

# **Session VII.**

# **SOVEREIGN CONTAGION AND RUNS ON MONEY-MARKET FUNDS**



Second Conference of the  
Macro-prudential Research  
(MaRs) Network of the  
European System of  
Central Banks

Sascha Steffen  
Frankfurt, Oct 30-31 2012

## Agenda

The three papers in context

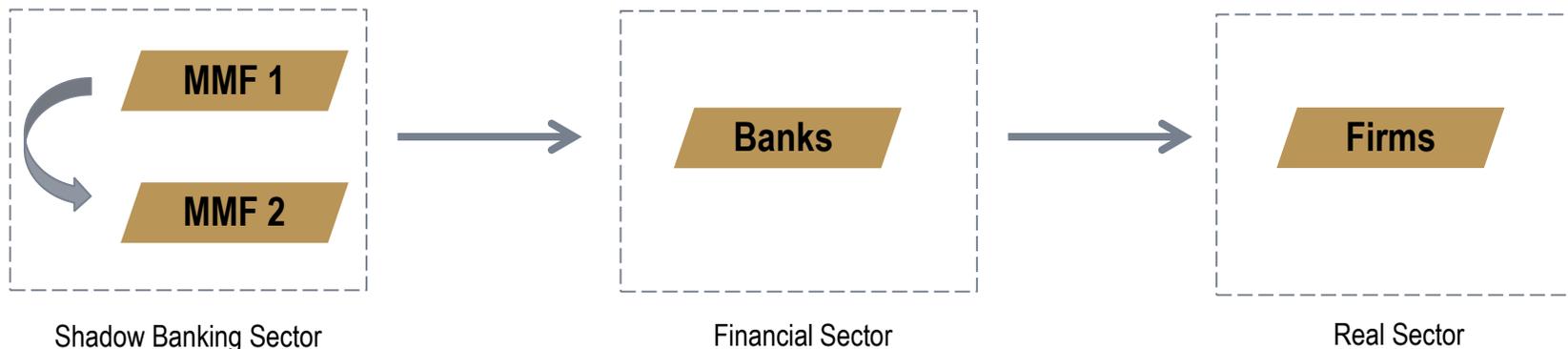
“Conditional Probabilities for Euro-area Sovereign Default Risk” (Lucas , Schwaab and Zhang)

“Runs on Money Market Mutual Funds” (Schmidt, Timmermann and Wermers)

“Liquidity Shocks, Dollar Funding Costs and the Bank Lending Channel during European Sovereign Crisis” (Correa, Saoriza and Zlate)

## › The three papers in context

- Contagion can be defined as a situation in which instability in a specific financial market, institution or country is transmitted to one or other markets, institutions or countries.
  - 2 characteristics: (1) precipitating event, (2) transmission „abnormal“ in speed/strength/scope
- Is there contagion and how can we measure it?
  - “Conditional Probabilities for Euro-area Sovereign Default Risk” (Lucas , Schwaab and Zhang)
- How do runs propagate?



## Agenda

The three papers in context

“Conditional Probabilities for Euro-area Sovereign Default Risk” (Lucas , Schwaab and Zhang)

“Runs on Money Market Mutual Funds” (Schmidt, Timmermann and Wermers)

“Liquidity Shocks, Dollar Funding Costs and the Bank Lending Channel during European Sovereign Crisis” (Correa, Saoriza and Zlate)

