Banks Are Not Intermediaries of Loanable Funds - Facts, Theory and Evidence

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1 Introduction: The Nature of the Financial System

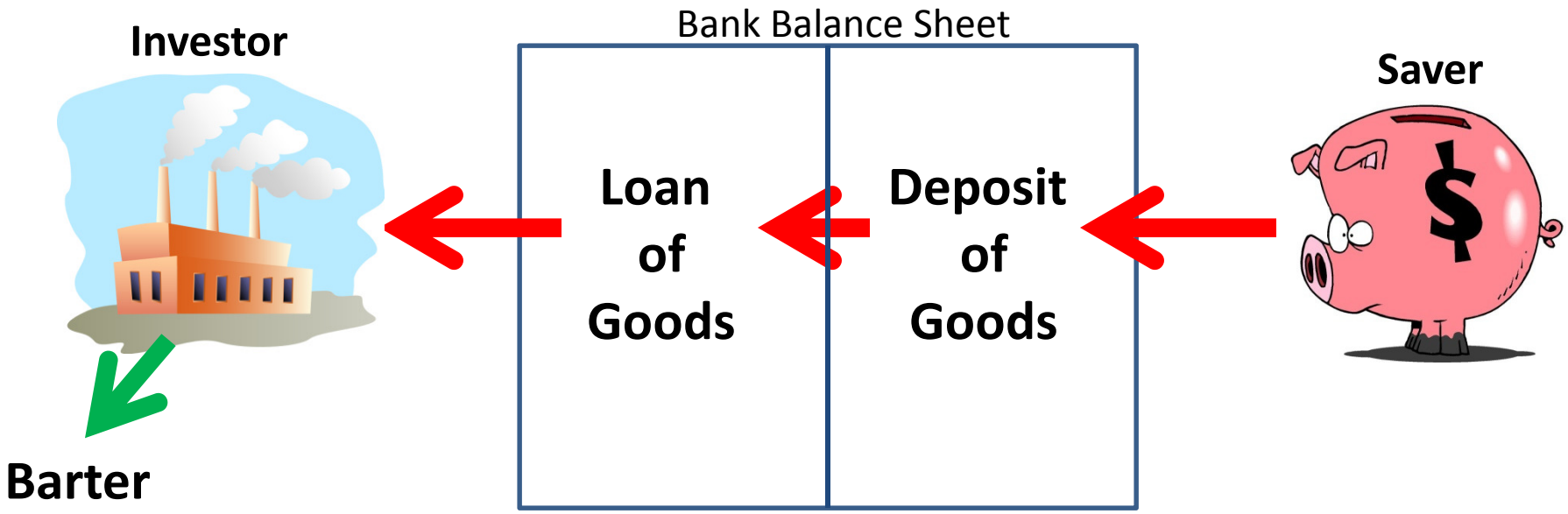
- **Question:** What conceptual framework informs our thinking about banking?
- **Significance:** Understanding of banking is critical for the design of reforms.
- **Comparison to the 1930s:**
  - Past reformers reasoned at the level of this conceptual framework.
  - The technical complexity of recent changes has been much greater.
  - But the constraints they imposed on banks have been much weaker.
  - And the debate about the fundamental purpose and design of the financial system has been (in my opinion) shallower.

