Did ECB Liquidity Injections Help The Real Economy?

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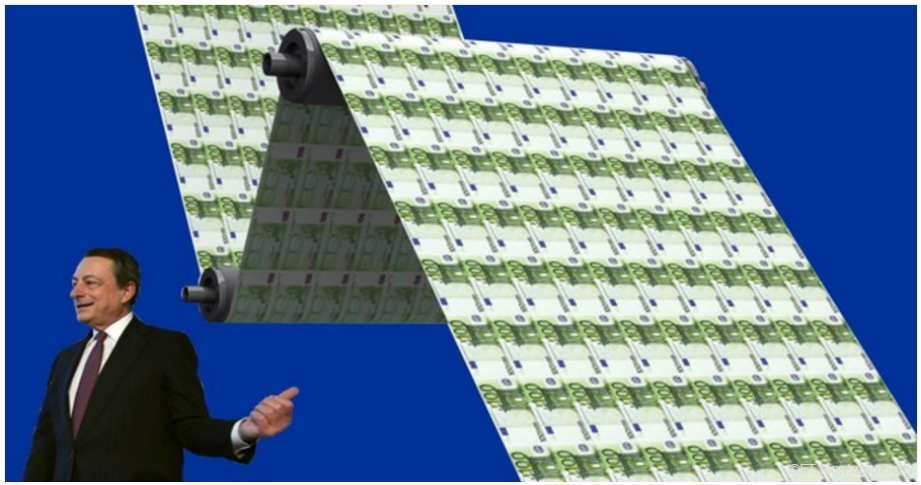
- Mario Draghi: ECB programme was effective



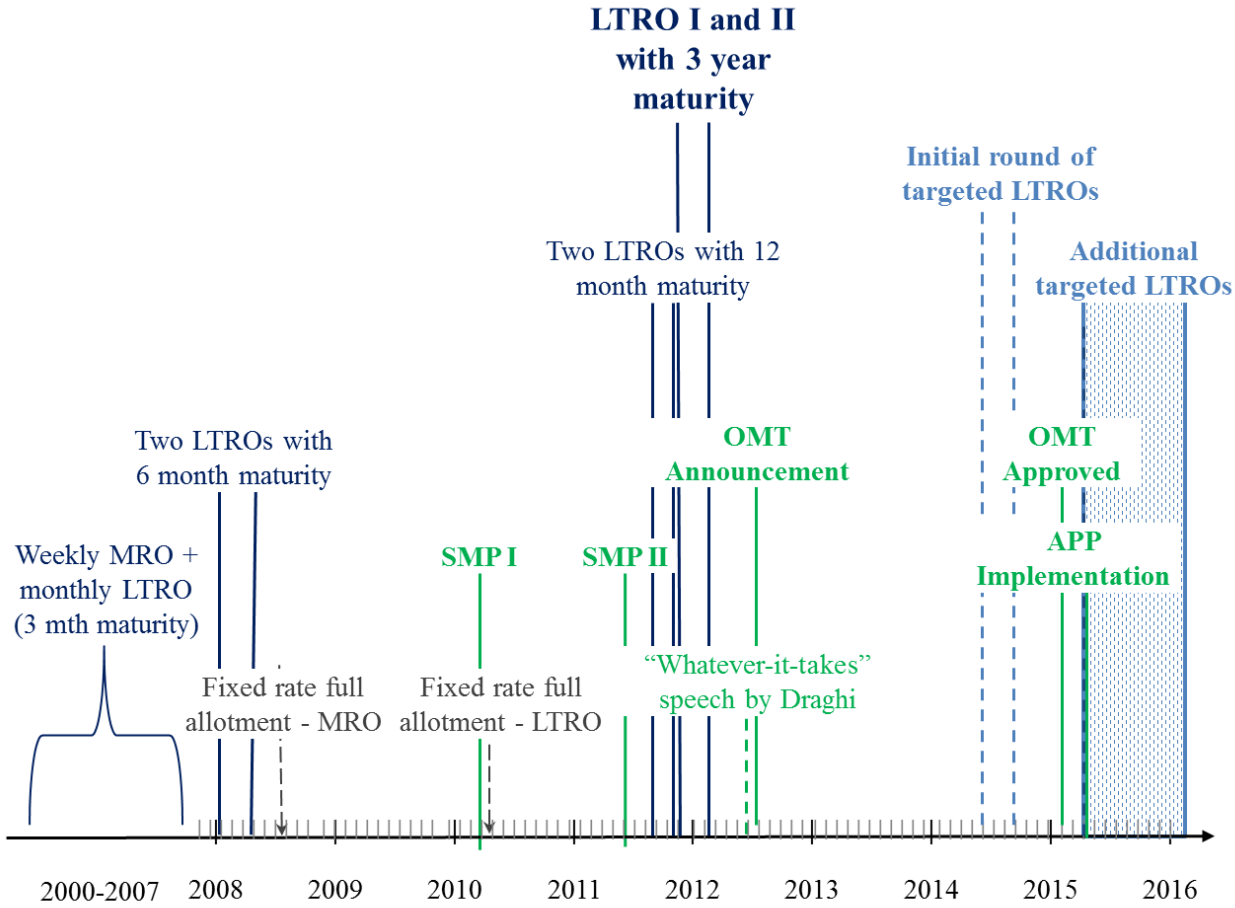
"I would say that our accommodative monetary policy is being passed through to the rest of the economy"

