ANALYSIS OF HOUSEHOLD SAVING FACTORS IN BOSNIA AND HERZEGOVINA - APPLICATION OF ARDL METHODOLOGY

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Abstract

Most papers in the field of private saving deal with the analysis of private saving as a whole without special consideration of its individual components. This paper is, therefore, focused on the analysis of one of the components of private saving and its factors, and that is the household saving. The analysis was conducted on household saving in Bosnia and Herzegovina (BiH), which, viewed as the sum of saving and time deposits, recorded a cumulative growth of 97% from the outbreak of the global financial crisis until September 2016. The aim of this research is to determine which factors favored the positive trends of household saving in BiH in the period 2000q1-2016q3. As a methodological tool for achieving the research goal and testing the defined hypothesis, the ARDL methodology was used. By applying the ARDL methodology, the work hypothesis was confirmed. Macroeconomic factors have an impact on household saving in BiH.

Keywords: household saving, household saving factors, ARDL methodology

JEL: C32, E21

1. Introduction

Securing funds to finance domestic investment and economic growth is one of the most important issues of any national economy. Domestic saving, and especially private saving, stand out in the literature as the most favorable and safest means for financing investments and economic growth. Saving can be defined as the amount of funds or income produced in a particular economy over a given period of time (usually a period of one year) that is not used immediately, but is left to be used to increase the returns of the observed economy in the years to come.

Private saving is a part of income that remains unspent. Private saving thus gets out of the income cycle and is left for future consumption (Mankiw, 2007). In this paper, the focus will be on household saving, although some empirical studies do not distinguish household saving and business saving, as a component of private saving as a whole. The basic factors of household saving will be investigated, observing the trend in the period 2000q1 - 2016.q3 (eight years before the outbreak of the global financial crisis and eight years after the outbreak of the global financial crisis) in Bosnia and Herzegovina (BiH), based on key theoretical and empirical determinants of saving, with an examination of the maturity impact of certain factors.

In the financial markets in BiH, banks have a central role, so, bank deposits appear as the most common form of saving. The percentage of population's investment in the capital market is quite small. If the capital market in BiH was more developed, in terms of the state issuing securities, then holding bonds of this type would be much more profitable than demand deposits because it would bring higher earnings at the interest rate.

Total household deposits at the end of September 2016 amounted to BAM (convertible mark, the currency of BiH) 10.25 billion. In the same period, the share of household deposits in total deposits of commercial banks in BiH was 59.6%. Household deposits increased by 6.6% or BAM 633.5 million compared to the end of September 2015. If a comparison is made with December of 2008, which was the beginning of the economic crisis, the deposits were constantly growing in the range of 8-15% at an annual level. Thus, the cumulative growth of

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deposits of 97% or BAM 5.05 billion was achieved. The largest percentage of household deposits, in September 2016, were saving and time deposits, 52.8%. When it comes to the currency structure of household deposits, in September of 2016, the largest share were deposits in € 51.1%, then in BAM 43.6% share, and deposits in other foreign currencies 5.3%
The aim of this research is to examine which factors favor such trends in household saving in BiH. In order to achieve the research goal, the model includes variables which were suggested by the economic theoretical and empirical literature, and which were available for BiH. All variables are expressed in absolute indicators. Based on the aim of the paper, the research hypothesis is defined as follows-H1: Macroeconomic factors significantly affect the household saving in BiH.

To test the defined hypothesis, the three-step Autoregressive Distributed Lag Model (ARDL) methodology was applied. The first step determines the existence of long-term relationships among variables by calculating the F- statistics. In the second step, the appropriate number of lags is selected. In the third step, the selected ARDL model is reparameterized to the Error Correction Model (ECM). The stationarity of the variables is examined using: Augmented Dickey-Fuller test (ADF), Philips-Perron test (PP) and Kwiatkowski-Philips-Schmidt-Shin test (KPSS) before applying the ARDL methodology.