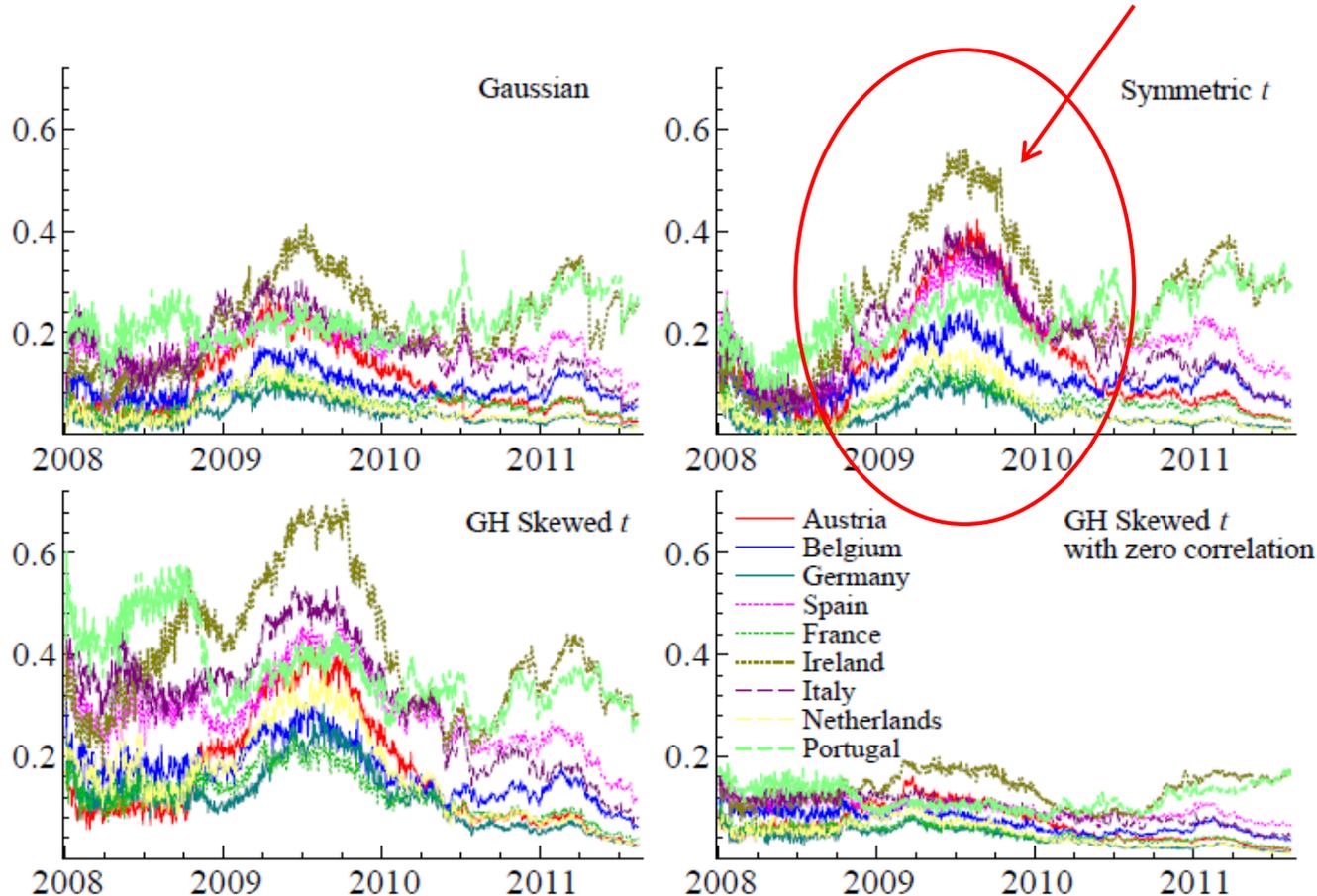
## ▶ “Conditional Probabilities for Euro-area Sovereign Default Risk” (Lucas, Schwaab and Zhang)

- Is there contagion and how can we measure it?
- Assesses the effect of an increased probability of default of one country on the likelihood of default of other countries in the Euro area
  - What is the probability that Portugal defaults if Greece has defaulted?
- Why do we need a more sophisticated model to assess contagion risk?
  - Heavy tails, skewness, time-series variation in volatilities and dependence of CDS spreads
- You can infer probability of default from market prices, but not the correlation structure and time-series changes -> model

## ▶ “Conditional Probabilities for Euro-area Sovereign Default Risk” (Lucas, Schwaab and Zhang)

- CDS data for sovereigns from January 2008 to June 2011.
  - Estimates of sovereign default probabilities are from market prices (not from official institutions)
- Distributional assumptions of CDS spread changes matter most for conditional assessment
- Event study around May 9, 2010
  - Announcement of ESFS and ECB’s SMP
  - Reduction in joint probability of default (-> “systemic risk“)
  - Conditional default probability unchanged (-> “contagion“)

# Conditional default probabilities of failure given that Greece fails



- Why is conditional default probability higher before the crisis started? How would this graph look like, e.g. conditioning on default of Italy?

