Do Central Bank Interventions Limit the Market Discipline from Short-Term Debt?

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The role of central bank intervention in a liquidity crisis

- European financial sector was hit by common asset shock in summer of 2011, with credit downgrade of 2 largest peripheral Eurozone countries (Italy and Spain).
- Exposure of European banks to short-term debt and sudden withdrawals of U.S. money market funds created elevated funding liquidity risk.
- ECB intervened substantially using non-standard measures (LTRO, OMT). These measures were designed to address funding liquidity risk, so that banks could continue intermediate industrial firms functions.
- Did ECB interventions limit the market discipline from U.S. MMF? More broadly, are ECB interventions effective?

ECB interventions

2 types of interventions: **providing liquidity against collateral** (LTRO) vs. **asset purchases** (OMT)

1. 3-year Long-Term Refinancing Operations (LTRO)
   - LTRO 1: ECB allotted EUR 489 billion to 523 banks - Dec 2011
   - LTRO 2: EUR 530 billion to 800 banks - March 2012
   - "haircut subsidy" but higher interest rate than prevailing market rates
2. Outright Monetary Transactions (OMT) - Sept 2012
   - following the "whatever it takes" speech (July 2012)
   - ECB can purchase unlimited amounts of gvt bonds with a maturity of 1 to 3 years

Effectiveness of ECB interventions: supporting the banks vs. supporting the market

1. Supporting the banks: providing liquidity against collateral (LOLR)
   - post LTRO, home bias increases
   - transfer of risky assets from non-GIIPS to GIIPS banks
   - LOLR money goes to risky illiquid assets (Acharya and Tuckman, 2014)
   - shift downside risk from a sovereign crisis to the ECB (Hoshi and Kashyap (2014); Drechsler, Drechsel, Marques, and Schnabl (2014))

2. Supporting the market: asset purchases (BOLR)
   - reduction of market discipline: private short-term debt flows to risky banks
   - reduction of fire sales externalities: increasing bond prices increases willingness to sell (improves market liquidity)

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To answer this question

- We investigate overall impact on bank performance linking ECB interventions to government bond, equity, and CDS prices in an event study.
- We study European banks access to U.S. MMF using data on
  - the investments of 416 U.S. MMFs at 63 European banks from Nov 2010 until Aug 2014 (iMoneyNet)
  - Balance sheet and market data (stock prices, CDS) of European banks (SNL, Bloomberg)
  - Sovereign bond holdings of European banks disclosed in stress tests (European Banking Authority)

Summary of results

1. LTRO
    - **no reduction in sovereign risk**
    - temporary reduction of solvency risk and funding pressure
    - moral hazard increased (rotation of svg bond portfolio)
    - run of U.S. MMFs from Eurozone banks intensified
2. OMT
    - **significant reduction in sovereign risk**
    - reduction of risk of fire sales
    - permanent reversal of private funding flows to Eurozone banks
3. Market discipline after ECB interventions
    - weakened through private funding flows
    - reinforced through maturities and yields of new investments

Outline

1. Sovereign risk
2. Solvency risk
3. U.S. MMF flows
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Cum. abnormal svg bond returns around ECB interventions

ECB actions reduced the flight-to-quality in German bunds, and reduced bond yields of the peripheral countries.

Cumulative abnormal sovereign bond returns for all 10-year GIIPS bonds and German bunds:

		CAR of Sovereign Bond Portfolio		
		Spain	**Italy**	**Germany**
LTRO 1	[-2;+2]	0.007	0.019	**-0.015*****
		(.468)	(1.343)	(-2.916)
	[-1;+1]	-0.008	0.006	**-0.015*****
		(-0.552)	(.329)	(-3.211)
	[-1;0]	0.002	0.010	**-0.013*****
		(.151)	(.398)	(-7.585)
Draghi speech	[-2;+2]	**0.08*****	0.022	**-0.024*****
		(6.171)	(.905)	(-6.449)
	[-1;+1]	**0.055*****	**0.033*****	**-0.016*****
		(4.943)	(2.4)	(-7.370)
	[-1;0]	**0.035*****	**0.026*****	**-0.009*****
		(3.314)	(2.625)	(-8.129)
OMT	[-2;+2]	**0.108*****	**0.047*****	**-0.018*****
		(4.413)	(2.474)	(-2.490)
	[-1;+1]	**0.075*****	**0.044*****	**-0.014*****
		(3.298)	(6.88)	(-2.777)
	[-1;0]	**0.048***	**0.031*****	**-0.012*****
		(1.842)	(4.714)	(-2.096)

Cum. abnormal svg CDS changes around ECB interventions

ECB actions reduced the risk of the peripheral countries.

