Introduction	Data	Bank Health	Bank Lending	Real Effects	Distortions	Conclusion	Backup

Whatever it takes: The Real Effects of Unconventional Monetary Policy

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• Mario Draghi stated on 26 July 2012, during a conference in London:

"Within our mandate, the ECB is ready to do whatever it takes to preserve the euro. And believe me, it will be enough."

• On 21 November 2014, Mario Draghi reflected on the ECB's policy by saying:

"Nevertheless, these positive developments in the financial sphere have not transferred fully into the economic sphere. The economic situation in the euro area remains difficult. The euro area exited recession in the second quarter of 2013, but underlying growth momentum remains weak. Unemployment is only falling very slowly. And confidence in our overall economic prospects is fragile and easily disrupted, feeding into low investment."



• Buying a theoretically unlimited amount of government bonds with one to three years maturity in secondary markets



- Krishnamurthy et al. (2015) and Szczerbowicz et al. (2015) show OMT announcements led to a relatively strong decrease for Italian and Spanish government bond yields
- As of today, OMT program has still not been activated

Introduction 00●0	Data 00	Bank Health 0000	Bank Lending 000000000	Real Effects	Distortions 000000	Conclusion 0	Backup
Contribu	ution						

- Did the OMT announcement affect banks? And how?
 - Periphery country banks benefited significantly due to their large holdings of GIIPS sovereign debt
 - Gains on sovereign debt improved equity capitalization of periphery country banks: indirect (backdoor) recapitalization
 - Indirect recapitalization measure allows central banks to target recapitalization to banks holding troublesome assets
 - Does not allow them to tailor the amount of recapitalization to a bank's specific capital needs
- Did the OMT announcement impact bank lending?
 - Capital gains led to increase in loan supply mostly to below median quality borrowers (only at the intensive margin)
 - Driven by zombie lending of banks that regained some lending capacity due to OMT announcement, but remained weakly-capitalized

Introduction 000●	Data 00	Bank Health 0000	Bank Lending 000000000	Real Effects	Distortions 000000	Conclusion 0	Backup
Contribu	ution						

- Did OMT announcement lead to financial and real effects?
 - Non-zombie firms that benefit from increased loan supply significantly increase their cash holdings
 - No direct effect of increased lending on real economic activity (employment, investment)
- What happened in the "longer run"?
 - Presence of zombie firms depresses
 - Employment growth (on average 4.1pp lower, up to 13.5pp lower for industries with a strong increase in the fraction of zombie firms)
 - Investment (on average 11.5%, up to 38% of capital lower) of healthy firms in the same industry
 - Banks with a high fraction of zombie lending have significantly higher non-performing loans to gross loans ratio starting in 2014 (16% vs 7.5% for low zombie lending banks)
 - Zombie firms default significantly more starting in 2015

Introduction	Data ●0	Bank Health 0000	Bank Lending	Real Effects	Distortions 000000	Conclusion 0	Backup
Sample							

- Hand matched sample at the intersection of Amadeus and Dealscan for all EU countries and period 2009-2014
- Loans issued to 980 private borrowers by 49 lead banks
- Relevant OMT announcement dates (Krishnamurthy et al. (2014)):
 - July 26, 2012: Draghi's "whatever it takes" speech
 - August 2, 2012: Announcement to undertake outright monetary transactions in secondary, sovereign bond markets

• September 6, 2012: Release of technical details of the operations

Introduction 0000	Data 0●	Bank Health 0000	Bank Lending	Real Effects	Distortions 000000	Conclusion 0	Backup
Outline							

- **OMT** Announcement: Effect on Bank Health
- 2 Bank Lending
 - Overall Lending
 - 2 Zombie Lending
- Sinancial and Real Effects of Bank Lending Behavior

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O Zombie Distortions



• OMT program announcement has improved the equity capital of banks with large GIIPS sovereign debt holdings

"The effects of the narrowing of the BTP/Bund spread entailed an improvement in the market value of debt instruments with a relative positive net impact on the fair value reserve of Euro 855 mn [...]."

