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EDUCATION AND FACTORS AFFECTING THE BUSINESS OF VOLUNTARY PENSION FUNDS IN SERBIA

Abstract: *This paper analyses the influence of economic, demographic and behavioural-economic factors on the business parameters of Voluntary Pension Funds (VPFs) in Serbia. The main objective of the research is to examine which factor or group of factors have the most significant impact on the amount of VPFs. There are seven VPFs in Serbia, with a total of 220,714 users. The economic indicators include: GDP/Cap, wages, poverty and unemployment rate. Demographic indicators include education level and gender distribution. For behavioural factors, we rely on Richard Thaler's model (2012), according to which people pay larger sums of money into pension funds as they approach retirement, rather than doing so in the years when they are at their best productive and financial shape. PCA and SEM techniques were used in the research. After performing PCA, the BE&E, G&W and W&P scores were isolated. By looking at the β coefficients, the effects of BE&E and W&P on the amount of funds were statistically significant. When BE&E jumps by one point, the amount of funds increases by 8017.920. If W&P increases by one point, the amount of funds jumps by 3461.143. The most significant positive factor loadings that form BE&E are behavioral factor, tertiary education and GDP. The management of VPFs can influence the elimination of nudging and raising the level of education by investing in financial training, and by providing student scholarships. W&P leads to positive growth of the amount of funds over average monthly earnings, but since they depend on the overall business environment in the country, management has no direct influence.*

Keywords: *Education; economic factors; nudging; business parameter; insurance companies*

JEL Classification: *M21, G22*

1. Introduction

Voluntary Pension Funds (VPFs) are insurance companies, usually privately or jointly owned. VPF aims to preserve and increase the value by investing collected payments and contributions, and to secure a certain amount of private pensions for payment to beneficiaries. From the point of view of the theory of the firm (Coase, 1937) and in terms of accounting (Garrison et al., 2023; Pany & Whittington, 2024), VPF, like any company, prepares a Profit and Loss account and presents income and expenses within it. Income includes regular membership payments to VPF, dividend income, interest income, lease income, net gains from value adjustment of securities, net gains from the sale of real estate, etc. Expenses include payments of accumulated funds to VPF users, risks related to stock market operations, bills, wages for company employees, unforeseen costs and other expen-

ditures. These insurance companies, throughout history, tried to base their investments on diversification and prudence. A good example is the Austrian multilateral insurance company (Grazer Wechelseitege Versuherung, GRAWE for short), founded by Archduke Johann, back in 1828. The success story of this company lasts 195 years. Events like the two world wars, the stock market crash of 1873, the consequences of "Black Friday" in 1928, and the oil price shock of 1973, could not derail this company. The company's longevity is ensured by good regulation based on internal rules and external audits (GRAWE, 2024). For many years, VPFs were limited to investing in government-backed securities, *i.e.* bonds with a high credit rating and blue-chip stocks. However, the hypertrophy of the financial sector and certain legislation in the USA, in the first decade of the 2000s, caused VPFs to start investing in derivatives (Collateralized Debt Obligations-CDOs) and

less secure investments, which led to the Global economic crisis (Babić, 2012: 51).

VPFs play a role in overcoming the poor economic outlook of state pension funds and allow users to maintain a certain level of the investor's standard of living in times when monthly incomes begin to fall down due to retirement. There are open-access and closed VPFs. In the case of an open VPF, any person can invest in savings, while a closed VPF allows membership for persons employed with an employer, trade union members, and members of association for self-employed or self-employed persons (The Croatian Pension Insurance Company, 2024). According to Rajesh Kumar (Hung & Holdings, 2024), the VPF is established by employers based on contributions from employers and employees. The VPFs are operated by intermediary financial institutions on behalf of the company or internal pension funds of the enterprise. Our study explores and analyzes the influence of users' economic, demographic and behavioral-economic factors on the business parameters of VPFs in Serbia. The main goal of this paper is to determine which factor or group of factors have the greatest influence on the amount of VPF in Serbia.

2. Literature review

This section provides an overview of the literature on the impact of economic, demographic

and behavioral economic factors on pension funds. Among the economic factors, GDP, wages, poverty and unemployment were taken into account. Among the demographic factors, the level of education and gender were observed. When it comes to behavioral factors, they are viewed through the prism of nudge concept.

2.1. Economic factors and pension funds

This section analyzes the impact of GDP, wages, poverty and unemployment on pension funds.

