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DETERMINANTS OF THE INTERNATIONAL RESERVES IN THE REPUBLIC OF MACEDONIA

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Abstract

Adequate level of international reserves is an indicator of the stability of a country. The research for the determinants of the international reserves and their appropriate level was intensified after the Asian crisis in 1996 and especially after the world financial crisis in 2007. The main purpose of this paper is to try to identify the determinants of the foreign exchange reserves in the Republic of Macedonia. We used quarterly data for the period 2004-2016 mainly from the state statistical system of the country using OLS estimation technique. The empirical results from our OLS model show that there is a statistically significant relationship among foreign exchange reserve as a dependent variable and the policy interest rate, UPI of exports, nominal GDP and exchange rate (Euro/denar) as independent variables. The results show that the highest impact on the level of foreign reserves in Republic of Macedonia has the exchange rate.

Key Words: International reserves, exchange rate, interest rate, GDP, imports

JEL Classification: C01,C31, C32, E51,G01,G21

Introduction

The International Monetary Fund defines the international reserves as external stock of assets which are available to the country's monetary authorities to cover external payment imbalances or to influence the exchange rate of the domestic currency through intervention in the exchange market or for other purposes".

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8) The views expressed in this paper are those of the authors and do not represent the views of the National Bank of the Republic of Macedonia

Hence, the international reserves represent an important indicator for the stability of the country in the international arena.

According to European Central Bank the world foreign exchange reserves grew from USD 1.2 trillion in January 2005 to more than USD 4.0 trillion in September 2005.There are very interesting facts regarding the structure of this increase; a large part of this increase is due to the increment in emerging Asia, 57% of the foreign reserves are held by 5 central banks, of which Japan and China are the top two,accounted for about half of the international reserves accumulation. According to the IMF data, the world international reserves amounted 5.4 trillion of US dollars in 2014, representing 65% increase in comparison with 2008. This shows that the financial crisis which started in USA with the collapse of the Lehman and Brothers bank had future impact on the level of the reserves which governments are holding for precautionary purposes. According to ECB there is progress towards more active management of official reserves and investments in more diversified and in instruments with a longer maturity. Furthermore, substantial share of official foreign assets has been channeled in to instruments with other than reserve holding (oil funds in Norway and Russia, stabilization funds).

According to BIS (Bank for international settlement) there are three motives for holding reserves: a transaction motive, an intervention-related or precautionary demand motive and wealth related or portfolio demand motive. The motives for holding reserves and the appropriate levels have been in the focus of many researchers tracing their way up to the sixties of the previous century. However, the analysis of the motives and the appropriate level of the reserves became very popular after the breakup of the Soviet Union and the communism, as well as after the Asian crisis in 1997-98. Most of the authors agree that the appropriate level of the foreign reserves depends on the external exposure of the economy, the size of the economy, the type of the exchange rate, the constrains on international trade and capital flows as well as the opportunity costs for holding reserves. However, it is accepted as a general rule by the international organizations, that a country is required to have international reserves in the level of at least three months of projected imports.

Despite the before mentioned factors for having international reserves, for a small open developing country like Republic of Macedonia, which has struggled in the past with high inflation, the foreign reserves are not just a mean for maintaining price stability, but also an indicator of the stability of the country and overall economy. Therefore, the management of the international reserves has been of crucial importance for the Republic of Macedonia. Even though the level of the international reserves throughout the years have increased constantly, in the first quarter of 2016 there was substantial withdrawal of the Denar deposits, as well as substantial increase of the foreign currency demand on the foreign exchange market which caused depletion of the international reserves. The reason for this withdrawal was the prolonged political crisis which created economic uncertainty. Thanks to the well liquid financial system and the appropriate reaction of the Central Bank there was no major banking crisis, but this was a driving motive for us to investigate the determinants of international reserves in Macedonia.

In this paper we are trying to determine the variables which influence the level of the international reserves in the Republic of Macedonia. We are using time series data and analyzing macroeconomic variables. We develop an Ordinary least squares model in order to determine the statistical significance of the variables towards the international reserve level and additionally see the linkage/dependence of these determinants with the level of international reserves.