(UBI Banca annual report 2012)

• Total equity of UBI in December 2011 was Euro 9,837 mn

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• Gains amount to 8.6% of total equity

Introduction Data Bank Health October Bank Lending Real Effects Distortions Conclusion Backup October Bank Lending October Bank Lending

$$OMT$$
 windfall gain_{bj} = $rac{\Delta Value \ EU \ Sov. \ Debt_{bj}}{Total \ Equity_{bj}}$

• Gain on EU sovereign debt holdings as a fraction of a bank's total equity

	OMT windfall gain	GIIPS/Assets	CDS return
Non-GIIPS Banks	0.011	0.010	-0.23
			(-9.2)
GIIPS Banks	0.08	0.118	-0.96
			(-3.4)
<i>t</i> -test for difference	5.69	12.7	7.8

• Despite significant equity gains, some banks remain highly levered (leverage of 21 on average)



Figure: Evolution of Bank Run Index (Veronesi and Zingales (2010))



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Introduction 0000	Data 00	Bank Health 000●	Bank Lending	Real Effects	Distortions 000000	Conclusion 0	Backup
Outline							

- OMT Announcement: Effect on Bank Health
- Bank Lending
 - **0** Overall Lending
 - 2 Zombie Lending
- Sinancial and Real Effects of Bank Lending Behavior

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O Zombie Distortions





 Increase in lending only at the intensive margin (i.e., only to existing borrowers, not to new borrowers) and only towards low-quality borrowers

Introduction 0000	Data 00	Bank Health 0000	Bank Lending 0●0000000	Real Effects	Distortions 000000	Conclusion 0	Backup
Outline							

- OMT Announcement: Effect on Bank Health
- Bank Lending
 - Overall Lending
 - **2** Zombie Lending
- Sinancial and Real Effects of Bank Lending Behavior

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O Zombie Distortions

Introduction 0000	Data 00	Bank Health 0000	Bank Lending 00●000000	Real Effects	Distortions 000000	Conclusion 0	Backup
Zombie	Lend	ing					

"...the zombie problem is chiefly focused in the peripheries of Europe rather than the core. In Spain, Ireland, Portugal and Greece, banks have been reluctant to pull the plug on companies as it would have forced them to crystallise heavy losses."

Source: Financial Times: "Companies: The rise of the zombie"

- Similar to Caballero, Hoshi, and Kashyap (2008), and Giannetti and Simonov (2013) we identify zombie firms as firms that receive subsidizied credit (i.e., loans at very advantageous interest rate)
- Benchmark: interest expense that highest quality public borrower in non-GIIPS countries (AAA rating) pay in a given year
- Two approaches to determine benchmark:
 - Newly issued loans in Dealscan
 - Interest payments from Amadeus





- Percentage of zombie firms increases post-OMT announcement for both benchmarks
- Highest fraction in Italy and Spain (16% 19%)

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• Lowest fraction in Germany (around 4%)

Introduction 0000	Data 00	Bank Health 0000	Bank Lending 0000●0000	Real Effects	Distortions 000000	Conclusion 0	Backup
Compari	ison (of differer	nt firm gro	oups			

Panel A: Amadeus Benchmark				
	High Quality	Low Quality Non-Zombie	Zombie	Difference (3)-(4)
Total Assets (mn)	2290	1880	1530	350
Tangibility	0.540	0.650	0.582	(1.24) 0.068*** (4.54)
Int. Cov.	7.623	1.118	0.404	0.714***
Net Worth	0.257	0.195	0.167	(3.67) 0.028** (0.027)
EBITDA/Assets	0.117	0.050	0.036	(2.27) 0.014***
Leverage	0.581	0.654	0.695	(5.88) -0.041***
Loan Amount / Total Assets (%)	28.26	29.11	33.06	(-3.00) -3.95
Maturity (Months)	58.78	59.28	59.87	(-1.30) -0.59
Term Loan (%)	54.65	59.38	57.63	(-0.22) 1.75 (0.36)

- Zombie firms are significantly worse in terms of interest coverage ratio, net worth, and EBITDA/total assets
- No difference in other loan characteristics between zombie and non-zombie firms





- Increase in zombie loan volume in Italy as well as Spain and Portugal
- Increase more pronounced for Italian banks that are still weakly capitalized

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Introduction Data on Bank Health Bank Lending October Conclusion Backup October Conclusion Conclusion Backup October Conclusion Conclusion Backup October Conclusion Conclusion Backup October Conclusion Co

