

# You Can't Always Get What You Want (Where You Want It): Cross-Border Effects of the US Money Market Fund Reform

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Deutsche Bundesbank

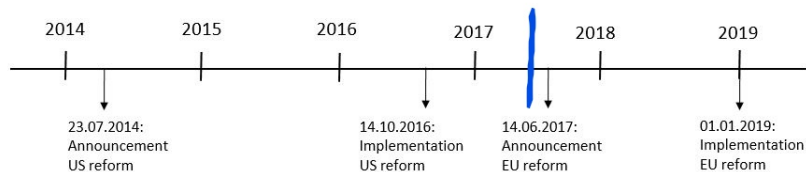
June, 8 2022

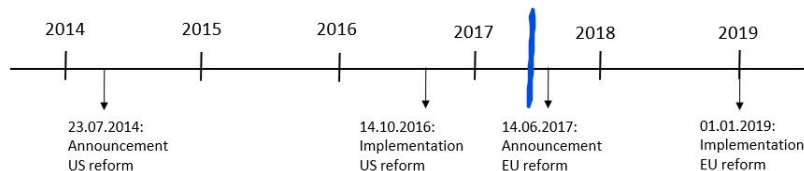
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# Motivation

- Ongoing policy discussions on **money market funds (MMFs)** due to instabilities and strong growth:
  - ▶ Globally: USD 4.9 trillion in 2013 to USD 5.9 trillion in 2017.
  - ▶ **Euro area**: USD 0.9 trillion in 2013 to USD 1.3 trillion in 2017.
- Reasons for growth:
  - ▶ Low interest rate environment.
  - ▶ **This paper**: cross-border effects of 2014 US MMF reform.

# Background [More](#)





- Main elements of the 2014 US MMF Reform:
  - ① introduction of redemption gates and liquidity fees for **all prime funds**,
  - ② **institutional prime funds** were forced to switch from a constant net asset value (CNAV) to a variable NAV (VNAV).
- **Identification**: institutional USD-/EUR-focused MMFs in euro area.

## 1 Reform-driven cross-border flows?

- ▶ Inflows of 50 EUR bn to **USD** funds, particularly **prime CNAVs**.
- ▶ Effect absent for prime VNAVs → flows motivated by stable NAV.
- ▶ Inflows almost exclusively due to **foreign investors**.

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## ② Economic consequences?

- ▶ **Fund level**: **Weaker** flow-performance relationship + **less** risk-taking
- ▶ **Sector level**:
  - Increased **concentration** + larger relative importance of prime segment.
  - **MMF run** in March 2020 concentrated on USD prime CNAVs (LVNAVs) and driven by foreign investors.

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## ● Main policy implication

- ▶ Assess potential cross-border effects of future reforms.

# Data

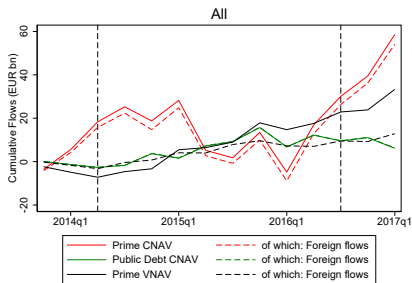
- Morningstar Direct
    - ▶ Flows, returns, TNA, fund characteristics
    - ▶ Portfolio holdings
  - Securities Holdings Statistics SHS
    - ▶ Ownership composition
    - ▶ Main investor groups: MFIs, ICPFs, IFs, NFCs, **Foreign**
- 
- Main sample: January 2013 until May 2017
    - ▶ 121 **institutional** MMFs domiciled in the euro area.
      - ★ Prime CNAV (12 EUR, 19 USD), Prime VNAV (69 EUR, 11 USD),  
Public Debt CNAV (3 EUR, 7 USD)
  - Fund-level analysis: 5,102 fund-month (1,069 fund-quarter) obs.



