



Interest rate pass through and asymmetries in retail deposit and lending rates: An analysis using data from Colombian banks [☆]



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ABSTRACT

Using a sample of Colombian banks, we examine retail interest rate adjustment in response to changes in wholesale interest rates. Interest rate pass through running from wholesale to retail rates is found to be both partial and heterogeneous across banks. This suggests that the effectiveness of monetary policy is limited. Further investigation reveals that the behaviour of retail deposit rates appears consistent with collusive behaviour between banks insofar as interest rates are more rapidly adjusted downwards than upwards. In the case of retail lending rates, it appears that banks more rapidly reduce than increase rates. This suggests that expansionary monetary policy in Colombia may be relatively more effective than contractionary policy.

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1. Introduction

The behaviour of interest rates on deposits and loans in the retail banking sector has an important bearing on investment decisions and the real economy. While important drivers of movements in retail bank rates include the stance of monetary policy, the interbank or money market (wholesale) rate, there is considerable interest in how retail bank rates actually respond when such drivers change. In this respect, researchers have investigated the speed of response as well as the possibility that retail rates respond differently to increases and decreases in other interest rates. Following the seminal work by [Stiglitz and Weiss \(1981\)](#), interest rate rigidity can be attributed to adjustment costs and information asymmetries in credit markets. In a modelling approach based on an imperfectly competitive banking sector, [Hannan and Berger \(1991\)](#), [Neumark and Sharpe \(1992\)](#) and [Freixas and Rochet \(1997\)](#) suggest that both lending and deposit interest rates maintain a stable long-run equilibrium relationship with the interbank rate. Within this framework, error correction based on the adjustment of retail interest rates ensures that deviations from long-run equilibrium based on shocks are temporary. However, [Hannan and Berger \(1991\)](#) and [Neumark and Sharpe \(1992\)](#) advocate the collusive pricing

hypothesis and the consumer behaviour hypothesis as alternative explanations for the extent of interest rate pass through and the adjustment of lending rates to changes in policy rates. As noted by [Payne \(2007\)](#), a downward rigidity of lending rates can be attributed to the reluctance of banks to decrease lending rates in fear of disrupting collusive arrangements and/or the hesitation by consumers to change lenders due to switching costs. On the other hand, the reaction from customers to lending rate increases and/or the adverse selection problem faced by lenders in an increasing interest rate environment may translate into upward rigidity in lending rates. This reasoning can be expanded to interest rates on bank deposits with banks more partial to raising rather than reducing deposit rates under the consumer behaviour hypothesis.

Numerous studies have examined the extent and nature of interest rate pass through and asymmetric adjustment based on various country samples. While much of this work is on the adjustment of retail interest rates with respect to changes in policy interest rates, there is a general finding that asymmetries are present with respect to how bank retail rates are adjusted. In terms of the relatively recent work, [Payne \(2007\)](#), using a momentum-threshold autoregressive (MTAR) specification, finds that the respective adjustable rate mortgages in the US and the federal funds rate are cointegrated, but with incomplete interest rate pass through. The results also indicate asymmetries in the response of the adjustable rates to changes in the federal funds rate. In an analysis of interest rates in Turkey, [Yüksel and Ozcan \(2013\)](#) employ the asymmetric threshold autoregressive (TAR) and MTAR procedures over the period December 2001 to April 2011 and find significant and complete pass-through between policy rate and loan rates. Positive and negative departures from the equilibrium converge to long-run path almost at the same speed. However, their analysis revealed that there is no significant relationship between policy rate and bank deposit rates due to sluggish

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adjustment of the latter. Zulkhibri (2012) examines Malaysia and finds that the pass through from money market rates to retail deposit and lending rates is incomplete. In addition to this, interest rate adjustments are found to be asymmetric, with more significant adjustments taking place under monetary easing than under monetary tightening. Wang and Thi (2010) find robust evidence that there exist the upward rigidity in the deposit rate and the downward rigidity in the lending rate in both Taiwan and Hong Kong. This is a finding that is consistent with the hypothesis of the collusive pricing arrangements.

In the case of Portugal, Rocha (2012) uncovers heterogeneous adjustments of bank rates as between sectors, between loans and deposits, and across maturities — which include complete long-run pass-through to corporate lending rates but rigidities for the personal sector. Verheyen (2013) presents the results that point to considerable asymmetries especially with regard to the long-run pass-through of money market rate changes as well as some heterogeneity between EMU countries; see also Marotta (2009) and Bernhofer and van Treeck (2013). Outside of the Eurozone, Becker et al. (2012) find the presence of substantial asymmetries when exploring the pass-through of the official rate to the money market rate and of the market rate to the mortgage rate in the UK. Hofmann and Mizen (2004) look at deposit and mortgage products offered by individual UK financial institutions and find that the speed of adjustment in retail rates depends on whether the perceived ‘gap’ between retail and base rates is widening or narrowing. Further work on mortgage rates includes Valadkhani and Anwar (2012) who find that the Reserve Bank of Australia’s rate rises have a much larger and more instantaneous impact on the mortgage rate than rate cuts. In contrast, Payne (2006) finds that US mortgage rates respond symmetrically to the federal funds rate in the long-run adjustment process. Lastly, Sznajderska (2013) examines the evidence for asymmetric effects in the Polish interest rate pass-through using TAR and MTAR models over the periods 2004 m1–2008 m8 and 2004 m1–2012 m4. The results indicate that there are many more cases of asymmetric cointegration in the earlier shorter sample period than in the later longer sample period. Sznajderska suggests that the absence of cointegration may be due to disturbances in 2004, possibly connected with Poland’s entry to the European Union, or also perhaps associated with methodological changes in the way interest rates are calculated and collected (in order to make them comparable with other EU countries).