1.1 Banks Are Not Intermediaries of Loanable Funds

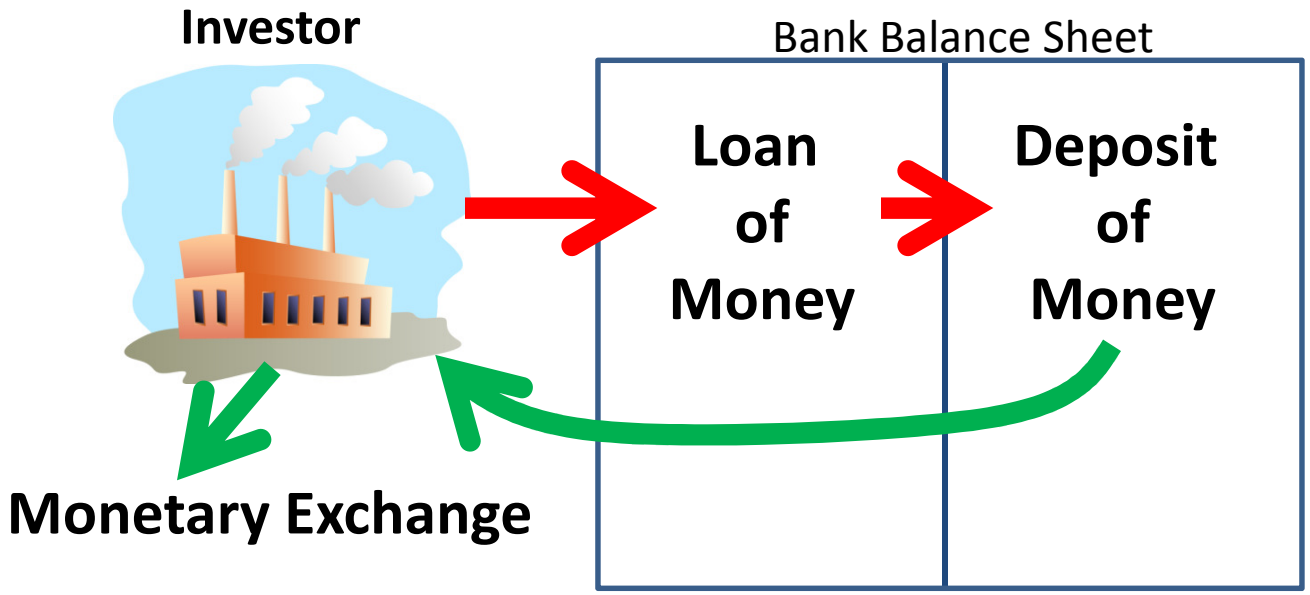
- Problem: Recent work uses **intermediation of loanable funds (ILF)** models.
  - Banks are intermediaries between savers and borrowers of physical resources (commodities and/or capital):
    * Physical resources $\Longrightarrow$ nonfinancial models.
    * Banks as intertemporal commodity traders.
  - This theory misrepresents how credit is created in the real world.

- Solution: Use **financing through money creation (FMC)** models.
  - Banks are creators of ledger-entry money and intermediaries between different spenders of this money:
    * Ledger-entry money $\Longrightarrow$ financial models.
    * Banks as creators and intermediaries of money.
  - This theory is consistent with the actual credit creation process.
  - It is fully consistent with recent publications by major CBs.

Intermediation of Loanable Funds Model



Financing Through Money Creation Model



1.2 ILF Deposits Are not Financial Transactions

- All financial transactions are variants of check deposits.
- Check deposit:
  - Households A and B bank with banks A and B.
  - B writes a check to A, A deposits in bank A.
  - Check only has value *because the deposit already exists* - in bank B.
  - This moves an existing deposit, it does not create a new one.
  - Also, bank A acquires reserves, not loanable funds.
  - The same logic applies to any deposits of private financial instruments.
- New deposits in ILF models therefore do not represent financial transactions.
- Look at ILF budget constraints: They represent resource accumulation.

1.3 ILF Deposits Are Physical Resource Accumulation

- Terminology (superscripts s/b = savers/borrowers):
  - inc_t/exp_t = physical income/expenditure (resources, not funds).
  - d_t/ℓ_t = deposits/loans.

- Saver budget constraint – resource accumulation:

$$\Delta d_t = inc_t^s - exp_t^s$$

Can only increase deposits by accumulating physical resources.

- Borrower budget constraint:

$$-\Delta \ell_t = inc_t^b - exp_t^b$$

- Bank balance sheet:

$$\Delta d_t = \Delta \ell_t$$

- Problems:
  1. Facts: Banks simply are not intertemporal commodity traders.
  2. Data: Savings accumulation is far smoother than changes in deposits.

