproofness of installations and devices by visual inspection, inspecting for signs of corrosion, detecting any leaks, checking the documents.

3. In the same year, the Regulation of the Minister concerning the register of controlled substances was passed (Regulation of the Minister of Economy and Labour of 11 August 2004 on the accounting of controlled substances (Journal of Law No 185, item 1910 as amended).

This document specifies, *inter alia*:

– how controlled substances should be registered in a ledger,

– procedures for the transmission of the data contained in ledgers of controlled substances,

– templates of the forms to register controlled substances.

In 2004, the Council of Ministers approved a strategy for the management of ozone layer depleting substances, including the strategy of withdrawing anti-asthma aerosols. The strategy also envisaged allocating about 36 million Polish zloty from the funds of the National Fund for Protection of the Environment and Water Management to financing the recovery and recycling of the above substances (*Prawna ochrona warstwy ozonowej*, 2004, p. 6).

The law that has been binding in Poland since 10 July 2015 is the Act on Substances Depleting Ozone and Some Fluorinated Greenhouse Gases, from 15 May 2015 (Journal of Law of 2015, item 881), and after amendments the consolidated text of 6 November 2018 (Journal of Law of 2018, item 222).

A strategy was developed to phase out halons from fire-fighting devices. The strategy set out deadlines, measures, training, and restrictions on the use of halons; this is another step that allows Poland to fulfill its international obligations (Kuncerowicz-Polak & Purski, 2000, p. 3, 4).

Health hazards due to the depletion of the ozone layer

Solar radiation, especially UV-*β*, affects the human skin, inducing its greater pigmentation. Among the diseases caused by UV rays, there are: solar urticaria, malignant melanoma (neoplasm), dermatomyositis, and other ailments effected by drugs which elevate the sensitivity to UV radiation. UV radiation affects the blood system in humans (Latanowicz & Latosińska, 2000, p. 99-102).

It has also been found that UV rays activate certain infectious diseases, e.g. caused by herpes or human papilloma virus, resulting in a more severe course of the illness.

Solar radiation causes damage to the immune system, especially to the skin, accelerating its ageing. Excessive exposure of the human body to solar rays, especially UV radiation, may lead to malignant skin cancers[4].

It is believed that the UV type ß radiation, that is rays within the wavelength range of 290-320 nm, play a major role in the aetiology of skin cancer.

The literature distinguishes the following types of skin cancer (Ciszewska, 2000, p. 65-68):

– basal cell carcinoma (BCC),

– squamous cell carcinoma (SCC). BCC is more frequent than SCC,

– non-melanoma skin cancer (NMSC). The incidence of NMSC varies and ranges between: $0.5 \cdot 10^{-5}$ in Spain, $213.2 \cdot 10^{-5}$ in Australia and $0.2 \cdot 10^{-5}$ in Slovenia. In Poland, between 1988-97, the incidence was from $9.5 \cdot 10^{-5}$ to $11.1 \cdot 10^{-5}$ among men, and from $6.5 \cdot 10^{-5}$ to $7.9 \cdot 10^{-5}$ among women.

Malignant melanoma (melanoma malignum MM) originates mainly from melanocytes localised within the basal layer of the epithelium.

Studies suggest various classifications of MM. Moreover, the incidence of MM in different states and among different human races varies (Bień, 2005, p. 113-120). Factors which favour its development are (Pastuszka, 2010, p. 58-62):

– exposure to sunlight,

– occurrence of melanoma in the family (genetic factors),

[4] The impact of ozone degradation on the increasing incidence of skin cancer is difficult to assess because of a great number of factors involved (e.g. human behaviour patterns, environmental factors) that can occur simultaneously. Mathematical models have been used as well (Kaczmarek *et al.*, 1998, p. 313-323).

– immunological disorders,
– presence of viruses,
– influence of hormones.
The incidence of melanoma cases in Poland can be seen in Table 2.

Table 2

Cases of melanoma in Poland in 2007–2014

Year \ Specification	Total	Men	Women	Total number of deaths
2007	8,871	4,210	4,661	47*
2011	10,965	5,229	5,736	86
2012	11,853	5,625	6,228	145
2013	12,598	5,987	6,611	171
2014	14,081	6,675	7,406	·

* 2006 r.
· no data
Source: the Statistical Yearbook by the Polish Central Statistical Office (GUS). Table. Incidence of malignant neoplasms.

These data indicate that there was a dynamic growth in 2007-2014 in the rate of skin melanoma, by about 58.7%. The number of deaths due to this cancer increased as well. Notably, women suffer from melanoma more often than men.

