

Did ECB Liquidity Injections Help The Real Economy?



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ECB Balance Sheet

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EU CENTRAL BANK BALANCE SHEET

€3.249 Trillion as of July 15, 2016

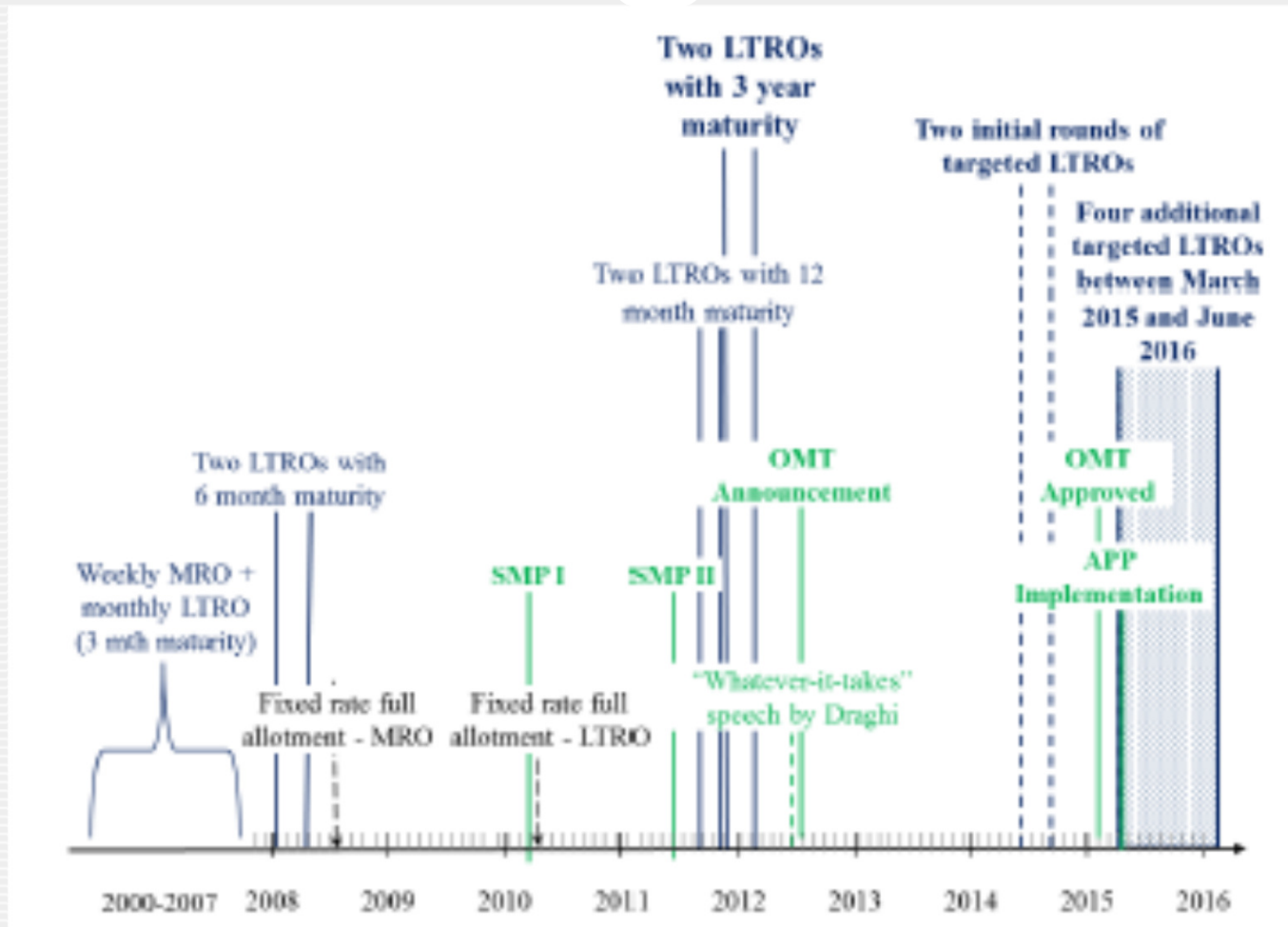


SOURCE: WWW.TRADINGECONOMICS.COM | EUROPEAN CENTR



Busy ECB

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Bank of England, Haldane et al., Oct. 2016



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- “[QE’s] effects on the yield curve, equity prices, corporate bond spreads and the exchange rate were **all large and significant.**”
- “What ultimately matters for monetary policy, however, is the impact of these asset purchases on **the economy.**”
- “In general, however, estimates are quite **uncertain.**”



Mario Draghi: “Monetary Policy Works!”

