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PROJECTING A LIFE-CYCLE INCOME – A SIMULATION MODEL FOR THE SLOVAK PENSION BENEFIT STATEMENT

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Abstract

The introduction of a regulation requiring pension asset managers to provide savers with an estimation of pension benefits opened a wide range of scientific questions on the projection methods and estimation of input parameters. One of them is the estimation of life-cycle income for calculating expected contributions and the estimation of the benefit ratio at the moment of retirement. We present an estimation of life-cycle income functions for various age and educational cohorts influenced by temporary labor market shocks. By employing the resampling simulation method for incorporating macroeconomic shocks, we have shown that using longitudinal data on the income process from a large closed economy could bring valid results for a country with a small open economy as well where the longitudinal data on income processes of individuals are unavailable. Our findings could serve a practical use when pension or other social benefits tied to individual income should be modelled.

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**PROGNOZOWANIE DOCHODU W CYKLU ŻYCIA –
MODEL SYMULACYJNY DLA SŁOWACKICH ŚWIADCZEŃ EMERYTALNYCH**

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Słowa kluczowe: mikrosymulacja, świadczenia emerytalne, dochód w cyklu życia, szoki na rynku pracy.

Abstrakt

Wprowadzenie regulacji nakładającej na zarządzających aktywami emerytalnymi obowiązek dostarczania oszczędzającym oszacowania świadczeń emerytalnych powoduje powstanie wielu pytań naukowych dotyczących metod prognozowania i szacowania parametrów wejściowych. Jedną z nich jest oszacowanie dochodu w całym cyklu życia do obliczenia oczekiwanych składek i oszacowanie wskaźnika świadczeń w momencie przejścia na emeryturę. W artykule przedstawiono oszacowanie funkcji dochodu w cyklu życia dla różnych grup wiekowych i edukacyjnych, na które wpływają przejściowe wstrząsy na rynku pracy. Z zastosowaniem metody symulacji resampling w celu uwzględnienia szoków makroekonomicznych pokazano, że wykorzystanie danych longitudinalnych dotyczących procesu dochodu z dużej gospodarki zamkniętej może przynieść ważne wyniki również dla kraju o małej otwartej gospodarce, w którym dane dotyczące procesów dochodowych osób w dłuższej perspektywie czasowej są niedostępne. Ustalenia autorów mogą posłużyć do praktycznego wykorzystania w modelowaniu emerytur lub innych świadczeń socjalnych powiązanych z indywidualnym dochodem.

Introduction and Relevant Literature Review

Understanding the life-cycle income process of individuals influenced by labor market shocks and permanent components like age and education has a significant impact on the amount of paid social insurance and pension contributions, and thus on the expected amount of paid benefits. Robust academic models are often beyond the ability of pension providers to apply such models for the estimation of expected benefits as required by regulation. However, the oversimplification of estimated life-cycle income parameters based on trivial fixed parameters and linearized assumptions could lead to misleading information for the savers. The aim of this paper is to present a stochastic model for the estimation of age

and education specific life-cycle income with unemployment risk. The purpose of the model should serve for estimating the pension benefit statement, which should be implemented in the Slovak pension system.

Life-cycle income dynamics have been studied since Mincer's (1958) seminal work and remains in the forefront for many researchers. The generally accepted hypothesis is that the life-cycle income function is hyperbolic rather than linear and has given rise to many empirical studies using longitudinal administrative data. Many influential economic studies have recognized that the use of current income as a proxy for long-run income can generate crucial errors-in-variables biases (Haider & Solon, 2006). In order to address the concavity of a life-cycle income function, the models should employ several key assumptions such as changing preferences towards employment positions with increasing age, diverging paths of the life-cycle income functions for different educational levels, or earnings inequality due to persistent and transitory components such as unemployment or maternity. Lagos *et al.* (2018) analyzed life-cycle wage growth in 18 countries using large-sample household survey data and their main finding is that experience-wage profiles are on average twice as steep in rich countries as in poor countries. In addition, more educated workers have steeper profiles than the less educated ones. Their findings are consistent with theories in which workers in poorer countries accumulate less human capital or face greater search frictions over their life cycle.

Guvenen (2009) pointed to the long-term effects of unemployment on the future income of an economic agent. Indeed, the long-term effects of unemployment as one of the temporary labor market shocks have led to the study of this shock in the context of the lifetime of an individual's life-expectancy hypothesis. The dynamics of the development of idiosyncratic risks are examined through stochastic models of lifetime income, with the modeling of the likelihood of temporary shocks (Guvenen & Smith, 2014). The influence of the variable associated with years of experience, which essentially increases labor productivity, was also confirmed by Katz and Murphy (1992). We work with the main assumption that the education of economic agents is a permanent determinant of their income and has a significant impact on the course of the life-long income function (Balco *et al.*, 2018).

Faber (1998) examined the length of employment for age and educational cohorts using empirical data from the Current Population Survey from 1973 to 1993. In his research, Faber confirmed that the duration of the employment relationship, i.e. the length of staying in the same position, is strongly dependent on the age of an individual. He has shown that younger cohorts (the cohorts of 25-34 and 35-44 years of age) frequently change position while, an individual tends to prefer job stability with increased age (the educated cohorts 45-54 and 55-64 years). At the same time, he rejected the hypothesis that the length of stay in one job is the same across educated cohorts. Raymo *et al.* (2010), based on data from the Wisconsin Longitudinal Study, examined the impact

of work experience at an earlier age on individual preferences for the nature and type of work performed at an older age. They showed that, at a higher age (53+), individuals prefer stable and less demanding work or even part-time work. These findings should be incorporated into the estimation of the lifecycle function parameters in the form of time preferences.

Low *et al.* (2010) distinguish two types of risks in the labor market: exogenous risks such as job disruption that directly affects unemployment, and endogenous risks such as greater variability in labor productivity. Unlike the fall in labor productivity, which is reflected in wage rigidity, job cuts are a transient shock to the individual's income. These risks have a considerable impact on an individual's lifecycle income.

Research objective and methodology

The objective of the paper is to present estimations for the age and education specific life-cycle income under the unemployment risk for the purpose of pension benefit projections under various scenarios. The model should serve the Ministry of Finance of the Slovak republic and pension providers, which are required to regularly provide their clients (savers) with pension projections, where the contributions are tied to the agent's wage (insurable income).

When constructing the model, the main constraint is the reliable long-term series of data for relatively young democracies such as the Central and Eastern European countries. Lack of long-term longitudinal data for individual wages combined with the transitory period of economies do not allow modeling of stable scenarios for long-term projections. Therefore, we decided to combine long-term data from developed economies and short-term administrative data from analyzed country. Combining longitudinal data on wage profiles with the long-term data series of the macroeconomic variables from the United States and linking them to the Slovak short-term administrative data on wage profiles allowed us to estimate the life-cycle income even for countries where reliable longitudinal data are still unavailable.

First, we present the longitudinal data from the American Community Survey presented by Julian and Kominski (2011). However, these data present the life-cycle income for 9 educational cohorts. In order to compare the Julian and Kominski data to the 2004–2018 administrative data for Slovakia (Fodor & Cenker, 2019), obtained from the Ministry of Finance of Slovakia, we needed to combine the American educational cohorts into the 3 educational cohorts for which the data are available in Slovakia. Then, we transformed the values into the coefficients of the average wage. Comparing the transformed values allowed us to inspect whether the data from Julian and Kominski would fit the administrative data for Slovakia. Based on the results of the data comparison, we used

the curve fitting technique to estimate the regressors of age (x) for 3 educational specific (j) income functions that should follow the polynomial function:

$$y_{j;x} = a + b_jx + c_jx^2 + \varepsilon \tag{1}$$

Further, we applied the estimated income functions on the Slovak working population and calculated labor productivity using the simulation method described below. The results were then compared to the projected labor productivity growth from the Ageing Report 2018 (EC, 2018). Differences in the projected labor productivity and estimated labor productivity from our model were then recursively incorporated into the fitted life-cycle income functions.

However, the income function should also be influenced by the temporary labor market risks. According to Cooper (2014) and Guvenen *et al.* (2015), if an economic agent drops out of the labor market for a certain period, his wage departs from a full uninterrupted income function, since the skills, working habits, and experience during the period of unemployment do not improve. Thus, we can create the scenarios, where the unemployment risk is incorporated. In order to estimate the nominal values of projected income, we also incorporated projected inflation from the macro scenarios. Given the existence of unemployment risk and inflation, the nominal wage (w) could be expressed as:

$$w_{j;t} = \left\{ \begin{array}{ll} w_{j;t}; t = 1 & \\ w_{j;t-1} \times (1 + \tau_t); & U_t = 1, t \in < 1, T > \\ w_{j;t-1} \times \omega_{j,t}^* \times (1 + \tau_t); & U_t = 0, t \in < 1, T > \end{array} \right\} \tag{2}$$

Where $\omega_{j,t}^*$ represents monthly changes in the real wage based on the estimated life-cycle income functions; τ_t represents the inflation in time t . $U_t = 1$ means that the economic agent is unemployed at time t , while $U_t = 0$ means that the economic agent is employed at time t . If an economic agent is employed ($U_t = 0$), his income function depends on the development of inflation and the increased labor productivity over time. In the case that the economic agent is unemployed ($U_t = 1$), his lifetime income function changes over time only by the impact of inflation and the labor capital remains constant.

Secondly, in order to get a different labor income process under the unemployment risk that reflects the impact of age and education (Skřętownicz & Wójcik, 2016), we developed a transition matrix, that transforms general unemployment rates into age and specific rates. The probability of unemployment is reviewed every year by the rate of change in total unemployment from the macroeconomic block. In modeling the probability of changes in the employment of an economic agent at age x , education j at time t , the transition matrix has the following form:

$$\mathbf{M}_{x,j,t} = \begin{pmatrix} p_{U_t=1 \rightarrow U_{t+1}=1} x,j,t & p_{U_t=1 \rightarrow U_{t+1}=0} x,j,t \\ p_{U_t=0 \rightarrow U_{t+1}=1} x,j,t & p_{U_t=0 \rightarrow U_{t+1}=0} x,j,t \end{pmatrix} \tag{3}$$

For each element of matrix \mathbf{M} , the probability of status change (p) applies, where:

$$0 \leq p \leq 1$$

The initial transition matrix with probabilities (odds ratios) has been created using cross-sectional data on age and education specific unemployment from the Ministry of Finance of Slovakia for the reference period of 2004 until 2018.

Thirdly, we have created a stochastic model that generates macroeconomic scenarios, which in turn influence the individual attributes of age and educational cohorts, mainly wage and employment status. We use the moving-block bootstrap (resampling) method, which allows an increased number of simulations by pseudo-randomly generated macroeconomic scenarios while preserving correlations among macroeconomic indicators (k_k). Data on monthly macroeconomic indicators for the period of 1,919 until 2017 include unemployment, inflation, GDP change, labor productivity, DJIA30 total returns and 3-7-year bonds with constant maturity returns. The empirical time series of macroeconomic variables (k_k) contain 1,164 monthly values. Since we want to obtain monthly changes for each macroeconomic variable, in total we have 1,163 monthly changes ($\Delta k_{j,t}$), where $t \in 1; 2; \dots; 1,163$.

Next, we cut the empirical time-series into up-trending (Up^i) and down-trending periods ($Down^i$) using data from the NBER (2018) on economic cycles and marked each period with the appropriate index value (i). Altogether, we have 18 up-trending and 18 down-trending periods. Figure 1 illustrates up-trending and down-trending economic periods between 1919 and 2017.

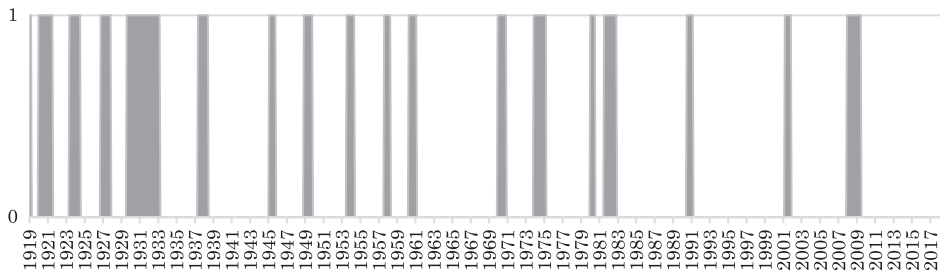


Fig. 1. Up-trending and down-trending macroeconomic periods in the US (1919–2017)

*Remark: Dark-colored columns represent the periods of economic downturn (recession).

Source: *US Business Cycle Expansions and Contractions*. (2018).

Each period (i) has a precisely identified time series of macroeconomic variables (Δk). Let us define a vector of the time series of monthly changes in macroeconomic variables ($\Delta k_{k,t}$) where the lower index k represents the observed macroeconomic variable (in the range 1 to K variables). Let us call the generated vector a simulation block (\mathbf{r}_N). The first simulation block (\mathbf{r}_1), which consists

of empirically measured values of monthly changes in observed macroeconomic variables ($\Delta k_{k;t}$), and contains all up-trending and down-trending periods in a sequential order from 1 up to 18, has the following form:

$$\mathbf{r}_1 = \begin{bmatrix} \Delta k_{1,1} & \cdots & \Delta k_{1,1163} \\ \vdots & \ddots & \vdots \\ \Delta k_{K,1} & \cdots & \Delta k_{K,1163} \end{bmatrix} \quad (4)$$

In order to increase the number of simulations, we have created new simulation blocks using a resampling procedure. We combined up-trending and down-trending periods without repetition while maintaining the rule that each period (i) can only occur once. Applying the resampling technique, we obtained a total of 150 simulation blocks (\mathbf{r}_N , where $N \in 1; \dots; 150$).

Finally, we can expose our age and education cohorts to the randomness of external macroeconomic development. The simulation at the level of a specific age and educational cohort is performed as follows. For each simulation block (\mathbf{r}_N), we start from the first month ($t = 0$) with the empirically gathered data on wages and respective unemployment rates for each age and educational cohort from the Statistical Office of the Slovak Republic for the year 2016. Each month the values of the macroeconomic indicators change, which affects the individual status parameters of an economic agent, where the employment status is affected by formula (3) and wage change by formula (2). We continue with simulations of each age and educational cohort until age (x) of the cohort reaches the statutory retirement age (R) set at 69 years. For each cohort, we perform simulations of the length from 1 year (age cohort of 68) to the remaining length of the working career (D , where $D = R - x_{j,t}$). If, for example, the age of the youngest cohort with a professional degree (PhD. degree) is 27 years, then the remaining working career (D) equals 42 years. This means, that within each simulation block, we can move this cohort 55 times. The total number of simulations for the cohort at age x and education j , which remains in the labor market for D years is given by the product of the number of blocks, the length of the block, the remaining length of the working career and number of status possibilities (employed/unemployed). For example, for an economic agent with a high-school degree who enters the labor market at the age of 19, we perform simulations ranging from 1 year (12 months) to 50 years (600 months) as we anticipate that he will retire at 69 years of age. In total, for this age and educational cohort, we get 3,330,600 simulations that form the scenarios for the life-cycle income and employment probabilities during the entire working career.

The generated scenarios allow us to inspect what was the estimated development of individualized (cohort) variables under the various macroeconomic scenarios. The scenarios represent percentiles, where the higher percentile corresponds to better macroeconomic conditions.

Results and discussion

The initial phase of the research was to compare the US longitudinal data on income from the ACS survey obtained from Julian and Kominski (2011) and compare them to the relatively short-term data on income for Slovakia obtained from Fodor and Cenker (2019).

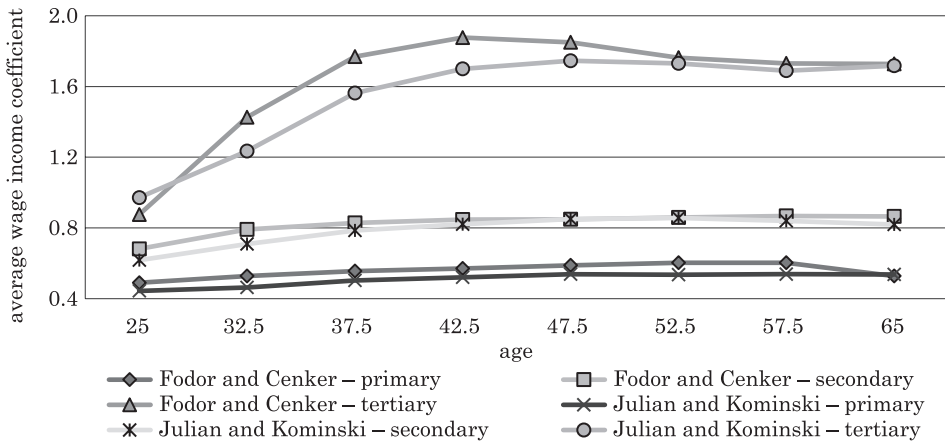


Fig. 2. Comparison of educational specific income coefficients for US and Slovakia
Source: authors' estimations using Julian and Kominski (2011) and Fodor and Cenker (2019).

The presented data for 3 educational cohorts suggests the possibility to estimate the income functions using more reliable longitudinal data from Julian and Kominski (2011). However, we can observe higher income growths for younger tertiary education cohorts suggesting higher labor productivity for younger university educated individuals in Slovakia.

Estimated regression parameters for all educational cohorts including statistics are presented in the table below.

Comparing US longitudinal data to the Slovak short-term administrative data shows that the model fits the US longitudinal data better, where all key statistics perform better including Standard Error, the parameters' standard deviations and the coefficient of determination.

Secondly, understanding the importance of labor productivity on income path (Jarmołowicz & Kužmar, 2017), we applied estimated life-cycle income functions on the Slovak working population and performed microsimulations using the resampling method that allowed us to get the expected development of labor productivity and average wage over the next 50 years. Then we compared the labor productivity growth rate projections in the 50th percentile with the European Commission projected labor productivity (Fig. 3).