- Feltrinelli is a private Italian publishing company and operates bookstores throughout Italy
- Came under severe stress during the sovereign crisis
- La Repubblica wrote in 2013: "Feltrinelli announces solidarity contracts for 1,370 employees, for a period of one year. [...] this will allow to save up to 216,000 working hours. 2012 was a particularly difficult year [...] The company has recorded a contraction of net sales by 11% over the last two years. And 2013 is going to be just as critical."
- Receives a new loan from UniCredit and Intesa Sanpaolo after OMT, when its interest coverage ratio was -1.1
- The interest rate on its debt for 2015 was 1.3%, the corresponding benchmark rate was 1.4%
- The interest rate on its debt at time of pre OMT loan was 4.7% when benchmark rate was 2.0%

Introduction 0000	Data 00	Bank Health 0000	Bank Lending 0000000●0	Real Effects	Distortions 000000	Conclusion 0	Backup
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	(1)	(2)	(3)	(4)	(5)	(6)
	Δ Loans	ΔLoans	Δ Loans	Δ Loans	Loan Inc.	ΔLoans
	All Banks	All Banks	All Banks	All Banks	All banks	GIIPS Banks
OMT windfall gain*PostOMT	0.444***	0.450***	0.393***	0.414***	0.569***	0.587**
	(5.03)	(4.79)	(3.05)	(3.01)	(2.82)	(1.99)
OMT windfall gain*PostOMT*Zombie	-0.526***	-0.573***	-0.468***	-0.543***	-0.585**	-0.697**
	(-3.16)	(-2.74)	(-4.53)	(-2.75)	(-2.04)	(-2.55)
OMT windfall gain*PostOMT*Still Undercap	-0.405**	-0.460**	-0.431***	-0.433***	-0.560***	-0.663**
	(-2.13)	(-2.33)	(-2.75)	(-2.83)	(-2.78)	(-2.83)
OMT windfall gain*PostOMT*Still Undercap*Zombie	0.722***	0.701***	0.768***	0.756***	0.865**	0.998***
	(3.17)	(4.50)	(4.12)	(3.58)	(2.42)	(3.66)
R ²	0.011	0.111	0.726	0.759	0.695	0.834
Ν	13600	13600	13600	13600	13600	4280
Bank Level Controls	YES	YES	YES	YES	YES	YES
Bank Fixed Effects	YES	NO	YES	NO	NO	NO
Time Fixed Effects	YES	YES	NO	NO	NO	NO
FirmCluster-Bank Fixed Effects	NO	YES	NO	YES	YES	YES
FirmCluster-Time Fixed Effects	NO	NO	YES	YES	YES	YES

- Well capitalized banks: One SD higher OMT windfall gain increase loan volume to non-zombies by 2.5%
- High gain Banks that remain undercapitalized after OMT do not increase loan supply in general
- Only provide new loans to zombie firms (increase in loan volume of 1.1% for one SD higher OMT windfall gains)

Introduction 0000	Data 00	Bank Health 0000	Bank Lending 00000000●	Real Effects	Distortions 000000	Conclusion 0	Backup
Outline							

- OMT Announcement: Effect on Bank Health
- Bank Lending
 - Overall Lending
 - 2 Zombie Lending
- **③** Financial and Real Effects of Bank Lending Behavior

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Zombie Distortions

Introduction Data Bank Health Bank Lending Cool Social Effects Distortions Conclusion Backup Cool Social And Real Effects - Main Variable

- Compute the Average OMT windfall gain for all the banks that act as lead arranger in a given syndicate.
- Defined for firm *i* in country *j* in industry *h* at time *t* as:

 $\textit{Indirect OMT windfall gains}_{ijht} = \frac{\sum_{l \in L_{ijht}} \textit{Avg. OMT windfall gain_{ijh} \cdot \textit{Loan Amount}_{ijht}}{\textit{Total Loan Amount}_{iiht}}$

- L_{ijht} are all of the firm's loans outstanding at time t.
- Measures the benefit of a firm via bank relationships

$$y_{ijht+1} = \beta_1 \cdot \text{Indirect OMT windfall gains}_{ijh} \cdot \text{PostOMT}_t + \gamma \cdot X_{ijht} + \text{Firm}_{ijh} + \text{Industry}_h \cdot \text{Country}_j \cdot \text{Year}_{t+1} + u_{ijht+1}$$