The paper is divided into six parts. After the introductory remarks, the theoretical framework is presented, and a brief overview of the basic theories of saving is given. The literature review places special emphasis on scientific articles dealing with the issue of factors of saving. The most important part of the paper is the presentation of empirical results. In this section, the research methodology is presented at the beginning, followed by the evaluation and analysis of the model. In the end; concluding remarks are given with summarized research results.

2. Theoretical framework

Economic theory specifically analyzes two theories of saving: the permanent income hypothesis and the life cycle hypothesis. Both theories fall into the category of neoclassical economic theories that are characterized by certain common assumptions: individuals are rational beings who want to maximize their satisfaction and reduce their dissatisfaction, with personal utility being a function of consumption; there is little difference between income and assets(active); economic resources provide financing for consumption; individuals should decide between present and future consumption, where such a decision is believed to be the product of autonomous, stable preferences.

The permanent income hypothesis (Friedman, 1957) distinguishes between the permanent (an income expected to be stable and to last in the future, which is actually the average income) and the transient part of income (income whose existence is not expected in the future, which is actually a deviation from the average income levels). According to this theory, individuals face short-term and random fluctuations in income from year to year.

Friedman's theory actually originates from the basic idea that consumers have a need for balanced consumption, not allowing short-term income fluctuations to be reflected in the form of changes in consumer habits. The aim of developing this model was to explain some significant empirical facts in a single theoretical framework, for example: why is income much more susceptible to volatility than consumption, or why is the marginal propensity to consume higher in the long run than in the short run?

In order to answer these questions, Friedman argues that consumers base their consumption on long-term income measures, such as lifelong wealth or wealth over a certain, reasonably long period of time. By wealth (denoted by w) he means the present discounted value of the sum of present and future income, including income from property.

The theory thus points out that only lifelong, permanent income (expected, long-term income) is a determinant of consumption and saving, and not current income. The exception is the appearance of more permanent, long-term changes that additionally have significant

effects on consumption. Saving occurs when long-term income is expected to be less than current income, to ensure an even consumption.

According to DeJuan and Seater (2006), a number of empirical studies have confirmed this theory, while a certain number rejected it. As the main problem and lack of this theory, Meghir (2004) points out the "poor" definition of permanent income, which further creates difficulties in its measurement. However, despite the observed criticisms, the theory of permanent income is still present and recognized in the economic literature thanks to the logical and consistent focus of the theory on intertemporal optimization of consumer behavior.

The life cycle hypothesis (Modigliani, 1966) begins its development at approximately the same time as Friedman's theory, which is the post-war period. Both Friedman's and Modigliani's theories are often referred to as life cycle theories; however, Modigliani's theory is much more closely related to the life cycle, especially because of an individual's age variable.

The period of development of the theory is a time of examination and transformation of economic thought because the new situation has called into question the validity of earlier theories of consumption and saving. That is how a series of empirical studies is created which conduct analysis based on time series of data.

The studies produced a series of facts and conclusions but did not offer a consistent view of the relationship of the observed phenomena. Therefore, one of the reasons for the long-term development of the life cycle theory is a very small number of credible postulates, that is, the absence of a single model of consumption and saving behavior, which would enable the integration of both micro and macro data with different implications.

The life cycle hypothesis (Modigliani, 1966) is based on the idea of making a rational decision about consumption over a lifetime, where the available resources in the observed period are the only limitation that must be taken into account.

The theory assumes that the growth of "lifelong" resources or average income is a direct, proportional function of consumption growth in all periods of life.

According to the life cycle theory there is no pronounced tendency to save in youth, given the level of income and large expenditures, while saving begins to grow significantly in middle age, reaching its maximum in the retirement period. Furthermore, the accumulated funds begin to be spent from retirement to death. These assumptions made it possible to introduce age into models of saving. The mentioned theory is more important for household saving as a component of private saving.

A significant implication of this theory is that saving does not depend on the level of national income, but on the rate of its growth, i.e. the wealth of an economy depends on the length of working life of its population. Although the life cycle theory, similar to the aforementioned theory, has been challenged in several empirical studies, it is still an important "economic tool", as it provides insight into the effects of demographic change on saving and enables the analysis of the role of saving in economic growth.