## Conditional risk

Conditional risk, $\Pr(i \text{ failing} \mid j \text{ failed})$						
	Thu May 6, 2010			Tue May 11, 2010		
	PT	GR	DE	PT	GR	DE
AT	17%	8%	52%	22%	10%	46%
BE	20%	10%	60%	32%	15%	61%
DE	16%	8%		26%	12%	
ES	49%	25%	78%	50%	23%	63%
FR	16%	8%	58%	28%	12%	62%
GR	78%		99%	80%		86%
IR	43%	23%	75%	49%	26%	68%
IT	45%	22%	77%	49%	21%	64%
NL	14%	7%	49%	21%	10%	50%
PT		36%	91%		33%	81%
Avg	33%	17%	71%	40%	18%	64%

- Would it make sense to look at this GIIPS vs. rest of Europe?

## Questions

- Can default probabilities be explained by other risk factor (country specific macro factors) that affect sovereign CDS spreads?
  - Include more variables that explain bank risk / sovereign risk.
- How does your model improve / deviate from existing models that account of dynamic correlations?
  - Engle (2002), Kelly and Engle (2011)
- You can apply same methodology to banks.
  - How does your model improve on existing models such as SES or CoVaR?
- Provide more evidence how various policy measures in Europe can be assessed based on the questions as to whether they decreased contagion risk in the Euro area.

## Agenda

The three papers in context

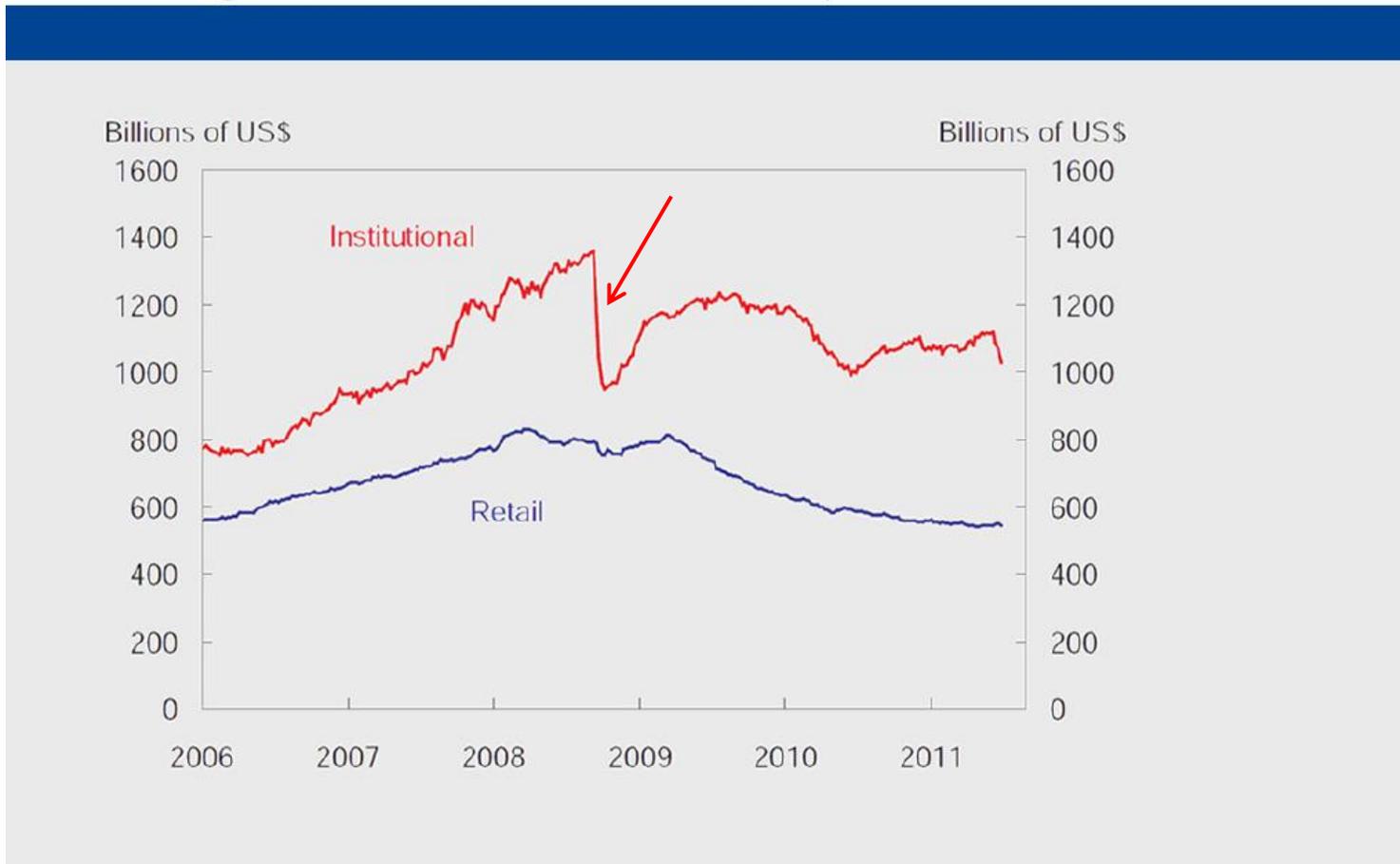
“Conditional Probabilities for Euro-area Sovereign Default Risk” (Lucas , Schwaab and Zhang)

