Investors' appetite for money-like assets:

The MMF industry after the 2014 regulatory reform

Marco Cipriani, Gabriele La Spada

Federal Reserve Bank of New York Research Group

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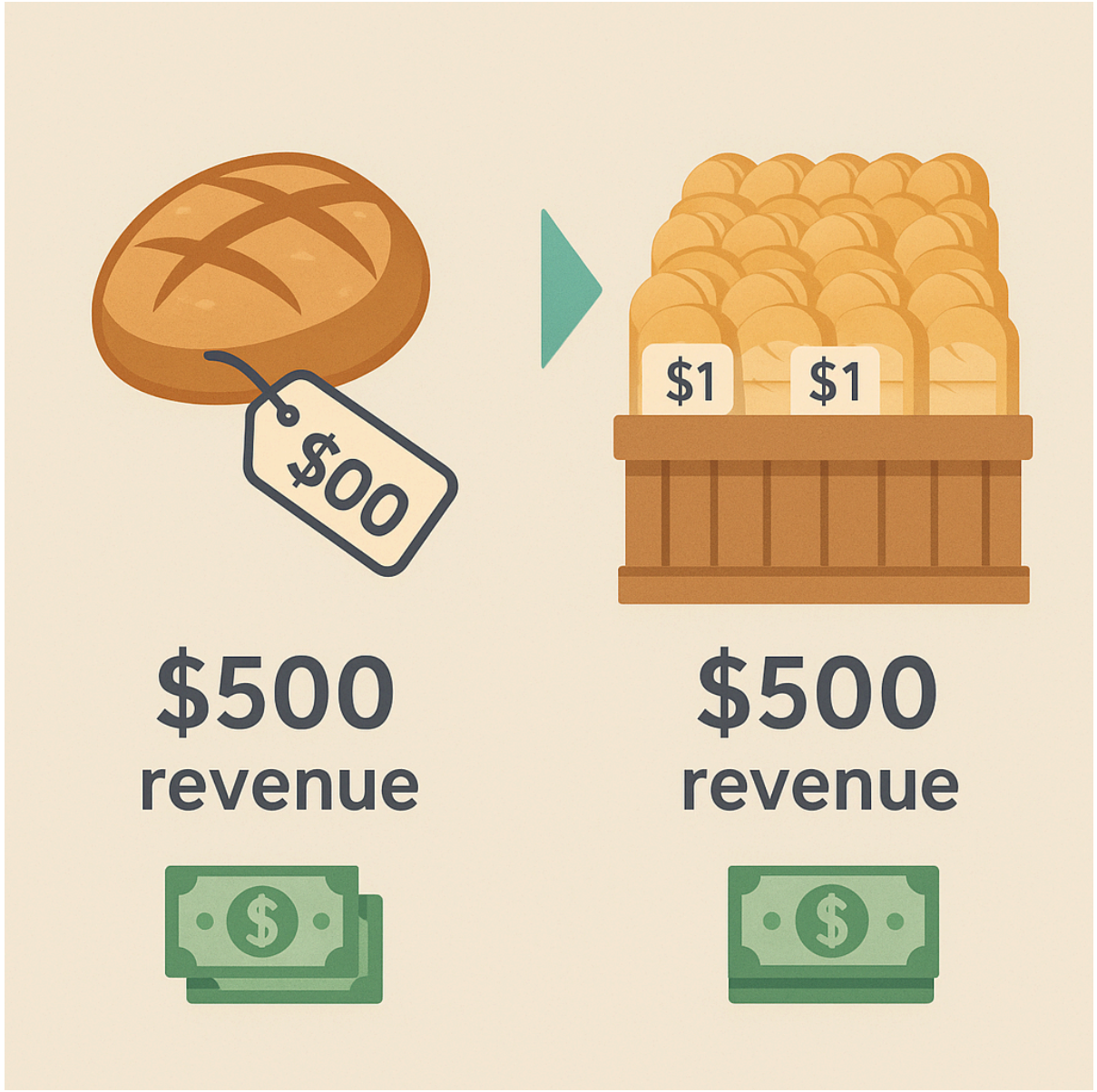
Outline

- Background
- Motivation
- Contribution & Key Methodology
- Result
    i. Premium for money-likeness
    ii. Elasticity of Substitution b/w Prime & Gov MMF