1.4 FMC Deposits Are Financial Transactions

- Saver/borrower budget constraint - ledger entries:

$$\Delta d_t - \Delta \ell_t = inc_t^{rep} - exp_t^{rep}$$

Can only increase deposits by taking out new loans.

- Bank balance sheet:

$$\Delta d_t = \Delta \ell_t$$

- Link between deposits and resources only concerns spending, not saving:

$$d_t \geq exp_t^{rep}$$

- Ledger additions involve no intermediation.
- Loan = right of bank to receive future installments from X.
- Deposit = obligation of bank to deliver current funds to X.
- Magic of banking: The obligation itself **is** current funds = money.

1.5 FMC: Banks Create Own Funding in the Act of Lending

- **There are no loanable funds**:
  - Funds first exist in the mind of the banker.
  - They then materialize (digitally) along with the loan.
- **Banks do not collect new funds from non-banks:**
  - They create new funds for non-banks.
  - They collect existing funds from other banks.
- **These (financial) funds add to the economy's (financial) funds.**

1.6 What Constrains Spending in the Real World?

- Not just real income in a budget constraint.
- But income + new deposits in a deposits-in-advance constraint.
- Deposits are not a transfer of existing physical resources.
- They are an addition to the stock of digital purchasing power.
- Their ex nihilo creation is independent of physical resources.
- But additional money can mobilize additional real income.
- Ex-post: Expenditure = income.
- Schumpeter (1934), Keynes (1939), Kaldor (1989).

1.7 Key Differences in the Properties of ILF and FMC Models

- ILF Model:
  - Deposits come from a physical process of saving resources.
  - This process is (with curvature in preferences) *slow* and *continuous*.
  - Implication: Bank balance sheets change only gradually.

- FMC Model:
  - Deposits are created on a computer as book entries.
  - This process can be *instantaneous* and *discontinuous*.
  - This means that lending booms or crashes can happen extremely fast.

2 The Models

- Two Models: One ILF and one FMC model.

- Except for the ILF - FMC difference, models are identical:
  - New Keynesian monetary models.
  - Identical preferences, technologies, endowments.
  - Identical deterministic steady states.
  - Every single parameter (including adj. costs) is identical.

- We are therefore, as much as possible, comparing apples with apples.

2.1 Endogenous Money

- Typical monetary models of the 1980s/1990s:
  1. Representative household.
     (with cash-in-advance/money-in-utility/transactions cost technology)
  2. Exogenous government money (3% of broad money).

- Our argument: The main shortcoming of these models is 2, not 1.

- Representative HH is in fact very useful for modeling endogenous money.

- We therefore assume:
  1. Representative household with transactions cost technology.
  2. Endogenous bank-created money (97% of broad money).

2.2 Banks

1. Bank Assets:
   - Costly state verification.
   - Modified Bernanke, Gertler and Gilchrist (1999).

2. Bank Liabilities:
   - Transactions cost technology.
   - Modified Schmitt-Grohe and Uribe (2004).

3. Bank Equity:
   - Subject to Basel regulation and aggregate risk.
   - Modified Benes and Kumhof (2015).

2.3 Budget Constraints

Deposits and loans are predetermined variables

Key Difference ILF-FMC: Budget Constraints

- Budget Constraints in ILF: Saver Household + Borrower Entrepreneur
  - Saver Household