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- 2015/09/03 by Mario Draghi, President of the ECB: “I would say that our accommodative **monetary policy is being passed through to the rest of the economy**. ... **So we have evidence that our monetary policy works**. ...so we'll have to see whether these effects are transitory or are permanent.”
 - <https://www.ecb.europa.eu/press/pressconf/2015/html/is150903.en.html>
- 2016/07/21: “the Governing Council will continue to monitor economic and financial market developments very closely and to safeguard the pass-through of its accommodative monetary policy to the real economy. ... Let me now explain our **assessment** ... **Domestic demand** remains supported by the pass-through of our monetary policy measures to the real economy. Favorable financing conditions and improvements in corporate profitability continue to promote a recovery in **investment**.”
 - <https://www.ecb.europa.eu/press/pressconf/2016/html/is160721.en.html>



The Objection: “*Failure to Spark*”

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- 2015/09/08: *Financial Times*:
“Despite cheap credit and low interest rates, many companies say it is still too early to spend”
- Ralf Thomas, **CFO of Siemens**:
“Investments are driven far more by assumptions around growth, potential profit and technological barriers to entry, rather than movements in interest rates... *We don't decide to spend more just because interest rates are lower for a couple of years.*”



\$1.1 trillion

Cash piles at European non-financial companies, up 40% from 2008



Our Study: **LTRO** and Corporate Policies

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- Liquidity transmission from **macro to micro?**

ECB LTRO → Bank Liquidity → Credit Supply to Firms → Corporate Liquidity → Corporate Investment?

- Cash holdings
- Debt structure
- Investment
- Employment



Findings and Contributions

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- LTRO → more cash, but no increase in investment
 - Even if banks keep the funds for longer time
- Without LTRO, Eurozone could have fared worse
- Fiscal-monetary policy interaction is important
- Cross-country analysis
- Existing studies
 - securities markets programme (SMP) asset purchases
 - on banks/financial markets
 - specific countries, often one at a time
 - related work from U.S./U.K., e.g., Berger and Roman (2016 *JFQA*), Weale and Wieladek (2016 *JME*)
 - Negative credit supply shocks decrease investment, but little work on the effectiveness of **positive credit supply shocks**