Dependencies between skin cancer cases, gender and age are presented in Table 3.

Table 3

Cases of melanoma and other skin cancers

Age	Men					Women				
	2007	2011	2012	2013	2014	2007	2011	2012	2013	2014
0–9	-	-	-	-	1	-	1	-	1	1
10–19	5	5	8	3	10	8	3	13	7	5
20–29	37	53	63	52	66	58	90	86	111	106
30–39	117	128	140	183	166	145	194	231	232	232
40–49	332	277	322	339	364	389	421	410	375	413
50–59	735	864	913	954	948	758	943	958	1,003	1,031
60–69	1,049	1,261	1,338	1,408	1,614	956	1,150	1,245	1,336	1,452
70–79	1,329	1,720	1,818	1,886	2,059	1,482	1,661	1,841	1,976	2,205
80 years and more	606	921	1,023	1,162	1,447	865	1,273	1,444	1,570	1,961

Source: the author, based on the Demographic Yearbook by the Polish Central Statistical Office (GUS) for the years 2008–2014.

These data prove that women contract skin cancers more often than man. The persons at the highest risk are above 50 years of age.

Uncontrolled exposure of the human body to the sun's rays can cause solar urticaria (Peyron *et al.*, 1999, p. 347-350). Another common health problem is uveitis. The eye lens absorbing large amounts of UV rays can become turbid. This is a problem commonly observed on snowy mountain slopes.

An index of natural UV radiation serving as a measure of the negative influence on the human skin has been developed[5]. Thus, the higher the UV index, the higher the risk of acquiring a skin disease.

A wide-scale investigation into the effects of UV rays on the human skin has implicated a number of factors responsible for skin cancers. The problem appears all across Europe (Kaczmarek *et al.*, 1998, p. 313-348), and the differentiating factors are the patient's age, sex, geographical location, season of the year, and others.

A study conducted on 251 patients in the Oncological Centre of Warmia and Mazury in Olsztyn revealed that (Kuciel-Lisieska *et al.*, 2011, p. 344-348):

– melanoma is most often localised in the area of the upper limbs, head and neck,

– melanoma of the digestive system was diagnosed in 8 patients,

– the localisation of melanoma depends on the patient's age and sex, but not on his or her place of residence,

– among the analysed group, about 34.7% of the patients were in stage IV of the cancer.

This last finding indicates that the general population are largely unaware of the risk, hence about 25% of MM are localised on the head and the neck.

UV radiation has an additional, adverse consequence on (Latanowicz, & Latosińska, 2012, p. 205-215):

– blood (UV radiation inhibits the activity of Langerhaus cells, which may lead to the development of a skin neoplasm);

– damage to eyes (the intensity of radiation depends on the angle at which the sunrays fall). The following eye structures are at the highest risk: conjunctiva, cornea, lens, retina;

– infectious diseases, by activating such viruses as HIV-1, AIDS;

[5] The UV index is an international measure of the intensity of the Sun's ultraviolet radiation on a given day and in a given site. It allows us to compare the consequences of the harmful impact of UV radiation on the skin, and to this end a weighted function is applied which is derived from the so called McKinlay – Diffey spectrum. It is assumed in this function that radiation of the wavelength 290 nm is three-fold more harmful than that of the wavelength 350 nm and five-fold worse than that of the wavelength 400 nm. These units can be referred to as statistical weights. All weighted results are added up or integrated, which leads to the calculation of the UV index value. However, this is not the final result as that must be corrected considering the cloud cover and radiation angle.

– inanimate matter, e.g. a negative effect on medications (photodegradation affects liquid and solid substances, e.g. tablets). In addition, UV rays cause isomerisation in fatty acids.

Studies on the effect of UV radiation on the human skin have shown that some of these rays are deflected (Cader *et al.*, 1995, p. 33-38). The ability of the human skin to deflect UV rays grows as the wavelength decreases.

Some researchers claim that the depletion of the ozone layer by 2% over the past 20 years has led to an increase in the amount of UVB rays reaching the Earth, which in turn contributed to an increase in the incidence of skin cancer cases (Ciszewska, 2000, p. 65-68).

Data collated in Table 2 indicate that a further increase in the incidence of skin diseases, including melanoma, can continue until the year 2020.