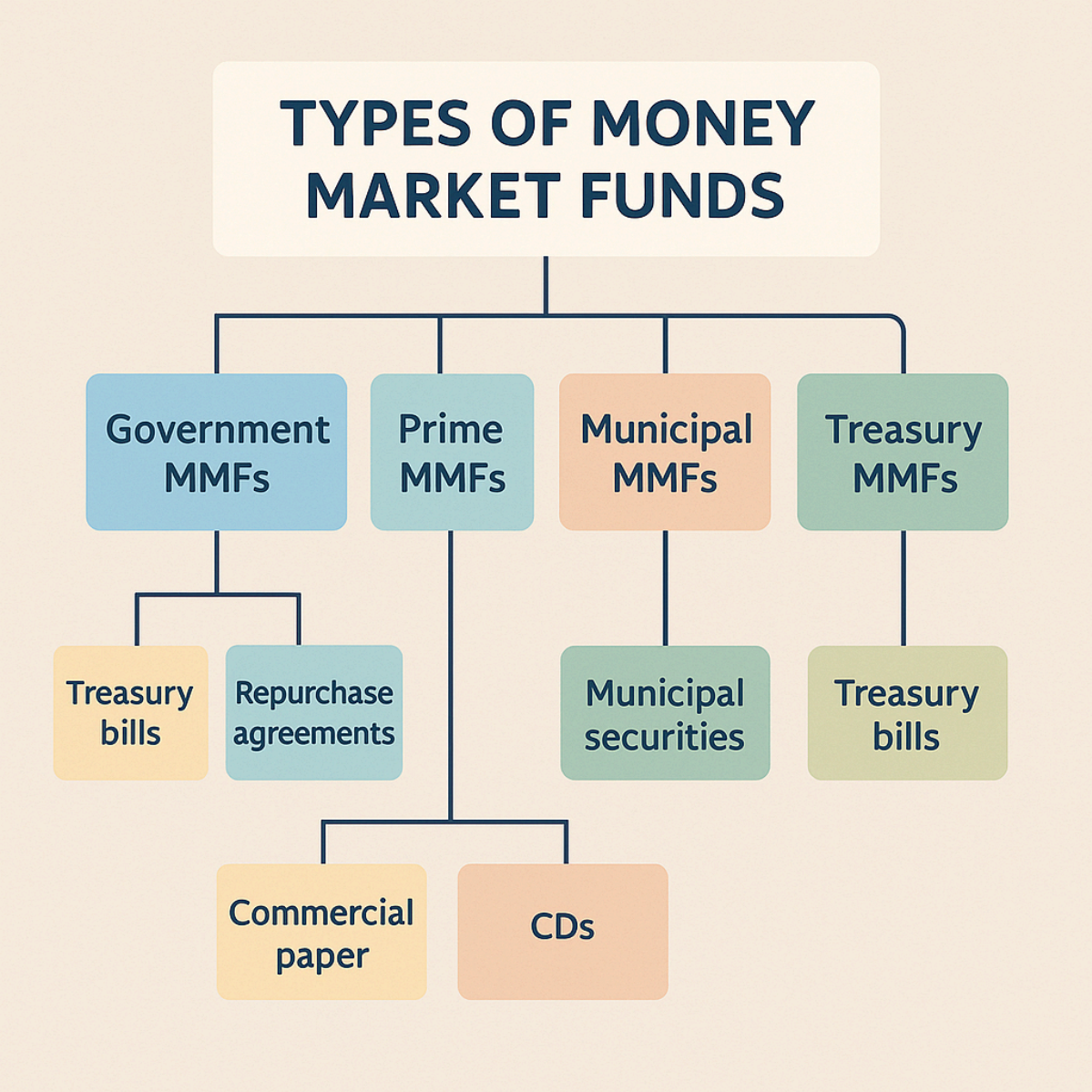
Background 1: Nonexistent Risk Free, But...

- Exists via combination of a market of people willing to buy the risk asset
- Distribute raw commodity $\Longrightarrow$ Distribute Risk of the Commodity



Background 2: MMF(Money Market Fund)

- Pegged to $1 per share, MMFs are a type of mutual fund that invests in short-term, low-risk securities



Background 3: 2014 SEC Regulatory Reform

Enhanced Disclosure Requirements

- The reform mandated liquidity fees and redemption gates for prime MMF (not gov MMF), additionally floating NAV only for ***institutional prime MMFs***
    - ***Floating NAV***: Round to the nearest 1/1000 of a cent for the asset value of the fund, instead of at a $1.00 stable share price
    - ***Gate***: fine liquidity fees or suspending redemptions temporarily when fund's weekly liquid assets fall below a certain threshold
- https://www.sec.gov/newsroom/press-releases/2014-143