$$\Delta deposits_t^s = income_t^s - spending_t^s$$

  - Borrower Entrepreneur

$$-\Delta loans_t^b = income_t^b - spending_t^b$$

- Budget Constraint in FMC: Representative Household only

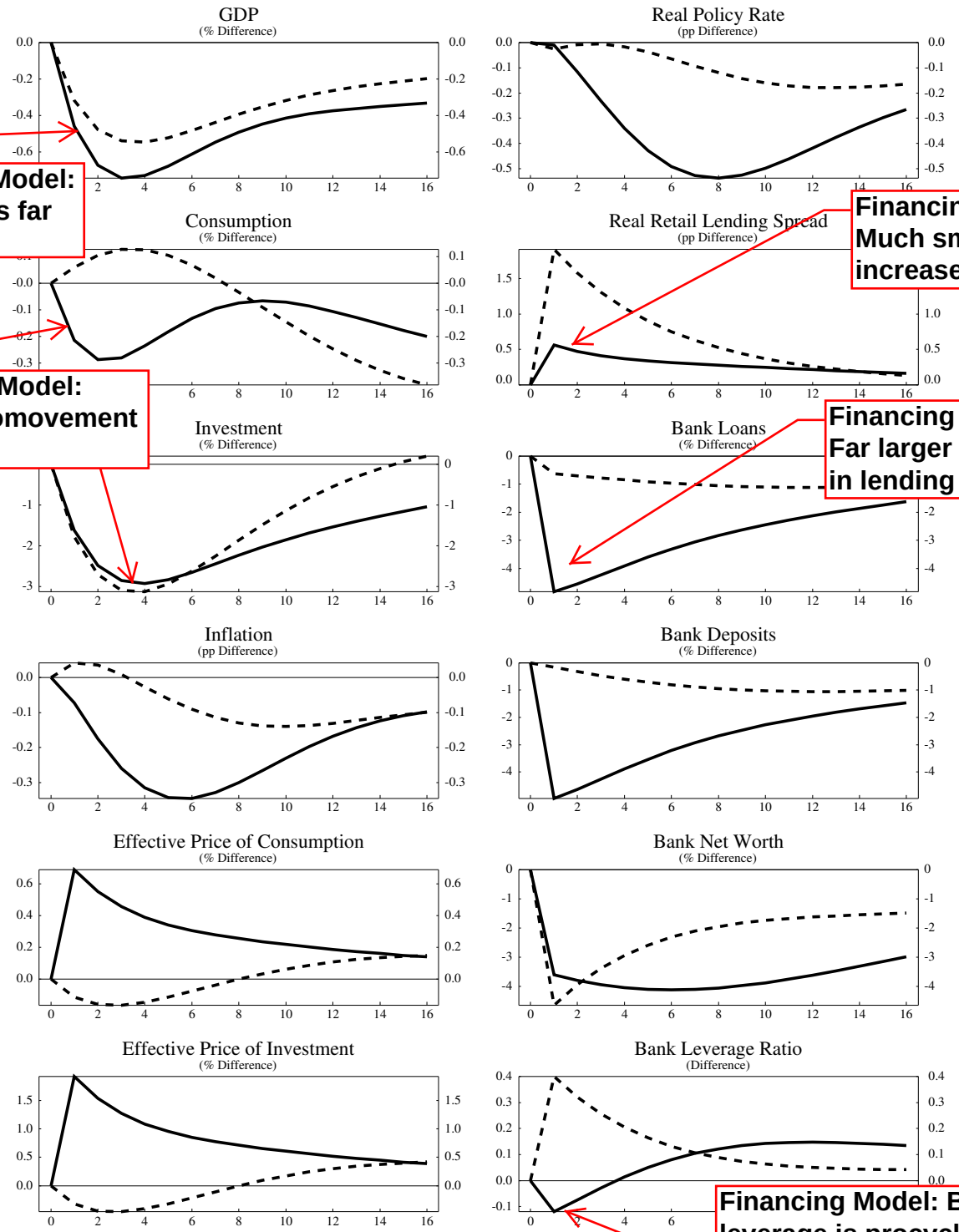
$$\Delta deposits_t^r - \Delta loans_t^r = income_t^r - spending_t^r$$

