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OVERTIME WORK DETERMINANTS OF MEN AND WOMEN IN SLOVAKIA

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Abstract

The paper deals with the supply side of the Slovak labour market. The main goal of the present study was to examine what variables contribute to the explanation of working over-time (e.g. devoting more than 40 hours per week to paid work) separately for women and men. A binomial logistic regression was used and factors were identified separately for men and women. The data were drawn from the results of primary research conducted in the year 2018.

Results suggest that the probability of working overtime is higher for both men and women with higher income. It seems that the substitution effect of an increase in income dominates the income effect. Household circumstances influence the probability of one's working overtime. In those multi-member households where the husband has higher level of education than the wife, the husband will more likely work overtime and women will be less likely to work overtime. The presence of very young children in households has a significant impact on the reporting of women working overtime. Women with preschool children were less likely to work overtime than women in households in which there were older children or households without children.

DETERMINANTY PRACY PO GODZINACH MĘŻCZYŹN I KBIET NA SŁOWACJI*Mariana Považanová, Ján Kollár, Gabriela Nedelová*Wydział Ekonomiczny
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Słowa kluczowe: rynek pracy, płatna praca, czas w płatnej pracy, nadgodziny.

Abstrakt

Artykuł dotyczy strony podażowej słowackiego rynku pracy. Głównym celem badania było sprawdzenie, jakie zmienne wyjaśniają przyczyny pracy w godzinach nadliczbowych (na przykład poświęcenie ponad 40 godzin tygodniowo na pracę zarobkową), oddzielnie dla kobiet i mężczyzn. Zastosowano dwumianową regresję logistyczną, a czynniki zidentyfikowano osobno dla mężczyzn i kobiet. Dane pochodzą z wyników badań pierwotnych przeprowadzonych w 2018 roku.

Wyniki sugerują, że prawdopodobieństwo pracy w godzinach nadliczbowych jest wyższe u pracowników o wyższych dochodach, zarówno u mężczyzn, jak i kobiet. Wydaje się, że jest to efekt substytucyjny wzrostu dochodu. Okoliczności domowe wpływają na prawdopodobieństwo pracy w nadgodzinach. W wieloosobowych gospodarstwach domowych, w których mąż ma wyższe wykształcenie niż żona, mąż będzie częściej pracował w nadgodzinach, a kobiety będą mniej skłonne do pracy w nadgodzinach. Obecność bardzo małych dzieci w gospodarstwach domowych ma znaczący wpływ na zgłaszanie się kobiet do pracy w nadgodzinach. Kobiety z dziećmi w wieku przedszkolnym rzadziej pracowały w godzinach nadliczbowych niż kobiety, które miały starsze dzieci lub ich nie miały.

Introduction

The labour market is the place where demand and supply of the labour force meet. On the demand side, there are companies demanding certain amounts of hours of work which is supplied by the households. Compared to labour supply, demand for labour is more flexible and is derived mainly from the demand for goods and services produced by the labour. The behaviour of labour supply is a central issue in the economy, since labour is one of the main factors of production. Hence in order to properly examine the output fluctuations in any country, or to explore the potential of further economic growth, analysis of labour is of immense importance. The aggregate labour supply in a country is the result of a decision made by individuals. For this reason, a micro point-of-view focusing on individual determinants of labour supply is necessary.

Our study deals with the supply side of the labour market in Slovakia. Since Slovakia is currently undergoing changes such as labour shortages linked to partial labour imbalances, the aging of the labour force, and the brain drain (Štefánik *et al.*, 2018); the study of determinants of the supply of labour at the microeconomic level is more than necessary. There are two things that individuals decide in labour supply theory. Firstly, whether to participate in labour

market activities (working) or not to participate in labour market activities (not working). Second, the decision to determine how much time is provided for labour market activities (number of hours worked) when deciding to participate in the labour market (Yunisvita *et al.*, 2017).

This paper deals with the latter point of view. Therefore, by studying the individual supply of labour we will understand the number of hours a person spends working at paid work in an average week. According to the number of hours worked and the national legislation in Slovakia, the terms of full-time employment; part-time employment and overtime are used. According to the Labor Code (§ 85 par. 5), the standard weekly working time in Slovakia in the case of full-time employment (without overtime) is 40 hours. Overtime is defined as the work performed by an employee on the employer's order or with the employer's consent over and above the specified working time resulting from a predetermined working time schedule and work carried out outside the working change schedule. It is typical for Slovakia that a majority of people are working full-time, and only a minimal share of employed Slovaks work a part-time job. The average number of Slovaks employed part-time in the period 2002-2014 was approximately 5%, while the OECD average was 15% (*OECD Factbook...*, 2016). So the main decision made by most of the employed people who have entered the labor market in Slovakia is how much time is provided for labour market activities (number of hours worked), and it is not a decision about working part-time or working full-time. Rather it is decision whether to work overtime or not. There is a limitation which concerns the length of overtime. According to the Labor Code (§ 85 par. 9), the maximum average weekly working time including overtime in Slovakia cannot exceed 48 hours. Working overtime has some positives as well as negatives. The aim of this study is not to evaluate whether the cost associated with working overtime outweigh the benefits, rather the aim of this paper is to better understand what could determine why people choose to work overtime. To the best of our best knowledge, there is no similar study in Slovakia.

When it comes to a discussion about labour supply concerning both labour market participation and hours spent at paid work, there are huge differences between genders. In all EU countries, women's labour participation is lower than men's. Women in employment tend to work fewer hours, work in lower-paying sectors, and occupy lower-ranking positions than men, resulting in considerable gender pay and earnings gaps. These differences are to some extent due to deep-rooted traditional gender roles, but are also due to economic incentives (*European Semester Thematic...*, 2017), which again call for a microeconomic point of view into labor supply. The same applies to Slovakia. According to the OECD (*OECD Factbook...*, 2019), the employment rate for men and women in 2015 was 69.4% and 55.9%, respectively. When examining the individual labor supply in terms of the number of hours worked, the gender became a significant variable (Yunisvita *et al.*, 2017). Also, the allocation of time devoted to unpaid work

in Slovakia during the day is different for men and women (Kika & Martinkovičová, 2015). On the basis of the foregoing differences, it is reasonable to identify the determinants of labor supply separately for women and men.

Only by obtaining data from the primary survey from employed individuals, knowing about their socio-demographic characteristics as well as other circumstances, is it possible to identify the results of the decisions about the allocation of time in favour of paid employment. Since time is a limited resource that cannot be reproduced but only efficiently redistributed, the study of the time allocation in favour of paid employment is one of the key issues concerning the actual conditions in the Slovak labour market.

There are several factors that determine a person's decision about how much time to supply to labour market activity, the importance of which may vary depending on the circumstances. The identification of determinants influencing the time allocation for paid employment specifically for men and women in particular provides a more aggregated view of the decision to allocate time in society. The originality of primary data on employed respondents provides an opportunity to identify and compare different time allocation factors simultaneously. The results could serve as an inspiration for implementing different labour market policies and increasing their effectiveness in order to stimulate the potential workforce. Just finding differences in the labour supply between men and women provides a number of conclusions about activities designed to promote reconciliation of work and family life.

After this introduction, the remainder of this paper is organized as follows. The upcoming Section 2 gives a concise literature review dealing with the determinants of labour supply, after which Section 3 follows, which describes the data employed and the method used in the analysis. Section 4 discusses the results, and Section 5 provides a conclusion.

Literature review

The labour-supply decision can be broken into two parts, the decision to participate in the labour market and the determination of the number of hours people work, conditional upon labour market entry (Birch, 2005). There are various factors which could influence the time spent in paid work. In many economic textbooks, one can find the explanation offered by neoclassical economic theory that the main determinant of individual labour supply is the wage rate, and that based on this assumption the labor supply curve is constructed in a way which reflects the "labor leisure" trade-off described by two opposite effects, e.g. income and the substitution effect. The substitution effect refers to the idea that, with a higher wage rate, time is more valuable and people try to minimise time spent on the production and consumption of goods within the household, leading to an increase in working hours (Becker, 1965; Gronau,

1977). The income effect increases the demand for leisure, thus decreasing the hours supplied to the market. The relationship between wages and weekly hours of work was examined by Borjas (1980), for example. As expected, the empirical results of the effects of wage rate on working hours are mixed. For example de Meester, Mulder and Fortuijn (2007) have found a negative impact of the wage rate on hours worked for men in the Netherlands, which suggests that the income effect outweighs a possible substitution effect. Bhattarai (2017) has come to the opposite result. His estimation indicates that the substitution effect of an increase in the wage rate dominates the income effect. However, as pointed out by Borjas (1980), the problem often arises because of the empirical definition of the wage-rate variable. Instead of wage, some authors are using individual income as an explanatory variable of the number of working hours. For example, Medhikarimi *et al.* (2015) found that a simple regression model (testing the log of adjusted personal income against hours worked) demonstrates that personal income has a positive relationship with hours worked, while the multiple regression model shows that this effect diminishes as income level increases. Apart from the income / wage rate, sociodemographic characteristics like age, education, number of children in households or number of household members could also determine the amount of time people spend in paid work. Carson, Krsinich and Kell (2000) found that the age group is among the predictors of the amount of time spent in paid work for employed people.

Human capital theory suggests that profit from paid work increases with human capital. Human capital can be expressed by one's level of education. Assuming that individuals seek to maximize profit, one would expect that having a higher level of education would lead to more hours spent in paid work. (de Meester *et al.*, 2007). When reviewing the published empirical literature on the determinants of the labour supply of Australian women, Birch (2005) mentions studies where more educated women tended to work a greater number of hours than their less-well educated counterparts in Australia. Kuhn and Lozano (2006) come to similar results: the more educated men were more likely to work longer hours.

In the case of households with two or more members, according to the new home economists in addition to individual human capital, differences in human capital between the partners are important with respect to the time spent in paid work (Farkas, 1976). Being more highly educated than one's partner could therefore be expected to have a positive impact on the time spent in paid work, since the person with the most human capital will specialize into market work and the other into unpaid household work. Working patterns of partners would be mutually interconnected (Lewin-Epstein *et al.*, 2006) so the number of hours spent in paid employment by one partner could influence the number of hours spent in paid work by the other partner. The higher qualified partner would spend more time in paid work, while the lower qualified partner would spend less time in paid work. The amount of time people spend in paid employment

could also be affected by the amount of time they spent on unpaid work. This is especially the case for women since household work remains highly segregated and predominantly a woman's responsibility (Shelton & John, 1996). One could expect that a higher burden of domestic tasks would decrease the number of hours spent in paid employment. Most studies of the female labour supply emphasize the importance of children. The presence of children is generally argued to reduce a woman's likelihood of participating in the labour market and working many hours (e.g. Kawaguchi, 1994).

Labour-supply decisions could also be affected indirectly by institutional factors. According to Bittman (1999), since there is a limited scope for women to re-negotiate their role in relation to family responsibilities within the home, appropriate public policies to accommodate women's family needs are important to women's success in the labor market. According to de Meester, Mulder and Fortuijn (2007) the degree of urbanisation could be an important determinant of time spent in paid work, since the labour market opportunities are more plentiful in strongly urbanised areas; there, more jobs are on offer and more supporting services such as childcare are available, which in turn will increase the number of hours worked.

The main goal of the present study is to examine what variables contribute to the explanation of working overtime (e.g. devoting more than 40 hour per week to paid work) separately for women and men in Slovakia. In line with the preceding discussion we hypothesize that the income will be an important determinant of working overtime. However, we can hardly predict whether the substitution effect will outweigh a possible income effect or vice versa. We also hypothesize that time spent by commuting to and from work does affect the working of overtime, since time spent commuting „adds“ another time to the length of paid work. We also hypothesize that household circumstances like the presence of preschool children and the time spent in unpaid work in the household will decrease the probability of working overtime especially for women. In line with the new home economists, we also expect that differences in human capital between the partners and time spent in paid work by one partner will be an important determinant of the probability to work overtime for both men and women.

Data and Methods

The data for these analyses were collected in 2018 within the project VEGA 1/0621/17 carried out at the Faculty of Economics, Matej Bel University, Slovakia using a questionnaire survey in 2018. The research sample consisted of 1819 individuals within 732 households. We used a quota sampling to achieve

a representative distribution in terms of the number of household members and the geographical regions.

The dependent variable of time spent in paid work was measured as the actual number of hours respondents reported that they worked per week. This measurement was preferred to the contractual number of hours worked, because overtime was included and this is crucial for our analysis. This data also included alternative work schedules that enable people to work fewer hours than their contractual hours, which in Slovakia is rather an exception than the rule. For the purposes of our analysis, we have restricted the sample to the individuals who spent more than 0 hours a week in paid work, e.g. only employed people were included in the analysis. After these adjustments, we ended up with a sample of 560 men and 496 women.

The main goal of the present study was to identify overtime work determinants separately for women and men. Despite the fact that time spent in paid work obtained from the answers to the questionnaire is a continuous variable and it is tempting to use the OLS method for analysis, we took into consideration the fact that people in Slovakia usually do not decide precisely about the certain time they spent in an average week in paid work, rather they could decide whether to work full-time, part-time or overtime. As was explained in the introduction section, to work part-time is in Slovakia rather an exception than the rule, so for this reason we focused on full-time employment and the decision to work longer than the standard weekly working time in Slovakia, which is according to the Labor Code (§ 85 par. 5) 40 hours per week. We assumed that if an employed individual worked more than 40 hours a week, it was more or less his decision and choice, which may be based on his motivation or the need to work more. For this reason, we believe that identifying the determinants affecting the probability of working more than 40 hours a week is an extremely topical issue in the case of the conditions of the SR.

For reasons that we do not want to base our analysis on, the unrealistic assumption that people can decide the exact number of their working hours, we find logistic regression analysis a more suitable method, similar to Yunisvita *et al.* (2017). In general, logistic regression is used to measure the functional relationship between the qualitative dependent variable and the quantitative and qualitative independent variables. In our study, we used binomial logistic regression. According to the above mentioned idea about the decision Slovak people are making about the time spent in paid work we have divided the time spent in paid work (which is our dependent variable) into two categories: cat. = 1; if the individual's average time spent on paid work is less than or equal to 40 hours per week; cat. = 2; if the individual's average time spent on paid work is more than 40 hours per week (working overtime).

The choice of explanatory variables X_1, X_2, \dots, X_9 (described in detail in Table 1) was primarily guided by their relevance to the theory discussed in the literature review section. However, it was also influenced by the availability

Table 1

Description of operational variables used in analysis

Description of the variables		
Y	time spent in paid work	= 1 if the individual's average time spent in paid work is more than 40 hours a week; = 0 if the individual's average time spent on paid work is less than or equal to 40 hours a week
X ₁	age	completed years of age
X ₂	commuting	average net weekly commuting to and from work by individual
X ₃	unpaid work	the individual's average time spent on unpaid work per week
X ₄	income	average net monthly income, cat = 1 if person is without income, cat = 2 if income is ≤ 200 EUR per month; cat = 3 if income is (200; 400 >; cat = 4 if income is (400; 600 >; cat = 5 if income is (600; 1000 >; cat = 6 if income is (1,000; 1,500 >; cat = 7 if income is < than 1,500 EUR per month
X ₅	population	resides in a municipality
X ₆	education	highest achieved level of education; higher vocationally educated; university educated (ref = up to lower secondary)
X ₇	partner education	= 0 if woman has the same level of higher education than a man; = 1 if a man has a higher education than a woman
X ₈	presence of children (0-6 years)	= 0 if there are no children under 6 years of age in the household; = 1 if there is at least one child under 6 in the household
X ₉	partners time in paid work per week	average weekly time spent in paid work by partner in hours

Source: own processing.

of suitable measures in the pool of variables assessed in the project that provided the data base for the present study. For example, people in Slovakia consider information about their income and wage as very private. For this reason, in the survey question dealing with their income, the income intervals were offered to them to choose from. As a consequence, income is an ordinal variable in analysis. Data processing and analysis was realized using the SPSS program packet.

Two different models were run. Each of them was made separately for men and women. Model 1 included all the respondents who performed at least one hour per week in paid work. Model 2 was focused on multi-member households in which the allocation of time of both spouses may be linked and the effect of either's employment pattern on the organization of time is likely to be contingent on the others.

Results and discussion

Table 2 shows the results of logistic regression. We first turn to the determinants of working overtime for all employed men in Model 1. According to the results, the highest achieved level of education does have a significant effect

on the probability of working overtime. The probability of working overtime is lower for university educated men than men who have achieved education up to the lower level of secondary education. Our results contradict the assumption that comes from human capital theory that having a higher level of education would lead to more hours spent in paid work (de Meester *et al.*, 2007). For a more detailed explanation of why that is so, a deeper analysis in which attitudes toward working overtime by respondents or by sector would need to be included as necessary. According to our hypothesis, individual income is a significant variable in determining men's overtime. Since men with higher income are more likely than men with lower income to work overtime, the substitution effect of an increase in income dominates the income effect. Time spent by commuting to and from work does not affect men working overtime.