2.1.1. GDP impact

In the mathematical analysis of the relationship between GDP and the development of pension systems (Nepp & Dolgodvorov, 2016), it was shown, through the derivation of the equation that there was a linear relationship between GDP and the share of pension contributions channelled to the funded pension system. The study proved that macroeconomic indicators, with a negative impact on GDP, affect the gradual

elimination of the compulsory-funded pension system. The Ukrainian study (Karmeliuk et al., 2018) pointed out the need to use econometric mediation to analyse socioeconomic indicators of living standard, which includes the level of pensions. The study proved that GDP growth affected the increase of minimum and average pensions in hryvnia and dollar equivalents. In the example of corporate VPFs in Vietnam, it was shown that the increase in the value of voluntary pension fund assets follows the higher growth rate of GDP (Hung & Holdings, 2024). According to Ferbero and Bermejo (2024), the weight of PAYG (pay-as-you-go) pensions, for citizens aged 65+, is 8% of GDP. The consumption of these citizens amounts to 6.7% directly or indirectly. The state of Spain returns 42 cents for every euro spent on pensions. Based on the author's projections, pensions will be sustainable in 2050, if taxes on profits rise or if exports grow hand-in-hand with pensions. The results of research conducted in Ghana (Ashley et al., 2019) showed a positive relationship between pension fund assets and Ghana's GDP. Through the regression model, it was revealed that pension fund assets explained 94.93% of the variability in the GDP of Ghana. Since it is an unstable financial market, the management of insurance companies is advised to monitor the market situation to find the optimal financial investment deal and ensure higher real returns on pension funds investments. Based on the results, the researchers suggest The Board of Trustees and other pension fund managers to pool resources to ensure sustainability of their long-term pension funds investment mandates (*ibid.*).

2.1.2. The impact of wages

The increase in salaries affects the amount of employee pensions, as a higher mandatory contribution to public pension funds is calculated on a higher salary. Higher salaries also give a larger scope for employees to start setting aside larger sums of money to invest in VPFs. Based on research on factors that affect retirement (Ngomba, 2020) it was determined that there was a positive correlation between income level and timely adoption of a pension plan by employees. According to Shiller and Weiss (1980), private pension funds increased from 1.7% to 4% of salaries in private companies. In the same period, coverage increased from 22% to more than 45% of all private wage and salary workers. In the States, it was analyzed (Woerheide, 1995) how salary, age of employees and length of career affect the choice of the form of the pension plan, i.e. defined benefit (DB) and defined contribution (DC). It was



established that the high salary growth rate and age of employees favoured DB pensions, while the longer career criterion favoured DC pensions. In a study that analyzed the income adequacy of DC for a comfortable post-retirement age of university employees (Adeyeye & Igbinsosa, 2015) it was proven that starting salary, entry age, year of service, and Consumer Protection Inflation affected the new pension. It was determined that the contributions of 15% of the employed were inadequate and that the review of contribution rates in line with prevailing economic conditions was needed to ensure the adequacy of pension income for university professors in Nigeria. An important factor that determines whether employees will retire in certain years of life or not, is the relation of productivity to alternatives (Lazear, 2105). If salaries, together with public and private pensions, deviate from worker productivity, private retirement incentives are distorted. This usually leads to early retirement, resulting in fiscal problems. Defined benefit pension plans promote retirement after a certain number of years of work. That is why the authors advise a long-term orientation towards Defined contribution plans because they do not lead to fiscal distortions and promote economic stability.

2.1.3. Poverty impact

The impact of poverty levels on contributions to compulsory pensions and VPFs in Australia was analyzed by Bradbury and Vipond (1986). The problem arises when it is necessary to measure whose pensions of poor citizens should be subsidized by the state. The authors suggest using a variant of Henderson's poverty line method to measure the ratio of citizens' poverty and minimum pensions. In a study covering the period 2004-2015, the positive impact of pension funds investments in financial assets on poverty reduction in Nigeria was proven (Abada & Okuma, 2017). A study by Li et al. (2023) evidenced links between poverty and pension funds. Using regression analysis, the authors proved that pensions had an anti-poverty effect in China, especially at the regional level. In a study conducted in 18 Latin American countries (Dethier et al., 2010), it was proven that alternative minimum pension schemes had an impact on poverty reduction, but that implementation depended on the country's fiscal capacity. Based on projections for the period 2010-2060 (Shang, 2014), an increase in the poverty of old people is predicted in all EU countries (by 1% on average) except in Cyprus. The biggest increase in poverty in this category is predicted for Bulgaria, Estonia, Greece, Poland and Sweden. Due to the unsus-

tainability of the public pension system in the long term, it is necessary to focus reforms on increasing enrollment in voluntary pension plans during working life, especially for vulnerable categories such as low-skilled and less-educated workers.

