

BANK LENDING CHANNEL REASSESSED

Posojilni kanal proučen na novo

1 Introduction

The investigation of paths through which monetary policy affects the real economy is of great importance, especially during periods of financial crisis that hamper the functioning of the monetary policy. The investigation of a bank lending channel warranted more attention in the 1990s, after the publication of Bernanke and Blinder's seminal paper in 1988. However, changes in the functioning of the economy and its financial system require some changes to be introduced in the functioning of the bank lending channel as well. This is the aim of the current paper, which is structured as follows: First, different paths ("channels") of monetary transmission are presented, followed by a precise description of the "traditional" bank lending channel. Afterwards, a modified explanation of the monetary transmission mechanism is presented.

2 Monetary Transmission Mechanism Overview

The transmission of a monetary policy can be defined as a transmission of changes in the nominal monetary variables into changes in real economic activity. The analysis of the transmission can be based on monetarists' reduced model studying the connection between changes in monetary policy and changes in GDP. On the other hand, it is also possible to try to identify the content of the "black box" to examine what is happening between a central bank's change of monetary policy stance and the real economy (Mishkin, 2006). This technique requires the precise identification of mechanisms of transmission of monetary policy, which makes it necessary to—at least theoretically—dismantle the "black box." Empirically, it is much more difficult to separate different elements of the "black box" since they intermingle considerably.

As shown in Figure 1, it is possible to divide the paths of monetary transmission into:

1. direct (classic) channel,
2. traditional Keynesian interest rate channel,
3. asset price channel (including exchange rate channel), and
4. credit channel (divided into balance sheet channel and bank lending channel).

The classic channel runs from the change in the monetary policy (money supply) that affects demand and causes changes in investment, consumption, and prices (Ribnikar, 2003). The Keynesian channel stems from an increase in interest rates encouraged by a decreased money supply, which increases the costs of capital and decreases investment and consumption (Mishkin, 2006). The basic precondition for any kind of effect of monetary policy on the real economy, as common to all Keynesian models, is the absence of full price accommodation

Abstract

UDC: 338.23:336.74

This paper focuses on adjustments of the bank lending channel mechanism necessary for its proper explanation. Different paths of monetary transmission are presented, followed by a precise description of the "traditional" bank lending channel and presentation of modifications of the monetary transmission mechanism. The influence of a central bank on banks' reserves and deposits has traditionally been the centre of attention of the "traditional" bank lending channel, but this approach is questionable nowadays. However, central banks maintain influence on non-deposit sources. The importance of these sources for functioning of the bank lending channel is investigated in this paper. *Key words:* transmission mechanism of monetary policy, bank lending channel, deposit financing, non-deposit sources