Men in multi-member households (according to the results of Model 2) where the husband has more education than the wife were more likely to work overtime which is in accordance with the new home economists theory as was explained in the literature review section. But on the other hand, what was really surprising for us was finding that the odds of working overtime is higher for those men whose wife spends more time in paid work. These results contradict with the Becker specialisation theorem in his Theory of the allocation of time, which suggests that efficient time allocation between spouses occurs when only one of them participates in market work, while the other is in charge of non-market work Becker (1965). According to the results, of all women in Model 1, the only significant variable in the model which influenced the probability of women working overtime is income. In that case, similarly to men, we have identified a substitution wage effect. As can be seen in Model 2, the actual number of hours women in multi-member households spend in unpaid household work does not have a significant effect on women's working overtime. Due to the legacy of the socialist system, in which there was a duty to work, it is not unusual even nowadays for women in Slovakia to have full-time employment and also be responsible for significant amounts of unpaid domestic labour, the so called double-burden Bútorová *et al.* (2008). However, as was expected, the presence of young children had a significant impact on the reporting of women working overtime. Women with preschool children were less likely to work overtime than women in households in which there were older children or households without children. It was not surprising, since the youngest children are more dependent on adults (usually the mother) and have their own, often strict, timetables, which in turn affects the possibility of women to spend many hours in paid work. From the results, it is obvious that the study's hypothesis regarding hours worked by the partner was not confirmed for women in multi-member households. A greater number of hours worked by one's partner did not influence the probability of a woman working overtime. However, in households where the husband had greater education, the probability of women working overtime was lower.

Table 2

Logistics regression

Specification	Model 1 – All				Model 2 – Multi-member households						
	men		women		men		women				
	<i>B</i>	<i>e^B</i>	<i>S.E.</i>	<i>B</i>	<i>e^B</i>	<i>S.E.</i>	<i>B</i>	<i>e^B</i>	<i>S.E.</i>		
	Characteristics of men										
Single (ref. multiperson)	-0.077	0.926	0.277	-	-	-	-0.006	0.994	0.012	-	-
Individual income	0.158**	1.172	0.032	-	-	-	0.159***	1.172	0.036	-	-
Commuting to and from work	0.000	1.000	0.000	-	-	-	0.000	1.000	0.000	-	-
Time spent in unpaid work	0.001	1.001	0.005	-	-	-	-0.001	0.999	0.006	-	-
Higher vocationally educated (ref = up to lower secondary)	0.153	1.166	0.247	-	-	-	0.182	1.199	0.265	-	-
University educated (ref = up to lower secondary)	-0.738**	0.478	0.269	-	-	-	-0.906***	0.404	0.309	-	-
	Characteristics of women										
Single (ref. multimember)	-	-	-	-0.449	0.639	0.317	-	-	-	-	-
Age	-	-	-	-0.006	0.994	0.011	-	-	-	-0.002	0.998
Individual income	-	-	-	0.153***	1.165	0.042	-	-	-	0.157***	1.170
Commuting to and from work	-	-	-	0.000	1.000	0.001	-	-	-	0.000	1.000
Time spent in unpaid work	-	-	-	-0.006	0.994	0.004	-	-	-	0.000	1.000
Higher vocationally educated (ref = up to lower secondary)	-	-	-	0.297	1.345	0.315	-	-	-	-0.030	0.970
University educated (ref = up to lower secondary)	-	-	-	-0.521	0.594	0.348	-	-	-	-0.848**	0.428
Household characteristics	-	-	-	-	-	-	-	-	-	-	-
Man higher educated than woman)	-	-	-	-	-	-	0.759**	2.095	0.319	-0.901**	0.406
Partner's time in paid work per week	-	-	-	-	-	-	0.019***	1.019	0.007	0.011	1.011
Presence of children (0-6 years)	-	-	-	-	-	-	0.259	1.296	0.306	-0.909**	0.403
Resides in a municipality	-	-	-	0.000	1.000	0.000	0.000	1.000	0.000	0.000	1.000

****p* < 0.01, ***p* < 0.05, **p* < 0.10

Source: own processing.

As was mentioned before, the choice of explanatory variables in the models was primarily guided by their relevance to the theory discussed in the literature review section. However, it was also influenced by the availability of suitable measures in the pool of variables assessed in the project that provided the data base for the present study.

It is clear that the working of overtime could also be influenced by other factors which were not included in the analysis due to a lack of data. Examples may include institutional factors and the sectors of economy in which a person works. In some sectors like construction and the automotive industry, there is a higher probability of working overtime than in education.

Also, the motivation to work hard and attitudes toward paid employment were not included in the analysis; however they are relevant. Moreover, for a better understanding of the individual labour supply decision it is also useful to know the willingness of people to spend more or less time in paid employment, since the actual time they are spending in paid work may be different from the time they would like to spend in paid work. There are some studies confirming the above mentioned opinion. For example, Reynolds (2003) in examining data from the 1997 International Social Survey Programme showed that a majority of U.S. employees would prefer to work a different number of hours than they actually work. These are the specific limitations of our study. For this reason, we have interpreted the regression coefficients only in terms of their positive or negative values and we did not include more linear interpretations of the results. Nevertheless, we believe that our results are relevant and comparable to other studies that we have presented in the literature review and bring some new knowledge about the supply side of the labour market in Slovakia.

Conclusion

The main goal of the present study was to examine what variables contribute to the explanation of working overtime (e.g. devoting more than 40 hour per week to paid work) separately for women and men. To achieve the results, we used data obtained from a questionnaire survey. The logistic regression method was used in the analysis. We have processed two separate models. Model 1 included all men and women. Model 2 included men and women separately who were part of a multi-person household.

The common determinant affecting working overtime for both men and women is the income. With higher income there is a higher probability of working overtime. Since men and women with higher income are more likely than men with lower income to work overtime, the substitution effect of an increase in income dominates the income effect.

In the case of men, we have found that the highest level of education achieved is another determinant that influences the chance to work more than the standard length of a working week. In the case of women, no other determinant was identified that would increase the likelihood of working more. These results are part of Model 1.

The results for multi-member households were in Model 2, and they were different from Model 1. Being more highly educated than one's partner could therefore be expected to have a positive impact on the time spent in paid work, since the person with the most human capital will specialize into market work and the other into unpaid household work.

In homes where the man was more educated than his wife, he was more likely to work overtime as compared to his partner. Similarly, we found that in the case of men whose wives spent more time in paid work, they were also more likely to work more than the standard amount of time. In this case, they may be households that are career oriented and prefer time spent in paid work over other forms of time usage. In the case of women who were part of a multi-member household, it was confirmed that the determinant affecting overtime was the number of children in the household from 0 to 6 years of age. Our research and the results we have presented had several limitations, such as investigation the interactions between spouses.

For this reason, further research should be focused precisely on identifying spousal interactions that could help to better understand the allocation of time in a multi-member household.

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SELECTED CHARACTERISTICS OF SLOVAK HOUSEHOLDS AS A SOURCE OF INFORMATION CONCERNING LABOUR SUPPLY

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Abstract

The purpose of the paper is to provide specific information on the labour supply in Slovakia based on the analysis of data collected from Slovak households. In line with the human capital theory, we consider households as essential in both shaping and providing the labour supply. The subject of the research survey were Slovak households and their members comprising a representative sample of the Slovak population with respect to the size, type and regional distribution of households as well as the age of their adult members. The sample consisted of 1,753 households and 4,855 household members as respondents. We looked at their willingness to make various choices in order to get a job and retain it as well as their family or household life strategies to maintain a work-life balance in view of their attitudes to sharing the family responsibilities. We used nonparametric statistical tests to establish the order of preferences for respective issues and the Spearman coefficient to find out the statistically significant relation between the age of the respondents and the choices they are most likely to prefer. The results have shown that age is a decisive factor in the responses to several of the questions, which is important to take into consideration as most of the labour demand in the following years will be created by the loss of older workers due to retirement or other reasons. This means that employers need to be prepared for a generational change and may be motivated to consider age management as one of their strategies to deal with the predicted labour shortage.

**WYBRANE CECHY SŁOWACKICH GOSPODARSTW DOMOWYCH
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Słowa kluczowe: płatna praca, strategie życia rodzinnego, podaży pracy, słowackie gospodarstwa domowe.

Abstrakt

Celem artykułu jest dostarczenie informacji na temat podaży siły roboczej na Słowacji na podstawie analizy danych zebranych w słowackich gospodarstwach domowych. Zgodnie z teorią kapitału ludzkiego gospodarstwa domowe są uważane za niezbędne, zarówno w kształtowaniu, jak i zapewnianiu podaży pracy. Przedmiotem badania ankietowego stały się więc słowackie gospodarstwa domowe i ich członkowie, którzy stanowili reprezentatywną próbę słowackiej populacji pod względem: wielkości, rodzaju, regionalnego podziału gospodarstw domowych oraz wieku ich dorosłych członków. Próba składała się z 1753 gospodarstw domowych i 4855 ich członków. Zbadano gotowość respondentów do dokonywania różnych wyborów w celu znalezienia i utrzymania pracy. Zbadano też strategie ich życia rodzinnego przyjęte w celu utrzymania równowagi między życiem zawodowym a prywatnym, a w szczególności podejście do podziału obowiązków rodzinnych. Do uporządkowania preferencji respondentów dotyczących rozpatrywanych kwestii w badaniach wykorzystano nieparametryczne testy statystyczne oraz współczynnik korelacji Spearmana, aby sprawdzić, czy zależność między wiekiem respondentów a wyborami, które są najbardziej prawdopodobne, jest istotna statystycznie. Otrzymane wyniki wskazują, że wiek jest decydującym czynnikiem w przypadku odpowiedzi udzielanych na kilka pytań. Kwestię tę należy wziąć pod uwagę, ponieważ większość popytu na pracę w kolejnych latach będzie spowodowana utratą starszych pracowników z powodu ich przejścia na emeryturę. Pracodawcy powinni być przygotowani na tę zmianę pokoleniową i powinni rozważyć przyjęcie strategii zarządzania wiekiem jako jednym z rozwiązań przewidywanego niedoboru siły roboczej.

Introduction

Following the recent trends in employment and labour markets, we have seen that rapid technology changes and economic growth result in challenges for companies and institutions related to adequate labour supply. Currently, the labour demand in Slovakia is much higher than the labour supply in some sectors (Štefanik, 2018) and the predictions are that the number of sectors in which it will be difficult to meet the labour demand will increase in the future (Radvansky & Miklosovic, 2016). In this paper, we focus on Slovak households and present a descriptive analysis of some of their social characteristics that may affect their contribution to the labour supply. This article is based on the theory of human capital, which is defined as “the set of attributes that individuals possess, including knowledge, skills, work experience, health and intangible

characteristics such as motivation. Such resources may be acquired or enhanced by education, training or other informal means including the experience of undertaking daily activities at home or at the workplace” (Shomos, 2010 in Loh-Kendig, 2013, p. 113). We take into consideration demographic and personal characteristics, and explore their relation to household strategies and attitudes to work. These phenomena have also been dealt with by Hronec, Kollar and Vallusova (Hronec *et al.*, 2015).

In addition to the theory of human capital, economic sociology puts emphasis on the impact of society and the group on individual actions and other noneconomic factors of human behaviour related to work (Granovetter, 2017). It recommends paying attention to the wider societal situation of the labour supply actors, their motivations, adopted ways of behaviour, and social and family structures. The labour market is about people, their way of life, personality and professional career that are greatly influenced by the family and the household. Coltrane (2000) claims that household labour is a permanent feature of family functioning and it affects its members. Other authors confirm that the home environment provides important opportunities for children and adolescents to learn skills that will be needed for independent living in adulthood (Dunn & Gardner, 2013; Riggio *et al.*, 2010).

We assume that job related choices depend to a considerable extent on the household situation and are part of household strategies. Therefore we look at the importance of the factors (reasons) for getting and retaining a job and the preferred family models. Taking into consideration the age-related differences, we also examine the aforementioned variables in relation to the age category of household members and workers. It is predicted that in Slovakia, the largest part of the new labour demand will be created by the loss of workers due to retirement and other age-related reasons. The employers should try to keep the older workforce at work as long as possible, due to demographic trends, because there will not be enough young people to replace them. That is why it might be interesting to know the differences in household strategies, attitudes to work and the life-work balance depending on the age of the respondents.

All of this could provide a more in-depth understanding of the households' potential both in terms of labor supply for the employers as well as the household needs and limitations, which should be reflected in public policies.

The labour market and its characteristics

The labour market is a specific type of a market that tries to match the demand for labour from the employers to the labour supply represented by job seekers. It is closely connected to the market economy, where the market of goods and services exists alongside the market of production factors, including labour.

The price of the labour in this market is represented by a wage or salary. The labour market is a derived market, which means that it reacts sensitively to changes in the market of products and services, as it is closely related to them. The labour force is represented by humans and that is why humans deserve increased attention if we want to understand the market and ensure its vitality (Uramova, 2004). Activities and decision-making in the labour market concern people, their way of life, personalities or professional career and indirectly also their families or households. We see this market having not only economic but also non-economic (social, cultural, ethical) parameters and determinants.

Labour demand is subject to the current structure of employment and the future needs of companies and organizations. The overall demand can be divided into two types. The first one is made of new jobs that are being created in the economy (expansion demand). The second one is the replacement demand which results from the need to replace the workforce leaving the labour market – mainly due to retirement, disability or change of profession. This replacement demand for labour closely corresponds to the age structure of employees in each sector (Radvansky & Miklosovic, 2016). With ageing as the prominent feature of the Slovak demographic trend, the replacement demand will comprise the major part of the future labour demand. Different economic sectors feature different age and educational structures of their labour force, so the labour demand in different sectors will vary, along with its educational levels.

Governments use various measures to influence the labour market both directly and indirectly. These include monetary, fiscal, tax, and social policies that form economic, legislative, institutional and business environments. In addition to the macroeconomic factors and economic and political arrangements, labour demand is also determined by the availability and price of other production factors and possibilities of their substitution. Technological progress and automation have always shaped the labour demand and its influence is becoming ever more crucial nowadays.

Labour supply is another variable of the labour market and it is closely linked with households, their members, their characteristics, and their willingness and ability to work. It states how many and what type of workers are available for the labour market. The supply is characterised by the number and structure of people/workers described by gender, age, qualifications and social status (Berg, 2015). In a wider perspective, it also includes the overall population, the share of people able to work, working hours, labour productivity, salary levels etc. It is always down to the supply of a certain number and quality of workers and the number of working hours.

Labour supply is thus a matter of behaviour and individual decisions that households make based on the opportunity costs of joining the workforce. Household members are willing to work when they realize that the result of their work is larger to or equal to the 'sacrifice' connected with its performance. It means that the main factor affecting the decision of the household (its members)

regarding the labour supply is the real wage. The labour supply is also interpreted as being a decision and choice of a consumer (household) when considering the utility of free time against the utility resulting from the ownership of products and services that one can buy for the wage in case one sacrifices their free time (Jirova, 1999). It means that the labour supply may be affected by household strategies regarding not only the paid job but also unpaid work connected with running the household and ways of spending their free time. We assume that when households count on unpaid work rather than market substitutes, it lowers their need and motivation for sacrifices in order to get a well-paid job. The objective of the household members on the supply side should be to get a job corresponding to their qualifications, abilities and aspirations for the highest possible wage. To summarise, the determinants of the labour supply in the market include factors such as: real wages, the demographic structure of the population of productive age, the professions' structure, and mobility; as well as the quality of the labour force and the size of specific groups like young people preparing for their job, women or the disabled.

Research methodology and results

The research survey concerning unpaid work and the use of free time in Slovak households was implemented by the research team VEGA1/06/2016 at the Faculty of Economics in Banská Bystrica. It included 1 753 Slovak households and 4 855 respondents. The sample was representative for age, household size and geographic regional distribution. The data were collected using the CAPI (computer assisted personal interview) method and processed using the IBM SPSS 19 statistical program. We first used frequency tables for the basic description of the observed variable values distribution. Then inductive methods were applied to generalise the findings in the selection sample to a basic sample – the overall population. We tested our assumptions with non-parametric Friedman and Wilcoxon tests and the Spearman coefficient. The results are presented in Tables 1–4. The mean rankings were established using the Friedman test and the overall ranking is the result of the Wilcoxon test with a significance level of 0.1. The significance level of the Spearman correlations was $p < 0.05$.

Although the survey was primarily aimed at unpaid work and free time, it also contained questions concerning paid work and employees' motivations to obtain and retain it. Labour market theory works with households and households are made of families with their strategies of time use and division of activities (among them labour supply as paid work) and of course with their characteristics, qualifications, needs, opinions, attitudes and expectations. Knowledge about these characteristics makes information about the labour supply more complex (Kika & Martinkovičová, 2015).

Table 1

Reasons for choosing paid work in the order of importance

Reasons for choosing the paid work	Average ranking	Overall ranking	Age sensitive/correlation
Financial reward	6.17	1.	men negative
Interesting work	4.86	2.	–
Self-fulfilment	4.62	3.	–
Job that is not very time consuming	4.53	3.	–
Opportunity to apply and use my education	4.30	4.	–
Making social contacts	4.20	4.	women negative
Career growth	3.87	5.	women negative
Social status	3.46	6.	–

Source: own results of the data analysis.