The structure of the paper is as follows: after this introduction we present the literature review. The literature review is an overview of older papers from the sixties and seventies in the previous century, as well as contemporary papers from this century which have analyzed the topic of the international reserves. The third section discusses the developments of the foreign exchange reserves in Macedonia. In the fourth section we present our model with the description of the procedure and obtained results and in the last part we present the conclusions of the research.

Literature review

Traditional approaches to international reserves determinants are usually trade-based, focusing on the influence of the imports propensity, variability of international receipts and payments and the opportunity costs to the level of the foreign exchange reserves. The early empirical work was focused on establishing direct proportions between reserves and other macroeconomic variables. Hence, Heller (1966) analyzed the determinants of the foreign exchange reserves and he concluded that reserves are mostly held for liquidity motives and that propensity to import is the main driver of the level of the reserves. He developed a cost-benefit model to analyze the effect of adjustments to external equilibriums, according to which the optimal level of reserves depends on the costs of adjusting to an external balance, the cost of holding the liquid international reserves and the probability that there will actually be a need for reserves. On the other hand (Clark 1970) argues that the need for reserves is obviously related to the degree of variability in a country's international transactions. The author tests the rudimentary theory of reserve-holding behavior. In his model he analyzes 38 countries. The main conclusion which he derives from his research is that countries use reserves to finance payments deficits, but at the same time take steps to bring their actual holdings of reserves back to the desired level, which according to this author are the main driver of the level of the international reserves. These conclusions are also brought by Edwards (1983). Frankel J. (1974) widened the analysis through the estimation of separate demand functions for international reserves by developed and less-developed countries. He shows that the behavioral parameters of the two groups are significantly different. As a by-product, he also concludes that the association between reserve holdings and the relative size of the foreign trade sector is positive. Streeter (1970) finds a significant relationship between the level of foreign reserves and countries trade deficit, as well as the opportunity costs of holding reserves. In accordance to the previously mentioned literature (Chowdhury at all, 2014) groups the determinants of the foreign exchange reserves in the early literature in to 5 categories: economic size, current account vulnerability, capital account vulnerability, exchange rate flexibility and opportunity costs. On the other hand in the reserve demand models of the present day more variables like free capital mobility, inflation and inflation targeting, risks arising from different types of foreign exchange regimes as well as precautionary motives are incorporated. The Asian crisis is maybe the strongest reason for this. Mendoza (2004) analyzed the increase of the foreign reserves after the Asian crisis and concludes that this trend of high increment of the levels of the international reserves is present in most of developing countries. On the other hand Dabla-Noris.E (2007) present a cost-benefit approach which includes the precautionary motive for low income countries. She concludes that the three months of imports rule of thumb is simply not enough and that governments should make more efforts in increasing the level of the reserves. Jeanne (2007) presents a simple framework for a cost-benefit analysis of the optimal level of reserves to deal with capital account crises. His work shows that the demand for reserves will depend on the size of the capital flight and output loss in a crisis, the opportunity cost of accumulating reserves; the relative risk aversion of the domestic consumer, and the probability of a crisis (which is endogenous to the level of reserves if they have a role in crisis prevention). Furthermore, the same author in 2016 developed a cost-benefit model for optimal reserves management for financially closed economies suggesting that the governments should have more active policy when using foreign reserves, not only during balance of payments or other types of crisis.

In the region of Europe the level of international reserves was investigated by Badinger (2004). In his research he analyzes the demand for the international reserves in small and open economies – the case of Austria with formerly fixed exchange rate regime Vis a Vis the German mark. By using the vector error correction approach he addresses two main questions: whether the Austrian national bank is managing the international reserves rationally, and whether the monetary approach to the balance of payments holds for Austria; and if it does would that imply that an excess of money demand (supply) is associated with an inflow or outflow of international reserves in the short run. The author analyzes the Austria's reserve demand over the period 1985 – 1997 using quarterly data and concludes that in the period of the investigation Austria's long-run policy reserves have been guided by the scale of the foreign trade, uncertainty and opportunity costs of holding reserves (domestic minus foreign interest rate). On the other hand in the short run, the

reserve movements were additionally driven by imbalances on the national money market, confirming the monetary approach to the balance of payments of Austria.