The first analyses of the theory were mainly concerned with examining the accuracy of the assumption that people save in their youth, more precisely in middle age, and then spend the accumulated funds in old age when, despite the accumulated funds, there is a sharp decline in consumption. A large number of studies have resulted in the rejection of this claim, such as Banks, Blundell, and Tanner (1998). The authors have proven that older people do not allocate funds in the way that the life cycle theory states, but that older people also save a part of their income.

Although both theories originated relatively long ago, in the 1950s, and experienced a large number of criticisms, they are still the so-called Buffer-stock saving models and are also indispensable in economic research.

3. Literature review

The basic economic theories that deal with saving and its factors are, as presented in the previous part of the paper, the permanent income hypothesis and the life cycle hypothesis. In these theories, as seen from the earlier text, income stands out as the dominant factor of saving. The life cycle hypothesis emphasizes the importance of demographic factors as well. Empirical analyses in the field of factors that determine saving recognize a large number of them, but do not give unambiguous assessments of the effect of individual factors on saving.

In most of these studies, inflation is used as a measure of uncertainty in terms of the future. According to "buffer stock" theories of saving, the greater the uncertainty, the greater the saving due to the fact that individuals who are not prone to risk in this period save money as a precaution. The precautionary motive, according to empirical analyses, generates a positive impact of inflation on saving. The positive impact of inflation on saving is also present due to the fact that inflation is related to income growth in the expansive phase of the business cycle. By analyzing the determinants of saving in Pakistan, Chaudhry et al. (2014), find that inflation has a positive impact on saving in both the short and long term. Inflation also affects nominal interest rates. Namely, inflation increases nominal interest rates thus producing higher income and further saving. Loayza et al. (2000) find that this postulate may not be valid. The authors argue that if the interest rate is not adaptable to changes in the inflation rate, then rising inflation will lower the real interest rate, and this will discourage saving in the form of financial assets. According to Kolas and Liberd (2015), the growth of consumer prices is also a positive function of saving. Inflation and the amount of money supply (M2) will be included as variables in the model of this research.

The central government can influence saving in various forms through its policies. The impact is possible through fiscal policy measures. Also, the impact can be achieved by public saving, which is a significant implication of Keynes's theory. In accordance with neoclassical life cycle models, the reduction of government saving is a positive function of consumption and a negative function of aggregate saving. In this way, the tax burden is shifted from current to future generations. Keynes's (1936) model argues the opposite. According to this model, higher aggregate saving temporarily reduces public saving. The third opinion on this issue is given by Ricardian theory. The theory argues that the growth of public saving does not have a significant impact on overall national saving. Namely, the growth of public saving leads to a decrease in private saving in the same amount. A large number of empirical papers have also dealt with this analysis.

According to Shaikh and Sheikh (2013) and Esmail (2014), high government expenditures are a negative function of saving, especially when they are expressed in the form of external debt growth. Ozcan et al. (2003) refute the postulates of Ricardian theory. They determine that public saving does not have a tendency to "squeeze out" private saving. Chaudhry *et al*. (2014) using the ARDL and ECM methodology show that the budget deficit is also a negative function of saving (both in the long run and in the short run). According to this research, budget revenues are a negative function of saving in the short run, but a positive function in the long run. In accordance with the above mentioned, the model of this paper will include as variables: general government revenue, general government expenditure, fiscal balance, and external debt.