The basic characteristics of household members comprise the information on main motivations/reasons for which they do the paid work and what they are willing to do to obtain and retain it. The respondents were asked to rank each factor on the scale from 1 – definitely agree to 4 – definitely disagree. The overall ranking is the result of the Friedman and Wilcoxon tests and it shows the relative importance of these factors in the whole population. The dependence of the factors on the age of the respondents was tested with a Spearman coefficient with a significance level <0.05 . The negative correlation means that the level of agreement rises with age and positive correlation means that the level of agreement decreases with age. The findings are presented in the respective Tables.

The main reason for doing paid work is the financial reward, which is not surprising. It is important that the work is interesting and provides self-fulfilment while not being very time consuming. The possibility to apply one's education and making social contacts come next. The social attributes and ambitions of the job – contacts, career growth and social status that come with it rank the lowest, although for women the importance of social contacts and career growth rises with age. It seems that current workers are more self-centered and ready to sacrifice the social acknowledgment of their work as long as they are happy in their jobs.

The ranking of reasons is the same for both genders as for the financial reward, social status and the career growth. However, differences exist in self-fulfilment, which is more important for men, and a less time consuming job and social contacts being more valued by women. As women face a much higher load of unpaid work at home (Kika & Martinkovičová, 2015), their preference of a less time consuming job is to be expected.

We further asked about the steps that the respondents are willing to take to find a new job or retain a current one.

Table 2

Steps that the respondents are willing to take to acquire or retain paid work

To acquire / retain paid work	Average ranking	Overall ranking	Age sensitive/ correlation
Go through requalification/lifelong learning course	4.43	1.	men and women neg.
Commute to work outside my hometown	4.31	2.	men neg.
Work in a position outside my specialisation and not matching my qualifications	3.98	3.	men and women neg.
Reduce the time that I spend with my family	3.13	4.	–
Move with the family	2.85	5.	women neg.
Work for a minimum wage	2.30	6.	–

Source: own results of the data analysis.

Based on the available data, we see that the household members are most prepared to undertake further education, commute to work outside one's hometown and also work outside one's specialization in order to get or keep the job. On the contrary, Slovaks are less willing to reduce their family time or move the whole family because of work. Working for the minimum wage is the least motivating both for men and women, which confirms the prime reason for doing paid work. As for gender differences, women are more ready to take on further education and men are more willing to commute for work outside their hometown. There are also statistically significant differences depending on age – the negative correlations shown in the last column of Table 2 mean that some choices are more readily made by older generations of men and/or women. In terms of human capital it is interesting to see that the older people get, the more willing they are to embark on lifelong education or work outside one's specialization. This seems positive as it suggests that there is adaptability in the experienced workforce to the changing labour market. The higher willingness to move with age is surprising, but it was statistically significant only for women.

The work connected with running the household, like food preparation, cleaning, shopping, childcare etc., is known as unpaid work. We understand unpaid work as “activities done that are considered to be work (i.e. excluding sleep, personal care, hobbies etc.) and are not remunerated by a wage” (Povazanova, 2016, p. 26). As these activities require time, they affect the decision-making and time use of the households also in relation to their paid work. That is why we explored how the Slovak households manage these activities. The findings are presented in Table 3.

We see that Slovak households prefer to rely on themselves and close family, with their unpaid work most often carried out on their own, without using paid services, sharing it equally between partners, although the research shows that the actual time spent on unpaid work is much higher for women (Kika

Table 3

Ways of securing unpaid work

Ways of securing unpaid work	Average ranking	Overall ranking	Age sensitive correlations
Handling most of the jobs within the household on our own	5.36	1.	–
Equal division of household chores between spouses/partners	5.30	1.	women neg.
Division of jobs within the household into those typically done by men and women	4.40	2.	–
Using the help of parents and close family members	3.62	3.	men and women neg.
Household chores should be handled solely by a wife/woman	3.38	4.	women positive
Use reciprocal (mutual) help of friends and neighbours	3.02	5.	–
Use of paid goods and services	2.91	5.	women negative

Source: own results of the data analysis.

& Martinkovičová, 2015). There were a few differences in the responses between men and women. The women preferred the equal division more than men, especially the older ones. However, they both agreed on a division of jobs to those typically done by men and women and in the least favourite options – using the help of neighbours or paid services. As for the help of parents and other family members, this option was preferred more by older men and women, which seems to reflect the traditional arrangements in Slovak families. One surprising result is that younger women were more likely to agree that it is the woman who should take sole care of the household, and younger women were also less likely to use paid services as substitutes to paid work.

Another type of information about the Slovak households concerns the preferred ways of family functioning. It is interesting, because it reveals the background for decision-making regarding the division of work within the family and thus is an indirect indicator of participation in the labour supply. These preferences are significantly age-related.

The results show that Slovak households prefer the model where both partners reconcile the work and family together and have jobs. There are no substantial differences in the responses between men and women. They both agree on the need to deal with work and family obligations together as well as on the use of help and support of their parents and close family. Their opinions differ slightly at using institutional care that is preferred more by men. Women, on the other hand, prefer more of a so called dual career model and the use of paid services. These results correspond to a great extent to the set of answers in Table 4.

Table 4

Family strategies

The ways families function	Average ranking	Overall ranking	Age sensitive correlations
Try to reconcile work and family together	6.35	1.	women positive
Reconcile work and family demands by using institutional care	5.79	2.	women positive
Dual-career families	5.74	2.	men and women negative
Reconcile the work and family demands with the help of parents and other family members	4.58	3.	men and women negative
The man should secure the family financially and the woman should take care of the family	4.10	4.	women positive
First build the career and have children later	3.64	5.	men negative
The man should pursue a career and the woman should take care of the family	2.97	6.	woman positive
Intensive use of paid market services in this domain	2.83	7.	Men negative

Source: own results of the data analysis.

However, there is a statistically significant dependence on age in each of these questions. Younger women are more likely to prefer reconciling work and family demands together with men and using institutional care. It is surprising that the younger the women, the more they agree that a man should secure the family financially while pursuing his career and the woman should take care of the family. This is considered a more conservative model of family strategies. The generally unpopular option of using paid service as substitutes for paid work is more favoured by older men rather than younger ones.

The selected characteristics of the Slovak households that we consider as social determinants of the labour supply also include the ways in which the households (and their members) respond to the wider social and economic environment and deal with it. In our research we tried to establish what barriers are present that prevent family members from using their time based on their preferences. They could have chosen from 17 barriers, of which approximately one-third were statistically proven as being relevant. That list is presented in Table 5.

The data show that although the employment on one hand secures many needs, on the other hand it is the main barrier to the time division based on people's preferences. It means that having better options to divide the time and activities according to one's liking is an important factor that the respondents may take into consideration when choosing a job. This applies to all age groups. The second most important barrier to the preferred use of time is a shortage of financial means. This is more the case for younger people, as is the case of missing necessary equipment and means to do sports and other activities.

Table 5

Barriers to preferred time use

Barrier	% respondents	Age sensitivity correlations
My job	33.57	–
Lack of financial means	29.39	-0.132 ($p = 0.000$)
Stereotype	25.18	-0.059 ($p = 0.006$)
My age	20.64	0.284 ($p = 0.000$)
My health	15.92	0.370 ($p = 0.000$)
Missing equipment	11.58	-0.129 ($p = 0.000$)

Source: own results of the data analysis.

The older people get, the more they report their age and health as one of the barriers of their preferred time use, which is understandable. Nevertheless, it points out the unfavourable state of health and life expectancy in Slovakia, which is one of the lowest among the OECD countries¹. The third most serious barrier is falling into a stereotype, which surprisingly concerns younger people more than the older ones. Testing the differences of responses between the genders did not show any differences in stereotype, age or health. Men and women both ranked them as the third, fourth and fifth barrier respectively. While men consider employment as the most important barrier, for women it is the shortage of finances.

Conclusion

The labour market in Slovakia is already under strain for a larger workforce in some sectors and this trend will continue in the future. Most of the demand will be due to the ageing productive population. Another source of imbalance between the labour demand and supply is caused by regional disparities. Slovakia is nowadays among the countries with a relatively very low rate of population mobility. The findings on migration (Michálek *et al.*, 2016) show that those that would need to move out for the sake of finding a job are not able to do it, due to their poverty and the lack of financial means. As for the mobility of the workforce within the country that is formally promoted as a solution to imbalances in offer and demand of the workforce, our findings show that moving the family for the sake of a job is one of the least preferred choices of the Slovak household members. Other insights into the preferences and strategies

¹ Life expectancy at birth in the Slovak Republic is 76.5 years, which is the third lowest in the OECD. Also notable is the very low healthy life expectancy for the 65 year olds, the lowest among measured countries in the EU (<https://www.oecd.org/els/health-systems/Health-Policy-in-Slovak-Republic-March-2017.pdf>).

of the Slovak households show that people are rather self-centred when it comes to paid work. In addition to a good salary, they want to enjoy it and find satisfaction in it, whereas climbing the career ladder and social status or social contacts are less important. The older people get, the more willing they are to embark on further education and work outside their field of expertise, though, which should be taken into consideration when designing age management strategies to retain older people at work longer. On the other hand, older people see their age and health as major problems for their preferred use of time so there is a need to foster policies to support health and active ageing. Another dominant feature of the Slovak households is reliance on their unpaid work and family help when it comes to household chores and institutions for childcare, which could be a limiting factor for their commitment to paid work.

We believe that better knowledge of the reasons why household members work and what they are willing to do in order to be successful in the labour market should help design the respective policies and employment strategies.

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STUDENT OPINIONS ABOUT THEIR RETIREMENT FUTURE

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Abstract

The paper aims to identify respondents' attitudes to and awareness of the retirement age and social protection, as well as their expectations with regard to educational activities in this area. The research was carried out in 2018, using an anonymous PAPI type interview on a non-random sample of economics students (N = 703 people) who were either full-time or part-time students. The detailed objectives of the analysis were related to the following issues:

- elementary knowledge of social insurance (an open question),
- attitudes towards future retirement, care for the elderly, and social solidarity (semantic differential technique combined with the Likert scale),
- expectations and opinions regarding the attractiveness and importance of social insurance as a subject of education (techniques as above),
- the desire to deepen knowledge in this area (a dichotomous question).

The conducted research has shown that despite a lack of expressive attitudes towards social and pension insurance, respondents were interested in deepening their knowledge in this area. This implies the need to create teaching programmes that would broaden this knowledge and build a new insurance awareness based not on demanding attitudes but on the conviction that the retirement future is created independently of the existing system and institutions.

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PRZYSZŁOŚĆ EMERYTALNA W OPINII STUDENTÓW

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Słowa kluczowe: system emerytalny, postawy studentów, zabezpieczenie starości.

Abstrakt

Celem artykułu jest identyfikacja postaw oraz stanu świadomości respondentów wobec przyszłości emerytalnej i zabezpieczenia społecznego, a także oczekiwań wobec edukacji w tym zakresie. Badania przeprowadzono w roku 2018 metodą anonimowego wywiadu ankietowego typu PAPI na nielosowej próbie studentów studiów ekonomicznych ($N=703$ osoby), stacjonarnych i niestacjonarnych. Celami szczegółowymi analizy było zbadanie:

- elementarnej wiedzy z ubezpieczeń społecznych (pytanie otwarte);
- postaw wobec przyszłej emerytury, opieki nad starszymi i solidaryzmu społecznego (technika dyferencjału semantycznego połączonego ze skalą Likerta);
- oczekiwań i opinii dotyczących atrakcyjności i ważności ubezpieczeń społecznych jako przedmiotu nauczania (technika dyferencjału semantycznego połączonego ze skalą Likerta);
- chęci pogłębienia wiedzy w tym zakresie (pytanie dychotomiczne).

Przeprowadzone badania wykazały, że mimo braku wyrazistych postaw wobec ubezpieczeń społecznych i emerytalnych, respondenci są zainteresowani pogłębieniem wiedzy w tym zakresie. Implikuje to konieczność stworzenia takich programów nauczania, które pogłębilyby tę wiedzę i zbudowały nową świadomość ubezpieczeniową, opierającą się nie na postawie roszczeniowej, lecz na przeświadczeniu, że sami tworzą swą przyszłość emerytalną, niezależnie od istniejącego systemu i instytucji.

Introduction

A pension system is a fundamental component of social insurance and protection, and the effects of its functioning translate to the level of future pension benefits, which has an impact on all citizens.

The minimum old age benefits set forth in Article 67 of the Constitution¹ imply that a pension is not only a benefit resulting from a prospective beneficiary's contributions, but it is also an area of social policies. Because of the protection of old age, guaranteed by the Constitution and stipulated in art. 67, a pension is not only a benefit worked for by a potential beneficiary as a result of the system of contributions, but it is also an area of interests of social policies. This fact gives rise to various attitudes to the protection of the retirement future, reflected in two extreme views: conscious and demanding citizens.

¹The Constitution of the Republic of Poland of 2 April 1997 (Journal of Laws 1997, 78.483 with later amendments) provides that: *Citizens are entitled to social insurance in the case of incapacity for work resulting from illness or disability, or from reaching the retirement age. The scope and forms of social insurance are stipulated by the Act.*

This paper aims to analyse and interpret various attitudes toward future retirement defined on the basis of the author's PAPI survey², conducted among economics students ($N=703$ persons), preceded by secondary research based on desk research, as well as on the recommendations for developing pension-related knowledge and attitudes. The paper aims to identify attitudes toward future retirement on the basis of a PAPI survey, conducted by the author among the students of economics ($N=703$ persons), preceded by a secondary research study based on the existing data and findings related to the attitudes of university students to retirement.

Citizens' knowledge about a social insurance system in the light of an analysis of secondary sources

The starting point for analysing the problem in question is an analysis of existing (secondary) sources. Interesting results are presented by the national ZUS³ research (Social Insurance Institution), based on quantitative (CAPI)⁴ and qualitative methods (based on FGI⁵); as well as omnibus research conducted in 2016 by Millward Brown on a random sample ($N = 1,030$ persons) representing the general population aged 15-75 (*Wiedza i postawy...*, 2016, p. 4, 5).

The results of the research of knowledge about a social insurance system are not optimistic, which is reflected in the aggregate knowledge index developed on the basis of the conducted study (Tab. 1).

Due to the lack of citizen knowledge about a social insurance system (merely 7% of respondents pass "an exam in knowledge"), assessments are based on emotions and stereotypes, and the expressed emotions are ambivalent in character.

Table 1

Knowledge about social insurance – knowledge index

Group	Share in population [%]
Experts (more than 90% of correct answers)	0
Knowledgeable persons (60-90% of correct answers)	7
Those having average knowledge (40-60% of correct answers)	33
Those having weak knowledge (10-40% of correct answers)	45
Ignorants (less than 10% of correct answers)	15

Source: based on *Wiedza i postawy...* (2016, p. 17).

² PAPI – *Paper & pen personal interview* – here: a method for the personal collection of data in the form of anonymous questionnaires.

³ Detailed results of research in: *Wiedza i postawy...* (2016).

⁴ CAPI – *Computer – assisted personal interview*.

⁵ FGI – *Focus group interview*. Five focus groups comprised entrepreneurs, employees, students, people who temporarily stop professional activities, non-working and unemployed people.

On the one hand, the prevailing sentiment is uncertainty and concern about the actual pay out of pensions, and if pensions are paid out at all – will they ensure acceptable living standards? On the other hand, the lack of knowledge and understanding of social insurance mechanisms gives rise to demanding attitudes – it is the state that should assume responsibility for the care of the elderly. Simultaneously, some respondents do not understand the relations between the level of pension benefits and their professional activities, nor do they realize the need for making pension and other public contributions. Also, the results of the study indicate that only 25% of Poles save for their retirement future. This proportion could increase by approx. 8% of Poles who declare the availability of necessary funds for savings, but who do not consider it necessary to save. However, the main barrier to personal savings for future retirement needs is a low level of personal income (*Wiedza i postawy...*, 2016, p. 8-36).

Another source of secondary data are the results of research conducted in 2015 among full time and part time students ($N = 504$, purposive sample, age 19-41), concerning an assessment of the pension reform of 1999 and changes in the capital pillar of the pension system of 2011-2014⁶. Out of a number of conclusions resulting from the conducted survey, two aspects deserve special attention. Namely, only 11.4% of respondents believe that the extension of retirement age is justified by the following arguments:

- longer period of employment increases pensions;
- it improves the financial standing of ZUS (Social Insurance Institution);
- it reduces state budget deficit.

Contrary opinions are expressed by 87.4% of respondents who claim that (Pierzchalska, 2016, p. 221):

- people above the age of 60 block career prospects for the young;
- people at this age are not fit for work;
- people are entitled to have a rest at any time regardless of age.

Such opinions and attitudes confirm the existence of a common stereotype: "it will work out somehow". The results of further research confirm the existence of this way of thinking. 38.4% of respondents reject the concept of intergenerational solidarity as a basis for building a pension system; the concept is accepted by 29.5% of respondents, while 30.3% of them are not familiar with it (Pierzchalska, 2016, p. 223). Nearly half of respondents (48.9%) are in favour of a public-private pension system (ZUS and OFE/Open Pension Funds). Only 15.3% of respondents are in favour of the total privatisation of the system, while 28.4% of them are in favour of the existence of only public pension systems (Pierzchalska, 2016, p. 224). The results of the study confirm the willingness of 21.7% of respondents to engage in additional savings schemes because of low expected replacement rates; 47% of respondents make such decisions dependent on decent earnings, while 28.2% believe that such an option is not viable (Pierzchalska, 2016, p. 226).