- Cheap credit and low interest rates environment
- Many companies say it is still too early to spend!

"There is no stimulation from cheap money to invest more," says Kurt Bock, chief executive of BASF, the German chemical group. "We orientate [our spending] towards growth prospects...and in Europe those growth prospects are modest."

Source: Financial Times September 7, 2015

ECBs' Unconventional Monetary Policies



Longer-term Refinancing Operations (LTROs)

- Three year funds at low interest rates for Eurozone banks
- Banks bid against each other to access pre-defined liquidity (auctions)
- Two rounds: December 2011 (LTRO I) and February 2012 (LTRO II)

Our Study: LTRO and Corporate Policies

- LTRO liquidity transmission from macro to micro?
- LTRO boosted corporate investment and employment?

$$LTRO \Rightarrow Bank\ liquidity \uparrow \Rightarrow Credit\ supply\ to\ firms \overset{?}{\Rightarrow} Corporate\ liquidity \uparrow \overset{?}{\Rightarrow} Corporate\ investment \uparrow$$

- We focus on corporate policies following LTRO
  - Cash holdings
  - Debt structure
  - Investment
  - Employment

Implications for the effectiveness of LTRO in boosting the real economy!

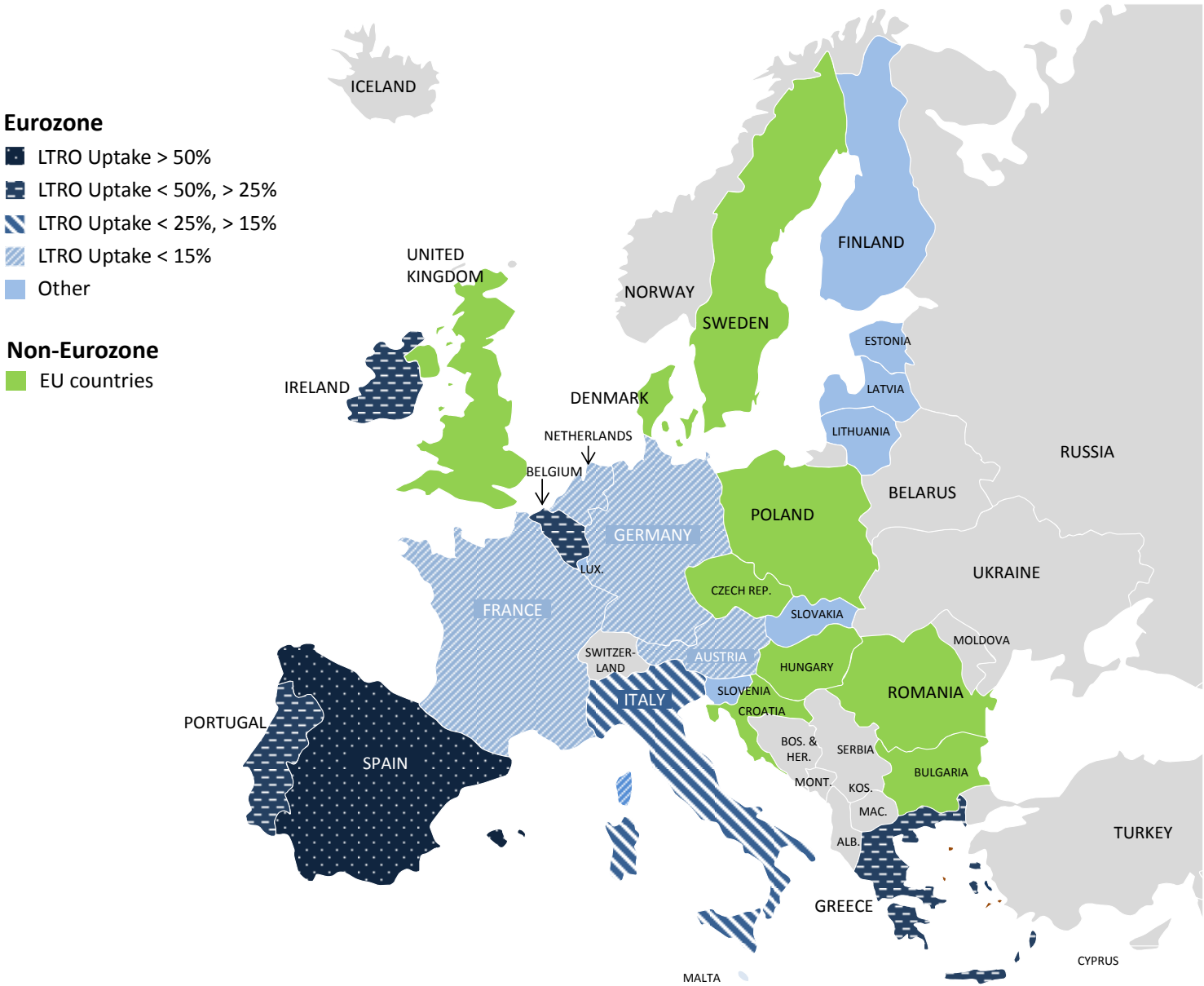
Findings and Contributions

- Findings:
  - Corporations hoard more cash after LTRO
    - Particularly, for firms with high bank debt reliance
  - No change/even decrease in investment and wages after LTRO
    - Particularly, for firms in countries with low exports, modest government debt and investment
- Contributions:
  - Cross-country analysis