The current account deficit and the ratio of the export-import price indices are commonly referred to as external variables. These factors can have a significant impact on saving in open economies no matter how developed they are. Herberger-Laursen-Metzler's hypothesis stimulates the analysis of the causality of saving and the relationship between the export and import price indices. The theory argues that the deterioration in the ratio of export-import price indices is a negative function of income and saving. Empirical studies in this area have shown that improving the ratio of export and import price indices is a positive function of saving due to the positive impact on income and wealth. The positive impact of the ratio of export and import price indices on saving (both in the long run and in the short run) is determined by Kwakwa (2013). A

current account deficit usually causes a partial reduction in private saving. This happens because external saving has a tendency to replace the domestic one. Loayza et al. (2000) show that the increase in the current account deficit is a negative function of domestic saving, which is therefore replaced by external saving. Ayalew (2013) determines the check and statistical insignificance of this variable in the long run. The current account deficit and the ratio of export and import price indices will be included as variables in the model of this research.

The most important "auxiliary" variable of the theory of permanent income is the interest rate. The interest rate affects saving through two effects. The first effect is the substitution effect according to which the growth of the interest rate increases the costs of the current consumption in relation to the future consumption causing the growth of saving. According to this effect, saving appears as a substitution of the current for future consumption. Another effect is the income effect, according to which the growth of the interest rate can discourage saving. This is due to the desire to receive an equal amount of money in the upcoming period. In line with the income effect, there is a decrease in public saving in countries with high public debt.

From the above, it is clear that the sign and intensity of the impact of interest rate on savings can be different. A number of empirical studies highlight the positive effects of interest rates on savings. Using the ARDL and ECM methodology, Chaudhry et al. (2014) prove that higher interest rates are a positive function of savings. The research methodology enabled the authors to prove the significance of the impact of interest rate on saving in both the long and short term.

The second group of studies highlights the negative effect of interest rates on saving. Thanoon and Baharumshah (2005) in their analysis argue that the interest rate is a short-term negative function of saving in Latin American countries. The methodological tool in this case was the unit root test. Using the regression of Kolas and Liberd (2015), Thanoon and Baharumshah (2005) determine that the interest rate is a negative function of saving in Poland, while for the Organisation for Economic Co-operation and Development (OECD) countries it has a weak positive impact. A number of analyses find that the interest rate does not have a statistically significant effect on saving. Such analysis results were obtained by Bhandari et al. (2007). The interest rate will also be included as a variable in the model of this research.

The last variable to be included in the model is the unemployment rate. In BiH, the unemployment rate has been constantly high in the post-war period, which leaves significant repercussions on the overall national economy and even on the household saving. Athukorala and Tsai (2003) include the unemployment rate in the model. A large number of studies emphasize the importance of demographic factors of saving, but for BiH these data are not available in time series long enough to meet the basic statistical and econometric conditions of sample size, so these variables are not included in the model.

From the literature review, it is obvious that there is no strictly determined order of significance or degree of influence of certain factors on saving.

The nature of the influence depends on the cultural and political characteristics of individual economies, population, experience, but sometimes also on the research methodology.

4. Research methodology

The use of economic indicators in the form of time series first requires their seasonal adjustment to exclude the effect of the season. The total variation of time series is significantly determined by seasonal variations of series, so it is necessary to do seasonal adjustment of the data. If the importance of seasonal influences is neglected, a large variance appears, so it is necessary to conduct seasonal adjustment of the data. When doing seasonal adjustment of time series, attention is focused only on assessing and removing seasonal impacts. The seasonal adjustment procedure does not perform analyses or explain the causes of seasonal phenomena.

In this paper, X-13 ARIMA and TRAMO SEATS methodologies are applied for the purpose of seasonal adjustment of time series. The X-13 ARIMA methodology provides a large number of possibilities for creating time series that are in line with the criteria of the regARIMA model. RegARIMA models are actually regression models, but their errors are ARIMA. The main function of time series is expressed by a linear combination of regressors, while the covariance structure of the sequence is an ARIMA process. If the regressors are turned off, then the regARIMA model would be reduced to the ARIMA model. Therefore, it is assumed that the main function is equal to zero. The TRAMO/ SEATS method for seasonal adjustment is often recommended in the literature. The biggest advantage of the TRAMO / SEATS method over other seasonal adjustment methods is sufficient reliability in detailed analyses. The first phase of the method is the TRAMO program, used to pre-adjust the series.
At this stage, the adjustment of working days is based on the regression model. Also, in this phase or the pre-adjustment phase, extremes as well as outliers in the series are detected. In the second phase of the method or SEATS program, the seasonal adjustment is performed.

