EUROPEAN ACADEMIC RESEARCH, VOL. I, ISSUE 8/ NOVEMBER 2013
ISSN 2286-4822, www.euacademic.org
IMPACT FACTOR: 0.485 (GIF)
DRJI VALUE: 5.9 (B+)

Comparative Study on Interest Rate Pass-Through: Albania versus Central, Eastern, and South-Eastern Europe

ILDA MALILE[1]
European University of Tirana
Tirana
Albania

Abstract:

This study aims to compare interest rate pass-through in Albania with that in countries of Central, Eastern, and South-Eastern Europe. The methodology employed across countries consists in time series cointegrating methods, which allow studying the long- and short-run dynamics of such pass-through. The comparison is based on results obtained by Balázs et al (2006) for countries of Central and Eastern Europe, and those obtained by Pertrevksi and Bogoev (2012) for countries of South Eastern Europe.

This study is a follow-up of three previous materials which aim to investigate the interest rate pass-through in Albania, its long-term asymmetry, and its nonlinearity, both in short- and long-term. These four studies will constitute the core part of author's PhD thesis, titled: "Analysis on the functioning of the interest rate channel during the years, 2002-2013".

A main finding of this study is that comparison of interest rate pass-through between Albania and countries of Central, Eastern, and South-Eastern Europe is challenging, and can be misleading given the slight differences in interest rate chosen to represent either the money or the retail market in these countries; differences in methodological approaches; and in time horizon chosen for the empirical analysis. Also, the study finds that interest rate pass-through in Albania is most similar with countries of the Central and Eastern Europe, which operate under floating exchange rate regimes. The bigger similarity

[1] Views expressed here are those of the authors, and do not necessarily represent views of the European University of Tirana.

refers to the first stage of interest rates pass-through – from policy rate to money market rates (of interbank and primary market).

Key words: interest rate pass through, nonlinearities, monetary policy

JEL Classification: C32, E43, E52

I. Introduction

Monetary policy transmission has been the focus of much theoretical and empirical research in almost every country, given its ability to influence money growth rate, inflation, retail interest rates (deposits' and loans'), credit to private sector and therefore consumption, private investment, Gross Domestic Product, etc. Most of these studies aim to investigate the magnitude, direction, and the time span that monetary policy will convey its impact to other variables of a given economy, and therefore will help monetary policymakers to undertake sound policies while avoiding past mistakes. However, as argued in many studies, the effectiveness of monetary policy depends mostly on the pass-through of policy rate to other interest rates (interbank and prime market, and ultimately to interest rates of the retail market). Also, findings on interest rate pass-through might have important implications on the policy design and the choice of monetary framework. So, in cases when interest rate pass-through is found to be weak and sluggish, a framework based on inflation targeting would not be optimal since it relies on strong interest rate pass-through.

Studies investigating the interest rate pass-through have broken down this process in two main stages. The first stage consists in how any change in the policy rate is transmitted to market interest rates (short- and long-term); while the second stage consists in how changes in market rates impact the retail markets (deposits and credits). Such investigation has been the focus of three previous studies,

conducted by the same author as part of author's PhD thesis, titled: "Analysis of the functioning of the interest rate channel during the years, 2002-2013".[2] This fourth study aims to conduct a comparative study on interest rate pass-through in Albania and countries of the Central, Eastern and South Eastern Europe.

The choice of countries on which the comparative analysis on interest rate pass-through is conducted depends on the availability of studies investigating the interest rate pass-through in countries which are comparable to Albania on certain criteria, on the similarity of methodology used, and on the time horizon over which the empirical analysis was carried out. More specifically, this study compares the characteristics of interest rate pass through in Albania with those of Central and Eastern European countries (consisting in Czech Republic, Poland, Hungary, Slovakia and Slovenia), and with those of the South-Eastern Europe (consisting in Bulgaria, Croatia, and Macedonia). The results on the interest rate pass-through of the first group of countries are obtained from Balázs et al (2006); while results for the second group of countries are obtained from Petrevski and Bogoev (2012). Both these studies employ the same methodology, Vector Error Correction Methodology, though not using the same time span or the same exact interest rates across countries. Therefore, the empirical analysis in the case of Albania has been conducted twice, to

[2] The very first part of this thesis, titled "The interest rate pass-through in Albania from monetary policy rate to wholesale interest rates and to retail market rates", was presented in the 5th International Conference "The Economies of Balkan and Eastern Europe Countries in the Changed World", held in Istanbul, Turkey on 9-12th May, 2013. The study is in the publishing process, and is available by the author upon request.
The second part of the thesis, titled: "Asymmetry of interest rate pass-through in Albania" was submitted at the "3rd International Conference on Human and Social Sciences", organized on September 20-22, in Rome, Italy
The third part of the thesis, titled: "Is interest rate pass-through in Albania non-linear?" is published in *European Academic Research*, Vol. 1, Issue 7, 2013.

align with the time span and the interest rates used in Balázs et al (2006), and with those in Petrevski and Bogoev (2012).