  - Implications for the effect of LTRO on the real economy
- Existing studies
  - SMP
  - On banks/financial markets
  - Specific countries
  - Related work from U.S., e.g., Berger and Roman (2016 JFQA), Chakraborty, Goldstein, and MacKinlay (2016) etc.

Data

- Sample:
  - 21 Eurozone and non-Eurozone countries
  - 6,620 non-financial firms
  - Sample period: 2002-2014
- Corporate data:
  - Compustat Global
  - Capital IQ, S&P Global Credit Rating
- Sovereign data:
  - Markit CDS, The World Bank
  - ECB Statistic Warehouse
- Key measure: LTRO Uptake

LTRO Uptake in the Eurozone (as % of Sovereign Debt Outstanding)



LTRO Uptake in the Eurozone

- Main participants: GIIPS (periphery, 70-80 %), Germany, France (core, 20-30 %)

	LTRO I: Dec. 2011	**LTRO II**: Feb. 2012	Total	**LTRO Uptake**
	EUR billion	EUR billion	EUR billion	% of Gov. Debt
Country	(1)	(2)	(3)	(4)
Austria	3.66	7.83	11.49	4.82
Belgium	45.28	43.71	88.99	25.02
France	5.59	6.52	12.12	0.61
Germany	12.25	13.13	25.38	1.67
Greece	60.94		60.94	25.54
Ireland	21.91	17.62	39.52	22.33
Italy	172.08	128.11	300.20	15.92
Netherlands	8.86	1.96	10.81	2.58
Portugal	24.54	24.76	49.30	29.37
Spain	153.21	165.53	318.74	51.44
Total	508.32	409.17	917.49	

Variables and Methodology

- Corporate Policies: cash, leverage, investment, wages

$$CorporatePolicies = X\beta + \beta_1 LTRO\ Uptake + \epsilon \quad (1)$$

- LTRO Uptake:
  - Zero before LTRO
  - Country-specific uptake of liquidity, scaled by the government debt holdings
- Controls: cash flow, market-to-book ratio, size, rating, sovereign CDS etc.

