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JEL: C32, E21
Original scientific article
https://doi.org/10.51680/ev.34.1.1

Received: June 21, 2020
Accepted for publishing:: November 17, 2020

ANALYSIS OF FACTORS AFFECTING THE SAVINGS OF PRIVATE PROFIT COMPANIES IN BOSNIA AND HERZEGOVINA EXPRESSED IN RELATIVE AMOUNT OF GDP BY APPLYING THE ARDL METHODOLOGY

Abstract

Purpose: This paper is aimed at analyzing one component of private savings and its factors, namely the savings of private profit companies.

Methodology: An analysis was conducted of the savings of the private profit companies in Bosnia and Herzegovina (BiH), which, viewed as the sum of savings and time deposits, recorded a cumulative growth of 78.72% until the outbreak of the global financial crisis. In order to examine what factors favored such positive developments the ARDL methodology was applied.

Results: The variables that statistically significantly affect the savings of private profit companies in BiH are GDP growth rate, deposit interest rate, money supply in % of GDP and current account balance in % of GDP (marginally significant at 6% significance level).

Conclusion: The methodology applied confirmed the hypothesis of the paper, which proposes that the savings of private profit companies in BiH are significantly influenced by variables of the financial type.

Keywords: Savings of private profit companies, private profit companies' savings factors, ARDL methodology

1. Introduction

A country's savings rate is defined as the amount of funds or income generated in a particular economy over a period of time (usually a period of one year) that was not immediately utilized but allowed to be used in such a way to increase the returns of the observed economy in the years to come. Private saving is a part of income that is left unspent, thus leaving the income circle for future consumption (Mankiw, 2007). In this paper, the focus will be on the savings of private profit companies, although some empirical studies do not distinguish between household savings and savings of private profit companies. The basic determinants of private profit companies'

savings will be explored, following their trends in the period 2000q1 – 2016q3 in Bosnia and Herzegovina, based on key theoretical and empirical determinants of saving, while examining the maturity impact of certain determinants.

Banks play a central role in the financial markets of BiH, so bank deposits appear instead of investing in the capital market as the most common form of savings. If the BiH capital market were more developed, in the sense that the government issues securities for infrastructure, holding bonds of this kind would be more profitable than demand deposits because it would bring higher interest rates.

Savings and time deposits of private profit companies in BiH had seen the highest growth since 2005 until the last quarter of 2008 and the onset of the global financial crisis. The cumulative growth of deposits in the observed period amounted to 78.72%. The decline in savings and time deposits of private profit companies was recorded by the end of 2010. Savings and term deposits of private profit companies were increasing gradually and slightly in the period 2010-2016, but with constant fluctuations as a result of various changes.

The aim of this paper is to investigate what factors favor such trends in saving, and determine the term effect of these factors on the savings of private profit companies in BiH. In order to achieve the defined goal of the research, variables suggested by economic theoretical and empirical literature that were available for BiH were included in the model. All variables are expressed in relative terms, as a percentage of GDP.

In line with the research objective, the research hypothesis was defined as follows: H1: The savings of private profit companies in BiH are determined by financial factors.

The Autoregressive Distributed Lag Model (ARDL) methodology, which is implemented in three steps, was used to test the defined hypothesis. The first step is to determine the existence of a long-term relationship between the variables by calculating the F-bounds test. The second step is choosing the right number of lags, and the third step involves reparameterizing the selected ARDL model into the Error Correction model (ECM). Previously, the stationarity of variables was examined by changing the Augmented Dickey-Fuller test (ADF), the Phillips-Perron test (PP) and the Kwiatkowski-Phillips-Schmidt-Shin test (KPSS).

The paper is structured in five parts. Following the introductory remarks, a review of the literature is given, with particular emphasis on scientific articles dealing with the issue of savings factors, bearing in mind that basic economic theory recognizes income as the dominant savings factor. The most important part of the paper is an overview of the empirical results. This section first presents the research methodology followed by model evaluation and analysis. Finally, concluding considerations are provided with concise research findings.

2. *Theoretical framework*

The main theories of saving are the permanent income hypothesis and the life cycle hypothesis. The first suggests that income is the dominant factor, while the second emphasizes the significance of demographic savings factors as well.