After seasonal adjustment of the data, in order to continue the econometric analysis, the stationarity of the included variables must be examined, as this is one of the most important features of time series. Stationarity is a prerequisite for determining most econometric models. A stochastic procedure is claimed to be stationary if its probable properties do not change over time. The stationarity tests used in this paper are: ADF test, PP test and KPSS test. The null hypothesis ADF and PP test claim the nonstationarity of the process, while the null hypothesis KPSS claims the stationarity of the process. KPSS serves as a confirmatory analysis for previous tests.

The ARDL methodology is used to determine which factors affect the household saving in BiH and what is their maturity impact. The ARDL methodology is particularly important because it can be applied regardless of whether the variables are I (0), I (1) or a combination of these. Unlike Johansen's approach, the ARDL methodology ensures the identification of cointegration equations. Here, each variable is an individual equation of a long-term relationship. After one cointegration equation is determined, the ARDL model of the cointegration vector is reparametrized into the EC model. The reparameterization process thus ensures the identification of short-term dynamics. Reparameterization is possible because ARDL dynamic equation model is of the same form as that of ECM. Through the distributed lag model, unlimited regression lags in the regression equation are allowed. The ARDL methodology process is carried out in three steps. The first step is to determine the existence of a long-term relationship among the variables. In order to determine the existence of a long-term relationship the F-statistic is calculated. In the second step, the appropriate number of lags is selected and in the third step, the reparameterization of the selected ARDL model into the ECM model is performed. In this paper, two software programs are used to perform all the tests and particular steps of the ARDL methodology: EViews 9.5 and R with a number of packages created for time series analysis.

The literature review section indicates the variables that will be included in the model. The level of household saving will be used as a dependent variable, and as independent variables: gross domestic product (GDP), inflation, general government revenues, general government expenditures, fiscal balance, M2, current account balance, external debt, ratio of export and import price indices, deposit interest rate and unemployment rate will be used.

Once cointegration tests are conducted, this preliminary specification of the model of saving may undergo changes. All data on the variables for the observed period, 2000q1 - 2016q3, are taken from the databases of the Central Bank of BiH and the Agency for Statistics of BiH.

5. Empirical research

In a review of the research results, the results of the stationarity tests of the variables will be presented first. This is followed by a display of evaluation and analysis of the defined model using the ARDL methodology.

5.1. Unit root test results in seasonally adjusted variables

Testing the hypothesis that seasonally adjusted variables have unit roots is done using the ADF test and the PP test. The null hypothesis of both tests claims that the variable has a unit root. However, the PP test has an advantage over other unit root tests. The main advantage is that it does not require the inclusion of additional dependent variables, as it is the case with most other tests. An additional advantage of the PP test is that it is a nonparametric test, so it is not based on the assumption of the functional form of error variables.

The KPSS test is also used for confirmatory analysis of stationarity. The null hypothesis of the KPSS test claims that the variable is stationary. Unit root tests generally have weak strength on small samples, i.e. in short time series.

In order to check the robustness of the results, the results for the three stationarity tests are shown below. The Schwarz criterion for determining the number of lags is used in the ADF test, while in the PP and KPSS tests, a spectral grading model with a Barteltt core and a Newey-West bandwidth is used.

The results of the three-unit root tests did not give unambiguous results for the variables included. In order to determine the order of integration of the variable, in addition to the test results, a visual revision of the variable graph is applied.

In the literature, due to the low power of unit root tests in time series of length available in this analysis, this combined approach is recommended. Applying the combined approach gives the general impression that, for the most part, there is agreement between the test results and the flow of time series on their chart.