Izvleček

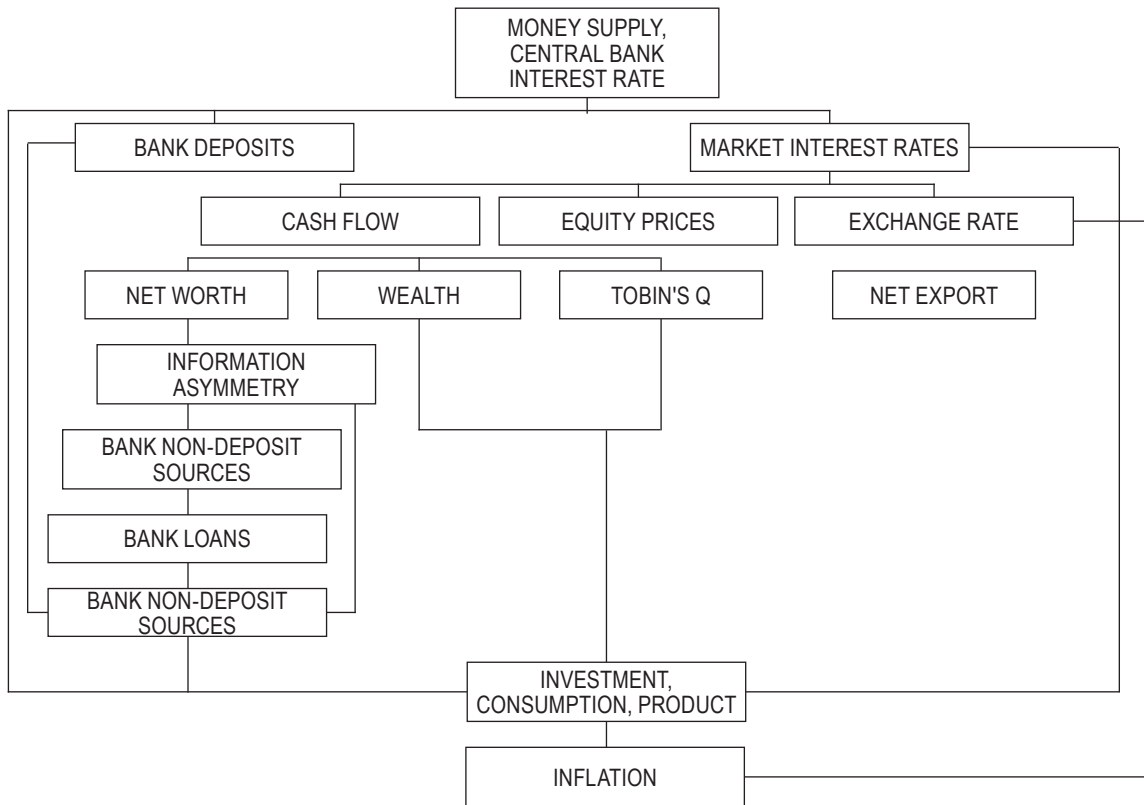
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Osrednja tema članka so prilagoditve posojilnega kanala, nujne za pojasnitev njegovega delovanja. Predstavljen so različne poti za prenos učinkov denarne politike na realno gospodarstvo, ki jim sledita opis »tradicionalnega« posojilnega kanala in opis sprememb transmissijskega mehanizma denarne politike. Vpliv centralne banke na bančne rezerve in depozite je bil osrednji element »tradicionalnega« posojilnega kanala, a je danes vprašljiv. Centralna banka pa ohranja vpliv na nedepozitne vire financiranja. V članku je podrobno analiziran pomen teh virov za delovanje posojilnega kanala. *Ključne besede:* transmissijski mehanizem denarne politike, posojilni kanal, depozitno financiranje, nedepozitni viri

JEL: E52, G21

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Figure 1: Channels of monetary transmission mechanism.



Source: Ahtik, 2010.

(Romer, 2006). The interest rate channel and direct channel of monetary policy would be the only channels through which monetary policy affected aggregate spending in a closed economy, where the central bank would be able to influence the term structure of market real interest rates and all agents would be able to borrow and lend at those rates. No agent's expenditures would be affected by his/her availability of liquidity or collateral (Angeloni, Kashyap, Mojon & Terlizzese, 2002). Meanwhile, the asset price channel incorporates the exchange rate channel as well, running from change in the monetary policy to price of assets; the change of this further affects consumer and investment spending. Tobin's q represents the relationship between the market valuation of capital and its reproduction costs and is used to explain this relationship. Monetary policy forces the market valuation of existing capital to diverge from its reproduction costs, encouraging a greater level of investment if the value of q is larger than one and vice versa if its value is less than one (Tobin, 1969).

According to Modigliani's life cycle theory (1963), households smooth out their consumption level according to their current income and their wealth level, which is important for monetary transmission mechanism analysis. An increase in share, bond, real estate, etc., prices increases households' wealth, thereby encouraging them to spend more. As observed during recent financial crises, the opposite effect takes place as well.