In this paper, we estimate M/TAR models to examine if there is evidence of asymmetric behaviour in response to market conditions in the case of retail deposit and lending rates set by Colombian banks. While this is not the first case study of interest rate pass through in Colombia, we believe that the Colombian experience is indeed interesting on the grounds that it is an economy which about two decades ago embarked on a series of financial sector reforms aimed at increasing the degree of competition in retail banking. However, a cursory look of some recent basic banking sector indicators, such as the evolution of the number of banks and the associated five-bank concentration ratio (based on assets), actually reveals an increase in market concentration. This clearly makes it an open question as to which hypothesis (that is, collusive pricing versus consumer behaviour) is likely to prevail. In an earlier study, Iregui et al. (2002) offer an initial examination of the effects of the financial liberalisation measures on the dynamics of Colombian retail interest rates. These authors characterise the behaviour of aggregate deposit and lending rates in terms of the so-called smooth transition autoregressive models (STAR), and find evidence of relatively greater rigidity for both deposit and lending rate decreases when compared with increases.¹

¹ It is worth mentioning that, similar to Iregui et al. (2002), we started our empirical analysis by fitting logistic and exponential STAR models to the data. However, the results (not reported here) indicated that the parameter which measures the smoothness in the value of the transition function was rather high, implying an almost instantaneous transition from one regime to the other. Bearing in mind that as the speed of transition tends to infinity the LSTAR and ESTAR models converge to the M/TAR model, the latter specifications were preferred over the former.

The distinguishing feature of our empirical analysis is that we take advantage of a highly disaggregated database that consists of the deposit and lending rates applied by the individual banks that comprise the Colombian banking sector. This is in marked contrast to much of the existing literature which, as indicated above, proceeds at a more aggregated sector-level basis.² The advantage of having data with such a level of disaggregation in our present study is that it is possible to determine whether the pass-through from market to retail interest rates as well as the presence of asymmetries (if any) is homogeneous across the banking institutions, or if they are dependent on the size of the intermediaries.

A further dimension that makes the Colombian experience attractive is that the effects of the Global Financial Crisis (GFC) have not been regarded as serious as it has been for other economies, mainly because of favourable commodity price movements related to Colombian exports and the country’s strong economic policy framework.³ This suggests that a zero lower bound on interest rates has been a less acute issue when it comes to lax monetary conditions. Instead, the existence of usury laws gives rise to an upper boundary on lending rates, which is commonly referred to as the interest rate of usury. This interest rate opens up the interesting possibility of an upper bound, which is in sharp contrast to most other countries which have had concerns with a lower zero bound during the GFC era.

The paper is organised as follows. Section 2 presents a brief overview of the developments in the Colombian financial sector, including an outline of the measures taken to increase competitiveness. Section 3 describes the econometric modelling strategy which is based on a threshold autoregressive approach for looking at asymmetric error correction towards long-run equilibrium between retail interest rates and interbank rates. Section 4 presents the data and the results of the empirical analysis. Our investigation reveals evidence that is consistent with the consumer reaction hypothesis being applicable in the case of lending rates, but the collusive behaviour hypothesis being applicable in the case of deposit rates. Section 5 offers concluding remarks.

2. An overview of recent developments in the Colombian banking sector

Until the late 1980s the banking sector in Colombia was subject to important restrictions in the form of high reserve requirements and liquidity ratios, controls on interest rates, and direct credit to specific sectors of the economy at subsidised interest rates. In this environment of “financial repression”, government-owned banks held approximately 43% of the assets of the financial sector (about 20% of GDP), while banks with foreign participation amounted to only 3% of the total assets of the financial system (approximately 1% of GDP); see Uribe and Vargas (2003). In addition, Clavijo et al. (2006) observe that the asset side of the bank’s balance sheet was rather specialised, as these institutions mostly dealt with specific sectors of the economy, such as agriculture, construction, industry, and commerce.

In the early 1990s, the Colombian government embarked on a major programme of reforms aimed at liberalising the economy with the purpose of making it more competitive. The reforms comprised several fronts: trade relations, foreign exchange regime, labour market, social security, government finances and the financial sector. Focusing on the latter, Uribe and Vargas (2003) and Arango (2006) summarise the package of financial liberalisation reforms in four main laws. Among other measures, Law 45 of 1990 redefined the structure of the financial sector; relaxed the requirements for entry and exit of intermediaries; regulated mergers, acquisitions and liquidations; substantially reduced reserve requirements; and liberalised interest rates, although ceilings regulated with the existence of usury laws are still in place today in

² An exception includes the recent paper by Valadkhani and Worthington (2014), who investigate asymmetric behaviour of Australia’s Big-4 banks in the mortgage market.

³ See, e.g., the IMF country report 14/141.

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