“Runs on Money Market Mutual Funds” (Schmidt, Timmermann and Wermers)

“Liquidity Shocks, Dollar Funding Costs and the Bank Lending Channel during European Sovereign Crisis” (Correa, Saoriza and Zlate)

# Run on Institutional MMF after Lehman bankruptcy

Chart 2: Holdings of institutional and retail investors in US prime MMFs



Source: ESRB (2012). Money Market Funds and Europe and Financial Stability, Occasional Paper No.1 (June 2012).

## ▶ “Runs on Money Market Mutual Funds” (Schmidt, Timmermann and Wermers)

- Paper is about contagion across MMF starting after the Lehman default and Prime Reserve Fund „broke the buck“ (Sept 17 – 19, 2008)
  - Roughly USD 300bn even from funds without Lehman exposure
- *“Our main goal in this paper is to explore the determinants of this episode [September 2008], such as the institutional characteristics of different money market funds, their portfolio holdings, and their investors, with a view to shedding light on the mechanisms by which runs propagate.”*
- Daily data on fund size, fund family, fund type, maturities and asset breakdowns for the Dec 31, 2007 to June 30, 2009 period for US MMF from iMoneyNet
  - Roughly 2,000 MMF
  - Total assets of funds increased from USD 500bn to USD 3.8 trillion between 1990 and 2008.

## ▶ “Runs on Money Market Mutual Funds” (Schmidt, Timmermann and Wermers)

- Very clear paper with solid methodology (quantile regressions)
- Cross-sectional heterogeneity and persistence of flows
  - Institutional funds with highest outflows lost about 20% of total assets on a single day (median fund not affected) -> almost no run on retail
  - Fund outflows were persistent among all funds (not only in tails)
  - Funds with high lagged std. dev. flows likely to remain in the tails
  - High inflows to government institutional and retail funds
  - Money likely to stay at the complex level but is shifted to government funds
- Common shock: higher outflows if higher yields and larger funds
- Tail exposure: higher outflows if more volatile flows, higher percentage of institutional owners
  - Would like to see this excluding government funds (where inst. Investors are “safe“)