⁶ For more details see: Pierzchalska (2016, p. 208-230).

A low percentage of people saving for old age has been confirmed by other studies; 78.5% of respondents do not undertake any activities aimed to prevent the deterioration in their living standards after reaching the retirement age (Czapiński & Góra, 2016, p. 10). In another study, conducted in 2018, merely 9% of respondents gave a “yes” answer to the question: “Are you saving for retirement?”. In 2015, such an answer was given by 21% of respondents (*Postawy...*, 2015, p. 5). Similar conclusions related to additional forms of old age protection are presented in another report. The results indicate that only 14% of Poles between the ages of 25-45 years save for old age, and merely 36% of those who do not save intend to change their attitudes in the future (*Skłonność Polaków*, 2016, p. 2, 9).

The presented results of research of the knowledge, attitudes and assessments of the retirement and old age protection system point to a number of issues which arise out of the lack of knowledge, foresight and the awareness of the need for individual financial protection in old age. Attitudes to retirement with regards to social awareness are presented in the Figure 1.

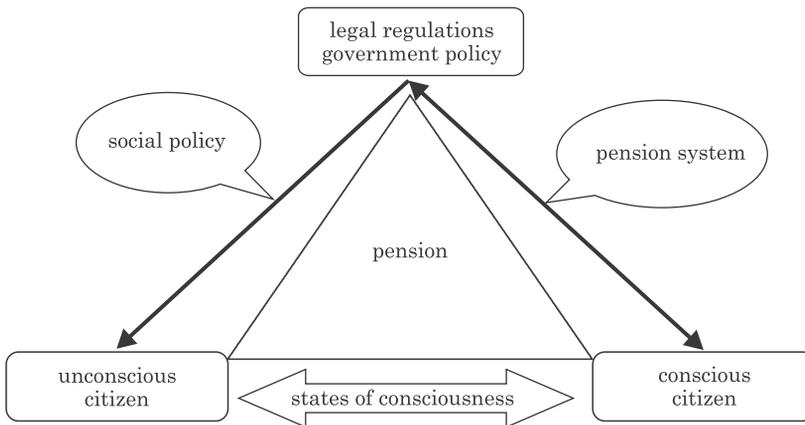


Fig. 1. Pension and social awareness

Source: author's research.

Two extreme attitudes to the protection of old age are defined as a “conscious citizen” – somebody who understands that his/her pension depends on the amount of accumulated contributions and the retirement age, and an “unconscious citizen” who does not possess such knowledge, which often manifests itself in demanding attitudes towards the state and passive attitudes to old age protection. Conscious citizens treat pensions as something resulting from their own contributions to future retirement, coordinated by legal regulations and government policies, while unconscious citizens regard pensions only from the perspective of social policies as their beneficiaries, representing demanding attitudes towards the state.

The presented results point to the relatively low knowledge of pension system mechanisms in Poland, leading to low social awareness reflected in demanding attitudes and the lack of understanding of the need for individual old age protection. It leads to specific macroeconomic effects, implying low levels of retirement protection and the necessity of central budget-based financial support.

Research procedure

This research study aims to analyse respondents' attitudes, strategies and awareness with regard to the retirement future and social protection schemes, as well as their expectations related to educational programmes in this area with a view to developing solutions and recommendations for the purpose of broadening the knowledge of retirement protection and changing attitudes from passive to active.

The research study was conducted in 2018 using the PAPI questionnaire on a non-random sample of full time and part time economics students ($N=703$ persons). The detailed objectives and research techniques are presented in Table 2.

Table 2
Research objectives and techniques

Question	Detailed objectives of research	Research technique
1	respondents' basic knowledge about social insurance	open questions, questionnaire with branching logic
2-3	analysis of respondents' attitude to future retirement, care for the elderly and social solidarity	semantic differential scale combined with Likert Scale
4-5	analysis of respondents' expectations with regard to the attractiveness and significance of social insurance as a subject of teaching	
6	respondents' personal interest in broadening knowledge about social insurance	dichotomous questions

Source: author's research.

The research study was comprised of 534 females (76% of respondents) and 169 males (24% of respondents). With respect to age, respondents represented a relatively homogenous group (19-25 years). Most of them had not attended social insurance classes.

The research of respondents' attitudes to future retirement, care for the elderly and intergenerational solidarity, as well as their views on the attractiveness and significance of social insurance as a subject of teaching was based on the semantic differential scale combined with the Likert Scale. Respondents' statements ranged from two extreme characteristics in which:

- [1] indicates: I fully agree with the first characteristic,
 [2] indicates: generally, I agree with the first characteristic,
 [3] indicates: balanced opinion,
 [0] indicates: I do not hold any opinion,
 [4] indicates: generally, I agree with the second characteristic,
 [5] indicates: I fully agree with the second characteristic.

The results of the research

The elementary knowledge of social insurance among economics students (objective 1) is analysed on the basis of an open question: *Name at least one Polish institution related to social insurance*. The results and their interpretation are presented in Table 3.

Table 3
Elementary knowledge of economics students about a social insurance system (N=703)

Elementary knowledge about social insurance	Answers [%]
Good – ZUS and KRUS are mentioned	11
Average – only ZUS or only KRUS mentioned	56
Lack of knowledge – answers in other configurations	34

Source: author's research based on questionnaire analysis.

The first group of answers concerns respondents' attitudes to retirement protection (objective 2). The distribution of answers and averaged opinions are presented in Table 4 and Figure 2.

Table 4
Respondents' attitudes to future retirement – distribution of answers (N=703)

Characteristic 1	1	2	3	0	4	5	Characteristic 2
In my opinion, pension premiums should be [%]							
Personally, I am not interested	3	4	26	4	39	25	this matter is of key significance for me
Flexibly set for particular professions	18	30	17	4	17	13	the same for all citizens
Lower than presently (19.52% of base premium)	18	19	39	7	13	4\	higher than presently (19.52% of base premium)
Dependent on citizens' discretionary decisions	19	25	20	2	25	10	be based on a system
Arranged only by commercial institutions	5	19	33	4	25	13	arranged by the state
Absolutely voluntary	22	24	22	1	22	9	absolutely mandatory

Source: author's research based on questionnaire analysis.

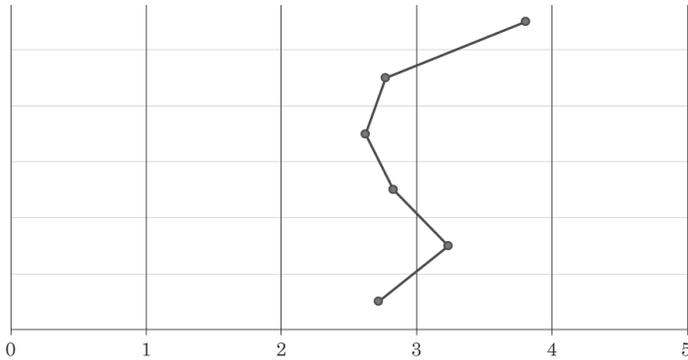


Fig. 2. Respondents' attitudes to future retirement – average answers presented in Table 4 (N=703)
Source: author's research based on questionnaire analysis.

The next group of questions relates to attitudes to old age and its protection as well as intergenerational solidarity. The distribution of answers and averaged opinions are presented in Table 5 and Figure 3.

Table 5

Respondents' attitudes to old age and its protection, and to intergenerational solidarity – distribution of answers (N = 703)

Characteristic 1	1	2	3	0	4	5	Characteristic 2
The main responsibility for care of the elderly should [%]							
Be discussed within a family	13	19	34	3	21	10	be taught as a school or university subject
Be based on intergenerational solidarity and social sensitivity	10	24	28	3	22	13	be based on individual contributions and savings
Be assumed by children and families	25	32	24	1	13	5	be assumed by the state

Source: author's research based on questionnaire analysis.

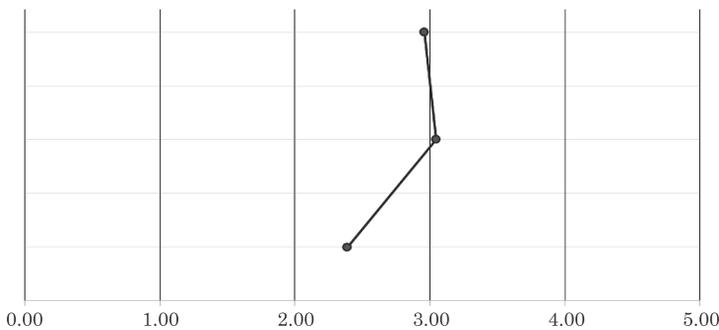


Fig. 3. Respondents' attitudes to old age and its protection, and to intergenerational solidarity – average answers presented in Table 5 (N=703)

Source: author's research based on questionnaire analysis.

The subsequent research area concerns respondents' views on the attractiveness and significance of social insurance as a subject of teaching (objective 3). The distribution of answers and averaged opinions are presented in Table 6 and Figure 4.

Table 6
Perception of social insurance as a subject of teaching – distribution of answers (N=703)

Characteristic 1	1	2	3	0	4	5	Characteristic 2
Social insurance as a subject of teaching is [%]							
For me, interesting	20	32	27	3	12	6	for me, boring
Practical	35	31	15	2	11	5	theoretical
Attractive	11	30	34	5	15	5	unattractive
Having a long-term dimension	26	36	25	3	8	2	non-developmental
Important	37	41	13	2	4	2	waste of time
Innovative	15	29	36	6	11	3	obsolete
Necessary	45	35	12	1	5	2	unnecessary

Source: author's research based on questionnaire analysis.

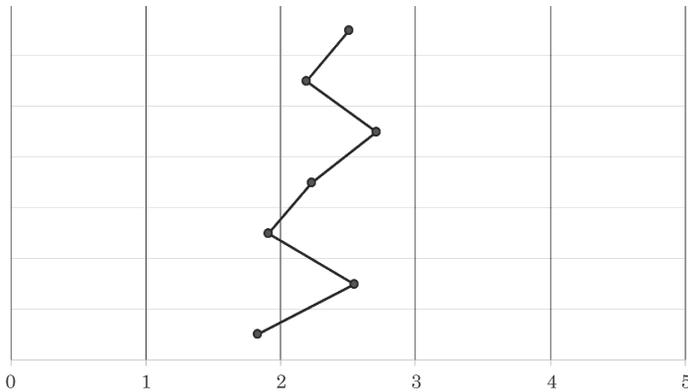


Fig. 4. Perception of social insurance as a subject of teaching – average answers presented in Table 6 (N = 703)

Source: author's research based on questionnaire analysis.

Respondents' opinions are supplemented by information on their expectations with regard to teaching social insurance subjects (objective 3). The distribution of answers and averaged opinions are presented in Table 7 and Figure 5.

Table 7

Respondents' expectations with regard to social insurance education – distribution of answers (N = 703)

Characteristic 1	1	2	3	0	4	5	Characteristic 2
Social Insurance as a subject should [%]							
Be taught in the form of lectures	9	14	27	3	21	2	be taught in the form of classes
Be more practical	37	36	16	2	6	2	be more theoretical
Be an elective subject for all university courses	20	29	23	4	17		be an elective subject for some university majors
Be mandatory for all university courses	13	25	32	5	17	8	be mandatory only for insurance courses
Be developed	23	38	25	5	7	2	no, it is taught to an excessive degree
Be taught at a university level	23	29	30	6	9	4	trainings and post-diploma programmes are sufficient
Be taught in secondary schools	25	38	18	2	10	7	unnecessary at this level
Be treated as an element of universal knowledge	28	37	19	2	9	5	be treated as an element of specialised knowledge

Source: author's research based on questionnaire analysis.

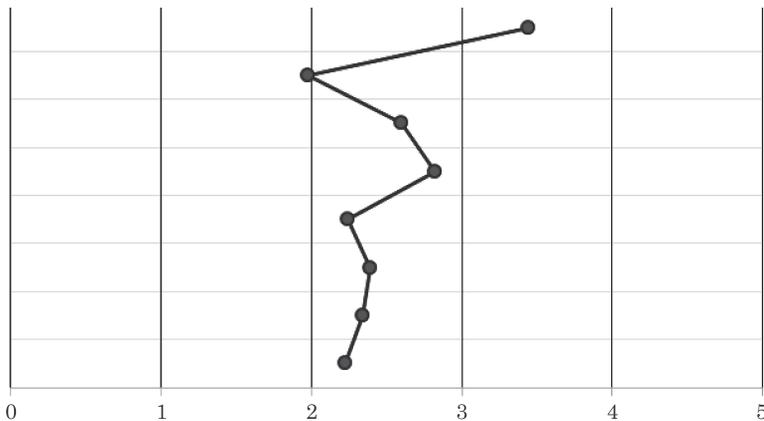


Fig. 5. Respondents' expectations with regard to insurance education – average answers presented in Table 7 (N=703)

Source: author's research based on questionnaire analysis.

The last research objective (objective 4) is an analysis of respondents' views on their personal commitment to broadening social insurance knowledge. The results are presented in Table 8.

Table 8

Respondents' commitment to broadening social insurance knowledge (N=703)
Respondent structure

Respondent opinions and declarations	Structure of responses [%]
I am willing to broaden my knowledge about social insurance	74
I am not willing to broaden my knowledge about social insurance	26

Source: author's research based on questionnaire analysis.

The presented results point to the lack of the surveyed students' unambiguous attitudes to social insurance issues (probably resulting from the lack of knowledge about social insurance); however, the issue of future retirement seems to be significant. It is confirmed by the commonly expressed opinion on the significance and necessity of Social Insurance as a subject of teaching and as a necessary component of universal knowledge to be taught at least at a secondary school level. Also, respondents are inclined to resort to families rather than systemic solutions in ensuring retirement protection.

Conclusions

The issue of safeguarding old age is becoming an increasingly important educational and political challenge in the face of an aging population perspective. This perspective for young people is quite distant, which results in the lack of expressive attitudes of the studied students towards social and pension insurance. However, research shows that the issue of securing old age is considered by them to be important and necessary, which implies the need to deepen knowledge about social security and to protect old age both in the family, as well as in the educational system and in the mass media. At the same time, they are also interested in deepening their knowledge about social insurance. This circumstance implies the necessity of creating, on the one hand, proper youth education policy and building such teaching programs or information campaigns for people of post-educational age, which would deepen this knowledge and build a new civic security consciousness, based not on claims but on the conviction that they create their own retirement future regardless of the existing system and institution.

Building retirement awareness at the level of higher education is a solution too late. This education should already start in the pre-school and early school years; then it would result – perhaps – with other attitudes. The initiatives of the Social Insurance Institution (ZUS) are going in this direction. Regardless, education in this field should take place in families, in the media and in social

media, which for young people is one of the most important and acceptable sources of communication and reaching awareness.

The results of the study may be an important source of information for entities responsible for social policy, including how to build a consensus among the entire society regarding the protection of old age.

The presented results are part of a broader project which also focuses on respondents' preferences with regard to social insurance teaching methods. The author's separate work will be dedicated to a more detailed analysis of research on correlations between the investigated characteristics and respondent characteristics (special attention given to female and male attitudes). Also, the author will address the problem of the effectiveness of retirement education, comparing the results of surveys and respondents' attitudes before and after attending social insurance classes.

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ADVANTAGES AND DISADVANTAGES OF FLEXIBLE FORMS OF EMPLOYMENT IN THE OPINION OF EMPLOYEES

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Key words: flexible forms of employment, labour market, opinions of employees.

Abstract

Flexibility of the labour market and employment in atypical forms has been indicated for years as a potential source of more effective competition. However, both types of flexibility constitute important changes for employees that cause concern in terms of employment security. In this context, the aim of the research was to determine opinions about the advantages and disadvantages of employment in atypical forms. The research was carried out in a chain of pharmacies and among paramedics, i.e. in entities where flexible employment constitutes the basic employment relationship. In the respondents' opinion, there are more disadvantages than advantages of employment in flexible forms, and the main disadvantage of atypical work is employment insecurity.

ZALETY I WADY PRACY W ELASTYCZNYCH FORMACH W OPINII PRACOWNIKÓW

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Słowa kluczowe: rynek pracy, elastyczne formy pracy, opinie pracowników.

Abstrakt

Elastyczność rynku pracy oraz zatrudnianie pracowników w atypowych formach od lat są wskazywane jako potencjalne źródła skuteczniejszego konkurowania. Obydwie formy elastyczności są dla pracowników istotnymi zmianami wywołującymi u nich niepokój o pewność zatrudnienia. W tym kontekście celem badań było poznanie opinii o korzyściach i wadach wykonywania pracy w atypowych formach. Badania przeprowadzono w sieci aptek oraz wśród ratowników medycznych, w podmiotach więc, w których elastyczne zatrudnienie jest podstawowym stosunkiem pracy. W opinii respondentów występuje więcej wad niż korzyści pracy w elastycznych formach, a główną niedogodnością atypowej pracy jest niepewność zatrudnienia.