LTRO and Corporate Cash Holdings

	Cash	Cash	
	Full sample	High Bank Debt	Low Bank Debt
LTRO Uptake	2.169***	2.609***	0.166
	(0.56)	(0.61)	(0.98)
Industry Sigma	0.021	0.102***	-0.016
	(0.01)	(0.02)	(0.02)
Cash Flow/Assets	0.001	0.000	0.004
	(0.00)	(0.00)	(0.00)
Market to Book	0.014***	0.015***	0.015***
	(0.00)	(0.00)	(0.00)
Size	-0.113	-0.714***	0.662***
	(0.07)	(0.10)	(0.12)
Net Working Capital	-0.124***	-0.064***	-0.188***
	(0.00)	(0.00)	(0.00)
Capital Expenditure	-0.121***	-0.037***	-0.190***
	(0.00)	(0.01)	(0.01)
Leverage	-0.167***	-0.140***	-0.199***
	(0.00)	(0.00)	(0.00)
Div. Dummy	0.665***	0.388***	0.752***
	(0.08)	(0.11)	(0.12)
R&D/Sales	0.015***	0.029***	0.019***
	(0.00)	(0.00)	(0.00)
Acquisition Activity	-0.023***	0.035***	-0.047***
	(0.00)	(0.01)	(0.01)
Rated	-0.048***	0.846	1.862***
	(0.01)	(0.52)	(0.37)
Sovereign Controls	Yes	Yes	Yes
Time and firm fixed effects	Yes	Yes	Yes
R-square	0.767	0.589	0.778
N	82053	30126	43777

- Firms hoarded more cash after LTRO, particularly for high bank debt firms!

LTRO and Debt Financing

	Leverage	Net Debt	Short-term Debt
LTRO Uptake	4.420***	3.554***	-0.012***
	(0.65)	(1.15)	(0.00)
Industry Sigma	0.112***	0.106***	0.001***
	(0.01)	(0.03)	(0.00)
Cash Flow/Assets	-0.059***	-0.123***	-0.000**
	(0.00)	(0.00)	(0.00)
Market to Book	0.008***	0.051***	0.000
	(0.00)	(0.00)	(0.00)
Size	2.640***	-3.271***	0.001
	(0.09)	(0.18)	(0.00)
Net Working Capital	-0.302***	-0.633***	-0.005***
	(0.00)	(0.00)	(0.00)
Capital Expenditure	-0.173***	-0.239***	-0.001***
	(0.01)	(0.01)	(0.00)
Cash	-0.228***	-0.549***	-0.002***
	(0.00)	(0.00)	(0.00)
Div. Dummy	-1.271***	-1.196***	-0.005***
	(0.09)	(0.18)	(0.00)
R&D/Sales	-0.013***	0.013*	-0.000***
	(0.00)	(0.00)	(0.00)
Acquisition Activity	0.064***	0.007	-0.000
	(0.01)	(0.01)	(0.00)
Rated	0.020	-1.234*	-0.002
	(0.34)	(0.65)	(0.00)
Sovereign Controls	Yes	Yes	Yes
Time and firm fixed effects	Yes	Yes	Yes
R-square	0.795	0.778	0.801
N	82053	64040	57166

- Firms issued more long-term debt following LTRO!

LTRO and Investment/Wage

- Financing frictions affect investment
  - Harford and Uysal (2014), Almeida and Campello (2007)
- Does the relaxed financing frictions after LTRO encourage investment?

	Investments	Wages
LTRO Uptake	-1.695***	-0.145
	(0.24)	(0.08)
Cash Flow/Assets	0.009***	-0.004***
	(0.00)	(0.00)
Market to Book	0.004***	0.000***
	(0.00)	(0.00)
Size	0.127***	0.675***
	(0.03)	(0.01)
Leverage	-0.016***	-0.001**
	(0.00)	(0.00)
Rated	0.332***	0.1
	(0.12)	(0.06)
Sovereign Controls	Yes	Yes
Time and firm fixed effects	Yes	Yes
R-square	0.568	0.787
N	86392	51997

- No change/even decrease in investment and wages after LTRO!

Connection with LTRO Participating Banks

- Bank-firm relationship data from Dealscan

	Cash	Leverage	Net Debt	Short Debt	Investment	Wages
	(1)	(2)	(3)	(4)	(5)	(6)
LTRO-Bank Relation						
x LTRO Uptake	-2.666**	3.253*	5.470**	0.013	-3.856***	0.207
	(1.27)	(1.73)	(2.38)	(0.01)	(1.03)	(0.28)
LTRO Uptake	4.796***	2.187	2.507	-0.041***	2.004**	-0.079
	(1.10)	(1.50)	(2.06)	(0.00)	(0.89)	(0.24)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
R-square	0.726	0.764	0.788	0.785	0.307	0.714
N	27247	27247	22108	20612	22194	17181

Why Was LTRO Ineffective In Boosting Investment?

- Firms consider various factors when making investment decisions
- LTRO encourage bank lending → increased credit supply→ invest more?
- However, there are other considerations:
  - Demand uncertainty
  - Fiscal policy: e.g. austerity
- They may impede the LTRO effects to the real economy!
- We construct proxies for these considerations and investigate their role!