2.1.4. Unemployment impact

According to Spanish research (Penaïdo & Serrano, 2017), a 1% increase in the unemployment rate leads to a 0.135% reduction in pensions. In a study on the expectations of the unemployed and their impact on economic behaviour (Hartmann & Leth-Petersen, 2024), it was determined that higher unemployment expectations lead to a higher unemployment probability of investing in unemployment insurance and accumulation of savings. In an American study (Mahmoudi, 2023), Unemployment Insurance was shown to prevent older workers from depleting their 401(k) after losing their jobs. Late job loss reduces workers' chances of finding work again and thus reduces the likelihood that the unemployed will replenish their retirement savings after the exhaustion caused by job loss. A 401(k) plan is an employer-sponsored retirement savings program. The program offers a variety of tax benefits while helping workers plan for retirement on time. According to OECD research (2021), which analyzes the consequences of career interruption due to unemployment, employed men with an average salary and five years out of the labour market due to unemployment, will have a pension equal to 94% of the pension of a full-time worker on average across the 38 OECD countries.

2.2 Demographic factors and pension funds

2.2.1. Education impact

Based on the results of the research (Ngomba, 2020) there was a positive correlation between education level and the desire to plan and secure a pension, on time, during the employment relationship. A large number of studies have shown that high financial literacy has a favourable effect on the creation of a retirement plan (Alessie et al., 2011, Lusardi & Mitchell, 2007, Van Rooij et al., 2011b, Van Rooij et al., 2012). Research also shows that on-the-job financial training positively affects the new amount of retirement savings (Collins & Urban, 2016; Duflo & Saez, 2003; Kaiser et al., 2022). Harvey and Urban (2023) investigated the impact of financial courses required by the state in middle age on the probability of holding an amount in retirement accounts in adult-



hood (ages 25–40). The results showed that the effect of these personal finance courses on the probability of having any retirement account was close to zero for each cohort examined. Many studies highlight the positive importance of raising the financial literacy of employees in the form of seminars, written communications and website information, for retirement planning and increasing their participation in pension funds (Maki, 2001; Ntalianis & Wise, 2011). Based on the results of the study (Uwizeye & Mpogole, 2019), knowledge about different pension plans is a key influence for retirement planning among teachers in Burundi. Variables, such as level of education ($b=.06$, $p < .05$) and financial literacy ($b=.09$, $t=2.32$, $p < .05$) had a significant impact on the relationship between knowledge of pension schemes and retirement planning among interviewed educators. Stenberg and Westerlund (2013) studied the effects of tertiary education on the timing of retirement. Employees between the ages of 42 and 55 at the time of enrollment in tertiary education were selected for the sample. Based on the results, tertiary education increases survival rates in the labour market at the age of 61–66 by about 5 percentage points. The difference in earnings can be attributed to delayed retirement. In a Chinese study (Chen et al., 2022), it was proven that an additional year of education increased the pension by 3.5 percentage points. This statistics is more pronounced in women. The OECD study (2008) emphasizes why financial education is particularly important and how financial education programs on private pensions, retirement savings plans, and social security can be combined with other mechanisms to increase retirement savings and pension income. Based on the results of a survey conducted on 11,700 households in Poland (Pieńkowska-Kamieniecka, 2020), the level of financial literacy is low and, only a small percentage of Poles save additionally for retirement. Financial education should be focused on people with a low level of education because they have almost zero financial competence and a weak tendency to save. Using the example of the Australian Pension Fund, the impact of large-scale financial education intervention on retirement saving behaviours was analyzed (Ghafoori et al., 2021). In 2 years, the seminars created excess voluntary contributions worth 6% of the attending members' pension balances. The seminars were useful and profitable both for the Fund and for the members. Similar findings were obtained in an Italian study (Billari et al., 2023) that experimentally tested a low-cost, online literacy intervention program implemented with the largest employer-based pension fund in Italy. The software *Finlife* signifi-

cantly increased the financial and demographic survival literacy of participants and encouraged them to seek more information, to become more active in financial decisions and to increase contributions to VPFs. In a study on participation in pension funds in Indonesia (Samosir et al., 2020) it was determined that improving financial literacy had a positive effect on increasing citizens' awareness to independently participate in pension fund programs. By measuring financial literacy among LinkedIn members, it was determined that less than two-thirds of CFOs, CEOs, and COOs completed the test correctly (Anderson et al., 2017). According to study results, financial literacy, precautionary savings and retirement planning were positively correlated. However, the correlation is driven by perceived, not actual, literacy. Perceptions particularly encourage financial decision-making among low-educated respondents and are associated with incorrect beliefs about financial products and low willingness to accept financial advice.

