

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

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Frankfurt, The Future of Money Conference, November 24, 2018

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1 Introduction: Banking Models in Economics

- Problem: Recent work uses intermediation of loanable funds (ILF) models.
 - Banks are intermediaries between savers and borrowers of goods:
 - * Nonfinancial models.
 - * Banks = intertemporal commodity traders.
 - * Money = commodity money.
 - This theory misrepresents how credit is created in the real world.
- Solution: Use financing through money creation (FMC) models.
 - Banks are intermediaries between spenders and spenders of money:
 - * Financial models.
 - * Banks = creators and intermediaries of money.
 - * Money = ledger entry money.
 - This theory is consistent with the actual credit creation process.

2 Understanding Banks: Key Insights

3.1 Banks are not Intermediaries of Loanable Funds

3.2 The “Deposit Multiplier” is a Myth

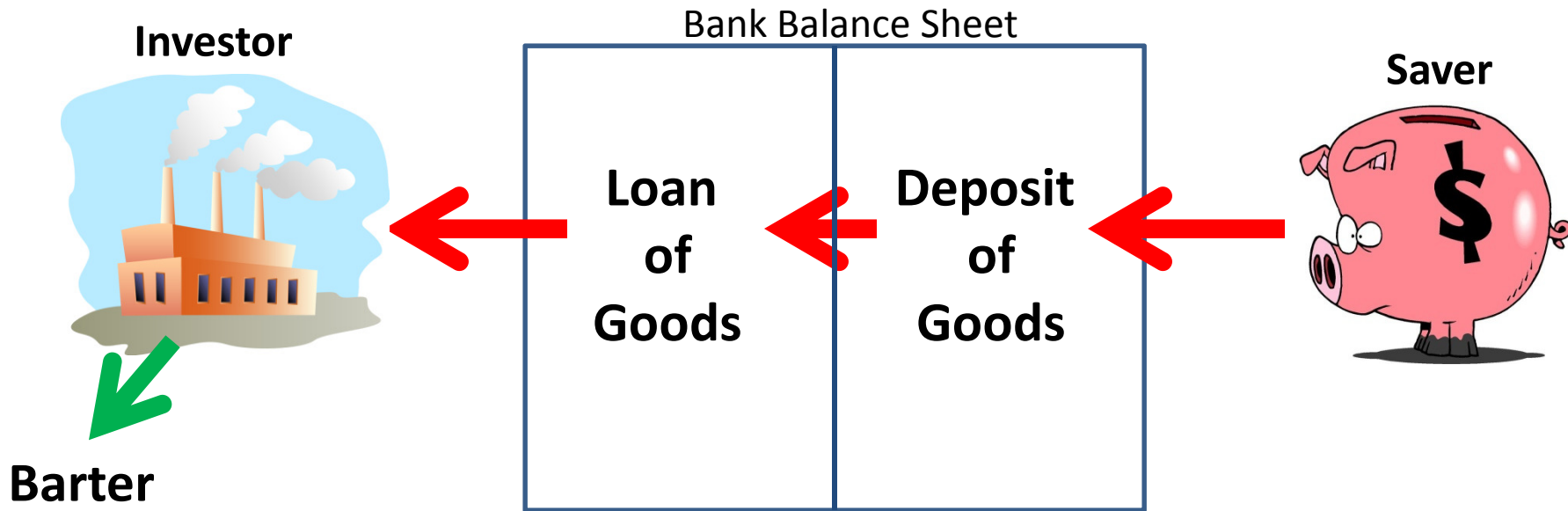
2.1 Banks are not Intermediaries of Loanable Funds