A similar paper conducting a comparative analysis on the degree of interest rate pass-through is that of Fomun (2011). The main objectives of this paper are to: investigate the magnitude and the speed of pass-through from policy rate to retail interest rates, both in Nigeria and Cameroon since 1980; to check whether such pass-through in both countries is asymmetric or not; and also to estimate whether changes in policy rate are transmitted from Nigeria to Cameroon or vice versa. The rationale in choosing Nigeria and Cameroon for the comparative analysis is that they both represent two large economies of Central and West Africa, respectively, sharing common features regarding trade, border and political history. Also, both, Nigeria and Cameroon are members of the same economic groups, oil-producers, and adopted the World Structural Adjustment Programme in the same year, 1988.

The rationale in comparing Albania with Central, Eastern and South Eastern countries is that they all adopted the two-tier banking system in the 1980s and early 1990s, which made retail interest rates more responsive to market forces. For this reason, several studies have found that the interest rate pass-through in these countries becomes stronger and faster over time. It is noteworthy to mention that countries under study operate under different exchange rate regimes. So, countries considered in Balázs et al (2006) have a flexible exchange rate regime likewise Albania, while countries under study in Petrevski and Bogoev (2012) operate under fixed exchange rate regime. Such difference in exchange rate regime, among other factors, is proven to theoretically and empirically affect the interest rate pass-through. So, under a flexible exchange rate regime, an increase in domestic policy rate will attract foreign flows leading thus to the domestic currency appreciation until the interest rate differential between domestic and foreign interest rate returns to its equilibrium.

On the other hand, under a fixed exchange rate regime, increase in foreign capital would lead to larger liquidity and therefore to downward pressures on interest rates.

Gigineishvili (2011), in a cross-sectional analysis over 70 countries around the world, including developed, emerging and low-income countries investigates whether interest rate pass-through changes across countries, and estimates the specific country effects which account for such change, such as: GDP, inflation, exchange rate flexibility, credit quality, banking competition, overhead costs, and banking competition. Regarding the exchange rate flexibility, Gigineishvili (2011) finds that those countries which have adopted fixed exchange rate tend to have weaker pass-through than those adopting floating exchange rate regimes.

The rest of the paper is organized as follows. The next section describes the data used and time span considered in the empirical analysis for each country or group of countries on which the comparative analysis is based on. It also provides results on the interest rate pass-through in Albania by drawing comparison with countries belonging to the Central and Eastern European group, and those belonging to the South Eastern Europe. The third section concludes and highlights some areas which might need further investigation.

II. Data description, setup of VECM, and empirical results

As mentioned, the main aim of this study is to conduct a comparative analysis on the interest rate pass-through between Albania and countries of the region, distinguishing at the same time between different exchange rate regimes.

Empirical analysis is organized in two parts. **The first one** compares the interest rate pass-through in Albania with countries of the Central-Eastern Europe (Czech Republic, Hungary, Poland, and Slovakia). It is noteworthy to mention

that all these four countries have floating exchange rate regime as well as Albania. The period on which the empirical analysis is conducted is conditioned on the period used in Balázs et al (2006), which estimates the interest rate pass-through in Central Eastern European countries over the period 1995m12 – 2005m12, while splitting the sample in two sub-periods. The first sub-period starts in 1995m12 and ends in 2000m12; while the second sub-period starts in 2001m01 and ends in 2005m12. Such splitting allows checking whether there is any structural break or any major change affecting the interest rate pass-through over time.

Balázs et al (2006) employed a two-stage framework: 1- the pass-through from base interest rate to rates of interbank and primary market; and 2- the pass-through from base interest rate to interest rates of retail market (deposits and loans). The methodology employed is Vector Error Correction Methodology, which also takes into account the possible asymmetric effects characterizing the process of interest rate pass-through. For comparative purposes, the empirical analysis used in this study covers the 2002m01: 2005m12 in the case of Albania, and the 2001m01: 2005m12 in the case of Central and Eastern European countries (corresponding to the second sub-period used in Balázs et al (2006). In the case of Albania, the period is shorter than the one used for CEE countries due to non-availability of data prior to year 2002, though we believe one year less will not substantially change the comparative analysis between Albania and Central and Eastern European countries.