Cumulative abnormal sovereign 5-yr CDS changes:

		CAR of 5-yr Sovereign CDS		
		Spain	**Italy**	**Germany**
LTRO 1	[-2;+2]	-9.577	**-38.498****	-2.641
(Dec 2011)		(-0.552)	(-2.217)	(-0.344)
	[-1;+1]	7.846	-13.703	-1.010
		(0.640)	(-1.106)	(-0.186)
	[-1;0]	4.211	-3.725	0.850
		(0.486)	(-0.425)	(0.222)
Draghi speech	[-2;+2]	**-82.585*****	**-52.304****	**-9.097****
(July 2012)		(-3.871)	(-2.346)	(-2.047)
	[-1;+1]	**-52.91*****	**-39.795****	-3.214
		(-3.503)	(-2.525)	(-1.021)
	[-1;0]	**-23.178****	**-21.645***	-2.252
		(-2.170)	(-1.942)	(-1.012)
OMT	[-2;+2]	**-61.869*****	**-42.857***	1.013
(Sept 2012)		(-2.750)	(-1.866)	(0.226)
	[-1;+1]	**-71.439*****	**-48.713*****	0.574
		(-4.487)	(-2.994)	(0.181)
	[-1;0]	**-46.429*****	**-31.09*****	-0.151
		(-4.124)	(-2.702)	(-0.067)

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Sovereign risk and bank risk evolution (avg. 5-yr CDS)

IIPS Euro nonGIIPS nonEuro

750
500
250

LTRO1
LTRO2
Draghi speech
OMT

2011 2012 2013

GIIPS banks Euro nonGIIPS banks nonEuro banks

600
400
200

2011 2012 2013

Cum. abnormal bank CDS changes ar. ECB interventions

Significant reduction of bank risk around ECB interventions. LTRO 1 has an impact only on 3-yr CDS spreads.

Average cumulative abnormal CDS changes (ACAR) for all publicly traded European banks that participated in the EBA stress tests:

		Average CAR of bank CDS	
		5-year CDS	3-year CDS
LTRO 1	[-2;+2]	-7.611	**-7.576****
(Dec 2011)		(-1.356)	(-2.269)
	[-1;+1]	-8.209	**-8.224****
		(0.144)	(-2.468)
	[-1;0]	-8.476	**-8.508****
		(0.132)	(-2.553)
Draghi speech	[-2;+2]	**-11.288*****	**-12.137*****
(July 2012)		(-3.759)	(-4.566)
	[-1;+1]	**-8.058*****	**-8.523*****
		(-2.688)	(-3.212)
	[-1;0]	-1.359	-1.539
		(-0.453)	(-0.580)
OMT	[-2;+2]	**-20.733*****	**-21.821*****
(Sept 2012)		(-8.728)	(-9.222)
	[-1;+1]	**-11.316*****	**-11.855*****
		(-4.769)	(-5.015)
	[-1;0]	-3.431	-3.700
		(-1.446)	(-1.566)

Sovereign bond holdings

Post LTRO: transfer of GIIPS svg bonds from non-GIIPS banks (-20 EUR bn) to GIIPS banks (+55 EUR bn).

Change in sovereign bond holdings (EUR bn) for all publicly traded European banks that participated in the EBA stress tests:

	Change in home exposure			Change in GIIPS exposure	
	GIIPS	Italy	Spain	Euro nonGIIPS	nonEuro
March-Dec '10	31	19	1	-50	16
Dec'10-Sept'11	-2	-8	8	-40	-11
Sept'11-Dec'11	-15	-8	-2	-20	-7
Dec'11-June'12 (post LTRO)	**55**	**36**	**13**	**-14**	**-6**
June-Dec'12 (post OMT)	**12**	**14**	**-3**	**4**	**-1**
Dec'12-June'13	51	20	26	8	0
June'13-Dec'13	-55	-9	-19	-1	-1

Summary of event studies

1. After LTRO 1: No impact on GIIPS bond prices, no reduction in sovereign risk

   Banks:

   - Higher stock performance
   - Significant reduction of 3-yr bank CDS
   - Dec'11-June'12: increase in home exposure (55 EUR bn for GIIPS), reduction in GIIPS exposure of non-GIIPS banks (-20 EUR bn)

2. After OMT: significant increase in bond prices and significant reduction in CDS of Italy and Spain

   Banks:

   - Higher stock performance explained by GIIPS holdings
   - Significant reduction of 3-yr and 5-yr bank CDS
   - June-Dec'12: increase in home exposure (12 EUR bn for GIIPS)