Table 1. *Summary of unit root test results - order of integration*

Variable	*ADF*	*PP*	*KPSS*	*Comment*
Household saving	I(1)	I(1)	I(1)	Non-stationary first-order
GDP	I(1)	I(1)	I(1)	Non-stationary first-order
Inflation	I(0)	I(1)	I(0)	Stationary
General government revenue	I(1)	I(1)	I(1)	Non-stationary first-order
General govern.expenditure	I(1)	I(0)	I(1)	Non-stationary first-order
Fiscal balance	I(0)	I(0)	I(0)	Stationary
M2	I(1)	I(1)	I(1)	Non-stationary first-order
Current account balance	I(0)	I(0)	I(1)	Trend-stationary
External debt of the country	I(1)	I(0)	I(1)	Non-stationary first-order
Ratio of export and import price indices	I(0)	I(0)	I(0)	Stationary
Deposit interest rate	I(1)	I(1)	I(1)	Non-stationary first-order
Unemployment rate	I(1)	I(1)	I(0)	Non-stationary first-order

Source: Author

When deciding on the order of integration of a certain variable, we start from the extended model, which implies the inclusion of a constant and a trend. Further in the iterative procedure, and in accordance with the methodology developed by Enders, it is determined whether the variable has a unit root or not.

Thus, the decision on the order of integration of variables is made on the basis of a model that includes constant and trend, but not in a direct way, but using the Enders process. The most important thing to point out here, and for the purpose of analyzing the lags distributed by autoregressive models, is that all variables are either stationary or integrated variables of the first order.

Visual revision of the graphs of variables included in the analysis identifies two outliers, which are a consequence of the effects of the global financial crisis in 2008 on the economy of BiH. Therefore, for these two quarters, two artificial dummy variables are introduced, which take the value 1 in these quarters, and zero in the other quarters. In other words,

D104 = 1, and 0 in other quarters, similarly D111 = 1, and 0 in all other quarters.

5.2. Model evaluation using ARDL methodology

Prior to the evaluation of the ARDL household saving model, the F- test is used to test the existence of a long-term correlation among the variables. The dependent variable is the level of household saving, the independent variables are: GDP, inflation, M2 and the ratio of export and import price indices, and exogenous variables are trend, D104 and D111. The result of the F-test is given in Table 2.

Table 2. *F-test and t-tests*

F-test			
Value	*Significance*	*I(0)*	*I(1)*
7.48	10%	2.91	3.82
	5%	3.38	4.43
	1%	4.56	5.79

Note: The null hypothesis is that there is no correlation between series levels. Critical test values are given for final samples of size 50.
Source: Author

The value of F-statistics in the F-test, 7.48, suggests rejecting the null hypothesis that there is no long-term relationship among the variables in the ARDL model of household saving. In other words, this test confirms the existence of a long-term relationship among the series involved.

After confirming the existence of the long-term relationship, the number of lags of each series in the ARDL model is determined in the next step. Determining the number of lags in the model is done using the so-called Schwarz's criterion. By using it, the ARDL (1,0,0,1,2) model is chosen.

The evaluation of this ARDL model with the level of household saving as a dependent variable is given in Table 3.

Table 3. *ARDL model*

	Long-run		
Variable	*Coefficient*	*t-statistic*	*p-value*
GDP	0.2577	1.32	0.1936
Inflation	28.2182	2.81	0.0079
M2	-0.2794	-3.75	0.0006
Ratio of export and import price indices	-21.042	-6.48	0.0000
@ Trend	191.055	15.98	0.0000
	Short-run		
Constant	190.781	8.13	0.0000
ΔM2	0.2890	8.91	0.0000
Δ Ratio of export and import price indices	-2.3725	-3.38	0.0018
Δ Ratio of export and import price indices (-1)	2.1115	3.60	0.0010
D104	-105.885	-2.32	0.0261
D111	527.327	10.97	0.0000
Error correction (EC) (-1)	-0.3119	-7.15	0.0000
Coefficient of determination R2	0.8903		
Adjusted coefficient of determination	0.8743		
F-statistic	55.4607		
Breusch-Godfrey autocorrelation LM test	2.5278 (number of lags = 4), *p*-value = 0.6397		
Jarque-Bera normality test	6.3247 (degrees of freedom = 2), *p*-value = 0.0423		
Ramsey RESET functional form test	3.3351 (degrees of freedom = 1, 35), *p*-value = 0.0764		
ARCH test	2.8203 (number of lags = 4), *p*-value = 0.5883		
Breusch-Pagan-Godfrey heteroskedasticityt est	12.4594 (degrees of freedom = 11), *p*-value = 0.3301		