Finally, the credit channel is focused on the lending activity of banks and other suppliers of external finance. It is based on the existence of imperfections in the credit markets. It is possible to identify three directions for research:

1. credit rationing view: due to information asymmetries, some borrowers fail to get bank loans despite the fact that they possess the same qualities as other borrowers who manage to get loans (Stiglitz & Weiss, 1981),
2. imperfect substitutability between different sources of finance: bank loans and securities as sources of external finance on one side and deposits and other bank sources on the other side are imperfect substitutes (Bernanke & Blinder, 1988; Kashyap, Stein & Wilcox, 1993),
3. financial accelerator view: changes in net worth of firms and households change the banks' evaluation of their creditworthiness and banks' preparedness to grant loans (Bernanke, Gertler & Gilchrist, 1996; Kiyotaki & Moore, 1997).

The credit channel is normally divided into two or three sub-channels. The bank lending channel functions through the influence of the monetary policy on the bank loan supply, while the balance sheet channel works through the influence of the monetary policy on the net worth of borrowers as well as their borrowing potential. In later periods, after the introduction of the Basel Accord, it was possible to identify a line

of research focused on the so-called bank capital channel (Heuvel, 2002; Markovic, 2006). If banks' capital decreases as a consequence of contractionary monetary policy, banks would be forced to diminish the amount of their loans in order to maintain a sufficient capital adequacy.

More attention should be dedicated to the mechanisms of the bank lending channel. Since some of its propositions are no longer fully valid, as recognised by its author Ben Bernanke (2007) as well, additional or substitutive mechanism(s) of bank lending channel have to be found and described; otherwise, the existence of this channel might be questionable. This is the main task of the following text.

3 Bank Lending Channel

3.1 "Traditional" bank lending channel

The functioning of a bank lending channel is based on three preconditions:

1. imperfect price adjustment,¹
2. imperfect substitutability of bank loans and other forms of finance, and
3. ability of a central bank to shift banks' loan supply schedule (Kashyap & Stein, 1995).

The condition of imperfect substitutability between bank loans and other forms of finance refers to the relationship between borrowers and banks. The latter compete with forms of direct financing, like bonds, commercial papers, or even trade credit. If different forms of finance function as perfect substitutes to bank credit, the monetary view of monetary transmission mechanisms prevails and the interest rate channel is the only functioning path for a monetary transmission.

The pure existence of banks shows that they perform a special function in the financial system. They reduce information asymmetry and other types of transaction costs (especially costs of monitoring) by exploring economies of scale and scope (Diamond, 1984, Leland & Pyle, 1977). Large-scale activities reduce the risk of the financial system (Allen & Santomero, 1998). These functions cannot be performed only through financial markets, as has been clearly shown during financial crises. Banks failed to perform their monitoring function properly and relied on financial markets too much, which actually increased information asymmetry instead of reducing it. Returning to the core banking activities and relationship banking will probably help prevent a financial crisis from re-occurring. This would also increase the special role of banks and ensure their continued fulfilment of conditions of imperfect substitution between bank credit and direct finance.

A central bank has to be able to move the supply curve of banks. The original (Bernanke & Blinder, 1988) theory of the bank lending channel was developed for the period when

so-called *Regulation Q* limited the setting of deposit interest rates. The theory focused on the impact of monetary policy on bank reserves and bank deposits. Increases in interest rates cause an outflow of non-interest-bearing deposits as depositors want to invest their funds more profitably. Commercial banks lose their deposit sources and cannot replace them without significant costs. The reduction of reserves and deposits can trigger three possible reactions: a reduction of granted loans, which causes consumption and investment to fall; a reduction of other ("non-loan") assets; or the replacement of deposits with other non-deposit sources (Kashyap & Stein, 1995). This does not mean that borrowing will be reduced; rather, it only means that the amount of loans to firms and households will be lower, just as it would be if markets were perfect (Bernanke & Gertler, 1995).