- The Loanable Funds Model - Postulated Credit Process

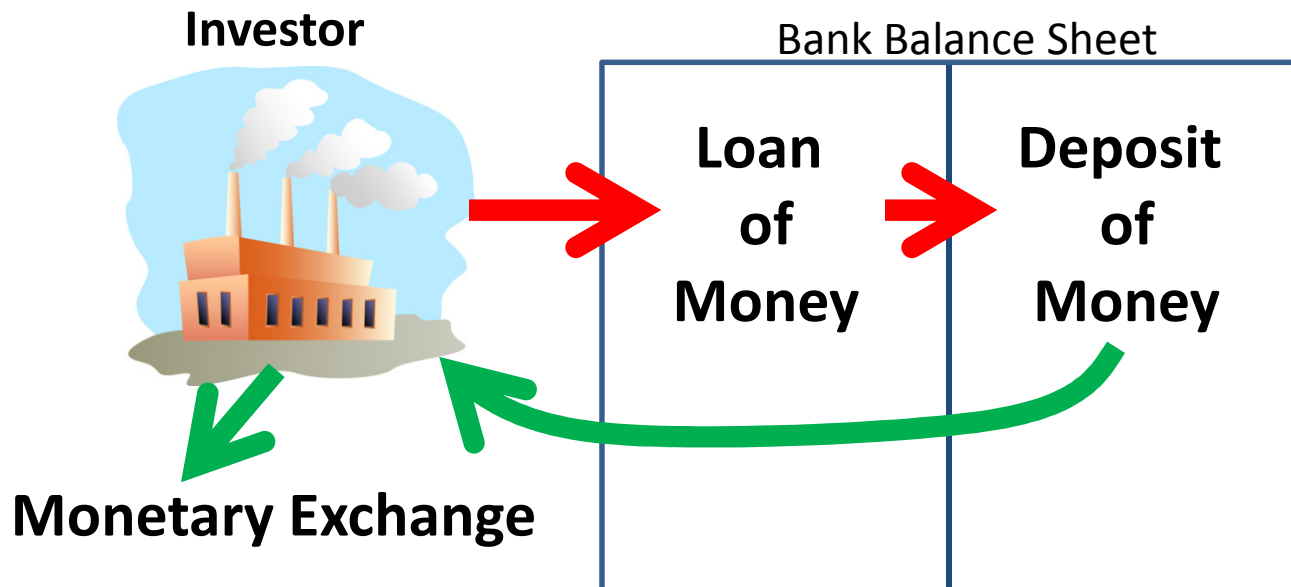
Intermediation = Physical Trading of Commodities

- Banks collect a deposit of commodities or capital from a saver.
 - Banks lend those existing commodities to *another agent*, the borrower.
 - Deposits in this model are an input.
 - Money in this model is held as a store of value.
 - Rapid changes in credit: *Switches between direct and indirect financing.*
- The Financing Model – Actual Credit Process
- Financing** = Digital Creation of Monetary Purchasing Power
- Banks make a loan of money to agent X.
 - Banks credit new money to the deposit account of *the same agent X*.
 - Deposits in this model are an output.
 - Money in this model is held as a medium of exchange.
 - Rapid changes in credit: *Changes in gross balance sheet positions.*

Intermediation of Loanable Funds Model



Financing Through Money Creation Model



- **Why must ILF deposit-taking be a nonfinancial transaction?**
 - All financial transactions are variants of check or cash 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.
- Central bank money is not loanable funds either:
 - Central bank reserves cannot be lent to nonbanks, only to other banks.
 - Cash is never disbursed against new bank loans, only against existing deposits.
- New deposits in ILF models therefore do not represent financial transactions.
- Look at ILF budget constraints: They represent commodity accumulation.

- **How is FMC deposit-creation a financial transaction?**

- Loans are simultaneous ledger additions to assets and liabilities.
- These 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.
- Banks are unique in their ability to do this.
- Why? Because they are perceived to be safe.
- Why? Mostly because of public support.

2.2 The “Deposit Multiplier” is a Myth

- Deposit Multiplier:
 - Central bank fixes narrow money first.
 - Broad money is a function of narrow money.
- Kydland and Prescott (1990) showed that the actual monetary transmission mechanism works in the opposite direction.
 - Broad money leads the cycle.
 - Narrow money (M0) lags the cycle.
- This is obvious under Inflation Targeting:
 - If you control a price (the interest rate), ...
 - then you have to let quantities (reserves) adjust.

2.3 Understanding Banks: Conclusions

- Transmission starts with loan creation = deposit creation, and ends with reserve creation.
- Alan Holmes, Vice President of the New York Federal Reserve, 1969:

In the real world, banks extend credit, creating deposits in the process, and look for the reserves later.

3 Key Features of Our Financing Model

1. Bank Assets: The Provision of Credit.
 - Banks do not lend out pre-existing loanable funds.
 - **There are no loanable funds:**
 - Funds first exist in the mind of the banker.
 - They then materialize (digitally) along with the loan.
2. Bank Liabilities: Households Demand Bank Deposits.
 - Bank deposits are not real savings.
 - **Banks do not collect deposits from non-banks:**
 - They create deposits for non-banks.
 - They collect deposits from each other.
3. Bank Equity: Subject to Basel regulation and aggregate risk.

4 The Models

- Two Models: One loanable funds and one financing model.
- Except for the loanable funds - financing 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.