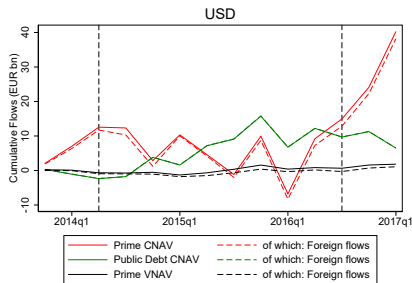
# Part I

# Regulation-Driven Flows

# Results: US MMF reform led to **cross-border flows**



(a) All Funds



(b) USD Funds

# Results: MMF reform and flows

Parallel Trends

SHS-S

Timing

Family

Dep. var.:	(1)	(2)	(3)	(4)
RelFlows	All	Prime	Prime	Prime
Post x USD	0.0180** (2.28)	0.0158** (2.01)	-0.0050 (-0.58)	
Post x CNAV			-0.0005 (-0.03)	
Post x USD x CNAV			0.0364** (2.15)	0.0359** (2.05)
adj. R2	.0160	.0148	.0165	.0150
Obs	5102	4667	4667	4667
Controls	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	-
Time x USD FE	No	No	No	Yes
Time x CNAV FE	No	No	No	Yes

*Post* = 1 after October 2015

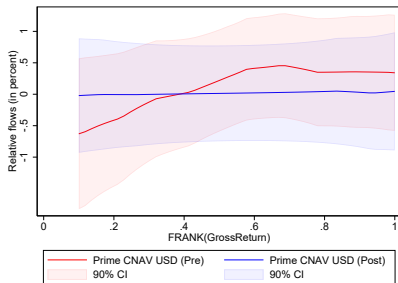
# Part II

## Economic Consequences

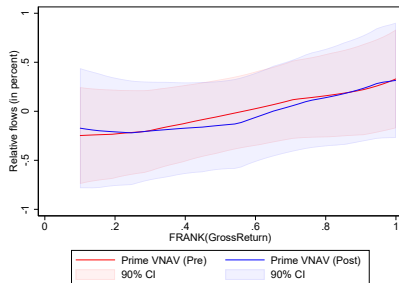
# Flow-Performance Relationship

Regression

## Descriptive Evidence



(c) Prime CNAV



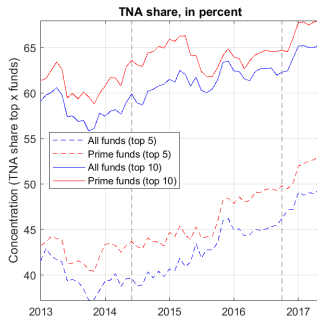
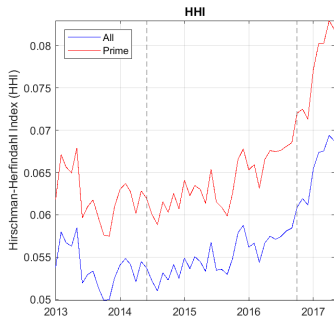
(d) Prime VNAV

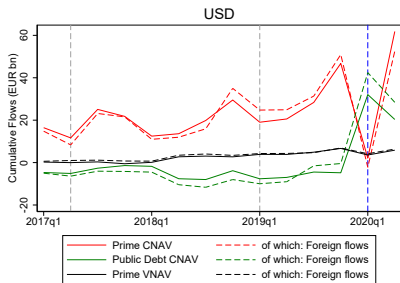
## Results: Less Risk-Taking

	(1) Holdings Risk	(2) Bank Holdings	(3) Corp. Holdings	(4) Cash Holdings
Post x USD x CNAV	-0.4384*** (-2.71)	-0.1497*** (-3.39)	-0.0829* (-1.90)	0.1880** (2.18)
adj. R2	.05756	.05111	.02431	.04123
Obs.	3125	3125	3125	3125
	(5) Gov. Holdings	(6) Portfolio Maturity	(7) Spread	(8) Spread Squared
Post x USD x CNAV	0.0033 (0.10)	-0.0809*** (-2.82)	-0.0880 (-1.37)	-0.2580** (-2.57)
adj. R2	.0110	.0195	.0214	.0356
Obs.	3125	3125	3125	3125
Controls	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes
Time x USD FE	Yes	Yes	Yes	Yes
Time x CNAV FE	Yes	Yes	Yes	Yes