The level of international reserves was also a topic of extensive research for the emerging market economies, especially the economies of the Asian countries. In this context Dash P.(2007) investigates the factors that influence foreign exchange reserves of India using the VECM – Johansen Maximum likelihood vector error correction model. The author comes to the conclusion the shocks on imports and exchange rate have permanent effects on reserves, on level as well as volatility. On the other hand Chowdhury at all, (2014) in his analysis of the determinants of the foreign reserves finds that there is a strong relationship among foreign exchange reserves, exchange rate, remittance, home interest rate, broad money M2, Unit Price Index of export and import and per capita GDP.

Overall even though there is a lot of literature in this topic there is no consensus or consensual evidence in the literature as to which variables determine the level of the international reserves. Additionally, throughout our research we couldn't find any relevant literature on this topic for the SEE countries and especially for the Republic of Macedonia, so this paper would contribute in enriching the overall literature in this area of research.

Developments of the international reserves in Macedonia

According to the Law on the National Bank of the Republic of Macedonia, one of the main tasks of the National Bank is managing the foreign reserves of the Republic of Macedonia. This is closely linked to achieving the primary objective of the monetary policy, providing liquidity to maintain the stability of the domestic currency in circumstances of applied monetary strategy of a de facto fixed exchange rate of the Denar against the Euro. Also, the foreign reserves management ensures sufficient liquidity for regular settlement of the financial liabilities of the Republic of Macedonia abroad (Report on foreign reserve management, NBRM). According to NBRM Statistics the foreign reserves are those external assets that are readily available to and controlled by monetary authorities for meeting balance of payments financing needs and for intervention in exchange markets in order to affect the currency exchange rate. Also, the purpose of foreign reserves is to maintain confidence in the currency and the economy, and serve as a basis for foreign borrowing. The foreign currency reserves are consisted of: monetary gold, SDRs, transferable deposits, securities, foreign currency and other deposits.

During the period of analysis 2004-2016, the structure of the gross foreign reserves have changed. In 2004, around 88% of the foreign reserves were transferable deposits and other deposits in FC, while in 2016 the dominate part are the securities in foreign currency which present the investment of the central bank in bonds (mainly in Germany and USA). This shows an improvement of the international reserves management and foreign currency liquidity.

