



On the empirical evidence of asymmetric effects in the Polish interest rate pass-through

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ABSTRACT

The paper empirically examines the potential asymmetries in the interest rate pass-through in Poland. We investigate the chosen retail interest rates in commercial banks on deposits and loans denominated in the Polish currency. It is considered whether their adjustment to changes in interbank rates is asymmetric in the long term as well as in the short term. We test for asymmetric cointegration using threshold autoregressive models and momentum-threshold autoregressive models. Next, if it is possible applying the threshold error correction models, we search for asymmetries associated with the following factors: the direction of change in the money market rate, the level of the economic activity, the level of liquidity, the level of central bank's credibility, the level of expectations, and the level of competition. Finally, we test whether using the asymmetric models improves the quality of forecasts of retail bank interest rates.

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1. Introduction

Precise understanding of how the central bank's rates affect retail bank interest rates is particularly important for conducting efficient monetary policy. Most central banks aim for maintaining a low and stable rate of inflation to provide sustainable economic growth. In order to achieve price stability they adjust their official short-term interest rates.

In the first stage of the transmission process the official rates affect money market rates. Subsequently, in the second stage, the money market rates influence retail bank interest rates. Finally, the level of deposit and lending rates influences the real economic activity.

If the central bank's rate increases the tendency to consume decreases, as an opportunity cost of current consumption increases, and thus, the tendency to save increases. Moreover, the increase of interest rates causes increase of cost of capital and worsens expectations about future spending causing decrease of investment. Whereas when the central bank rate decreases, in contrary, the tendency to consume and invest increases and the tendency to save decreases.

The interest rate pass-through is one of the main channels of the transmission process in inflation targeting framework. Łyziak, Przystupa, Stanisławska, and Wróbel (2010) show that the effectiveness of the interest rate channel in Poland was growing till the recent crisis, due to increasing credibility of the central bank and higher economic maturity.¹

In this study we concentrate on the second stage of the interest rate transmission process in Poland. In the analyzed time period Poland can be viewed as an example of an emerging market economy with fully fledged inflation targeting.

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¹ Nevertheless, they find out that the exchange rate channel is still the most efficient channel in Poland, however, its efficiency is decreasing and it dropped by half after adopting floating exchange rate regime in 2000.

Asymmetries in a response of retail bank interest rates to monetary shocks have been explored in numerous studies.² Thus, our paper extends the existing literature by providing evidence on the threshold effects in one of the Central-European countries. We allow for asymmetries in both the long term as well as the short term. The threshold error correction models are estimated with the threshold values selected by a grid search over all potential thresholds. Such method has not been used for the Polish data yet. Encompassing the asymmetric elements in the interest rate pass through equation might both give better explanation of the transmission process and improve the forecasting performance of the equation.

The paper is organized as follows. The next section provides rationales for an asymmetric interest rate pass-through in general. Moreover, it presents the specific characteristics of the Polish economy which may cause asymmetries. Section 3 presents our empirical strategy used to investigate the potential asymmetries. Whereas, Section 4 describes our dataset and Section 5 reports our results. Section 6 tests forecasting properties of the asymmetric and symmetric models. The last section concludes.

2. Reasons for asymmetric interest rate pass-through

2.1. Explanations of asymmetric adjustment

Empirical studies show that the transmission process from a central bank interest rate to retail bank interest rates is incomplete and may be asymmetric. The changes of certain economic indicators may cause an asymmetric adjustment process. The most important indicators to mention here are the following.

Firstly, it is the level of economic growth. Many authors argue that when high level of economic growth is observed, it is easier for banks to adjust their lending and deposit rates (see [Égert et al., 2007](#)). Then the demand for loans is higher and banks are more inclined to limit it by greater increases of their credit rates. Moreover, the economic agents are in better financial condition and it is easier for firms to adjust their prices. Thus, the prices are adjusted more frequently and more completely in the whole economy, therefore in the banking sector as well. When the economy is slowing, banks may require a higher compensation for risk, thus decreases in the policy rate may be only partially passed to households and firms. During periods of macroeconomic instability and uncertainty, the interest rate pass-through is weaker. When higher interest rate volatility is observed banks wait longer to change their rates.

Also the assessment of credit risk by banks is important. In some periods banks may restrict the supply of loans to riskier borrowers and slow down the adjustment process. Typically credit risk increases in economic slowdown, making banks unwilling to decrease their credit rates, that slows the interest rate pass-through and contributes to the asymmetry according to the level of economic growth.³

On the other hand concerning lending rates banks face asymmetric information and adverse selection problems. [Stiglitz and Weiss \(1981\)](#) argue that increasing lending rates attract customers with a higher risk preference. These borrowers accept higher rates as their projects have higher expected return. Therefore, although it seems to be profitable banks might be reluctant to increase their credit rates.

Secondly, the level of liquidity in the banking sector plays an important role. [Angeloni, Mojon, Kashyap, and Terlizzese \(2002\)](#) mention the value of high and low levels of liquid assets as the main factor influencing the interest rate transmission process. [Agenor and Aynaoui \(2010\)](#) show that excess liquidity might cause upward stickiness of deposit rates and an easing of collateral requirements, which might lead to lower lending rates. Moreover, it might provide unwanted stimulus to the economy and the ability of central bank to control this may be constrained.

Similarly, it is worth noting that a significant maturity mismatch of loan and deposit portfolio might cause asymmetries. Banks usually give long-term loans and take short-term deposits, that involves a high interest rate risk. Therefore, the more long-term loans are covered by long-term deposits the less pressure banks feel to adjust their lending rates, as their liabilities are less sensitive to market rates.

Thirdly, the level of competition in the economy should be listed. In a competitive market banks may be interested in increasing their market share and maintaining customers by setting favorable rates and borrowing to less risky borrowers. High level of competition among banks appears to cause faster interest rate pass-through ([Gropp, Sørensen, & Lichtenberger, 2007](#)). [Gambacorta and Iannotti \(2007\)](#), by examining the interest rates in Italy, find out that when the Consolidated Law, which fostered competition, was introduced in Italy in 1993 the speed of interest rate pass through increased and, what is more, the asymmetries concerning the monetary policy regime almost vanished. According to the “structure-conduct-performance hypothesis” the level of concentration is inversely related to the degree of competition, because high level of

² See for instance: [Becker, Osborn, and Yildirim \(2010\)](#) for the UK, [Cecchin \(2011\)](#) for Switzerland, [De Graeve, De Jonghe, and Vennet \(2007\)](#) for Belgium, [Égert, Crespo-Cuaresma, and Reiningger \(2007\)](#) for CEE, [Gambacorta and Iannotti \(2007\)](#) for Italy, [Karagiannis, Panagopoulos, and Vlamis \(2010\)](#) for the Euro Area and the USA, [Payne \(2007\)](#) for the USA, [Sander and Kleimeier \(2002, 2004, 2006\)](#) for European and SACU countries.

³ Recently so-called risk-taking channel is distinguished, which operates through the impact of monetary policy on the behavior of banks towards risk ([Borio & Zhu, 2008](#); [Gambacorta, 2009](#)).

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