2.2.2. Gender impact

An Italian study of 801 women (Angelici et al., 2022) has shown that women are more interested in pension schemes and retirement options after completing a short information training programme. After this training, they are better informed and more willing to receive additional information. A Turkish study (Bodur et al., 2023) provides some evidence of gender differences in decision-making and investment. Based on user data in the Individual Pension of Turkey, it was found that men are 17.6% less likely to make risky investments compared to women. The presence of a larger share of women with tertiary education and lower income contributes to the risk appetite. Research literature shows that the gender gap in pensions in the EU is 35.7%. The largest gap is in Malta, 46.1% (Dessimirova & Bustamente, 2019). The authors cited two types of factors as reasons: employment history and the design of the pension system. The growth of the gap in the period 2005-2010 of 1.7%, compared to the reduction of the gap from 2010-2017 of 5.2% is a good sign that the gap is closing.

2.3. Behavioural-economic factors and VPFs

We are following the trail of Nobel laureate in economics Richard Thaler, and his nudging theory (Thaler & Sunstein, 2012; Thaler, 2017). Thaler was awarded for contributions to the field of behavioural economics (Thaler,

2017). Every day we make decisions about various things, and often the wrong ones. Nudge is about how we make these choices and how we can improve them (Thaler, 2009; Thaler, 2018). Mistakes happen because no choice is neutrally presented to us, but we make decisions with bias. Based on the Thaler model, people make financial decisions with limited rationality, without enough self-control, impatient and short-sighted, concentrating more on the present than in the future. Younger employees generally opt for a financial decision that gives them immediate satisfaction, neglecting to plan for the future (Thaler & Sunstein, 2012; Cronqvist et al., 2018). People pay larger sums of money into pension funds as they approach retirement, instead of doing so in the years when they are in their best productive and financial conditions.

In the research, we test the following hypothesis:

H: Economic, demographic and behavioural-economic factors influence the change of the business variable "amount of VPF".

It is taken into account that there is a complex interaction between factors. Therefore, it is necessary to gain a deeper understanding of scenes. The main task of the study is to obtain a smaller number of latent variables by reducing the set of observed variables and to explore their impact on the VPF business parameter.

3. The research methodology

3.1. Data and methods

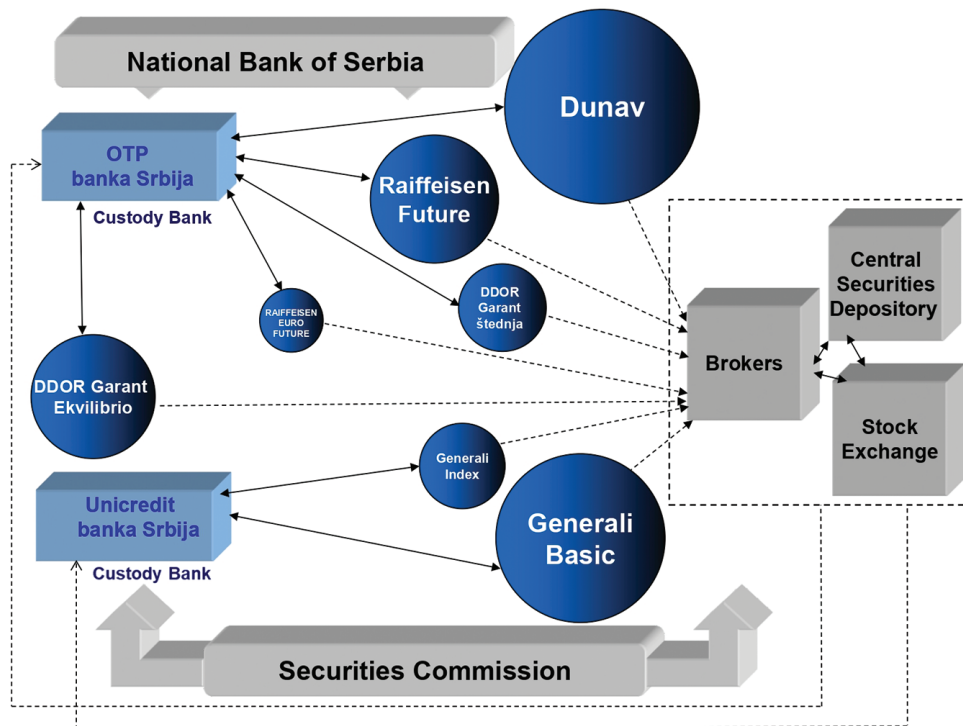
According to data from the National Bank of Serbia (2024), at the end of the fourth quarter of 2023, four management companies were operating in Serbia that managed the assets of seven VPFs, five intermediary banks, one intermediary insurance company and two custodian banks (Chart 1).