Data

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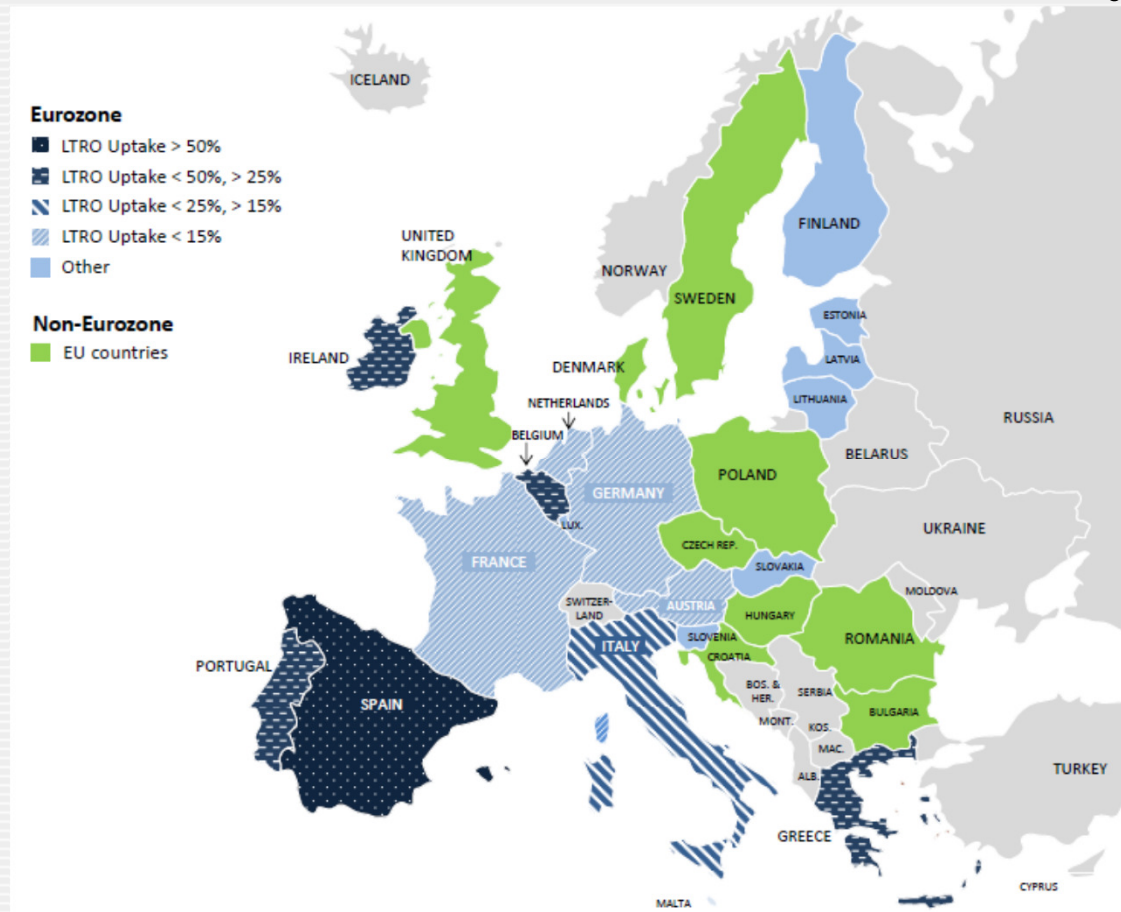
- 21 Eurozone and non-Eurozone countries
- 6,620 non-financial firms
- Sample period: 2002-2014
- Compustat Global; Capital IQ, S&P Ratings
- DealScan
- Markit CDS
- The World Bank
- Transparency International
- ECB Statistics Warehouse
- **Bloomberg**
- Key measure: *LTRO Uptake*



Longer-Term Refinancing Operations (LTRO)

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- LTRO I: December 2011; LTRO II: February 2012





LTRO Uptake

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Country	LTRO I: Dec. 2011	LTRO II: Feb. 2012	Total	LTRO Uptake
	EUR billion (1)	EUR billion (2)	EUR billion (3)	% of government debt (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 ^a		60.94 ^a	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	



LTRO and Corporate Cash Holdings

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	Cash	Cash	Cash
	(1)	High Bank Debt (2)	Low Bank Debt (3)
LTRO Uptake	2.169*** (0.56)	2.609*** (0.61)	0.166 (0.98)
Industry Sigma	0.021 (0.01)	0.102*** (0.02)	-0.016 (0.02)
Cash Flow/Assets	0.001 (0.00)	0.000 (0.00)	0.004 (0.00)
Market to Book	0.014*** (0.00)	0.015*** (0.00)	0.015*** (0.00)
Size	-0.113 (0.07)	-0.714*** (0.10)	0.662*** (0.12)



LTRO and Debt Financing

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	Leverage (1)	Net Debt (2)	Short-term Debt (3)
LTRO Uptake	4.420*** (0.65)	3.554*** (1.15)	-0.012*** (0.00)
Industry Sigma	0.112*** (0.01)	0.106*** (0.03)	0.001*** (0.00)
Cash Flow/Assets	-0.059*** (0.00)	-0.123*** (0.00)	-0.000** (0.00)
Market to Book	0.008*** (0.00)	0.051*** (0.00)	0.000 (0.00)
Size	2.640*** (0.09)	-3.271*** (0.18)	0.001 (0.00)



Credit Supply and Investment

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- Negative credit supply shocks \rightarrow investment \downarrow
 - Chava and Purnanandam (2011 JFE)
 - And many others
- Bond market access \rightarrow investment \uparrow
 - Harford and Uysal (2014 JFE)
- Liquidity injection \rightarrow investment?
 - Japan? China?



