



Determinants of loan interest rates in a country with a currency board: Evidence from Bulgaria



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ABSTRACT

This article examines the process of loan interest rate formation in Bulgaria. While the standard approach in the literature on interest rate pass-through is focused on the impact of changes in the domestic money market rate, the objective of this study is to adapt the existing interest rate pass-through analysis to the case of a country with a currency board arrangement. To this end, the role of money market conditions in the euro area and the influence of the domestic business climate are taken into account. The impact of these factors on loan interest rates in Bulgaria is examined through symmetric as well as asymmetric error-correction models. The analysis identifies specific patterns in the response of loan interest rates depending on the sector of the borrower, the currency denomination and the maturity of loans.

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1. Introduction

The formation of interest rates on bank loans and deposits is of special interest to central banks. On the one hand, the importance of this issue stems from the key role of bank interest rates in the monetary transmission mechanism, the understanding of which is related to the conduct of monetary policy and the mandate of central banks to maintain price stability. In addition, the formation of bank interest rates is a topic in financial stability analysis, as loan interest rates levels are directly related to the magnitude of credit risk that banks face. Moreover, the dynamics of interest rates on bank products affect the size of the net interest income and hence the capacity of banks to withstand various financial stability risks.

One of the key issues in the literature on retail interest rate dynamics is how loan interest rates react to changes in the monetary policy or the money market conditions. The theoretical models explaining banks' pricing behaviour and the empirical studies on the formation of retail interest rates are based on an analysis of the interest rate pass-through process. Some of the empirical papers that study the interest rate pass-through use aggregate time series in one or several countries: see Bredin et al. (2001) for Ireland, De Bondt (2002) for the euro area, Baugnet and Hradisky (2004) for Belgium, Castro and Santos (2010) for Portugal, Sznajderska (2012) for Poland, Crespo-Cuaresma et al. (2004) for the Czech Republic, Hungary and Poland, Cottarelli and Kourelis (1994) and Borio and Fritz (1995) for a larger set of countries. Other studies employ individual banks' data: see Weth (2002) for Germany, De Graeve et al. (2007) for Belgium, Chmielewski (2004) for Poland, and Horvath et al. (2004) for Hungary, among others.

Analysing the formation of retail interest rates has some peculiarities that depend on the monetary regime that is in place. In the general case of a country with an independent monetary policy, the central bank can alter the monetary conditions by

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introducing changes in the main refinancing rate, by changes in the conditions that banks face when accessing the marginal lending/deposit facility of the central bank, by changes in the ratio or the scope of the reserve requirements, or, potentially, by asset purchase programs. At the same time, retail interest rates are affected by foreign monetary conditions. The relative roles of the foreign monetary conditions and the domestic monetary policy as determinants of loan interest rates vary with the degree of openness of the domestic economy as well as across the entire spectrum of monetary regimes.

A currency board arrangement is a special case, since in contrast to all other monetary regimes, including those based on standard pegs, it explicitly prohibits the central bank from setting a policy rate. Under a fixed exchange rate, free movement of capital and prohibition to conduct an independent monetary policy, foreign interest rates are the only monetary factor underlying the domestic interest rates in countries with a currency board. In this case, the analysis of the interest rate pass-through to retail rates boils down to measuring the extent and speed at which changes in the monetary conditions in the country or the area of the anchor currency are transferred to the retail interest rates in the domestic banking system.

This article attempts to study the formation of loan interest rates in Bulgaria—a country with a currency board arrangement. The article makes a few contributions to the interest rate pass-through literature. First, it provides a framework for the analysis of loan interest rate formation in a country with this monetary regime. This framework is centred on the key role that foreign monetary conditions play when the central bank does not conduct monetary policy. Second, the paper augments the interest rate pass-through analysis by accounting for the role of credit risk and shows that the latter can be measured indirectly via the developments of the business climate indicator. Third, the paper applies this framework to the credit market in Bulgaria and identifies a number of specific patterns across the various credit market segments, thus contributing to a better understanding of the monetary transmission mechanism in the country.

The empirical analysis in this article employs aggregate time series on loan interest rates in Bulgaria. Their dynamics are analysed by error-correction models, allowing both short-term and long-run adjustments to be studied. Along with the estimation of standard VECM, this article tests for asymmetries in the loan interest rates' reactions using asymmetric error-correction models. The paper aims to test for asymmetry in the interest rate pass-through for two reasons. First, identifying whether the reaction of loan interest rates is characterised by asymmetric patterns could provide a better understanding of the impact of the reference interest rate on the domestic economy. A lack of asymmetry could point to strong financial integration with the zone of the anchor currency, with implications for the monetary transmission mechanism in Bulgaria when the country becomes part of the euro area. Second, the potential upward asymmetry in the formation of loan interest rates could be interpreted as an indirect indicator that banks exert excessive market power on the credit market (and vice versa, an absence of asymmetry may suggest strong competitive conditions).

The article is structured as follows. The next section presents the theoretical framework of the study. Section 3 describes the sources and the range of the dataset used. In Section 4, the statistical properties of the data are analysed. Section 5 reports the results from the estimation of the long-run relationship between loan interest rates and their determinants, while in Section 6 standard and asymmetric error-correction models are estimated. Section 7 examines the changes in the interest rate pass-through coefficients during the global economic crisis. Finally, Section 8 concludes.

2. Theoretical background

2.1. Outline of the theoretical framework in Freixas and Rochet (2008)

The theoretical framework of this article draws heavily on Freixas and Rochet (2008), who present versions of the Klein-Monti model of banking behaviour. Starting with the polar cases of perfect competition and monopoly, they also present a more general version of the model with an oligopolistic market structure.

The simplest version of the Klein-Monti model considers a monopolistic bank confronted with a downward-sloping demand for loans $L(r_L)$ and an upward-sloping supply of deposits $D(r_D)$. The bank's decision variables are L (the amount of loans) and D (the amount of deposits). The difference between the volume of deposits D that the bank has collected and the volume of loans L that the bank has granted is divided into two terms: minimum reserve requirements held on account with the central bank (calculated as α percent of deposits), and the bank's (net) position M (positive or negative) on the interbank market:

$$L + \alpha D = D + M \quad (1)$$

The model assumes that the bank sets the loan interest rate r_L and the interest rate on deposits r_D . $r_L(L)$ and $r_D(D)$ are the inverse functions of the demand for loans and the supply of deposits, respectively. The interest rate on the money market r is taken as given and is assumed to be between the loan interest rate and the interest rate on deposits.

Banking technology is represented by a cost function $C(D, L)$, interpreted as the cost of managing a volume D of deposits and a volume L of loans. Assume that $C(D, L)$ is linear and that costs are additive, i.e. the pricing of loan and deposit products are independent of each other:

$$C(L, D) = \gamma_L L + \gamma_D D, \quad (2)$$

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