Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Economics

Diploma Thesis
Abstract

Economic analysis of the Macedonian denar (MKD)

Ekonomická analýza makedonského denáru (MKD)

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1 Introduction

Some of the most closely monitored indicators of a country's economic health are changes in the level of inflation, interest rates, GDP growth rate, GDP per capita and the unemployment rate. However, another very important indicator of a healthy economy is the movement of the exchange rate. The exchange rate plays an essential role in the quantity of trade in a country and trade is a key aspect of every free market economy in the world. Accordingly, it was the author's opinion that an economic analysis of the Macedonian denar would provide an appropriate reasoning for the health of the Macedonian economy. The research followed the denar's historic development and also served to determine the factors that cause the greatest impact on its movements.

2 Keywords

Macedonian denar, US dollar, economy, exchange rate, forex, technical analysis, fundamental analysis, regression analysis, evaluation, forecasting

3 Objectives of thesis

The objective of the thesis was to identify and evaluate the key factors that have an influence over the Macedonian denar. The first goal was analyzing the currency as an integral part of the Macedonian economy by following the historical occurrences that shaped the Macedonian denar as it is today. The second goal was comparing the exchange rate similarities/dissimilarities between the Macedonian denar and the neighboring currencies from the Balkan region, in particular: the Croatian kuna, the Serbian dinar and the Bulgarian lev. The third goal was comparing the Macedonian denar with the official currency of the European Union - the euro. As a final aim, the author aimed at creating a short-term forecast scenario for the Macedonian denar in the period of six months.

The main hypothesis of this diploma work is as follows: Based on preliminary research, it is presumed that the exchange rate movement of the Macedonian denar is influenced by the following macroeconomic factors: inflation rate (expressed as purchasing power parity), key

interest rates of the Central Bank, import and export volumes and various economic and political events.

4 Methodology

The theoretical research was conducted with the use of *quantitative analysis* and *qualitative analysis*. The methods chosen for quantitative analysis are: deduction, induction, data extraction, data transformation and data analysis while the method used for qualitative analysis is historical research.

The practical research was conducted with the assistance of three methodological tools: *technical, fundamental and linear regression analysis*. Technical analysis is done by evaluating the statistics generated by past market activity such as price and volume information and uses this information to predict the future movement of the exchange rate. The methods used for technical analysis are: trend line analysis, technical pattern analysis, relative strength index, support and resistance levels and simple moving average. Fundamental analysis attempts to measure the intrinsic (true) value of the Macedonian denar by considering a broad range of economic, financial, historical, quantitative and qualitative factors. A linear regression model was used to quantify the relationship between seven selected macroeconomic factors that are presumed to influence the movement of the Macedonian denar.

5 Main findings

The first chapter concluded that being a part of the People's Federal Republic of Yugoslavia was a significant factor in the development of the Macedonian denar. After declaring independence, it took nearly four years until Macedonia was able to break the hostile circle and experience its first independent economic growth.

In the she second chapter, technical analysis was performed and the following findings were obtained: a *polynomial trend line* identified an overall downtrend followed by a recent uptrend; a *falling wedge technical pattern* lasted for seven years prior to the financial crisis of 2007-08 and was used to predict a trend reversal; a *triple-bottom formation* was observed in the period following the 2008 crisis recovery that was broken in January 2015 and continued in an uptrend; the technical indicator *relative strength index* identified the historical points in time

when the US dollar was overbought/oversold in terms of the Macedonian denar; long-term, short-term and key *support and resistance levels* have fluctuated between the support level of 73.6304 MKD per USD and a resistance level of 38.26 MKD per USD and finally, a *simple moving average* filtered the noise from the random rate fluctuations and identified the points in time when each new trend started.

The fundamental analysis looked deeper into macroeconomic and political factors and clarified the underlying reasons behind trends in the exchange rate. The Macedonian denar was compared to several other Balkan currencies and the analysis reached a conclusion that the national currency can serve as an indicator for the health of an economy.

In the last chapter a linear regression model was created for the time-series data set January 2002 - July 2015 and the parameters of seven variables were estimated. The model was tested for economic, statistical and econometric significance and its credibility was confirmed. With a 96% *goodness-of-fit*, it was concluded that the model fits the real data appropriately and it explains the greater part of variations in the exchange rate. The scenarios simulation confirmed the initial assumptions and with this the working hypothesis of the thesis was also confirmed. A forecast scenario for a period of six months was created. A mean percentage error of 2.8825 was the cause for deviation between the forecasted and the actual data that was retrieved for the purposes of forecast verification. The forecast was accurate for the first three months but it failed to correctly predict the behavior of the USD/MKD exchange rate in the last three months.

6 Conclusion

Technical analysis was efficient in identifying trends, patterns and support and resistance levels that confirmed that over time, the Macedonian foreign exchange market tends to provide a consistent reaction to similar stimuli. Fundamental analysis was effective in detecting specific macroeconomic and political factors and clarified the underlying reasons behind trends in the USD/MKD exchange rate. The regression analysis estimated the quantitative relationship between the selected economic variables and the USD/MKD exchange rate movement. Although a widely popular statistical technique, the regression analysis exhibited some limitations when employed for the purposes of prediction and forecasting. Nonetheless, the evidence gathered in this paper suggests that technical, fundamental and regression analysis were efficient in analyzing and predicting the USD/MKD exchange rate and confirming the hypothesis.

7 References

ARCHER, Michael D. *Getting started in currency trading: winning in today's Forex market*. 3rd ed. New Jersey: John Wiley & Sons, Inc., Hoboken, 2010. 333 pg. ISBN 978-0-470-60212-6.

BULKOWSKI, Thomas N. *Encyclopedia of chart patterns*. 2nd ed. New Jersey: John Wiley & Sons, Inc., Hoboken, 2013. 1032 pg. ISBN 978-1-118-04585-5.

CHATTERJEE, Samprit, HADI, Ali S. *Regression analysis by example*. 5th ed. New Jersey: John Wiley & Sons, Inc., Hoboken, 2012. ISBN 978-0-470-90584-5.

CHEN, James. *Essentials of foreign exchange trading*. 1st ed. New Jersey: John Wiley & Sons, Inc., Hoboken, 2009. 221 pg. ISBN 978-0-470-39086-3.

HYNDMAN, Rob J, ATHANASOPOULOS, George. *Forecasting: principles and practice*. 1st ed. United States: OTexts, 2014. 292 pg. ISBN 978-0-9875071-0-5.

LIM, Mark Andrew. *A Handbook of Technical Analysis: The Practitioner's Comprehensive Guide to Technical Analysis.* 1st ed. Singapore: John Wiley & Sons Inc, 2016. 800 pg. ISBN 978-1-118-49891-0.

MACDONALD, Ronald. *Exchange rate economics: theories and evidence*. 1st ed. New York: Routledge, 2007. 450 pg. ISBN 978-0-203-38018-5.

National Bank of the Republic of Macedonia. Nbrm.mk, (2016). [online] Accesible at: WWW: <http://www.nbrm.mk/?ItemID=41989BA5CE65DA48AC1B50206D0DE89D>

KOCH, Karl Rudolf. *Parameter estimation and hypothesis testing in linear models*. 2nd ed. Berlin: Springer-Verlag, 2010. 334 pg. ISBN 978-3-642-08461-4.

STEVENS, Leign. *Essential Technical Analysis Tools and Techniques to Spot Market Trends*. New York: John Wiley & Sons, 2002. 400 pg. ISBN 978-0-471-27381-3.