Introduction

Globalization of the economy implies changes in economic structures in individual countries. The effects of increased freedom of movement of goods, services, capital and people are changes in generic, spatial, proprietary-corporate and institutional systems of national economies. As a result of these processes, the situation in the local, regional and national labour markets changes, as they become more international.

The changing numbers and structures of moving employees evoke the need for a quick response to the supply-demand relations of the workforce. From the supply perspective, the conditions under which employees want to commence work are important, as much as the principles of work organization according to which they want to perform work; while from the demand perspective it is about creating opportunities to increase the number of jobs. Both aspects of the labour market are important from a social and economic point of view, because the balance in the labour market improves the general quality of life of employees and affects the competitiveness and efficiency of management in a specific enterprise, region and country (Wysocka, 2016, p. 9).

The need for the rational management of labour resources (which in many European countries are insufficient), emerges from the outlined context of globalization of the economy and rapid technological progress. One of the ways to improve this state of affairs is to make the labour market more flexible and to employ and organize work in flexible forms. The requirement of having a rational management of manpower resources results from the fact that the two flexibilities described as beneficial, cause a decrease in the durability (certainty) of the employment relationship, in both temporary and part-time employment, a greater flexibility in beginning and ending work, as well as changes in the workplace (Puzio-Waławik, 2016, p. 107, 108).

The suggestion of increasing the flexibility of the labour market and the employment of employees in flexible forms results from a number of theoretical and empirical publications (among others, by Organiściak-Krzykowska, 2006; Riedmann *et al.*, 2006; Kalina-Prasznic, 2009; Kwiatkowski, 2011). The research

conducted by the authors cited above indicates the impact of such flexibilities on the earlier commencement and extension of professional activity, a reduction in the scope of professional exclusion, an increase in the chances of the “survival” of a company in times of strong economic crises and a better combination of work and personal life.

Flexibility of labour markets and forms of employment

The terms ‘flexibility of labour markets’ and ‘flexibility of forms of employment’ are not new terms, however they are not clearly defined in the literature on the subject. For instance, according to E. Kwiatkowski (2003, p. 19, 20) flexibility of the labour market is “the ability to quickly adapt to changes in market and technological conditions”, while R. Lewandowski, G. Koloch and A. Regulski (2008, p. 3) claim that the flexibility of the labour market is “the ability of the market to restore its former balance or achieve a new state of equilibrium as a result of external disorders.” However, L. Machol-Zajda and D. Głogosz (2010, p. 17) believe that the flexibility of the labour market is “the scope and speed of adaptation of the labour market to external shocks (e.g. oil, demand, supply, structural and technological revolutions) or market conditions.”

The issues of labour market flexibility have also been presented in a wider context, i.e. in macroeconomic and microeconomic terms. According to Z. Wiśniewski (1999, p. 41-44), in the macroeconomic approach, flexibility refers to the achievement of equilibrium in the labour market (the ability to adapt demand for labour, labour supply and wages), while in microeconomic terms it refers to the possibility of adapting an enterprise to satisfy the needs of working people or people actively seeking work.

The definitions selectively referred to show that flexibility of the labour market is, above all, keeping up with changes in the environment. External expressions of this flexibility are various forms of employment, working time and remuneration of employees as well as the variability of labour supply (Kwiatkowski & Tokarski, 2004, p. 274). The first three of these forms are referred to as flexible forms of employment, as well as flexible forms of work, atypical forms of employment and alternative forms of employment, working time and organization of work¹.

To summarize the flexibility of the labour market, it should be added that this flexibility should be analysed in three dimensions, i.e. employees, employers and the state. In the modern labour market, employees must be willing to improve their skills and change their profession and place of employment. An employers’ flexibility should be expressed in the dynamic adaptation to a constantly changing environment, capturing market opportunities and an integrated vision of the relationship between the state of the labour market, the general strategy

¹ In literature on the subject and in this article, these terms are used interchangeably.

and the personnel strategy implemented in a given organization. On the other hand, the state's flexibility should be demonstrated by the rapid development and adoption of appropriate legal regulations favouring all stakeholders in the labour market (Wysocka, 2016, p. 78).

The issues raised have been very significant for years in Poland (and in other European countries) because of an unfavourable effect arising from the political changes initiated in 1989, which resulted in problems with double-digit unemployment, among other issues. This problem was due to the advantage of the demand side over the supply side in the labour market, which meant that in terms of establishing employment relationships, potential employees had to accept the employers' terms concerning forms of work and the amount of remuneration. Legal regulations in the field of employment relations introduced since the beginning of the political transformation facilitated the employment of employees on the basis of fixed-term employment contracts, on the one hand, while on the other hand, they weakened the protection against dismissal of employees with permanent employment contracts (*Employment protection...*, 2017, p. 12). The situation raised is worrying, especially in Poland, because for years the highest fixed-term employment rate has been recorded among EU countries. For example, in 2015, the highest percentage of temporary employees in the EU was recorded among the total number of employees in the 20-64 age group (22%, with the EU-28 average = 11%). The transition rate from a fixed-term employment contract to an indefinite one was similar, as a result of which Poland was classified sixth last among all EU Member States (*Employment protection...*, 2017, p. 4).

Definitional ambiguity also occurs in relation to flexible forms of employment. According to L. Florek (2003, p. 94), atypical employment is "non-employee employment under a contract other than an employment contract." A similar definition is presented by E. Kwiatkowski (2003, p. 13), according to whom non-standard employment is "employment in a different than traditional form, i.e. for an indefinite period, an eight-hour working day, permanent working hours." In turn, J. Wratny (2003, p. 116) defines flexible forms of employment as "a variety of ways to perform work according to principles that deviate from a model that can be considered traditional performance of work as part of an employment relationship between an employee and an employer employing him/her (contract work, subordinate, dependent), established on the basis of an indefinite employment contract, full-time, fixed hours and a specific place usually at the employer's office." However, Ł. Piotrowski (2015, p. 48, 49) emphasizes that flexible forms of employment constitute "a manner of using human activity in the work process, creating an opportunity for both sides (employer and employee) to regulate the form of the employment relationship separately from the generally applicable one, in a way that facilitates reconciliation of duties related to employment and legitimate interests of individual persons performing work". Based on the definitions given above, it can be concluded that atypical employment

is the establishment of an employment relationship in a form different from full-time employment and for an indefinite period.

Legal regulations in terms of the flexibility of the labour market in particular EU Member States mainly concerns three aspects of employment protection, i.e. protection of employees in the case of individual dismissals; requirements in terms of group dismissals and temporary forms of employment (*Employment protection...*, 2017, p. 15). All aspects of the regulations introduced are related to the provisions contained in the EU documents. For example, in *White Paper (Growth, Competitiveness, Employment...*, online) the increase in flexibility of employment was considered to be one of the most important priorities in labour markets within EU Member States. The issues concerning the promotion of atypical forms of employment were also discussed in the *European Employment Strategy (EU horizontal policies...*, 2006). Suggestions contained in the above-listed document are reflected, among others, in the *National Employment Strategy* in Priority 3, in which the improvement of the adaptability of employees and enterprises and the flexibility of the labour market is going to be achieved by promoting atypical forms of employment (*National Employment Strategy...*, 2005). In the summary of the analysed issue, it should be added that flexibility of employment is not only the establishment of an employment relationship, but also the termination of the employment relationship, however, provisions of, among others, the MOP Convention (*Convention on part-time work...*, online). European Social Charter (*European Social Charter...*, 1996) and Charter of Fundamental Rights of the European Union (*The Charter of Fundamental...*, 2000) protect employees from being dismissed by employers (Wysocka, 2016, p. 84).

The flexibility of employment is related to the flexibility of working time that enables, on the one hand, meeting the needs of work organization according to the employer's plans, and on the other hand, the needs and abilities of the employee. Of course, the most advantageous solution would be a situation in which none of the parties to the contract has a privileged position and enforces a second solution that favours only one party.

Another determinant of employment flexibility is the flexibility of employees' remuneration that allows optimization of labour costs, especially in periods of economic crises resulting in a lower demand for specific goods or services, and thus a lower demand for labour. In such situations, the amount of wages should respond adequately to changes in factors determining it, such as "the situation on the labour market, the profitability of the enterprise or labour productivity" (Kalinowska, 2007, p. 194). The fourth dimension of employment flexibility is the flexibility of labour supply, which E. Kryńska (2000, p. 9-14) defines as the "adaptability of the workforce to the requirements of labour demand in such cross-sections as occupations, qualifications, education or space".

Signalled forms of employment flexibility are supplemented by the concept of flexicurity, according to which employment flexibility should occur inseparably with the social security of employees and persons temporarily remaining

outside the employment relationship. In the summary of the theoretical outline of the research subject, it should be added that the analysed forms of employment flexibility are not new issues. These issues were already mentioned in 1993 in the White Paper and in 1997 in the Green Paper of the European Union. In the first of the above-mentioned documents, it was emphasized that the reason for the low efficiency of labour markets is a lack of flexibility, especially in dimensions such as working time, remuneration and the mobility of employees. On the other hand, the second document pointed to the need to undertake activities that enable achieving a balance between seemingly contradictory states of the labour market, i.e. flexibility of employment and the social security of employees (Wysocka, 2016, p. 105).

In recent years, regulations in Poland have been aimed at eliminating employment based on so-called *junk* contracts. In 2016, restrictions were placed on the number of successive fixed-term employment contracts, and the notice period for fixed-term employment contracts was equated with the period of notice for an indefinite employment relationship (*Employment protection...*, 2017, p. 14). In turn, since April 1, 2019, a new act on emergency medical services (Consolidated text of the Act on State Emergency Medical Services of April 25, 2019) came into force, according to which the emergency medical system in Poland will be nationalized, and such services can only be provided by independent public healthcare institutions or public companies with a minimum of 5% public capital shares.

Research assumptions

The objective of the research was to identify opinions about advantages and disadvantages of employment in atypical forms of work. The research was carried out in a chain of pharmacies and in the emergency medical unit operating in the province of Warmia and Mazury. The selection of diagnosed institutions was a deliberate procedure. These entities were chosen because the employees employed in them work mainly in atypical forms. It was assumed that their opinions on the research subject would be highly credible because they result from experience, and not just general knowledge about employment flexibility. The analyses were based on secondary data from 2016, which was compared with the results obtained by other researchers between 2003 and 2016; and the results obtained from this particular research.

The research procedure sought answers to the following questions:

- what is the knowledge of employees about atypical forms of work?
- what flexible forms of work are used in the surveyed entities?
- what are employees' opinions about the advantages of working in flexible forms?
- what are the employees' concerns about employment in flexible forms?

Based on the objective of the research and detailed questions, the following hypothesis was formulated: the majority of employees employed in the surveyed entities see more disadvantages than advantages in employment in atypical forms, which results from the combination of flexible employment mainly with less certainty about the duration of the employment relationship.

The diagnostic survey method was used in the research. Questionnaire surveys constituted the research technique and the tool was a survey questionnaire completed by sixty employees employed in pharmacies and thirty paramedics. The entities where the respondents work were located in the province of Warmia and Mazury.

Results

A total of 90 people participated in the research. The respondents from the chain of pharmacies were mostly women (70%) and the paramedics were mostly men (60%). The structure of respondents employed in individual atypical forms of employment is presented in Table 1.

The figures in the table show the main forms of atypical employment in the surveyed entities in 2016. Most of the employees in the chain of pharmacies had fixed-term contracts, and every third employee worked part-time. On the other hand, among the paramedics, self-employment and weekend employment dominated. Similar results, also obtained in 2016, were presented by M. Mazurkiewicz (2016, p. 41). In that study, part-time employment was declared by 70% of the respondents, 51.0% were employed based on contracts of mandates and 23.0% on contracts for a specific task. The same percentage of employees performed work based on self-employment.

Table 1

Employment structure in atypical forms of employment

Form of employment	Entity type	% Respondents
Fixed-term contract	P	67.0
	EM	17.0
Part-time	P	33.0
	EM	17.0
Civil law agreements	P	20.0
	EM	25.0
Weekend employment	P	13.0
	EM	32.0
Self-employment	P	0.0
	EM	41.0

P – pharmacies, EM – emergency medical services.

Source: own elaboration based on *Elastyczne formy...* (2016, p. 38-45), Świerszcz (2016, p. 46-65).

It should be mentioned that results similar to those presented above have been received in Poland for many years. For example, the research conducted by E. Kryńska published sixteen years ago (2003, p. 240, 241) showed that the most frequently used forms of atypical work in Polish enterprises were fixed-term contracts (78.4%), civil law contracts (68.6%), part-time employment contracts (66.3%) and self-employment (23.5%). The structure of the applied forms of employment has not changed much in the subsequent years. According to the results presented by B. Puzio-Waławik (2009, p. 189), fixed-term contracts (69.5%), civil law contracts (66.0%) and self-employment (22.4%) continued to dominate. The dominance of these forms of atypical employment also occurred in 2012 (among others, by Arendt, 2012, p. 22; Wysocka, 2013, p. 213).

In order to learn the advantages and disadvantages of employment in flexible forms, the respondents were first asked about the level of their knowledge about atypical employment. It was assumed that increased knowledge about the discussed forms of work would be related to an increased awareness of their pros and cons. A three-level scale was adopted: Knowledge, partial knowledge and no knowledge. The results obtained are summarized in Table 2.

Table 2

The level of knowledge of flexible forms of employment

Employment form	Entity type	Assessment (% responses)		
		knowledge	partial knowledge	no knowledge
Fixed-term contract	P	100.0	0.0	0.0
	EM	100.0	0.0	0.0
Part-time employment	P	46.7	53.3	0.0
	EM	88.9	11.1	0.0
Civil law contracts	P	66.7	33.3	0.0
	EM	92.5	5.3	2.2
Weekend employment	P	20.0	80.0	0.0
	EM	64.0	32.0	4.0
Self-employment	P	33.3	67.7	0.0
	EM	100.0	0.0	0.0
Division of labour	P	13.3	67.7	20.0
	EM	8.9	59.0	32.1
Substitute employment	P	100.0	0.0	0.0
	EM	100.0	0.0	0.0
Telecommuting	P	40.0	60.0	0.0
	EM	32.0	65.0	3.0
On-call employment	P	23.3	76.7	0.0
	EM	100.0	0.0	0.0
Temporary employment	P	20.0	80.0	0.0
	EM	12.5	73.5	14.0

P – pharmacies, EM – emergency medical services.

Source: own elaboration based on *Elastyczne formy...* (2016, p. 38-45), Świerszcz (2016, p. 46-65).

Based on the data in the table, it can be concluded that the most well-known forms of employment in the surveyed entities are those in which employees are most often employed, i.e. in the chain of pharmacies – fixed-term employment, substitute employment and employment based on civil law contracts. In turn, paramedics declare the most knowledge in the field of fixed-term employment, civil law contracts, self-employment, substitute employment and on-call employment.

In the other forms listed in the table, similar results were recorded among employees of both entities. The discussed results should be supplemented with a lack of knowledge of employment in the form of division of labour (every fifth respondent from the chain of pharmacies and almost every third paramedic had no knowledge of it). In addition, respondents from both subgroups stated that they do not have knowledge of the forms of atypical employment, such as task-oriented work time, equivalent work time, shortened work week, flexible working time or individual work time schedule. These forms of work were also listed in the questionnaire.

Other researchers obtained similar results to the results presented above. For example, from the nationwide research into the knowledge of flexible forms of employment conducted among 4,610 employees published ten years ago by A. Mazur (2008, p. 132), it can be concluded that forms such as the following contracts were best known: fixed-term contracts – 97%, contracts of mandate – 96 %, contracts for a trial period – 91%, contracts for a specific task – 90% and substitute employment contracts – 58%. In turn, in the research carried out in the Lower Silesian Province (sample of 1,000 employees), 57% of all respondents declared a relatively high knowledge of flexible forms of employment (Sochańska-Kawiecka *et al.*, 2013, p. 44, 45).

Employees participating in the research see a number of advantages to working in flexible forms. In their opinion, these forms of employment also have disadvantages. The main advantages and disadvantages of practicing flexible forms of employment are summarized in Table 3.

Respondents from both professional groups indicated more disadvantages than advantages resulting from employment in atypical forms. For the employees of pharmacies and paramedics, the greatest benefit they have from flexible employment is more time for the family. In other words – they have greater opportunities to combine work and family life. Among the advantages, the respondents also indicated the possibility of obtaining additional employment because they can undertake other work. However, flexibility of their employment may also result in lower remuneration in situations when, “for some reason” they are not able to fulfil the previously agreed time proportion of work.