Empirical studies in this area recognize a large number of savings factors, but there are no unambiguous estimates of the absolute and maturity effects of particular savings factors.

In most savings studies, inflation is used as a common measure of future uncertainty. According to buffer stock theories of saving, greater uncertainty also means greater savings because individuals who are not risk averse in this period save money due to caution. Empirical analysis shows a positive effect of inflation on savings, both because of the creation of a precautionary motive, but also because inflation is linked to income growth in the expansionary phase of the business cycle. By analyzing the determinants of saving in Pakistan, Chaudhry et al. (2014) confirm that inflation has a significant positive impact on saving (both in the short and long term). Inflation also raises nominal interest rates, generating higher income and further savings. However, Loayza et al. (2000) find that if the interest rate is not adaptable to changes in the inflation rate, then rising inflation will reduce the real interest rate and further discourage saving in the form of financial assets. Kolasa and Liberda (2015) also find that consumer price growth is a positive function of saving. Inflation and the amount of money supply (M2) will be included in the model of this research.

Central government policy can have an impact on saving in various forms. The effect can be achieved through fiscal policy provisions, but also through public saving itself, which is a significant implication of Keynesian theory. Neoclassical life-cycle

models show that reducing government savings means increasing consumption and further reducing aggregate savings, shifting tax burdens from present to future generations. In contrast, Keynesian model argues that larger aggregate savings temporarily reduce public savings. Ricardian theory holds that the growth of public savings does not have a significant impact on total national savings. That author argues that the growth of public savings leads to a decrease in the private savings by the same amount. A large number of empirical papers are exploring this topic.

Shaikh and Sheikh (2013) and Esmail (2014) argue that high government spending has the effect of reducing savings, especially when expressed in the form of external debt growth. The rigorously defined postulates of Ricardian theory have been refuted by Ozcan et al. (2003). Based on empirical research, the authors conclude that public saving does not tend to "squeeze out" private saving. Chaudhry et al. (2014), using the ARDL and the ECM methodology, show that budget deficits have a negative impact on savings both in the long and short term. The authors point out that budget revenues are a negative function of savings in the short term, but a positive function in the long term. Based on the model outlined in this paper, the central government revenues, expenditures and fiscal balance, as well as external debt will be included as variables.

Export-import price index ratios and current account balances/deficits, often referred to as external variables, can have a significant impact on savings in open economies, regardless of their level of development. The analysis of the causality of saving and the relationship between export and import price indices is further stimulated by Harberger–Laursen–Metzler hypothesis. The hypothesis argues that a deterioration in the export-import price index ratio leads to a decrease in income and savings. Empirical studies have shown that improving the relationship between export and import price indices leads to an increase in savings due to the positive impact on income and wealth. Kwakwa (2013) finds the positive impact of the export-import price index on savings both in the long and short term. It is usually expected that a current account deficit will cause a partial reduction in private savings. The reason for this is that external savings tend to substitute for domestic ones. Loayza et al. (2000) show that an increase in the current account deficit leads to a decrease in domestic savings, which is substituted by external savings. Ayalew (2013) establishes the statistical insignificance of this variable in the long run. The export/import price index ratio and the current account balance/deficit will be included in the model of this survey.

The interest rate is the most significant "auxiliary" variable in the theory of permanent income. The interest rate can have an effect on saving in different ways. On the one hand, there is a substitution effect. In line with the substitution effect, the rise in the interest rate increases the cost of current versus future consumption causing savings to rise, so savings appear as a substitute for current consumption.

On the other hand, an income effect may occur. According to the income effect, rising interest rates may discourage savings as a result of the desire to receive an equal amount of money in the coming period. The income effect also results in a reduction in public savings in countries with high public debt.

The sign and the magnitude of the interest rate impact on savings may be different, as explained above. Certain empirical studies highlight the positive effects of interest rates on savings. By applying the ARDL and ECM methodologies, Chaudhry et al. (2014) prove that higher interest rates mean greater savings. This methodology has made it possible to prove the significance of the effect of interest rates on savings both in the long and short term.