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

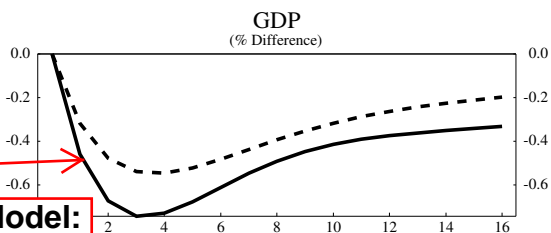
$$\Delta deposits_t^r - \Delta loans_t^r = income_t^r - spending_t^r$$

Deposits and loans are jump variables

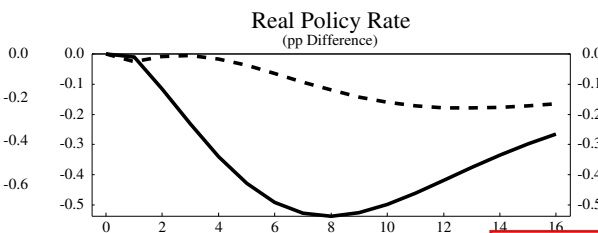
As we will see, this is highly favored by the data

5 Model Impulse Responses to Financial Shocks

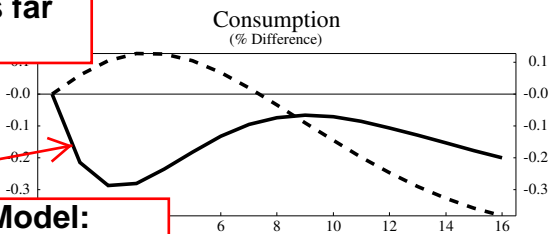
Credit Crash due to Higher Borrower Riskiness



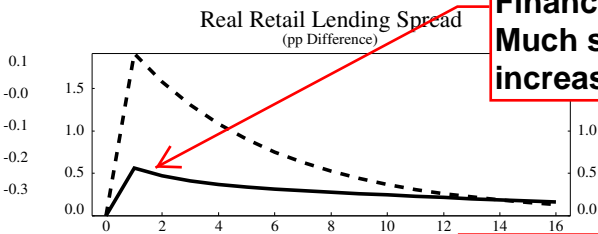
Financing Model: GDP drop is far larger



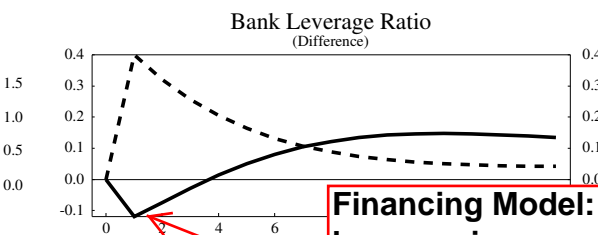
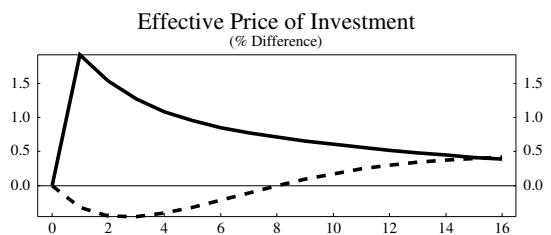
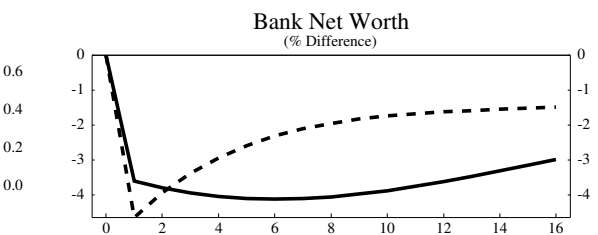
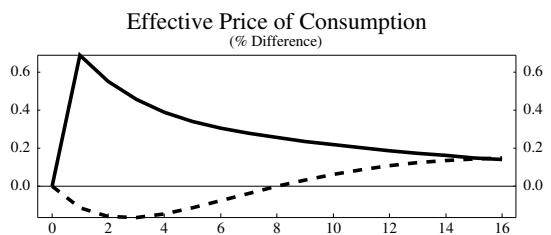
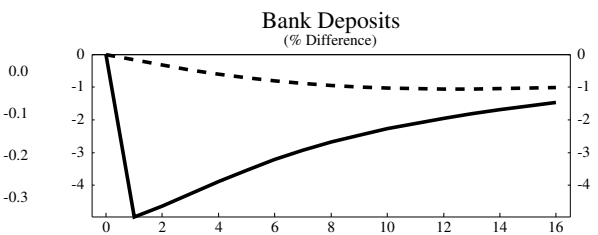
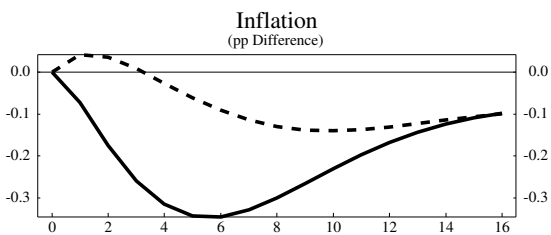
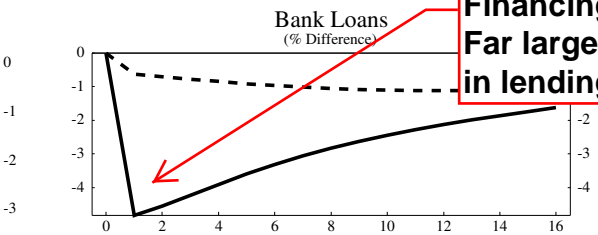
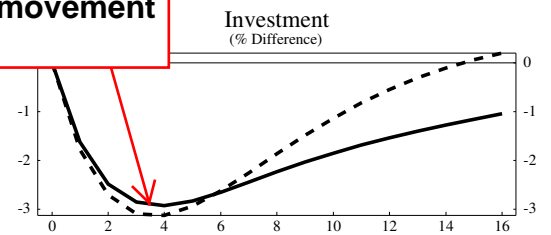
Financing Model: Much smaller increase in spreads