Economic, demographic and behavioural indicators were used in the research.

Economic indicators include: 1. Average monthly earnings in Serbia for the period 2014-2023 (Statistical Office of the Republic of Serbia, 2024), 2. Serbian GDP per Capita PPP (current int. \$), taken from the World Bank (2024a) in the form of time series, 3. The poverty gap at \$2.15 a day (2017 PPP), taken from the World Bank (2024b) as a time series, and 4. The unemployment rate for Serbia, taken from ILO (2024) as a time series.

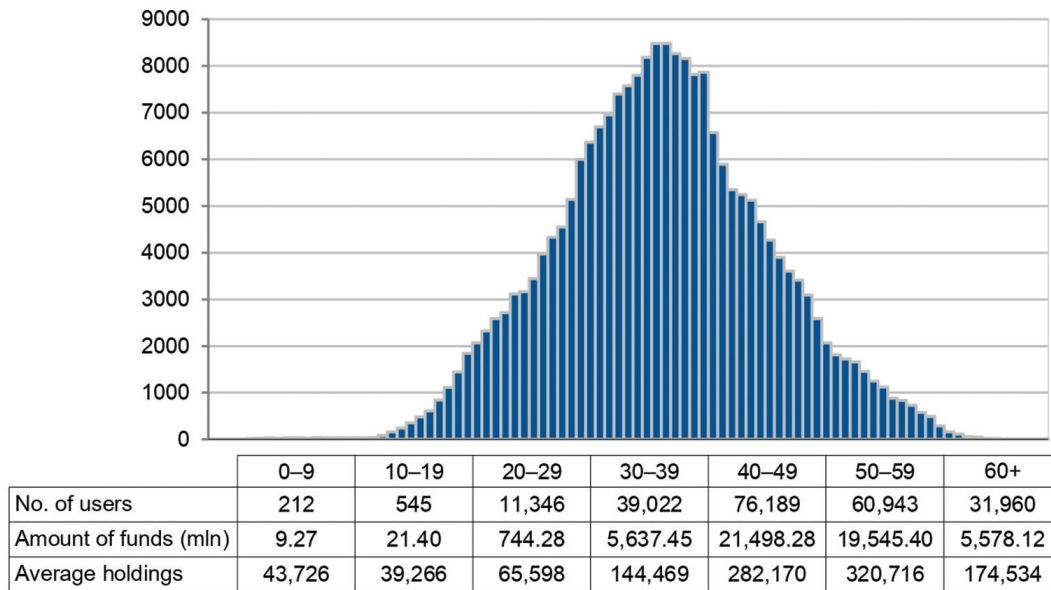
Demographic indicators include: 1. Population by educational attainment, annually in %:

- Low-educated population (less than primary, primary and lower secondary education, including three-year entrepreneurial schools (Eurostat, 2024)).
- Tertiary educated population, annually in % (Eurostat, 2024).



Source: National Bank of Serbia, 2024

Chart 1. Market participants



Source: National Bank of Serbia, 2024

Chart 2. Distribution of users and accumulated funds by age (RSD)

2. Distribution of total VPF users by gender, $N=220,714$. The sample is dominated by men with a 57% share (National Bank of Serbia, 2024).

The *behavioural indicator* includes the total number of VPF users by age, $N=220,714$ (Chart

2). The average age of users is 48 years. Most users are aged 40–60 (62.3%).

As an indicator for measuring the business success of VPFs, the variable *amount of funds* (Chart 2) was used. When it comes to this variable, by far the highest accumulated values were recorded for users 40–60 years old. Significantly less value was accumulated by users aged 20–39. Users pay significantly higher amounts into the fund after the age of 40. Users between the ages of 20 and 39, the members of a very productive working cohort, pay lower, often symbolic amounts into pension funds.