- + ForeignBankCountry $_{k\neq j}$ · Year $_{t+1}$.
- Indicator variable PostOMT
 - Zero in fiscal years 2009 to 2011
 - Equal to one in fiscal years 2012 to 2014



Introduction	Data 00	Bank Health 0000	Bank Lending	Real Effects 0●0	Distortions 000000	Conclusion O	Backup
Financia	alan	l Real Ef	fects - 70	mhie			

Panel A: Zombie Lending - Amadeus Benchmark						
	Δ Cash	Δ Debt	Δ Debt- Δ Cash	Emp. Growth	CAPX	ROA
Indirect OMT windfall gains*PostOMT*Low IC	0.519**	0.557**	0.038	-0.418	-0.618	0.185
	(2.30)	(2.05)	(0.1)	(-0.98)	(-0.93)	(0.82)
Indirect OMT windfall gains*PostOMT*Low IC*Zombie	-0.384**	-0.028	0.356**	0.346	0.044	0.125
	(-2.00)	(-0.19)	(2.15)	(1.36)	(0.11)	(1.12)
	0.514	0.619		0.471	0.500	0.482
N	2856	3431		2773	3361	3405

• Non-zombie low quality firms use new loans to build up cash reserves (cash and leverage increase by the same amount)

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• Zombies save significantly less cash out of the increase in leverage

Introduction 0000	Data 00	Bank Health 0000	Bank Lending	Real Effects 00●	Distortions 000000	Conclusion 0	Backup
Outline							

- OMT Announcement: Effect on Bank Health
- Bank Lending
 - Overall Lending
 - 2 Zombie Lending
- Sinancial and Real Effects of Bank Lending Behavior

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4 Zombie Distortions

Introduction 0000	Data 00	Bank Health 0000	Bank Lending	Real Effects	Distortions ●00000	Conclusion 0	Backup
Zombie	Disto	ortions					



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- Investigate effect of rising fraction of zombie firms on healthy (non-zombie) firms in the same industry.
- Similar to Caballero, Hoshi, and Kashyap (2008), we run the following regression:

$$\begin{array}{lll} y_{ijht+1} & = & \beta_1 \cdot \textit{Non-Zombie}_{ijht} + \beta_2 \cdot \textit{Non-Zombie}_{ijht} \cdot \textit{Fraction Zombies}_{jht} \\ & + & \gamma \cdot X_{ijht} + \textit{Firm}_{ijh} + \textit{Industry}_h \cdot \textit{Country}_j \cdot \textit{Year}_{t+1} + u_{ijht+1} \end{array}$$

• The fraction of zombies is measured at the industry-country-year level using the universe of large and very large firms in Amadeus

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Graph

Introduction 0000	Data 00	Bank Health 0000	Bank Lending 000000000	Real Effects	Distortions 00●000	Conclusion 0	Backup
Industry	effec	ts on No	n-zombie	Firms -	Results		

Panel A: Amadeus Benchmark				
	(1)	(2)	(3)	(4)
	Interest	Emp. Growth	CAPX	Productivity
Industry Frac Zombie*Non-Zombie	0.026***	-0.005**	-0.014**	0.010**
2	(2.87)	(-2.29)	(-2.23)	(2.24)
\mathbb{R}^2_N	0.851 5792	0.512 5128	0.527 5858	0.931 5257
Eirm Level Controls Firm Fixed Effects Industry-Country-Year Fixed Effects	YES YES YES	YES YES YES	YES YES YES	YES YES YES

- Non-zombie firms in industries with a high fraction of zombie firms
 - have higher interest expenses
 - have lower employment growth rates
 - invest less
 - have higher productivity, since non-zombies primarily reduce investments in projects with low productivity

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• Effects driven by firms operating in competitive industries

Introduction 0000	Data 00	Bank Health 0000	Bank Lending	Real Effects	Distortions 000●00	Conclusion 0	Backup
Industry	effec	ts on No	n-zombie	Firms -	Results		