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

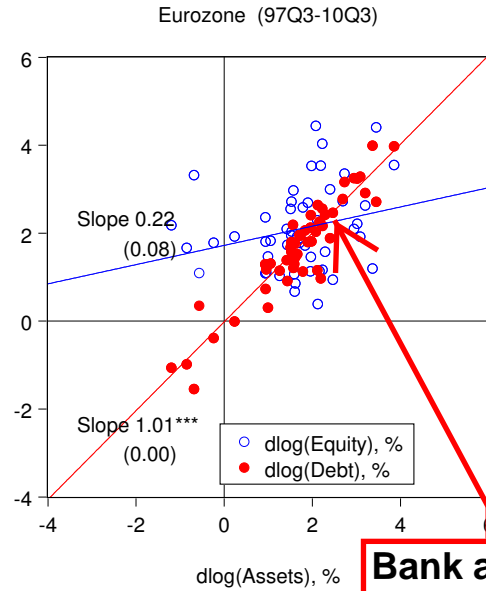
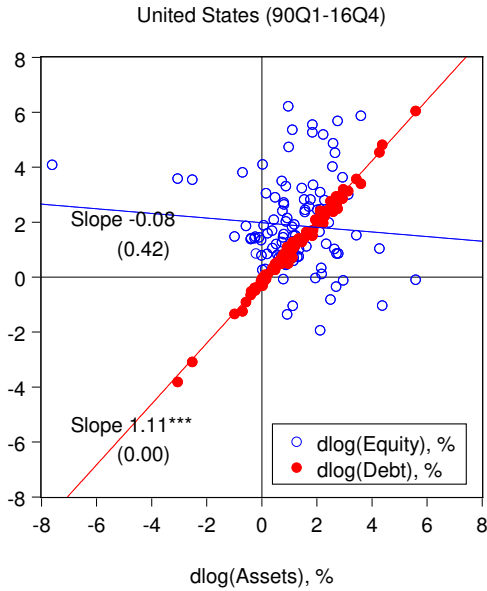
6 Stylized Facts and Related Empirical Literature

Simulations have generated three interrelated predictions for the financing model versus the loanable funds model:

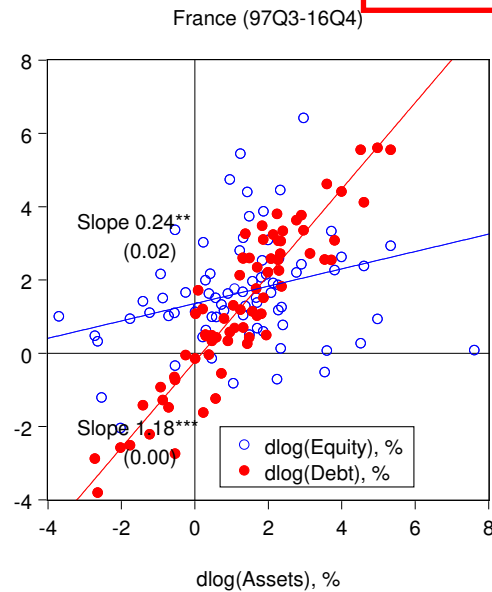
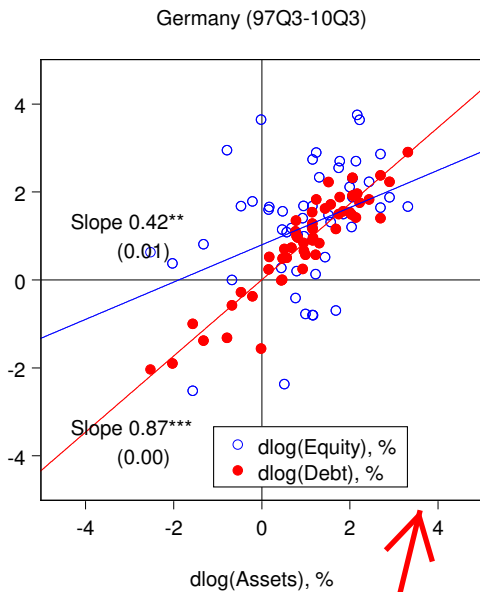
1. Large and rapid changes in financial sector balance sheets.
2. Bank leverage is procyclical or acyclical.
3. Credit crashes have a large quantity rationing component.

6.1 Large and Rapid Changes in Financial Sector Balance Sheets

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.

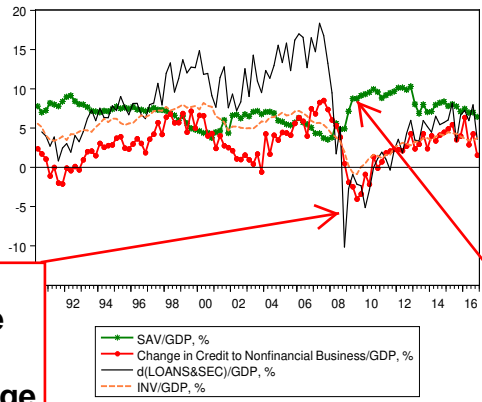
Data: Flow-of-funds. Each point represents one quarter.

Sample sizes shown in text. p-values of regression slopes in brackets.

The balance sheet changes are often extremely large

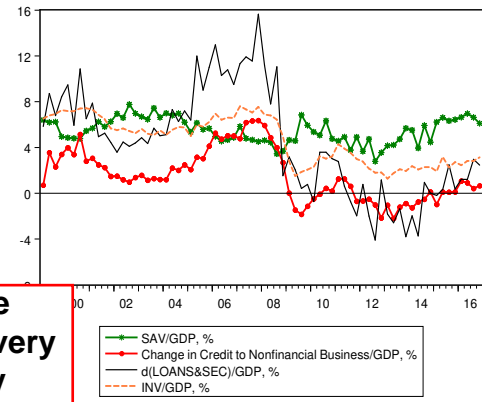
Changes in Bank Balance Sheets versus Net Private Saving

United States (90Q2-16Q4)



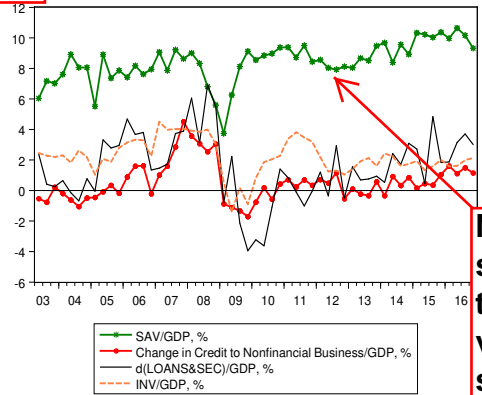
Changes in bank balance sheets are extremely large and volatile

Eurozone (97Q4-16Q4)



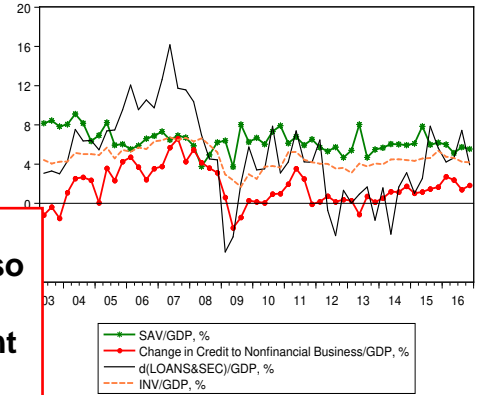
Net private saving is very smooth by comparison