LTRO Effect and Bank Debt Reliance

- If LTRO help, firms with high bank debt should benefit more!

	Investments		Wages	
	High Bank Debt	Low Bank Debt	High Bank Debt	Low Bank Debt
LTRO Uptake	-1.286***	-1.123***	-0.023	-0.199
	(0.37)	(0.33)	(0.10)	(0.15)
Corporate Controls	Yes	Yes	Yes	Yes
Sovereign Controls	Yes	Yes	Yes	Yes
Time and firm fixed effect	Yes	Yes	Yes	Yes
R-square	0.524	0.563	0.779	0.789
N	31262	45556	20201	28804

- No difference between firms that have a high/low bank debt reliance
- Wages seem to be unaffected by the stimulus (poor transmission)

LTRO Effect and Demand Uncertainty

- Demand uncertainty affects corporate policies!
  - Kahle and Stulz (2013)
- Firms in low-export countries may face greater demand uncertainty!
  - Particulary, during European crisis!
- Does demand uncertainty drive the decrease in investment?

	Investments	
	Low Export	High Export
LTRO Uptake	-1.504***	-0.411
	(0.26)	(0.59)
Corporate Controls	Yes	Yes
Sovereign Controls	Yes	Yes
Time and firm fixed effect	Yes	Yes
R-square	0.591	0.625
N	61206	25186

- Decrease in investment was significant for firms in countries with low export!

LTRO Effect and Fiscal Policy

- The interaction between monetary-fiscal policies

	Investments		Investments	
	High Gov. Debt	Low Gov. Debt	High Gov. Investment	Low Gov. Investment
	(1)	(2)	(3)	(4)
LTRO Uptake	2.113***	-1.346***	1.761	-1.780***
	(0.78)	(0.31)	(1.74)	(0.47)
Cash Flow/Assets	0.017***	0.005**	0.013***	0.007***
	(0.00)	(0.00)	(0.00)	(0.00)
Market to Book	0.004***	0.003***	0.004***	0.004***
	(0.00)	(0.00)	(0.00)	(0.00)
Size	0.146***	0.214***	-0.032	0.246***
	(0.05)	(0.04)	(0.05)	(0.04)
Leverage	-0.012***	-0.017***	-0.013***	-0.017***
	(0.00)	(0.00)	(0.00)	(0.00)
Rated	0.239	0.413**	0.179	0.431***
	(0.20)	(0.16)	(0.19)	(0.16)
Sovereign CDS	-0.334**	-17.803***	-1.452***	-0.421***
	(0.13)	(4.82)	(0.30)	(0.14)
Sovereign Export	-0.056***	0.008	-0.046***	-0.004
	(0.01)	(0.00)	(0.00)	(0.00)
Time fixed effect	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes
R-square	0.612	0.605	0.602	0.574
N	36552	49840	35980	46968

- Decrease in investment was driven by relatively "good" countries!

Eurozone vs. Non-Eurozone

	Cash	Cash	
	Full sample	High-Risk Sovereign	Low-Risk Sovereign
	(1)	(2)	(3)
LTRO Dummy x Non-Eurozone	-0.969***	0.020	-1.050***
	(0.11)	(0.21)	(0.15)
R-square	0.751	0.677	0.762
N	143731	35385	103686

	Investment	Investments	
	Full sample	High-Risk Sovereign	Low-Risk Sovereign
	(1)	(2)	(3)
LTRO Dummy x Non-Eurozone	-0.519***	-0.979***	-0.408***
	(0.05)	(0.11)	(0.06)
R-square	0.583	0.518	0.617
N	149798	37088	107834

	Wages	Wages	
	Full sample	High-Risk Sovereign	Low-Risk Sovereign
	(1)	(2)	(3)
LTRO Dummy x Non-Eurozone	-0.068***	-0.088***	-0.153***
	(0.02)	(0.03)	(0.02)
R-square	0.772	0.832	0.769
N	91049	19222	69184

- Without LTRO, it may be even worse!

Conclusion

1. Little knowledge about the effectiveness of ECB liquidity injections!
2. Focus in this paper: Corporate policies and real economy
   - Transmission channel:

     ECB liquidity to banks ↑ ⇒ credit supply shock ⇒ corporate liquidity ↑
3. Corporate response:
   - Precautionary cash holdings ↑
   - Investment and employment compensation ↓ / →
4. Main challenges for LTRO efficiency
   - On-going demand uncertainty
   - Conservative fiscal policies

The 3-year LTROs may have been ineffective in boosting Eurozone economies! But without LTRO, it may be even worse!