

# **Transmission Mechanisms of Monetary Policy and the Banks**

Elaborated on M. Affinito's Lectures, 2016

# (1) Interest-Rate Channel

$$M \uparrow, i_r \downarrow, I \uparrow C \uparrow, Y \uparrow$$

[reminder:  $Y = C + I + (G - T + TR) + NX$ ]

# (1) Interest-Rate Channel

- The interest rate channel applies equally to  $I$  and  $C$
- It places emphasis on real interest rate  $i_r$  rather than on nominal  $i$   
 $[i_r \approx i - \pi]$
- It is the **long-term**  $i_r$  and not the short-term  $i_r$  that is viewed as having the major impact on  $C$  and  $I$  spending

# (1) Interest-Rate Channel

- ✓ With sticky  $P$ , an increase in  $M$  leads to a  $\downarrow$  in **short term nominal  $i$**  and also  $\downarrow$  short-term real  $i_r$
- ✓ According to the expectations hypothesis of the term structure of interest rates, this also negatively affects the whole yield curve, i.e.  $\downarrow$  long-term  $i_r$
- ✓ The decline in short- and long-term  $i_r$  leads to an  $\uparrow$  in  $C$  and  $I$  spending thus on output  $Y$

# Interest-Rate Channel and the banks

- Owing to the relatively large share of bank loans and deposits in total financial assets and liabilities (particularly in the Euro-Area) the bank interest rate pass-through is a key element of the interest rate channel
- The impact of this channel may vary with the amplitude and speed with which bank interest rates on loans and deposits are adjusted when policy rates change
- The bank interest rate pass-through itself depends on a multitude of factors, such as the degree of competition among banks and financial markets development and the balance sheet situation of banks and their borrowers

# Credit View

- Two types of monetary transmission channels arise as a result of information problems (such as adverse selection and moral hazard problems) in credit markets
- These channels operate through their effects on
  - 5.a. Bank lending
  - 5.b. (Firms' and Households' ) balance sheet

# Bank Lending Channel - 1

$M \uparrow$ , bank reserves and deposits  $\uparrow$ , bank loans  $\uparrow$ ,

$C$  and  $I \uparrow$ ,  $Y \uparrow$

# Bank Lending Channel - 1

- Because of asymmetric information problems in credit markets, many borrowers do not have access to the stock and bond markets and depend on bank loans to finance their activities
- Because of banks' ability to solve such problems, an expansionary monetary policy which  $\uparrow$  bank reserves and deposits,  $\uparrow$  the quantity of bank loans available to small credit-constrained borrowers
- The  $\uparrow$  in loans causes  $C$  and  $I$  to  $\uparrow$



# Bank Lending Channel - 1

- Monetary policy will have a greater effect on smaller firms, which are more dependent on bank loans, than it will on large firms, which can access the credit markets

## Bank Lending Channel - 2

$M \uparrow$ , bank deposits  $\uparrow$ ,  $(r_L - r_B) \downarrow$ ,  
 $C$  and  $I \uparrow$ ,  $Y \uparrow$

# Bank Lending Channel - 2

- If some of the bank customers do not have access to capital markets, an expansive monetary policy determines a more pronounced increase of loans than of securities
- This causes a decrease in the spread between the interest rate on loans ( $r_L$ ) and bonds ( $r_B$ ), which has a positive impact on Consumption and Investment

# Bank Lending Channel - 2

- The effectiveness of the bank lending channel is closely linked to composition of corporate debt
  - the incidence is higher if bank loans are granted to short-term and floating rate (Borio, 1996; Kashyap and Stein, 1997)
- The process is strengthened by the presence of forms of credit rationing (Stiglitz and Weiss, 1981; Blinder, 1987)

# Balance Sheet Channel - 1

$M \uparrow, P_e \uparrow, \text{Collateral} \uparrow, \text{lending} \uparrow, I \uparrow, Y \uparrow$