Cumulative change for September 2006   Source: NBRM data
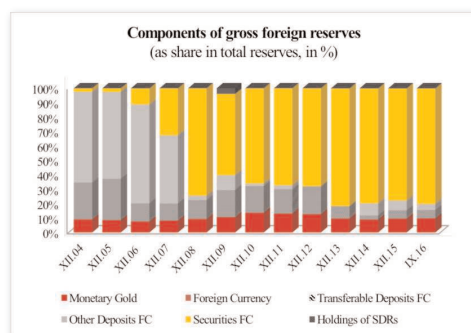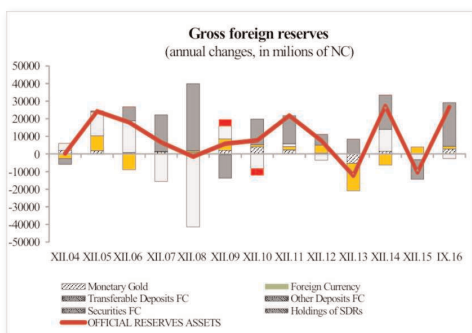
In the last twelve years, the gross foreign reserves increase around 4 times, from 717 million euros in 2004 to 2.699 million euros in Q3 2016. The gradual liberalization of the capital account, the admission to CEFTA, the EU candidate status, higher credit rating, as well as the aggressive policy of the Government for attracting foreign capital in the country contributed to incremented inflow of foreign currency. Also, the inflows from the direct foreign investments and foreign borrowing from the government contributed to the increase of the foreign reserves. During this period, the foreign reserves had different dynamic, influenced by economic and non-economic factors. It started with significant increase of the foreign reserves in 2005, when they went up by 406 million euro, as a result of favorable movements on the foreign exchange market. The increase in the gross foreign reserves was primarily generated from the realized net purchase of foreign exchange by the NBRM on the foreign exchange market and from the realized net inflows of government deposits. The increase was also influenced by the allocated funds on the basis of the banks' reserve requirement on the foreign currency deposits and inflows originating from interest on foreign currency deposits with foreign banks. Part of the total annual increase of the foreign reserves was due to the inflows based on Eurobonds aimed at repayment of the debt to the London Club of Creditors. The increase of the foreign reserves continued in the following years, together with the high volume of foreign currency inflows. This was expected having in mind the liberalization of the capital account and the stabilization of the environment. Most of the foreign currency inflows were result of private transfers and also from the high amount of used foreign credits and loans by the private sector, the greater export activity, the growth in the portfolio-investments and the sale of government shares. The satisfactory level of foreign reserves in 2007, contributed to early payments towards several international institutions (Paris Club of Creditors, IMF, MBDP). The global financial crisis that hit the world in 2007-2009 caused unfavorable movements in the balance of payments and increase of debt in the private sector. The effect of the global financial crisis was especially felt in the first half of 2009, when there was an increase in the demand for foreign exchange on the foreign exchange market and pressure on the denar exchange rate. In the second half of 2009, the conditions of the foreign reserves improved, as the result of stabilization of the current account, monetary policy measures and improved conditions of the foreign exchange market. Also, the issued Eurobond that year also influenced on the foreign inflows and significant increase of the foreign reserves. In the next three years, the foreign reserves continued to grow, counting an increase of 478 million euro for the period 2010-2012. Still, in 2013 there was a decline of foreign reserves on annual basis as a result of negative price changes and currency differences. The withdrawal of banks' foreign currency deposits with the National Bank also contributed to the reduction of foreign reserves as a one-off factor. The stabilization of the foreign reserves was registered the next year, when they went up, as the result of the stable macroeconomic environment and foreign exchange market. Unfortunately, very soon, the management of foreign reserves once again was put on test, due to uncertain political situation in the country. The foreign reserves declined, which was primarily influenced by the net repayments of government liabilities abroad. Furthermore, in the second quarter of 2016 there was a substantial withdrawal of the Denar deposits, as well as substantial increase of the foreign currency demand on the foreign exchange market which caused depletion of the international reserves. In the third quarter of 2016, the international reserves increased due to gradual stabilization and inflow from the new Euro bond.
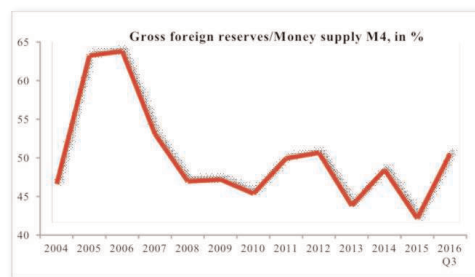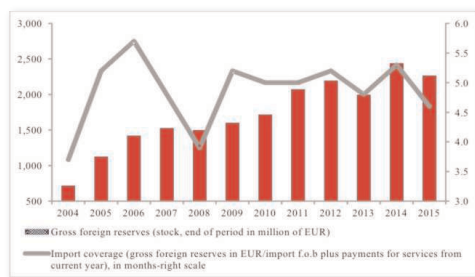
Source: NBRM data

Despite the challenges that the foreign reserves faced during the period of analyze 2004-2016, the indicators stayed stable, and foreign reserves ensure coverage of the import of goods of around 4 months. Also, during this period, the short term debt is fully covered by the foreign reserves. The foreign reserves present a sound coverage of the liabilities of the domestic monetary system to the private sector, which can be seen by the indicator for the correlation of the gross foreign reserves and the broadest money supply M4, which equals around 50% in 2016.

The efficient management of the foreign reserves will continue to be one of the main strategy objectives of the National bank of Republic of Macedonia. According to NBRM Strategic plan 2017-2019, the management of the foreign reserves of the Republic of Macedonia will rely on the optimal balance of the principles of safety, liquidity and return on investment. In the next two years, the national bank is planning to adjust the investment strategy towards increasing the investments in financial instruments and currencies with positive yields and more stable economic perspectives. Also, the National Bank will continue to further strengthen the institutional capacity for managing foreign reserves by participating in the Reserves Management and Advisory Program (RAMP), improvement in the risk management in foreign reserve management in accordance with the best practices recommended by the World Bank, improved efficiency through implementation of new trade strategies, ensuring technical assistance and exchange of experience and constant trainings of employees (NBRM Strategic plan 2017-2019).