Deposits and loans are jump variables

This is highly favored by the data

3 Model Impulse Responses to Financial Shocks

Credit Crash due to Higher Borrower Riskiness



Financing Model: GDP drop is far larger

Financing Model: Much smaller increase in spreads

Financing Model: Positive comovement of C and I

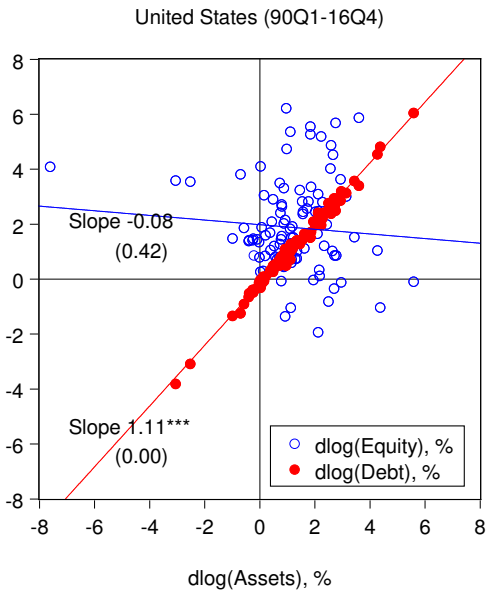
Financing Model: Far larger contraction in lending

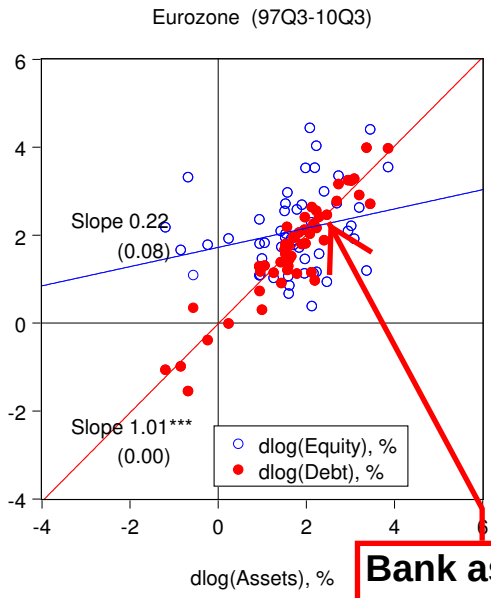
Financing Model: Bank leverage is procyclical as lending contraction dominates net worth reduction

- - - = ILF Model, —— = FMC Model

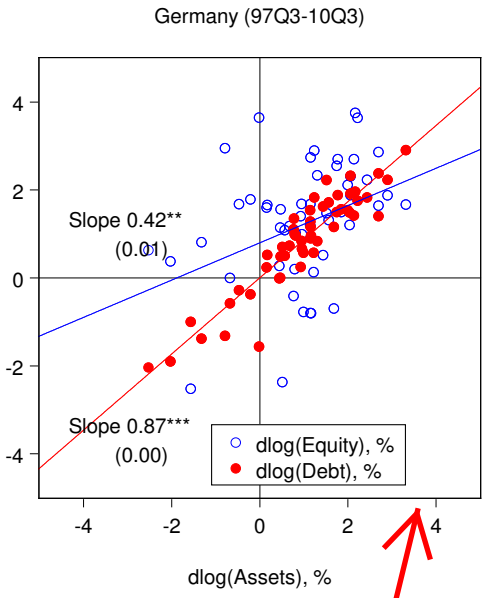
4 Stylized Facts: Bank Balance Sheet Dynamics

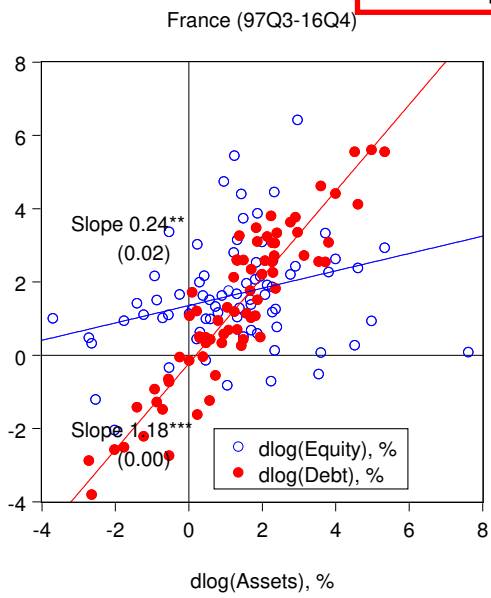
Bank Balance Sheets: Time Series Evidence for 4 Regions