$P_e$  is the price of equity

# Balance Sheet Channel - 1

- The mechanism of the "balance sheet channel" can be explained by the effects of changes in the relative prices of financial assets held by economic agents that require the loan
- An expansive monetary policy causes an increase in the prices of bonds and equities, this increases the value of the collateral to bank loans, hence positively affect loan supply and corporate investments

# Balance Sheet Channel - 2

$M \uparrow, P_e \uparrow, \text{Collateral} \uparrow,$

adverse selection  $\downarrow$  and moral hazard  $\downarrow,$

lending  $\uparrow, I \uparrow, Y \uparrow$

# Balance Sheet Channel - 2

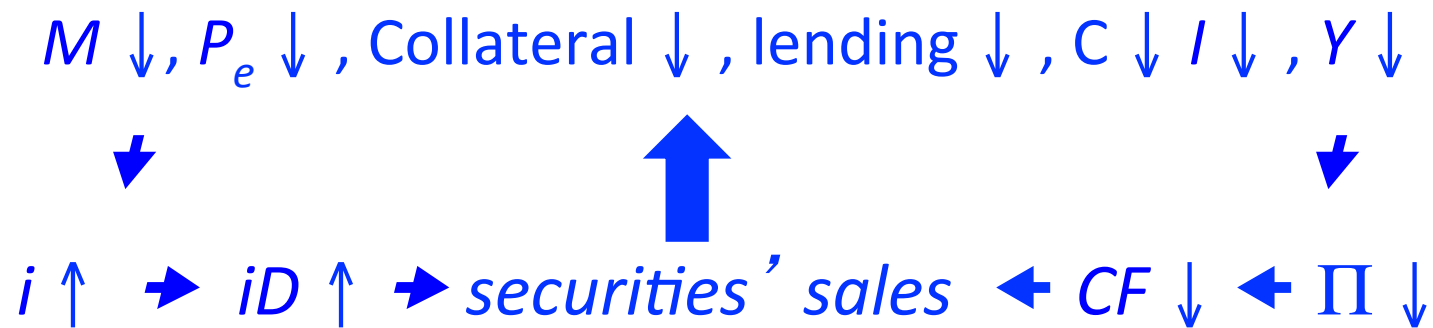
- The balance sheet channel may be accentuated if the companies that do not have access to the capital markets are considered more risky
- In the presence of information asymmetries between banks and borrowers, tight monetary policies intensify
  - adverse selection problems (increased losses resulting from the incorrect identification the type of customer)
  - and moral hazard (firms tend to invest in riskier projects)



# Balance Sheet Channel - 2

- The lower the net worth ( $NW$ ) of firms, hence the lower the collateral  $C$  that they have for their loans, the more severe the adverse selection and moral hazard problems in lending to these firms
- In fact, a reduction in  $NW$ ,  $\uparrow$  the adverse selection and moral hazard problems and leads to a contraction in lending and hence in Investments
- Monetary policy can affect firms' balance sheets in several ways. For example, expansionary monetary policy,  $\uparrow P_e$  (along lines discussed earlier) and  $\uparrow$  the  $NW$  of firms and so leads to an  $\uparrow$  in  $I$  and  $Y$

# Balance Sheet Channel - 3



# Balance Sheet Channel - 3

- ✓ The transmission can be intensified by a process of debt deflation
- ✓ If the economy has a high private sector debt, the sale of the securities portfolio may cause a **further deterioration of secured assets**
- ✓ This process results from the combination of
  - a reduction of the self-financing capacity related to the decline in profits ( $\Pi$ ),
  - an increase of financial charges on debt ( $iD$ )
- ✓ The effect tends to be more sharp if the companies do not have access to capital markets

# Balance Sheet Channel - Cash Flow Channel

- The balance sheet channel may operate through firms' cash flow
- Cash flow is the difference between cash receipts and cash expenditures
- Expansionary monetary policy,  $\downarrow i$  and raises cash flow

# Balance Sheet Channel - Cash Flow Channel

- The  $\uparrow$  in cash flows causes an improvement in firms' balance sheets, because it increases liquidity hence prospects of paying its bills.
- This  $\downarrow$  adverse selection and moral hazard problems, leading to an  $\uparrow$  in lending
- In this transmission mechanism it is the short-term  $i$  (not  $i_r$ ) that affects cash flows