Principal component analysis (PCA) and the multivariate technique Structural Equation Modeling (Byrne, 2016) are used in the research from a methodological point of view. These methodological tools use multiple fit indices to confirm the suitability of a research model.

3.2. Principal component analysis

Eight observed variables were processed by PCA. We start from the basic model of PCA (Bro & Smilde, 2014), equation 1:

$$X = TP^T + E \quad (1)$$

that is, for a larger number of combinations, we expand the equation:

$$X = t_1p_1^T + t_2p_2^T + \dots + t_Rp_R^T + E \quad (2)$$

Where: $X (I \times J)$ is data matrix; The data are collected in a matrix X with I rows ($i = 1, \dots, I$; usually samples/objects) and J columns ($j = 1, \dots, J$; usually variables), $T (I \times R)$ are the scores, $P (J \times R)$ are the loadings, $E (I \times J)$ are the residuals, and R is number of principal components used to describe X

After performing the varimax rotation, the following results were obtained (Table 1). Three factors (components) were isolated. Taken together, they explained 98.36% of the total variance. The threshold for factor loadings in our sample size is set at ± 0.45 (Hair et al., 2019), while factor loadings with values of ± 0.70 are considered indicative of a well-defined structure, and they are the real aim of each factor analysis (Babić & Zarić, 2023). The cells with significant factor loadings are coloured in grey. The first factor score is called BEHAVIOURAL ECONOMICS & EDUCATION (BE&E) containing the following components in order of importance: number of VPFs users by age (0.996), unemployment rate (-0.889), the poverty gap at \$2.15 a day (-0.739), low education (-0.721), tertiary education (0.707), GDP per cap PPP (0.606) and average monthly earnings (0.484). The second isolated factor score GENDER & WAGES (G&W) is composed of the following significant factor loadings: gender (0.986), average monthly earnings (0.718), GDP capita PPP (0.669), low education (-0.569), tertiary education (0.545), and the pov-

Table 1. Rotated component matrix^a

	Component		
	BEHAVIORAL ECONOMICS & EDUCATION	GENDER & WAGES	WAGES & POVERTY
Number of VPF users by age	0.966	-0.078	0.212
Gender	0.050	0.986	0.105
Average monthly earnings in RSD	0.484	0.718	0.498
Poverty gap at \$2.15 a day (2017 PPP %)	-0.739	-0.465	-0.452
Unemployment rate	-0.889	-0.441	-0.091
Tertiary education, Ann. %	0.707	0.545	0.413
GDP Cap/PPP/Int. \$	0.606	0.669	0.412
Education less than primary, primary and lower secondary education, Ann. %	-0.721	-0.569	-0.392

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization.^a
 a. Rotation converged in 8 iterations.

Source: Authors' calculation

erty gap at \$2.15 a day (-0.465). Both BE&E and G&W have significant positive factor loadings for tertiary education. However, in the case of BE&E, a high negative value for the factor loading of low education is indicated. Large negative loadings indicate a high negative correlation, which in our case means that the variable strongly affects that principal component.

The third factor score WAGES & POVERTY (W&P) contains two characteristic components: average monthly earnings (0.498), and the poverty gap at \$2.15 a day (-0.452).

3.3. The model

The proposed model was created by using Structural equation modeling (SEM) technique (Chart 3). The impact of the three obtained factor scores on the business variable *amount of funds by age* was analysed:

Looking at the fit indices (Table 2), a perfect value (1) for Comparative Fit Index (Hu & Bentler, 1999) is indicated. Unlike CFI, IFI and NFI are not normed to the 0 to 1 range, so it is mathematically permissible for them to be > 1. In case the values for IFI and NFI are above 1, they are not ideal, but can be considered acceptable (Marsh et al., 1996).