Table 1
 Estimation of regression parameters for educational cohorts using Julian and Kominski (ACS) data vs. Fodor and Cenker (Ministry of Finance of Slovakia) data

Regressors	Fodor and Cenker – Ministry of Finance			Julian and Kominski – ACS		
	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary
<i>a</i>	0.1293	0.2825	-1.7447	0.2242	0.0006	-0.9978
<i>b</i>	0.0016	0.0018	0.0119	0.0009	0.0027	0.0085
<i>c</i>	-0.0000013	-0.0000014	-0.0000097	-0.0000006	-0.0000021	-0.0000065
Standard Error	0.01724	0.0159	0.1172	0.0086	0.0095	0.0702
<i>R</i> ²	0.87	0.95	0.91	0.96	0.993	0.96
Correlation	0.93	0.98	0.95	0.98	0.99	0.98
Parameter Standard Deviations:						
<i>a</i> _stddev	0.0786	0.0724	0.5342	0.0392	0.0431	0.32
<i>b</i> _stddev	0.0003	0.0003	0.0021	0.0002	0.0002	0.0012
<i>c</i> _stddev	0.0000003	0.0000003	0.000002	0.00000014	0.00000015	0.00000114
Parameter Uncertainties, 95%						
<i>a</i> _unc	0.2021	0.1862	1.3732	0.1009	0.1109	0.8226
<i>b</i> _unc	0.0008	0.0007	0.0053	0.0004	0.0004	0.0032
<i>c</i> _unc	0.0000007	0.0000007	0.000005	0.0000004	0.0000004	0.000003

Source: authors' calculations.

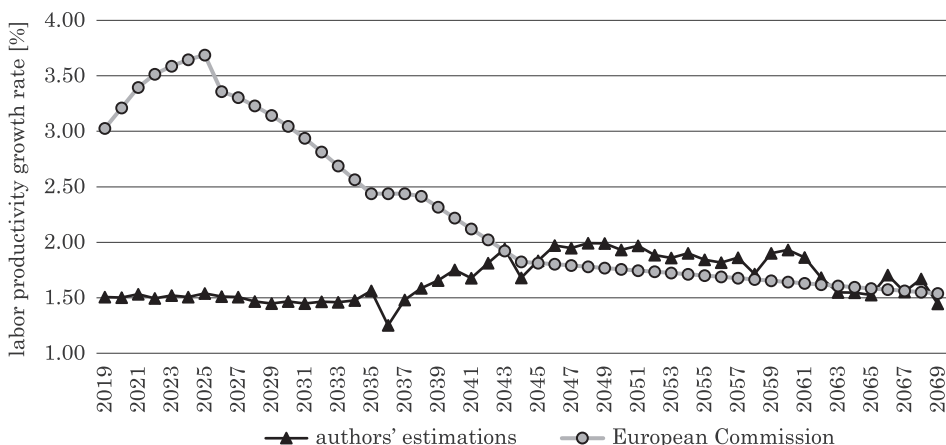


Fig. 3. Labor productivity growth rates – authors' vs. European Commission projections
 Source: own calculations.

Our model with estimated life-cycle income functions keeps the labor productivity growth rates relatively stable around 1.5% annually for the next 25 years and underestimates expected labor productivity growth rates compared to the European Commission projections. However, the second projected period provides similar projections with labor productivity growth rates. In order to prepare the model for practical usage, we incorporated the labor productivity convergence factor and adjusted the income function regression parameters in a way that redistributes the necessary increase in labor productivity into individual life-cycle income functions evenly. The projected life-cycle income functions for 3 education cohorts including unemployment risk under various economic conditions (scenarios) presented as a percentile of all simulations are presented in the appendix.

First, the estimation of life-cycle income using our approach brings more realistic outcomes compared to the simplified assumptions of linear growth tied to the general total factor productivity growth that is often used when estimating future wage growths. Decreasing coefficients over the life-cycle clearly emphasize other research findings that echo the concept of economic agents preferring wage growth during the early stages of their careers whereas later stages are associated with preferences for job stability. An economic agent is willing to accept lower wage growth compared to the rest of the working population in exchange for job stability and work-hour flexibility at the end of their career.

Our approach also incorporates recent findings, that regardless of a previous career, employers do apply similar wage increase mechanisms for older workers. In other words, later in their career, the age of a worker is a more dominant factor than the years of working experience and human capital. For the same age and educational cohort, the coefficients of wage growth during the last 10 years of work in all scenarios are quite similar with relatively low variability.

At the same time, we can observe, that the model predicts lower changes of a significant up-tick for mid and older cohorts with lower education, where the wage growth coefficients suggest optimistic scenarios (higher percentiles) for relatively modest wage growths.

Conclusions

The objective of the paper was to estimate life-cycle income functions for educational cohorts in Slovakia in order to provide pension benefit projections for the Slovak pension system. At the same time, the model generates respective employment coefficients that are tied to the life-cycle income functions and together are able to assess the number of working career years which is a significant input for the projection of pension benefits. Based on the inherent risk of unemployment in the lifetime income function, it is possible to identify

how much the economic agent transfers to public finances, as well as the volume of benefits received from the social insurance system.

The model serves the Ministry of Finance of Slovakia for the estimation of the fiscal and welfare impact of various policy settings where individual economic agents should be considered. On the other hand, the weaker point of the model could be that it employs empirical data from the economy with a constantly growing population, which in the conditions of the Slovak Republic may not prove to be an acceptable assumption. However, we have shown that it is possible to adopt longitudinal data from a different country if combined with a robust simulation technique that allows for generating macroeconomic scenarios.

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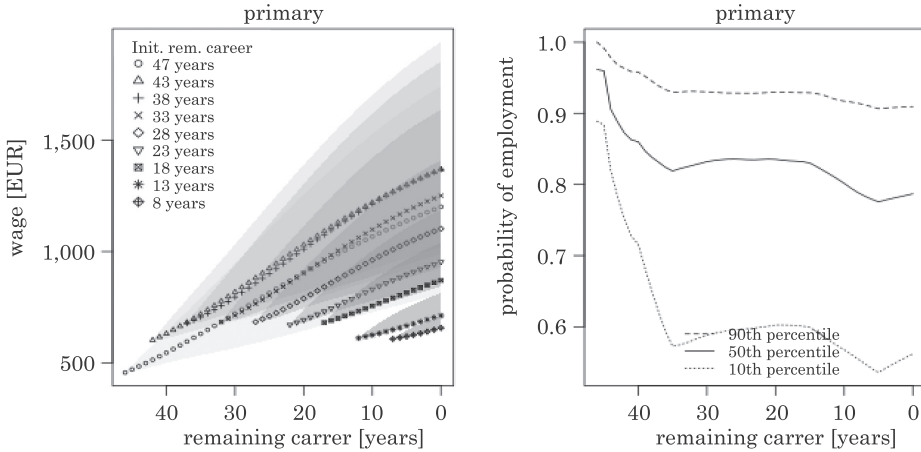
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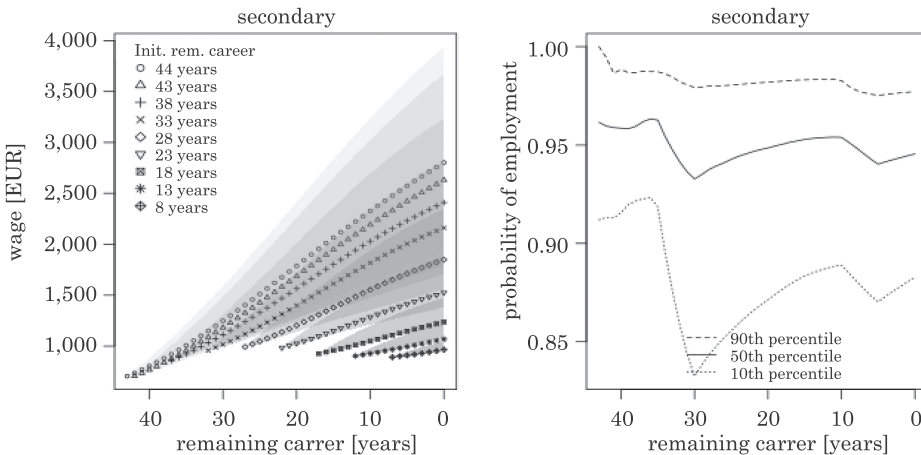
Appendix

The charts below present education specific life-cycle income projections for different remaining career/working years (left chart) complemented with the estimation of probability of being employed until achieving the standard retirement age (right chart) presented as percentiles of all simulations. Grey shaded areas around the 50th percentile within the charts on the left represent 10th and 90th percentile of all simulations.

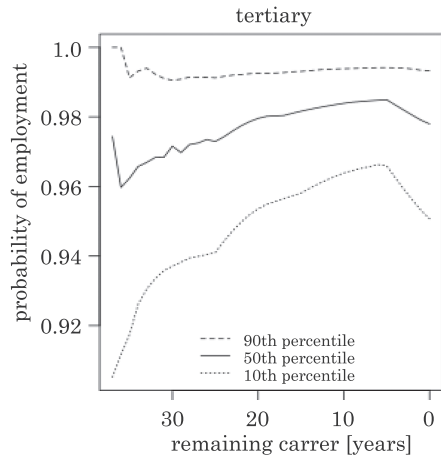
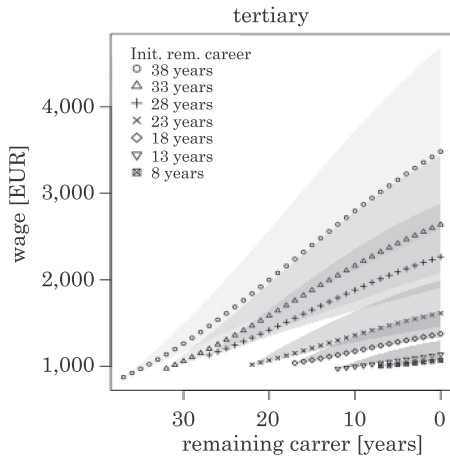
Primary education level



Secondary education level



Tertiary education level





OPPORTUNITIES AND CHALLENGES FACED BY SMALL AND MEDIUM ENTERPRISES IN UZBEKISTAN

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JEL Classification: H81, L20, O38.

Key words: small and medium enterprises, development, support policy.

Abstract

Small and medium enterprises (SMEs) are a pillar of economic development in most national economies - both more and less developed. Enterprises of this type, being more flexible than large entities, are better able to use the opportunities created by the environment. Nevertheless, in the course of their activity, they also face numerous challenges. Thus, the purpose of the presented research is to identify the opportunities created and existing challenges in the development of SMEs in Uzbekistan in recent years. According to the opinion of 384 respondents (CAWI), the most important opportunities created by the government involved tax benefits and subsidies, preferences for export products and tax incentives for those creating new jobs. At the same time, the most important challenges were poor infrastructure, lack of skilled specialists, problems with the credit allocation system and high-interest rates.

SZANSE I WYZWANIA DLA MAŁYCH I ŚREDNICH PRZEDSIĘBIORSTW W UZBEKISTANIE

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Kody JEL: H81, L20, O38.

Słowa kluczowe: małe i średnie przedsiębiorstwo, rozwój, polityka wsparcia.

Abstrakt

Małe i średnie przedsiębiorstwa (MŚP) są podstawą rozwoju gospodarczego większości gospodarek krajowych - zarówno tych bardziej, jak i mniej rozwiniętych. Przedsiębiorstwa tego typu, będąc bardziej elastycznymi niż duże podmioty, coraz lepiej wykorzystują możliwości jakie stwarza otoczenie. W toku swojej działalności często napotykają jednak na wiele zagrożeń. Celem badań przedstawionych w artykule była identyfikacja szans i wyzwań przed jakimi stoją obecnie małe i średnie przedsiębiorstwa w Uzbekistanie. Według opinii 384 respondentów najważniejszymi szansami stworzonymi przez rząd były ulgi podatkowe i dotacje, a także preferencje dla produktów eksportowych oraz zachęty podatkowe dla tworzących nowe miejsca pracy. Jednocześnie najważniejszymi wyzwaniami rozwojowymi była słaba infrastruktura, brak wykwalifikowanych specjalistów, problemy z systemem alokacji kredytów oraz wysokie stopy procentowe.

Introduction

Small and medium enterprises (SMEs) have numerous benefits to their owners and the economy (Brodziński *et al.*, 2020, p. 107). These entities play an important role in Uzbekistan economic growth and the current role of SMEs is highly growing. That is why the rapid development of SMEs is a key element in ensuring the sustainable growth of any country's economy and a priority of ongoing economic reforms. The development of SMEs leads to the creation of new jobs. SMEs are not only an important source of job creation in countries, they can also become a source of innovation and increased productivity (Hansjörg & Zeynep Mualla, 2018, p. 2). At the same time, SMEs face numerous challenges to their development which, in individual regions, leads to restrictions on their functioning (and sometimes to collapse), which also affects the negative development of the entire economy (Glinkowska, 2019, p. 101-112).

The latest statistical data show that in Uzbekistan, the share of employment by SMEs was 73.8% of the total employed population (State Committee of the Republic of Uzbekistan on Statistics, 2020, Q4, p. 1). The success

of an entrepreneur depends on several social-economic, political and technological environmental factors (Firdouse, 2014, p. 89-94).

In recent years, Uzbekistan has been paying great attention to the development of SMEs. Many decisions and decrees have been made in the last three years. For example, the position of Business Ombudsman was introduced, the Prime Minister's Representative in all provinces to assist entrepreneurs, the State Fund for Entrepreneurship Development (200 billion, 50 million Uzbekistani som, which is equivalent to approx. USD 20,000,000) and the Agency for Entrepreneurship Development were established (Uzbekistan National News Agency, 2019). However, many problems in Uzbekistan hinder the development of SMEs, one of them is the poor development of the market infrastructure and a lack of specialists in the field of SMEs (OECD, 2017, p. 1-45).

Although many researchers have conducted research on SMEs in Uzbekistan, little attention has been paid to topics related to SMEs' opportunities and challenges. According to many scientists (Jimmy & Pauric, 1999, p. 5; Madalina, 2013, p. 205; Kubičková *et al.*, 2017, p. 1987; Gherghina *et al.*, 2020, p. 2), small enterprises are an important part of the world economy. For this reason, many researchers have conducted research on the practices and activities of these enterprises. Although the Uzbekistan government is creating opportunities for SMEs, there are still many challenges, which have not been precisely identified. Therefore, the authors focus on filling this gap and the purpose of the presented research is to identify the opportunities created and the existing challenges in the development of SMEs in Uzbekistan in recent years. Moreover, the practical contribution of this article is not only limited to the identification of opportunities and challenges, but it also includes a comparison between these two factors.

Small and medium enterprises in Uzbekistan

The Resolution of the Cabinet of Ministers of the Republic of Uzbekistan "On measures of transition to the international system, classification of types of economic activity" has indicated the differences between micro and small enterprises. Micro-enterprises consist of 1-5 people, 1-10 people, and 1-20 people, small enterprises consist of 5-25, 11-50 and 21-250 people. For example, micro-enterprises in manufacturing (food production) consist of 1-20 people, and small enterprises in manufacturing (food production) consist of around 21-250 people. Micro enterprises in transportation and storage consist of 1-10 people, and small enterprises in transportation and storage consist of 11-25 people. There is no normative data to determine medium-sized enterprises. According to the information given by the World Bank, the sizes of SMEs in Uzbekistan are: a) small enterprises have 5-19 employees, b) medium enterprises have 20-99 employees, and c) large enterprises have 100+ employees. SMEs in Uzbekistan are not defined based on clear criteria that are consistent with

international practice. In international practices, SMEs should also include annual turnover and characteristics of the industry along with the number of employees (Tadjibaeva, 2019, p. 2). The result of the above studies show that micro-firms contain 1-20 people, small enterprises contain 21-100 people and medium-sized enterprises contain 101-250 people.

At present, the number of SMEs in Uzbekistan is 334,800 (without agricultural farms) and the number increased by 56.73% in 2020 Q2 compared to 2014. The number of SMEs is based on the type of economic activities in the following sectors: 28,800 in agriculture, forestry and fisheries; 70,000 in industry; 36,000 in construction; 100,600 in trade; 15,200 in transportation and storage; 25,500 in housing and food; 7,600 in information and communication; 6,400 in health and social services; and 44,700 in other specialties (State Committee of the Republic of Uzbekistan on Statistics, 2020, Q2). In Q1 2020, 23.3 thousand new SMEs were newly created (without agricultural farms), which is 23.4% less than the same period in 2019 (State Committee of the Republic of Uzbekistan on Statistics, 2020, Q1, p. 182).

Literature review

SME development is highly related to a favourable investment atmosphere, public consumption levels and geographical locations (Eravia *et al.*, 2015, p. 96). Some researchers (Scott *et al.*, 2017, p. 1-32) have identified a number of opportunities to support SMEs. These include training and business development support, innovative financing to address the financial problems of at-risk SMEs, as well as the allocation of targeted fiscal packages and others. As major consumers of goods and services, governments have an opportunity to support SMEs directly through their purchasing policies (Loader, 2005, p. 17). Technological advances and the development of e-commerce have opened up vast opportunities for SMEs as well as offering new foreign markets. However, restrictions on the financing of SMEs, tight profit margins and difficulties in innovation hinder the development of SMEs (Luo *et al.*, 2019, p. 2999).

Many researchers have investigated in detail the opportunities created for SMEs in their country. For example (regarding the Asian continent), according to Rahadi (2016, p. 51) opportunities for SMEs in Indonesia are indicated by market potential, creativity, export opportunities and the availability of local knowledge about the market. That study indicated that the main strength of Indonesian SMEs was in their creativity, i.e. the production of unique and new products leading to an advantage in a competitive environment in the market. This would be effective for SMEs in increasing the annual assets and sales growth when government diagnostic and support services are combined with government loan financing (Soonae *et al.*, 2020, p. 213-238).