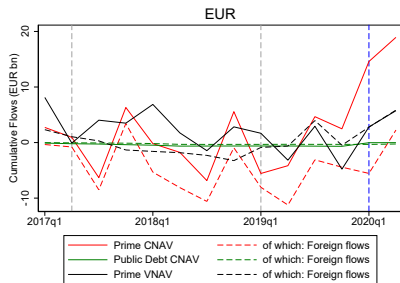
*Post* = 1 after October 2015

# Results: Increased Concentration of MMF Sector





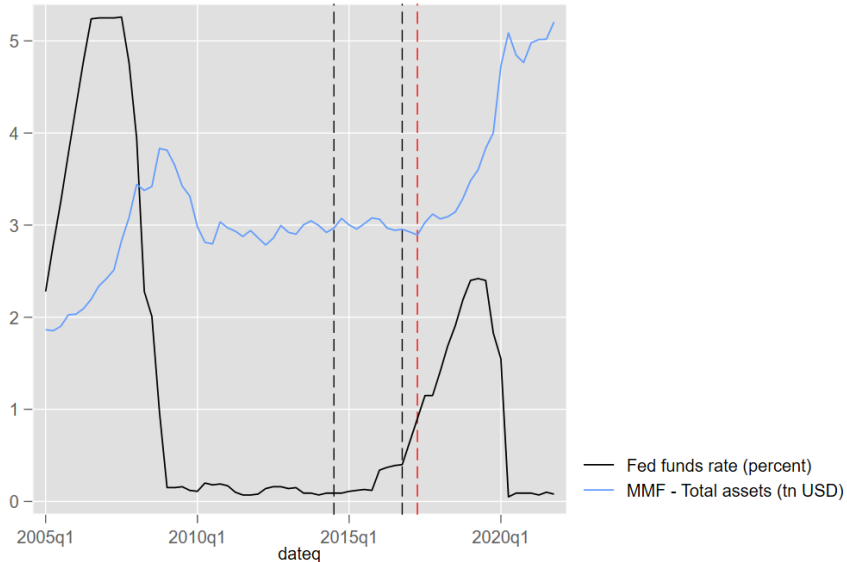
(e) USD Funds



(f) EUR Funds



# Potentially Contaminating Events: US Monetary Policy



# Conclusion

- Findings:

- ▶ US reform made euro area **USD prime CNAVs** more attractive (large foreign inflows) and more stable (lower FPR, less risk-taking)
- ▶ US reform made euro area **MMF sector** more concentrated and less stable (Covid-19 outflows, run risk)

- Policy implications:

- ▶ Ongoing policy discussions on MMF instabilities (COVID-19)
  - ★ FSB policy proposals 2021 set the ground
  - ★ Jurisdictions with (specific) implementation
  - ★ e.g. different anti-dilution tools (swing prices, redemption fees,...)
- ▶ Potential spillovers of future reforms need to be assessed carefully

# Additional Slides

## Institutional Investor

## Retail Investor

<b>Government Including Treasury</b>	<b>Stable NAV, No Liquidity Fees, No Redemption Gates</b> Must invest only in government securities*	
<b>Prime (Commercial Paper)</b>	<b>Floating NAV</b> Liquidity Fees / Redemption Gates	<b>Stable NAV</b> Liquidity Fees / Redemption Gates
<b>Municipal (Tax-Exempt)</b>	<b>Floating NAV</b> Liquidity Fees / Redemption Gates	<b>Stable NAV</b> Liquidity Fees / Redemption Gates

Source: [https://www.gsam.com/content/dam/gsam/images/us/en/campaigns/liquidity-center/3\\_LS\\_US\\_RegReform\\_160415-01.png](https://www.gsam.com/content/dam/gsam/images/us/en/campaigns/liquidity-center/3_LS_US_RegReform_160415-01.png)

## Short-Term Money Market Funds

	Short-Term Money Market Funds			
	Pre-January 2019: Current Fund	Post-January 2019: New Fund Types		
	CNAV Fund	Public Debt (Government) Fund CNAV	Low Volatility NAV Fund (LVNAV)	Short-Term Variable NAV Fund (VNAV)
Minimum Daily Liquidity	20% <sup>1</sup>	10%	10%	7.5%
Minimum Weekly Liquidity	30% <sup>1</sup>	30%	30%	15%
Max WAM	60 days	60 days	60 days	60 days
Max WAL	120 days	120 days	120 days	120 days
Maximum Maturity of investments	397 days	397 days	397 days	397 days
Accounting Method	Amortised Cost Accounting	Amortised Cost Accounting	Amortised Cost Accounting up to 75 days Mark-to-market > 75 days	Mark-to-market Variable NAV
Threshold to Trade at Constant NAV	50bps	50bps	20bps	N/A
NAV Method	Fund pricing to two decimal place	Fund pricing to two decimal place	If the portfolio NAV moves more than 20bps from 1.00/share then the fund must use a NAV per share to four decimal places	Variable NAV to four decimal places
Liquidity Fees and/or Gates	UCITS/Prospectus	Liquidity-based fees and/or Gates	Liquidity-based fees and/or Gates	UCITS/Prospectus

