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Bank risks, monetary shocks and the credit channel in Brazil: Identification and evidence from panel data

Julio Ramos-Tallada*

Banque de France, DGEI-DERIE-SERMI, 31 rue Croix des Petits Champs, 75049 Paris Cedex 01, France

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ABSTRACT

Using a large database of bank financial statements, this paper investigates the determinants of the bank lending channel (BLC) of monetary transmission in Brazil between 1995 and 2012. I extend the standard empirical approach in two main ways. First, I apply a micro-founded strategy for disentangling demand from supply shifts in credit. Using this identification scheme, I show that lending supply is negatively correlated with the short-term market interest rate over the long period. The sensitivity of credit supply to monetary shocks is not related to the bank characteristics generally used in the empirical literature, whereas a proxy of the individual bank external finance premium (EFP) tends to capture financial constraints better than size, liquid assets or capitalization ratios. However, the patterns of the BLC have changed since the onset of the global financial crisis. In the post-crisis period, the money market rate does not affect the lending supply of the average bank anymore, while small banks and those lacking access to long-term funds appear more sensitive to monetary shocks in some estimations. Second, I check whether several types of uncertainty may drive the BLC, beyond liquidity risk. Over the long period, I find evidence that higher market risk borne by banks' securities portfolios (captured by a longer duration of public debt bonds) and lower uncertainty in the money market (captured by a lower volatility of rates) appear to consistently enhance the effectiveness of monetary policy through the BLC.

* Tel.: +33 142925561.
E-mail address: julio.ramostallada@banque-france.fr.

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1. Introduction

The latest IMF Article IV report on Brazil (IMF, 2013) devotes a whole chapter to investigating whether the effectiveness of monetary policy through the credit channel has weakened in recent years. The question is of special interest: in a country where the ratio of bank credit over GDP has risen from barely 25% in 2003 to around 55% in 2013, the impact of bank lending supply on real activity is likely to have strengthened significantly.

The narrow credit channel, called also bank lending channel (BLC), is a mechanism through which monetary policy shocks are transmitted to the real sector via shifts in the banks' lending supply.[1] The extent to which the lending supply responds to a monetary shock determines whether a BLC exists and is active in a given economy. The higher the sensitivity of banks' credit supply, the more effective monetary policy is. The BLC is therefore key to policy-making: if it is not active, central banks may lack an important tool to stabilize inflation; but if the lending supply is too sensitive, the BLC might give rise to a sudden process of overheating or a sudden stop of economic activity, increasing the volatility of output.

The establishment of the theoretical foundations of the BLC by Bernanke and Blinder (1988) has led to the emergence of a wide range of studies in this area. Romer et al. (1990), Kashyap and Stein (1993, 1997), Friedman et al. (1993), Ramey (1993), Bernanke and Gertler (1995), Trautwein (2000) and Walsh (2003), amongst others, have dealt with theoretical and policy aspects. In addition to its importance for policy-making, the BLC has prompted a lively debate because its economic foundations remain controversial, and empirical evidence on the determinants is not clear-cut. First, econometric studies, particularly those using aggregate data, face a challenging identification problem: when a monetary shock occurs, it is difficult to determine whether variations in the observed outstanding credit are driven by the demand for or by the supply of loans (see for example Peek and Rosengren, 2013). Second, the transmission of monetary policy is driven by variables that may either be imperfectly measured, such as risk premiums, or unobservable, such as expectations (Issing, 2003).

To overcome the identification problem, numerous empirical studies use a panel-based microeconometric approach, applied either on static models (Kashyap and Stein, 1995; Favero et al., 1999; Arena et al., 2006; Olivero et al., 2011a, b) or on dynamic specifications (Kashyap and Stein, 2000; Kishan and Opiela, 2000; Ehrmann et al., 2003; Gambacorta, 2003; De Haan, 2008; Kishan and Opiela, 2006; Ashcraft, 2006; Pruteanu-Podpiera, 2007; Altunbas et al., 2010; Gambacorta and Marques-Ibanez, 2011; Wu et al., 2011; Kandrac, 2012; Bluedorn et al., 2013).[2] The main explanatory variable, a monetary shock, is generally measured as a change in the observed money market rates.[3] The usual specification is founded on the main hypothesis underlying the BLC: market imperfections faced when collecting funds and the related external finance premium (EFP) differ across banks. Implicitly, the credit response to a monetary shock is based on the bank's optimization of a liquidity risk. The lending supply is likely to be more sensitive to a monetary shock for banks facing a higher EFP and a tighter liquidity constraint. Although these variables are difficult to observe, standard empirical literature uses some proxies based on banks' financial structure: for example banks' size, liquid assets, capitalization ratios, and foreign or public ownership are assumed to loosen liquidity constraints, thus to attenuate the BLC.

The use of bank-specific variables is intended to solve identification issues, since a significant heterogeneity across banks' responses is assumed to signal credit supply shifts. Properly taking into account credit demand is in turn a challenging task. The empirical studies generally use macroeconomic variables, such as GDP growth and inflation. Indeed, when surveys on aggregate loan demand

[1] In the context of the BLC, the term “monetary shock” refers to a shift in the supply of the money base involving a change either in the bank deposit base or in the money market rate.

[2] See also the special issue of the Journal of Banking and Finance (2002, n.26) and Angeloni et al. (2003) (part 3), which collect many other empirical works.

[3] Money market rates do reflect the current supply conditions in the market for bank reserves as long as they are explicitly or implicitly targeted by monetary authorities (see Bernanke and Mihov, 1998).