Other studies highlight the negative effect of interest rates on savings. Thanoon and Baharumshah (2005) argue that interest rates in the short term have a negative impact on savings in Latin American countries. The authors applied the unit root test as a methodology. Kolasa and Liberda (2015) use regression to determine the negative impact of the interest rate on savings in Poland, while for the OECD countries it has a weak positive impact. Several analyses have found that interest rates do not have a significant impact on savings. One such study is Bhandari et al. (2007). Given that interest rate is a significant determinant of savings according to most studies, it is included as a variable in the model of this research.

Another variable that is included in the model is the unemployment rate. In BiH, the unemployment rate was quite high in the post-war period, which has had significant consequences on the overall national economy. In the research model, the un-

employment rate as a variable is included by Athukorala and Tsai (2003).

A large number of studies highlight the importance of demographic saving factors. However, for BiH, these data are not available in a sufficiently long time series to satisfy the basic statistical conditions for sample size. Therefore, these variables are not included in the model.

It can be seen from the above literature review that there is no strictly established order of significance and the degree of influence of certain determinants on savings. The impact depends on the cultural and political characteristics of individual economies, population, experience, but also on the methodology used. This paper will apply the initial way of observing variables, which is the relative ratio to GDP.

3. Research methodology

When using economic indicators in the form of time series, seasonal adjustments should be made first to exclude the effect of the season. Seasonal adjustment of the data should be done as the total variation of the time series is significantly determined by seasonal variations of the series. A large variance, a prognostic error, occurs when the importance of seasonal impacts is neglected, so seasonal adjustment of data is necessary. When applying seasonal adjustment methods, attention is focused only on the estimation and elimination of seasonal effects, no analysis is performed of the causes of seasonal phenomena nor are they explained.

Seasonal adjustment of the data in this paper was carried out using the X-13 ARIMA and the TREAMO SEATS methodology. The X-13 ARIMA methodology provides a number of options for creating time series that meet the criteria of the regARIMA model. RegARIMA models are regression models with ARIMA errors. In these models, the main function of the time series is expressed by a linear combination of regressors, and the covariance of the string structure is the ARIMA process. If the regressors are shut down, then the regARIMA model is reduced to the ARIMA model, so the main function is assumed to be zero. The TRAMO/SEATS method for seasonal adjustment of batches is also frequently recommended in the literature. The biggest advantage of the TRAMO/SEATS method is its sufficient reliability in detailed analyses. The TRAMO program or the first phase of the method is used to pre-adjust the series. Here, workday adjustment is based on a regression model. In the pre-adjustment phase, the extremes and oulier in the series are also observed. In the second phase of the method, seasonal adjustment of the series is carried out.

For the purposes of further econometric analysis after seasonally adjusted data, it is necessary to examine the stationarity of the variables involved. Stationarity is one of the most important features of the time series and a prerequisite for determining most econometric models. A stochastic procedure is stationary unless the probable properties of the observed process change over time. The testing of the data for stationarity in this paper is done by applying: the ADF test, the PP test and the KPSS test. The null hypothesis for the ADF and PP tests is process nonstationarity, while the null hypothesis for the KPSS test is the stationarity of the process and serves as a confirmatory analysis for the previous tests.

The ARDL methodology was applied in determining the factors affecting the saving of private profit companies in BiH. The ARDL methodology can be applied regardless of whether the variables are I (0), I (1) or a combination of these differences. Unlike the Johansen approach, this methodology provides for the identification of cointegration equations. Each variable is an individual equation for a long-term relationship. Once one cointegration equation is determined, the ARDL model of the cointegration vector is reparameterized into the EC model. The reparameterization procedure ensures the identification of short-term dynamics and long-term relationships among the variables in the observed model. Reparameterization is possible since the ARDL dynamic equation of the model is of the same form as the ECM. Unrestricted displacements of the regressors in the regression equation are allowed through distributed displacement models. The ARDL methodology is implemented in three steps. The first step is to determine the existence of a long-term relationship between the variables by calculating the F-bounds test. The second step is choosing the right number of lags, while the third step is to reparameterize the selected ARDL model to the ECM model.