Source: HSBC (2017): European Money Market Fund Reform Frequently Asked Questions

### ● US MMF Reform

- ▶ Cipriani and La Spada (2020), Baghai, Gianetti, and Jäger (2021)
- ▶ This paper: *cross-border* effects of the US MMF reform

### ● Cross-border effects of financial regulation

- ▶ Demirguc-Kunt, Detragiache, and Merrouche (2013), Houston, Lin, and Ma (2012)
- ▶ This paper: first to study cross-border effects of *MMFs*

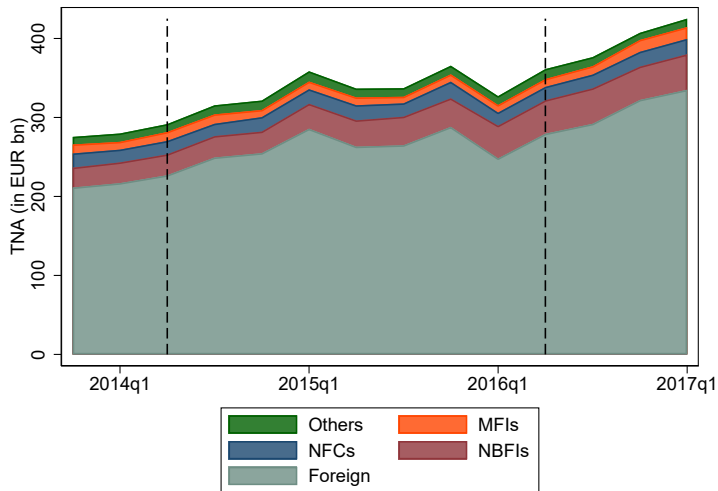
### ● Fund sector increasingly competitive market

- ▶ Wahal and Wang (2011), Baghai et al. (2021) focus on *increasing* competition
- ▶ This paper: exogenous *reduction* in competition

### ● Role of non-bank financial intermediaries

- ▶ Hashimoto and Krogstrup (2019), Kacperczyk and Schnabl (2016), Schmidt, Timmermann, and Wermers (2016), Chernenko and Sunderam (2014), Di Maggio and Kacperczyk (2017)

# TNA by Investor Group [Back](#)



# Robustness: Timing US MMF reform Back

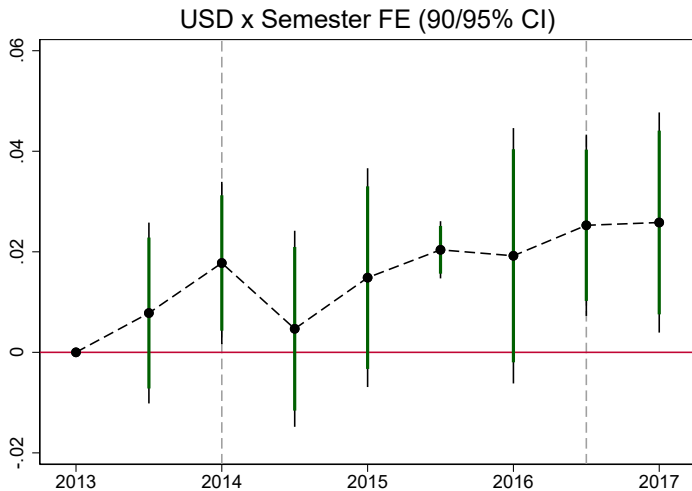
Dep. var.:	(1)	(2)	(3)	(4)
RelFlows	All	Prime	Prime	Prime
Announcement × USD	0.0075 (1.03)	0.0063 (0.97)	0.0038 (0.60)	
Announcement × CNAV			-0.0147 (-0.84)	
Announcement × USD × CNAV			0.0158 (1.06)	0.0147 (0.97)
Implementation × USD	0.0137** (2.02)	0.0136* (1.78)	-0.0116 (-1.30)	
Implementation × CNAV			-0.0160 (-0.76)	
Implementation × USD × CNAV			0.0552*** (3.20)	0.0532*** (2.93)
adj. R2	.01472	.01374	.01469	.01444
Obs	5102	4667	4667	4667
Fund controls	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	-
Time × USD FE	No	No	No	Yes
Time × CNAV FE	No	No	No	Yes