# Balance Sheet Channel - Cash Flow Channel

$M \uparrow, i \downarrow$ , cash flow  $\uparrow$ ,  
adverse selection  $\downarrow$  and moral hazard  $\downarrow$ ,  
lending  $\uparrow, I \uparrow, Y \uparrow$

# Risk-taking Behaviour

By affecting collateral values, asset prices and cash flows, monetary policy may affect the **risk perception and risk tolerance** of banks (and non-banks) and hence the overall risk-taking behaviour in the economy

# Risk-taking Behaviour

- Banks tend to lend to riskier borrowers when the monetary policy stance is accommodative

By affecting asset prices, monetary policy may induce some institutional investors to “search for extra yields” across a wider array of assets



# Risk-taking behavior

It has also been argued that if financial intermediaries and market participants expect/anticipate that the central bank will provide insurance against downside risks to asset prices, this may lead excessive risk-taking over the business cycle

# Risk-taking behavior

For example, in the environment of low interest rates observed in recent years

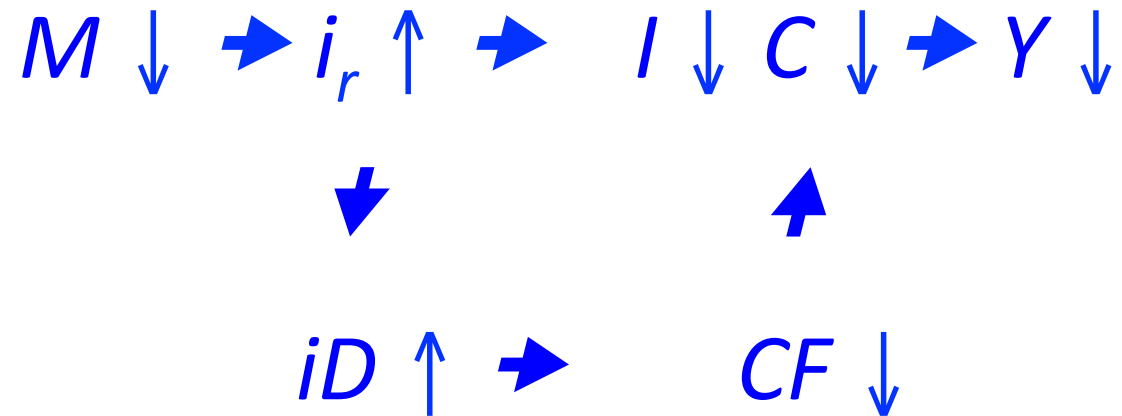
some institutional investors (such as pension funds and insurance corporations) may have increasingly invested in credit-related assets,

which has allowed banks to increasingly fund themselves by selling loans in the secondary market,

thus potentially boosting their ability to supply new loans

The end

# Interest-Rate Channel -2



# Interest-Rate Channel -2

- According to the "financial instability hypothesis" (Fisher, 1933; Minsky, 1975; 1982; Kindleberger, 1978), a contraction in money supply, leads to a decline of output ( $Y \downarrow$ ) which is more pronounced if the private sector of the economy is highly indebted ( $D$  is large)
- In fact, the increase in the interest rate ( $i_r \uparrow$ ) leads to an increase in financial expenses ( $iD \uparrow$ ) and a reduction in the capacity of self-financing (CF: cash flow  $\downarrow$ ) which causes a decline in aggregate demand (if internal and external sources are not perfect substitutes)

# Interest-Rate Channel - 3

$$M \uparrow, i_r \downarrow, I \uparrow, C \uparrow, Y \uparrow$$

*Zero lower bound*

The interest rate transmission mechanism is effective even when  $i$  has already been driven to zero by the CB during a deflationary period