The main disadvantage of employment in flexible forms, according to the majority of respondents, is the uncertainty of employment and a short notice period, which results from the limited legal protection of atypical employment. For every fifth employee of a pharmacy and every fourth paramedic, employment in flexible forms prevents them from participation in training at the company’s

Table 3

Advantages and disadvantages of employment in flexible forms of work

Specification	% Responses	
	P	EM
Advantages		
More free time	33.3	14.1
Additional source of income	33.3	27.0
Gaining new professional experience	23.3	0.0
Better chances of finding the right job	27.0	0.0
More time for the family	37.9	48.0
Increased opportunities to pursue one's interests	0.0	18.0
Disadvantages		
Insecurity of employment	53.0	62.0
Short notice period	40.0	73.0
Lower earnings	26.7	48.0
Ineffective/non-motivating form of remuneration	0.0	16.0
Limited legal protection	26.7	82.0
Lack of creditworthiness	18.0	0.0
No access to training in the company	20.0	25.0
Irregularity of income	68.2	12.0
Fewer opportunities for promotion	40.9	0.0

P – pharmacies, EM – emergency medical services.

Source: own elaboration based on *Elastyczne formy...* (2016, p. 38-45), Świerszcz (2016, p. 46-65).

expense. It is puzzling to find that nearly 70% of pharmacy employees indicated the irregularity of income. Such situations may affect employees employed on the basis of civil law contracts or result from the fact that some of the respondents work in franchise entities, which may generate disruptions in the flow of receivables between the franchisor and individual franchisees. However, these issues were not identified in the discussed research.

Opinions of respondents concerning the advantages and disadvantages of atypical employment correspond to the results obtained in studies conducted by M. Kolwitz *et al.* (2017, p. 68-72) between 2014-2015 among nurses and paramedics from the West Pomeranian Province. The cited authors stated that the majority of employees surveyed prefer employment in the form of a permanent employment contract. The indicated preference results from associating this form of employment with greater “employment protection” and greater “social protection”. Some respondents declared preferences for performing work in the form of self-employment, which resulted from the possibility of obtaining higher income by performing work for an increased number of hours.

The above-mentioned financial aspect of the possibility of performing work in the form of self-employment does not correspond to the postulate of paramedics and nurses of the emergency medical service system seeking employment only on the basis of a permanent employment contract (Kurowska, 2016). If such a regulation enters into force without increasing the remuneration of this group of employees at the same time, then those who chose self-employment for financial reasons would lose such opportunities because the employment contract must comply with the number of working hours specified in the Labour Code.

The advantages and disadvantages of employment in flexible forms summarized in Table 3 can be considered as relatively typical and changing insignificantly in the opinion of Polish employees. This statement is justified because similar results were obtained in research published eleven years ago (among others, by Dziubiński & Kowalewski, 2008, p. 109-126), seven years ago (among others, by Wysocka, 2016, p. 188 – research completed in 2012) and three years ago (among others, by Mazurkiewicz, 2016, p. 44).

Conclusion

The empirical material collected in the research confirmed the hypothesis. It was determined that the employees taking part in the research reported more disadvantages than advantages resulting from employment in atypical forms of work. The self-assessment of knowledge regarding flexible forms of employment can be considered satisfactory, which probably results from the fact that in the surveyed entities flexible forms of employment constitute the basic form of employment and most respondents work in these forms.

The employees of both professional groups associate flexible employment mainly with fears of an easier and faster loss of employment because, in their opinion, these forms of employment are less protected by law. Perhaps their articulation of these fears results from the practices they experience in the entities they work for. It seems that these issues may be an interesting subject of detailed research and analyses regarding pathologies occurring in the labour environment, including those resulting from the employment of employees in atypical forms of employment.

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COMPETITIVENESS OF THE POLISH DAIRY INDUSTRY IN THE EU MARKET

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Key words: competitiveness, dairy industry.

Abstract

The structural transformations occurring in the Polish dairy industry, to a large extent, arise from the processes of its adaptation to the uniform EU market conditions. The thorough modernization of milk production and processing technologies has enabled the producers to achieve a considerable improvement of the quality of dairy products, which alongside the cost and price advantage of Polish dairy producers is an important contributor to the competitiveness in the EU market. The purpose of this study has been to make an assessment of the prospects for further growth in the competitiveness of the Polish dairy industry in international markets. The dairy industry in Poland was compared to selected EU countries with regards to the quality of raw material supplies, the worth and structure of the production of dairy products, labour efficiency, and production concentration. The study showed that any further growth in the export of Polish dairy products will require more intensive promotional campaigns, so that European consumers would be able to identify Poland with a greater array of dairy products.

KONKURENCYJNOŚĆ POLSKIEGO PRZEMYSŁU MLECZARSKIEGO NA RYNKU UE

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Słowa kluczowe: konkurencyjność, przemysł mleczarski.

Abstrakt

Przemiany strukturalne zachodzące w polskim przemyśle mleczarskim w dużej mierze są efektem procesów dostosowawczych do funkcjonowania w ramach jednolitego rynku Unii Europejskiej. Gruntowna modernizacja procesów produkcji mleka i jego przetwórstwa umożliwiła znaczną poprawę jakości produktów mleczarskich, która w połączeniu z przewagą kosztowo-cenową stała się ważnym czynnikiem konkurencyjności na unijnym rynku. Celem artykułu była ocena perspektyw dalszego wzrostu konkurencyjności polskiego przemysłu mleczarskiego na rynkach międzynarodowych. Przemysł mleczarski w Polsce skonfrontowano z wybranymi krajami UE pod względem jakości bazy surowcowej, wartości i struktury produkcji sprzedanej wyrobów mleczarskich, wydajności pracy oraz koncentracji produkcji. W wyniku badania udowodniono, że rozwój polskiego eksportu produktów mleczarskich będzie możliwy w wyniku intensyfikacji działań promocyjnych w taki sposób, aby konsumenci europejscy kojarzyli z Polską coraz większą liczbę tych wyrobów.

Methods and materials

The purpose of this study has been to make an assessment of the prospects for the further growth of competitiveness in the Polish dairy industry in international markets, especially in the EU. To this aim, the current position of the Polish dairy industry was evaluated against the background of the selected EU member states: Germany, France, the UK, Italy, Belgium, the Netherlands, Slovakia, Hungary and Lithuania. The dairy industry in Poland has been confronted with its counterparts in the above countries in terms of the quality of raw material supplies, the worth and structure of production of dairy products, labour efficiency, and production concentration. The article takes advantage of secondary source data published in dairy industry reports and Eurostat data. The results of analyses are presented in current and comparable prices, considering their buying power in the analyzed EU countries. This ensures a more objective assessment of the analyzed problems. The year-averaged changes in the data were calculated using the compound percent method.

The following research hypothesis was proposed: *The Polish dairy industry still does not fully exploit its competitiveness potential, and is mostly composed of a production potential similar to a country that only exports raw materials. Furthermore, the potential of the milk processing industry and the competitive potential in the international market have also not been effectively exploited.*

Raw material base

An assessment of the raw material base of the dairy industry in Poland must take into account the following parameters: the number of dairy cows, the milk yield, the volume of milk production, and the milk sales to total milk production ratio. The number (livestock) of dairy cows is the principal factor

that contributes to the base for supplying the dairy industry with raw material. Poland is a leading country among the Central and Eastern European block with regard to the number of dairy cows. Its contribution to the total number of cows in the EU-28, which in 2017 was 9.3%, meant that Poland secured third place in the entire European Union (*Agrarmärkte*, 2017). More dairy cows were found only in Germany and France. In most EU countries, a constant reduction in the stocks of dairy cows can be observed. In Poland, the number of dairy cows between 2010 and 2016 decreased at a year-average rate of 2.3% (Fig. 1).

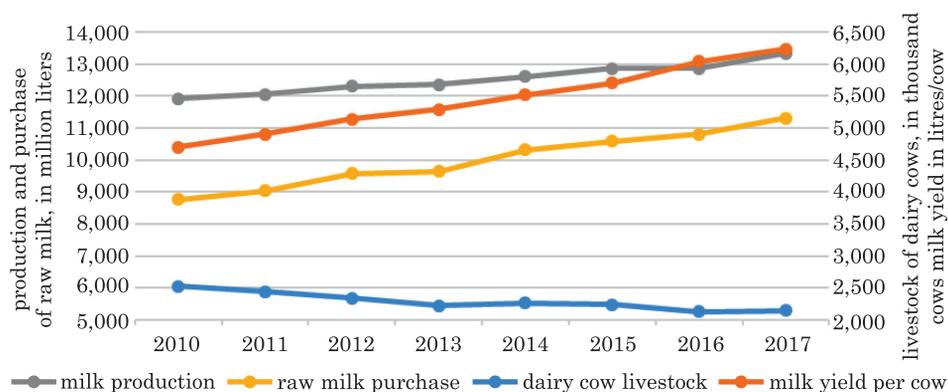


Fig. 1. Livestock and milk yields of cows, as well as the production and purchase of milk as a raw product

Source: diagram developed by the author, based on: *Rynek Mleka. Stan i Perspektywy* (2018, no 54).

To achieve an adequate and complete evaluation of the raw material base for the dairy industry in every country, the information about the number of dairy cows needs to be supplemented by adding the data on milk yields. Unlike the number of cows, the milk yield in the analyzed period increased. In Poland, the milk yield of cows in 2010–2017 increased by nearly 4.1% on average each year, which was faster than in Germany, where the increase was 1.7%. However, the milk yield of dairy cows in Poland is still lower by about 33% than the average milk yields obtained by cows in Germany. In 2016, Poland's share of milk production in the whole EU-28 was 8.5%, thus being lower than its share of the dairy cow livestock (9.0%) (Nowak, 2016).

The sales to total production ratio in the raw milk production base mostly depends on the quantities of milk delivered to plants which process this raw product, which in practice corresponds to milk wholesale purchases. In 2010–2017, Poland recorded a year-average increase in raw milk purchases of about 3.8%, as a result of which the amount of raw milk bought by dairy plants in 2017 was 11,313 thousand litres (i.e. 23% more than in 2010) (Zuba-Ciszewska, 2019).

The final form of an assessment of the raw material base for the dairy industry in Poland, compared to selected EU countries, chosen in this study consisted

of the Principal Component Analysis. This analysis enables us to transform a given set of non-correlated traits (variables) into a new set of characteristics (i.e. principal components), which is comparable to the original set (see: Statistica, online). The first stage of the PCA was composed of building a matrix of correlations between the original variables: dairy cow livestock, milk yield of cows, milk production volume, sales to total production ratio, and raw milk purchases. The cases consisted of the countries analyzed at six time points: in 2000, 2003, 2007, 2010, 2013, and in 2016. The second step employed the Kaiser criterion, to determine the number of principal components, as a result of which two independent (non-correlated) factors were obtained, which together explained 96% of the variation comprised in the primary data. The eigenvalues of factors equaled: 3.1 for the first factor and 1.7 for the second factor. Denotation of the new variables was made possible by so-called factor loads, which define the degree of saturation of a principal component with the given variable. The higher the correlation coefficient for the correlation of the principal component with the variable, the more significant it is for the main principal component. In the final stage of the analysis, the analytical factors were submitted to a *varimax* orthogonal rotation, which showed that the first factor was correlated with the variables: number of dairy cows (0.89), milk production (0.98) and raw milk purchases (0.93), while the second factor was correlated with the variables: cows' milk yield (0.93) and milk sales to total production ratio (0.77).

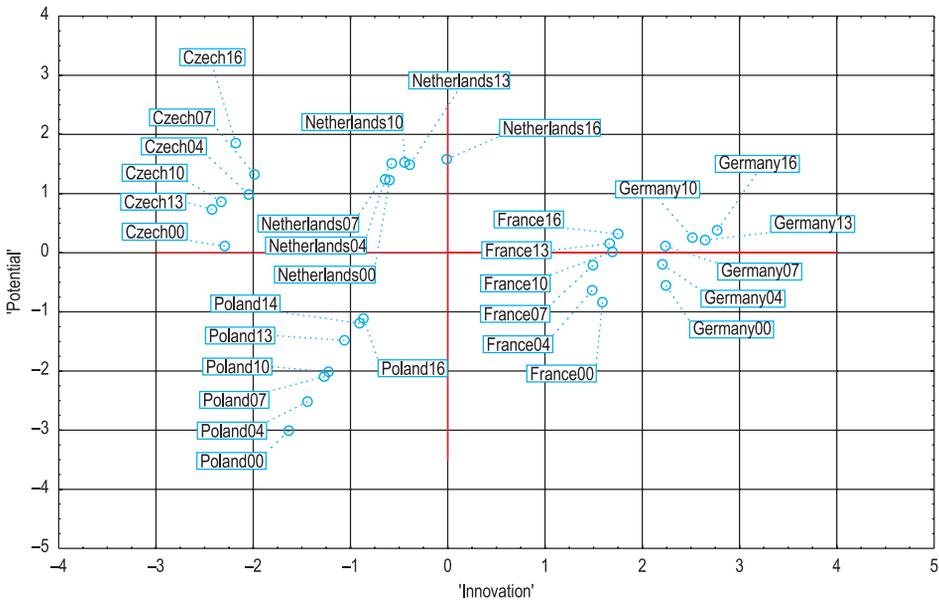


Fig. 2. Map illustrating the positions of selected EU countries with respect to the factors: potential and innovation, in the years 2000, 2003, 2007, 2010, 2013, and 2016

Source: the author, based on: Rynek Mleka. Stan i Perspektywy (2014, no 47-54); *Agrarmärkte* (2017).

The following conventional terms were designated to the distinguished factors: potential (factor 1) and innovation (factor 2).

Figure 2 presents a map of the analysed EU states in 2010-2016, positioned with respect to one another according to the factors 'potential' and 'innovation'. The raw milk base in all the analyzed countries was characterized by a rising value of the factor 'innovation'. Compared to the analyzed EU states, the raw milk base in Poland should be described as traditional, but having great potential concerning the assumed evaluation parameters. In 2010-2013, there was a relatively slow increase in the rate of growth in the parameters which define the innovative nature of the raw milk base. This growth rate has accelerated in recent years, mostly because of more rapid changes in the structure of cow use in Poland, which in turn is a consequence of the abolishment of milk production quotas in the EU.

Production of dairy products

Resource base restructuring and the modernization processes of the raw milk base for the dairy industry in Poland have had a strong impact on the development and changes in the production structure of the final dairy products. Following the above transformation, Poland has become the fourth largest producer of dairy goods in the EU, having an 8.3% share in the dairy production of the whole EU (Wiater *et al.*, 2019). Poland has been surpassed in this regard only by France (19.1%), Germany (17.8%) and Italy (11.9%). The years 2008-2016 were a period of dynamic growth for Poland's dairy industry. The rate of growth in total dairy production in Poland, measured by the worth of sold production, was the highest in the entire EU. At that time, the value of dairy goods sold in the EU (in comparable prices) increased by 7.6% while in Poland it rose by 29% (Tab. 1).

As their economic situation improves, consumers expect increasingly better quality, which is manifested, for example, by a growing demand for highly processed products. Polish companies in the dairy industry, while attempting to meet this rising demand, have adopted a strategy of intensively developing highly processed products, mainly ripened cheeses, milk beverages, desserts and ice creams (Fig. 3) (Kowalska *et al.*, 2019).

After Poland's accession to the EU in 2004, the production output of consumer milk increased greatly as well. In 2004-2017 the year-averaged rate of growth in the production of this product was 5.3%.

Due to the limited subsidies under the Common Agricultural Policy (CAP) allocated to butter production, in most EU countries the production output of this product was observed to have stabilized in 2004-2013. As the demand for butter rose in world markets, the production of butter in Poland increased by 20% in 2017 as compared to 2013. The year-averaged rate of growth

Table 1

Production of dairy products in the selected EU countries

UE states	The value of production in prices [mld euro]:								Average rate of growth of the dairy industry production worth [% annually]			Production in 2016 [Euro/capita]
	current				comparable*				2008-2015	2008-2012	2013-2016	
	2008	2010	2013	2016	2008	2010	2013	2016				
Poland	5.8	5.8	7.1	6.2	8.5	9.8	12.7	11.5	4.2	7.2	1.4	312
Lithuania	0.8	0.8	1.1	0.9	1.3	1.2	1.7	1.4	0.5	3.1	-2.0	486
Hungary	1.1	0.9	0.9	0.8	1.6	1.4	1.6	1.4	-0.5	-1.4	0.3	171
Slovakia	0.6	0.5	0.6	0.5	0.8	0.7	0.9	0.8	-0.3	0.5	-1.0	164
Belgium	3.9	4.0	4.5	4.2	3.6	3.7	4.2	3.8	0.5	1.1	0.0	330
Germany	26.5	23.3	29.3	23.5	25.6	22.4	28.4	22.8	-0.6	0.1	-1.4	317
France	25.7	24.6	28.8	26.2	23.5	22.5	26.8	24.3	0.5	0.9	0.2	414
The UK	9.2	9.5	10.9	8.4	8.2	8.5	9.4	6.9	-1.3	-0.1	-2.5	138
Italy	16.7	14.6	18.1	17.1	16.7	14.6	17.7	17.1	0.6	1.6	-0.5	282
UE-27/28	133.3	123.5	148.4	130.0	133.2	123.4	148.1	129.7	0.1	0.1	0.0	286

* in comparable prices, i.e. current prices corrected by the parity of the buying power of the Euro in analyzed countries

Source: the author, developed from Eurostat data.