Health insurance and prevention aspects

A nearly double rise in the rate of skin diseases among men and women (Tab. 2) implicates a serious threat to the health of the Polish population. A higher incidence of illnesses entails an increase in the treatment costs, which are borne by the population. Noteworthy is the fact that this health-risk situation is complicated by the long latent phase of skin cancer (5–6 years), which has a significant influence on the number of cases detected in Poland. This is known in the insurance business as a trigger, i.e. we do not know when we will become ill, when the illness will manifest itself, when we should present at the doctor's, how long it needs to be treated and, consequently, what costs it will incur. In the light of the above remark (and earlier considerations), skin cancer cases show the characteristics of randomness conditioned by excessive exposure to UV radiation, regardless of the spatial location. It should also be mentioned that skin neoplasms require expensive and specialist treatment. Hence, to relieve, at least in part, the costs of such therapy an insurance method can be suggested where these costs are spread over a larger population via an established insurance contribution fund. The data (Tab. 2) show that the frequency of skin cancer is around $4.85 \cdot 10^{-4}$. This would translate to a small contribution per capita, and therefore increasing insurance contributions may be possible, for instance as one of the options in life insurance policies.

It is known that there are insurance products providing clients with a long-term (sometimes indefinite) cover. The insurance company should specify very precisely, in the general terms of life insurance policies, the scope of their responsibilities, according to their risk assessment and other parameters of a given policy.

Both the literature connected with insurance and the insurance products use the term 'severe illnesses', which most often refers to malignant neoplasms (Kolbarczyk, 2015, p. 47, 48). This term also covers melanoma.

As these are serious illnesses, it becomes necessary to undertake certain prophylactic measures, besides insurance.

Since the late 20th century, great progress has been achieved in the protection from UV radiation with photostable filters and broad-band UV filters (Osterwalder *et al.*, 2014, p. 42-46). Such cosmetic products are now widely available. The various labels they are given have encouraged efforts undertaken to coordinate the labeling.

Other recommended measures are:

– to raise the awareness of the general public about the risk of skin cancer, to make dermocosmetics protecting the skin from UV radiation more popular, and especially to recommend using cosmetics that contain anti-radiation substances;

– to search for ways to prevent these diseases;

– to develop early warning systems against the risk of developing a skin cancer.

The sunscreen attribute of cosmetics declared by their producers, in line with the European regulations and the Polish law, requires them to document this property based on reliable and repeatable determination methods. Attention is drawn to the Sun Protection Factor (SPF), which defines the effectiveness of sunscreen cosmetics and enables consumers to choose the most suitable product. The SPF informs 'how much longer the exposure to the sun (after applying the cosmetic) becomes, and after what length of time the skin erythyma is comparable to the one observed on the skin not protected with this cosmetic'.

It is also worth considering a solution where the National Health Fund (the NFZ in Poland) would co-finance contributions paid to private insurance policies. It is also necessary to monitor the quality of life of patients who have recovered from melanoma.

It is necessary to implement prophylactic measures, which should involve all people over 60 years of age (Tab. 3). As skin cancers are difficult to treat, we cannot exclude a possibility of setting up regional centers for therapy of skin neoplasms, which would coordinate the procedures in cases of such diseases, should their prevalence increase.

Conclusions

This brief analysis of the depletion of the ozone layer confirms that this problem also affects Poland's territory. Causes of the loss of ozone in the atmosphere are numerous. The conclusions arising from the above considerations are as follows:

– as the ozone layer undergoes depletion, the incidence of skin cancers increases;

– an increase in the cases of melanoma will entail an increase in the costs of treatment;

– it is necessary to provide an insurance cover for this neoplasm in health and life insurance policies.

The limited length of this article prevented an exhaustive presentation of this problem. Instead, it was only possible to highlight the main issues. Further studies are needed to examine the costs of treatment in the case of skin cancer, so as to determine a potential rise in health policy contributions.

Translated by Jolanta Idźkowska
Proofreading by Michael Thoene

References

Bień, S. (2005). Czerniak złośliwy w obrębie głowy i szyi. *Otolaryngologia*, *4*, 113-120.

Cader, A., Matusiak M., Janowski, J., Kajdos, Z. & Kaczmarek, J. (1995). Ocena współczynnika odbicia promieniowania ultrafioletowego dla skóry ludzkiej. *Medycyna Pracy*, *1*, 33-38.

Ciszewska, M. (2000). Środowiskowe uwarunkowania raka skóry. *Medycyna Środowiskowa*, *3*, 65-68.

Degórska, M., & Rojewska-Więch, B. (1982). Dziura ozonowa – zagrożenie czy przestroga? *Przyroda Polska*, *6*, 12-13.

Dobrzyński M. (2007). Fundacja Ochrony Warstwy Ozonowej PROZON. *Chłodnictwo*, *1-2*, 9-11.