Two software programs were used to implement the ARDL methodology: EViews 9.5 and R with numerous packages created for time series analysis.

The literature review mentioned the variables that will be included in the model. The savings of pri-

vate profit companies in % of GDP will be used as the dependent variable and GDP growth rates, inflation, general government revenues in % of GDP, general government expenditures in % of GDP, fiscal balance in % of GDP, money supply (M2) in % of GDP, current account balance in % of GDP, external debt in % of GDP, export-import price index ratio, deposit interest rate and unemployment rate will be used as independent variables. All data on variables for the period 2000q1 - 2016q3 are taken from the databases and bulletins of the Central Bank of BiH and the Agency for Statistics of BiH.

4. Research results

The results of the stationarity tests of the variables will be presented first, followed by the evaluation and analysis of the defined model using the ARDL methodology.

4.1 Results of unit root tests in seasonally adjusted time series

The ADF test and the PP test were used to test the hypothesis that seasonally adjusted variables have unit roots. In both tests, as pointed out earlier, the null hypothesis is that the variable has a unit root. The PP test has an advantage over other unit root tests because it does not require the inclusion of additional dependent variables, as is the case with most other tests. An added benefit of the PP test is that it is not based on the assumption of a functional form of error variables because it is a nonparametric test.

The KPSS test was also used in the analysis. As pointed out, the null hypothesis of the KPSS test is that the series is stationary. Given that unit root tests have poor power in small samples, i.e., short time series, to test the robustness of the results, the results for the three stationarity tests are shown below.

In the ADF test, the Schwarz criteria were used to determine the number of lags. The PP test and the KPSS test used a spectral evaluation model with Bartlett core and Newey-West bandwidth.

The three-unit root tests do not give clear results. The decision on which order of integration is variable is based on the results of the tests, but also on the visual revision of the time series chart. Such a combined approach has also been proposed in the literature due to the low power of unit root tests in the time series lengths available in this analysis. The general impression is that, overwhelmingly, there is a match between the flow of time series on its chart and the results of the tests.

Table 1 Summary of unit root test results - integration order (seasonally adjusted time series as a percentage of nominal gross domestic product)

Variable	ADF	PP	KPSS	Comment
Saving of private profit companies	I(0)	I(0)	I(0)	Stationary
Gross domestic product growth Rate	I(0)	I(0)	I(0)	Stationary
Inflation	I(0)	I(0)	I(0)	Stationary
General government revenue	I(1)	I(0)	I(1)	First-order nonstationary
General government expenditure	I(0)	I(0)	I(1)	Stationary
The fiscal balance	I(0)	I(0)	I(0)	Stationary
Money supply (M2)	I(1)	I(1)	I(1)	First-order nonstationary
Current account balance	I(1)	I(1)	I(1)	First-order nonstationary
External debt	I(1)	I(0)	I(0)	Stationary
Export-import price index ratio	I(0)	I(0)	I(0)	Stationary
Deposit interest rate	I(1)	I(1)	I(1)	First-order nonstationary
Unemployment rate	I(1)	I(1)	I(0)	First-order nonstationary

Source: Author

When deciding about the order of integration of a particular variable, an extended model, which includes a constant and a trend, was considered first. Next, it was determined in an iterative procedure,

according to the methodology developed by Enders, whether the variable has a unit root or not.

The decision about the order of integration of the variables was made on the basis of a model that includes a constant and a trend, not in a direct way but by using the Enders process. In order to analyze the autoregressive models of distributed displacements it is important to point out that all variables are either stationary or first order integrated variables. For these models, the requirement is that none of the variables is an I (2) variable.

4.2 Model estimation by the ARDL methodology

The F-bounds test was used to test the existence of long-term inter-series connectivity before evaluating the ARDL economy savings model. The results of the F-bounds test are given in Table 2.