Bank assets and bank debt move virtually one-for-one

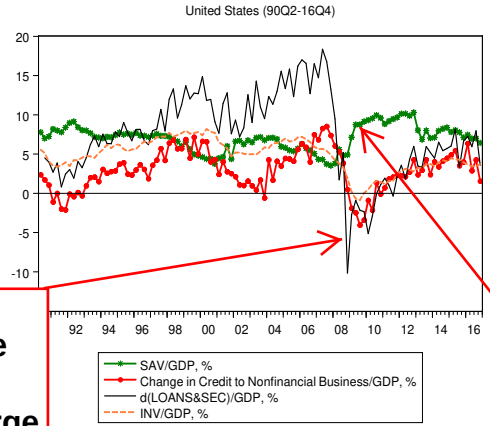


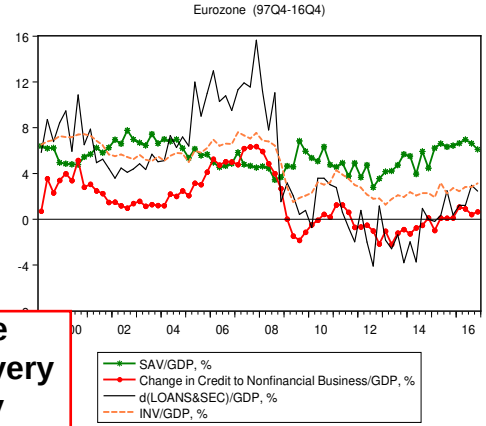


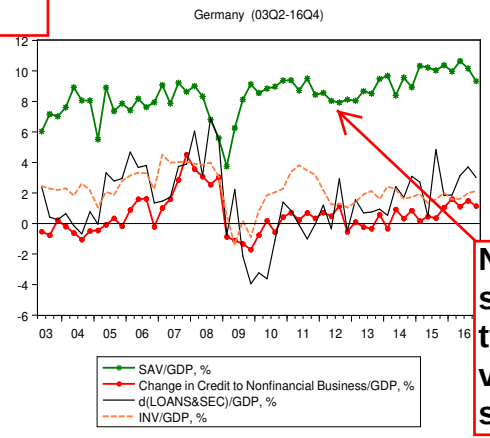
Aggregate banking system assets, debt and equity.
Quarter-on-quarter % changes.
Data: Flow-of-funds. Each point represents one quarter.
Sample sizes shown in text. p-values of regression slopes in brackets.

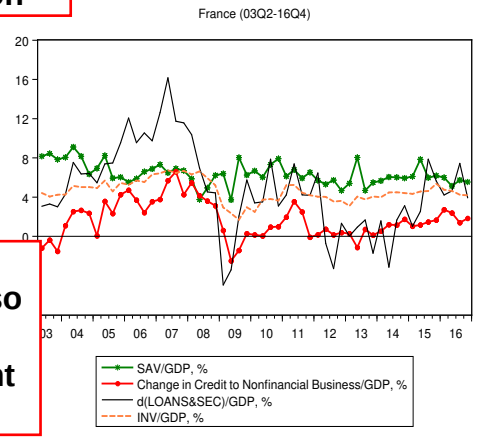
The balance sheet changes are often extremely large