Dziewulska-Łosiowa, A. (1989). *Ozon w atmosferze*. Warszawa: PWN.

Górski, M. (1997). Prawo międzynarodowe a ochrona warstwy ozonowej. *Studia Prawno-Ekonomiczne*, *LV*, 79-90.

Jarosławski, J. (1993). Pomiary zawartości ozonu w przyziemnej warstwie atmosfery w Bielsku. *Przegląd Geofizyczny*, *3-4*, 255-259.

Kaczmarek, J., Jankowski, J., & Cader, A. (1998). Wzrost zachorowań na schorzenia skóry uwarunkowane oddziaływaniem promieniowania ultrafioletowego. Prognoza dla Polski. *Medycyna Pracy*, *4*, 313-323.

Kolbarczyk, W.P. (2000). Poważne choroby. *Miesięcznik Ubezpieczeniowy*, styczeń, 47-48.

Kuncerowicz-Polak, B., & Purski, R. (2000). Wycofanie halonów a ochrona przeciwpożarowa. *Przegląd Pożarniczy*, *10*, 3-4.

Kurcz, L., & Steindel, M. (2009). Fluorowane gazy cieplarniane i substancje zubożające warstwę ozonową. Certyfikacja, ocena kompetencji i szkolenia. Część I. Certyfikacja personelu i przedsiębiorstw. *Chłodnictwo*, *1-2*, 6-9.

Kuciel-Lisieska, G., Godlewski, J., Lisiecka-Tyszko, S., Lachowski, A., & Kaczmarska, G. (2011). Analiza danych epidemiologicznych chorych na czerniaka leczonych w latach 1996-2007 w Warmińsko Mazurskim Centrum Onkologii w Olsztynie. *Nowotwory. Journal of Onkology*, *4*, 344-348.

Latanowicz, L., & Latosińska J.N. (2000). *Promieniowanie ultrafioletowe a środowisko*. Zielona Góra: Wyższa Szkoła Pedagogiczna im. T. Kotarbińskiego, p. 99-102.

Latanowicz, L., & Latosińska, J.N. (2012). *Promieniowanie UV w środowisku*. Warszawa: Wydawnictwo Naukowe PWN, p. 205-215.

Lityńska, Z. (1992). Problem zaniku warstwy ozonowej. *Gazeta Obserwatora IMGW*, *1-3*, 5.

Pastuszka, M. (2010). Zwiększone ryzyko wystąpienia pierwotnych nowotworów złośliwych (skóry i narządów wewnętrznych) u pacjentów z czerniakiem lub rakiem skóry w wywiadzie. *Dermatologia Praktyczna*, *3*, 58-62.

Peyron, J.L., Raison-Payron, N., Meynadier, I., Moyal, D., Rougier, A., & Hourseau, C. (1999). Zapobieganie pokrzywce świetlnej przy pomocy ekranów słonecznych o szerokim spektrum

i określenie wskaźnika protekcji pokrzywki świetlnej (Solar Urticaria Protection Factor – SUPF). *Postępy Dermatologii*, *XVI*, 347-350.
Prawna ochrona warstwy ozonowej. (2004). *Gazeta Obserwatora IMGW*, *4*, 6.
Purski, R. (2005). Diabeł a dziura ozonowa. *Gazeta Obserwatora IMGW*, *6*, 4-6.
Purski, R. (2007). Ochrona warstwy ozonowej. *Środowisko*, *11*, 13, 14.
Stan warstwy ozonowej nad Polską. (1993). *Gazeta Obserwatora IMGW*, *2-3*, 9, 10.
Encyklopedia PWN. Retrieved from https://encyklopedia.pwn.pl/szukaj/ozonosfera.html.
Rozporządzenie Ministra Gospodarki i Pracy z 16 sierpnia 2004 r. w sprawie programów kursów, przeprowadzania egzaminów oraz wzoru świadectwa kwalifikacji w zakresie substancji kontrolowanych. DzU z 2004 r., nr 195, poz. 2009 ze zm.
Rozporządzenie Ministra Gospodarki i Pracy z 16 sierpnia 2004 r. w sprawie kontroli szczelności urządzeń i instalacji zawierających substancje kontrolowane. DzU z 2004 r., nr 195, poz. 2008 ze zm.
Ustawa z 2 marca 2001 r. o postępowaniu z substancjami zubożającymi warstwę ozonową. DzU nr 52, poz. 537.
Ustawa z 20 kwietnia 2004 r. o substancjach zubożających warstwę ozonową. DzU nr 121, poz. 1263 ze zm.