LTRO and Investment/Wage

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	Investments		Wages	
	(1)	(2)	(3)	(4)
LTRO Uptake	-1.695*** (0.24)	-1.350*** (0.25)	-0.145 (0.08)	-0.101 (0.09)
Cash Flow/Assets	0.009*** (0.00)	0.005** (0.00)	-0.004*** (0.00)	-0.007*** (0.00)
Market to Book	0.004*** (0.00)	0.004*** (0.00)	0.000*** (0.00)	0.000** (0.00)
Size	0.127*** (0.03)	0.218*** (0.04)	0.675*** (0.01)	0.365*** (0.02)
Time fixed effect	Yes	Yes	Yes	Yes
Firm fixed effect	Yes	Yes	Yes	Yes
R-square	0.568	0.597	0.787	0.790
N	86392	64635	51997	47910



Firm Operating Environment

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	Investments		Investments	
	High Competition (1)	Low Competition (2)	High Corp. Tax (3)	Low Corp. Tax (4)
LTRO Uptake	-1.575*** (0.27)	-1.324*** (0.43)	-1.188*** (0.29)	-2.644*** (0.76)
Cash Flow/Assets	0.010*** (0.00)	-0.000 (0.00)	0.005*** (0.00)	0.025*** (0.00)
Market to Book	0.003*** (0.00)	0.005*** (0.00)	0.004*** (0.00)	0.004*** (0.00)
Size	0.302*** (0.04)	0.472*** (0.06)	0.041 (0.03)	0.351*** (0.07)



Connection with LTRO Participating Banks

	Cash (1)	Leverage (2)	Net Debt (3)	Short Debt (4)	Investment (5)	Wages (6)
LTRO Uptake	3.242*** (1.01)	3.004** (1.40)	3.113 (1.93)	-0.029*** (0.00)	1.772** (0.81)	-0.063 (0.22)
LTRO-Bank Relation x LTRO Uptake	-1.828 (1.18)	2.229 (1.63)	4.652** (2.25)	0.012 (0.01)	-3.736*** (0.94)	0.131 (0.26)
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	0.727	0.767	0.785	0.786	0.316	0.715
N	30420	30420	24742	23064	24715	19091

=1 if the firm has borrowed from a participating bank in the past five years

With banking relationship



Other Analysis

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- 2008-2014 period
- Large versus small firms
- Bank-level LTRO uptake

	Cash (1)	Leverage (2)	Net Debt (3)	Short Debt (4)	Investment (5)	Wages (6)
Log(LTRO Bank Uptake)	0.070*** (0.02)	0.098*** (0.03)	0.172*** (0.04)	-0.000* (0.00)	-0.017 (0.01)	0.003 (0.00)
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	0.728	0.765	0.786	0.782	0.304	0.717
N	26692	26692	21597	20118	21671	16691



Why Investments Not Increasing?

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- Demand
- “counterfactual analysis”
- Policy interactions: fiscal vs. monetary



Domestic Demand

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	Investments	
	Low Export (1)	High Export (2)
LTRO Uptake	-1.504*** (0.26)	-0.411 (0.59)
Cash Flow/Assets	0.006*** (0.00)	0.009*** (0.00)
Market to Book	0.004*** (0.00)	0.004*** (0.00)
Size	-0.013 (0.04)	0.467*** (0.06)



Institutional Environment

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	Investments		Investments	
	High Corruption (1)	Low Corruption (2)	High Gov. Debt (3)	Low Gov. Debt (4)
LTRO Uptake	2.515 (2.67)	-1.909*** (0.25)	2.113*** (0.78)	-1.346*** (0.31)
Cash Flow/Assets	0.034*** (0.00)	0.008*** (0.00)	0.017*** (0.00)	0.005** (0.00)
Market to Book	0.003*** (0.00)	0.004*** (0.00)	0.004*** (0.00)	0.003*** (0.00)
Size	0.320*** (0.10)	0.111*** (0.03)	0.146*** (0.05)	0.214*** (0.04)