SMEs are a key pillar in the development of the Asian economy since they cover more than 96% of all Asian businesses. However, there are many challenges for the growth of SMEs on this continent. The lack of a database, underdeveloped sales channels, the problem of asymmetric information between suppliers and demanders of funds and high-interest rates on bank loans lead to the slow growth of SMEs (Yoshino & Taghizadeh-Hesary, 2016, p. 17; 2018, p. 15). Wang (2016, p. 167-176) has identified five obstacles for SME managers. Among them, “access to finance” is the greatest barrier. That study analysed the impact of internal and external factors on the access to finance for SMEs and found that the most serious constraints for SMEs in need of external funding were high-interest rates, complex application procedures and high collateral requirements. According to Petković *et al.* (2016, p. 45), obstacles in the successful development of SMEs are due to the difficulties in the collection of receivables from debtors, high tax rates, and the difficulty in obtaining loans from banks. The results of a study by Aliyev (2019, p. 36), have shown that bank loans are beneficial for SME enterprises, however, the low level of financial literacy of entrepreneurs and high tax rates limit SME financing opportunities. Challenges related to financial factors have been observed by many researchers. Mainly, the lack of access to finance is seen as one of the important factors hindering SME innovation. Of course, there are other factors as well. For example, Yadollahi Farsi and Taghi Toghraee (2014, p. 1-15) have identified several challenges which are exploratory factors. Some of these include:

- lack of management skills: as a result of this, entrepreneurs may not be prepared for changes in the business environment and innovative developments;
- lack of credit: due to the lack of access to credit, entrepreneurs may have a lack of free choice, i.e. they are forced to buy old, obsolete equipment instead of using innovative technologies;
- regulatory environment: the activities of SMEs are affected by unexpected government policies, as well as corruption.

Factors hindering the development of SMEs are the lack of skilled human resources, high interest rates (Eravia *et al.*, 2015, p. 96), unsatisfactory food hygiene, a lack of sustainability practice (Noor Hasnan *et al.*, 2014, p. 328-336), a low level of management skills for continuous improvement, a lack of motivation for employees (Maarof & Mahmud, 2016, p. 522-531), a high cost of raw materials and a high initial cost of investment (Musa & Chinniah, 2016, p. 254). The external financing provision for SMEs is also still low (Eniola & Entebang, 2015, p. 334-342). The challenges for SMEs in developing countries consist of limited access to long-term and affordable finance and a lack of institutions for the developmentally skilled class of entrepreneurs and workers (Hansjörg & Zeynep, 2018, p. 34). The observed challenges for SMEs in India are the procurement of funds, infrastructure development, government policy and raw material procurement (Agarwal *et al.*, 2019, p. 33). In Malaysia, there are five major barriers for SMEs. These include financial issues, human resource

problems, marketing strategies, facilities, appliances, layout and problems with suppliers (Azwa Ambad *et al.*, 2020, p. 13).

Research methodology

Since the study focuses on SMEs, especially in developing countries, the research is based on the SMEs in Uzbekistan as the population of interest. Due to a limitation on collecting information from the entire population, a sample size was selected. However, for this research, convenience sampling was chosen as it was believed to be the most effective. In identifying the sample size for this thesis, a formula by Cochran (1977) was used. Using this formula (for a confidence level of 0.95, and a maximum error of 0.05), a minimum sample size of 384 subjects was obtained.

The data collected was from both primary and secondary sources. The primary data set that was gathered in this study was inspected several times so that there would be no errors when it came time to analyse it in the system. The data that had been collected for the content analysis was processed by the use of descriptive writing, in addition to making use of tables and statistical information when necessary.

A questionnaire was used as a survey instrument to generate primary data. The questionnaires were distributed through the Auditor firm (Amulet-Audit Auditing Company LLC in Tashkent was established on March 23, 2008, and currently employs about 10 auditing specialists). The created questionnaire was entered into Google Forms and a link was sent to the auditing firm via email and telegram. The questionnaires were sent out by the Auditor to the respondents (who were the managers of SMEs). The auditors also monitored the return of the questionnaires and reminded managers to submit them (in order to obtain the required number of returns). The questionnaires were collected between October-December 2020. In order to check the reliability of the questionnaire, the Cronbach's alpha coefficient was used (mean = 0.8). The questionnaire consists of two sections. The first section contained eight questions that were meant to collect general information about SMEs that included their activities, number of workers, workers' salary scale, workers' education level and so on. The second section contained two questions which included opportunities and challenges for SMEs. At the same time, the opportunities in the study were limited to those that were created by the public policy conducted in relation to this sector of the enterprise (through financial and non-financial support).

The following section addresses the statistical tests that were conducted. Some of the tests included descriptive statistics, frequencies and cross-tabulation. The results were then illustrated in pictures that were created following the coding of the researcher.

Results

A total of 384 SMEs were sampled, of which 74 SMEs (19.2%) employed 1-10 workers, 185 SMEs (48.2%) employed 11-50 workers, 81 SMEs (21.1%) employed 51-100 workers and 44 SMEs (11.5%) employed 101-250 workers. The majority of the respondents belonged to the service (54.4%), manufacturing (23.4%) and construction (13.3%) industries; while other enterprises constituted 8.9%.

The survey results show that the number of workers employed by beginning entrepreneurs was mainly 1-10 (76.6%) and 11-50 (18%). A considerable number of entrepreneurs who started a business with 1-10 employees developed to employ from 11 to 50 people (Tab. 1).

Table 1

Size of the enterprises according to number of employees

Specification	Number of employees when start a business							
	service	manufac- turing	trading	agricul- ture	textile	construc- tion	education	total
1-10	158	78	12	6	10	24	6	294
11-50	51	12	0	0	0	6	0	69
51-100	0	0	0	0	0	21	0	21
101-250	0	0	0	0	0		0	0
The number of employees at present								
1-10	48	7	4	0	0	9	6	74
11-50	116	61	0	2	2	4	0	185
51-100	34	17	6	4	5	15	0	81
101-250	11	5	2	0	3	23	0	44

Sources: own study.

Most of the workers received a salary between USD 200-500. In some services (construction and manufacturing enterprises) employees received salaries between USD 500-1,000. Wage levels by sector of the economy are presented in the Table 2.

Table 2

The level of employees' wages

Specification	Salary amount in USD							
	service	manufac- turing	trading	agricul- ture	textile	construc- tion	education	total
Less than 200-300	63	19	0	6	0	7	6	101
Between 300-500	138	30	9	0	10	15	0	202
Between 500-1,000	8	41	3	0	0	29	0	81

Sources: own study.

Forty-seven percent of employees of SMEs were bachelor's degree holders (180), 38.3% were diploma (college) holders (147), 12% were master's degree holders (46) and 2.9% were Ph.D. holders (11) (Tab. 3).

Table 3

Employees' level of education

Specification	Number of employees by level of education							
	service	manu- facturing	trading	agricul- ture	textile	construc- tion	education	total
Diploma (College)	67	32	0	5	8	35	0	147
Degree (Bachelor)	118	37	12	1	2	10	0	180
Masters	17	21	0	0	0	6	2	46
PhD	7	0	0	0	0	0	4	11

Sources: own study.

39.6% (152) of SMEs are expected to increase the number of employees to 1-10 in three years, while 29.4% (113) of SMEs are expected to increase the number of employees to above 11-50 in three years. 13.3% (51) of SMEs are anticipated to increase the number of employees to above 51-100 in three years and 17.7% (68) of SMEs are not expected to increase the number of employees in three years (Tab. 4).

Table 4

Future employment plans

Specification	Number of employees to which it is planned to increase employment							
	service	manufac- turing	trading	agricul- ture	textile	construc- tion	education	total
Unexpected	49	6	9	0	2	0	2	68
Expected until 1-10	133	12	1	6	0	0	0	152
Expected until 11-50	27	33	2	0	8	39	4	113
Expected until 51-100	0	39	0	0	0	12	0	51
Total								384

Sources: own study.

It should be noted that those entrepreneurs who do not plan to increase employment have two options (keep employment at the same level or reduce it). None of the surveyed entrepreneurs intended to increase employment by more than 100 people.

Overcoming the challenges for SMEs depends on the opportunities and support that the government has created for SMEs (OECD, 2018, p. 1-4). Figure 1 shows the opportunities created by the government in the development of SMEs. Most of the enterprises (181, i.e. 47.1%) received tax benefits and subsidies from the government, of which 33.8% were service enterprises, 5.9% were manufacturing enterprises and 7.4% were construction enterprises. Sixty-two SMEs (16.2%) were granted preferences by the government for product export, of which 5.9% of SMEs were service enterprises, 4.4% of SMEs were manufacturing enterprises and 2.9% of SMEs were textile enterprises. Fifty-six SMEs (14.7%) were offered tax incentives by the government to create new jobs, of which 5.9% of SMEs were service enterprises, 5.9% of SMEs were manufacturing enterprises and 2.9% of SMEs were construction enterprises (Fig. 1).

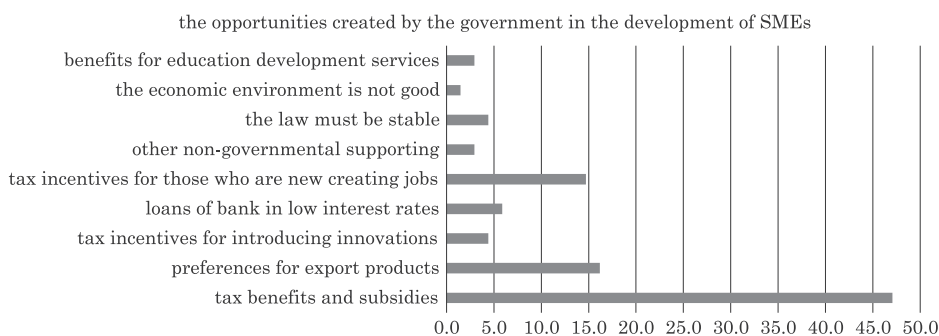


Fig. 1. Frequency analysis of respondents by opportunities created by the government in the development of SMEs

Sources: own study.

All of these opportunities in Uzbekistan belong to financial support given to SMEs by the government.

The main challenges of Uzbek SMEs consist of a lack of skills, poor infrastructure, financial difficulties and legal issues. In SMEs, challenges related to expertise such as lack of entrepreneurial skills (10.3%), weakness of financial management (10.3%) and lack of strategic planning (4.4%) can be seen. Financial challenges for SMEs were observed, such as higher tax rates (4.4%), problems related to the credit allocation system (8.8%) and only certain groups could use tax and customs benefits (10.3%). Legal challenges for SMEs were related to legal uncertainty, which was confirmed by 13.2% of respondents. The main obstacle to the development of SMEs in Uzbekistan is the poor development of market infrastructure and other infrastructure. These challenges were observed in 30.9% of SMEs (Fig. 2).

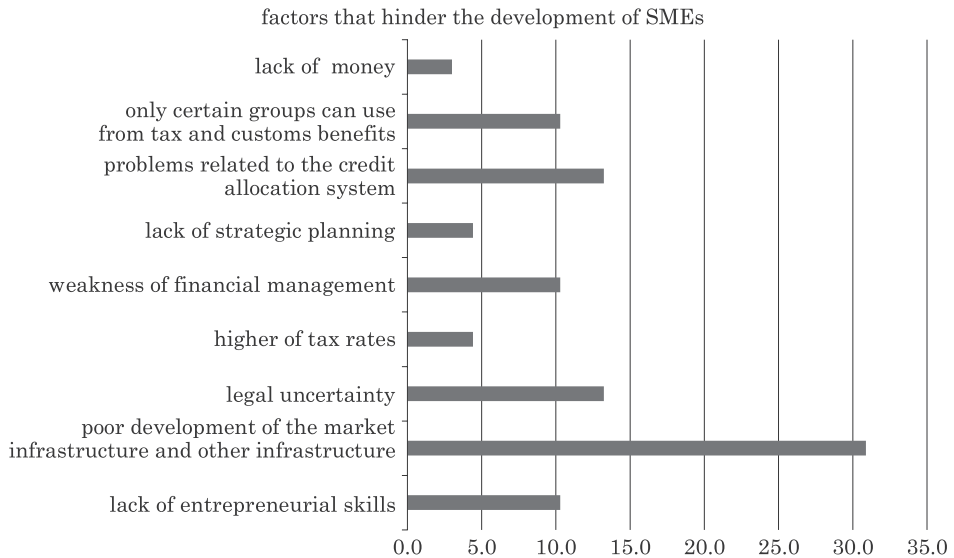


Fig. 2. Frequency analysis of respondents by factors that hinder the development of SMEs
Sources: own study.

The cause of the failure of most entrepreneurs in Uzbekistan is a lack of entrepreneurial experience, poor financial management, over-investment in fixed assets and lack of marketing experience, among others (Saidova, 2018, p. 138-142).

Discussion

According to the Statistics, in 2020 Q2 the average monthly nominal accrued wages in Uzbek SMEs amounted to USD 250. This increased by 26.5% compared to the corresponding period of 2019. The higher the level of knowledge of employees and their motivation to work, the higher the quality of the work performed. The level of education has a positive impact on the profitability of the business (Chiliya & Roberts-Lombard, 2012, p. 468). The study found that most SMEs have bachelor and diploma (college) degrees. This shows that the level of education of employees working in SMEs in Uzbekistan is high and medium. It is recommended to increase the level of education of medium-level workers.

In recent years, the government of Uzbekistan has created many opportunities for the development of SMEs. The survey was conducted during the coronavirus pandemic period and the results show that the government has been providing more financial support to SMEs. The measures to provide legal protection and financial support to business entities have also been strengthened. A decree

by the President of the Republic of Uzbekistan “On further measures to support the population and businesses during the coronavirus pandemic” was adopted. The decree reflects the opportunities for business entities such as reducing the tax burden through tax exemptions, write-offs of fines and penalties, tax deferrals and other measures to support entrepreneurs.

The survey results indicate the following four factors influence the failure of SMEs in Uzbekistan.

Poor infrastructure: The findings have shown that one of the biggest challenges for SMEs in Uzbekistan is the weakness of market infrastructure and other infrastructure. The studies of other researchers in explaining these problems more clearly were included. The results of research conducted by the Central Bank showed an increase in some factors that prevented the more efficient use of production capacity. For example, in 2020, when compared to 2019, problems related to the electricity and natural gas supply had increased by 3 percent. The Central Bank study highlighted the problems of power supply and natural gas infrastructure in Uzbekistan (Central Bank, 2020). There are also challenges associated with logistics, market and road infrastructure in Uzbekistan. One of the obstacles to creating a competitive logistics sector is that the de-monopolization of a number of enterprises and the liberalization of foreign trade policy is very slow (Akbaraliev *et al.*, 2019a, p. 5). The challenges of market infrastructure in Uzbekistan include insurance companies, audit firms, trading houses, consulting centres, business centres and so on.

Lack of skills: The lack of entrepreneurial skills, weakness of financial management and a lack of strategic planning negatively affect SME development in Uzbekistan. This lack of skills depends on several influencing factors, such as low level educational systems, a lack of HRM, illegal expenditures, etc. For example, the violation of budgetary discipline and other illegal expenditures (a total of 81.7 billion Uzbekistani som, which is equivalent to approx. USD 8,019,802) were identified by the Department of State Financial Control of the Ministry of Finance and its territorial departments in the first half of 2020. Nine billion Uzbekistani som (equivalent to approx. USD 891,089) were detected as being illegal expenditures belonging to the Ministry of Public Education and 6.9 billion Uzbekistani som (equivalent to approx. USD 683,168) belonging to the system of the Ministry of Education. Such illegal activities inevitably affect the development of the education system.

Legal uncertainty: The adoption or amendment of many laws in recent years has led to a misunderstanding of the law among some entrepreneurs. For example, changes in the tax system has led to misunderstandings concerning certain types of taxes for entrepreneurs, which can be seen as a number of problems among entrepreneurs in calculating value-added tax. The findings have indicated that there are legal uncertainty challenges for SMEs in Uzbekistan. The first reason for such legal uncertainties is the low level of experience and skills of entrepreneurs. Because such shortcomings can lead to a poor understanding

of normative documents, there is often a failure to use the opportunities provided by the government. Secondly, the existence of normative documents that focused on single operations that differ from each other or the absence of normative documents leads to legal uncertainties. But there is no clear evidence as to whether such problems exist. Therefore, it is necessary to conduct an in-depth analysis and compare the normative documents related to SMEs.

Financial problems: Some SMEs are facing financial difficulties that depend on the credit allocation system and higher tax rates. High-interest rates and excessive bureaucracy reduce the opportunities for entrepreneurs to access loans. Entrepreneurs try to utilize their own funds more than loans and this decreases the quality level of products and services. High tax rates can lead to tax avoidance by entrepreneurs (it creates a shadow economy) or bankruptcy due to an inability to pay taxes.

Nearly 78% of enterprises that participated in the survey were given various tax benefits by the government. Notwithstanding, about 88% of these enterprises faced challenges involving poor infrastructure, lack of skills, legal uncertainties and financial problems.

Conclusions

The development of SMEs is critical to supporting economic growth in Uzbekistan. This paper analysed the opportunities and challenges faced by SMEs in Uzbekistan. In recent years, Uzbekistan has created many opportunities for the development of SMEs. This is evidenced by the fact that the number of SMEs and their share in GDP is growing from year-to-year. The results show that the government has been providing entrepreneurs tax benefits and subsidies, preferences for export products and tax incentives for those who are creating new jobs.

In addition to the opportunity to grow, as with any existing business, SMEs also face several challenges, such as poor infrastructure, lack of skilled specialists, problems with the credit allocation system, high-interest rates, and others. Uzbekistan should analyse these challenges and investigate every single factor and cause (Akbaraliev *et al.*, 2019b, p. 5). This would involve many specific approaches, including analysing major obstacles affecting the improvement of infrastructure and the educational system, attracting investors to the private sector, the simplification of the credit system, the reduction of interest rates and, finally, a reduction of the power of monopolies in certain business sectors.

As with any study, some limitations must be acknowledged. First, it was planned to conduct the survey in each region, but the limited scope of the opportunity and difficulties of reaching respondents made the entire research work challenging. Secondly, we studied the opinions of respondents (entrepreneurs,

managers), which may be subjective. Of course, the respondents know their own enterprises very well, but it would be advisable to supplement future research with objective financial indicators.