Formal representation of this situation was outlined by Bernanke-Blinder's CC-LM model. The IS-LM model assumes the existence of only two types of assets (i.e., money and bonds) and one interest rate. Several multi-asset models have been developed (Brainard, 1964; Tobin, 1970; etc.), but the model presented by Bernanke and Blinder remains the most widely used.

Three assets are explicitly modelled: money, loans, and bonds (including all types of debt instruments). Borrowers as well as lenders choose between loans and bonds, taking into consideration the interest rates of the two instruments.

Figure 2: Bank balance sheet.

| ASSETS | LIABILITIES |
|-----------------------|-----------------------|
| reserves (<i>R</i>) | deposits (<i>D</i>) |
| bonds (<i>B</i>) | |
| loans (<i>LS</i>) | |

Bank assets are composed of reserves (*R*), bonds (*B*), and loans (*L*), while liabilities are composed of deposits (*D*). It is assumed that capital equals zero (Putkuri, 2003).

$$R = \tau D + E \tag{1}$$

Bank reserves are composed of required reserves τD , where τ is the required reserve-to-deposit ratio, and excess reserves *E*. Return on excess reserve equals zero. The amount of excess reserves depends negatively on the required reserve ratio, positively on the quantity of deposits, and negatively on the interest rate for bonds (*r*).

$$E = \varepsilon(r)D(1-\tau) \tag{2}$$

$$\tau D + E + B + LS = D \tag{3}$$

$$B + LS + E = D(1-\tau)$$

The preferred structure of bank assets depends on returns on loans and bonds.

¹ Common to all models of money non-neutrality; therefore, it will not be particularly analyzed.

A) Money market

A supply of deposits (D^s) in the model depends on bank reserves (Bernanke & Blinder, 1988). From (1) and (2), it is possible to derive

$$D^s = \frac{R}{\tau + \varepsilon(r)(1 - \tau)} = m(r)R \quad (4)$$

where money multiplier, $m(r) = \frac{1}{\tau + \varepsilon(r)(1 - \tau)}$.

The demand for deposits arises from the transactions motive and depends on the interest rate, income, and wealth that are considered constant and therefore suppressed.

$$DD = D(r, y) \quad (5)$$

The equilibrium on deposit market $DS = DD$ is derived from (4) and (5):

$$D(r, y) = m(r)R \quad (6)$$

Money market is represented through an ordinary LM curve.

$$y = M(r, R) \quad (7)$$

Product (y) positively depends on bond interest rate (r) and bank reserves (R).

B) Loan market

The supply of loans (LS) is determined by deposits (D), required reserves ratio (τ), bond interest rate (r), and loan interest rate (rl) (Bernanke & Blinder, 1988):

$$LS = \lambda(rl, r)D(1 - \tau) \quad (8)$$

LS is negatively affected by interest rates on bonds and positively by loan interest rates. The demand for loans (LD) negatively depends on loan interest rates (rl), positively on bond interest rates (r), and positively on GDP (y).

$$LD = L(rl, r, y) \quad (9)$$

Equilibrium $LS = LD$ is formed as

$$L(rl, r, y) = \lambda(rl, r)D(1 - \tau) \quad (10)$$

Deposits (D) from (10) can be replaced with $m(r)R$ (6). Market equilibrium can now be written as

$$L(rl, r, y) = \lambda(rl, r)(1 - \tau)m(r)R \quad (11)$$

The loan interest rate equals

$$rl = \Phi(r, y, R) \quad (12)$$

where rl is a positively sloped function of the bond interest rate (r), a positively sloped function of GDP (y), and a negatively sloped function of the amount of reserves (R).

C) Bond market

According to Walras law, the demand for money and the demand for bonds equal the total wealth minus the demand for bank loans. Non-bank demands for bonds are therefore implicitly determined by $L(rl, r, y)$ and $D(r, y)$ (Bernanke & Blinder, 1988). When a loan market and money market are in equilibrium, the bond market is in equilibrium as well.

