The bank-lending channel and monetary policy during pre- and post-2007 crisis

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Evangelos N. Salachas [a], Nikiforos T. Laopodis [b], Georgios P. Kouretas [c,a,*]

[a] Department of Business Administration, Athens University of Economics and Business, 76 Patission Street, Athens 10434, Greece
[b] Deree College and ALBA Graduate Business School at The American College of Greece, 6 Gravias Street, Athens 15342, Greece
[c] IPAG Lab, IPAG Business School, 184 Boulevard Saint-Germain, FR-75006 Paris, France

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ABSTRACT

In this paper, we assess the influence of monetary policy on the bank-lending channel in both pre- and post-2007 financial crisis periods. In constructing the monetary policy instrument, we used both conventional and unconventional measures, the latter being the asset purchases ratio in the central banks' balance sheets. In the pre-crisis sub-period, the bank- lending channel operated effectively in response to changes in central banks' rates. In the post-crisis sub-period, however, this traditional mechanism was distorted. The effect of unconventional measures on the banks' behavior, however, was statistically significant. Our results suggest that an increase in asset purchases by central banks reduced the financial institutions' balance sheet dependence to extend financing. Consequently, we infer that the implementation of unconventional monetary policy measures was effective in stimulating credit growth in the post-crisis sub-period.

1. Introduction

The reevaluation of the bank lending channel came to the forefront since the 2007 global financial crisis as the stability of the banking sector and its role in providing credit to the real economy was questioned. Before the crisis, monetary policy could be effectively implemented by managing the short-term interest rate. In the post-crisis period, the ability of the major economies' central banks to efficiently and effectively implement monetary policy declined and, as a result, short-term rates reached the zero lower bound (ZLB). The central banks used the ZLB environment to signal their future monetary policy stance, sustaining low interest rates at an extended period to stimulate economic activity (Wright, 2012, and Hormann and Schabert, 2015). In view of large drops in output, central banks were forced to apply supplementary, non-conventional policy instruments, i.e., quantitative easing (or the purchase of long-term bonds and increase central bank reserves), in an effort to revive the global economy.

The contribution of this study is threefold. First, we analyze the functions of both conventional and unconventional monetary policies' bank-lending channel, and we evaluate the extent to which conventional monetary policy was distorted during the financial crisis period. We focus on the funding mechanism of financial institutions in an effort to analyze the

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* Corresponding author at: Department of Business Administration, Athens University of Economics and Business, 76 Patission Street, Athens 10434, Greece.

E-mail addresses: evan.salachas@gmail.com (E.N. Salachas), nlaopodi@alba.edu.gr, nlaopodis@acg.edu (N.T. Laopodis), kouretas@aueb.gr (G.P. Kouretas).

existence and the operations of the bank-lending channel. We examine the liquidity shocks that banks may have experienced and how the monetary policy could have been effective in providing the adequate liquidity to financial institutions. We measure the liquidity offered by central banks by the extent to which monetary policy affected the credit growth of commercial banks emanated from the interbank money market. Our work is related to those by Cetorelli and Goldberg (2012) and Kashyap and Stein (2000) but the relevance of our study is much broader. Clearly, instead of focusing on a single economy, we rely on a richer database that consists of countries that implemented both conventional and unconventional monetary policies, i.e., US, UK, Japan and Eurozone so as to have a comprehensive view about the bank-lending channel and the monetary policy transmission mechanism.

Second, we emphasize both the pre- and post-crisis periods and we apply conventional and unconventional monetary policy measures implemented by central banks (Joyce et al., 2012). The richness of this analysis allows us to draw general conclusions about the effect of conventional and unconventional policies on that transmission channel and at the same time, to identify potential distortions in that mechanism.

Third, we propose an alternative, innovative way of analyzing the bank-lending channel by examining the relationship between central bank rates and bank-level lending rates. The existing literature focused mainly on the aggregate lending rates and the extent to which they were determined by the movements in the short- term central bank rates. We apply this methodology to both sub-periods.

The (real) short-term central bank rates are the main conventional monetary policy instruments. We quantify unconventional monetary policy with asset purchases by central banks as seen in their balance sheets. Asset purchase programs included large purchases of long-term securities and Mortgage Backed Securities by central banks. The target was to reduce long-term yields in order to promote investments and to inject the necessary liquidity in markets. We construct a new measure, the assets purchase ratio, by dividing the total asset purchases growth by the total central bank assets growth. We found that the asset purchases increased sharply during the crisis period since central banks employed large-scale asset purchases in order to restore the credit growth and economic activity.

Quantitative easing policies, which started in Japan during early 2000s during the country's prolonged deflation era, were used excessively during the financial crisis by the US, UK and the Eurozone. Such policies affected significantly the global economies and, as a result, asset prices and interest rates became increasingly correlated (Mohanty, 2014). The large-scale assets' selloffs by investors during this period implicitly revealed the expectations for economic downturn and extended the fall in the price level (Norgren, 2010). Consequently, central banks purchased assets directly from secondary markets thus enhancing credit support and reducing the uncertainty in financial markets.

Previewing our results, we found that the monetary policy bank-lending channel worked effectively before the financial crisis. The monetary policy tightening induced commercial banks to increase funding. However, the financial crisis had a substantially weak effect on this channel since the short-term central bank rates did not affect the financial institutions' decisions. We additionally observed that the implementation of unconventional measures may have partially restored the passing-through of monetary policy. Thus, quantitative easing offered the necessary liquidity in the banking system and helped improve credit growth. The banks reduced their balance sheets' dependence to furnish funding and started borrowing from the interbank market. In conclusion, based on our findings we propose a mixture of short-term rate and asset purchase changes to be used in implementing monetary policy in order to maintain the effectiveness of the transmission mechanism and the stability of credit growth.

The rest of the paper is organized as follows. Section 2 provides the literature review for the bank lending channel. In Section 3 we outline the data and the empirical approach. Then, we present the empirical results in Section 4 and follow with the presentation of traditional bank lending channel analysis in Section 5. Section 6 reports the selected robustness tests, and finally Section 7 summarizes and concludes the study.

2. Literature review

There is a well-established literature with respect to the bank lending channel of monetary policy. In seminal papers, Bernanke and Gertler (1995) and Peek and Rosengren (1995) highlighted the crucial role of the financial institutions in the transmission of monetary policy. In essence, the monetary authorities affect the real economy through the banking system, since they directly determine the level of the credit supply. The traditional pass-through of monetary policy focuses on the use of the short-term rate and central banks may implement expansionary or contractionary monetary policies by reducing or increasing that rate. In this framework, the monetary policy bank-lending channel exists when the central bank decisions for short-term rate can directly be transmitted to the bank lending rates.

Much of the empirical research examines whether the bank lending channel exists in some countries and the extent to which the financial crisis impaired the monetary policy transmission mechanism. For example, Peek and Rosengren (2013) emphasized the effectiveness of the monetary policy's bank-lending channel during the global financial crisis and reported that liquidity crunches had a direct, adverse impact on the monetary policy transmission mechanism. In the same context, Kapan and Minoiu (2013) analyzed the credit growth evolution during the crisis and concluded that financial institutions with strong balance sheets and well-capitalized were better able to provide liquidity to the real economy.

The implementation of unconventional monetary policy measures by central banks during the crisis had a direct impact on the credit supply. For example, Garcia-Posada and Marchetti (2015) assessed the effect of unconventional monetary