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

In the long run, inflation has a positive effect on saving. A 1% increase in inflation will result in an increase in household saving by 28 million in the long run.

The level of M2 and the ratio of export and import price indices have a negative impact on the level of household saving in the long run. The value of the coefficient with the participation of M2 is -0.2794 and indicates that in the long run the level of household saving will decrease by BAM 0.28 million with a unit increase in the level of M2. The value of the coefficient with the ratio of export and import prices is -21.0423 and indicates that in the long run the level of household saving will decrease by about BAM 21 million with a unit

improvement in the ratio of export and import prices.

The error correction coefficient (EC (-1)) in the short-term part of the model is with the expected negative sign and is statistically significant. Its value -0.3119 indicates a relatively slow adjustment of the estimated short-term household saving to their long-term trajectory: (1 / 0.3119) * 4 = 12.82 quarters, i.e. it takes almost 13 quarters to fully adjust the level of household saving according to this ARDL model to deviations from the long-term trajectory of the level of household saving. Based on the previous results of the more dominant statistically significant impact of the inflation rate and the ratio of export and import prices on household saving, the hypothesis of this paper is confirmed, household saving in BiH is determined by macroeconomic factors.

All statistical tests of the specifications of the evaluated model, except the Jarque-Bera test, indicate that the ARDL model is correctly specified. In the case of the Jarque-Bera test, a p-value of 0.0423 is obtained, which indicates a smaller deviation from the residual normality of the evaluated ARDL model. It should be borne in mind that the key assumption of the ARDL methodology is that errors of the model are not autocorrelated. This is the case with this model as confirmed by the Breuch-Godfrey autocorrelation LM test.

The result of the Jarque-Bera normality test can be ignored because the ARDL model is estimated using the least squares method. As it is known, the estimate obtained by this method is a consistent estimate regardless of any assumption about the normality of the model error. In other words, this result of the Jarque-Bera test, which indicates a smaller deviation from normality, can be freely ignored because all tests of significance of the coefficients evaluated model will have a correct asymptotic distribution even if the errors are not normally distributed.

5.3. Discussion

The variables that statistically significantly affect the level of household saving in BiH are: inflation, ratio of export and import price indices and M2. Inflation has a positive impact on household saving in the long run. A 1% increase in inflation will increase household saving by BAM 28 million in the long run.

Analyzing the household saving in Central and Eastern Europe, Kukk and Steahr (2015) also find that inflation is a positive function of the dependent variable. The same results are obtained by Hufner and Koske (2010) and Freytag and Voll (2013). Chaudhary et al. (2014), considering the monetary and fiscal determinants of saving in Pakistan, determine the positive impact of inflation on total private saving, as well as Kolas and Liberada (2015) who analyze private and household saving in Poland.

Such results are expected given the economic and political situation in the country. Thanks to the "rigid" bank-centric system, inflation in BiH is not high. However, due to the economic and overall political situation, the population reacts to the slightest changes in macroeconomic stability. Inflation is perceived by the population as a significant danger, so, consumption is rapidly reduced and saving is growing. Due to the expectation that the trend of economic instability will continue in the long run and given the overall situation in the country, the growth of inflation has a long-term effect on the reduction of consumption and the growth of saving.

The ratio of export and import price indices is a negative function of household saving in the long run. A unit improvement in the ratio of the export-import price indices to GDP will reduce household saving in GDP by around BAM 21 million in the long run. The ratio of export and import price indices is an indicator of the competitiveness of the economy. According to the research results, the more competitive the economy of BiH is in the long run, the saving will decline.