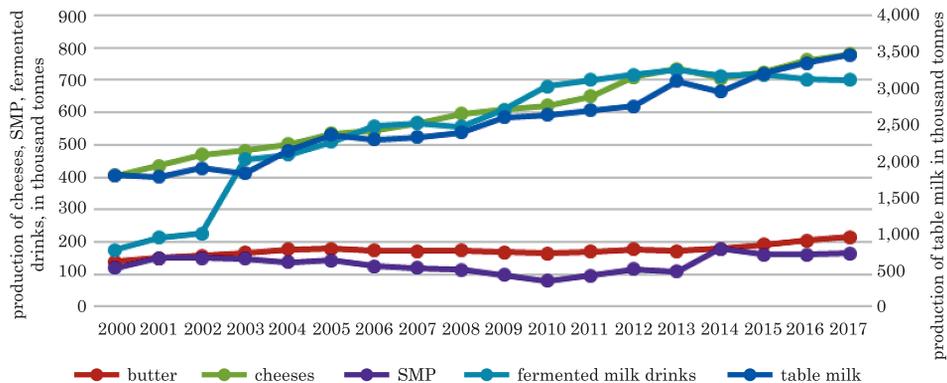


Fig. 3. Production of basic dairy products in Poland

Source: the author, based on data from Rynek Mleka. Stan i Perspektywy (2014, no 47-57).

in the production of butter in Poland over the analyzed time period was 5.7%, still less by one percentage point than in the entire EU.

The third important group of products in the dairy industry in the EU is composed of cheeses, whose production in most of the EU states has been distinguished by a constant growing tendency. Likewise, the quantities of cheese made in Poland increased considerably, from 501 thousand tonnes in 2004

to 780 thousand tonnes in 2017, and the year-averaged growth rate over that time period was 3.45%. Considering the fact that cheeses are highly processed products, the growing trend in their production in Poland should be perceived as a positive manifestation of changes in the structure of milk processing in our country.

Another group of dairy products having high added value are fermented dairy beverages, whose volume of production in Poland over the years 2004-2017 increased by 33%. In 2017, the Polish dairy industry produced over 702 thousand tonnes of these products, which corresponded to 7.2% of the total volume of fermented milk drinks produced in the EU-28 states.

By comparing the share of a given country in the production of dairy products in the EU-28 states with the share of this country in the raw milk purchase in the EU-28 states, it is possible to evaluate a degree of specialization in the production of all groups of products. The graphic presentation of this analysis for Poland and Germany (for comparison) can be seen in Figure 4. The data have been shown in the form of a pentagon, where each vertex represents a given product, i.e. table milk, butter, cheeses, skimmed milk powder (SMP) and fermented milk drinks. The distance from the central point reflects the degree of specialization of a given country in a given group of products. An analysis of both diagrams implicates differences in the production profiles of the compared countries. An analysis of Poland's production profile indicates a gradually diminishing gap in the production of products with high added value relative to Germany, which represents here all countries with a highly developed dairy industry. An analysis of the structure of the Polish dairy industry's production in 2000-2016 shows a significant increase in the share of this group of products in the value of all sold products.

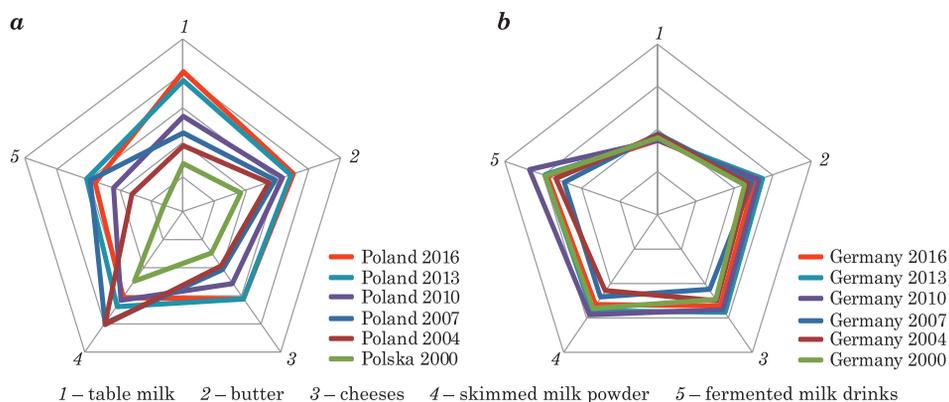


Fig. 4. Graphic specification of the production profiles of dairy industries in Poland (a) and Germany (b) in 2000-2016

Source: the author, based on: Rynek Mleka. Stan i Perspektywy (2014, no 47-54); *Agrarmärkte* (2017).

International trade in dairy products

The positive changes occurring in the structure of groups of products made by the Polish dairy industry are driven by changes in consumer preferences and, on the other hand, are a consequence of the restructuring and modernization of this sector. Owing to these processes, the Polish dairy sector now has an up-to-date potential which enables the industry to produce high quality products with a high added value. This is an essential factor that plays a crucial role in the growth of dairy product exports.

International trade is one of the principal determinants of the growth of economies of entire states, business sectors and companies which these sectors are composed of (Irwin, 2002). Hence, international trade has long been considered to be an important contributor to the development of the Polish dairy industry. Poland used to be a large exporter of butter in the inter-war years; for example it exported 28.7 thousand tonnes of butter in 1938. This quantity of exported butter was not surpassed until the year 2005 (Gornowicz, 2003).

For many years, and particularly after Poland's access to the European Union, Poland has had a positive balance in the international trade of dairy products. Since 2004, the Polish export in terms of its worth has risen by an average of 14.3% annually, to reach the value of 2.12 billion Euro in 2017. Owing to this high rate of growth in import (23.4% a year on average), its value in 2017 was nearly 960 million Euro, and was therefore demonstrably lower than the value of exported dairy goods. As a result, the positive balance in international trade in dairy products nearly doubled in 2017 compared to 2004 (Fig. 5).

Besides this impressive increase in the volume of international trade in dairy products, the structure of their exports has improved as well (Fig. 6). Prior to Poland entering the EU, the share of semi-raw products in the total exports of dairy products from Poland was between 60 and 80%. After the accession, the percentage of ready-made products increased considerably. In 2016, the highest share in the value of exported dairy products was made up by cheeses (39.3%, while the share of skimmed milk powder fell to 11.9%.

To summarize, this analysis of the foreign trade in dairy products is a synthetic comparison made between the profiles of the main exports of dairy products (Fig. 7). Similar to fig. 4, Poland and Germany are presented in the form of a pentagon (Fig. 7). Each vortex of this pentagon symbolizes a specific product: table milk, butter, SMP, cheeses and yoghurts. The distance to the central point reflects the degree of specialization of a given country in exporting a given product. An analysis of figure 7 will reveal the distance between Poland and the so-called old EU member states (EU-15), in our case represented by Germany. In 2002-2004, Poland was strongly orientated towards exporting SMP. It was not until its integration with the EU that the contribution of other products, particularly cheeses and fermented milk drinks, increased.

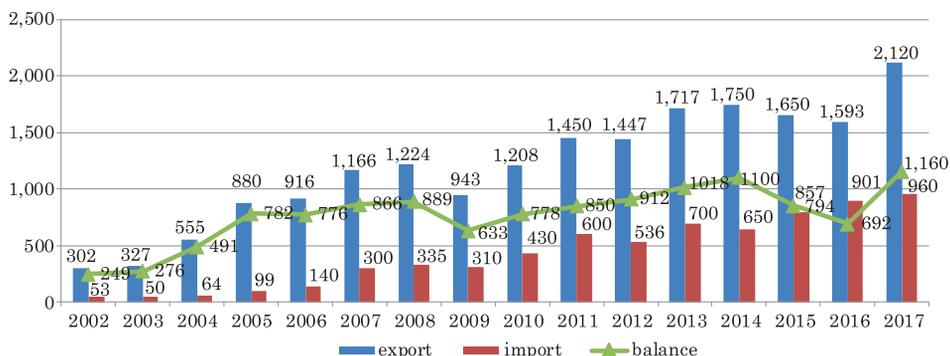


Fig. 5. International trade in dairy products in Poland, in million EUR
 Source: the authors, based on: Rynek Mleka. Stan i Perspektywy (no 47-54,2014-18);
 Agrarmärkte (2017).

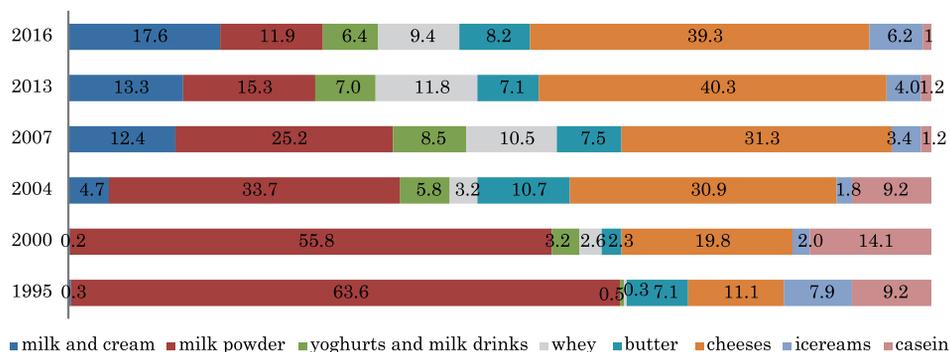


Fig. 6. Structure of the value of Polish trade in dairy products in international markets
 Source: the authors, based on: Rynek Mleka. Stan i Perspektywy (2014, no 47-54);
 Agrarmärkte (2017).

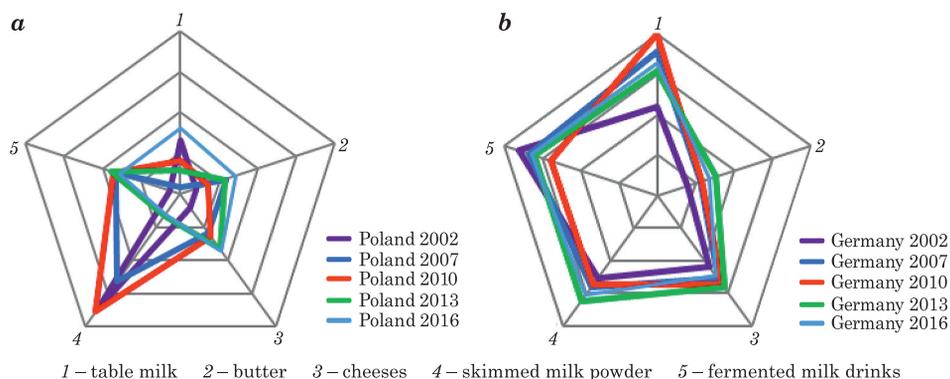


Fig. 7. Graphical comparison of the export profiles for the main dairy products in Poland (a) and Germany (b) in the years 2002-2016
 Source: the authors, based on: Rynek Mleka. Stan i Perspektywy (2014, no 47-54);
 Agrarmärkte (2017).

Changes which have taken place in the foreign trade of dairy products in Poland after its access to the EU can be deemed to be very positive. Besides the increased positive balance of the international trade in these products, in terms of both their worth and quantity, another positive and desirable trend is a rising share of highly processed products in both import and export trade. An increase in the export of cheeses, yoghurts and butter from Poland enables the producers to gain higher benefits owing to the greater added value and the economics of scale. However, a comparison of the exports from Poland and from the EU-15 countries suggests that the Polish dairy sector still possesses an unused potential to raise the percentage of highly processed products in the structure of exported dairy commodities. Activating this potential will have a significant influence on strengthening the competitive edge of the Polish dairy sector.

Labour efficiency in the EU dairy industry

In the practice of measuring labour efficiency, several economic and financial categories are employed, e.g. added value, operating profit or value of sold production (Ikeda, 2009). In general, labour efficiency is understood as the quantity or monetary value of production generated in a time unit by one worker in a given economic sector (Gołaś, 2017).

In 2017, the Polish dairy industry employed around 39.5 thousand people, which corresponded to 10.7% of the total labour force in the EU dairy industry. This placed Poland in the fourth position among the EU-28 states. A higher level

Table 2

Labour efficiency in the dairy industry in the EU

EU states	Labour efficiency in comparable prices [thousand EUR/worker]							Changes in labour efficiency [% annually]		
	2008	2010	2012	2013	2014	2015	2016	2008-2016	2008-2012	2013-2016
Poland	198.1	229.0	274.8	314.7	321.7	297.3	290.6	4.91	8.53	1.40
Lithuania	151.4	166.3	191.3	222.9	223.9	191.5	185.2	2.55	6.02	-0.82
Hungary	192.7	181.2	211.1	219.9	237.5	224.7	212.8	1.25	2.31	0.20
Slovakia	231.4	187.9	242.6	267.8	284.9	256.2	237.8	0.34	1.19	-0.50
Belgium	478.8	508.0	516.5	600.1	641.8	561.4	541.6	1.55	1.91	1.19
Germany	623.4	580.7	580.5	652.8	603.9	559.0	515.2	-2.35	-1.77	-2.94
France		390.6	434.9	467.6	477.6	443.4	397.9	0.31	5.51	-2.20
the UK	262.2	268.7	302.1	303.5	325.1	275.5	245.4	-0.83	3.60	-5.07
Italy	380.9	351.7	403.4	413.6	417.9	417.6	391.4	0.34	1.45	-0.76
UE-27/28	360.1	342.8	365.3	393.3	434.7	390.7	352.4	-0.27	0.35	-0.89

Source: the authors, based on data from Eurostat.

of employment was only found in France (57 thousand), Germany (44 thousand) and Italy (43.5 thousand). In 2008-2016, the number of persons employed in the milk processing industry in Poland decreased by 5%, meanwhile it increased in the EU-28 by 3%.

The highest increase in labour efficiency in the dairy industry over the analyzed time period (in comparable prices) was noted in Poland, where it rose by 47%. A high rate of increase in labour efficiency occurred in 2008-2012 (8.5% annually), while the subsequent time period of analysis (2013-2016) was characterized by a slower growth rate (1.4% annually). Moreover, despite the improved labour efficiency in the Polish dairy industry, this parameter is still lower than the EU average by 17.6%. This means that further improvement is possible and the gap between Poland and more developed countries of the EU can be diminished (Tab. 2).

The concentration of milk processing plants in Poland and in the EU

There were 290 companies operating in the Polish dairy industry in 2016, which corresponded to 3.6% of all dairy companies in the EU. In 2008-2016, the number of these companies in Poland declined by 20.5%, while the total number of dairy companies in the EU remained practically unchanged. As a result, an over 70% increase in the average turnover of Polish dairy

Table 3

Average value of the turnover of companies in the dairy industry in the EU, measured by the worth of production (in comparable prices)

EU countries	Value of the turnover in comparable prices [million EUR/company]							Annual change [%]		
	2008	2010	2012	2013	2014	2015	2016	2008-2016	2008-2012	2013-2016
Poland	23.1	32.0	37.1	44.8	47.6	42.1	39.10	7.26	12.65	2.13
Lithuania	22.2	39.9	41.6	44.4	41.3	56.7	54.72	11.67	15.31	8.14
Hungary	18.0	14.3	17.3	18.2	19.5	18.3	16.70	-0.10	-1.63	1.46
Slovakia	24.2	10.7	12.3	14.3	12.4	10.7	8.81	-11.20	-16.10	-6.01
Belgium	35.2	30.7	31.4	40.9	41.0	39.1	46.76	3.30	-2.97	9.98
Germany	88.6	77.6	76.3	93.6	104.8	87.5	69.80	-2.13	-2.81	-1.45
France	21.3	24.0	28.7	29.1	33.6	30.9	29.59	3.84	9.13	1.29
the UK	26.9	27.7	25.0	27.3	28.0	25.2	18.61	-3.74	-4.33	-3.15
Italy	5.8	5.3	5.5	5.8	5.6	5.4	5.38	-0.62	0.15	-1.39
UE-27/28	14.6	13.7	15.0	15.9	16.5	16.0	14.09	-0.05	0.29	-0.39

Source: the author, based on the Eurostat data.

companies was achieved in 2008-2016. This turnover was 178% higher than the average turnover of the EU-28 dairy companies in the last year of our analysis, i.e. in 2016. Such a large decline in the number of economic entities and an increase in the turnover of an average enterprise was a consequence of the progressing concentration and consolidation process in the Polish dairy sector. This factor has become an important stimulant for growth in the economic power and competitiveness of Polish dairy plants in the EU market.

Conclusion

The foreign trade outcome and the analysis of competitiveness conducted in this study demonstrate that the Polish dairy industry has achieved a measurable success in the EU markets. A further strengthening of the position of Polish dairy producers in the EU market will require a systemic and consistent reinforcement of the developed comparative advantages. Our analysis of the raw milk base for the dairy industry in Poland showed its high potential to produce milk, both in the context of its quantities and quality. The key role in the use of raw milk will be played by the integration in the sense of coordinated efforts undertaken by milk processing and milk producing subjects.

Changes in the production profile of the Polish milk processing sector, presented in this paper, demonstrate diminishing gaps in the production of high added value products relative to the EU countries with well-developed dairy industries.