Motivation from title

- ***money-like asset*** = MMF is not risk free. It has non-zero volatility like asset
- 2014 ***regulatory reform*** = for adverse selection b/w inst and retail investors
- ***Investors' appetite***: = Premium of money-likeness for risk aversion

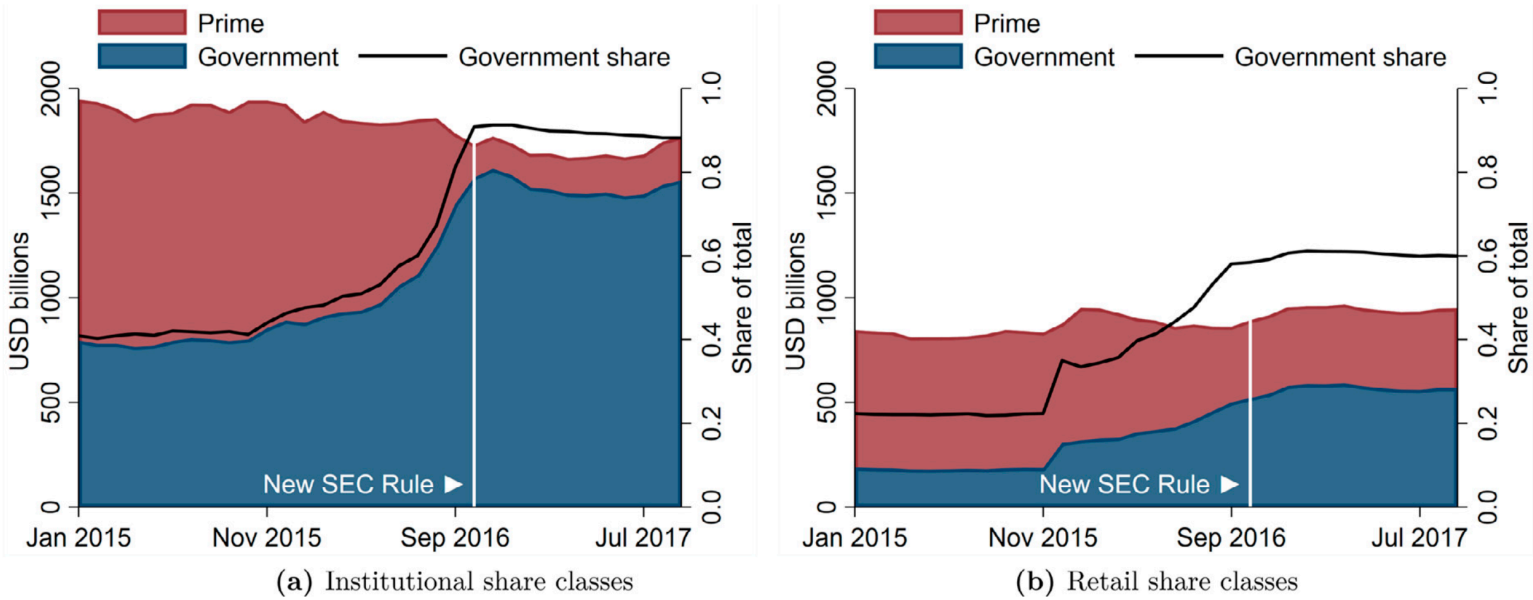


Fig. 2. Total net assets (TNA) by money market fund (MMF) type and investor type: institutional (left) vs. retail (right) investors. The solid black line is the share of government MMFs in the industry (right *y*-axis). The vertical white line represents the month of the implementation of the 2014 SEC reform (October 2016). Note that, for the classification of share classes into institutional and retail, we use the iMoneyNet data set; since the iMoneyNet data set only covers a subsample of the whole MMF industry (see Section 2), the sums of institutional and retail TNA in these charts are slightly smaller than the totals reported in Fig. 1(a). (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

Contribution

- Define feature of money-like assets, information insensitivity
- Estimate the premium for money-likeness even assets supplied by the private sector
    - By exploiting a exogenous change (SEC Reform)

Methodology

- Difference-in-Difference
    - Treatment: Prime MMF
    - Control: Government MMF

Result 1: Premium for Money-Likeness

$$y_{ijkt} = \alpha_{ijk} + \mu_{jt} + \gamma_1 \times \text{Prime}_k \times 1_{t \geq \text{Nov. 2015}} + \gamma_2 \times \text{Prime}_k \times 1_{t \geq \text{Oct. 2016}} + \gamma_3 \times \text{Inst}_j \times \text{Prime}_k \times 1_{t \geq \text{Nov. 2015}} + \gamma_4 \times \text{Inst}_j \times \text{Prime}_k \times 1_{t \geq \text{Oct. 2016}} + \varepsilon_{ijkt},$$