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ON EXTERNAL AID EFFECTIVENESS AND SCHOOL ENROLMENT: A STUDY ON SUB-SAHARAN AFRICA

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Key words: External aid, education, school enrolment, HIV/AIDS, malaria.

Abstract

This paper re-evaluates the external aid effectiveness on school enrolment in Sub-Saharan Africa and provides a piece of evidence on the relationship conditioned on the prevalence of malaria and HIV/AIDS. A panel dataset from 2010 to 2019 for 42 countries in Sub-Saharan Africa was modelled and analyzed using a dynamic panel GMM technique. The results suggest a statistically significant positive effect of external aid on school enrolment – primary, secondary and tertiary school enrolment. However, when correlated with the HIV/AIDS and malaria diseases, the relationship turned insignificant and at best negative. That is, in the case where malaria and HIV/AIDS diseases are evident, external aid does not have a statistically significant positive impact on school enrolment. It therefore means that the level of aid effectiveness on school enrolment is contingent on malaria and HIV/AIDS diseases in the region. Hence, although the attraction of more external aid can increase school enrolment in Sub-Saharan Africa, it will be effective only if the HIV/AIDS and malaria diseases are eradicated.

**W SPRAWIE SKUTECZNOŚCI POMOCY ZEWNĘTRZNEJ I ZAPISÓW DO SZKÓŁ –
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Kody JEL: F35, I22, I10.

Słowa kluczowe: pomoc zewnętrzna, edukacja, zapisy do szkół, HIV/AIDS, malaria.

Abstrakt

W artykule ponownie oceniono skuteczność pomocy zewnętrznej w zakresie zapisów do szkół w Afryce Subsaharyjskiej i przedstawiono dowody na zależność uwarunkowaną występowaniem malarii i HIV/AIDS. Zestaw danych panelowych z lat 2010-2019 dla 42 krajów Afryki Subsaharyjskiej wymodelowano i przeanalizowano technikami dynamicznego panelu GMM. Wyniki sugerują statystycznie istotny pozytywny wpływ pomocy zewnętrznej na zapisy do szkół - podstawowych, średnich i wyższych. Związek stał się nieistotny, a w najlepszym razie negatywny, kiedy wchodził w interakcję z chorobami HIV/AIDS i malarią. Oznacza to, że jeśli malaria i choroby HIV/AIDS są ewidentne, to pomoc zewnętrzna nie ma statystycznie istotnego pozytywnego wpływu na zapis do szkoły. Oznacza to zatem, że poziom skuteczności pomocy w zakresie zapisów do szkół zależy od malarii i chorób HIV/AIDS w regionie. Większa ilość pomocy zewnętrznej może zwiększyć liczbę uczniów zapisujących się do szkół w Afryce Subsaharyjskiej, będzie ona jednak skuteczna tylko wtedy, kiedy zostaną wyeliminowane choroby HIV/AIDS i malaria.

Introduction

A large funding gap stemming from the overwhelming shortage of local resources remain a top constraint to the development of a sound educational system in sub-Saharan Africa. The consequences range from increased sociopolitical unrest and terrorism to poor education outcomes which include large numbers of out-of-school children, truancy and low school enrolments. Many countries in sub-Saharan Africa lack appealing school infrastructures to motivate a sustained rapid growth in school enrolment on a regular basis. Today, sub-Saharan Africa houses vast numbers of young people who are much less likely to enroll in school or continue with education at advanced levels of study. The situation is salvageable if the resources meant for the development of other sectors are diverted to the education sector and domestic resources are augmented to contain education sector needs using external resources or aid. The first option poses more danger: there would be a serious underdevelopment of other sectors. Since the educational sector also depends on the performance

of some of these sectors, their poor state will in turn hinder educational sector development. In the end, no progress is attained; the overall national development is halted. Reckoning on the latter, that is external aid, as an alternative, also come with costs, albeit less damaging than the resource diversion among sectors.

Such costs include an overdependence on external assistance resulting in the susceptibility of the aid-recipient economy to adverse external shock and a loss of self-esteem. To a reasonable extent, where these costs are minimized, external aid is a good means to bridge the education funding gap to step up the school enrolment rate in sub-Saharan Africa. The illustration posed by Easterly (2003, p. 40) where an external aid water project provided reduced the numbers of out-of-school children and foster school enrolment in a village in Ethiopia is an example. Although the Easterly (2003, p. 40) illustration is based on an individual example or is relegated to microanalysis, ample examples of macro studies have found a direct positive relationship whereby school enrolment rates expand with a rise in the level of external aid disbursed. For instance, Moe (2008, p. 202-221) evaluated the casual link between educational development and Official Development Assistant (ODA) in Southeast Asian countries between 1990 and 2004 and found a positive and significant impact of both the general and education-specific ODA on secondary and post-secondary schools. Also, Dreher, Nunnenkamp and Thiele (2006, p. 291-314) in their study covering 96 low and middle-income countries found a positive impact of aid allocation on school enrolment.

Furthermore, the study of Adediyan and Obadoni (2020, p. 68-85) found a direct positive effect of external aid on school enrolment. However, there are other researchers that are pessimistic on the positive impact of external aid on school enrolment or education (e.g. Moyo, 2009a, p. 7-208; 2009b, p. 1-5; Rena, 2008, p. 2), and even in some cases, a negative relationship is documented. Nevertheless, a recent trend in the external aid literature is the debate that the nature of the impact of external aid or how effective external aid could be is conditioned on the interfering role of other factors in the economic relationship under investigation. These factors include the level of the aid recipient countries macroeconomic policy management, institutional quality, and the size of government. A good case in point is the study of Qayyum and Haider (2012, p. 97-116) that questioned the effectiveness of external aid in the absence of the role of institution. Likewise, while Burnside and Dollar (2000, p. 847-868) conditioned the effectiveness of external aid to good economic policies, Guillaumont and Chauvet (2001, p. 66-92) found it contingent on hazards and shocks (environmental factors); while Collier and Dehn (2001, p. 1-25) looked at negative supply shocks.

Unfortunately, there are studies that have also reported contradictory results. For instance, Rajan and Subramanian (2008, p. 643-665) in their cross-country analysis found that external aid inflow has no effect on national output even when contingent on good economic policies. This paper takes the debate further

by assessing the effectiveness of external aid on school enrolment where there is a disease outbreak using sub-Saharan Africa as a case study. Two variants of endemic illness are at the heart of the paper: the HIV/AIDS and malaria diseases. Sub-Saharan Africa remains undoubtedly one of the world's regions most badly hit by the HIV/AIDS and malaria diseases over the years. The severity of the HIV/AIDS and malaria outbreaks have gotten worse in recent years in sub-Saharan Africa following the outbreak of the Covid-19 global pandemic that drastically bends low the efforts of the government and non-governmental bodies at curtailing the diseases (WHO, 2020, p. 15-25). It is increasingly worrisome that the incidence of HIV/AIDS and malaria is expanding daily with its grave negative consequences, both direct and indirect, cutting across the overall external aid allocation processes, and importantly, the implementation, monitoring and coordination of external aid specific education projects.

As a result, how well external aid is expected to determine educational behaviours, particularly school enrolment, is rarely actualized under the influence of HIV/AIDS and malaria. The central objective of this study is therefore an empirical evaluation of whether external aid allocation to the education sector is effective in raising school enrolment in sub-Saharan Africa under the interfering influence of the HIV/AIDS and malaria outbreaks. The structural categorization of the remaining part of the paper is as follows: a literature review is in section 2, section 3 is the methodology, and sections 4 and 5 contain results, analysis and a conclusion.

Methodology and data

Disease is only one of several factors determining not just the level of aid allocation to different sectors, but the level of compliance of donors to timely use the externally funded projects, which in turn affects the potential school enrollees' decision whether or not to enrol at a given level of education. To understand the intrusive role of diseases on the effectiveness of external aid on school enrolment particularly in sub-Saharan Africa, two objective functions: the peripheral and major objectives as in equation 1 and 2 are specified. The peripheral objective function highlights the individual direct impact of external aid and diseases on school enrolment as follows:

$$SE_{it} = \beta_0 + \beta_1 \ln E_{it} + \beta_2 \ln D_{it} + \beta_3 \ln F_{it} + \beta_4 EP_{it} + \mu_{it} \quad (1)$$

$$i = 1, 2, 3, \dots, 42 \quad t = 1, 2, 3, \dots, 10$$

Equation (1) primarily constrained school enrolment (SE) on external aid (E) and disease (D). Definitionally, the school enrolment consists of the gross primary (P), secondary (S) and tertiary (T) school enrolment level. The external

aid variable (E) refers to the total external aid disbursement, disbursed to the education sector in sub-Saharan Africa by the Development Assistance Committee (DAC) countries, measured at the 2018 US dollar constant price. Disease is measured using two indexes: malaria incidence and the HIV/AIDS prevalence. A positive relationship is expected between external aid and school enrolment. Consequently, it follows that the effectiveness of aid on school enrolment is indicated by the positive (and significant) impact of external aid. However a negative relationship is expected between the school enrolment level and disease. For the secondary explanatory variables, fiscal policy (F) and employment level (EP), the fiscal policy is indicated by the general government spending and employment variable as a ratio of employment to total population, both are expected to be positive.

For the major objective function, the impact of disease on the relationship between school enrolment and external aid effectiveness is modelled as

$$SE_{it} = \alpha_0 + \alpha_1 \ln E_{it} + \alpha_2 \ln D_{it} + \alpha_3 \ln(E \times D)_{it} + \alpha_4 \ln F_{it} + \alpha_5 EP_{it} + \mu_{it} \quad (2)$$

$$i = 1, 2, 3, \dots, 42 \quad t = 1, 2, 3, \dots, 10$$

Equation (2) is an interactive model describing the indirect impact of disease and external aid on school enrolment in sub-Saharan Africa. The coefficient of the parameter, α_3 , is expected to be positive and significant if disease outbreak (HIV/AIDS and malaria) does not hamper the positive effect of external aid on school enrolment. That is, the coefficient will be positive and significant if external aid effectiveness on school enrolment does not depend on the spread of disease in sub-Saharan Africa. To estimate the parameter coefficients of equations (1) and (2), a dynamic panel GMM technique is employed. The technique enables the construction of the dynamics of the objective functions of the study. For instance, the current level of school enrolment may depend on the past level; a dynamic panel GMM adequately captures such a relationship, and controls the resulting dynamic endogeneity problem and simultaneously bias (Verbeek, 2004, p. 148-150; Asteriou & Hall, 2011, p. 433; Arellano & Bond, 1991, p. 277-297). The study used a panel dataset consisting of 42 selected countries in Sub-Saharan Africa, spanning between 2010 and 2019. The selected countries in the region are those with an updated dataset with regards to the key variables of the model. The data collected were on HIV/AIDS prevalence, malaria incidence, fiscal policy (general government expenditure), gross school enrolment rate and employment rate, gathered from the World Bank Development Indicators database. Also, data on external education aid disbursement were used, and were collected from the OECD/Development Assistance Committee (DAC) Credit Reporting System (CRS) online database.

Empirical findings

The empirical results of the study are presented in Tables 1 and 2. Table 1 highlights the direct effects of the diseases, HIV/AIDs and malaria, and external aid allocation on primary, secondary and tertiary school enrolment in sub-Saharan Africa with the fixed effect in the model controlled. It is quite clear in Table 1 that the primary, secondary and tertiary school enrolment increases with a period lag. Also, the external aid allocation has a statistically significant positive effect on primary, secondary and tertiary school enrolments. It thus follows from the estimated coefficient of external aid that school enrolment at the primary, secondary and tertiary levels increases or decreases with a rise or a fall in the total amount of external aid allocated by the donors. Although the obtained positive relationship between external aid allocation and school enrolment is significant only at a 10 per cent level for the primary school level, it is statistically significant at a 5 per cent level for the secondary and tertiary education levels and it suggests that the positive impact of external aid on school enrolment is more pronounced at the secondary and tertiary education levels compared to the primary school level over the sample period.

The impact of HIV/AIDs in Table 1 is negative and statistically significant at a 5 per cent level in the case of school enrolment at the secondary and tertiary levels, but positive and insignificant at the primary school level. One reasonable justification of a cause may hinge on the level of stigmatization attached to HIV/AIDs victims across all levels of education. Specifically, at the primary school level pupils, especially at the lower level of primary education, are less aware of the implications of HIV/AIDs. Therefore, the HIV/AIDs infected ones are less likely to face severe stigmatization from their colleagues which motivates additional HIV/AIDs infected enrollees in primary school. But at the secondary and tertiary levels, the level of stigmatization of HIV/AIDs patients is much higher and therefore serves as a disincentive for the HIV/AIDs infected potential secondary and tertiary school enrollees to undertake schooling.

Thus, at a high level of education, the effect of HIV/AIDs is negative. As expected, the impact of malarial disease on primary, secondary and tertiary school enrolment is negative and statistically significant at a 5 per cent level. That is, there is clear statistical evidence that a rise in the level of malarial disease decreases school enrolment at the primary, secondary and tertiary school levels, and vice-versa. The school enrolment at the primary level is the most sensitive to a change in the level of malaria among the levels of education with the tertiary school enrolment level as the least. This paints a picture of a diminishing impact of malarial disease as the level of education rises, say, from the secondary to the tertiary level. Since, at an advanced level of education, enrollees are much better able to detect the symptoms of malaria at its early stage of development for a proper treatment. Also, they are well aware of the various methods of malaria prevention.

The estimated negative impacts of malaria and HIV/AIDS validate the study of Komarulzaman, Jong and Smiths (2019, p. 633-646) and Zinyemba, Pavlova and Groot (2020, p. 35-84) that disease has a negative impact on education. The estimated impact of the fiscal policy variable in Table 1 is negative and statistically insignificant at any level of statistical test. Consequently, an expansionary fiscal policy is likely not a good policy variable to drive up school enrolment in sub-Saharan Africa. The ineffectiveness of fiscal policy in the management of school enrolment at the primary, secondary and tertiary education levels is largely a result of corruption, public funds mismanagement and bureaucratic processes surrounding the use of fiscal policy in most countries of sub-Saharan Africa. Lastly, the ratio of employment to the population has an insignificant effect on school enrolment at the primary and secondary education levels, but has a significant positive impact at 10 per cent on tertiary school enrolment, mainly as a result of job prospects after school completion.

Table 1

Estimated models of School Enrolment

Regressors	Primary level	Secondary level	Tertiary level
P(-1)	0.17 (0.04)*	–	–
S(-1)	–	0.28 (0.00)*	–
T(-1)	–	–	0.30 (0.02)*
E	29.02 (0.07)**	1.81 (0.04)*	0.55 (0.02)*
M	-6.68 (0.01)*	-5.87 (0.00)*	-1.38 (0.00)*
H	0.30 (0.83)	-1.46 (0.04)*	-0.46 (0.02)*
F	-0.47 (0.46)	-0.21 (0.24)	-0.46 (0.12)
EP	-0.14 (0.70)	0.04 (0.63)	0.04 (0.09)**
C	-20.78 (0.19)	-9.40 (0.24)	-7.02 (0.00)
AR(1)	-4.38 (0.00)	-4.34 (0.00)	-3.93 (0.00)
AR(2)	-1.00 (0.32)	-0.36 (0.72)	1.14 (0.25)
Sargan test	3.40 (0.49)	0.39 (0.82)	1.28 (0.26)
No. of Instrument	20	18	17
No. of Groups	42	42	42
Obs.	373	376	374

Note that the * and ** means the attached coefficient is significant at 1%, 5% and 10%, respectively. The coefficients of the period effect are not reported.

Source: authors.

Table 2
Estimated interactive models of School Enrolment

Variables	Primary level				Secondary level				Tertiary level			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
P(-1)	0.24 (0.00)*	0.34 (0.00)*	0.20 (0.04)*	0.30 (0.18)								
S(-1)					0.27* (0.00)*	0.27* (0.00)*	0.28* (0.00)*	0.38 (0.05)**				
T(-1)									0.48 (0.05)**	0.52 (0.03)*	0.48 (0.05)**	0.15 (0.53)
E	-21.97 (0.21)	28.12 (0.11)	-30.29 (0.28)	11.40 (0.91)	0.17 (0.90)	2.78 (0.01)	0.77 (0.61)	-4.11 (0.82)	-0.34 (0.68)	0.23 (0.64)	-0.42 (0.60)	-2.75 (0.28)
M	-13.15 (0.04)*	-5.55 (0.01)*	-15.45 (0.09)**	-2.29 (0.95)	-7.20 (0.00)*	-5.29 (0.00)	-6.90 (0.00)*	-8.40 (0.12)	-1.81 (0.04)*	-1.22 (0.04)*	-1.81 (0.04)*	-2.95 (0.02)*
H	-2.21 (0.19)	21.47 (0.09)**	-8.76 (0.47)	51.30 (0.37)	-1.75 (0.02)*	1.84 (0.26)	1.57 (0.34)	41.78 (0.05)**	-0.40 (0.14)	-0.50 (0.24)	-0.60 (0.17)	-0.20 (0.96)
F	0.637 (0.13)	0.13 (0.76)	0.62 (0.11)	0.16 (0.89)	-0.24 (0.19)	-0.15 (0.41)	-0.17 (0.36)	-0.35 (0.56)	0.04 (0.51)	0.04 (0.60)	0.04 (0.56)	0.10 (0.23)
EP	0.52 (0.01)*	0.20 (0.43)	0.50 (0.01)*	0.88 (0.26)	0.03 (0.71)	0.05 (0.58)	0.04 (0.65)	0.33 (0.73)	0.05 (0.16)	0.05 (0.15)	0.05 (0.19)	-0.09 (0.36)
E×H		-8.28 (0.08)**	2.39 (0.56)	9.16 (0.73)		-1.20 (0.03)	-1.20 (0.03)*	10.47 (0.12)		0.07 (0.63)	0.08 (0.61)	-0.10 (0.94)

cont. Table 2

E×H(-1)							-27.3 (0.46)					-25.51 (0.06)**												-0.11 (0.97)
E×M	4.47 (0.13)					5.51 (0.18)	2.31 (0.89)	0.50 (0.12)			0.63 (0.07)**	2.40 (0.44)	0.21 (0.14)											0.21 (0.13)
E×M(-1)							-1.56 (0.79)					0.85 (0.92)												1.21 (0.24)
C	-14.05 (0.45)	-71.39 (0.00)	3.92 (0.93)	-37.2 (0.81)	-6.56 (0.43)	-14.71 (0.08)	-11.58 (0.18)	-10.75 (0.66)	-6.34 (0.01)	-7.24 (0.01)	-5.96 (0.02)													-7.94 (0.04)
AR(1)	-4.13 (0.00)	-4.31 (0.00)	-3.89 (0.00)	-2.60 (0.01)	-4.23 (0.00)	-4.19 (0.00)	-4.30 (0.00)	-2.05 (0.04)	-2.65 (0.01)	-2.93 (0.00)	-2.67 (0.01)													-3.39 (0.00)
AR(2)	-1.00 (0.32)	-0.97 (0.33)	-0.96 (0.34)	0.22 (0.83)	-0.41 (0.69)	-0.13 (0.90)	-0.31 (0.75)	0.44 (0.66)	-0.59 (0.56)	-0.50 (0.61)	-0.58 (0.56)													0.66 (0.51)
Sargan test	3.02 (0.22)	2.15 (0.34)	2.86 (0.24)	7.57 (0.11)	0.44 (0.80)	0.53 (0.47)	0.68 (0.71)	0.78 (0.86)	0.27 (0.60)	0.26 (0.61)	0.25 (0.61)													0.12 (0.73)
No. of Instrument	19	19	20	24	19	18	20	23	18	18	19	18	19	18	19	21								21
No. of Groups	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42								42
Obs.	371	373	371	371	374	376	374	374	374	374	372	374	372	374	372	372								372

Note that the * and ** means the attached coefficient is significant at 1%, 5% and 10%, respectively. The coefficients of the period effect are not reported. Source: authors.