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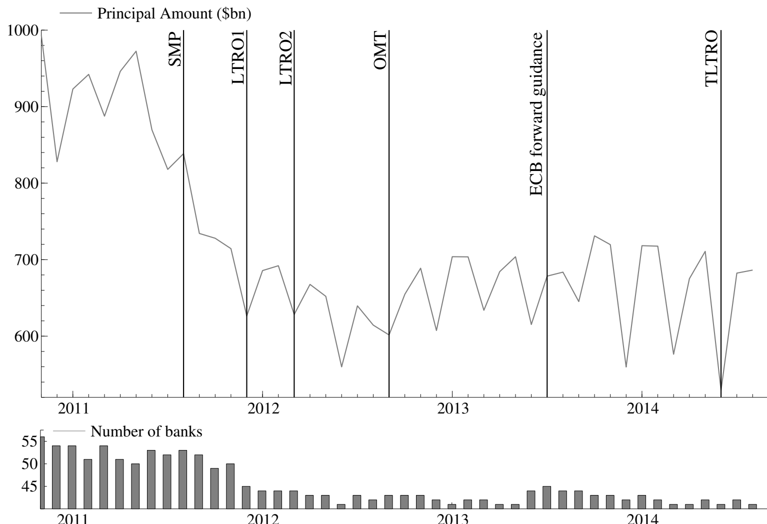
Market disciplining role of MMFs

- **Money market funds**: a pool of securities that generally provides higher returns than interest-bearing bank accounts (SEC).
- Difference with deposits: MMF not insured by FDIC $\rightarrow$ disciplining role on banks
- "**Market discipline** should reduce the bank manager moral hazard problem of ex-cessive risk taking by making the bank pay the actual cost of its risk taking" (Freixas and Rochet, 2008).
- ECB interventions impairs market discipline: no market discipline if banks cannot fail (Bliss and Flannery, 2002), no market discipline if there is regulatory forebearance (Rochet, 2004)
- "Monetary policy is no free lunch": trade-off between cost of bank runs and market discipline (Diamond and Rajan, 2001).

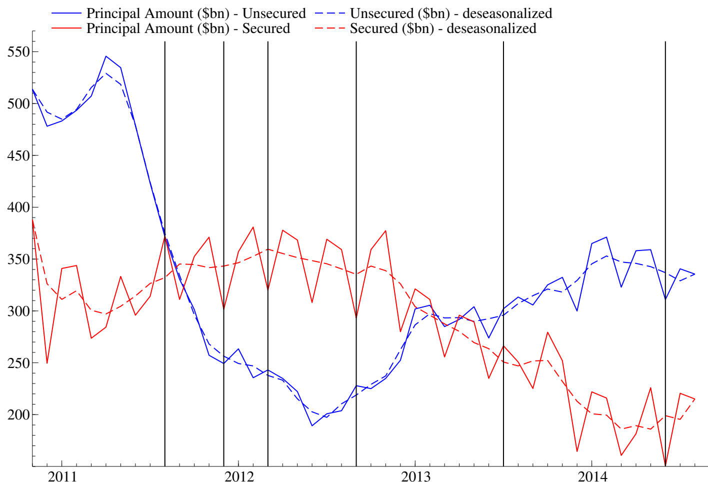
U.S. MMF investments at European banks

MMF investments at European banks decreased from 972 USD bn to 626 USD bn from May 11 until Dec 11.



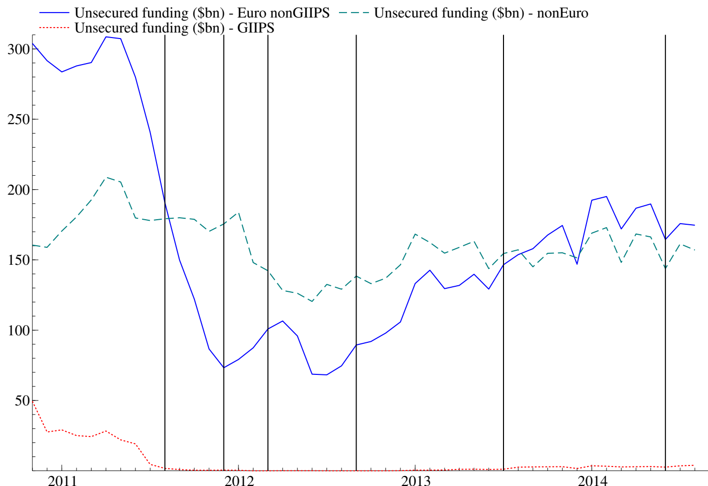
The “run” on unsecured funding

A “run” appears on unsecured funding starting in April 2011, then unsecured funding starts flowing back in summer 2012.
The trend in secured funding is reversed.



Unsecured funding in GIIPS, Eurozone, and non-Eurozone

- Eurozone banks lose access to unsecured funding during the crisis.
- Permanent reversal of fund flows to Eurozone banks after Draghi speech.



The "run" in USD unsecured funding triggers other ST funding outflows ...