D) Goods market

The goods market is usually represented by an IS curve

$$y = Y(r, rl) \quad (13)$$

where GDP (y) is a negatively sloped function of the bond interest rate (r) and a negatively sloped function of the loan interest rate (rl).

Using (12) and (13), it is possible to form the CC curve ("*commodities and credit*")

$$y = Y(r, \Phi(r, y, R)) \quad (14)$$

As with the IS curve, the CC curve is downward sloping. It is shifted by the credit market shocks that affect loan supply or loan demand as well as by monetary policy (Bernanke & Blinder, 1988).

3.2 Microeconomic explanation

Stein's model (1998) offers a microeconomic explanation of a bank lending channel. The central bank is capable of influencing the spread between the rates on loans and those on open-market securities and is capable of moving the level of the treasury rate.

Banks face information asymmetry and are not capable of an accurate valuation of their assets. Banks' investors are even more prone to this problem. They are not familiar with the quality of banks' investments, which crucially influences probability of return on their investment. Banks can partially circumvent this problem through deposit financing. Deposits are at least partially guaranteed through deposit insurance; therefore, depositors do not have to worry about the quality of their bank.

Bank assets comprise loans, securities, and reserves. Bank liabilities comprise deposit and non-deposit sources (equity, loans, certificates of deposit, subordinated debt, etc.). Banks are able to liquidate securities without costs, whereas the liquidation of loans requires significant costs.

Banks have to increase their deposit or non-deposit sources if they want to expand their lending activity. According to Bernanke and Blinder's model, the central bank is capable of influencing the level of reserves in the banking system and the ratio between deposit and non-deposit sources. The price and availability of non-deposit (and non-guaranteed) sources depend on investors' perceptions

of the quality of banks' assets, since probability and shares of their repayment depend on the bank's performance.²

Stein's model is built in two steps. During the first period, the bank's management becomes acquainted with information about the quality of its assets, while other stakeholders (external investors) become familiar with this information only after the decision is made about the type of financing or asset restructuring.

Banks can handle contractionary monetary policy to reduce their reserves and deposits in three ways: by reducing the quantity of loans, by increasing non-deposit financing, or by reducing securities' holdings. The decision about which approach to use is based on the quality of the bank's assets. Banks with lower quality assets face higher information asymmetry. The value of their stocks will fall, and they will be forced to pay higher interest rates or higher dividends to their investors if they want to increase non-deposit sources. If they maintain a higher volume of securities in their assets, they will be able to liquidate them and give additional loans instead. Of course the buffer of securities cannot go to infinity; thus, such a bank would eventually be forced to decrease the amount of loans (Stein, 1998). High-quality banks with less information asymmetry problem can get non-deposit financing more easily, and their supply of loans does not fall or falls by a lower percentage than loans from low-quality banks (Kashyap & Stein, 1994).

3.3 Critics of the "traditional" bank lending channel theory

Milne in Wood (2009) claims that bank reserves are of no importance for the transmission of monetary policy in developed financial systems,³ arguing that bank reserves represent only taxes on commercial banking operations. The taxes are dependent on the extent that they are unremunerated, the level of short-term interest rates, and the excess reserves. In any case, such taxes are too small to affect the structure of banks' balance sheets.

Critics further dispute the mechanism of a bank lending channel that is supposed to be different than previously explained: Banks taking into account their lending possibilities calculate the required quantity of financial sources and determine deposit interest rates that would bring sufficient deposit sources. The amount of deposits ultimately determines the demand for reserves (Bole, 1999, Milne & Wood, 2009, Disyatat, 2008). Yet this criticism, despite changing the mechanism of the bank lending channel, does not necessarily question its existence.