In each of the models of school enrolment in Table 1, the Sargan instrument restriction test is satisfied and it suggests that the three estimated models are valid.

In Table 2, estimates on the interfering effect of disease on the school enrolment and external aid relationship is summarized. Four different sub-models were reported for each level of school enrolment. In each of the levels, the first sub-model presents the coefficient estimate of the interactive effect of malarial disease and the second sub-model highlights that of HIV/AIDS. The third sub-model combines the coefficients of the interactive effect of HIV/AIDS and malaria. This is re-estimated with a lag in the fourth sub-model.

In Table 2, it is apparent that school enrolment level does not rise with more external aid under an increased menace of HIV/AIDS; at best, it is negative on the primary and secondary school enrolment levels. With a lag, the interactive effect of HIV/AIDS and external aid on primary, secondary and tertiary school enrolment is negative and significant at a 10 per cent level for school enrolment at the secondary education level only. Additionally, the impact of malaria on the relationship between external aid and school enrolment is largely positive but not statistically significant; although with a very small exception (only at the 10 per cent level) for secondary school. The lagged coefficient of the malaria and external aid interactive term is not statistically significant at all. The diagnostic test report summarized in Table 2 suggests valid instruments for the models and a lack of the second order autocorrelation.

Conclusion

In the light of the empirical results obtained, it is true that to raise the level of school enrolment in sub-Saharan Africa increased external aid disbursement plays an active role, because external aid has a significant positive impact on school enrolment in the region. However, a growing prevalence of diseases, especially HIV/AIDS and malaria, is capable of neutralizing the positive impact of external aid on school enrolment, and in some cases, can render a detrimental impact. In essence, the outcome of the estimated interacted term in the model calls to mind that school enrolment on average does not improve with additional external aid if the impact of diseases is considered in the relationship. Therefore, it will amount to an unending waste of resources should the donors increase aid disbursement to sub-Saharan Africa to foster school enrolment without addressing the menace of diseases troubling the region.

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DIFFERENCES IN THE LEVEL AND STRUCTURE OF CONSUMPTION OF POLISH HOUSEHOLDS FROM 2010-2019

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Key words: Polish households, level and structure of consumption, economic welfare, disposable income, consumer spending, propensity to consume.

Abstract

This article aims to assess the level and structure of household consumption and its social differentiation in the years 2010–2019 in terms of disposable income and consumption expenditure. The data on household budgets were sourced from Statistics Poland. The analysis revealed clear differences in the level and structure of household consumption observed over a ten year period. The share of expenditure on food, healthcare, as well as transport and communications is growing, while the share of expenditure on housing, clothing and shoes is decreasing. Meanwhile, the level of these changes varies across groups of households. The decreasing propensity of households to consume and the increasing level of income accumulation are evidence of an increase in their economic welfare. However, the deepening process of social polarization of income clearly perpetuates inequality in the level and structure of household consumption.

RÓŻNICE W POZIOMIE I STRUKTURZE KONSUMPCJI POLSKICH GOSPODARSTW DOMOWYCH W LATACH 2010-2019

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Słowa kluczowe: polskie gospodarstwa domowe, poziom i struktura konsumpcji, dobrobyt ekonomiczny, dochody rozporządalne, wydatki konsumpcyjne, skłonność do konsumpcji.

Abstrakt

Celem artykułu była ocena kształtowania się poziomu i struktury konsumpcji gospodarstw domowych oraz jej społecznego zróżnicowania w latach 2010-2019 w świetle dochodów rozporządzalnych i wydatków konsumpcyjnych. Podjętą problematykę zrealizowano na podstawie analizy danych GUS dotyczących budżetów gospodarstw domowych. Jak wynika z badań na przestrzeni dziesięciu lat zaobserwowano wyraźne różnice w poziomie i strukturze konsumpcji gospodarstw domowych. Wzrósł udział wydatków na żywność, ochronę zdrowia oraz transport i łączność, zmalał natomiast udział wydatków na mieszkanie oraz odzież i obuwie, przy czym poziom tych zmian jest zróżnicowany w poszczególnych grupach gospodarstw domowych. Malejąca skłonność gospodarstw domowych do konsumpcji i coraz wyższy stopień akumulacji dochodów świadczą o wzroście ich dobrobytu ekonomicznego. Poglębiający się proces społecznej polaryzacji dochodów wyraźnie jednak utrwała różnice w poziomie i strukturze konsumpcji gospodarstw domowych.

Introduction

Consumption among Polish households is constantly changing, which results in changes in their economic welfare. In consumption research, economic welfare is defined as the material and financial base of consumption, i.e. the stock of consumption items and financial resources, which are at the disposal of household members and/or society (Bywalec, 2010). In detailed economic analyses, it is assumed that the most important categories of economic welfare, allowing for an objective assessment of the financial situation of households, are disposable income and consumption expenditure (Kasprzyk & Leszczyńska, 2012, p. 263).

Disposable income includes all monetary and non-monetary household receipts less taxes (on income from employment, other income, and property paid by self-employed persons) and personal tax advances paid by a taxpayer on behalf of the taxpayer, as well as healthcare and social security contributions. It is distributed as deemed appropriate for consumption, savings and other expenses. Consumption expenditures constitute a strictly separated group of consumer goods and services and include goods purchased for cash with a debit or credit card, as well as on credit, the value of goods received free

of charge and natural consumption¹. Savings, i.e. income accumulated in the past, contribute to the current consumption of households. Other expenses include amounts transferred to other households and non-profit institutions, certain taxes (including from inheritance and donations, property income, or rental and sale of real estate) and monetary losses (*Budżety gospodarstw domowych...*, 2019). Disposable income and consumption expenditures allow an assessment to be made of the material situation within households, and this analysis is an important indicator for assessing the level and structure of household consumption.

The aim of the article is to assess the level and structure of consumption within Polish households and its social variation in the years 2010-2019 in the light of the most important categories of economic welfare, i.e. income and expenditure of households.

Research methodology

The analysis of disposable income and consumption expenditure (per person in a household) was carried out according to the subject structure of consumption (*Żelazna et al.*, 2002), in accordance with the previously specified criterion. In the literature on the subject, the most common criterion differentiating the financial situation of households is disposable income (*Janoś-Kresło*, 2006). Disposable income (DI) consists of two components, i.e. discretionary income, which is spent on consumption and savings, and other expenses.

With reference to the previously defined criterion, four groups of households have been distinguished, depending on the source of their income, i.e.:

- employees,
- farmers,
- self-employed workers,
- retirees and disability pensioners.

The analysis of the level and structure of household consumption in the light of disposable incomes and consumption expenditure consisted of:

- the level and structure of average monthly income in groups of households, including a comparison of income levels and a calculation of income dynamics and structure;
- level and structure of average monthly consumption expenditure², including a calculation of expenditure dynamics and structure;
- assessment of the social differentiation of the household financial situation in light of Keynes' hypothesis (*Bywalec*, 2012), i.e. the share of consumer spending in disposable income.

¹ Natural consumption includes consumer goods and services provided for a household from the individual household itself or from self-employed economic activity.

² The following groups of consumer goods and services were included in the analysis: food and non-alcoholic beverages, clothing and footwear, housing and energy, transport and communications, and healthcare.

The research period spanned the years 2010-2019, which made it possible to assess the financial situation of households against the background of a changing economic reality (including the effects of the global financial crisis of 2007-2009) and to observe the contemporary tendencies of the Polish market. The research used information derived from sources published by Statistics Poland, mainly household budget surveys, as well as selected internet data from the website stat.gov.pl.

The number of surveyed households was determined based on information derived from household budget surveys (Tab. 1).

Table 1

The number of investigated households from 2010-2019

Years	Households				Total
	employees	farmers	self-employed	retirees and disability pensioners	
2010	18,441	1,909	2,657	12,937	37,412
2011	18,511	1,863	2,584	12,914	37,375
2012	18,261	1,841	2,589	13,141	37,427
2013	17,962	1,842	2,531	13,108	37,181
2014	18,146	1,689	2,488	13,167	37,215
2015	18,336	1,681	2,457	13,118	37,148
2016	17,877	1,689	2,500	13,323	36,886
2017	17,708	1,658	2,508	13,282	36,655
2018	17,217	1,555	2,467	13,657	36,166
2019	16,797	1,464	2,602	13,797	35,923

Source: own study based on: *Budżety gospodarstw domowych...* (2011-2020).

The household budget survey was conducted using the representative method. A sample is drawn from among all households, which allows for the generalization of the survey results. According to this method, a different randomly selected household participates in the annual survey each month..

Household income and expenditure

In 2010-2019, the level of disposable income per person in a household was diversified in individual groups of households (Tab. 2). The highest level of income was characteristic for households of the self-employed and the lowest income level was for farmers.

Table 2

Average monthly disposable income of households (in PLN/person) in 2010-2019

Years	Households				Extreme Income Difference
	employees	farmers	self-employed	retirees and disability pensioners	
2010	1,199.22	1,024.53	1,468.38	1,180.82	443.85
2011	1,243.84	983.88	1,497.43	1,233.08	513.55
2012	1,289.16	1,091.55	1,536.68	1,297.90	445.13
2013	1,305.88	1,156.13	1,581.05	1,328.65	424.92
2014	1,349.12	1,050.85	1,631.64	1,382.32	580.79
2015	1,386.87	1,046.17	1,739.48	1,438.04	693.31
2016	1,494.79	1,151.28	1,792.33	1,498.78	641.05
2017	1,607.77	1,575.57	1,918.94	1,579.03	343.37
2018	1,702.64	1,579.00	2,011.71	1,683.35	432.71
2019	1,832.14	1,666.55	2,173.63	1,819.27	507.08

Source: own calculations based on: *Budżety gospodarstw domowych...* (2011-2020).

In 2019, as compared to 2010, disposable income in all groups of households increased. In three out of four groups of households, i.e. employees, the self-employed, and retirees and disability pensioners, there was an increase in income year-to-year, which proves a systematic improvement in their economic welfare. On the other hand, in farming households, there was a decrease in incomes in 2010-2011 and 2013-2015. In the next four years, the income of farming households increased, while the material situation of this group of households apparently improved in 2017, which resulted from a significant increase in budget transfers to the agricultural sector³, mainly redistributive expenses, as well as an increase in the productivity of the sector (Kata, 2019, p. 31-34). Thus, the smallest difference between the incomes of the richest and the poorest groups of households was recorded in 2017 (PLN 343.37), but the process of social polarization of household incomes deepened again over the next two years.

The analysis of the change in average monthly disposable income showed a differentiated rate of income growth in individual groups of households (Tab. 3).

In 2019, the highest increase in income as compared to 2010 was recorded in households of farmers (62.7%) and the lowest in households of the self-employed (48%). In the entire analysed period, there was an upward trend in disposable income in the households of employees, the self-employed and retirees and pensioners. In farming households, disposable income showed a downward trend

³ Redistributive expenses are intended to support agricultural income directly and in the short term, taking the form of direct payments, agri-environmental payments, insurance system subsidies, relief subsidies for agricultural fuel and agricultural social insurance, among others (Czyżewski *et al.*, 2016, p. 45-72).

Table 3

The dynamics of the average monthly household disposable income per person in 2010-2019

Households	Years									
	2010 = 100% (PLN)	2011	2012	2013	2014	2015	2016	2017	2018	2019
Employees	1,199.22	103.7	107.5	108.9	112.5	115.6	124.6	134.1	142.0	152.8
Farmers	1,024.53	96.0	106.5	112.8	102.6	102.1	112.4	153.8	154.1	162.7
Self-employed	1,468.38	101.9	104.6	107.7	111.1	118.5	122.1	130.7	137.0	148.0
Retirees and disability pensioners	1,180.82	104.4	109.9	112.51	117.1	121.8	126.9	133.7	142.6	154.1

Source: own calculations based on: *Budżety gospodarstw domowych...* (2011-2020).

only in 2010-2011 and 2013-2015. In the last four years analysed, a significant increase in income was influenced by the government program Family 500+ introduced on 1 April 2016 (*Family...*, 2020), as well as an improvement in the labour market, i.e. a decrease in unemployment and an increase in wages (*Situation...*, 2018, p. 14, *Labour Market...*, 2020, p. 1).

Analysing the structure of the distribution of average monthly disposable income (DI) in particular groups of households, the structure indicators were compiled assuming two components of disposable income: discretionary income (DCI) and other expenses (OE), i.e. amounts transferred to other households and/or non-profit institutions (Tab. 4).

In 2010-2019, no significant differentiation was observed in the structure of disposable income of individual groups of households (Tab. 4). In 2019 as compared to 2010, farming households had the highest percentage of discretionary income (98.0%), while households of retirees and disability pensioners had the lowest (96.0%). Among all household groups, retirees and disability pensioners were also characterized as having the highest percentage of income transferred to other households and/or non-profit institutions (4.0% in 2019).

Since the level of disposable income directly determines the level and structure of household consumption expenditures, the next step was to analyse the level and dynamics of consumption expenditures (Tab. 5 and 6) and their structure (Tab. 7).

In the years 2010-2019, the level of expenditure per person varied in individual households (Tab. 5). The highest consumption expenditure per person was recorded in self-employed households, which was associated with the highest level of disposable income in this group of households, while the lowest level of expenditure was recorded in farming households. In 2019, the consumption expenditure of farming households (PLN 888.00) accounted for 62.4% of the expenditure of self-employed households. In the households of employees, retirees and pensioners, the level of consumption expenditure (per capita)

Table 4

Distribution structure of the average monthly household disposable income per capita in 2010-2019 [%]

Years		Households			
		employees	farmers	self-employed	retirees and disability pensioners
2010	DCI	96.7	96.5	96.5	94.6
	OE	3.3	3.5	3.5	5.4
2011	DCI	97.0	97.3	96.5	95.0
	OE	3.0	2.7	3.5	5.0
2012	DCI	96.9	96.9	96.8	94.9
	OE	3.1	3.1	3.2	5.1
2013	DCI	97.0	97.8	96.8	95.3
	OE	3.0	2.2	3.2	4.7
2014	DCI	96.9	97.1	96.6	95.2
	OE	3.1	2.9	3.4	4.8
2015	DCI	97.0	97.2	96.5	95.0
	OE	3.0	2.8	3.5	5.0
2016	DCI	97.2	97.5	97.2	95.1
	OE	2.8	2.5	2.8	4.9
2017	DCI	97.3	98.0	97.2	95.5
	OE	2.7	2.0	2.8	4.5
2018	DCI	97.4	98.1	97.5	95.5
	OE	2.6	1.9	2.5	4.5
2019	DCI	97.6	98.0	97.2	96.0
	OE	2.4	2.0	2.8	4.0

Source: own calculations based on: *Budżety gospodarstw domowych...* (2011-2020).

Table 5

Average monthly consumption expenditure of households (in PLN / person) in 2010-2019

Years		Households			
		employees	farmers	self-employed	retirees and disability pensioners
2010		975.05	757.25	1,206.91	1,041.46
2011		1,006.05	736.02	1,221.52	1,080.14
2012		999.69	750.46	1,222.39	1,051.29
2013		1,010.71	759.00	1,237.76	1,081.96
2014		1,021.42	769.37	1,246.11	1,090.45
2015		1,034.35	750.30	1,250.20	1,108.95
2016		1,080.39	786.09	1,264.05	1,152.99
2017		1,124.52	836.86	1,314.22	1,199.34
2018		1,126.05	841.47	1,349.47	1,200.88
2019		1,192.38	880.00	1,411.23	1,272.98

Source: own calculations based on: *Budżety gospodarstw domowych...* (2011-2020).

in the analysed period was similar, which was mainly due to the number of people in individual groups of households. The households of employees usually include 3- to 4-persons, while pensioners usually consist of 1- to 2-person households (*Budżety gospodarstw domowych...*, 2019).