## Questions

- Can you be more precise about the mechanisms through which runs propagate?
  - Data should contain precise information about holdings
    - Asset classes
    - Maturities / maturity transformation
  - Can you see which funds had Lehman exposure which ones did not?
    - If so, construct experiment around Lehman default with 3 groups, (1) prime institutional fund with Lehman, (2) prime institutional fund without Lehman, and (3) government fund
  - Are there more runs on funds that have similar portfolios? -> Limits to diversification
- What is the role of the fund sponsor? -> propensity of being bailed out?
  - How do runs depend on identity of sponsor, investment banks versus other institutions, domestic versus foreign, capitalization (if bank sponsor)
  - What does your paper say about the current discussion in Europe banning fund managers from bailing out investors in MMF? -> 2007-2009: 62 bailouts (26 in Europe), USD 12.1bn

## Questions

- Can you discuss your results vis-a-vis Kacperczyk and Schnabl (2012)?
- What are further implications of your findings
  - MMF significant source of ST funding for banks: can you provide estimates how the massive outflows affected banks wholesale funding accelerating the crisis in the financial sector?
  - MMF can affect real sector indirectly through financing of banks and directly through lending to corporates: How important was this direct channel for the economy?

## Agenda

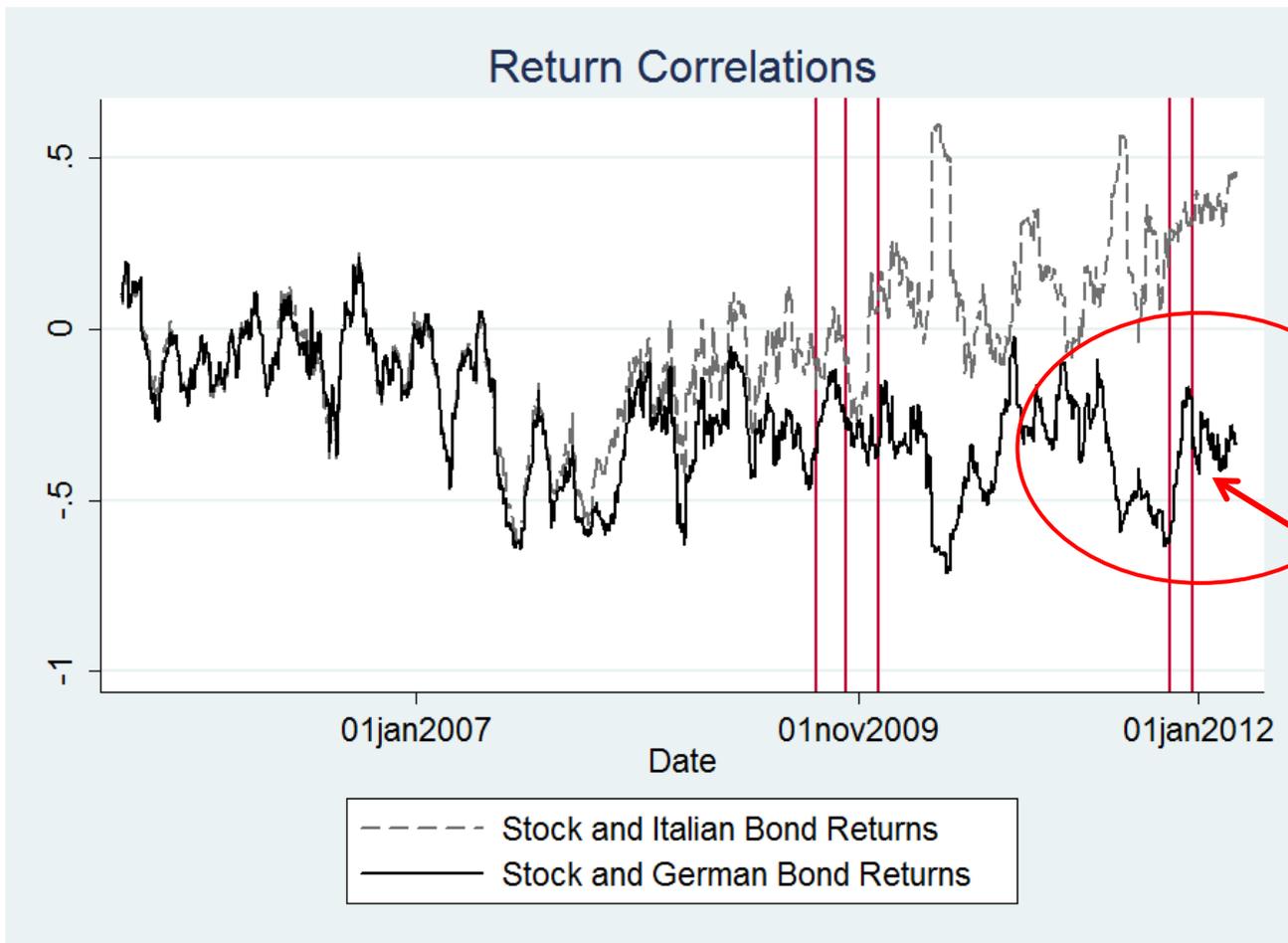
The three papers in context

“Conditional Probabilities for Euro-area Sovereign Default Risk” (Lucas , Schwaab and Zhang)

“Runs on Money Market Mutual Funds” (Schmidt, Timmermann and Wermers)

“Liquidity Shocks, Dollar Funding Costs and the Bank Lending Channel during European Sovereign Crisis” (Correa, Saoriza and Zlate)