"OLSZTYN ECONOMIC JOURNAL"
GENERAL INFORMATION

The "Olsztyn Economic Journal" (ISSN 1897–2721, e-ISSN 2083–4675) is a scientific journal, published in English by the Faculty of Economic Sciences of the University of Warmia and Mazury in Olsztyn. It publishes scientific papers of methodical, review and empirical nature in economic sciences. During the years 2007–2012 the journal was published semi-annually and from 2013 is published quarterly. The "Olsztyn Economic Journal" is published by the University of Warmia and Mazury in Olsztyn Publishing House. The print edition is the primary version of the Journal. All numbers of the magazine are available in the electronic format on the websites: http://www.uwm.edu.pl/wne/olsztyn-economic-journal, http://wydawnictwo.uwm.edu.pl (subpage Czytelnia).

„Olsztyn Economic Journal" is indexed in the following reference databases: BazEcon, BazHum, Index Copernicus Master List (ICV in 2017 86.86 pts), The Central European Journal of Social Sciences Humanities (CEJSH), Central and Eastern European Online Library (CEEOL), POL-index, RePEc.

Since 4th July 2018 „Olsztyn Economic Journal" has been on the Italian, ministerial list of scientific journals prepared by National Agency for the Evaluation of Universities and Research Institutes (Italian name: Agenzia Nazionale di Valutazione del sistema Universitario e della Ricerca – ANVUR).

PUBLICATION PROCEDURE

Polish authors submit articles in Polish and in English. In order to ensure high quality of linguistic editing of the journal, the article should be verified by native English speaker(s). The costs of translating/verifying the article are borne by the Authors. Foreign authors submit articles in English. Additionally, the title, key words and abstract of the article should be submitted in Polish.

Articles should be submitted to the editorial board either via e-mail (oej@uwm.edu.pl) or snail mail, to the following address:

"Olsztyn Economic Journal"
University of Warmia and Mazury in Olsztyn
Faculty of Economic Sciences
Department of Social Policy and Insurance
M. Oczapowskiego 4 Street
10-719 Olsztyn, POLAND

Articles are subject to formal evaluation, initial evaluation by the editor-in-chief and associate editors, and then to evaluation by external reviewers and the statistical editor. The formal evaluation is made by the editorial secretary and refers, among other things, to: the length of the article, the inclusion of the title, abstract and key words (in Polish and English) and correctly formatted bibliography. Articles which do not meet the guidelines are sent back to Authors for revision. Articles which meet the guidelines are subject to evaluation by the editor-in-chief and associate editors, who assess its scientific character and relevance to the thematic scope of the journal. After a positive internal evaluation articles are submitted to the evaluation by external reviewers, who are appointed by the editor-in-chief.

The reviewing procedure:
1) At least two independent reviewers from research institutions other than the one with which the Author is affiliated are appointed to evaluate each article.
2) At least one of the reviewers is affiliated in an foreign institution other than the Author's nationality.
3) The Author or Authors do not know the identities of the reviewers and vice versa (double-blind review process). As regards the relations between the author and the reviewer, there is no:
a) direct personal relationship (kinship, legal ties, conflict),
b) professional supervisor-subordinate relation,
c) direct scientific collaboration in the course of the last two years preceding the preparation of the review.
4) The editorial board follows procedures preventing ghostwriting and guest authorship. Detailed description of the procedures can be found on the website.
5) The reviewer is obliged to abide by the copyrights. In the case of detecting copyright infringement by the Author, the reviewer is obliged to report it to the editorial board of the journal.
6) The reviewer is required to keep confidential all details of the article as well as the peer review process.
7) The review is submitted in the written form and ends with a clear statement as to whether the article is accepted for publication or rejected.
8) Only articles which have two positive reviews are submitted for printing. If one of the reviews is negative, the article is submitted for evaluation to a third reviewer.
9) The review form is available on the website.
10) Names of the reviewers for individual issues of the journal are available in the current issue and on the website.

After receiving two positive reviews and taking into considerations the reviewers' corrections and recommendations the Author revises the article and submits to the editorial board the following:
a) the final version of the article in English, together with the title, key words and abstract in Polish and English (saved on CD or sent via e-mail to oej@uwm.edu.pl),
b) responses to reviews,
c) the Author's statement (the relevant form can be found on the website),
d) information about the name and last name of the translator and the native speaker,
e) consent for the processing of common personal data (the relevant form can be found on the website).

The final version of the article submitted by the author will be verified by the statistical editor.