

# Cyclical Investment Behavior across Financial Institutions

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# Introduction and Research Question

- Shift from bank-based finance to market-based finance
  - Broadening the funding base has advantages
  - Transfer of risk from banks to other financial institutions
- Financial institutions invest large part of their assets in debt securities
- How do financial institutions react to price changes?
- Reaction to price changes differ across financial institutions

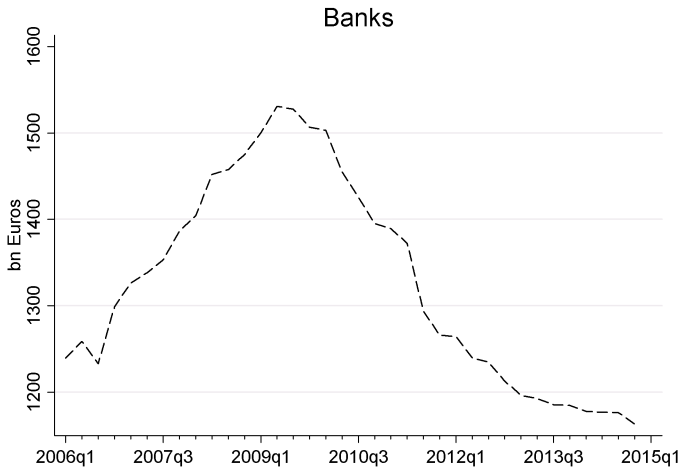
- Stabilize markets (Fama, 1965; Friedman, 1953)
- Exacerbate price dynamics
  - Abreu and Brunnermeier, Econometrica 2003; DeLong et al., JF 1990; Vishny and Shleifer, JEP 2011
- Pro-cyclical investors
  - Investment Funds (Feroli et al. 2014; Brunnermeier and Nagel, JF 2004)
- Counter-cyclical investors
  - Abbassi, Iyer, Peydró and Tous (JFE 2016)
    - Use German security-level data for banks
    - Trading banks behaved more counter-cyclically than non-trading banks during the crisis

- German Microdatabase Securities Holdings Statistics
  - Research Data and Service Centre of the Deutsche Bundesbank\*
  - Confidential security-by-security (by ISIN) holdings of investors domiciled in Germany by holding sector
- Banks; Investment Funds (Mutual Funds); and Insurance Companies and Pension Funds
- Debt securities
- Quarterly from 2005q4 - 2014q4

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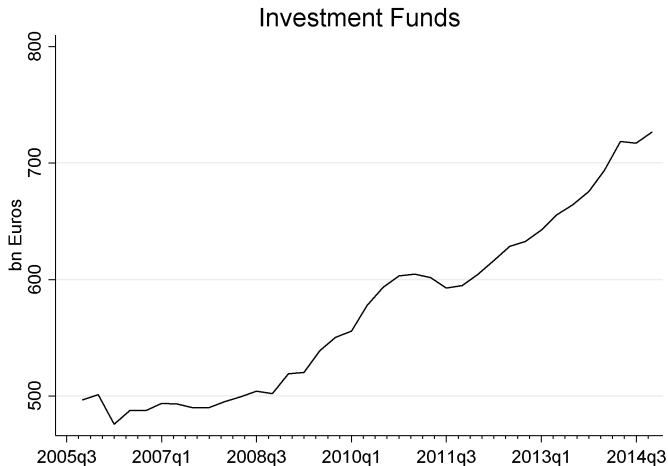
\* See Bade, M., Flory, J., and T. Schönberg (2016). SHS-Base, Data Report 2016-02 - Metadata Version 1-1, Deutsche Bundesbank Research Data and Service Centre

Figure 1: Nominal Holdings of Debt Securities of Banks



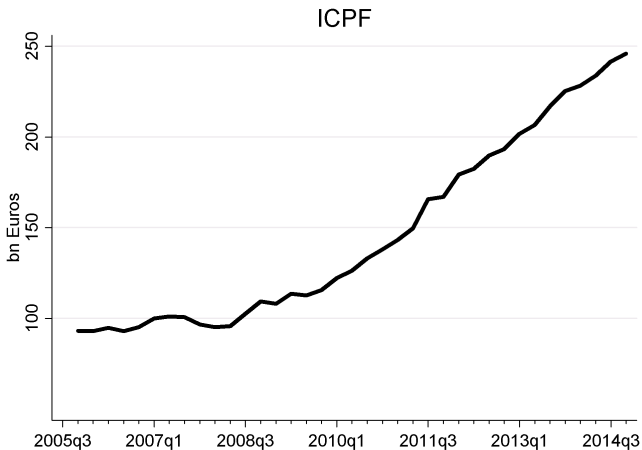
Source: Microdatabase Securities Holdings Statistics, Deutsche Bundesbank

Figure 2: Nominal Holdings of Debt Securities of Investment Funds



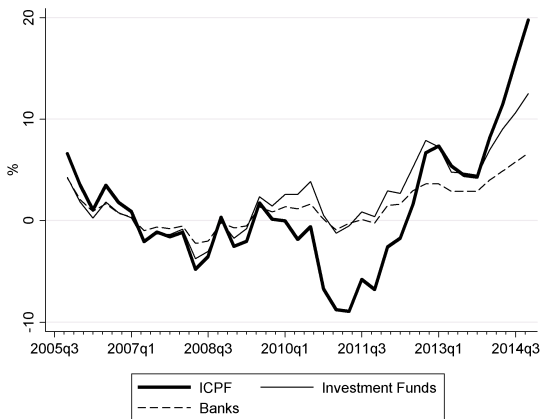
Source: Microdatabase Securities Holdings Statistics, Deutsche Bundesbank