Table 2 F-bounds and t-bounds tests

***F*-bounds test**					***t*-bounds test**			
Value	**Significance**	**I(0)**	**I(1)**		**Value**	**Significance**	**I(0)**	**I(1)**
6.46	10%	2.68	3.53		-4.47	10%	-2.57	-3.66
	5%	3.05	3.97			5%	-2.86	-3.99
	2.5%	3.40	4.36			2.5%	-3.13	-4.26
	1%	3.81	4.92			1%	-3.43	-4.60

Note: The null hypothesis is that there is no correlation between levels of series.
Source: Author

The F-statistic value in the F-bounds test is 6.46 and exceeds even the 1% critical value for the upper limit (4.92). Therefore, there is more than enough evidence to reject the null hypothesis, which proposes that there is no long-term dependence among the variables in the ARDL model. In other words, this test confirmed the long-term interdependence among the variables involved.

Since the long-term interdependence is confirmed, in the next two steps, the number of lags of each variable in the ARDL model is determined and then the ARDL model is evaluated with a certain number of lags.

The number of lags in the model was determined using the Schwarz criterion. Using this test, the ARDL (2,1,2,0,0) model was selected. In doing so, starting from the preliminary specification of a model of 10 independent variables, the list of variables included in the ARDL model was reduced using statistical tests.

Specifically, when specifying the ARDL model, not all independent variables had a statistically significant effect on the dependent variable. The estimation using the ARDL model, with the saving of private profit companies in % of GDP as a dependent variable, included the following independent variables: growth rate of real gross domestic product, money supply (M2) in % of GDP, deposit rate and current account balance in % of GDP.

The ARDL model estimate is given in Table 3. The upper part of the table contains the coefficients of the long-term savings participation ratio of GDP and other model variables. The bottom of Table 3 contains the results of the error correction model, i.e., the coefficients of the interdependence of the savings ratio in GDP and other variables of the model in the short term.

Long-term interdependence ratios are all statistically significantly different from zero, although the ratio of the current account balance to GDP is marginally significant at 6% significance level.

All coefficients have the expected sign. The negative coefficient along with the growth rate of the real gross domestic product suggests that faster growth of the domestic product did not have a positive effect on the increase in the private profit companies' savings share in gross domestic product in the long run. In other words, savings grew more slowly than domestic product.

A one percent increase in the share of money supply (M2) in gross domestic product will, in the long run, lead to a 0.15% increase in the share of private profit companies' savings in gross domestic product. The larger amount of money in circulation in the long run also increases the level of savings. The positive impact of M2 is in line with previous empirical studies: Park and Shin (2009), Sahoo and Dash (2013), Bayar (2014).

A one-percent increase in the deposit interest rate in GDP will, in the long run, lead to a 1.2% increase in the share of private profit companies' savings in GDP. The positive effect of deposit interest rate on savings was also found by Nicholas (2007), Chaudhry et al. (2014).

Table 3 The ARDL model

		Long term	
Variable	**Coefficient**	***t*-statistics**	***p*-value**
GDP growth rate	-0.5332	-2.61	0.0131
Money supply (M2) in % GDP	0.1506	5.47	0.0000
Deposit interest rate	1.1961	2.48	0.0182
Current account balance in % GDP	0.1071	1.94	0.0606
@Trend	-0.3235	-6.90	0.0000
		Short term	
Constant	-6.0224	-5.87	0.0000
Δ Savings of private profit companies in % GDP (-1)	0.4441	3.54	0.0011
Δ Growth rate of real gross domestic product	-0.1303	-3.50	0.0013
Δ Money supply (M2) in % GDP	0.0483	3.30	0.0022
Δ Money supply (M2) in % GDP (-1)	-0.0940	-4.89	0.0000
Error correction (EC) (-1)	-0.4658	-5.89	0.0000
Determination coefficient R^2	0.6762		
Adjusted coefficient of determination	0.6358		
F-statistics	16.71		
Breusch-Godfrey autocorrelation LM test	5.5144 (number of lags = 4), *p*-value = 0.2385		
Jarque-Bera normality test	2.7625 (degrees of freedom = 2), *p*-value = 0.2513		
Ramsey RESET functional form test	0.9909 (degrees of freedom = 2, 33), *p*-value = 0.3820		
ARCH test	5.4997 (number o = f lags 4), *p*-value = 0.2398		
White heteroskedasticity test	5.8365 (degrees of freedom = 10), *p*-value = 0.8288		