4. Results and discussion

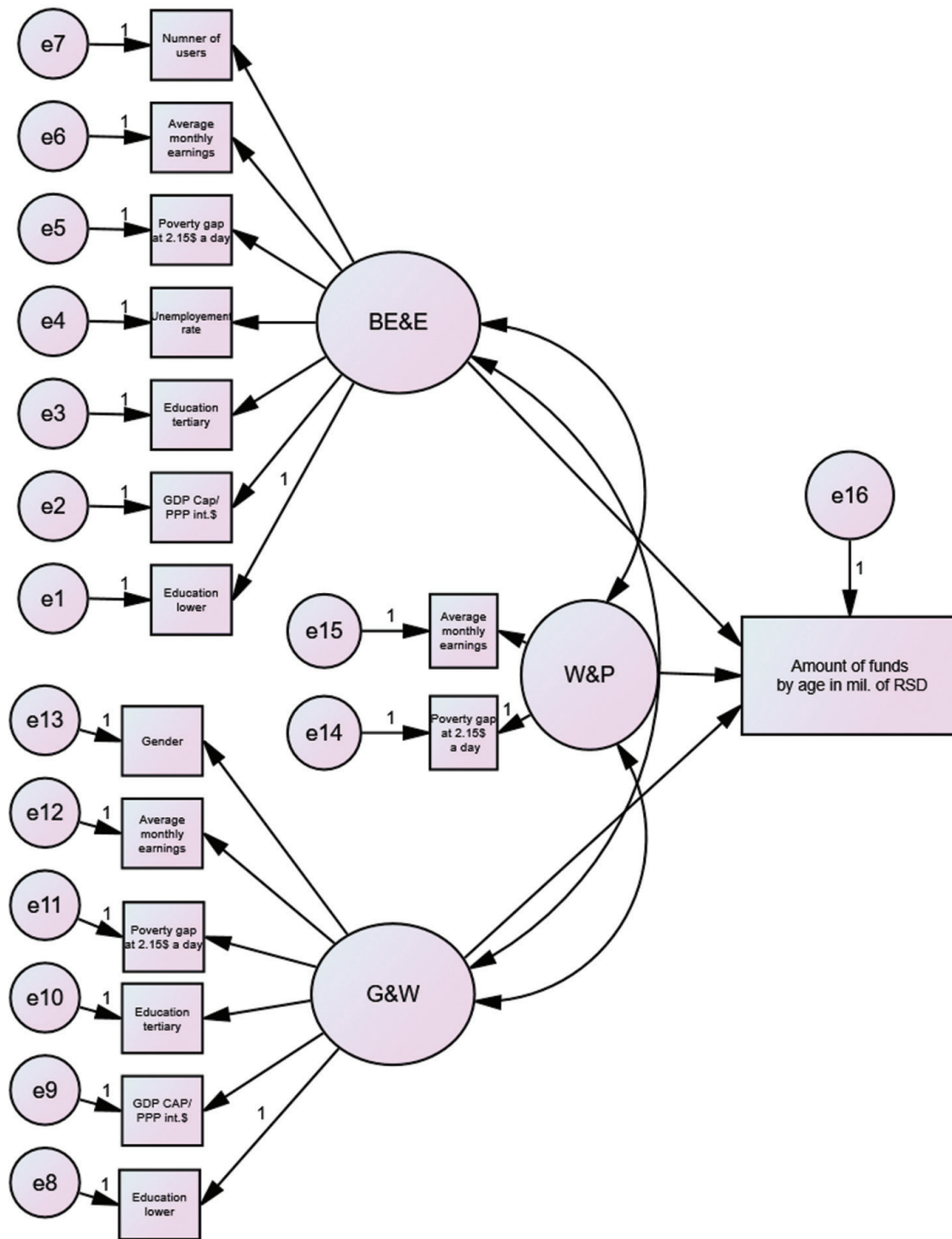
Based on the results obtained through SEM, it was determined that BE&E, G&W and W&P explain 94.8% of the variability of the business variable *amount of funds by age* (Table 3).

We conclude that hypothesis *H* is confirmed. Viewed partially, by the shares of the coefficients, the effects of BE&E and W&P are statistically significant, while G&W is not significant (Table 4). When BE&E jumps by one point, the amount of funds increases by 8017.920. If W&P increases

Table 2. Model Fit Summary: Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	1.068		1.068		1.000
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Source: Authors' calculation



Source: Authors' calculation

Chart 3. Graphical model representation of SEM analysis

Table 3. Regression Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.973 ^a	0.948	0.895	2973.95000

a. Predictors: (Constant), W&P for analysis 1, G&W for analysis 1, BE&E for analysis 1

Source: Authors' calculation

Table 4. Coefficients^a contribution

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	7576.314	1124.047		6.740	0.007
	BE&E	8017.920	1214.110	0.873	6.604	0.007
	G&W	-1902.336	1214.110	-0.207	-1.567	0.215
	W&P	3461.143	1214.110	0.377	2.851	0.055

^aDependent Business Variable: Amount of funds by age in millions of RSD

Source: Authors' calculation

by one point, the amount of funds jumps by 3461.143.