In addition, the condition of imperfect substitutability of deposits and other bank sources is questioned, especial-

ly in the United States (Romer & Romer, 1990). According to critics, banks are always capable of replacing deposit sources lost to contractionary monetary policy because they have wide market access to non-deposit sources, whose supply is totally elastic. It is possible to partly agree with this criticism. Global financial markets experienced extremely low margins, causing these sources to become cheaper than deposit sources. The opposite was assumed (at least for some banks) in Stein's (1995) explanation of the bank lending channel (Milne & Wood, 2009). Banks started to prefer those sources and only slowly adjusted deposit interest rates—as long as non-deposit sources remained available. However, as recent financial crises have clearly demonstrated, resources in international financial markets remain limited. Information asymmetry is present and particularly affects economic subjects perceived to riskier (e.g., coming from riskier countries). As a consequence of the financial crisis and restrictions on financial markets, smaller, more opaque banks returned to deposit financing.

Therefore Romers' line of reasoning can be rejected. A more reasonable criticism of a "traditional" bank lending channel and its prepositions would be the objection to the claim that monetary policy affects deposits and consequently lending activities of banks. Critics of this condition can be classified into the following groups:

1) Monetary policy does not influence bank deposits because they are rather inelastic.

Deposits represent more or less a constant share of banks' balance sheets. Eventual changes are connected to monetary policy only to a smaller extent; rather, they are mostly connected with alternative investment opportunities that might be affected by monetary policy as well.

Monetary policy influences only the structure of deposits. When interest rates increase, the share of time deposits increases at the expense of sight deposits. This hardly affects the total amount of deposits in banks' balance sheets (Milne & Wood, 2009). As stated by Goodfriend (1995), deposits are mainly determined by demand, not supply. This criticism significantly threatens the foundations and mechanism of the "traditional" bank lending channel. If monetary policy does not determine the quantity of deposit sources, it cannot affect the amount of loans either. Here is where the theory of a bank lending channel falls.

Deposit financing provides greater stability in banks' financing. In fact, smaller banks—especially savings banks—mostly finance with deposits and mostly invest in loans. If Stein's theory were correct, they would invest in securities more in order to buffer the effect of monetary policy on deposits by liquidating their securities' investments.

Bank lending channel theory has to be adjusted accordingly. Increased interest rates are reflected in deposit interest rates, meaning that financial sources of banks with deposit financing get more expensive, leading to a very

² Some sources' repayment or return is more dependent on bank's performance than others (compare equity vs. loans).

³ Monetary policy of "quantitative easing" performed by Bank of Japan between 2001 and 2006 did not manage to increase economic activity despite significant expansions in reserve balances and deposits. The money multiplier kept falling (Disyatat, 2008, p. 15).

similar effect as the decrease of reserves in Bernanke and Blinder's model or redirection to more expensive external sources in Stein's theory. The final result is an increase in prices (lending interest rates) and a reduction of quantity of loans.

Bernanke (2007) himself believes that his model best describes the situation in the United States in the 1960s and 1970s, while it is of no major importance in later periods. In the past, required reserves were prescribed for a larger share of deposits; their rate was much higher. Moreover, *Regulation Q* was valid in setting the maximum possible deposit rate, making it impossible for banks to prevent deposit outflow by increasing interest rates. In addition, less alternative sources were available in this period.

2) Commercial banks can always—regardless of the monetary policy stance—replace or increase the quantity of deposit sources by increasing interest rates.

Commercial banks are able to obtain as large of a quantity of deposits as they need. The maximum deposit interest rate is decided by commercial banks themselves; there are no legally set maximums anymore. In the case of deposit outflow, banks can either acquire non-deposit sources or increase the deposit interest rate and maintain their deposit sources.

The recent financial crisis confirms this reasoning: Banks have not been able to obtain sources from financial markets due to increased asymmetry of information and lack of confidence. They did not reduce the deposit interest rate despite the fact that the central bank reduced its interest rate significantly. Instead, they increased the deposit interest rate in order to retain or acquire additional deposit financing. Luckily (for banks), this situation co-existed with a lack of investment opportunities for depositors (Ahtik, 2010).