Note: The null hypothesis for the Breusch-Godfrey LM autocorrelation test is that model residuals are not autocorrelated; The null hypothesis for the Jarque-Bera normality test is that model residuals follow a normal distribution; The null hypothesis for the Ramsey RESET test is that the functional form of the model is correctly specified; The null hypothesis for the White heteroskedasticity test is that the model residuals are homoskedastic.
Source: Author

The error correction coefficient (EC (-1)) in the short-term part of the model, which measures the rate of equilibrium adjustment in the dynamic model, has the expected negative sign and is statistically significant. Its value of -0.4658 indicates that deviations from the long-term savings rate, i.e., the share of private profit companies' savings in gross domestic product in the current period/quarter, are adjusted by 46.58% in the next period/quarter. Based on this coefficient, we calculate how many quarters it takes to fully adjust: 1/0.4658 * 4 = 8.6 quarters, that is, it takes eight and a half quarters for the private profit companies' savings rate to fully match the deviations from the long-term savings rate.

All short-term coefficients are expected to be smaller than the corresponding long-term coefficients, suggesting that only part of the equilibrium deviation adjustment is performed in the short term, that is, adjustment requires longer than one quarter.

To test the individual significance of the coefficients in the ARDL models, we use the values based on the t-bounds test in Table 2. Based on the previous

results, which suggest that the deposit interest rate and money supply (M2) have the dominant statistically significant influence on private profit companies' savings in BiH, we confirm the hypothesis of this paper, which proposes that the savings of private profit companies in BiH are determined by financial factors.

The validity of the ARDL model was evaluated using a set of statistical tests, whose results are shown in the lower part of Table 3. All statistical diagnostic tests of the evaluated model indicate that the ARDL model is correctly specified.

The Breusch-Godfrey autocorrelation LM test indicates that the model results are not autocorrelated. The ARCH test and the White heteroskedasticity test confirm that the model residuals are homoskedastic and uncorrelated with independent model variables. The Jarque-Bera normality test indicates the normal layout of the model residuals, while the Ramsey RESET functional form test confirms the correct specification of the model.

The relatively high value of the adjusted coefficient of determination, 0.6358, suggests that nearly 64% of the variation in the private profit companies' savings rate is explained by variations in the set of independent variables included in this ARDL model.

5. Discussion

The variables that statistically significantly affect the savings of private profit companies in BiH are GDP growth rate, deposit interest rate, money supply in % of GDP and current account balance in % of GDP (marginally significant at 6% significance level).

The deposit interest rate shows a positive impact in the long run only on the savings of private profit companies in BiH. An increase in the deposit interest rate of 1% causes the private profit companies to save 1.2%.

Analyzing monetary determinants of savings in Pakistan, Chaudhry et al. (2014) find that interest rate is a positive function of private profit companies' savings. The authors explain these results by the fact that a higher deposit interest rate means more savings for the private profit companies because of high borrowing costs, so companies create their own inventories of funds in these conditions. In considering the determinants of savings in South Africa, Nicholas (2007) also found a positive effect of the deposit interest rate on savings. The same effect was also found by Nasir and Khalid (2004), Ahmad et al. (2006), Chaudhry et al. (2010).

The deposit interest rate is expected to have a positive impact on savings. Higher deposit interest rate causes the savings of private profit companies in BiH to grow, but only in the long run. This may be so because the interest rate on corporate deposits is not high enough to attract savings in the short term. It may also be due to the different tax burdens and business risks that businesses are exposed to so they cannot make significant savings in the short term even if the interest rate is high. If a favorable deposit interest rate and stable economic and political developments in the long run are expected, then the private profit companies' savings will increase with interest rates rising. The aforementioned significant impact of the deposit interest rate on the private profit companies' savings can help the monetary and fiscal policy makers in BiH in formulating strategies and implementing economic policies.

GDP growth, both in the long and the short term, results in a reduction in savings. Thus, one-percent GDP growth will reduce private profit companies' savings by 0.53% and 0.13% in the long and short term, respectively.

Increasing production in BiH means that businesses need to invest more heavily in their resources (human and technological) and promotion because they operate in a poor and developing country. As a result, there is not enough savings available or they must be used for further development, so they are reduced both in the short and long term as production volumes grow.