The analysis of the dynamics of household consumption expenditures showed that the highest increase in expenditures in 2019 compared to 2010 occurred in households of employees (22.3%) and it was similar to the dynamics of expenditures of retirees and disability pensioners (22.2%). Meanwhile, the lowest increase occurred in farming households (16.2%) (Tab. 6).

Table 6

Dynamics of average monthly household consumption expenditure per capita in 2010-2019

Households	Years									
	2000 = 100% (PLN)	2011	2012	2013	2014	2015	2016	2017	2018	2019
	%									
Employees	975.05	103.2	102.5	103.7	104.8	106.1	110.8	115.3	115.7	122.3
Farming	757.25	97.2	99.1	100.2	101.6	99.1	103.8	110.5	111.1	116.2
Self-employed	1,206.91	101.2	101.3	102.6	103.2	103.6	104.7	108.9	111.8	116.9
Retirees and disability pensioners	1,041.46	103.7	100.9	103.9	104.7	106.5	110.7	115.2	115.3	122.2

Source: own calculations based on: *Budżety gospodarstw domowych...* (2011-2020).

To analyse the differentiation of the consumption structure among individual groups of households, structural indicators were compiled based on five groups of consumer goods and services, i.e. food and non-alcoholic beverages, clothing and footwear, housing and energy, transport and healthcare (Tab. 7).

Table 7

Changes in the structure of household consumption expenditure in 2010-2019
(total expenditure = 100)

Years	Households			
	employees	farmers	self-employed	retirees and disability pensioners
1	2	3	4	5
Food and non-alcoholic beverages				
2010	23.5	31.5	21.0	28.1
2011	23.7	33.1	21.2	27.9
2012	23.8	31.1	21.5	28.0
2013	23.7	31.5	21.2	27.5
2014	23.2	31.0	20.9	27.2

cont. Table 7

1	2	3	4	5
2015	22.9	31.3	20.5	26.6
2016	23.0	31.5	20.9	26.7
2017	23.2	31.0	20.9	26.9
2018	23.6	30.8	20.9	28.0
2019	23.9	31.7	21.1	28.4
Clothing and footwear				
2010	5.9	5.2	6.8	3.1
2011	5.8	5.2	6.1	3.2
2012	5.6	5.1	6.3	2.9
2013	5.7	5.6	6.6	3.0
2014	5.9	5.9	7.0	3.4
2015	6.1	5.6	6.6	3.5
2016	6.2	6.0	7.0	3.6
2017	5.9	6.1	6.7	3.2
2018	5.5	5.4	6.0	3.0
2019	5.4	5.5	5.9	3.0
Housing				
2010	18.8	18.5	17.3	24.3
2011	19.2	18.0	18.6	24.9
2012	18.8	17.7	18.4	24.4
2013	19.4	18.7	18.3	24.4
2014	18.8	17.4	17.9	23.6
2015	19.0	17.2	17.9	23.5
2016	18.3	16.7	18.0	23.0
2017	18.4	16.9	17.0	23.1
2018	17.3	14.1	16.1	21.7
2019	17.0	13.9	15.9	21.3
Transport and communications				
2010	15.2	15.8	16.2	10.1
2011	15.0	14.9	16.3	10.0
2012	15.2	15.3	16.1	10.0
2013	16.3	15.0	16.9	11.0
2014	15.8	15.6	15.3	10.2
2015	15.2	15.9	14.7	10.3
2016	15.2	15.8	13.9	10.0
2017	14.7	15.0	13.6	10.1
2018	15.7	17.3	16.8	10.5
2019	15.4	16.1	15.2	10.6

cont. Table 7

1	2	3	4	5
Healthcare				
2010	3.8	3.7	3.9	7.8
2011	4.0	3.7	4.1	8.0
2012	4.0	3.9	4.0	8.1
2013	4.0	4.2	4.0	8.3
2014	3.9	4.2	4.0	8.2
2015	4.3	4.3	4.4	8.1
2016	4.3	4.8	4.5	8.3
2017	4.5	4.6	4.6	8.5
2018	4.0	4.8	4.1	8.0
2019	4.2	4.7	4.1	8.1

Source: own calculations based on: *Budżety gospodarstw domowych...* (2011-2020).

Over the ten years analyzed, there have been significant changes in the consumption structure of Polish society. In 2019, compared to 2010, the share of expenditures on food and healthcare increased in all groups of households. An upward trend was also recorded in expenditures on transport and communications, with the exception of farming households where this share decreased by 1.0 percentage point. In 2019, compared to 2010, a downward trend in the share of expenditure on housing was visible in all household groups, and the indicators of the share of expenditure on clothing and footwear decreased in almost all households (except for farming households, which showed a slight increase – by a 0.1 percentage point).

The highest share of expenditure on food and non-alcoholic beverages in total expenditure was recorded in farming households (31.7% in 2019), and the lowest in self-employed households (21.1% in 2019). It can be noted that the shares of food expenditure in global expenditure are highest in the poorest households and the lowest in the richest. It is worth noting that a slight increase in food expenditure indicators (in a situation of growing household incomes) proves that Engel's law⁴ ceased to apply, which can be explained primarily by the change in the structure of demand for food (more expensive products and functional food play a greater role), as well as a relatively faster increase in food prices than in other consumer goods.

Expenditure on healthcare was another group of expenses that showed an upward trend in the analysed period. The highest percentages of this group of expenses were recorded in the households of retirees and pensioners (8.1% in 2019), and the lowest – in the households of the self-employed (4.1% in 2019).

⁴ According to Engel's law, with an increase in household income, the share of food expenditure in total household expenditure decreases (Bywalec & Rudnicki, 2002).

The upward trend in this group of expenses is a consequence of the progressive ageing of the Polish society, limited access to medical care in the public system and, consequently, an increasing private expenditure on healthcare.

Expenditure on transport and communications in 2019 increased in comparison to 2010 in almost all groups of households (with the exception of self-employed households), which is the result of the dynamic development of wireless telephony and greater availability of the Internet. The highest percentages of this group of expenses were recorded in farming households (16.1% in 2019) and the lowest were in households of retirees and disability pensioners (10.6%).

Expenditure on housing was characterized by a downward trend. The highest share of expenditure on housing was recorded in the households of retirees and disability pensioners (in 2019 – 21.3%) and the lowest was in the households of farmers (13.9%), which results from the specificity of the rural housing economy, e.g. houses are owned and not rented; as well as lower water and heating costs.

In 2019, as compared to 2010, the share of household expenditure on clothing and footwear also decreased in almost all households (except for farming households). The highest percentages of this group of expenditures were reported by self-employed households (in 2019 they amounted to 7.0%), and the lowest were reported by retirees and disability pensioners (3.4%), which can be explained by the low rank of clothing needs in this group of households.

Assessment of the financial situation of households

The analysis of disposable income and consumption expenditure made it possible to assess the financial situation of Polish households in 2010-2019 in the light of Keynes' hypothesis describing the relationship between household income and expenditure (Tab. 8).

According to Keynes' hypothesis, with the increase in the level of economic welfare of households, their propensity to consume (measured by the share of consumer spending in disposable income) decreases and the propensity to save increases. It should be emphasized that the propensity to consume does not depend only on the level of income, but it is the most important factor shaping the consumption behaviour of households (Bywalec, 2010).

In 2019, as compared to 2010, a decreasing propensity to consume was observed in all groups of households. The highest ratio of consumption expenditure in the disposable income of households in 2019 was recorded in the households of retirees and pensioners (70.0%), and the lowest was in farming households (52.8%). The decreasing propensity to consume in all groups of households proves an increasing level of income accumulation and their growing propensity to save. The growing savings of households

Table 8

Propensity to consume by household group in 2010–2019 (in %)

Type of household \ Years	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Employees	81.3	80.9	77.5	77.4	75.7	74.6	72.3	69.9	66.1	65.1
Farmers	73.9	74.8	68.8	65.7	73.2	71.7	68.3	68.5	53.3	52.8
Self-employed	82.2	81.6	79.5	78.3	76.4	71.9	70.5	76.0	67.1	64.9
Retirees and disability pensioners	88.2	87.6	81.0	81.4	78.9	77.1	76.9	76.0	71.3	70.0

Source: own calculations based on: *Budżety gospodarstw domowych...* (2011-2020).

in the analysed period could result from risk aversion resulting from the consequences of the global financial crisis of 2007-2009 (Kulpaka, 2015, p. 315), money transfers from abroad resulting from economic emigration and a growing awareness among Polish households of the need to have material security for the future.

Conclusions

Over the ten years analysed, clear differences were observed in the level of disposable income and consumption expenditure of Polish households.

1. The highest level of income and expenditure in all years was observed in self-employed households, while the lowest was in farming households. In 2019, compared to 2010, an increasing disparity was observed between households with the highest and lowest incomes, which proves the deepening process of social polarization of income.

2. Income and expenditure in individual groups of households showed an upward trend, which indicates an improvement in the level of household wealth. However, the growth rate of income and expenditure in particular groups was diversified. Farming households recorded the highest increase in income and households of employees recorded the highest increase in expenditure.

3. Significant changes were observed in the structure of household consumption expenditure. The share of expenditure on food, healthcare, as well as transport and communications is growing, while the share of expenditure on housing, clothing and shoes is decreasing and the level of these changes varies across groups of households.

4. The upward trend in disposable income and a slight increase in the share of expenditure on food and non-alcoholic beverages in total household expenditure indicate the cessation of Engel's law.

5. The decreasing share of consumer spending in household disposable incomes shows a decreasing propensity to consume and an increasing propensity to save, which suggests that the growing level of income accumulation will contribute to an improvement in household economic welfare in the future.

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MOTIVATORS AND DEMOTIVATORS FOR EMPLOYEES

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Abstract

Employee motivation is the basis of effective human resource management. A properly designed motivational system and an adequate selection of motivation drivers elicit employee behaviour desirable from the employer's standpoint and thus play a decisive role in the organisation's success. This study aimed to identify factors that have a motivating and demotivating effect on the workforce, as well as to determine the motivational intensity of selected incentives. The empirical research also covered the influence of conflicts – interpersonal and intrapersonal – on the motivation levels among the employees, and the effectiveness of motivational systems applied in the organisations. The findings were obtained through a Web study (CAWI) conducted with the use of a survey questionnaire distributed by electronic means. According to the respondents, the most effective motivation driver is the level of remuneration. This factor is a priority mainly for people with a lower income, lower status and shorter work experience. A positive atmosphere at the workplace turns out to be the second most important driver, whereas non-financial benefits rank third. Furthermore, the poll demonstrates that the level of employee motivation is largely affected by conflicts between employees, employees and their managers, or those of an internal nature. Irrespective of their character and development, antagonisms generate a slew of negative consequences, such as weaker engagement in the job, increased staff fluctuation, a drop in work efficiency and the manifestation of unfavourable attitudes among staff members.

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Słowa kluczowe: motywacja pracownicza, motywatory, demotywowatory.

Abstrakt

Motywacja pracownicza stanowi podstawę skutecznego zarządzania zasobami ludzkimi. Właściwie skonstruowany system motywacyjny oraz odpowiednio dobrane narzędzia motywowania determinują pożądane przez pracodawcę zachowania pracowników, a w rezultacie przesądają o sukcesie przedsiębiorstwa. Celem publikacji było zidentyfikowanie czynników, które działają motywująco i demotywowująco na kadre pracowniczą oraz określenie siły oddziaływania wybranych bodźców na motywację do pracy. W opracowaniu podjęto również wątki influencji konfliktów – interpersonalnych i intrapersonalnych – na poziom motywacji pracowników oraz efektywności systemów motywacyjnych w organizacjach. Zaprezentowane wyniki pozyskano w badaniu online (CAWI), z wykorzystaniem kwestionariusza ankiety udostępnionego drogą elektroniczną. Najskuteczniejszym czynnikiem motywacyjnym, w opinii respondentów, jest wymiar wynagrodzenia. Czynniki te priorytetowo traktują głównie osoby o mniejszych zarobkach, niższym statusie i stażu zawodowym. Na drugim miejscu w rankingu ważności motywatorów znalazła się dobra atmosfera w miejscu pracy, a na kolejnym benefity pozapłacowe. W wyniku badań sondażowych wykazano również, że na poziom motywacji pracowniczej w dużym stopniu rzutują konflikty uwidaczniające się między przełożonym i pracownikami, współpracownikami, jak również te o wymiarze wewnętrznym. Antagonizmy, niezależnie od ich natury i przebiegu, generują wiele negatywnych następstw, jak chociażby: mniejsze zaangażowanie pracowników, większa fluktuacja personelu, niższa wydajność pracy, ujawnienie się nieprzychylnych postaw członków organizacji.

Introduction

Despite numerous studies devoted to the problem of employee motivation, the search for answers to the questions: “What motivates people to work, and to what extent?” and “What are the factors demotivating employees?” seems to be still relevant and useful. The problem of motivation and demotivation to work is important from the cognitive and practical point of view. It is undoubtedly an important issue worth studying comprehensively and in-depth. The dynamically changing environment of organisations can “modify” an employees’ approach to work and motivation. Therefore, an attempt was made to identify the factors that motivate and demotivate the workforce and to determine the strength of their effect on work motivation. The questionnaire survey was limited to working residents of the Warmia and Mazury Voivodeship.

The findings were obtained through a Web study (CAWI) conducted with the use of a survey questionnaire distributed by electronic means.

Work motivation – the essence, types and motivating and demotivating factors

Motivation is considered “the driving force” behind human action. It is the “mental regulatory process which fuels human behaviour with energy and gives it a direction” (*Encyklopedia Powszechna PWN*, 2009, p. 185).

Literature usage of the notion is marked with ambiguity. Motivation is often equated with the intention to do something of purpose-driven behaviour (Armstrong, 2007, p. 215). Stevenson (2002, p. 1, 2) defines it as “an incentive, an inducement, or a stimulus for action. [...] anything – verbal, physical, or psychological – that causes somebody to do something in response”. Motivation is thought to be an endogenous mechanism triggering and organising human behaviour oriented at the attainment of a goal (Król & Ludwiczynski (eds.), 2019, p. 317-333). Motivation is also “a leadership process that uses knowledge about behavioural factors to influence human behaviour” (Kacprzak-Biernacka *et al.*, 2014, p. 3). In management theory, motivation is a factor determining the level, direction and durability of the work effort (Mazur, 2013, p. 157).

Motivation has many natures and dimensions. It may refer to an individual or a group of workers. Generally, the literature distinguishes intrinsic (autonomous, coming from within) and extrinsic (instrumental) motivation, as well as positive and negative motivation.

Intrinsic motivation arises from within the individual and requires no external impulse (Kozłowski, 2020, p. 206). “It drives us to achieve values for their own sake” (Kacprzak-Biernacka *et al.*, 2014, p. 4). It stimulates job interest and engagement, increases flexibility in thinking and acting, fosters creativity, affects mental health and positively impacts interpersonal relations. The theory of self-motivation relies on three pillars (Pink, 2011, p. 91). These include a sense of:

- autonomy – the employee is free to decide what they are working on, how, when and with whom (freedom at the level of tasks, time, methods, relations);
- mastery – the employee wishes to grow in the areas they find important (seeking mastery);
- purpose – the staff members feel that their work has a meaning; the goal set for the employee must be specific, important and useful.

According to Penc (2000, p. 45-48), intrinsic motivation depends on personal qualities and dispositions, such as perception, amicability, ability to focus or find your place in a situation, learning speed, task engagement and openness.

Extrinsic motivation is oriented to an external gain. Typically, it involves a more or less elaborate system of rewards and punishments complete with rules for their distribution. In an economic organisation, rewards are primarily associated with remuneration (its level, raises) but also other financial and non-financial benefits from the boss, such as words of praise, respect towards the employees and promotion. Punishments include warnings, reprimands, and financial penalties (Michalik, 2005, p. 77).

Negative motivation relies on fear, anxiety, and insecurity which “drive [people] to work by inspiring a sense of threat” (Dolot, 2015, p. 23). It relates to defence mechanisms which, within an organisation, essentially boil down to the fact that employees are strongly motivated in two situations – the fear of losing a reward or facing punishment.

Meanwhile, positive motivation is based on positive reinforcement. It is equated with employee behaviour driven by “aiming for” a higher position, better remuneration or greater autonomy.

The effectiveness of the incentive scheme of an organisation is largely determined by its selection of employee motivation drivers. These constitute an array of both economic (monetary and non-monetary) and non-economic factors. The latter plays a crucial role in three fundamental operational areas of the business (Jaska & Włodarczyk, 2009, s. 71; Kopertyńska, 2002, s. 55):

- organisational (promotion, authority, high level of autonomy and responsibility, flexible hours, access to information, etc.);
- technological (suitable equipment, ergonomic workstation design, etc.);
- psychological (prestige, recognition, words of praise from the boss, job certainty, friendly atmosphere, opportunity for self-fulfilment).

The available literature devotes considerable attention to wage motivators such as the level of basic pay, pay rise, bonuses and awards (Prędko, 2020, p. 165). Increasingly, however, employees value non-wage motivators, which include: the possibility of self-realisation, a pleasant atmosphere in the workplace, opportunities for personal development of employees, promotion and covering the costs of training and workshops (Leśniewski & Berny, 2011, p. 99-105; Nogalski & Niewiadomski, 2019, p. 427-446; Garstka, 2015, p. 53-60). Non-wage motivators reinforce the motivational impact of wage incentives and act autonomously, and “their effectiveness is particularly important to employees with highly developed social and self-fulfillment needs” (Krzątowska & Jagodziński, 2015, p. 50). However, it is impossible to unequivocally state which motivators are more effective for a company, and their selection seems to be an individual issue (Tokarska-Ołownia, 2019, p. 163). Although some motivators may strongly influence some organisation employees, motivating them to work, they may influence others to a significantly lesser extent and, for others, they may even be perceived as work demotivators (e.g. travelling to a training course in the form of a dynamic workshop) (Dolot, 2015, p. 26).