Therefore, it is necessary to form an alternative explanation of the bank lending channel, as indicated by Bernanke (2007) as well. He argues that the bank lending channel explanation should focus more on Stein's theory, which focuses on information asymmetry. However, the explanation should take into account the fact that the influence of a central bank on deposits remains rather limited nowadays (Ahtik, 2010).

Some adjustments of the Bernanke-Blinder model based on the previously described criticisms have already been made. Grimaud (1997) as well as Milne and Wood (2009) take into account that banks in most countries pay interest on deposits; therefore, their quantity (to a small extent anyway) depends on interest rates. Grimaud models banks as profit-maximising firms. Deposit and lending interest rates follow the central bank interest rate. Effects of these changes depend on the size of spread between the market (central bank) interest rate and deposit/lending interest rates (Milne in Wood, 2009). In the case of constant deposit and

lending margins, commercial banks only transmit changes in monetary policy to their customers, without influencing monetary policy. This is not a very plausible conclusion. Banks are profit-maximisers; they try to transmit effects of contractionary monetary policy to their lenders and effects of expansionary monetary policy to their depositors. This behaviour is possible due to low interest-rate elasticity of deposits, while its extent also depends on the level of competitiveness of the market.

The difference between lending rates and the central bank's interest rate must increase, following a monetary policy tightening, in order for the bank lending channel to amplify the impact of monetary policy on bank lending (Milne & Wood, 2009). As predicted by Bernanke and Blinder (1988) this causes the CC curve to shift leftwards in the case of monetary tightening. However, Milne and Wood (2009) believe that this type of reaction is not very plausible. They claim that a bank loan-market rate interest margin declines following the tightening of monetary policy; therefore, the bank lending channel diminishes the impact of monetary policy.

Milne and Wood (2009) further assume that the quantity of banks' loans falls while their deposits grow due to increased interest rates, meaning that banks face an excess of resources (and not a shortage, as assumed by "traditional" bank lending channel theory) that cannot be placed because of the reduced loan demand. These excess funds can be invested only if banks reduce their lending rates by increasing loan supply (Milne & Wood, 2009).

In accordance with this theory, banks' increase of deposit and non-deposit sources is not connected with an actual need for additional sources. This is not very convincing. If banks face an excess of resources due to an increase in deposit rates that actually represent a cost for them, they would not increase deposit interest rates and certainly would not search for additional non-deposit sources if they felt constrained in investing them. Moreover, as previously mentioned, deposits are rather irresponsible to changes in interest rates.

However, a question that requires an answer is if and how a central bank still affects lending activities of banks. The central bank certainly influences banks' interest rates, which causes changes in the supply of loans. Banks' interest rate policy has an important effect on bank lending channel (Goodfriend, 1995). Despite the fact that a central bank might not—or only to a smaller extent—influence bank reserves and deposits of commercial banks, this does not mean that it does not affect the supply of loans; only the mechanism is different from the one suggested in Bernanke and Blinder (1988).

Mechanisms of the central bank's influence on loans that have not been given enough attention are discussed in the following.

A) Perception of risks

Monetary policy affects perception of risks. Risks are perceived to be much lower during monetary expansion, while they increase when interest rates increase.

If bank assets and their quality are taken into consideration, we are talking about balance sheet channel. However, the same effect can be noticed if a bank as a firm is being analysed. If an ordinary firm faces financing constraints if its net value falls, the same is true (or even “more true”) for a bank as a highly leveraged firm. Monetary policy therefore affects the value of bank assets—namely, increased interest rates decrease the possibility of repayment of some loans, causing the value of the bank’s assets to fall. Banks whose value of assets has fallen face difficulties obtaining or retaining non-deposit sources (or even deposit sources if depositors do not believe in the deposit guarantee), as identified by Stein (1995), since the importance of non-deposit sources in banks’ balance sheets increasing the influence on bank lending remains.