The period taken into consideration in this comparative study is short for conducting cointegration analysis, comprising 60 observations for the case of CEE countries, and 48 observations for the case of Albania. But as Balázs et al (2006) argues, adjustment of interest rates in the pass-through context is much faster, while a business cycle is found to take place in a 10-year period, at least. Though by econometric standards 100-

120 observations would be required, a sample of 50-60 observations might be considered appropriate studying the interest rate pass-through. In this view, Balázs et al (2006) attributes the absence of cointegrating relationships to the use of nonlinear cointegration techniques rather than to short time series on interest rates data.

The interest rates used in the case of Albania are not exactly the same ones used in the case of CEE countries under study in Balázs et al (2006), due to nonexistence of such data for Albania or their short time series. So, the interbank interest rate in the case of Albania is represented by the 7-day maturity, while in CEE it is represented by the 1-month maturity of money market. In those CEE countries where the T-bills' yield is not available, the 12-month interest rate of money market is used. The government bonds' yield in the case of Albania is represented by the 2-year maturity, while CEE countries it is not clearly indicated which maturity the government bonds' yield refers to. Depending on data availability, interest rates of retail markets in CEE countries are categorized by maturity (short-, medium-, and long-term), subject (households vs. businesses), purpose (consumption, housing etc.), and methodological measurement (flow vs. stock). Given that this categorization of deposits and loans interest rates is not uniform across all countries of CEE, and given that in Albania some of these interest rates are not available, comparison of VECM results should be done with caution. In case of Albania, interest rates of retail market are represented by: interest rates on newly collected short-term deposits in ALL[3] (of 3-, 6- and 12-month maturity); interest rates on newly issued short-term loans in ALL (of 0-6 months and 6-12 month maturity); and by interest rates on newly issued long-term loans in ALL (of 3-to-5-year maturity and of over-5-year maturity).

Slovenia, though is part of CEE countries considered in Balázs et al (2006), is not included in this comparative analysis

[3] ALL – Albanian Lek

for two main reasons. The first one relates to nonavailability of interest rates in Albania which mimic those used for the case of Croatia in Balázs et al (2006). Second, not many cointegrating relationships are found for the case of Slovenia, which makes it not a very good basis for comparison.

Most of literature regarding the interest rate pass-through employs the methodology of Vector Error Correction Mechanism, which allows studying both, the short-run and the long-run dynamics of the pass-through. In a very generic form, VECM can be represented as follows:

$$\Delta X_t = \mu + \rho(X_{t-1} - \mu - \beta Y_{t-1}) + \sum_{j=1}^{k} \gamma_j \Delta X_{t-j} + \sum_{j=1}^{k} \delta_j \Delta Y_{t-j} + \varepsilon_t$$

where Xt denotes variables whose behavior we want to explain are based on its lagged values and other explanatory variables; Y denotes explanatory variables which influence X in the long and short-run; ρ denotes the speed of adjustment of the short-run dynamics to the long-run equilibrium relationship.4; the expression in the brackets presents the long run relationship between X and Y; β is the long-run coefficient; γ denotes the matrix of short-run coefficients for lagged values of X till the k5-th lag; σ denotes the matrix of short-run coefficients for lagged values of Y till the k-th lag; μ is the constant term, and ε represents the residual term.

Prior to estimating a Vector Error Mechanism, we check whether the interest rate time series used in this comparative study are stationary or not. For this reason, we have applied Augmented Dickey Fuller tests on each series for each sample, with and without intercept.6 Though literature suggests that most interest time series are expected to be stationary, ADF tests show that all the interest rate data under study are I(1) at

[4] Since out data are at monthly frequency, speed of adjustment shows how much of a gap in X created by a change in Y is closed within one month.
[5] k is the appropriate lag length suggested by information criteria AIC and SC criteria.
[6] Results on Unit Root tests are available by author upon request.

10% confidence level, with the exception of loans interest rates, which are I(0). For this reason, results regarding cointegrating relationships which include loans interest rate as one of the variables should be taken with caution.