Eurozone vs. Non-Eurozone (“counterfactual”)

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- Even though non-Eurozone was not subject to LTRO directly, they have their own interventions
- 2016/08/04: the **Bank of England**’s Monetary Policy Committee voted to introduce a package of measures to support growth and achieve a sustainable return of inflation to the target:
 - a 25bp cut in Bank Rate to 0.25%;
 - a new Term Funding Scheme to reinforce the pass-through of the cut in Bank Rate;
 - the purchase of up to £10bn of UK corporate bonds, financed by the creation of central bank reserves;
 - an expansion of UK government bond purchases by £60bn to £435bn, also financed by the creation of central bank reserves.



Eurozone vs. Non-Eurozone

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	Cash	Cash	Cash
	Full sample	High-Risk Sovereign	Low-Risk Sovereign
	(1)	(2)	(3)
LTRO Dummy x Non-Eurozone	-0.969*** (0.11)	0.020 (0.21)	-1.050*** (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*** (0.05)	-0.979*** (0.11)	-0.408*** (0.06)
R-square	0.583	0.518	0.617
N	149798	37088	107834
	Wages	Wages	Wages
	Full sample	High-Risk Sovereign	Low-Risk Sovereign
	(1)	(2)	(3)
LTRO Dummy x Non-Eurozone	-0.068*** (0.02)	-0.088*** (0.03)	-0.153*** (0.02)
R-square	0.772	0.832	0.769
N	91049	19222	69184



LTRO and Investment

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- Did LTRO cause investment reduction?
- When would LTRO be most effective?



LTRO and Investment/Wage: Bank Dependence

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	Investments		Wages	
	High Bank Debt (1)	Low Bank Debt (2)	High Bank Debt (3)	Low Bank Debt (4)
LTRO Uptake	-1.286*** (0.37)	-1.123*** (0.33)	-0.023 (0.10)	-0.199 (0.15)
Cash Flow/Assets	0.015*** (0.00)	0.007*** (0.00)	-0.006*** (0.00)	-0.004*** (0.00)
Market to Book	0.007*** (0.00)	0.004*** (0.00)	0.000 (0.00)	0.000*** (0.00)
Size	0.184*** (0.06)	0.087** (0.04)	0.712*** (0.02)	0.668*** (0.02)



Bank LTRO Uptake

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- Similar results when we use bank-level LTRO uptake measure instead of country-level:

	<u>Investments</u> (1)	<u>Wages</u> (2)
LTRO-Bank Uptake	-0.532*** (0.11)	0.020 (0.05)



LTRO Repayment

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Panel A: Low Early LTRO Repayment

	Cash (1)	Leverage (2)	Net Debt (3)	Short-term Debt (4)	Investments (5)	Wages (6)
LTRO-Bank Uptake	8.194*** (1.82)	19.685*** (3.01)	17.435*** (3.78)	0.024 (0.01)	-0.695 (1.06)	-0.097 (0.26)
R-square	0.634	0.739	0.739	0.809	0.544	0.834
N	4845	4845	4053	3867	5116	2988

Panel B: Medium Early LTRO Repayment

	Cash (1)	Leverage (2)	Net Debt (3)	Short-term Debt (4)	Investments (5)	Wages (6)
LTRO-Bank Uptake	-0.908*** (0.22)	-0.536 (0.33)	0.194 (0.45)	-0.012*** (0.00)	-0.528*** (0.11)	0.007 (0.06)
R-square	0.768	0.777	0.810	0.791	0.640	0.681
N	17032	17032	13573	12828	17883	11246

Panel C: High Early LTRO Repayment

	Cash (1)	Leverage (2)	Net Debt (3)	Short-term Debt (4)	Investments (5)	Wages (6)
LTRO-Bank Uptake	15.915 (9.96)	-11.308 (11.4)	-8.542 (14.3)	-0.121 (0.07)	9.938** (3.95)	1.398 (2.07)
R-square	0.717	0.766	0.783	0.737	0.572	0.774
N	9116	9116	7675	6931	9506	5433



Fiscal vs. Monetary Policies

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- “If countries don’t tackle **fiscal problems**, monetary policy will become **utterly irrelevant**”
—former Federal Reserve Chairman Alan Greenspan, 2015/09/04

- “Monetary policy has exhausted its influence, that is why we are so keen on **tax arrangements that support investment**”



—Scott Morrison, Treasurer of Australia, 2016/10/30



Run Out of Magic?