Money is expected to have a positive impact on private profit companies' savings in both the long and the short term. A one percent increase in the share of money supply in GDP will lead to an increase in the share of private profit companies' savings in GDP by 0.15% in the long run, or approximately 0.05% in the short run.

By analyzing savings in developing countries in Asia, Park and Shin (2009) found a positive effect of money supply on private profit companies' savings. The same results were obtained by Horioka and Yin (2010), Sahoo and Dash (2013), and Bayar (2014).

More money in circulation means a more developed financial sector in the country, which increases confidence in the banking sector. If this trend is expected to continue in the future, then savings in

the long run will also grow. Such developments are expected as more money in circulation means faster capital flow and more investment, and therefore enough resources for private profit companies to save more. This reaffirms that greater confidence in the BiH financial sector is conducive to the growth of private profit companies' savings. Therefore, the results obtained can also be used to inform and develop an adequate economic policy in BiH.

6. Conclusion

This paper focused on exploring the phenomenon of private profit companies' savings, as one of the components of private savings, in the small open economy of Bosnia and Herzegovina over a sixteen-year period. The theoretical and empirical literature does not clearly define the impact of individual factors on savings. Most studies also have a macroeconomic focus on total private savings and do not differentiate between individual categories of private savings, which is particularly important for small emerging economies. This analysis examined the impact of macroeconomic and financial factors on BiH private profit companies' savings as a component of private savings.

Survey results show that private profit companies' savings, expressed relatively (in % of GDP) in BiH are determined by: GDP growth rate, deposit interest rate, money supply in % of GDP and current account balance in % of GDP (marginally significant at 6% significance level).

The negative coefficient along with the real GDP growth rate suggests that faster growth of GDP did not have a positive effect on the increase in the share of private profit companies' savings in GDP in the long run. In other words, savings grew more slowly than GDP.

A one percent increase in the share of money supply (M2) in GDP will in the long run lead to a 0.15% increase in the share of private profit companies' savings in GDP. The larger amount of money in circulation in the long run also increases the level of savings.

A one-percent increase in the deposit interest rate in GDP will in the long run lead to a 1.2% increase in the share of private profit companies' savings in GDP.

All short-term coefficients are expected to be smaller than the corresponding long-term coefficients, suggesting that only part of the equilibrium deviation adjustment is performed in the short term, that is, adjustment requires longer than one quarter.

The main objective of the paper was to examine the influence of certain factors on private profit companies' savings. The research confirmed the hypothesis of the paper, namely that the saving of private profit companies in BiH is determined by financial factors.

The conducted research makes both theoretical and empirical contribution to the ongoing discussions on this topic. The theoretical contribution is reflected in the development of savings models for BiH, since no similar research has been done so far. An additional theoretical contribution at a more "global" level consists in testing and determining the impact of existing theory-defined factors on private profit companies' savings in small emerging economies. The empirical contribution of the research is that the obtained results can be used to inform strategic decision-making, both at the macroeconomic level and at the level of commercial banks, where most of the private profit companies' savings in BiH are realized.

The key challenge in the analysis was the limited availability and quality of data to conduct empirical research. Thus, some variables were not monitored for the BiH economy, whereas the variables included also had a significant number of missing data for the reference period. By using the available statistical methods of imputation of missing data and by contacting the competent statistical and financial state institutions, following the procedure for obtaining the data that have not been made public, the mentioned limitations could be addressed.

In further analysis, it would be useful to carry out similar research after a number of years to determine if the length of the time series has affected the results. It would be important to include demographic data in savings models as well, which was not possible in this study due to the short data series. Furthermore, it would be useful to carry out a comparative analysis with similar economies in order to reach more general conclusions.