Tables 1 and 2 provide results on the magnitude and statistical significance of the long-term coefficients. In the first stage of pass-through (from policy rate to interest rates of interbank and primary market), it is obvious that results are somewhat similar in Albania and SEE countries, especially when the interest rates of interbank market are considered, lying within range [0.87 : 1.01]. In the case of government bond, Balázs et al (2006) does not find a cointegrating relationship in the case of Czech Republic, Hungary, and Poland; while in the case of Albania a cointegrating relationship is found between the policy rate and the 2-year government bond, though the long-run coefficient is not statistically significant.

In the second stage of pass-through (from policy rate to deposits and loans rate), results are not that similar. Similar to the case of Hungary and Poland, there is no cointegrating relationship between policy rate and the short-term deposits rate (newly collected) in the case of Albania. This holds true also when medium-and-long-term loans rates are considered. A cointegrating relationship is found only between policy rate and short-term loans interest rates, though the long-term coefficient is statistically non-significant and of lower magnitude than the average long-term coefficient for Central and Eastern European countries.

Table 1 . The pass-through from policy rate to interbank and primary market rates over **2002m01:2005m12** for Albania, and over **2001m01: 2005m12** period for other countries

	Interbank rates	12-month T-bills	Government bonds **
Albania	0.91***	1.27*** (no coint.)	0.36
Czech Rep.	1.01**	0.98**	0.43** (no coint.)
Hungary	1.04**	0.87**	0.48***(no coint.)
Poland	1.02**	0.40*** (no coint.)	0.15 (no coint.)
Slovakia	0.87**	0.95**	NA

***, **, and * indicate the statistical significance at confidence level 1%, 5%, and 10%

Table 2 The pass-through from policy rate to DEPOSIT and LENDING RATES over **2001m01:2005m12**

	deposits of less than one year	long-term deposits	loans of less than one year	1 year < loans < 5 year
Albania	1.07*** no coint.	NA	0.26	0.94** no coint.
Czech Rep.	0.79**	0.59***no coint.	0.66*** (no coint.)	0.25 no coint.
Hungary	no coint.	0.81**	0.61** and 0.96**	0.29(no coint.) / 0.72**
Poland	0.80**	0.81**	0.43*** no coint. / 0.50*** (no coint.)	0.45*** no coint
Slovakia	0.3 no coint.	NA	0.78**	1.01**

***; **; and * indicate the statistical significance at confidence level 1%, 5% and 10%

The second part of the empirical analysis compares the interest rate pass-through between Albania and countries of South-Eastern Europe (Macedonia, Bulgaria and Croatia), focusing on the second stage of pass-through: from money market rates to loans interest rates. Findings on the interest rate pass-through in South-Eastern Europe are obtained from Petrevski and Bogoev (2012). The period used for empirical analysis is condition on that used in Petrevski and Bogoev (2012), which covers the 2000m01: 2010m12. Due to non-availability of data on money market rates prior to 2002 in Albania, the period used in the empirical analysis starts in 2002m01. The methodology employed in Petrevksi and Bogoev (2012) consists in three main time-series cointegration methods: Vector Error Correction Methodology, Engle and Granger and Dynamic Ordinary Least Squares. The use of three various methods provide robustness check of the obtained results, and also accounts for non-stationarity of the interest rate series. In this comparative study we will represent the average value of three models regarding the long- and short-term coefficient of pass-through, and the error correction term,

along with p-values of their respective statistical significance. In the case of Albania, only VECM methodology is used.[7] Contrary to Albania, countries of South Eastern Europe operate under fixed exchange rate regime. Such difference along with shorter time span used in the case of Albania, and differences in the interest rate time series might make this comparative a bit ambiguous. Also, it is important to point out that interest rates on newly issued loans in ALL is stationary at level, leading thus to controversial results, or to absence of cointegrating relationships.

So, in the case of Albania, we find at least one cointegrating relationship between the 7-day interbank interest rate and the interest rates on newly issued loans – of medium-to-long-term maturity, similarly to Bulgaria and Croatia (see Table 3). The long-term coefficient of pass-through is statistically significant and has a higher magnitude than one (overshooting) in the case Albania. Similarly are the case of Bulgaria and Croatia, though the magnitude of the long-term coefficient is lower than one, on average at 0.47. Also, the error correction term is statistically significant and of high magnitude, in both countries, Bulgaria and Croatia, around 23%; while the speed of loans interest rates in Albania is higher, around 46%.

When the weighted average interest rate on newly issued loans is considered – in case of Albania, we find at least one cointegrating relationship with the 7-day interbank interest rate, with speed of adjustment around 30%, while in the case of Macedonia it is quite low, around 7%. However, the long-term pass-through in Albania is statistically insignificant, estimated at around 0.37, while in case of Macedonia it is much higher, around 0.83, and also statistically significant.