- y_{ijkt}: W.Avg Net Yield of MMF
  - $k \in \{prime(1),\ government(0)\}$
  - $j \in \{inst,\ retail\}$: Share classes
  - i: Family = Same investment bank
  - t: Month
    - $1_{t \geq Nov.\ 2015}$: ***started to react***
    - $1_{t \geq Oct.\ 2016}$: the ***regulation onward***

Table 4
The premium for money-likeness: regression analysis.

Net yield_{ijkt} is the weighted average net yield of family i's share classes of type j (institutional or retail) in MMFs of type k (prime or government) in month t. Prime_k is a dummy for k ="prime." Inst_j is a dummy for j ="institutional." $1_{t \geq \text{Nov. 2015}}$ is a dummy for November 2015 onward and $1_{t \geq \text{Oct. 2016}}$ is a dummy for October 2016 onward. All regressions include fixed effects for the interaction of family, MMF-type, and class-type; and fixed effects for the interaction of class-type and time. Column 1 reports the results for the unbalanced panel of MMF families active in any month from January 2015 to September 2017. Column 2 reports the results for the balanced panel of families continuously active from January 2015 to September 2017. Column 3 reports the results for the unbalanced panel of MMF families active in any month from November 2010 to September 2017. Standard errors (in parentheses) are HACSC robust from Driscoll and Kraay (1998) with 3-month lags. Significance values are computed according to critical values from fixed-b asymptotics derived by Vogelsang (2012). ***, **, and * represent 1%, 5%, and 10% statistical significance.

	Net yield_{ijkt}		
	(1)	(2)	(3)
$\text{Prime}_k \times 1_{t \geq \text{Nov. 2015}}$	0.55	2.00	0.87
	(0.75)	(1.18)	(0.75)
$\text{Prime}_k \times 1_{t \geq \text{Oct. 2016}}$	19.07***	17.99***	19.59***
	(2.10)	(2.24)	(2.02)
$\text{Inst}_j \times \text{Prime}_k \times 1_{t \geq \text{Nov. 2015}}$	4.64***	9.18***	4.17***
	(0.87)	(1.85)	(0.87)
$\text{Inst}_j \times \text{Prime}_k \times 1_{t \geq \text{Oct. 2016}}$	3.25	1.01	4.33***
	(1.78)	(1.78)	(1.33)
$\text{Prime}_k \times \sum_s 1_{t \geq s}$	19.62***	19.99***	20.46***
$\text{Inst}_j \times \text{Prime}_k \times \sum_s 1_{t \geq s}$	7.90***	10.19***	8.50***
Balanced		Yes	
Nov. 2010 - Sep. 2017			Yes
Adj. R^2	0.92	0.91	0.90
Adj. within R^2	0.26	0.29	0.26
Observations	5257	3333	15723

Result 1+: Value of Info. Insensitivity in Fee and Gross Yield

Increase in Net-Yield spread

- $\Longleftarrow$ Decrease in Fee
- $\Longleftarrow$ Increase in Gross-yield spread or both

Table 9
The premium for money-likeness: decomposition in fees and gross yields. Fee_{ijkt} ($\text{Gross yield}_{ijkt}$) is the weighted average fee (gross yield) of family i's share classes of type j (institutional or retail) in MMFs of type k (prime or government) in month t. Prime_k is a dummy for $k =$"prime." Inst_j is a dummy for $j =$"institutional." $1_{t \geq \text{Nov. 2015}}$ is a dummy for November 2015 onward and $1_{t \geq \text{Oct. 2016}}$ is a dummy for October 2016 onward. All regressions include fixed effects for the interaction of family, MMF-type, and class-type; and fixed effects for the interaction of class-type and time. Columns 1 and 4 report the results for the unbalanced panel of MMF families active in any month from January 2015 to September 2017. Columns 2 and 5 report the results for the balanced panel of families continuously active from January 2015 to September 2017. Columns 3 and 6 report the results for the unbalanced panel of MMF families active in any month from November 2010 to September 2017. Standard errors (in parentheses) are HACSC robust from Driscoll and Kraay (1998) with 3-month lags. Significance values are computed according to critical values from fixed-b asymptotics derived by Vogelsang (2012). ***, **, and * represent 1%, 5%, and 10% statistical significance.