Panel A: Investn	nent			
Industry	Avg.	Δ Fraction	Investment	Investment
	Investment	Zombie	Loss	Years lost
	(% of Capital)		(% of Capital)	
Construction	9.58%	17.00pp	23.8%	2.5
Manufacturing	12.3%	5.40pp	7.6%	0.6
Trade	10.6%	12.29pp	17.2%	1.6
Service	12.5%	13.62pp	19.1%	1.5
Other	8.9%	3.82pp	5.4%	0.6
Panel B: Employ	/ment			
Industry	Avg. Emp.	Δ Fraction	Employment	
-	Growth	Zombie	Loss	
Construction	-2.26%	17.00pp	8.5pp	
Manufacturing	0.65%	5.40pp	2.7pp	
Trade	0.44%	12.29pp	6.1pp	
Service	-1.0%	13.62pp	6.8pp	
Other	-2.1%	3.82pp	1.9pp	





• "[...] Italian banks have Eur 200bn worth of non-performing loans of which Eur 85bn are not already written down, according to the Bank of Italy." (Source: Financial Times)





- Zombie firms initially default less
- Starting in 2015, defaults for zombie firms increase sharply, potentially as loans no longer rolled over

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Regression

Introduction 0000	Data 00	Bank Health 0000	Bank Lending	Real Effects	Distortions 000000	Conclusion •	Backup
Conclus	ion						

- OMT program announcement led to increase in bank health
- Banks with improved health increase credit supply to low quality borrower
- Partly driven by zombie lending
- Cash and leverage increase significantly almost one to one for non-zombie low quality firms
- Leverage increases by more for zombie low quality firms
- No significant increase in employment and investment
- Increasing fraction of zombie firms depresses investment and employment of high quality firms in the same industry
- Capital gains from OMT announcement not enough for some struggling banks



- To extend new loans banks also require liquidity, which they obtained mainly from three sources
 - Indirect recapitalization allows banks to restructure their asset portfolio, which helps to free-up liquidity needed to make new investments
 - OMT announcement improved the ability of banks from GIIPS countries to acquire funding from financial markets

Spain-based BBVA noted in its annual report of 2012: "[...] as a result of new measures adopted by the ECB with the outright monetary transactions (OMT), the long-term funding markets have performed better, enabling top-level financial institutions like BBVA to resort to them on a recurring basis for the issue of both senior debt and covered bonds."



- OMT announcement helped banks to free-up liquidity that they had acquired previously, e.g., under the LTRO program
- Banks had to use the liquidity obtained from the LTRO program to safeguard against the risk of massive deposit withdrawals by their customers upon negative events

"Some analysts estimated that banks would have lost up to 10% of their deposit base if Greece had left the Eurozone in 2012" (Source: "Europe Banks Dear a Flight", The Wall Street Journal, May 21, 2012)

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- Use the method used in Veronesi and Zingales (2010), which utilizes the term structure of CDS rates to estimate the probability of a bank run
- Compare conditional probability of bankruptcy in 1 year (P1) and the conditional probability of bankruptcy in 2 years given no default in year 1 (P2)
- Run index calculated as R = P(1) P(2)
- Positive R value is an indication that a bank is subject to a run

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Introduction	Data 00	Bank Health 0000	Bank Lending 000000000	Real Effects	Distortions 000000	Conclusion 0	Backup
Solvency	/ VS.	Liquidity	(4)				

	Δ Run Index	Δ Run Index	Δ Run Index	Δ Run Index
OMT windfall gains	-0.150***	-0.139***	-0.175***	-0.162***
	(-6.58)	(-3.85)	(-3.89)	(-2.51)
GIIPS Bank			0.002	0.002
			(0.65)	(0.44)
Ln(Total Assets)		0.001	. ,	0.000
		(0.59)		(0.39)
Tier 1 Ratio		0.000		0.000
		(0.09)		(0.02)
R2	0.607	0.610	0.613	0.613
N	30	30	30	30

• Dependent variable: Change in Run Index 6 months prior to 6 months after OMT

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Introduction 0000	Data 00	Bank Health 0000	Bank Lending	Real Effects	Distortions 000000	Conclusion 0	Backup
Syndica	tes						

- Our zombie classification requires syndicate to remain constant or become smaller
- Concern is that we identify relationship lending if low quality banks leave the syndicate
- Banks leaving the syndicate have a higher equity ratio than remaining banks
- Zombie syndicates have larger exposure to their firms and comprise of a higher fraction of undercapitalized banks