[7] The methodology employed and unit root tests performed for the case of Albania are further explained in the first part of empirical analysis, pages 6-7.

Table 3. Pass-through from money market rates to loans interest rates in South-Eastern countries and in Albania

Banks' Lending Rates									
	Interest rates on short-term loans			Interest rates on long-term loans			Weighted interest rates on loans		
	long-run	short-run	ECM term	long-run	short-run	ECM term	long-run	short-run	ECM term
Bulgaria	0.69**	0.36	(0.26)***	0.57***	-0.08	(0.24)**	NA	NA	NA
Croatia	0.43***	0.02	(0.17)***	0.38***	-0.17	(-0.22)***	NA	NA	NA
Macedonia	NA	NA	NA	NA	NA	NA	0.83**	0.05**	(0.07)**
Albania_o_n	no coint.			no coint.			no coint.		
Albania_i_7d	no coint.			1.21***	-0.37	(0.46)***	0.37	0.39	(30)***

***, **, and * indicate the statistical significance at confidence level 1%, 5%, and 10%

III. Conclusions and further areas of research

The aim of this paper was to provide a comparative analysis on interest rate pass-through between Albania and two groups of countries: Central and Eastern European Countries (Czech Republic, Hungary, Poland, and Slovakia) and South Eastern European countries (Macedonia, Croatia and Bulgaria). The former group operates under a flexible exchange rate regime as well as Albania, while the latter operates under a fixed exchange rate regime. Therefore, this study serves to point out differences in interest rate pass-through which might come as result of operating under different exchange rate regimes. It does not attempt to estimate the impact of exchange rate on the interest rate pass-through, but to check whether interest rate pass-through in Albania resembles more to countries operating under the same exchange rate regime, or under different exchange rate regime.

A main finding of this study is that comparison of interest rate pass-through between Albania and countries of Central, Eastern, and South-Eastern Europe is challenging, and can be misleading given the slight differences in interest rate chosen to represent either the money or the retail market in these countries; differences in methodological approaches; and in time horizon chosen for the empirical analysis. It was impossible to mimic studies of Balázs et al (2006) and Petrevski and Bogoev (2012) on every single aspect due to non-

availability of data on some interest rates (for example loans interest rate issued for consumption or housing purposes, interest rates on the stock of loans, interest rates on loans issued to businesses or households, interbank interest rates with maturity greater than one week, etc), or due to short-time series (for example interest rates on long-term newly collected deposits). Also, loans interest rates in Albania are found to be stationary at level, which complicates the use of time series cointegrating methods, and interpretation of results obtained from using such methods.

Another finding of the study is that interest rate pass-through in Albania is most similar with countries of the Central and Eastern Europe, of which all of them operate under floating exchange rate regimes. The bigger similarity refers to the first stage of interest rates pass-through – from policy rate to money market rates (of interbank and primary market).

When trying to compare interest rate pass-through between countries operating under floating and fixed exchange rate regimes, it is important to control for different degrees of exchange rate flexibility, as they differ by openness of their capital accounts. This could be done by introducing finer classification of exchange regimes, and by introducing variables which capture the degree of capital account openness.

An interesting and useful topic which might need further research is to investigate whether monetary impulses (increase or decrease in policy rate) in any of the countries of Central, Eastern, and South-Eastern Europe are transmitted to Albania or vice versa.

Finally, such comparative analysis would be more thorough and accurate if empirical results on interest rate pass-through for countries of Central, Eastern and South-Eastern Europe were not obtained by other studies, but were done by the author, in order to ensure the same data, time span and methodology across all countries under study.

BIBLIOGRAPHY:

Balázs, E., J. Crespo-Cuaresma, and R. T. William. 2006. "Interest rate pass-through in Central and Eastern Europe: Reborn from ashes merely to pass away?" *William Davidson Institute Working Paper* 851.

Fomun, T. A. 2011. *Interest rate pass-through in Cameroon and Nigeria: A comparative analysis, Nigeria and Cameroon, Rhodes University*. Department of Economics and Economic History. Thesis submitted in partial fulfillment of the requirements for the degree of commerce in financial markets.

Gigineishvili, N. 2011 "Determinants of interest rate pass-through: Do macroeconomic conditions and financial market structure matter?" IMF Working Paper 11, 176.

Petrevksi, G., and J. Bogoev. 2012. "Interest rate pass-through in South East Europe: An empirical analysis." *Economic Systems* 36: 871 – 593.