Methodology

As a methodology for analyzing the determinants of the international reserves we selected the multinomial regression (OLS) model. The multinomial regression model was chosen because of the following reasons: 1.) through this model we can determine the explanatory power of the selected (independent) variables towards the dependent variable through the coefficient of determination, 2.) The OLS regression shows us whether the independent variables have statistically significant impact to the independent variable and 3.) Through the model we can determine the linkage or correlation (positive/negative) of the explanatory variables with the dependent variable.

In our model we have 4 independent variables: the exchange rate (euro/denar), the nominal GDP, Unit Price Index of export and the policy interest rate and the international reserves as a dependent variable. The series of data used in the model are quarterly data for the period 2004-2016 obtained from the database of the National Bank of Republic of Macedonia and the State statistical office. In total 50 observations were included in the model. According to the abovementioned information the model would have the following form:

FDR=β□+ β□Exchange rate+ β□NGDP + β□UPI Export+ β□Policy interest rate+εi

In order to obtain the needed parameters, it's necessary for the multinomial regression model to satisfy the asymptotic properties concerning the characteristics of the deterministic and stochastic part:

1.) The regression model is linear in the coefficients, is correctly specified, and has an additive error term.

2.) Zero mean value of disturbance u_i

3.) All explanatory variables are uncorrelated with the error term i.e. zero covariance between u_i and X_i, or $E(u_iX_i) = 0$.

4.) There is no perfect multicollinearity i.e. there are no perfect linear relationships among the explanatory variables.

5.) Homoscedasticity or equal variance of u_i i.e. the error term has a constant variance.

6.) No autocorrelation between the residuals i.e. the observations of the error term are drawn independently from each other.

7.) The error term is normally distributed with..

8.) Correct specification of the model

9.) The values of the regress to be predetermined in advance in the process of random drawing of the sample

10.)There is enough variability of the regresses

In order to test the fulfillment of the asymptotic properties and define whether we have a good fitted model the following tests were performed:

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1.) Breusch-Godfrey Serial Correlation LM Test (p)
2.) Heteroscedasticity Test: White (p)
3.) Histogram Normanility test (p)
4.) Ramsey Reset test

The first three, test the asymptotic properties of the residuals and the Ramsey Reset test was conducted in order to determine whether there are or not mistakes in the specification of the model. Additionally a correlation matrix was conducted and the variance-inflation factor-VIF was calculated, for determining whether there is perfect multicollinearity or not in the model. The square root of the VIF coefficient was also calculated in order to see the deviation of the standard errors of the model in comparison with the standard errors of the "perfect model",

For the conduction of the analysis and the tests, the econometric software package E-views 6 was used.

In order to perform the OLS test, we first have to test the stationarity of the series. Stationarity means that if in a series a shock is performed at some point of time, its impact with decline over time. On the other hand if the series are not stationary the shock performed in a time series will continue and will eventually lead us to having a spurious regression. For the above mentioned reasons we perform the Augmented-Dickey-Fuller test.

From the raw data of the series it was concluded that the series were not stationary. The best method for solving this problem is by differentiating the series or finding their log value. The series where differentiated, and in the first level all of the five variables showed stationary with the Augmented-Dickey-Fuller test.