Changes in Bank Balance Sheets versus Net Private Saving







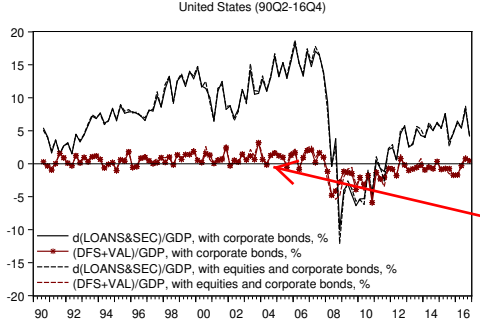


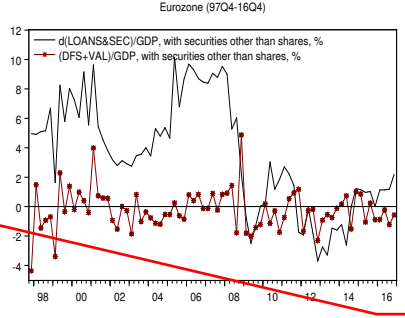
Changes in bank balance sheets are extremely large and volatile

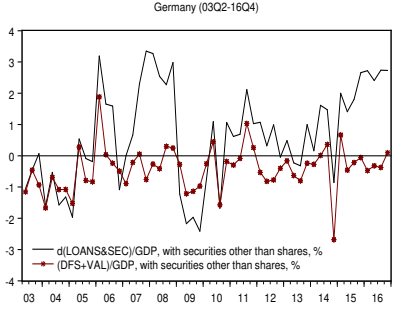
Net private saving is very smooth by comparison

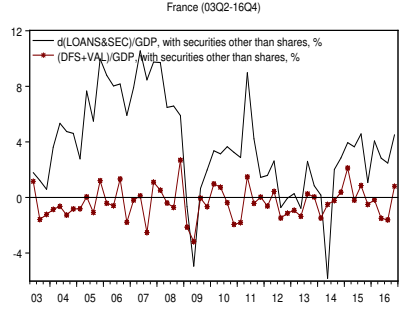
Net private saving is also typically of very different size

Changes in Bank Balance Sheets versus Valuation Effects and Direct Financing Substitution









Valuation effects and direct financing substitution are very small compared to total balance sheet changes

(Data: Flow of funds. Quarterly. Based on stock data for all series. All variables divided by the same quarter's GDP.)

((VAL+DFS)/GDP: Securities issued by Nonfinancial Business for all countries in the sample.)

5 Conclusions

- Key Contributions of This Paper:
  1. **Theory:**
     - ILF models are not a correct representation of real-world credit creation.
     - FMC models aim to fix that.
  2. **DSGE Model Comparison:** Financing models have very different simulation properties.
     - Far larger and far faster changes in bank lending.
     - Much larger effects on the real economy.
     - Credit is not physical, but it matters more for physical outcomes!
  3. **Stylized Facts:** Financing models are consistent with key stylized facts.
     - Large discontinuous jumps in credit and money.
     - Procyclical bank leverage.
     - Credit rationing during downturns.

6 Significance for Monetary Reform

- The FMC understanding of banks motivated the monetary reformers of the 1930s and 1940s.
- This included the top thinkers: Fisher, Knight, Simons, Friedman, etc.
- What were their reasons?

6.1 Reason 1: Credit Cycles

- Money creation privilege of banks can be a major source of credit cycles:
  - Credit decision can be funded 100% in house, through money creation.
  - Government guarantees: Banks and depositors pay less attention to risk.
- Under the Chicago Plan the money creation privilege is removed:
  - Intermediary banks must first persuade investors to make a cash deposit.
  - This risky deposit has (needs) no government guarantee of any kind.
  - Investors will therefore be more cautious.
- This makes credit-driven business cycles less likely.
- But of course it does not rule them out completely.

6.2 Reason 2: Bank Runs

- Money is completely safe because its value no longer depends on:
  - The *quantity* of private debts.
  - The *performance* of private debts.

- Run on the credit system?
  - *Payments system* would remain 100% safe.
  - Credit problems could be dealt with separately from payments system.

6.3 Reasons 3, 4, 5 and 6

See my paper with Jaromir Benes.

Thank you!