In the case of BE&E, the three most significant positive factor loadings are the number of VPF users by age (behavioural factor) with a value of 0.966, tertiary education (0.707) and GDP per Capita PPP/int. \$ (0.606). We emphasize that education is a significant and important ingredient of BE&E. In addition to tertiary education (0.707), there is also a negative factor loading for low education (-0.721). A negative value means an inverse impact on BE&E. The opposite effect means that this factor loading will have a negative impact and slow down the growth of BE&E, which will influence the slower growth of a variable amount of funds by age. A similar situation is indicated for unemployment. When BE&E increases, the amount of funds variable grows due to the dominant influence of positive factor loadings. As for W&P, average monthly earnings (0.498) were isolated as the dominant factor loading. Both BE&E and W&P isolated negative values for the poverty gap factor loadings, which may be a useful signal for the management of VPFs. Compared to our study, Nepp & Dolgodvorov (2016) also proved a linear relationship between GDP and pension fund accumulation but using a different methodology. In our research, GDP/CAP/PPP (int. \$) was used as a more appropriate indicator, which more realistically shows individuals' level standards and purchasing power of potential investors in VPF. There is a certain coincidence, because macroeconomic indicators (poverty and unemployment rate) were also identified in our study, which harms the level of pension funds. In studies (Ashley et al., 2019; Hung & Holdings, 2024), a direct linear relationship between pension fund assets and

GDP growth was proven, which was not the case in our study. When it comes to the impact of education on the level of pension funds, many studies have highlighted the positive importance of infor-

mal education, in the form of financial literacy of employees, like seminars, short courses, written communications and internet information, to increase their participation in pension funds (Maki, 2001; Ntalianis & Wise, 2011; Ghafoori et al., 2021). In comparison with these findings, our research examined the impact of the formal education of employees on investment in VPFs, where it was determined that the low education level of employees has a distinctly negative impact on the accumulated sums in VPFs. Certain similarities with our study can be seen in the findings (Stenberg & Westerlund, 2013), where a positive linear relationship between tertiary education and length of service, i.e. delaying retirement among employees aged 61-66 years was found, as well as with the results of the study (Chen et al., 2022) in which each additional year of education increases the pension by 3.5%. There is also a certain agreement with the results of a Polish study (Pieńkowska-Kamieniecka, 2020), in which it was determined that people with low education had a weak tendency to save for retirement. Looking at the gender structure of beneficiaries, the different results are noticeable in comparison with the Italian study (Angelici et al., 2022), according to which women are more interested than men in entering pension programs, after a short training. Regarding the impact of the behavioural economic indicator, the results of our study correspond with American findings (Thaler & Sunstein, 2012) and research in Sweden (Cronqvist et al., 2018). Most users adopt a savings rate that is too low, and some participants are nudged to save less than they can afford.

5. Conclusion

This study analysed the influence of economic, demographic and behavioural-economic factors on the level of accumulated funds of VPFs in Serbia. PCA and SEM were used as methodo-



logical techniques. Three complex factors were extracted, two of which (BE&E and

W&P) have a significant influence on the business variable *amount of funds by age*. BE&E has more than double the impact on the growth of the business variable. Within BE&E, the behavioural factor, tertiary education and GDP per Capita PPP/int. \$ respectively contribute the most to the growth of business variable. The Board of VPFs cannot influence the increase of GDP per Capita, but it can to some extent influence the elimination of nudging among users and the raising of education level. In the short term, this can be improved by investing in free financial training and information courses for employees to promote all the good sides of investing in VPFs. In the long term, this can be achieved through student scholarships and the promotion of tertiary education. W&P also leads to positive growth of the business variable,

through the average monthly earnings variable. Since the level of wages and salaries depends on the overall business environment in the country, little is concretely related to the decisions and actions of the VPF management. Regarding the research limits, it should be noted that the results were analysed for Serbia. Possible comparative regularities and similarities in terms of the application of the model need to be examined for the Balkan countries, as they are states with similar economic development and business culture. One of the challenges for the researchers would be to apply the existing model to the analysis of VPFs in Central Europe. It would be interesting to include additional variables from behavioural economics, such as citizens' fear of losing their job, and fear of bankruptcy, and examine how they affect the dependent variable - the level of VPF.

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