Panel A: Difference in Equity Ratio of syndicate members							
	Remaining Banks	Leaving Banks	Difference (t-statistic)				
Equity Ratio	5.13	6.02	0.89**				
			(-2.25)				
Panel C: Difference in Syndicates							
	Zombie Firms	Non-Zombie Firms	Difference (<i>t</i> -statistic)				
Loan exposure to equity (%)	0.765	0.482	0.283***				
			(6.158)				
Loan exposure to total loans (%)	2.129	1.428	0.767***				
			(3.553)				
Still undercap. banks in syndicate (%)	53.48	8.949	44.534***				
			(13.236)				

Introduction	Data 00	Bank Health 0000	Bank Lending	Real Effects	Distortions 000000	Conclusion O	Backup
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Benchmark Interest Rates



• Right Panel plots interest rate gap for firms that were non-zombies before OMT and became zombies after OMT

Back)

Introduction Data Bank Health Bank Lending Real Effects Distortions Conclusion Backup Zombie Lending due to Government Pressure? Image: Conclusion Conclu

• We check whether government owned banks engage in zombie lending

Panel A: Zombie Amadeus Benchmark						
	Δ Loans	∆ Loans	∆ Loans	Δ Loans	Loan Increase	Δ Loans
OMT windfall gain*PostOMT	0.437***	0.481***	0.422***	0.526***	0.768***	0.804*
	(4.58)	(5.11)	(3.58)	(4.24)	(5.01)	(2.00)
OMT windfall gain*PostOMT*Zombie	-0.512***	-0.559***	-0.479***	-0.468	-0.770**	-1.164***
	(-3.16)	(-2.86)	(-3.96)	(-1.65)	(-2.17)	(-5.81)
OMT windfall gain*PostOMT*Undercap	-0.388**	-0.462**	-0.464***	-0.540***	-0.778***	-0.837**
	(-2.24)	(-2.58)	(-3.01)	(-3.58)	(-5.24)	(-2.18)
OMT windfall gain*PostOMT*Undercap*Zombie	0.786***	0.713**	0.731***	0.757**	0.867***	1.152***
	(3.36)	(2.53)	(3.24)	(2.28)	(3.68)	(10.53)
OMT windfall gain*PostOMT*High Gov. Own.	-0.088	-0.058	-0.059	-0.083	-0.068	-0.016
	(-1.31)	(-0.77)	(-1.30)	(-1.29)	(-0.57)	(-0.29)
OMT windfall gain*PostOMT*High Gov. Own.*Zombie	0.072	0.166	0.011	0.040	0.109	0.073
	(0.94)	(1.24)	(0.33)	(0.22)	(1.01)	(0.56)
R2	0.011	0.111	0.726	0.760	0.695	0.842
N	13600	13600	13600	13600	13600	4280

Introduction Data Bank Health Bank Lending Real Effects Distortions Conclusion Backup Zombie Lending due to Government Pressure? Backup

• We check whether zombie firms have a higher government ownership, as governments might push banks to provide cheap loans to government owned firms

Panel G: Difference in Group of Firms (Amadeus Benchmark)							
	(1)	(2)	(3)	(4)			
	High-Quality	Low-Quality Non-Zombie	Zombie	Difference (2)-(3)			
Government Ownership (%)	2.84	2.36	2.82	-0.46			
				(-0.46)			
Panel H: Difference in Group	of Firms (Deals	scan Benchmark)					
Government Ownership (%)	2.84	2.33	3.17	-0.84			
				(-0.79)			

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• No differnce in government ownership of zombie and non-zombie firms

Introduction Data Bank Health Bank Lending Real Effects Distortions Conclusion Backup Zombie Lending due to Government Pressure? Backup

• We rerun zombie loan volume regressions excluding firms with positive government ownership

