

B(e). The Monetary transmission mechanism

How does money affect output? The transmission mechanisms

- I) Labor markets: Wage contracts
- II) Imperfectly competitive firms. Menu costs. Set prices

1. The interest rate channel

Effect of interest rates on the cost of capital (also residential investment and expenditure on durables)

$$M \downarrow \Rightarrow i \uparrow \Rightarrow I \downarrow \Rightarrow y \downarrow$$

$$i \uparrow \Rightarrow SR-r \uparrow \Rightarrow LR-r \uparrow$$

2. The exchange rate channel

$$M \downarrow \Rightarrow i \uparrow \Rightarrow s \downarrow \Rightarrow NX \downarrow \Rightarrow y \downarrow$$

3. Other asset price effects

Tobin's Q

Q is related to investment

$M \downarrow \Rightarrow \text{Equity prices} \downarrow \Rightarrow q \downarrow \Rightarrow I \downarrow \Rightarrow y \downarrow$

$M \downarrow \Rightarrow \text{Equity prices} \downarrow \Rightarrow \text{wealth} \downarrow \Rightarrow C \downarrow \Rightarrow y \downarrow$

4. Credit channel

Agency problems (adverse selection, moral hazard)

a) Bank lending channel

Special role of banks (under asymmetric info (monitoring)). There exist borrowers who can only finance new projects through bank loans

$M \downarrow \Rightarrow \text{Bank deposits} \downarrow \Rightarrow \text{bank loans} \downarrow \Rightarrow I \downarrow \Rightarrow y \downarrow$

But financial innovations have made bank lending less important

b) Balance sheet channel

Uncollateralized external finance is more costly than internal finance

Spread between the cost of internal and external funds is negatively related to the borrower's internal funds

An adverse shock to a borrower's net worth (a reduction in internal funds) reduces the borrower's ability to implement investment

Financial accelerator

Lower net worth \Rightarrow Less collateral + less cash flow

\Rightarrow Losses from adverse selection $\uparrow \Rightarrow$ Loans $\downarrow \Rightarrow I \downarrow \Rightarrow y \downarrow$

\Rightarrow Moral hazard $\uparrow \Rightarrow$ Loans $\downarrow \Rightarrow I \downarrow \Rightarrow y \downarrow$

Similar effects through the balance sheets of the households (liquidity effects)

$M \downarrow \Rightarrow$ Equity prices $\downarrow \Rightarrow$ financial wealth $\downarrow \Rightarrow$ likelihood of financial distress $\downarrow \Rightarrow C$

durables and housing expenditure $\downarrow \Rightarrow y \downarrow$

The empirical evidence on money and economic activity

Reduced form evidence

1. Timing patterns

2. Case studies; historical evidence (the increase in RR in 1936-37), narrative approach (Friedman and Schwartz)

3. "Atheoretical" statistical evidence: Granger causality; Vector autoregressions (Sims); Barro's anticipated versus unanticipated money (but Mishkin)

Criticism: Correlation and statistical causality do not imply economic causality

Simultaneity (third factor) Reverse causality (RBC: inside-outside money)

Examples: crime and police arrival; Christmas cards and Christmas

The opposite is also true. Lack of correlation does not imply lack of causality

Example: perfectly successful stabilization

Possible remedies: Identify truly exogenous changes in monetary policy; trace out their effects on output

The VAR approach

Identification of monetary policy

1. Orthogonalization

Ordering and interpretation of policy (first \rightarrow exogenous \Rightarrow contemporaneous effects on output vs last \rightarrow endogenous (reaction function) \Rightarrow no contemporaneous effect on output)

2. Structural VARs (for instance, long term restrictions a la Blanchard and Quah)

Problems: Different choice of policy variable (i, M1m reserves...), identifying restrictions, or model specifications lead to completely different results

Criticism of VAR approach:

- a) "Strange" results (price puzzle. But inclusion of commodity prices solves it)
- b) Failure to incorporate forward looking variables that influence monetary policy
- c) Little resemblance of derived policy shocks (from VAR) to the historical record

d) Little resemblance of derived policy function to standard policy reaction functions

Structural equations evidence

Large scale macroeconomic models

Conclusion: Most economists believe that money matters. Nevertheless there exists considerable debate concerning the qualitative and quantitative importance of money for economic activity.