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- 2016/09/08, Mario Draghi: “there are **limits to monetary policy**”
 - “we have numbers showing **the impact of our monetary policy on growth** and inflation over the forecast horizon. I think – but I should check – because I don't remember them exactly – I think it's 0.5% over the forecast horizon as far as growth is concerned, and I think it's 0.3% as far as inflation. Or – but we'll have to check that. Let me do this. I'll check and let you know after. Or it's 0.3% and 0.5% – it's either – over the forecast horizon, from now. I think we should be able to give you full figures in a moment.”
 - “It's an accumulated upward impact on GDP growth of 0.6% over the projection horizon”
- “... elected governments that have the money should be spending more ... to start and grow a business.”
- “... it is now up to **governments** to break out of the vicious circle”



Fiscal-Monetary Policy Interactions

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Dixit and Lambertini (2003 *AER*):

- “[fiscal and monetary policy interactions] can lead to very different macroeconomic outcomes than those predicted by the analysis of one policy in isolation”

The heterogeneity in Eurozone fiscal policies provides a good setting for analysis!



Role of Fiscal Policies

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	Investments			Investments	
	Increased Corporate Tax (1)	Unchanged Corporate Tax (2)	Decreased Corporate Tax (3)	Increased Gov. Investment (4)	Decreased Gov. Investment (5)
LTRO Uptake	-8.425*** (1.31)	-1.630*** (0.31)	25.052** (9.80)	2.249*** (0.70)	-1.825*** (0.29)
Cash Flow/Assets	0.012*** (0.00)	0.006*** (0.00)	0.021*** (0.00)	0.018*** (0.00)	0.003* (0.00)
Market to Book	0.004*** (0.00)	0.004*** (0.00)	0.005*** (0.00)	0.004*** (0.00)	0.004*** (0.00)
Size	-0.259*** (0.05)	0.273*** (0.04)	0.268*** (0.08)	-0.048 (0.05)	0.255*** (0.04)
Leverage	-0.017*** (0.00)	-0.016*** (0.00)	-0.011*** (0.00)	-0.015*** (0.00)	-0.017*** (0.00)
Rated	0.242 (0.18)	0.429*** (0.16)	-0.651 (0.48)	0.185 (0.19)	0.405** (0.15)
Sov. CDS	-9.047** (3.51)	-2.994 (2.88)	-0.663*** (0.16)	-0.476*** (0.11)	-3.838* (2.07)
Sov. Export	0.204*** (0.05)	-0.007 (0.00)	-0.045*** (0.01)	-0.134*** (0.01)	-0.008 (0.00)



Role of Fiscal Policies

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- Bank-level LTRO uptake

	Investments			Investments	
	Increased Corp. Tax (1)	Unchanged Corp. Tax (2)	Decreased Corp. Tax (3)	Increased Gov. Investment (4)	Decreased Gov. Investment (5)
LTRO-Bank Uptake	0.182 (0.16)	-1.039*** (0.16)	7.916* (4.38)	-0.402*** (0.14)	-0.495** (0.24)
<i>R</i> -square	0.665	0.578	0.609	0.608	0.605
<i>N</i>	9013	17486	6006	13897	18608



Summary and Conclusions

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- Cash holdings of Eurozone firms increase after **LTRO**
- But investments do not increase with LTRO
- **Monetary transmission does not guarantee growth**
- Caveat: non-Eurozone of EU fared even worse
 - LTRO might have halted the deterioration of investment
- Early **repayment** is associated with more investment
- May need the support of **fiscal policies** to spark corporate investments
- Negative credit supply shocks decrease investments, but liquidity injections may not boost investment