Augmented-Dickey-Fuller test results

Variables	Difference	t-statistics	5% level	Alpha (5%)	Probability	Outcome
Foreign reserves	I (1)	-7.041	-2.925	0.05	0	Stationary
Exchange rate (euro/denar)	I(1)	-6.947	-2.927	0.05	0	Stationary
UPI of Export	I(1)	-2.303	-1.948	0.05	0.022	Stationary
NGDP	I(1)	-4.358	-2.928	0.05	0.001	Stationary
Reference interest rate	I (1)	-3.695	-2.924	0.05	0.007	Stationary

After determining the stationarity of the series a regression was performed. Two regression analysis were performed, one consisted with four independent variables (exchange rate, UPI of export,[9] NGDP and the reference interest rate) and another with three independent variables (exchange rate, UPI of export and NGDP). From the obtained results both models pass the Breusch-Godfrey Serial Correlation LM Test and the Heteroscedasticity White test. The Ramsey Reset stability test wasn't passed by the second model and both models don't pass the Jarque Bera Normality test. Having in mind these results and the higher value of the adjusted r-square coefficient of the first model 0.30, compared to 0.22 of the second model the first model with four variables was chosen for further analysis.

Variables	Model 1	Model 2
Constant	0.979	0.853
Exchange rate (euro/denar)	0.001	0.003
UPI of Export	0.054	0.045
NGDP	0.012	0.021
Reference interest rate	0.020	
Adjusted R-squares	0.305	0.229
Breusch-Godfrey Serial Correlation LM Test (p)	0.118	0.548
Heteroscedasticity Test: White (p)	0.286	0.191
Jarque Bera Normanility test (p)	0.010	0.008
Ramsey Reset Test (p)	0.123	0.043

A correlation matrix was performed with the data of the first model in order to see if there is perfect multicollinearity of the data. From the obtained correlation matrix we see that we have a relatively low coefficients of correlation (the highest correlation coefficient being -0.47 between the UPI of export and the ngdp). Despite getting these results the VIF coefficient of the model were estimated in order to make sure that there is no multicollinearity in the model.

The Correlation matrix Model 1

	DFR	DEURO	DNGDPE	DE	DINT
DFR	1	-0.409	0.269	0.053	-0.197
DEURO	-0.409	1	-0.164	0.200	-0.214
DNGDPE	0.269	-0.164	1	-0.477	0.119
DE	0.053	0.200	-0.477	1	-0.144
DINT	-0.197	-0.214	0.119	-0.144	1

VIF coefficient

Dependant variables	NGDP	Reference Interest rate	UPI of Export	Exchange rate (euro/denar)
VIF coefficient	1.3	1.06	1.33	1.09
√VIF	1.14	1.03	1.15	1.04

*The VIF coefficient, shows us the deviation of the standard errors of the model in comparison with the standard errors of the "perfect model", in which the variables are not correlated

After obtaining the values of the variance inflation factor-VIF, the question arises, how much should the coefficient of the simple correlation

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9) We use Unit price of exports in order to avoid the significant price influences specially in the metal industry and energy.

be, i.e. how high should the value of the VIF be if there is no multicollinearity problem. Neter at all (1990) suggest that we examine the highest value of the variance inflation factor, as an indicator for colinearity. There are different opinions on this question, but its generally accepted that if the VIF ratio is higher than 5, than the multicolinearity of the variables should be treated as a problem. As we can see from the table, none of the VIF coeffients doesnt exceed the value of 2, which is an additional indicator that the multicolinearity in the model isnt a problem and that we have a "good" model.

After determining the model and concluding that it fulfills the asymptotic properties, we proceed in analyzing the results. From the obtained results of the model we get a coefficient of determination of 0.36. The coefficient of determination shows us the explanatory power of the independent variables over the dependent variable. The coefficient of determination of 0.36, tells us that the independent variables together explain 36% of the motion of the dependent variable. Unfortunately, the R-square coefficient has two major weakness which we have to bear in mind: First, the coefficient of determination rises artificially with each independent variable that we add to the model and second, if a model has too many predictors and higher order polynomials, it begins to model the random noise in the data. This condition is known as overfitting the model and it produces misleadingly high R-squared values and a lessened ability to make predictions. Therefore in models which have more than one independent variable is important to use the Adjusted R-square (adjusted coefficient of determination). The adjusted R-square is a modified version of R-squared that has been adjusted for the number of predictors in the model. The adjusted R-squared increases only if the new term improves the model more than would be expected by chance. It decreases when a predictor improves the model by less than expected by chance.