B) Central bank’s influence on price of deposit and non-deposit bank sources

Non-deposit sources represent an important substitute for deposit sources, which significantly changes the functioning and explanation of the bank lending channel, as emphasised by Bernanke (2007) and Romer and Romer (1990). As an alternative to deposit financing, non-deposit sources are included in Stein’s model (1998), although their importance in the pre-crisis period (until 2007) even increased. Therefore, it is possible to claim that restrictions in these markets affect lending activity even more than predicted by Stein (1995). Stein perceives non-deposit sources as being more expensive than deposit sources. This is not necessarily true all the time; the price of non-deposit sources was lower than the price of deposits during financial expansion. In addition, numerous alternative investment possibilities existed for depositors that took deposits from banks. Non-deposit sources actually became a principal form of bank financing before the crisis, especially for large banks, while only smaller banks continued to rely on deposit sources. During the crisis, non-deposit sources became practically unavailable, causing deposit sources to gain importance.

Bank lending channel theory has to focus on the impact of monetary policy on price and the availability of non-deposit sources, especially in financial markets where banks get additional or even principal short- and long-term funds. The central bank’s interest rate necessarily influences them. The competitiveness of those markets reduces margins and causes almost a complete pass-through of monetary policy measures. It is almost certain that monetary policy (of most important central banks, such as the Fed, ECB, BoJ, and BoE) affects the availability of those financial sources.

The increased interest rate (and risk margin) or even rationing of non-deposit sources in these markets (as experienced in the period of financial crisis) could hurt, especially

those banks that have been recognised as more vulnerable (i.e., exposed to information asymmetry) in Stein’s model. Among them are smaller, less liquid, less capitalised banks that originate from riskier countries.

Figure 3: Alternative view of a bank lending channel.

interest rate \uparrow \rightarrow adverse selection & moral hazard
 \uparrow \rightarrow non-deposit bank sources \downarrow \rightarrow loans \downarrow \rightarrow investment
 \downarrow \rightarrow product \downarrow

Monetary policy affects the value of banks’ assets and perception of banks’ riskiness, which further influences potential investors’ (e.g., shareholders, lenders, securities buyers) preparedness to provide funds.

C) Central bank’s influence on bank capital

Heuvel (2002) suggests that monetary policy actions affect bank profits (for example, through changes in open market interest rates). These changes could eventually accumulate to changes in bank capital. In the case of binding capital requirement, banks with low levels of regulatory capital would be hurt more severely than other banks; therefore, they would reduce their loan supply. The so-called capital channel’s existence is more probable after the introduction of formal capital requirements (Basel Accord) and International Financial Reporting Standards that require assets and liabilities to be booked at market prices or at an equivalent estimated “fair value” (Weber, Gerke & Worms, 2009).

4 Conclusion

The functioning of a credit channel has been severely hampered during the financial crisis, when banks faced losses that reduced their capital and their lending activities. Similarly, uncertainties in financial markets increased (Clerc, 2009). However, those same tensions in the financial markets can be very helpful when trying to identify and specify the mechanism of the monetary transmission. \square

The influence of a central bank on banks’ reserves and their deposit financing was the centre of attention of the “traditional” bank lending channel. However, the capability of a central bank to influence deposits is questionable nowadays. Changes in monetary policy normally do not affect deposits that are more or less interest-rate inelastic. However, the most important question is how the central bank’s policy affects the availability and price of non-deposit sources. They are perceived as an alternative to deposit sources in the case of their outflow caused by the monetary policy (Stein, 1995), but in fact those sources have been gaining in importance. Increases in the central bank’s interest rate have caused some banks to be perceived as riskier; these banks lose their financing, especially if their funds are short-term—regardless of the amount of their (immobile) deposit sources. Non-deposit financing

is therefore gaining a more central role in the description of the bank lending channel, which remains despite the limited or non-existent effect that the central bank exhibits over deposits.

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