Panel A: Zombie Amadeus Benchmark								
	Δ Loans	Δ Loans	Δ Loans	Δ Loans	Loan Increase	Δ Loans	Δ Loans	Δ Loans
OMT windfall gain*PostOMT	0.454***	0.478***	0.380**	0.432***	0.585**	0.591*	0.315**	0.580*
	(3.64)	(3.51)	(2.66)	(2.76)	(2.33)	(1.97)	(2.65)	(2.38)
OMT windfall gain*PostOMT*Zombie	-0.518**	-0.542**	-0.490***	-0.490*	-0.612**	-0.673**	-0.549***	-0.662**
	(-2.24)	(-2.60)	(-2.75)	(-2.00)	(-2.31)	(-2.29)	(-5.25)	(-3.42)
OMT windfall gain*PostOMT*Undercap	-0.393*	-0.452*	-0.414**	-0.478**	-0.591***	-0.686**	-0.384*	-0.697*
	(-1.92)	(-1.98)	(-2.45)	(-2.59)	(-3.07)	(-2.55)	(-2.15)	(-2.31)
OMT windfall gain*PostOMT*Undercap*Zombie	0.677**	0.733***	0.752***	0.740***	0.906**	0.865**	0.738	1.066**
	(2.72)	(2.96)	(3.19)	(2.89)	(2.06)	(2.14)	(1.71)	(3.42)
R2	0.011	0.113	0.730	0.763	0.692	0.855	0.847	0.940
N	13117	13117	13117	13117	13117	4116	2803	1313

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ntroduction	Data 00	Dank Health	Dank Lending	Real Effects	Distortions		Васкир

OMT vs. EBA Recapitalization

	Δ Loans	Δ Loans	Δ Loans	Δ Loans	Loan Increase	Δ Loans
OMT windfall gain*PostOMT	0.037	0.058	0.004	-0.008	-0.039	0.079
	(0.54)	(0.67)	(0.07)	(-0.10)	(-0.26)	(0.82)
OMT windfall gain*PostOMT*LowIC	0.247***	0.265***	0.219***	0.259***	0.372**	0.308**
	(3.65)	(3.50)	(3.27)	(3.09)	(2.13)	(3.09)
Equity Increase EBA*PostEBA	-0.049	-0.044	-0.017	-0.015	-0.043	0.008
	(-1.62)	(-1.26)	(-0.70)	(-0.62)	(-1.08)	(0.30)
Equity Increase EBA*PostEBA*LowIC	0.057	0.053	-0.033	-0.032	0.007	-0.067
	(1.44)	(1.18)	(-0.89)	(-0.85)	(0.12)	(-1.54)
R2	0.014	0.098	0.598	0.643	0.617	0.775
Ν	10879	10879	10879	10879	10879	4090

- Equity Increase from EBA recapitalization has no significant effect
- Banks met this requirement mainly by reducing their risk-weighted assets, as opposed to an increase in their equity capital (see Gropp, Mosk, Ongena, and Wix, 2016)



Debt Growth

---- Leverage Growth

---- Asset Growth





2009 2010 2011 2012 2013 2014 2011

High-IC

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Introduction 0000	Data 00	Bank Health 0000	Bank Lending	Real Effects	Distortions 000000	Conclusion 0	Backup
What ha	appen	is in the	"longer"	run? NP	Ls		

	ΔNPL	ΔNPL	ΔNPL	ΔNPL
High Zombie Lending Bank	0.090***	0.088***	0.088***	0.081***
	(4.87)	(4.69)	(4.60)	(3.63)
Log(Assets)		-0.004	-0.005	-0.005
		(-1.59)	(-1.73)	(-1.21)
Equity/Assets		. ,	-0.001***	-0.001**
			(-3.09)	(-2.45)
RWA/TA			. ,	0.049
				(1.41)
R^2	0.511	0.522	0.541	0.564
Ν	49	49	49	49
R ² N	0.511 49	0.522 49	0.541 49	0.564 49

• Dependent variable is the change in average NPLs after 2014 to the average NPLs before 2014



	Default	Default	Default
Low-IC (2012-14)	0.036***	0.033***	0.038***
	(3.15)	(3.55)	(2.66)
Zombie (2012-14)	-0.037***	-0.033***	-0.049**
	(-3.51)	(-2.93)	(-2.41)
Low-IC (2015-16)	`0.000´	`0.006´	`0.008 [´]
	(0.02)	(0.78)	(0.74)
Zombie (2015-16)	0.060**	0.051**	0.053**
· · · · ·	(1.97)	(1.99)	(1.97)
R^2	0.022	0.117	0.254
N	1915	1915	1915

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