"US MMF have been traditionally a key source of short-term USD funding for banks across Europe but in 2011 they were the first investor groups to withdraw as the crisis in the eurozone escalated." (FT, February 28, 2013)

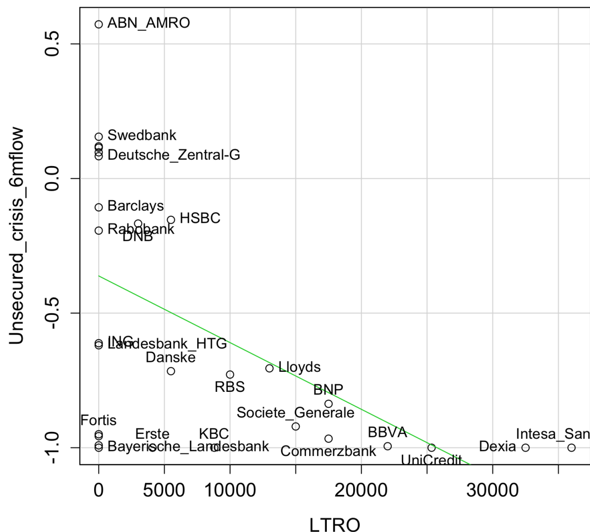
Panel A: U.S. MMF flows and short-term debt securities flows

	1-year debt flow at EU-28 banks			
MMF unsecured flow (t-1)	**0.081***			**0.107****
	(0.046)			(0.050)
MMF secured flow (t-1)		0.039		0.089
		(0.090)		(0.091)
2-year debt flow (t-1)			-0.835**	-0.824**
			(0.321)	(0.315)
AR	0.002	0.030	0.356*	0.292
	(0.102)	(0.131)	(0.209)	(0.202)
Constant	-0.264	-0.285	-0.517	-0.365
	(0.321)	(0.344)	(0.329)	(0.293)

Sample: 2011 (2) – 2014 (9)

... and triggers public interventions

Unsecured US MMF outflows during the crisis predict the probability of receiving LTRO funding, as well as the amount of LTRO funding received.



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MMFs return to risky banks following ECB interventions

Unsecured funding inflows at risky banks following the OMT comes from their exposure to GIIPS sovereign debt.

	Unsecured			Secured		
CDS, pre-crisis	-0.065***		-0.071***	-0.019		0.002
CDS, crisis	-0.168***		-0.101**	-0.070		0.009
CDS, after LTRO	-0.024		-0.020	0.009*		0.007
CDS, after OMT	**0.022****		0.014	**0.019*****		**0.020*****
GIIPSexp, pre-crisis		-0.346	0.522		-9.915***	-9.883
GIIPSexp, crisis		-4.903***	-3.267**		-17.432*	-17.694**
GIIPSexp, after LTRO		-2.047	-1.508		**3.116*****	**2.461****
GIIPSexp, after OMT		**1.631*****	1.044		2.601*	0.842
pre-crisis	0.041**	-0.032	0.040	0.020	0.094*	0.092**
crisis	0.101***	-0.050**	0.055	0.070	0.150**	0.141
after LTRO	0.054	0.010	0.052	-0.019*	-0.012	-0.025**
after OMT	-0.025***	0.003	-0.016	-0.035***	-0.012	-0.042**
AR	0.534***	0.543***	0.522***	0.451***	0.345***	0.339***

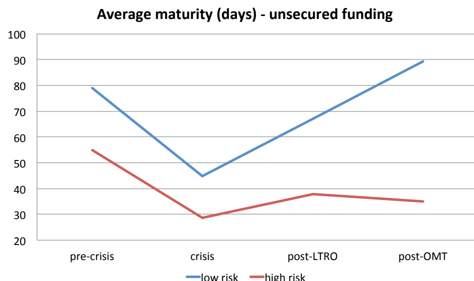
***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

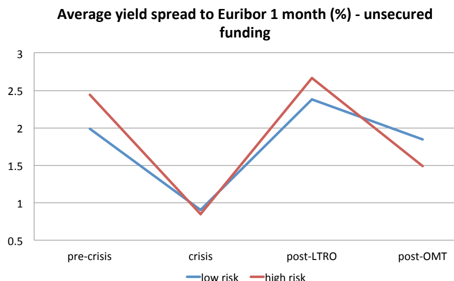
Maturity increases for low risk banks following ECB interventions

After ECB interventions: maturities diverge between high and low risk banks, but yield spreads converge.

- Low risk bank are rewarded by longer maturities without a corresponding increase in yield spread
- Only short-term funding flows back to risky banks

Average maturity and yield spread of new securities:





Summary

ECB interventions reduce overall bank funding pressure, drive abnormal stock returns, increase home bias...

- LTRO has no impact on GIIPS bond prices,
- while OMT is associated with increasing GIIPS bond prices

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