References

1. Ahmad, H. A., Atiq, Z., Alam, S. & Butt, M. S. (2006). The impact of demography, growth and public policy on household savings: A case study of Pakistan. *Asia Pacific Development Journal, 13*(2), 57-71. https://doi.org/10.18356/8517ea89-en
2. Athukorala, P. C. & Tsai, P. L. (2003). Determinants of household saving in Taiwan: growth, demography and public policy. *The Journal of Development Studies, 39*(5), 65-88. https://doi.org/10.1080/00220380412331333149
3. Ayalew, H. A. (2013). Determinants of domestic saving in Ethiopia: An autoregressive distributed lag (ARDL) bounds testing approach. *Journal of Economics and International Finance, 5*(6), 248-257. https://doi.org/10.5897/JEIF2013.0526
4. Bayar, Y. (2014). Financial development and domestic savings in emerging Asian countries. *Theoretical and Applied Economics, 21*(7), 55-56.
5. Bhandari, R., Dhakal, D., Pradhan, G. & Upadhyaya, K. P. (2007). Determinants of private saving in South Asia. *South Asia Economic Journal, 8*(2), 205-217. https://doi.org/10.1177/139156140700800202
6. Chaudhry, I. S., Faridi, M. Z., Abbas, M. & Bashir, F. (2010). Short Run and Long Run Saving Behavior in Pakistan: An Empirical Investigation. *Journal of Money, Investment and Banking, 16,* 57-66.
7. Chaudhry, I. S., Riaz, U., Farooq, F. & Zulfiqar, S. (2014). The Monetary and Fiscal Determinants of National Savings in Pakistan: An Empirical Evidence from ARDL approach to Co-integration. *Pakistan Journal of Commerce and Social Sciences, 8*(2), 521-539.
8. Esmail, H. A. H. (2014). Macroeconomic determinants of savings in Egypt 'Statistical Model'. *International Journal of Business and Economic Development, 2*(2), 26-33.
9. Horioka, C. Y. & Yin, T. (2010). Household savings rates and social benefit ratios: Country comparisons. In Kawai, M. & Pasadilla G. O. (Eds.). *Effects of Social Policy on Domestic Demand Annual Conference 2009* (pp. 63-79). Tokyo: Asian Development Bank Institute.
10. Kolasa, A. & Liberda, B. (2015). Determinants of Saving in Poland: Are They Different from Those in Other OECD Countries?. *Eastern European Economics, 53*(2), 124-148. https://doi.org/10.1080/00128775.2015.1033276
11. Kwakwa, P. A. (2013). Determinants of National Savings: A Short and Long Run Investigation in Ghana. *KCA Journal of Business Management, 5*(1), 1-15.
12. Loayza, N., Schmidt-Hebbel, K. & Serven, L. (2000). What drives private saving across the world?. *Review of Economics and Statistics, 82*(2), 165-181. https://doi.org/10.1162/003465300558678
13. Mankiw, G. (2007). *Macroeconomics.* McGraw-Hill.
14. Nasir, S. & Khalid, M. (2004). Saving-Investment Behavior in Pakistan: An Empirical Investigation. *The Pakistan Development Review, 43*(4), 665-682. https://doi.org/10.30541/v43i4IIpp.665-682
15. Nicholas, O. (2007). The Determinants of Savings in South Africa: An Empirical Investigation. *African Finance Journal, 9*(2), 37-52.
16. Ozcan, K. M., Gunay, A. & Ertac, S. (2003). Determinants of private savings behaviour in Turkey. *Applied Economics, 35*(12), 1405-1416. https://doi.org/10.1080/0003684032000100373
17. Park, D. & Shin, K. (2009). Saving, investment, and current account surplus in developing Asia. *ADB Economics Working Paper Series No. 158*, Asian Development Bank, April 2009. https://doi.org/10.2139/ssrn.1611454
18. Sahoo, P. & Dash, R. K. (2013). Financial sector development and domestic savings in South Asia. *Economic Modelling, 33,* 388-397. https://doi.org/10.1016/j.econmod.2013.04.018
19. Shaikh, S. A. & Sheikh, E. A. (2013). Macroeconomic Determinants of Savings in Pakistan. *Global Management Journal for Academic & Corporate Studies, 3*(1), 151-165.
20. Thanoon, M. A. M. & Baharumshah, A. Z. (2005). What happened to savings during the financial crisis—a dynamic panel analysis of Asian-5 countries. *Economic Change and Restructuring, 38*(3-4), 257-275. https://doi.org/10.1007/s10644-006-9006-9