



The relationship between exchange rates and interest rates in a small open emerging economy: The case of Romania



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ABSTRACT

This paper revisits the relationship between interest rates and exchange rates in a small open emerging economy using wavelet-based methodologies. Based on data for Romania, our results confirm the theoretical predictions on the interest rate - exchange rate relationship during turmoil or policy changes. In the short term, the relationship is negative, confirming the sticky-price models, and over the long term, the relationship is positive, confirming the Purchasing Power Parity theory. At the beginning of the turmoil, the exchange rate movements generally take the lead over the interest rates for the first month, but the monetary authorities take the lead afterwards. Our results reveal that in a small open emerging economy with a direct inflation targeting monetary policy regime, the relationship between exchange rates and interest rate is fundamentally different from that in an advanced economy. Also, our results stress the necessity that the central bank must pay simultaneous attention to both variables in order to achieve their monetary policy targets.

1. Introduction

In recent years, there has been a special interest regarding the relationship between exchange rates and interest rates in both advanced and developing countries. The data on this issue however, have not provided an unambiguous answer. A number of studies that have examined the time-series relationship between interest rates and the nominal exchange rate tend to either find conflicting results that depend on the sample of countries and/or the time period studied, or tend to find insignificant results (Calvo, 2001; Calvo and Reinhart, 2002, 2005; Eichengreen and Evans, 1995; Eichengreen, 2006; Hnatkovska et al., 2012).

This relationship between the interest rates and exchange rates is of interest not only to academics but also to policymakers. The central banks in emerging countries tend to use the interest rate and exchange rate policies in order to abate inflation (Holtemöller and Mallick, 2016). Given that the exchange rate fluctuations have important consequences for monetary policy (Holtemöller and Mallick, 2013), from policymakers' perspectives it is important to analyze the transmission channel between these markets in order to adopt proper policies and forecast the full impact of their decisions (Sensoy and Sobaci, 2014). The empirical literature in this area has been inconclusive, and that is why this unclear empirical relationship became even

more problematic from the perspective of practitioners (Bautista, 2003; Sánchez, 2008). While extensive research has addressed this relationship and the associated puzzles for developed countries, the literature on emerging markets has been much more scant, in part because most emerging markets do not have a sufficiently long track record with a floating exchange rate regime (Kohlscheen, 2014). Good knowledge about the relationship between interest rate and exchange rate changes in emerging economies is very important for a clearer understanding of the monetary policy transmission mechanisms. Also, the importance of this analysis is enhanced considering the fact that the relationship is time varying. Moreover, the emerging-countries group is heterogeneous, and large economies are the subject of a separate research focus (Mallick and Sousa, 2012; Minella et al., 2003).

Among emerging market economies, this interest is further enhanced by the fact that many of them have recently introduced changes in their monetary and exchange rate policies, moving to inflation-targeting frameworks that operate officially under flexible exchange rate regimes (Sánchez, 2008). There are some Central and Eastern European countries among them, such as Czech Republic, Croatia, Hungary, Poland or Romania that are (relatively) new members of European Union. They will have to adopt the European common currency (Euro) in the future and drop the exchange rate as a monetary policy instrument. They will have to accomplish specific conditions,

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known as “convergence criteria” or “Maastricht criteria” that are formally defined as a set of macroeconomic indicators. There are two criteria among them that refer to exchange rates and, respectively, to interest rates. One criterion refers to the exchange rate stability, defined as the participation in the Exchange Rate Mechanism (ERM II) for at least two years without strong deviations from the ERM II central rate. The other criterion considers the long-term interest rates that should not exceed more than 2 percentage points above the rate of the three best performing Member States in terms of price stability. From this point of view it has become crucial to consider the dynamics and the relationship between exchange rates and interest rates in countries that are candidates for European and Monetary Union (EMU) membership.

This study applies a wavelet-based analysis to examine the relationship between exchange rates and interest rates in Romania, a representative small open emerging economy in Central and Eastern Europe. Such emerging small open economies face substantially different policy issues from those of advanced, larger economies. The price of consumer goods depends on the exchange rate, and exporting firms typically set their prices in foreign currency and bear the risk of currency fluctuations (Batini et al., 2009). Given that the exchange rate plays a more important role in emerging economies than in advanced economies (Ghosh et al., 2016), and the short-interest rate is the typical policy instrument used by policymakers to affect currency values (Hnatkowska et al., 2013), the analysis of the co-movement between interest rates and exchange rates in these countries becomes a challenge with possible relevant policy implications. Thus, we expect the relationship between exchange rates and interest rate in an emerging small open economy to be fundamentally different from that in an advanced economy. Romania, as a Central and Eastern European country, has a set of characteristics that makes it an appropriate case for such an investigation. The process of economic transition began in 1990 in the Central and Eastern European countries (CEECs) with a liberalization of the foreign exchange markets and a provision of currency convertibility. These drastic steps resulted in initial deep undervaluations of the national currency. Also, the CEE countries have a quite recent history of high and volatile inflation rates during their transition to a market economy (Dąbrowski et al., 2014). Thus, inflation targeting was an attractive option to generate low inflation, both in CEECs and other emerging market countries, at the cost of constraints on the central bank's ability to respond to shocks that contribute to exchange rate volatility (Ghosh et al., 2016). Therefore, the features of CEECs transition economies provide an interesting study of the relationship between interest rate and exchange rates.