Owing to the beneficial transformations in the structure of dairy products made and the cost and price advantage, Polish dairy plants have been steadily increasing their export to EU countries. However, the competitive advantage of our dairy companies, understood as a favourable ratio of price to quality of products, has been gradually decreasing (Szczepanek & Tereszczuk, 2017). Hence, any further growth in the export of Polish dairy products will require more intensive promotional campaigns, so that European consumers may identify Poland with a greater array of dairy products. More active promotion in foreign markets will entail large costs, and therefore it seems reasonable to implement such advertising campaigns that will encompass groups of producers or even the entire dairy sector (Szczepanek, 2017).

A significant source of improved export potential for the Polish dairy industry consists of a further rise in labour and capital productivity, which in turn will arise from the implementation of the subsequent stages in the restructuring of the milk processing and production sector.

Having analyzed the research results within the context of the hypothesis, it can be concluded that the hypothesis has been positively verified.

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AGRICULTURAL PRODUCTION VOLUME IN POLAND AND IN BELARUS AND ITS PROSPECTS

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Abstract

The aim of this study was to identify changes in the agricultural production volume for selected branches in 2013-2017 and to estimate the future trends in Belarus and in Poland. The following comparative analyses used selected *per capita* intensity indices, the change rate index and a logistic function. The study found that in both countries the greatest decrease took place in the plant production volume, while animal production volume remained more stable. The fact that its foreign trade is heavily dependent on Russia is the greatest problem for Belarus. Foreign trade in Poland is more stable and less dependent on Russia owing to the influence of the European Union.

WIELKOŚĆ ORAZ PERSPEKTYWY PRODUKCJI ROLNICZEJ W POLSCE I NA BIAŁORUSI

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Słowa kluczowe: wielkość produkcji rolniczej, polityka handlowa, Polska, Białoruś.

Abstrakt

Celem badań było zidentyfikowanie zmian w wielkości wybranych branż produkcji rolniczej w latach 2013-2017 oraz oszacowanie trendów rozwoju na Białorusi i w Polsce. W analizach porównawczych wykorzystano wybrane wskaźniki natężenia *per capita*, wskaźnik dynamiki zmian oraz funkcję logistyczną. W wyniku przeprowadzonych badań stwierdzono, że największe spadki w obu krajach dotyczą produkcji roślinnej. Produkcja zwierzęca jest bardziej stabilna. Największym problemem na Białorusi jest zależność handlu zagranicznego od Rosji. W Polsce większą stabilizację handlu zagranicznego i mniejszą zależność od Rosji zapewnia Unia Europejska.

Introduction

Due to a lack of self-sufficiency in food production, geographic position and historical considerations; Russia trades in food products with countries of the former eastern bloc. It is the main trade and economic partner of Belarus; its commercial exchange with Poland is also significant. However, there is a recurring issue of lobbying by individual sectors of the Russian economy as well as holdings and concerns with Russian capital. Protectionist support from the Russian government has had a negative impact on the financial situation of food and agricultural produce exporters in Belarus. In particular, this manifests itself as the imposition of bans and sanctions against imports to Russia (Gribov, 2018, p. 27-29). Belarus exported to Russia approx. 90% of its agricultural produce in 2010 (Instytut Sobieskiego, online). According to Statistics Poland (formerly known as the Central Statistical Office or GUS in Polish), Russia was only the tenth highest export market for Poland; however, the growth rate of the Polish exports to Russia was high until 2013 (Batyk, 2014, p. 7-14). After Poland's accession to the European Union, the EU became their main trade partner, which does not mean that there is no cooperation with third countries, which is based on relevant agreements (Matysiak-Pejas, 2010, p. 80-90). When Western countries imposed economic sanctions on Russia in 2014, the latter responded with retaliatory measures. It affected the level of commercial exchange between Poland and Russia (especially in some groups of products), as well as with Belarus, which was suspected of providing false

countries of fruit origin. However, Batyk (2014, p. 7-14) claims that because Polish agricultural produce is highly esteemed in the Russian market, exports may continue to grow.

Therefore, there is a question of how these problems of exports to Russia will affect the production volume in both countries in the near term. The authors realise that agriculture development is affected by numerous factors, not fully recognised and variable in time. This study focused only on assessing the trade relations with Russia and the agricultural production volume now and in future; without analysing the mutual relations.

This study identified the changes in the agricultural production volume in selected branches from 2013-2017 and estimated future trends in Belarus and in Poland.

Study methodology

The study covered secondary data on plant and animal production volume in Belarus and Poland from 2013-2017 and the prospects for the following 5 years¹. Belarus and Poland, which share a common geographic position, were chosen because of the need to compare the problems faced by one country which is an EU member, and by another remaining under the strong influence of Russia. The data were taken from public statistical information: the Belorussian Statistical Yearbook and Statistics Poland. Data were listed comparing the situation in Belarus and in Poland. The comparative analyses used selected *per capita* intensity indices and the change rate index. Forecasts were prepared with mathematical models based on assumed process continuity and predictability, and on the use of historical data (Struzak, 2009, p. 36). The current situation is likely to remain unchanged within the predictability horizon (Peitgen *et al.*, 2002, p. 556). The logistic function, used for modelling various growth processes, was applied in this study. According to this function, the growth rate was initially high, but then decreased with time to reach an unsurpassable limit in the final phase. The logistic function matched well to historical data. This was a decisive argument for applying it in the study. In its simplest form, the function can be written in the following manner (Struzak, 2009, p. 45):

$$y = \frac{1}{1 + \exp(-t)},$$

where:

- y – growth function (maximum value 1),
- t – time.

¹ 5% forecast error assumed.

In order to apply this function in practice, it was modified by introducing three temporally constant numerical parameters determining the function course – a , b and c (Grzegorek & Wierzbicki, 2009, p. 119):

$$y = \frac{a}{1 + b \exp(-c \cdot t)},$$

where:

$a, b, c \geq 0$,

a – saturation of the phenomenon under study, determined heuristically,

b, c – function parameters chosen through statistical estimation.

The time series in the study was five years (Grzegorek, 2012, p. 32). The parameter a , which determines the natural saturation level, was taken as 100%. In this case, 100% denoted the largest production volume in Belarus or in Poland during the time sequence of 2013-2017 under analysis, for each type of production.

Agricultural policy in Russia and its impact on the import of agricultural produce from Belarus and Poland

The agricultural production volume in Russia decreased severely after the socioeconomic transformations of the 1990s. For example, the total agricultural production volume in 1998 in Russia decreased to 56% of the 1990 level, with plant production decreasing to 66% and animal production dropping below 50%. Some positive trends have been observed since 1999 and the subsidising of agriculture from the state budget returned. Despite considerable growth in production volume in Russia, its growth has lagged behind quickly growing internal demand. The import of agricultural produce and of food increased 2.4-fold from 2000-2005 and exceeded USD 17.4 billion. The implementation of a programme entitled “Development of APK²” started in Russia in 2005. It was regarded as the first stage of a strategy aimed at overcoming the crisis in agriculture and creating conditions for stable growth. The period of carrying out the project in question (2005-2007) proved to be very good for agriculture. The annual growth rate of agricultural production volume was 3.4%. Another programme, entitled “Agriculture development and regulation of markets for agricultural produce, raw materials and food” was implemented in 2008-2012 (Furkin, 2008, p. 140-150). Agriculture in Russia generates approx. 3.7% of GDP, employs 9.2% of the country’s labour force and generates approx. 6% of its exports. This sector has proven highly resistant to widespread economic turbulences.

² An inter-sectoral complex, bringing together companies involved in the production and processing of agricultural products.

Although the food and agriculture sector has a huge potential to play a greater role in the Russian economy, it suffers from relatively low productivity and an obsolete technological base (Kuzminov, 2018, p. 52-57).

The comparative advantage in the current Russian export is achieved mainly by cereal crop (wheat, barley) cultivation, their by-products (wheat bran) and products from their processing, such as grouts, flour, etc. (Bensova, 2017, p. 318-330). In animal production, countries exporting to Russia have suffered great losses because of trade bans as a consequence of African swine fever. The effects of the import ban have been studied extensively by Blanchard and Wu (2019, p. 173-195). They also discuss possible factors related to cross-border disease transmission through trade. Russia makes use of Article 6 of "Agreement on applying sanitary and phytosanitary measures" (Inspekcja Jakości Handlowej Artykułów Rolno-Spożywczych, online) to implement its trade policy, although it often constitutes an instrument of arbitrary and unjustified discrimination against signatories to the agreement. One must not forget that Russia has implemented retaliatory measures for the sanctions imposed by the West. An embargo was imposed in 2014 on imports from the EU, the USA, Canada, Australia and Norway. The embargo applied to a range of food products. In 2014, Russia started to follow a policy of import substitution. The objectives of the state programme include the development of subsectors for import and agriculture substitution, including the cultivation of vegetables, fruit and breeding dairy and meat cattle. The import policy and the Russian embargo initially led to a deterioration of the country's economic situation. The consequences included the devaluation of the ruble, an increase in the inflation rate and a rapid decrease in purchasing power, which was especially painful with the deficit of cheap imported goods. Now, the Russian economy is gradually reviving (Tsutsieva *et al.*, 2019, p. 2781-2787). In April 2019, Russia imposed a temporary ban on the import of apples and pears from Belarus, suspecting that they, in fact, came from Poland. The ban was lifted in July 2019 after many inspections of Belorussian apple producers.

Gusakov *et al.* (2018, p. 263-285) pointed to a potential external threat associated with the growing deficit of resources on agricultural produce, raw materials and food markets, the instability of the economic situation; as well as using protectionist measures and regulations by major exporters. This is the case with Russia.

The current state and prospects for agricultural production volume in selected branches in Belarus and Poland

Agriculture in Belarus generates over 9.2% of GDP, with 2.6% in Poland and 4% globally³. As much as 60% of the land in Belarus is used for agriculture. In Poland, agricultural land accounts for slightly more than 50% of its area. Major crops in Belarus include cereals, cannabis, tobacco, hop, flax, potato, sugar beet, forage crops, fruit and vegetables. Cattle, pigs and poultry are also bred. The major crops in Poland include cereals, rapeseed, potatoes, fruits, vegetables and many others. Animals bred in Poland include mainly pigs, cattle and poultry.

Table 1

Production volume per capita (kg per person) of major agricultural products

Country	Years					2017/2013 [%]
	2013	2014	2015	2016	2017	
Grain						
Belarus	803	1009	912	785	842	104.9
Poland	634	631	711	644	659	104.0
Potato						
Belarus	624	663	632	630	675	108.2
Poland	185	193	168	224	216	116.7
Vegetables						
Belarus	172	183	178	199	206	119.8
Poland	131	113	126	118	119	90.8
Fruit						
Belarus	48	66	58	74	50	104.2
Poland	109	111	107	107	83	76.15
Livestock (post-slaughter weight)						
Belarus	124	113	121	123	127	102.4
Poland	132	153	160	172	172	130.0
Milk						
Belarus	701	707	743	751	771	110.0
Poland	340	347	351	352	357	104.9
Eggs						
Belarus	407	407	395	380	370	90.9
Poland	286	242	221	247	260	90.9

Source: prepared by the author based on the Statistical Yearbook of the Republic of Belarus (2018).

³ 2017 data

Swinnen *et al.* (2012, p. 127-144) analysed changes in the results of agricultural activity in Central and Eastern Europe and in former Soviet republics from the beginning of the transformation process. The government-run Program of Rural Area Revival and Development for 2005-2010 brought positive results in the form of a quite high production volume growth rate (Belskiy, 2019, p. 56), and Belarus achieved a positive trade balance in food and agricultural produce (Matuszewicz, 2008, p. 167-173; Saihanau & Kazakevich, 2008). Since Poland's accession to the European Union, the country's agriculture has been governed by the Common Agricultural Policy, which affects the production volume. Joining the EU has had a positive effect on foreign trade in products (Terszeszczuk, 2010, p. 192-197). Poland also has a positive trade balance in agricultural produce⁴.

Considering the *per capita* volume from 2013-2017, a decrease was observed only in eggs, which was also observed in Poland. However, the greatest decrease per capita was observed for fruit (Tab. 1). A growing trend was observed for the other products under analysis. The highest was for vegetables in Belarus and livestock in Poland.

Considering the simulations performed with logistic functions assuming that the production volume level remains unchanged, a drop in fruit production in Belarus and in Poland should be expected, although Poland is the undisputable leader in the EU. Other expected decreases include the production of cereal crops in Belarus, although the country is a significant producer of these crops in Europe and of vegetables in Poland (Fig. 1).

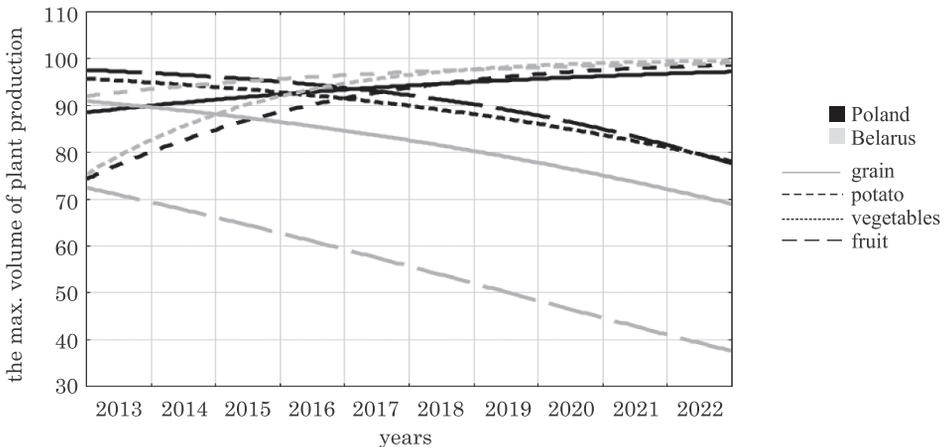


Fig. 1. The volume and forecast of plant production in Belarus and in Poland (100% in the logistic function denotes the maximum production volume from 2013-2017)

Source: prepared by the author based on acquired data.

⁴ Production and foreign trade of agricultural products in 2017 (Główny Urząd Statystyczny, online).

A further decrease in egg production is expected with respect to animal production in Belarus and in Poland. The decrease will be much more rapid in Belarus than in Poland (Fig. 2). The livestock production volume is expected to remain at the present level in Poland and to decrease in Belarus. The milk production volume is likely to remain at the present level in both countries. Nearly all the countries undergoing transformation initially witnessed a decrease in productivity and nearly all of them now enjoy an increase in productivity. However, an increase in productivity is not the only factor affecting production volume forecasts.

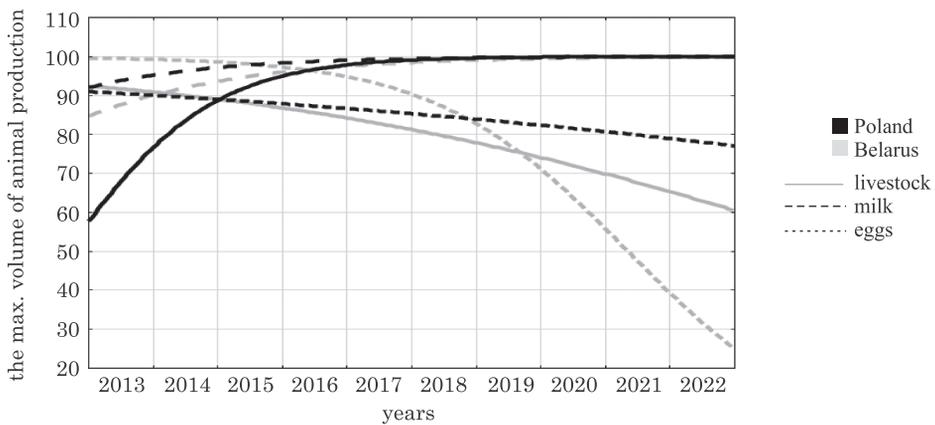


Fig. 2. The volume and forecast of animal production in Belarus and in Poland (100% in the logistic function denotes the maximum production volume from 2013-2017)

Source: prepared by the author based on acquired data.

According to Gorzelak (2013, p. 145-167), both near-term and further forecasts (especially) are mainly affected by the demand for food from a society with purchasing power. Furthermore, socioeconomic and cultural transformations in the society and the profitability of foreign trade in food products also affect these forecasts.

Conclusions

An increase in agricultural production volume in Belarus aggravated the problem of markets for its produce. However, although in late 2017 Belarus signed contracts for the supply of dairy products and meat worth USD 114 million to China, it still struggles to sell its agricultural produce. Poland enjoys a positive foreign trade balance only with respect to animal products, meat, milk and dairy products. According to Koška (2016), Russian sanctions did not

affect foreign trade in Poland. Producers quickly switched to new markets and signed new contracts.

In order to maintain the current position in agricultural trade and agricultural product processing in Belarus, given the volume of production now and in the future, it is necessary to diversify food markets by expanding the area of food supply and by reducing the influence of Russia on the financial situation of Belarusian farmers and food producers. The present system of agricultural industry regulation in Belarus calls for significant changes. The situation in Poland is more stable due to its membership in the EU. Russia is not the main trading partner of Poland, but it is still important. If Poland wants to maintain its trade position with Russia, it should focus on direct trade with the Kaliningrad District (Batyk, 2014, p. 7-14).

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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
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.

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- 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 a 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),
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- 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.
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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.