	(1) Fees_{ijkt}	(2) Fees_{ijkt}	(3) Fees_{ijkt}	(4) $\text{Gross yield}_{ijkt}$	(5) $\text{Gross yield}_{ijkt}$	(6) $\text{Gross yield}_{ijkt}$
$\text{Prime}_k \times 1_{t \geq \text{Nov. 2015}}$	1.43	0.54	0.22	1.98	2.54	1.09
	(1.23)	(1.78)	(1.33)	(1.89)	(2.88)	(1.98)
$\text{Prime}_k \times 1_{t \geq \text{Oct. 2016}}$	−11.14**	−9.70**	−11.87***	7.92	8.29	7.72*
	(3.81)	(3.54)	(3.70)	(4.41)	(4.60)	(4.21)
$\text{Inst}_j \times \text{Prime}_k \times 1_{t \geq \text{Nov. 2015}}$	−5.30***	−9.56***	−4.59***	−0.66	−0.38	−0.42
	(1.27)	(2.20)	(1.32)	(1.28)	(2.58)	(1.22)
$\text{Inst}_j \times \text{Prime}_k \times 1_{t \geq \text{Oct. 2016}}$	2.91	4.84	2.52	6.17	5.86	6.85**
	(2.95)	(3.04)	(2.65)	(3.31)	(3.75)	(3.13)
$\text{Prime}_k \times \sum_s 1_{t \geq s}$	−9.71**	−9.17**	−11.65***	9.91**	10.83**	8.81**
$\text{Inst}_j \times \text{Prime}_k \times \sum_s 1_{t \geq s}$	−2.39	−4.71	−2.07	5.51	5.48	6.43*
Balanced		Yes			Yes	
Nov. 2010 - Sep. 2017			Yes			Yes
Adj. R^2	0.83	0.80	0.82	0.98	0.98	0.97
Adj. within R^2	0.08	0.10	0.09	0.22	0.28	0.13
Observations	5257	3333	15723	5257	3333	15723

Result 2: Elasticity of Substitution b/w Prime & Gov MMF

MMF Investor's Relative Demand for Prime vs Gov MMF

$$\log(q_{it}^P/q_{it}^G) = \alpha + \delta_0 1_{t\geq \text{Oct. 2016}} + \delta_1 \log(p_{it}^P/p_{it}^G) + \delta_2 1_{t\geq \text{Oct. 2016}} \times \log(p_{it}^P/p_{it}^G) + \varepsilon_{it},$$

- q: TNA(total net asset) of the Funds
  - from diff of yield Δy:
    - treat MMF share as zero coupon bond \$1 face value $p = \frac{1}{1+y}$
- p: W.Avg Prices
  - Log form means $Spread_{it}$

Result 2: Elasticity of Substitution b/w Prime & Gov MMF

2LSR

- To instrument for the time-varying endogenous relative price
- Use familiy specialization in prime MMFs from a pre-sample period
  - MMF Specialization: how concentrated an MMF family's business