**Figure 3:** Nominal Holdings of Debt Securities of Insurance Companies and Pension Funds



Source: *Microdatabase Securities Holdings Statistics, Deutsche Bundesbank*

Figure 4: Cumulative Capital Gains on Debt Security Holdings



Source: Microdatabase Securities Holdings Statistics, Deutsche Bundesbank



“If some northern European lenders had kept their Italian government debt in 2011-2012, they would be earning much more”

— Matteo Renzi, Italy's Prime Minister

- Insurance Companies and Pension Funds
  - Long-term liabilities
  - Payouts predictable and unrelated to economic condition
- Banks
  - High leverage
  - Short-term liabilities
  - Unstable wholesale funding
- Investment Funds
  - Limited leverage
  - Investor redemptions

▶ Balance Sheets

- $Netbuy_{s,t} = \beta \Delta Price_{s,t-1} + \gamma' X_{j,t-1} + \phi' Z_{t-1} + \alpha_s + \epsilon_{s,t}$ 
  - Netbuy: log difference of the nominal amount held of security  $s$  at quarter  $t$  if this amount changes
  - $\Delta Price$ : log difference in the price of the security
  - $X = Gov\_Bond\_Yield, \pi,$  and  $\Delta GDP$  of country  $j$
  - $Z = VIX, EONIA$
  - $\alpha_s$  is a security fixed effect
  - Standard errors clustered at the security level

Table 1: Netbuy

	(1) Funds	(2) ICPF	(3) Banks
$\Delta$ Price	0.174*** (0.02)	-0.650*** (0.12)	0.169*** (0.06)
R <sup>2</sup>	0.139	0.178	0.120
N	263612	28096	134005
Security FE	Yes	Yes	Yes
Controls	Yes	Yes	Yes

Standard errors are in parentheses and clustered at the security level. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

- Banks and Investment Funds pro-cyclically
  - May exacerbate price dynamics
- Insurance Companies and Pension Funds counter-cyclically
  - May stabilize the markets

- Regulating shadow-banking sector
  - Redemption fees/gates
  - Asset liquidity
  - Solvency II
- Short-termism
  - Taxes (Summers and Summers, 1989)
- Cross-border capital flows
  - Investor base (Cerutti, Claessen and Puy, 2015)
  - Surges and stops

# Thank You!





Figure A2: Balance Sheet of Investment Funds in Germany

Assets	Liabilities
Debt Securities	Investment Fund Shares issued
Equity Securities	
Investment Fund Shares	
Cash and Deposits	
Other	
	Other

Figure A3: Balance Sheet of Banks in Germany

Assets	Liabilities
	Equity
Loans to Non-Banks	Retail Deposits
Loans to Banks	Interbank Borrowing
Debt Securities	Debt Securities Issued
Other	Other

Figure A4: Balance Sheet of ICPF's in Germany

Assets	Liabilities
Equity Securities and Investment Fund Shares	Equity
Cash and Deposits	Net Equity of Household in Life Insurance and Pension Funds
Debt Securities	
Loans	Unearned Premiums and Reserves for outstanding Claims
Other	Other

Table A1: Summary statistics

<b>Variable</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>N</b>
Buy Funds	8.4	35.4	110587
Buy ICPF	12.4	35.5	19955
Buy Banks	16.3	100.9	91278
Sell Funds	7.5	30.6	125753
Sell ICPF	11.57	34.6	16868
Sell Banks	19.5	147.9	85845

Buy and sell refers to the amount bought and sold in million Euros. Source: Microdatabase Securities Holdings Statistics, Deutsche Bundesbank

Table A2: Benchmark: ICPF

	(1)	(2)	(3)
	Netbuy	Netbuy	Netbuy
$\Delta \text{ Price*Banks}$	0.684*** (0.18)	0.732*** (0.18)	0.928*** (0.20)
$\Delta \text{ Price*Funds}$	0.333*** (0.13)	0.382*** (0.13)	0.424*** (0.13)
$R^2$	0.339	0.340	0.432
N	50751	50751	50751
Security*Time FE	Yes	Yes	Yes
Sector FE	No	Yes	No
Sector*Time FE	No	No	Yes

Standard errors are in parentheses and clustered at the security level. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Table A3: Summary of Price Change Coefficients

Security FE	Other characteristics	Funds	ICPF	Banks
(1) No	-	0.178*** (0.02)	-0.280** (0.12)	0.160*** (0.06)
(2) Yes	-	0.124*** (0.02)	-0.767*** (0.12)	0.155** (0.06)
(3) Yes	Macro Controls	0.175*** (0.02)	-0.680*** (0.12)	0.179*** (0.06)
(4) Yes	Country*Time FE	0.159*** (0.02)	-0.365*** (0.14)	0.154** (0.07)
(5) Yes	Country*Issuing Sector* Time FE	0.178*** (0.02)	-0.233 (0.15)	0.188*** (0.07)

Table A4: Interaction with the VIX

	(1)	(2)	(3)
	Funds	ICPF	Banks
$\Delta \text{ Price} * \text{VIX}$	0.166*** (0.06)	0.797*** (0.28)	-0.057 (0.15)
$\Delta \text{ Price}$	0.134*** (0.03)	-0.806*** (0.14)	0.183** (0.08)
$R^2$	0.139	0.178	0.120
N	263612	28096	134005
Security FE	Yes	Yes	Yes
Macro Controls	Yes	Yes	Yes

# More Policy Considerations

- Mark to Market of Security Holdings
- Leverage Requirements
- Defined Benefit vs. Defined Contribution