With  $i = 0$ ,

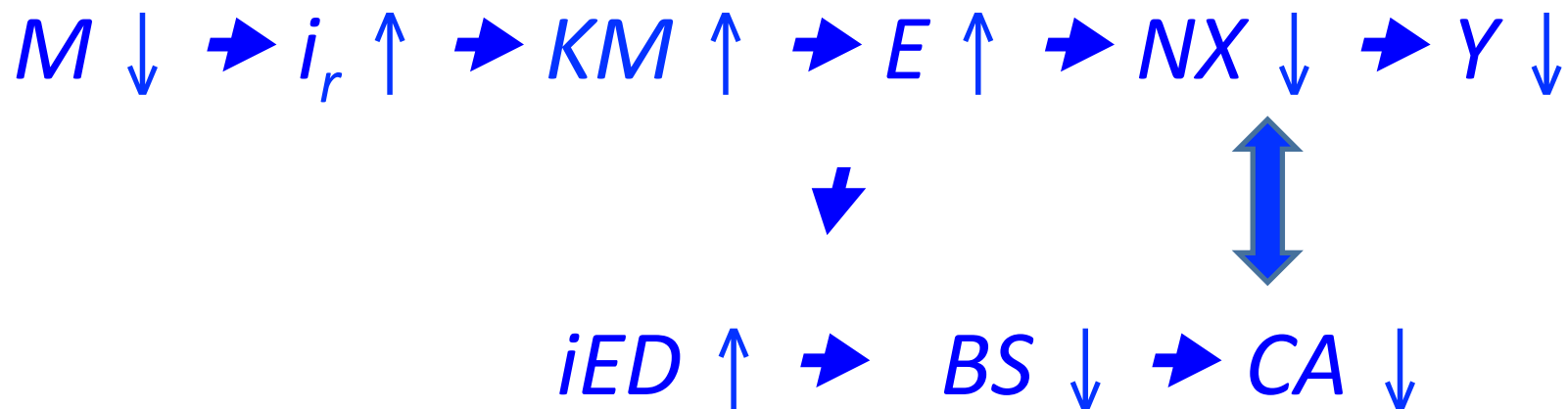
$$M \uparrow, P^e \uparrow, \pi^e \uparrow, i_r \downarrow, C \text{ and } I \uparrow, Y \uparrow$$

## (2) Exchange Rate Channel

$$M \uparrow, i_r \downarrow, E \downarrow, NX \uparrow, Y \uparrow$$

- When  $i_r \downarrow$  the domestic currency depreciates, that is  $E \downarrow$
- This makes domestic goods relatively less expensive and  $NX \uparrow$

If exchange rates and free capital movements



*KM: capital movement; ED: external debt; BS: Balance of Services; CA: current account*

### (3) Portfolio approach: Tobin's $q$ Channel

$$M \uparrow, P_e \uparrow, q \uparrow, I \uparrow, Y \uparrow$$

$P_e$  is the price of equity



# (3) Portfolio approach: Tobin's $q$ Channel

$$q = MVF/RCC$$

$MVF$  = market value of firms

$RCC$  = replacement cost of capital

- If  $q$  is high,  $MVF$  is high relative to  $RCC$ , and new plant and equipment capital is cheap relative to the market value of firms
- In this case, companies can issue stock and get a high price for it relative to the cost of the facilities and equipment they are buying
- /  $\uparrow$  because firms can buy a lot of new investment goods with only a small issue of stock

## (4) Portfolio approach: Wealth Channel

$$M \uparrow, P_e \uparrow, W \uparrow, C \uparrow, Y \uparrow$$

## (4) Portfolio approach: Wealth Channel

- It was introduced by Franco Modigliani in his “life cycle hypothesis of consumption.” He argued that the most important transmission mechanism of monetary policy involves consumption
- Tobin’s  $q$  and wealth mechanisms allow for a general definition of equity that includes housing and land. For example, an  $\uparrow$  in house prices, which  $\uparrow$  their value relative to replacement cost,  $\uparrow$  Tobin’s  $q$  for housing, thereby stimulating its production
- Also, an  $\uparrow$  in housing and land prices  $\uparrow W$ , thereby  $\uparrow C$  and  $Y$