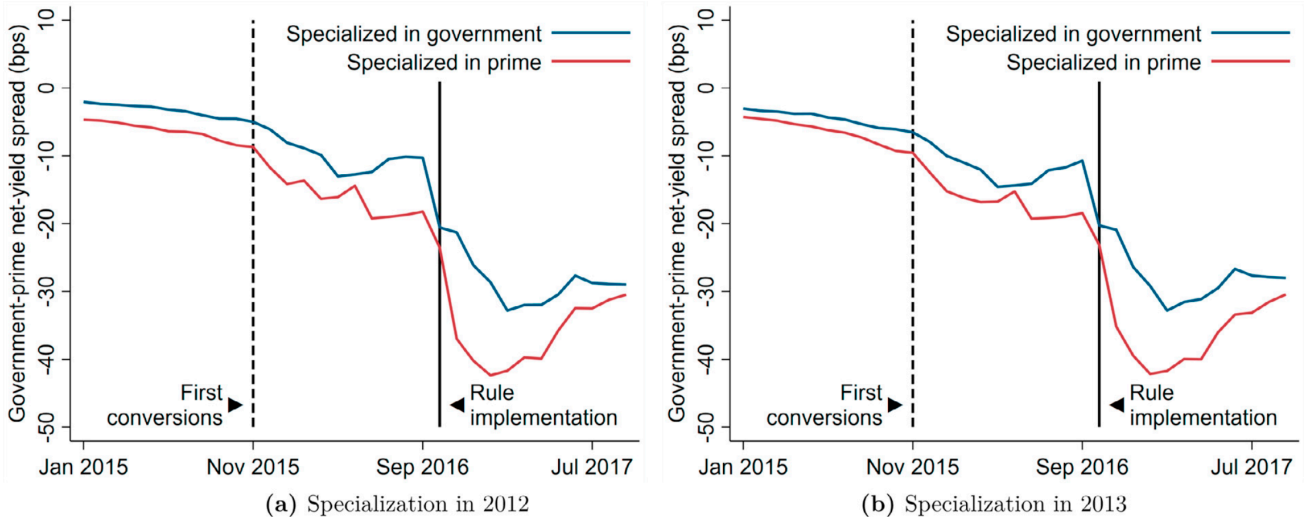


Fig. 7. Net-yield spread between government and prime money market funds (MMFs) by family specialization. The sample is all MMF families that have both government and prime institutional funds in any month from January 2015 to September 2017. Specialization in the prime MMF sector is measured the share of a family's prime MMF business in the family's total MMF business in 2012 (left panel) and in 2013 (right panel). The blue line is the net-yield spread of families more specialized in government MMFs (i.e., in the bottom 33% of the prime-share distribution); the red line is the net-yield spread of families more specialized in prime MMFs (i.e., in the top 33% of the distribution). (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

Result 2: Elasticity of Substitution b/w Prime & Gov MMF

Table 11
The Relative Demand Function of Institutional Investors for Prime versus Government Money Market Funds (MMFs): a Regression Analysis. $\log(q^P_{it}/q^G_{it})$ is the log ratio of the TNA of prime and government institutional MMF share classes of family i in month t; $\log(p^P_{it}/p^G_{it})$ is measured as the spread between the (value-weighted) net yield of government and prime institutional classes of family i in month t; $1_{t\geq \text{Oct. 2016}}$ is a dummy for October 2016 onward. The panel is the unbalanced panel of MMF families with both prime and government institutional classes in any month of the regression sample. The table reports the estimates of the second stage of a two-stage least square regression that uses a family's specialization in the prime MMF business and its interaction with $1_{t\geq \text{Oct. 2016}}$ as instruments for the family's Spread_{it} and $\text{Spread}_{it} \times 1_{t\geq \text{Oct. 2016}}$ (the first stage is reported in Appendix E). A family's specialization in prime MMFs is measured as the share of prime MMFs in the family's total MMF business. In Columns 1 and 2, the sample is January 2015–September 2017 excluding the transition period November 2015–October 2016, and family specialization is measured using data from 2013 and 2012, respectively. In Column 3, the sample is January 2012–September 2017 excluding the transition period, and family specialization is measured using data from 2011. Columns 4 and 5 replicate Columns 1 and 2 but include the transition period. Columns 6 and 7 replicate Columns 1 and 2 but exclude Treasury MMFs. Standard errors (in parentheses) are HACSC robust from Driscoll and Kraay (1998) with 3-month lags. Significance values are computed according to critical values from fixed-b asymptotics derived by Vogelsang (2012). ***, **, and * represent 1%, 5%, and 10% statistical significance.

	$\log(q^P_{it}/q^G_{it})$						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Spread_{it}	−0.51***	−0.42***	−0.29***	−0.29***	−0.24***	−0.36***	−0.34***
	(0.04)	(0.03)	(0.07)	(0.06)	(0.05)	(0.04)	(0.04)
$\text{Spread}_{it} \times 1_{t\geq \text{Oct. 2016}}$	0.40***	0.32***	0.17*	0.17**	0.14*	0.23**	0.23**
	(0.05)	(0.05)	(0.08)	(0.07)	(0.06)	(0.07)	(0.06)
$1_{t\geq \text{Oct. 2016}}$	−4.28***	−4.30***	−5.57***	−4.08***	−4.08***	−5.63**	−4.99***
	(1.12)	(1.08)	(1.32)	(1.11)	(1.08)	(1.68)	(1.31)
Instrument	$\text{Share}_{i,2013}$	$\text{Share}_{i,2012}$	$\text{Share}_{i,2011}$	$\text{Share}_{i,2013}$	$\text{Share}_{i,2012}$	$\text{Share}_{i,2013}$	$\text{Share}_{i,2012}$
Long sample			Yes				
With transition				Yes	Yes		
No Treasury funds						Yes	Yes
CD F-statistic	19.0	23.3	69.9	16.7	19.2	16.6	22.6
Observations	491	491	1634	775	775	459	459

Fin.