Germany (03Q2-16Q4)

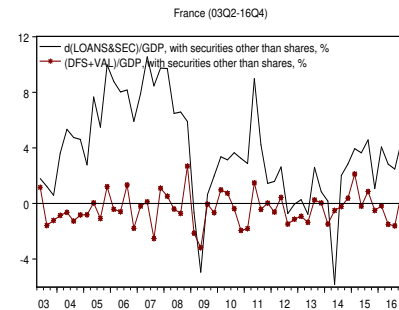
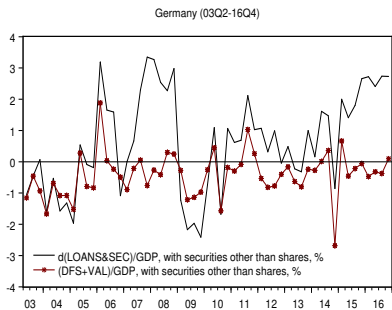
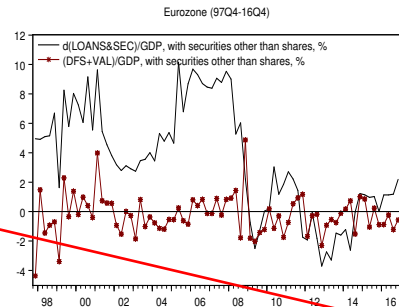
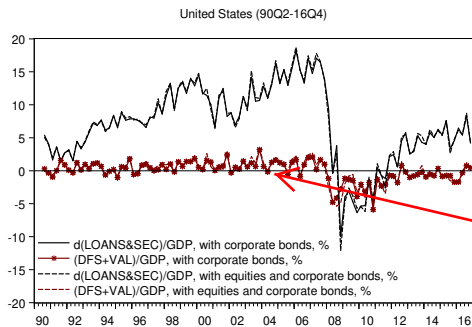


Net private saving is also typically of very different size

France (03Q2-16Q4)



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.)

6.2 Procyclical Bank Leverage

- Nuño and Thomas (2012):
 - Study comovement between cyclical components of U.S. bank leverage and aggregate output.
 - Commercial banks are acyclical, shadow banks are strongly procyclical.
- Our Analysis:
 - Follows Nuño and Thomas (2012).
 - In addition:
 - * Takes account of lags of output.
 - * Studies several other countries.

Table 2: Correlation of Financial Sector Leverage and GDP in Four Economies

Cross-correlation between cyclical components of logarithm of lagged GDP and leverage ratio (with assets = cumulated flows)

	US Regulated	US Shadow	US Regulated + Shadow	EUR	GER	FRA
Lags	90:1 - 16:4	90:1 - 16:4	90:1 - 16:4	97:3 10:3	97:3 10:3	97:3 16:4
0	0.18*	0.66***	0.53***	0.40**	0.24	0.40***
1	0.20*	0.65***	0.50***	0.56***	0.33**	0.54***
2	0.19*	0.50***	0.38***	0.62***	0.33**	0.60***
3	0.16	0.29***	0.23**	0.56***	0.25	0.58***
4	0.15	0.08	0.10	0.41***	0.14	0.48***
5	0.13	-0.07	0.00	0.21	0.03	0.33***

(Data: Flow of funds. Quarterly.)

(* = Significant at 10% confidence level, ** = Significant at 5% confidence level, *** = Significant at 1% confidence level)

Strongly procyclical credit

7 Conclusions

- Key Contributions of This Paper:
 1. **Theory:** Loanable funds models of banking are not a correct representation of the real-world credit/money creation process. The objective of financing models is to fix that.
 2. **DSGE Model Comparison:** Financing models have very different simulation properties.
 - Far larger and far faster changes in bank lending.
 - Much smaller changes in spreads.
 - Much larger effects on the real economy.
 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.

8 Looking Ahead

- The topic of this conference is “The Future of Money” .
- To understand various monetary reform proposals one has to first understand “The Presence of Money” .
- And that means the present modus operandi of banks and the central bank.
- The ILF model offers a misleading starting point.
- The FMC model aims to fix that.
- Many important implications.
- Example: Ability of banks to engage in procyclical lending:
 - Very high in the FMC model.
 - Much more modest in the ILF model.

Thank you!