*Announcement* = 1 between July 2014 and September 2016

*Implementation* = 1 after October 2016



# Parallel Trends Assumption [Back](#)



Dep. var.: RelFlows	(1) Total	(2) Foreign	(3) NBFIs	(4) NFCs	(5) MFIs	(6) Others
Post × USD × CNAV	0.10** (2.28)	0.05* (1.97)	0.01 (0.62)	-0.01 (-1.47)	0.00 (1.01)	0.02 (1.57)
adj. R2	.0343	.0435	.0105	.1164	.0388	.0467
Obs.	1069	1053	852	728	694	932
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes	Yes	Yes
Time × USD FE	Yes	Yes	Yes	Yes	Yes	Yes
Time × CNAV FE	Yes	Yes	Yes	Yes	Yes	Yes

*Post* = 1 after October 2015

# Fund Flows - Within Family Flows [Back](#)

	(1)	(2)	(3)
Family US Outflow(t-1) x Post x USD	-0.0993* (-1.73)	-0.0125 (-0.22)	0.0481 (0.66)
Family US Outflow(t-1) x Post x CNAV		0.0529 (1.16)	0.0196 (0.25)
Family US Outflow(t-1) x Post x USD x CNAV		-0.1571*** (-2.78)	-0.2291*** (-3.23)
Family US Inflow(t-1) x Post x USD	0.0011 (0.01)	0.0034 (0.08)	-0.0180 (-0.26)
Family US Inflow(t-1) x Post x CNAV		-0.1100 (-1.29)	-0.0978 (-0.65)
Family US Inflow(t-1) x Post x USD x CNAV		0.1195 (1.28)	0.1288 (0.77)
Adj. R2	-0.0065	-0.0113	-0.0131
Obs.	1309	1309	1239
Controls	Yes	Yes	Yes
Fund FE	Yes	-	-
Time FE	Yes	-	-
Time x USD FE	No	Yes	Yes
Time x CNAV FE	No	Yes	Yes
Time x Fund Family FE	No	No	Yes

# Results: Fee Reduction [Back](#)

	(1)	(2)	(3)	(4)
	Baseline	Has No US Prime	Has US Prime	Interaction
Post x USD x CNAV	-0.0447 (-1.54)	-0.0914** (-2.21)	0.0263 (1.17)	-0.0822* (-1.94)
Post x USD x CNAV x Has US Prime				0.1077** (2.17)
adj. R2	.07081	.06486	.1245	.06494
Obs.	4667	3331	1336	4667
Controls	Yes	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes	Yes
Time x USD FE	Yes	Yes	Yes	-
Time x CNAV FE	Yes	Yes	Yes	-
Time x USD x Has US Prime FE	No	No	No	Yes
Time x CNAV x Has US Prime FE	No	No	No	Yes

*Post* = 1 after October 2015

## Results: Weaker Flow-Performance Relationship [Back](#)

Dep. var.:	(1)	(2)
RelFlows	Baseline	Piecewise
FRANK(t-1) × Post × USD × CNAV	-0.1240* (-1.89)	
High - FRANK(t-1) × Post × USD × CNAV		-0.0402** (-2.38)
Medium - FRANK(t-1) × Post × USD × CNAV		-0.0085 (-1.05)
Low - FRANK(t-1) × Post × USD × CNAV		-0.0089 (-0.25)
adj. R2	.021	.018
Obs	4598	4598
Controls	Yes	Yes
Fund FE	Yes	Yes
Time × USD FE	Yes	Yes
Time × CNAV FE	Yes	Yes

*Post* = 1 after October 2015

*FRANK* = fractional performance rank

	(1) EU Reform	(2) COVID-19	(3) Both
Announcement EU Regulation × USD × CNAV	0.01 (0.51)		-0.01 (-0.26)
Implementation EU Regulation × USD × CNAV	0.03 (1.24)		0.02 (0.59)
COVID-19 × USD × CNAV		-0.09** (-2.42)	-0.09** (-2.26)
adj. R2	.0325	.03506	.0341
Obs.	2,936	2,936	2,936
Controls	Yes	Yes	Yes
Fund FE	Yes	Yes	Yes
Time × USD FE	Yes	Yes	Yes
Time × CNAV FE	Yes	Yes	Yes

*Announcement EU Regulation* = 1 between June 2017 and November 2018

*Implementation EU Regulation* = 1 between December 2018 and May 2019

*COVID-19* = 1 in March and April 2020