



The effect of banking market structure on the lending channel: Evidence from emerging markets[☆]

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ABSTRACT

This paper analyses the extent to which the level of bank competition influences monetary policy transmission. Using a large panel dataset of 978 banks from 55 countries, and employing the Lerner index model as a measure of market structure, our results show that an increase in banking sector competition weakens the effectiveness of monetary policy on bank lending. The findings are robust to a broad array of sensitivity checks including control of alternative measurements of the Lerner index, different samples and different methodological specifications. By extension, these results have important policy implications for regulators in assessing the effectiveness of monetary policy transmission mechanisms.

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1. Introduction

The objective of any economic policy according to Friedman (2008) is to advance the economic well-being of a nation's citizens and to strengthen the institutions through which they interact to achieve this welfare. Some of these institutions are financial intermediaries which firms as well as households rely on to finance their projects. The key objective of this paper is to examine the role of bank market structure in monetary policy transmission as well as the effect of monetary policy on bank lending.¹ The standard view of a transmission mechanism focuses on the effect of monetary policy on interest rates and through interest rates on lending and credit. According to this standard view as explained through the interest rate channel, a change in the monetary policy stance affects long-term interest rates and the exchange rate, and this alters relative prices in the economy, the price of future

consumption and investment relative to the price of present consumption, and the prices of foreign goods in terms of domestic goods (Bean, Larsen, & Nikolov, 2002).² In contrast, the bank lending channel of monetary policy transmission focuses not only on the impact of monetary policy on demand for loans, but more important on the supply of loans. However, to support the existence of a lending channel, there is a need for evidence that monetary policy tightening causes a shift in the supply of loans and that there are certain categories of borrowers who depend on bank loans for their finances.

Studies on the bank lending channel, either country specific or cross-country, have centred on identifying its existence, on gauging its potency and its overall importance, on identifying shifts in loan demand from shifts in loan supply, and on types and distributional effects.³ Little attention has been given to the effect of banking structure on the response of bank lending to monetary policy. The argument in support of the banking structure-lending channel hypothesis is that monetary policy not only affects bank reserves either through open market operations or reserve requirements, but also impacts on marginal cost

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¹ Banking market structure refers to the different attributes of a market, including the number and distribution of banks (Bauer & Cromwell, 1989), specific characteristics of the banks within the market and the characteristics of the market itself (De Nicolò, Bartholomew, Zaman, & Zephirin, 2004). Throughout this paper market structure or bank market structure connotes the competitiveness or non-competitive environment in which the banks operate.

² The interest rate channel cannot fully explain the intensity, timing and composition of responses of real variables to variations in monetary policy (Pruteanu-Podpiera, 2007). Bernanke and Gertler (1995) provide an exposition of what the interest rate channel theory fails to explain.

³ Since the seminal work of Bernanke and Blinder (1988), there have been several papers on the bank lending channel through which the monetary policy transmission mechanism operates (see Altunbas et al., 2002; Brissimis & Delis, 2009; Ehrmann et al., 2003; Kashyap & Stein, 1995, 2000; Kishan & Opiela, 2000).

through interest rates paid on bank liabilities. Moreover, banking market structure is important as the degree of market power determines how banks' marginal cost shocks could be passed to prices and lending. Vanhoose (1985) shows that monetary policy designed to target an interest rate automatically impacts on the monetary aggregate as a result of changes in bank market structure. Thus, proper understanding of the industrial organisation of local financial markets is necessary for a detailed analysis of monetary transmission mechanisms.

From an empirical point of view, studies which examine the relationships between the level of competition and the effect of monetary policy on bank lending are those of Adams and Amel (2005), Gunji, Miura, and Yuan (2009) and Olivero, Li, and Jeon (2011). Adams and Amel (2005) use US data to investigate the impact of local bank concentration on monetary policy transmission and find that the impact of monetary policy on loan originations is weaker in more concentrated markets. Gunji et al. (2009) and Olivero et al. (2011) test the impact of *H-statistic* (competition measurement) on the transmission of monetary policy and their results show that increased competition in the banking industry leads to a smaller policy effect on bank lending. However, the concentration ratio does not necessarily measure the level of competition (Claessens & Laeven, 2004) and it cannot be used to explain differences in market structure. Secondly, *H-statistic* is seen as an aggregate phenomenon emanating from the collective interaction of a set of market participants. In contrast, *Lerner index* is an individual phenomenon which results from the behavioural pricing strategy of a particular bank (Gutierrez de Rozas, 2007).⁴ Finally, the use of aggregate data that rely on the short-term responses of bank lending may not be very informative in view of the fact that banks may be prevented from quickly adjusting their stock of loans following a monetary policy shock, due to loan commitments (Brissimis & Delis, 2009).

It is well established in the new empirical industrial organisation literature that, there is a relationship between market structure and interest rates charged on loans and deposits. Using for example the structural-conduct-performance hypothesis, studies reveal that in a market where banks are concentrated, lending reduces as a result of high lending rates. Also, deposit rates decline where a bank has excessive market power in a deposit market (Berlin & Mester, 1999; Black & Strahan, 2002; Kahn, Pennacchi, & Sopranzetti, 2005).⁵ Also, due to innovation in the financial system, variables such as bank size, liquidity and equity may not be enough to assess banks' ability to provide additional loans (Altunbas, Gambacorta, & Marques-Ibanez, 2010).