Demotivating factors are understood as persistent and annoying events that frustrate employees and reduce the amount of productive energy they use at work (Spitzer, 1995, p. 56-60). These factors include ignoring employees, their ideas and suggestions, receiving praise by an employee for team successes, an absence of interest in an employee as a human being, publicly criticizing staff, inconsistent actions by the supervisor, lack of a clearly defined range of responsibilities, unclear reporting rules and issuing orders without consulting or communicating with employees (Line, 1992, p. 4-7). In the literature

on the subject, attention is also drawn to such demotivators as: underdevelopment or overdevelopment of formal bonds, defectiveness of the system of selection and promotion of employees, the inadequacy of the method of management, formalism, defectiveness of the proportion of rewards and punishments and ritualism (Podgórecki, 1974, p. 61). Demotivation of an employee may result from both factors occurring in the organization (external factors) and factors inherent in the employee (internal factors) (Dolot, 2015, p. 26).

Recent studies devoted to the issue of motivation have focused primarily on non-wage motivation factors affecting employees achieving their own professional and life goals.

Modern organisations depart from the carrot-and-stick approach to employee motivation. Multiple studies have demonstrated that both of these forms of impact on the individual (punishments and rewards) have little effect as motivation drivers. In fact, they often elicit competitive behaviour associated with impaired communication, disinformation, intentional misguidance and less efficient teamwork. Therefore, supporting self-motivation appears to be the key to boosting employee engagement and work efficiency.

Since every person has a value system encompassing both universal and personal values (Stachowska & Czaplicka-Kozłowska, 2017, p. 102), motivation is a complex process that involves a wealth of different aspects.

It is hard to imagine how an organisation could achieve its strategic goals without proper employee motivation. HR managers should be responsible for creating transparent and effective motivational systems based on the criteria of comprehensiveness and individuation. Properly motivated employees exhibit greater involvement in achieving the goals of the organisation, while simultaneously satisfying their own needs, desires, and aspirations (Knap-Stefaniuk *et al.*, 2018, p. 192).

Research methodology and study sample profile

This study focuses on identifying factors that motivate and demotivate staff and determine the strength of the impact of selected stimuli on work motivation. The study also addresses the influence of conflicts – interpersonal and intrapersonal – on the level of employee motivation and the effectiveness of incentive schemes in organisations. The results presented in the study were obtained through an online survey (CAWI). The research tool was a questionnaire composed of a demographic information part (6 questions) and the main part (13 questions).

The demographic section included questions on age, gender, education, work experience and the gross monthly salary of the respondents. The main part of the questionnaire contained questions relating to the research subject (i.e. associations of the respondents with the word “motivation”, factors motivating

and demotivating to work, the intensity of influence of particular motivators on the surveyed employees, assessment of interpersonal relations and the motivation system). The survey was conducted in the first half of 2019 and was restricted to working residents of the Warmia and Mazury Voivodeship. The survey was voluntary and resulted in 250 completed questionnaires, of which 140 (56%) were completed by women. The questionnaire included closed-ended questions (semi-open responses, and a defined list of responses: single-select and multi-select) and open-ended questions. Scaled questions allowed the respondents to present their feelings, opinions and preferences on the research topic.

Most respondents reported having secondary education (46.8%). A slightly smaller group had a higher education degree (31.6%). The percentages of people indicating lower secondary education and primary education were 6% and 15.6%, respectively. In terms of age, the largest group in the study sample included people aged 25-35. Nearly every fourth respondent fell within the 36-45 age group. The percentages of the youngest (aged 25 or less) and the oldest respondents (more than 55 years of age) were relatively similar (12.8% and 14.8%, respectively). The lowest gross monthly remuneration (less than PLN 3,000) was declared by 44% of the respondents and the highest (more than PLN 7,000) by 12% of the employees, chiefly those in managerial positions. Seventy respondents (28%) reported earnings in the range of PLN 3,001-5,000. The remuneration at the level of PLN 5,001-7,000 was declared by forty respondents (16%). The respondents with the shortest work experience (5 years and less) constituted 39.2% of the sample, whereas those with the longest work experience (more than 15 years) – 26.8%.

Employee motivation in the light of empirical research

Strongly motivated people have clearly defined goals and take actions aimed at their achievement (Armstrong, 2007, p. 211). Needless to say, such people may uphold their motivation on their own, which seems ideal. However, most people require an external “impulse”. Thus, a high level of employee motivation may be attained through the creation of suitable conditions by the organisation.

The issue of motivation is often treated only perfunctorily and reduced to a set of simple operational rules. Meanwhile, it is a complex, multi-dimensional process of a heterogeneous nature, which requires the organisation to skilfully and effectively encourage employees to act towards the achievement of business goals.

The respondents were questioned about their associations with the term “motivation”. They provided a total of 18 associations (Tab. 1). Most responses were given multiple times. Additionally, some respondents indicated that motivation “doesn’t bring to mind anything”, “brings to mind many things”, or that it was “difficult to say”. The most common associations were “money”, “willingness to act”, “incentive” and “encouragement”.

Table 1

Associations with the word "motivation"

Association	% of the responses	Association	% of the responses
Money/finances	23.5	engagement	2.3
Willingness to act	17.0	goal pursuit	1.8
Incentive	14.4	support	1.5
Encouragement	9.7	afflatus	1.2
Reward	7.0	impact	0.6
Bonus	7.0	ambition	0.6
Impulse	5.4	striving	0.3
Inspiration	3.2	internal power	0.3
Readiness to take action	2.9	perseverance	0.3

Source: own research.

A part of the research was to determine how intensely particular motivators affect the examined employees. According to the respondents – mainly women with the longest work experience and higher education – what does not inspire them to work are reprimands, warnings or participation in planning the tasks and goals of the organisation.

According to the respondents, the most important motivator was high remuneration. Slightly more than 55.5% of the study sample considered it a highly or very highly motivating factor. This response was indicated by respondents having primary education, lower secondary education, most of those with secondary education and a small group of respondents (chiefly male) with higher education. The factor was particularly important for respondents with shorter work experience. To a slightly lesser extent, employee motivation is affected by a positive atmosphere at the workplace (52% of the respondents viewed that factor as highly motivating or very highly motivating) and non-financial benefits (high or very high motivational intensity declared by 49.2% of the respondents). Lower positions in the ranking of importance were occupied by financial rewards, bonuses, a clear path for promotion, the opportunity for skills development at the expense of the company and the potential for self-fulfilment.

Source literature includes not only a broad account of issues relating to employee motivation but also an extensive presentation of demotivation. A demotivated employee has no organisational identification, fails to make an effort or underperforms in the achievement of the organisation's goals. Demotivation has multiple sources, a heterogeneous nature and may have the markings of temporariness or permanence.

Table 2

Motivator intensity in the opinion of the respondents (% of the responses)

Factors driving work motivation	Motivational intensity of the factor					
	not motivating	very poorly motivating	poorly motivating	averagely motivating	highly motivating	very highly motivating
High remuneration	0.0	12.0	15.6	16.8	20.8	34.8
Financial rewards	0.0	14.8	20.0	18.6	21.2	25.4
Bonuses	0.0	14.0	20.0	19.4	21.2	25.4
Opportunity for self-fulfilment	0.0	16.0	18.6	22.8	22.0	20.6
High level of autonomy	0.0	13.2	24.0	24.0	19.0	19.8
Opportunity for skills development	0.0	14.8	18.3	20.8	24.0	21.2
Fear of losing the job	0.0	24.4	25.6	16.8	16.0	17.2
Participation in task and goal planning	11.2	14.8	20.4	24.4	12.0	18.1
Clear path for career growth	0.0	16.0	17.6	24.0	21.6	20.8
Appreciation from the boss	0.0	12.8	16.8	20.4	25.6	24.4
Positive atmosphere at the workplace	0.0	12.4	15.6	20.0	25.0	27.0
Non-financial rewards	0.0	12.4	18.0	20.4	22.8	26.4
Threat of degradation	0.0	22.0	18.0	22.0	19.6	18.4
Reprimands, warnings	28.8	25.6	17.6	16.0	8.0	4.0
Partial loss of remuneration	0.0	24.0	23.6	19.6	16.4	16.4
Work-life balance	0.0	14.4	14.4	27.2	26.4	17.6

Source: own research.

The most common demotivating factors indicated by the respondents included low remuneration, the absence of a clear motivational system in the company, stagnant remuneration, the lack of opportunity for career growth and a negative atmosphere at the workplace.

Three of the demotivating factors indicated by the respondents related directly or indirectly to the financial aspects of the job, i.e. the remuneration system. Money (the level of remuneration, raises or cuts, remuneration rules, bonus availability) has varying motivational effectiveness depending on the situation and the employee in question. Therefore, it seems important to profile employee needs and personalise financial incentives to prevent a decline in the levels of work motivation. Research shows that employee demotivation frequently results from factors such as the absence of opportunity for career growth (lack

Table 3

Factors affecting employee demotivation

Demotivating factors	Number of responses	Demotivating factors	Number of responses
Unclear division of responsibilities	59	lack of opportunity for career growth	128
Leadership conflict at the organisation	3	lack of response to the problems raised	29
Lack of a clear motivational system	142	lack of meaning/purpose of the efforts	44
Low remuneration	191	lack of appreciation from the boss	82
Remuneration inadequate to the job performed	66	negative atmosphere at work	92
Disinterest in the needs of the employees	42	lack of bonuses	84
Lack of respect from the boss	48	“unhealthy” interpersonal relations	45
Unwarranted criticism from the boss	11	job uncertainty	6
Excessive control	26	responsibility overload	14
Stagnant remuneration	132	insufficient information flow	10

Source: own research.

of perspectives for a promotion or the development of hard skills) and a negative atmosphere at the workplace (for instance: unhealthy competitiveness, envy, unprofessional team leadership)

The findings clearly demonstrate that a significant motivation driver is an atmosphere that stimulates the development of harmonious interpersonal relationships and prevents internal strife. The respondents are aware of the inevitability of conflicts with the organisation, but appear to focus mainly on their negative consequences, even though the literature highlights their stimulating role as well (for instance, their influence on growing employee motivation). The study sample indicated that conflicts (intrapersonal and interpersonal) definitely reduce work motivation (67.6% of the responses). Only 1.8% did not observe their negative impact on employee motivation. According to the respondents, the most common negative consequences of conflict, other than diminished motivation, include weaker engagement in the job, increased staff fluctuation, a drop in work efficiency, the manifestation of unfavourable attitudes among staff members (aggression, hate, disinformation, etc.) and worsening health conditions among the employees.

In their assessment of interpersonal relationships in an enterprise, the respondents considered three areas: the direct manager–subordinate relationship, the employee–employee bond and internal communication.

Table 4

Interpersonal relations according to the respondents

Relationship type	Assessment of interpersonal relations (% of the responses)				
	very poor	poor	no opinion	good	very good
Direct manager–subordinate relationship	16.0	16.4	9.6	40.0	18.0
Employee–employee relationship	11.2	14.0	10.0	37.6	27.2
Communication within the organisation	12.4	17.2	13.6	38.8	18.0

Source: own research.

The direct manager–subordinate relationships were assessed at least positively by 58% of the respondents with the prevailing percentage of women having average work experience (6-10 years). As many as 16% of the respondents viewed these relationships as very poor. A relatively high percentage had no clear opinion on the matter. Meanwhile, bonds between co-workers met with a far more enthusiastic appraisal. Nearly every third respondent considered them good, and every fourth considered them very good. Interpersonal communication was viewed positively by almost 39% of the respondents and very positively by 18%. The answers “poor” and “very poor” in this area were marked by 17.2% and 12.4% of the respondents, respectively.

Furthermore, the respondents were asked to assess the motivational system applied by their employers. Approximately 10% of the study sample declared that the employee motivational system at their current work establishment was effective. Nearly 25% regarded it as relatively effective and approximately 32.6% regarded it as rather ineffective. Only 5.4% of the respondents labelled it as ineffective. Relatively many (27%) were unable to provide an unequivocal assessment (“difficult to say”).

One of the respondents (employed in the IT industry) included a relatively broad account of the motivational system implemented at his work establishment. He pointed to the use of referral bonuses and spot bonuses. Moreover, his company offers a range of benefits and extra services such as private healthcare (also for family members), a MultiSport card, financing or co-financing of employee training, design of individual career paths, face-to-face meetings between the leader and the employees, regular massage sessions, company parties and outings. Another significant factor is the open-door policy (team leaders are on a first-name basis with employees and share the same rooms), which undeniably contributes to employee integration, greater engagement of the staff and work efficiency.

Almost every eighth respondent was definitely content (mainly women), while every fifth was rather content with their job. 14% of the respondents expressed definite discontent. These opinions found their reflection in the distribution of responses regarding the wish to change jobs. More than half of the respondents were not interested in job offers from other establishments, 27.2% would consider such an option, albeit upon deep thought, analysis or consultation with family members.

Conclusions

The perception of the employee role in an organisation has evolved over the years. Nowadays, the theory of human resource management places emphasis on treating the staff as subjects. The employee is viewed not only as an important resource but, above all, as a person who creates the image of the organisation. Dedicated employees appear to be one of the crucial values of the company (Rosłon & Ciupiński, 2017, p. 13), so the employers should support their needs of autonomy, their pursuit of mastery and creativity. The opportunity for participation and a role in decision-making undeniably encourages greater affective engagement and more efficient work efforts (Pawlak, 2015, p. 61).

The survey study demonstrates that financial factors (level of remuneration) continue to present the most important incentive for work, even though their importance is particularly accentuated by the less educated employees who occupy lower positions and have shorter work experience. The employees are also highly affected by non-financial motivators such as a positive atmosphere at the workplace or non-financial benefits such as training (traditional and online), private healthcare, life insurance and fitness club cards. Meanwhile, negative factors (warnings, reprimands) prove to have the least effect on employee motivation.

The poll results indicate that many employers seem to recognise the tangible benefits related to proper employee motivation. On the other hand, some businesses can still hardly present a formal motivational system or a set of motivators attractive from the employee's standpoint.

Motivated employees are key to the long-term growth of an organisation. Therefore, it is important to inquire about the expectations, ambitions and professional preferences of prospective workers as early as the level of recruitment. People (or in the context of the findings, motivated people) appear to be one of the most critical investments for an organisation.

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APPLICATION OF BUDGETING IN SELECTED MUNICIPAL COMPANIES IN THE WARMIŃSKO-MAZURSKIE VOIVODESHIP

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Abstract

This study aimed to determine the scope to which budgeting is used as a management method in selected enterprises of the municipal sector in the Warmińsko-Mazurskie Voivodeship. The research goal was achieved through the following tasks: identification of the reasons for and methods of budgeting used in enterprises of the municipal sector in the Warmińsko-Mazurskie Voivodeship and determining the methods of controlling budget implementation in the examined entities.

The use of budgeting in the practice of Polish municipal enterprises, as well as the knowledge of how to use this management instrument, seems to be relatively common. Nevertheless, there are still entities convinced of the insufficient amount of benefits resulting from budgeting and that these benefits may be lower than the labour input and costs incurred in budgeting.

Research has revealed that budgeting is used primarily in medium and large companies with annual revenues of over PLN 50,000,000 and employing over 200 employees. An important feature that connects all entities using budgeting is the desire to reduce costs and improve financial results. The desire to increase internal control and make more effective decisions was the main reason for the implementation of budgeting in these enterprises. The dominant methods of budgeting are the top-down and incremental methods. Budget control is exercised by various people and units. Disclosed deviations most often relate to exceeding the planned level of costs and failure to meet the deadlines for renovation and investment tasks.

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WYKORZYSTANIE BUDŻETOWANIA W WYBRANYCH SPÓŁKACH KOMUNALNYCH W WOJEWÓDZTWIE WARMIŃSKO-MAZURSKIM

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Słowa kluczowe: budżetowanie, spółka komunalna.

A b s t r a k t

Celem badań było określenie zakresu wykorzystania budżetowej metody zarządzania w wybranych przedsiębiorstwach branży komunalnej w województwie warmińsko-mazurskim. Cel badań zrealizowano przez wykonanie następujących zadań: identyfikacja przesłanek i metod budżetowania występujących w przedsiębiorstwach branży komunalnej w woj. warmińsko-mazurskim oraz określenie sposobów prowadzenia kontroli realizacji budżetu w badanych podmiotach.

Wykorzystanie budżetowania w praktyce polskich przedsiębiorstw komunalnych, jak również wiedza dotycząca sposobów korzystania z tego instrumentu zarządzania wydają się być stosunkowo powszechne. Mimo to istnieją wciąż podmioty przekonane o niedostatecznej skali korzyści płynących z budżetowania oraz o tym, że korzyści te mogą być niższe niż wkład pracy i koszty poniesione na budżetowanie.

Na podstawie przeprowadzonych badań stwierdzono, że budżetowanie jest stosowane przede wszystkim w spółkach średnich i dużych, o rocznych przychodach kształtujących się na poziomie ponad 50 000 000 zł i zatrudniających powyżej 200 pracowników. Istotną cechą, która łączy wszystkie podmioty wykorzystujące budżetowanie jest chęć redukcji kosztów i poprawy wyników finansowych. Dążenie do zwiększenia kontroli wewnętrznej i podejmowania skuteczniejszych decyzji było główną przyczyną wdrożenia budżetowania w tych przedsiębiorstwach. Dominującymi metodami budżetowania są metoda odgórna i przyrostowa. Kontrola budżetu jest sprawowana przez różne osoby i komórki. Ujawniane odchylenia najczęściej dotyczą przekroczenia planowanego poziomu kosztów oraz niedotrzymania terminów realizacji zadań remontowych i inwestycyjnych.

Introduction

One of the basic tasks of local government authorities is conducting business activities, particularly in the field of public utilities. This area is served by municipal economic entities¹. Although water and sewage companies, heating plants, public transport companies and municipal waste management companies fulfil the statutory obligations of local governments, they must conduct their activities in such a way as to maintain the ability to develop and adapt to the

¹There are also budgetary units and entities in this area, which operate under the regulations of public sector accounting rules.

growing requirements of environmental protection. Due to these circumstances, processes related to the broadly understood domain of resource management are becoming increasingly important in municipal enterprises. They necessitate, among others, searching for more and more optimal management methods to ensure rational and effective use of both resources and planning. Budgeting, defined as a method of managing an economic entity, supporting the processes of planning, organising, motivating and controlling, plays a significant role in this process.