Romania started the economic transition in the early 1990s and went through deep structural, social and institutional reforms. These efforts were crowned by the accession to the European Union in 2007. Romania has adopted the managed floating arrangement since 1994, but until 2004, the exchange rate policy was characterized by relatively frequent interventions on an FX market with low deepness, that generated a low exchange rate volatility and high predictability. In Romania, as for many other European countries' central banks, the primary objective of the National Bank of Romania (NBR) is to ensure and maintain price stability, and the main tasks of the NBR are to define and implement the monetary policy (Tiwari et al., 2013). During 1999, Romania was facing the threat of the financial crisis due to the decrease of its international reserves to a historically minimum value. Starting with March 2003, the Euro became the reference reserve currency for Romanian currency (RON), while in 2005, there was a new policy shift: the inflation-targeting monetary policy strategy was adopted and the flexibility of the exchange rate was increased.

Shortly after the Lehman Brothers failure, due to the generalized capital run from CEE countries, the local currencies came under the pressure of depreciation. Starting from the end of October until the beginning of November 2008, the Romanian currency came under a speculative attack and the NBR adopted an active position to defend

the currency. By raising interest rates high enough, the NBR made it prohibitively costly for speculators to take short positions in RON.

Similar to other countries in the region, Romania is “Euroized”, as the foreign currency denominated loans of Romanian banks have a high weight in total bank assets—approximately 60% (Yeşin, 2013). It has a very similar exchange rate policy framework as other non-Euro new members of European Union (Czech Republic, Hungary, Croatia and Poland)—candidates to EMU that adopted exchange rate regimes with high flexibility (free or managed floating). The monetary policy framework is also very similar in order to achieve the primary objective of price stability. However, among the CEE countries mentioned above, the Romanian case is interesting by its particularities. As we can see in Appendix A, the Romanian Leu (RON) exchange rate behaves differently in a very evident way compared to the currencies of the other four CEE countries that have a very similar behavior—their level is quite stable over the entire period, with small rates of appreciation or depreciation. Fig. A1 shows a sharp depreciation of RON between 1999 and 2004, an appreciation until 2008, followed by a new period of depreciation until the end of 2014. Fig. A2 shows that the RON series behaves as an outlier among the other data series of rescaled exchange rates. The Croatian Kuna (HRK) and Polish Zloty (PLN) series show a high stability. Compared to these series, the Czech Koruna (CZK) has a slightly higher volatility, with a tendency toward small depreciation. A similar behavior may be noticed for the Hungarian Forint (HUF) series. A clear difference is exhibited by the Romanian Leu (RON) behavior during this period: an average value that is three times higher than the base, a very large spread between the extreme values.

From a different perspective, Romania aims to join the Eurozone in the future and to stay in ERM II (Exchange Rate Mechanism II) for two consecutive years before this moment. An internal interest rate shock may generate difficulties for monetary authorities to keep the RON exchange rate within the $\pm 15\%$ fluctuation band if there is a co-movement between interest rates and exchange rates.

Fig. B1 plots the money market interest rates for period between 1999 and 2014. The behavior of the data for Czech Republic, Hungary, Croatia and Poland is quite similar and fluctuates between 20% and about 5% during 1999–2004. On the other hand, in the case of Romania, the interest rates show a high volatility with a sharp decrease from values that exceed 100% to values of about 20%. During the period between 2005 and 2014, the behavior is similar for all the series. However, the graph exhibits a peak for the Romanian interest rates during the international financial crisis of 2008. The value of the interest rates is higher in Romania almost during the entire period. Fig. B2 exhibits the boxplots of the money market interest rates in the period between 1999 and 2014. There is visual evidence of a different interest rate behavior on the Romania money market compared to the other interest rate data series.

Considering all the above arguments, a question arises: What is the nature of the relationship between interest and exchange rates in a small open emerging economy? This paper aims to identify the structure of the lead-lag relationship between the interest and exchange rates in Romania during the period between 1999 and 2014.

The time period for our analysis includes some important moments in Romanian economy: the period that follows the important 1998–1999 banking reforms and the start of the credit expansion to households. After 2000, Romania started the negotiations for EU integration and, seven years later, became a member of the Union. The time dimension of the sample includes policy shifts, political events, and the global financial crisis that started in the US in 2007, and was shortly followed by the Eurozone crisis.

To our knowledge, this is the first study to examine the relationship between exchange rates and interest rates in Romania, especially using a wavelet-based analysis. The advantage of this methodology is that we get time-frequency based results that are very important not only for policy makers, but also for arbitrators, investors, speculators, and hedge fund managers.

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