## European banks had substantial exposure to short-term funding

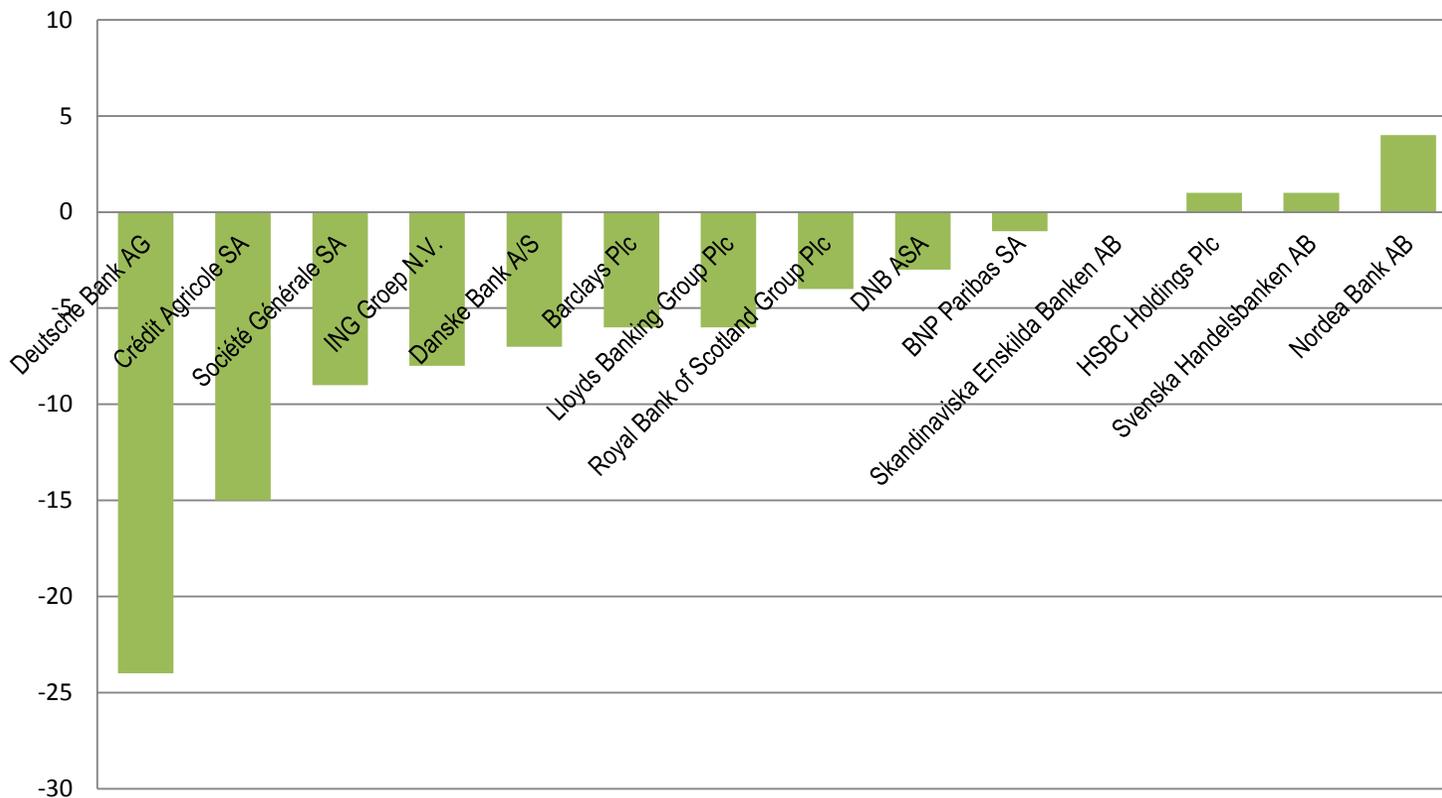


Exposure to short-term funding

Acharya, V., and S. Steffen (2012). The "Greatest" Carry Trade Ever? Understanding Eurozone Bank Risks.

# US MMMF reduced USD funding to European banks by USD 77 billion between May and July 2011

## US Money Market Fund May - July 2011



Source: Own calculations based on data from JP Morgan Research

## ▶ “Liquidity Shocks, Dollar Funding Costs and the Bank Lending Channel during European Sovereign Crisis” (Correa, Saoriza and Zlate)

- Paper is about contagion from MMF to the financial sector and impact on the US real sector through the balance sheet channel
- Significant reduction of large time deposits between 2010 and 2011 in non-US bank branches
  - Reduction in funding due to US MMF reducing exposure
  - Inflow from parent institutions insufficient
  - Reduction in funding causes reduction in lending to US firms
  - Investors differentiate between European and non-European banks
  - It does not matter how much domestic sovereign debt bank parents hold
  - It does not matter whether (potential) government support is more credible
- Clear channel that shows global dimension and interconnectedness
  - What are the causes and implications?

## Questions about causes and alternative explanations

- What other factors can be responsible for the reduction in large time deposits?
  - Involvement of MMF is conjecture but paper misses tests
  - “Net due to head office“ can be both reduction in lending to head office or increase in borrowing from head office -> what do you see in the data? Shouldn't US branches supply parent with US in times of stress?
  - How much of loss in funding can be offset by other US deposits?
- Can result be caused by change in demand rather than change in supply of capital?
  - Bank level aggregates could be driven by large loans to some firms
  - Can change in bank risk explain decrease in lending?
- How economically significant is the result? USD 1bn reduction in funding -> USD 38mn in lending
  - USD 1bn is about 15% change from mean total assets

## Questions about policy implications

- Banks should hold liquidity in foreign currency
  - Isn't this why European banks open US branches? As “natural” hedge?
- What proportion of US funding should come from MMF?
  - For some European banks, 50% of US funding come from US MMF
  - How much wholesale funding should come from MMF?

## Overall, three very interesting and timely papers

- Conditional Probabilities for Euro-area Sovereign Default Risk (Lucas , Schwaab and Zhang)
- Liquidity Shocks, Dollar Funding Costs and the Bank Lending Channel during European Sovereign Crisis (Correa, Saoriza and Zlate)
- Runs on Money Market Mutual Funds (Schmidt, Timmermann and Wermers)

**Thank you!**