Budgeting, as a method of enterprise management, as well as a component of financial planning, is the result of translating the category of public finance into corporate finance. The very concept of budgeting, characterised in many ways in the literature, can be reduced in the simplest sense to a management method, in which the planning and use of financial resources are harnessed towards the effective operation of the enterprise. There is a strong link between budgeting and management functions. However, there is no single, proper, typical budgeting scheme that can be used by every entity. Choosing a budgeting method also means the necessity to strictly adhere to the rules that aim to standardise the entire budgeting process. The budgeting procedure should undergo review as well.

The present research aims to determine the scope to which budgeting is used as a management method in selected enterprises of the municipal sector in the Warmińsko-Mazurskie Voivodeship.

The research goal was achieved through the following tasks:

- identification of the premises and methods of budgeting used in enterprises of the municipal sector in the Warmińsko-Mazurskie Voivodeship;
- determining the methods of controlling budget implementation in the examined entities.

Only companies have been examined in this research. Budgetary units and entities, which operate under public accounting rules, were not involved in this research.

Budgeting in the literature

Budgeting as an instrument of management and accounting supports the achievement of the company's goals. It forms an obligation to apply appropriate rules and procedures that will guide the use of the enterprise's resources so that it agrees with its mission (Nita, 2014, p. 98). Covaleski and Dirsmith (1983, p. 323) emphasise that in traditional terms, budgeting is one of the instruments of control over activities carried out at the middle and basic level through the flow of information "downstream" of the organisation². As the surroundings

² A similar view is presented by Dynowska and Bartoszewicz (2014, p. 173) that budgeting as a method of monitoring the degree of achievement of the company's goals is one of the instruments of internal control.

of an organization evolve, and project management and its tool – budgeting – gain growing recognition, managers are forced to enhance their awareness of the dysfunctional phenomena related to budgeting (Kochański, 2010, p. 287).

Through budgeting, all management functions are performed (Fig. 1).

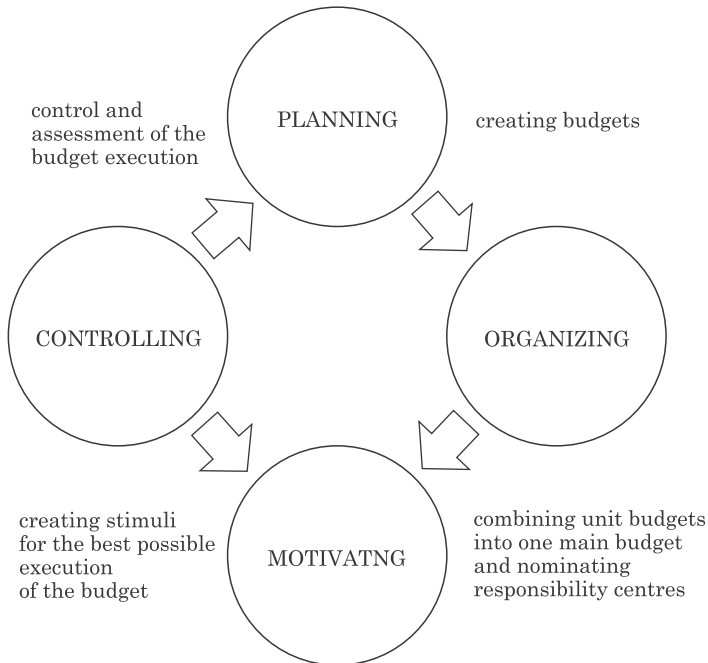


Fig. 1. Implementation of management functions through budgeting

Source: own research based on Nita and Nowak (2010, p. 16).

According to Dynowska and Kes (2010, p. 127), “the stage of budgeting consisting in creating budgets is conceptually and functionally similar to the planning function. Hence, the conclusion can be drawn that, in this respect, budgeting supports and even permeates planning”. Budgeting can be the basis for creating new or changing existing plans. Thus, in a way, it “forces” managers to design future activities. It consists of translating the company’s tangible plans into financial plans while taking into account the existing limitations (Nowak, 2010, p. 17).

Buk (2006) and Komorowski (1997) identify budgeting functions that favour effective management (Tab. 1).

Table 1

Budgeting Functions and Effective Management

Budgeting functions according to H. Buk	Budgeting functions according to J. Komorowski
Command function – systemic and detailed designation of tasks and means of achieving strategic and operational goals, and their coordination	command function – ensuring the use of the economic potential of the enterprise in pursuit of set strategic goals
Optimisation function – disciplining costs, limiting expenses and promoting the best economic decisions	optimisation function – shaping the most economically advantageous development of the company
Information function – obtaining systematic knowledge about the degree of achievement of goals and the use of funds at all levels of management	the function of economic equilibrium – maintaining proper balance relations and financial liquidity of the company
Motivational function – providing an objective, numerical basis for assessing the work of employees and managers and the effects of the functioning of internal units of the organisation	motivational function – use of financial incentives to induce positive attitudes of employees
Control function – assessing the purposefulness and effectiveness of the activities carried out so far and drawing conclusions in a timely manner for a possible correction of the implemented plans	control function – controlling the processes of collecting and using financial resources in terms of purposefulness and efficiency of management

Source: based on: Buk (2006, p. 144, 145) and Komorowski (1997, p. 26).

Both authors emphasise the importance of functions such as command, optimisation, motivation and control. H. Buk also mentions the information function, while J. Komorowski stressed the economic equilibrium function.

It should be noted that criticism of traditional budgeting, based mainly on annual static budgets, has been growing for ca. 25 years (Hansen *et al.*, 2003). Traditional budgeting methods are often criticised for inflexibility and an excessive focus on resource allocation in the organisation. A contemporary, clearly noticeable trend is the implementation of flexible, decentralised budgeting systems strongly related to the use of key performance indicators (KPI) (Popesko, 2018, p. 203). Cygańska and Marcinkiewicz (2014, p. 238) emphasise that the effectiveness of budgeting depends on its successful implementation.

According to Nowak (2010, p. 32), “it should be noted that budgeting is considered as one of the most politicized activities related to management, which is confirmed by the surveys conducted in American companies and other organizations”.

Characteristics of the surveyed entities

According to a study by the Provincial Statistical Office in Olsztyn, in 2019, 182 commercial companies in which local authorities had shares operated in the Warmińsko-Mazurskie Voivodeship, including (*Zmiany strukturalne...*, 2020, p. 17):

- 31 companies producing and supplying electricity, gas, steam and hot water (17%);
- 82 entities dealing with water supply and sewage management, as well as waste management (45%);
- 10 companies dealing in transport and warehouse management (5,5%);
- 20 real-estate companies (11%).

The companies that participated in this research have been selected in a purposive, quota manner. As part of the study, questionnaires were delivered to 43 selected municipal companies in the Warmińsko-Mazurskie Voivodeship (i.e. approx. 24% of such companies in the voivodeship) in the first quarter of 2020 (in person or via e-mail). The shares of the industries represented in this selected group were comparable to the shares in the voivodeship. Out of 43 entities, 24 agreed to answer the questions, while the remaining entities (21) refused to take part in the study without giving any reason. Unfortunately, due to the emerging pandemic situation, there was no possibility to increase the number of companies surveyed. Among the enterprises that participated in the study, the largest sized group was medium (10), followed by small (8), large (4) and micro-enterprises (2)³. They represented the following industries:

- water supply and sewage – 6,
- heating – 6,
- public transport – 4,
- municipal solid waste management – 4,
- municipal property management – 4.

Most often, the questionnaire was filled in by employees of the accounting department, in rare cases (2) it was also the person managing the unit or the only person (1). Each entity had operated for a period longer than five years, and their legal form was a limited liability company.

Out of 24 surveyed enterprises, 18 entities (75%) used budgeting, and six entities (25%) did not use budgeting (Fig. 2).

Figure 2 shows that the larger the enterprise, the more likely it used budgeting. All micro-enterprises and three out of eight small enterprises did not use budgeting. The use of budgeting was declared by larger companies – all (4) with the status of a large enterprise and nine out of 10 medium ones.

³ Criteria for classifying business entities in terms of size are included in the Act on the freedom of economic activity of July 2, 2004, Journal of Laws No. 173, item 1807.

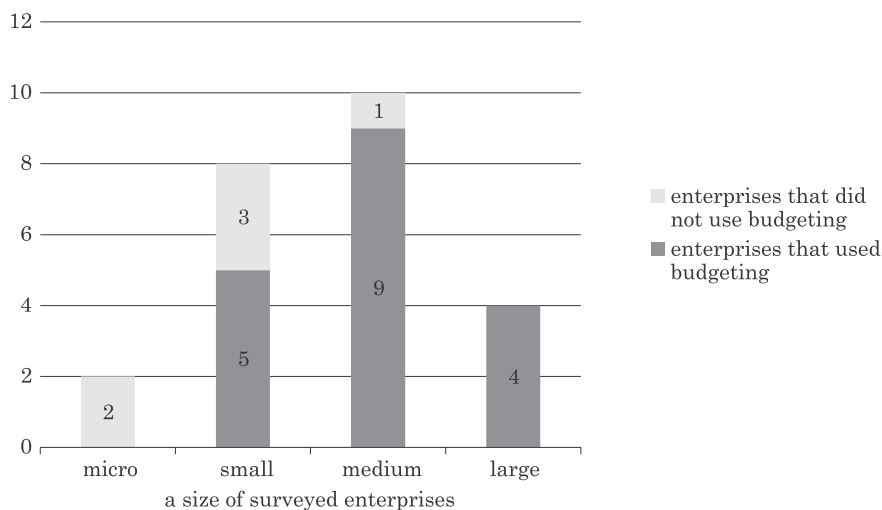


Fig. 2. The number of surveyed enterprises that used budgeting (n = 24)

Source: own research.

This is in line with international literature (e.g. Leone & Rock, 2002, p. 46; Seng & Yew, 2017, p. 83; Armitage *et al.*, 2016).

A detailed breakdown by industries and the size of the enterprise in the context of budgeting use is presented in Table 2.

The industry in which budgeting was used the least frequently was municipal property management (one company out of 4), and the only entity in this industry using budgeting was a small enterprise, while entities in which budgeting was not used were micro-companies (2) as well as a medium-sized company. In other industries, the vast majority of entities used budgeting, the few exceptions being small companies.

Table 2

The size and industry of enterprises in the context of their use of budgeting

Content	Water supply and sewage				Heat plants				Public transport				Municipal solid waste management				Municipal property management				Total
	micro	small	medium	large	micro	small	medium	large	micro	small	medium	large	micro	small	medium	large	micro	small	medium	large	
Not using budgeting	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2	0	1	0	6
Using budgeting	0	1	2	2	0	1	3	1	0	1	2	1	0	1	2	0	0	1	0	0	18

Source: own research.

Reasons for budgeting implementation

Table 3 presents a detailed distribution of responses from the surveyed companies (taking into account the possibility of multiple responses). The most frequently indicated reason for implementing budgeting in enterprises from the water supply and heating sectors was the desire to reduce costs and improve results (five companies from each industry). The second answer was “a shortage of information needed to make effective decisions” (three indications in the water supply industry and four in the heating industry).

Table 3

Reasons for implementing budgeting in the surveyed companies, by industry

Term	Water supply and sewage	Heat plants	Public transport	Municipal solid waste management	Municipal property management
Employees' expectations/requests	0	0	0	0	0
Increased pressure from competition	0	0	0	0	0
Unsatisfactory previous planning methods	0	0	0	0	0
A change in strategy	0	0	0	0	0
A desire to secure new markets, customers, contractors	0	0	0	0	0
Employees' sentiment favouring change	0	0	0	0	0
Implementation of new technologies	0	0	1	0	0
Availability of financing	0	1	0	0	0
Availability of human resources	0	1	0	0	0
A change in management	1	0	0	1	0
Requirement from head office	2	1	0	1	0
Change in management's information needs	0	2	2	0	1
Striving to improve control	1	3	2	0	0
Lack of information to make effective decisions	3	4	2	2	0
Desire to reduce costs and improve financial results	5	5	4	2	1

Source: own research.

Enterprises providing public transport services have also implemented budgeting with the hope of improving results by reducing costs (four indications). It was similar in the case of entities dealing with waste management and municipal property management (two indications and one indication, respectively). None of the companies indicated that the reasons for introducing budgeting were:

- employees' expectations/requests;
- increased pressure from competition;
- unsatisfactory previous planning methods;
- a change in strategy;
- a desire to secure new markets, customers, contractors;
- employees' sentiment favouring change.

All surveyed companies, regardless of the industry in which they operate, want to improve their financial results through budgeting.

The budgeting method chosen by enterprises during the implementation process has never been changed – all entities have declared this. Therefore, it can be assumed that it was well matched to the needs of these companies or that sufficient long-term experience has not yet been gathered to allow for the assessment and possible verification of the methods used. Three companies used the selected method of budgeting for less than a year, six (33.3%) used it for a period from one to three years, and the remaining nine enterprises (50%) used it for three years or longer. Based on the above results, it can be concluded that, in most cases, budgeting as a management method has been introduced relatively recently.

Companies participating in the study declared the use of four budgeting methods which are considered traditional:

- top-down,
- bottom-up,
- incremental,
- mixed (a combination of incremental and zero-based methods).

It was possible to indicate several methods, e.g. top-down and incremental.

Based on Table 4, it can be concluded that the dominant method of budgeting is the top-down method (16 companies). Only two companies indicated the bottom-up method. This indicates a relatively low level of participation of responsibility centres in budget preparation and broad prerogatives of budget teams appointed by management boards. At the same time, the municipal entities covered by the study largely favoured the incremental method, in which the new budget is created on the basis of the budget realised in the previous year, subject to an appropriate

Table 4

Budgeting methods in enterprises by industry

Industry/budgeting method	Top-down	Bottom-up	Incremental	Mixed
Water supply	5	–	5	–
Heat plants	4	1	4	1
Public transport	4	–	4	–
Municipal solid waste management	2	1	2	1
Municipal property management	1	–	1	–

Source: own research.

update. It is a relatively cheap and quick method of budget preparation, but at the same time widely criticised for the possibility of contributing to a waste of certain resources, the non-objective nature of the budget, or the efforts of managers to spend all available funds in fear of limiting the budget in the future (cf. Świdorska (Ed.), 2010, p. 472, 473; Gmińska, 2011, p. 370). Only two entities out of 18 which used budgeting employed the mixed method, in which, in selected responsibility centres, budgets were prepared using the zero-based method.

The choice of the method was most often determined by:

- the management board (6 entities),
- the chief accountant (4),
- the management board in consultation with the chief accountant (5),
- the director in consultation with the chief accountant (3),

Control in the budgeting process

In small and medium-sized municipal enterprises covered by the study, the chief accountant was most often responsible for budget control. In large enterprises, a special budget committee is appointed for this role. However, this is not a ubiquitous practice. As shown in Table 5, in small municipal enterprises participating in the study, the budget is also controlled by the director and the financial department or the president of the board. In medium-sized entities, verification is carried out by the controlling department, the director or the financial department. In large companies, budget implementation is controlled by the controlling department and responsibilities are divided: managers of individual organisational units are responsible for partial budgets and the chief accountant is responsible for the entire budget.

Table 5

Responsibility for budget control in the surveyed entities, by municipal sector

Term	Water supply	Heat plants	Public transport	Municipal solid waste management	Municipal property management
Controlling Department	0	3	0	0	0
Committee on Budgets	2	0	0	0	0
Managers of individual units (partial budgets), chief accountant (total budget)	0	0	1	0	0
Director	2	0	3	0	0
Chief Accountant	3	1	2	1	1
Finance Department	0	0	1	2	0
President of the Management Board	0	1	0	0	0

Source: own research.

The most frequently indicated answer by small, medium and large enterprises to the question regarding budget deviations revealed during control is exceeding the planned cost level (6 entities). The second-most indicated type of deviation (five enterprises) is the postponement of deadlines for the completion of renovation/investment tasks.

Apart from those mentioned, the following were also indicated:

- planning inaccuracy, such as exceeding/underestimating individual cost items;
- over-planning/under-estimation of individual budget items.

Most enterprises (in each industry) declared that detecting deviations during budget control prompted them to perform detailed analysis and constituted the basis for changes in budget implementation and budget assumptions for future periods. Only four companies used the detected deviations to assign responsibility to specific persons from relevant responsibility centres. In addition, the surveyed entities declared that the deviations were:

- the basis for creating reports,
- the basis for creating incentive systems.

Conclusions

The use of budgeting in the practice of Polish municipal enterprises, as well as the knowledge of how to use this management instrument, seem to be relatively common. Nevertheless, there are still entities convinced of the insufficient amount of benefits resulting from budgeting, and that these benefits may be lower than the labour input and costs incurred in budgeting.

Based on the research, the following conclusions were drawn:

1) Budgeting is used primarily in medium and large companies within the surveyed group, with annual revenues of over PLN 50,000,000 and employing over 200 employees. This is mainly due to a greater awareness of the benefits of budgeting, a suitably numerous management team and the complexity of processes and activities carried out in individual spheres of activity of such entities. Smaller enterprises, having fewer resources and operating on a smaller scale, did not implement this method of management.

2) An important feature that connects all entities using budgeting is the desire to reduce costs and improve financial results. The desire to increase internal control and make more effective decisions were other factors that led these companies to introduce budgeting.

3) The dominant method of budgeting within the surveyed group is the top-down method. This indicates a relatively low level of participation of responsibility centres in budget preparation and broad prerogatives of budget teams appointed by management boards. At the same time, municipal entities covered by the study largely favoured the incremental method, in which the new budget is created based on the budget realised in the previous year, subject to an appropriate update.

4) Budget control is exercised by various people and units. Disclosed deviations most often relate to exceeding the planned level of costs and failure to meet the deadlines for renovation and investment tasks.

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