The competitiveness of the economy certainly has a significant effect on the overall economic and political trends in the country, particularly on expectations of the population and ease in income expectations.

If a poor or developing economy is more competitive, the population has a greater sense of security and confidence in the domestic

economy. A more competitive economy will ensure: job creation, increase in exports, faster and easier flow of capital, as well as the changes expected in the financial markets in terms of liberalization and deepening of financial markets. Such trends conduct to the reduction in precautionary saving among the population of BiH in the long run.

M2 is a negative function of household saving in the long run, and a positive function of saving in the short run. An increase in M2 by BAM 1 million leads to a decrease in the level of household saving in GDP by about BAM 0.28 million in the long run, and to an increase in short-term saving by about BAM 0.28 million. A larger amount of money in circulation should also mean greater financial development, which further affects the growth of confidence in the banking sector in BiH. Regardless of the fact that the trust in the financial sector of the state has increased, the overall political situation in the country makes it impossible for the population to react normally to the appearance of a larger amount of money in the short term. If there is a larger amount of money in circulation in the short term, the population will save more in order to "use" the available funds and create stocks for the future period, which is uncertain given the economic and political environment.

If the population expects the trend of available large sums of money to continue in the long run, then they will respond to such trends with smaller amounts of saving. The results can also be interpreted in the spirit of Friedman's theory. Higher expected permanent income causes a decrease in saving.

6. Conclusion

This paper focused on researching the phenomenon of household saving, as one of the components of private saving in the small open economy of BiH over a sixteen-year period. The character of the influence of certain factors on saving is not unambiguously determined by the theoretical and empirical literature. Also, most analyses apply a macroeconomic focus on private saving as a whole and do not differentiate among individual categories of private saving. Making distinctions among individual components of private saving is especially important for small, growing economies. The analysis conducted in this paper examined the impact of macroeconomic and financial factors on household saving in BiH as a component of private saving.

The results of the research show that household saving, expressed in absolute terms, in BiH is determined by: inflation, M2, and the ratio of export and import price indices. A 1% increase in the inflation rate will result in an increase in the level of household saving by BAM 28 million in the long run. M2 and the ratio of export and import price indices have a negative impact on the household saving rate in the long run. The value of the coefficient of M2 is -0.2794 and indicates that in the long run the level of household saving will decrease by BAM 0.28 million with a unit increase in the level of M2 (growth of BAM 1 million). The value of the coefficient of the ratio of export and import prices is -21.0423 and indicates that in the long run the level of household saving will decrease by about BAM 21 million with a unit improvement in the ratio of export and import prices.

The obtained results achieved the research goal and the influence of certain factors on the household saving in BiH was examined. The research confirmed the work hypothesis that the household saving in BiH is determined by macroeconomic factors. The conducted research gives an appropriate theoretical and empirical contribution. The theoretical contribution is reflected in the development of the household saving model in BiH. So far, no similar research has been conducted in BiH. The paper makes a theoretical contribution on a "global" level, in the sense that the impact of the existing theory-defined factors on household saving in small growing economies has been tested and determined. The empirical contribution of the research is reflected in the fact that the obtained results can be used to make strategic decisions. The conducted research as an aid in making strategic decisions can be used at the macroeconomic level, but also at the level of commercial banks in which the majority of household saving in BiH is realized.

The biggest limitation during the writing of the paper was the availability of data and their

quality. Some data were not monitored for the BiH economy and the included variables had a significant number of missing data during the observed period. By applying statistical methods of missing data imputation but also by contacting the appropriate statistical and financial state institutions, while respecting the procedure of obtaining data that have not been made public, the limitations have been overcome.

In the continuation of the research, it would be useful to conduct a similar empirical analysis after a certain number of years to determine whether the length of time series affected the results. It would be useful to include demographic data in saving models as well. Due to the brevity of data series, this was not possible in this study. It would also be important to conduct a comparative analysis with similar economies in order to draw more general conclusions.

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