Dependent Variable: DFR
Method: Least Squares
Sample (adjusted): 2 50

Included observations: 49 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.006	0.246	-0.026	0.979
DEURO	-9.227	2.465	-3.743	0.001
DNGDPE	0.004	0.002	2.612	0.012
DE	0.030	0.015	1.984	0.054
DINT	-0.877	0.362	-2.422	0.020

R-squared	0.363	Mean dependent var	0.136
Adjusted R-squared	0.305	S.D. dependent var	1.991
S.E. of regression	1.660	Akaike info criterion	3.948
Sum squared resid	121.279	Schwarz criterion	4.141
Log likelihood	-91.732	Hannan-Quinn criter.	4.021
F-statistic	6.258	Durbin-Watson stat	2.236
Prob(F-statistic)	0.000		

In our model we have an adjusted R-square of 0.30. This coefficient tells us that the independent variables together explain 30% of the movements of the foreign reserves. That means that in 30% of the cases we can explain the movement of the foreign reserves of Republic of Macedonia through the movement of the exchange rate, NGDP, UPI of exports and the policy interest rate. In different words, the movements of the exchange rate (euro/denar), NGDP, UPI of exports and the policy interest rate together explain 30% of the movements of the international reserves.

The second conclusion that we can come to, through analyzing the results is that all of the independent variables are statistically significant at the level of 5%, except for the UPI of export which is statistically significant at the level of 5.35%. The results show us that the exchange rate, NGDP, UPI of export and the interest rate have a statistically significant impact on the level of foreign reserves of Republic of Macedonia.

The third conclusion which we derive from the interpretation of the coefficients of the regression is that the exchange rate (euro/denar) and the policy interest rate are negatively correlated with the international reserves. On the other hand UPI of export and NGDP are positively correlated with the level of foreign reserves. The coefficients show us that if the exchange rate rises for one percent (ceteris paribus) the foreign reserves will decline for 9.22% and if the interest rate rises for one percent (ceteris paribus) the foreign reserves will drop by 0.87%. On the other hand if the Nominal GDP rises for one percent (ceteris paribus) the foreign reserves will rise 0.004%, and if the UPI of export rises for one percent (ceteris paribus) the for-

eign reserves will rise 0.03%. From the obtained data we can see that the highest impact on the level of for-eign reserves of Republic of Macedonia has the exchange rate. This is expectable having in mind that Macedonia has a de facto fixed regime course with the euro, and every increase in the euro/denar exchange rate (depreciation of the denar) would mean that Macedonia would have to sell foreign reserves (decline the level of foreign reserves) in order to maintain a stable exchange rate regime.

Conclusion

Adequate level of international reserves is an indicator of stability for a country. For the International Monetary Fund and the others international financial institutions the level of the international reserves is one important indicator of financial vulnerability, which can mitigate or absorb different economic or political shocks in one economy. The research for the appropriate level of the international reserves and the deter-minants was intensive after the Asian crisis. However, there is not much research for the Balkan region. In the Republic of Macedonia, after the independence from Yugoslavia, there were several negative shocks which were mitigated thanks to the appropriate monetary policy and the satisfactory level of the internation-al reserves. The biggest shocks were in 2001 when there was a security crisis, as well as in 2015-2016 when we are facing political crisis. Thanks to the mature monetary policy of the Central bank, but also on the appropriate level of the foreign reserves, there was no bankruptcy procedure for the country. The main pur-pose of this study is to identify the determinants of the foreign exchange reserves by estimating the appro-priate international reserves function. We used data mainly from the state statistical system of the country using OLS estimation technique. Our OLS model delivered the results pointing the significant determinants of the international reserves. We found that significant variables are UPI of Exports, NGDP, Interest refer-ence rate and the exchange rate. From the results it derived that the highest impact on the level of foreign reserves of Republic of Macedonia has the exchange rate (eruo/denar). This is expectable having in mind that Macedonia has a de facto fixed regime course with the euro, and every increase in the euro/denar exchange rate (depreciation of the denar) would mean that the National Bank of Republic of Macedonia would have to sell foreign reserves (decline the level of foreign reserves) in order to maintain a stable exchange rate regime.

Having in mind that there is no extensive research in this field for the South-East Europe, as a future research we recommend analysis of the determinants of the foreign reserves in this region, using panel data.

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