The aim of this paper is to blend the above research with that of a study on monetary policy transmission. Apart from an extension in the scope of the current literature, this paper also makes the following three important contributions regarding developing and emerging economies: First, a Lerner index is constructed as a proxy for bank market power and then we test the sensitivity of loan growth to core deposits and market power on bank loan growth.⁶ This enables us to investigate whether banks with a high degree of market power are constrained by the availability of loanable funds which is a necessary condition for the existence of a bank lending channel (Jayaratne & Morgan, 2000). Second, the Lerner index is interacted with the monetary policy stance to examine the impact of bank market structure on monetary policy transmission. Specifically, bank loan growth is

regressed on the Lerner index, the stance of monetary policy and the interactions between these variables. The third contribution emanates from the use of 978 individual banks' balance sheet data across 55 developing countries for the period 2000–2007. Favero, Giavazzi, and Flabi (1999) indicate that microeconomic data makes it possible for one to identify the presence of a credit channel. Analysing the implication of the degree of bank market power for loan supply and monetary policy transmission is important as the changes in developing countries' bank market structure, ever increasing liberalization of the financial sector, and the emergence of financial innovation in these markets could have changed the perception and the risk pricing behaviour of banks. In addition, traditional bank-specific variables may not provide an accurate assessment of banks' capacity, ability and willingness to grant additional loans.

Our results show that a decline in the level of competition increases the response of bank lending to monetary policy stance, providing evidence in support of a stronger relationship between market imperfection and the effectiveness of the monetary policy instrument. The overall implication of this finding is that bank market structure needs to be considered in addition to the traditional bank-specific indicators in assessing banks' ability to finance economic activities.

The theoretical principles underlying the bank lending channel posit the effect of monetary policy on the real economy through direct impact on the supply of bank loans. The mechanism is that, tightening of monetary policy shrinks banks' reserves and reduces banks' access to loanable funds and credit (Lensink & Sterken, 2002). The lending channel according to Bernanke and Blinder (1988) and Kashyap and Stein (1995) operates on certain premises: bank loans and publicly issued bonds are imperfect substitutes for firms and that capital structure matters for such firms since they cannot offset a decline in the supply of loans by financing their investment with external borrowings. The other condition is that bonds and loans are not perfect substitutes for banks and that, the central bank must be able to alter the quantity of reserves available to banks in order to influence the supply of loans. This condition is key in that, banks must not be able to completely insulate their lending activities from the shocks to reserves, either by switching from deposits to non-reservable sources of finance such as certificate of deposits (CDs), commercial paper or equity (Bernanke & Blinder, 1988).

The implication of a bank lending channel of monetary policy transmission is that, it has distributional effects on varying levels of bank characteristics with small, illiquid and less capitalised banks most affected. However, some studies have cast doubt on the existence and implications of the bank lending channel. Romer and Romer (1990) argue that, large multinational firms and private banks may neutralise the effects of a monetary contraction by replacing a decrease in bank loans and reserves with other forms of funds by issuing equity and CDs respectively. Disyatat (2010) contends that the importance placed on policy-induced changes in deposits is misplaced and that the lending channel works through the effect of monetary policy on banks' balance sheet strength and risk perception.

Given the lack of consensus on theories underlying the relevance of the lending channel, empirical studies provide evidence on the existence, relevance, distribution and implication of a bank lending channel. Empirical studies in the US show that a bank lending channel exists and that the transmission is through bank size (Kashyap & Stein, 1995); bank size and liquidity (Kashyap & Stein, 2000) and bank size and the level of capital (Kishan & Opiela, 2000). However, recent studies suggest that the bank lending channel within the US is declining in strength (Ashcraft, 2006; Loutskina & Strahan, 2009). On cross-country studies (mainly in continental Europe), there are mixed results on distributional effects of monetary policy. Altunbas, Fazylove, and Molyneux (2002) find that the capitalization level and size of the bank affect a bank's reaction to monetary policy change in the Euro area. Ehrmann, Gambacorta, Martínez-Pagés, Sevestre, and Worms (2003) show that apart from bank liquidity, neither capital nor size

⁴ The *Lerner index* is a measure of market power or price mark-up over marginal cost. It provides a separate value for each bank in the industry. Conversely, the *H-statistic* is an indicator of competition and it is based on the price elasticities of input cost in a reduced-form revenue equation. It provides a single value for the whole industry (Gutierrez de Rozas, 2007). Thus using *H-statistics* to investigate the effect of bank market structure on the lending channel to changes in monetary policy may not be appropriate.

⁵ Corvoisier and Gropp (2002) summarise the impact of concentration on the pricing behaviour of banks using the 'structure performance hypothesis' (i.e. ability of a bank with market power to extract higher rent) and 'efficient structure hypothesis' (i.e. lower operating cost).

⁶ An alternative version (i.e. funding-adjusted Lerner index) is also constructed as a robustness check of the earlier version (i.e. conventional Lerner index).

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