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Fear the walking dead - zombie firms, spillovers and exit

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Banco de Portugal and NOVA SBE
Ciclo de seminários GPEARI/GEE
Lisboa - 19 April 2018
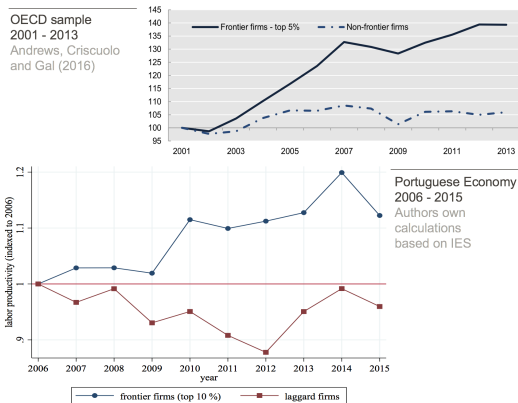
Motivation: productivity paradox

- Great technological advances

- Better-than-ever educated workforce and improved healthcare

- Participation in global value chains

Motivation: productivity paradox

- Structural headwinds such as aging and slowing global trade (Adler et al., 2017)

- Measurement issues (Adler et al., 2017 and Byrne et al., 2016)

- How disruptive are innovations? Gordon (2017) v. Brynjolfsson and McAfee (2014)

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Fear the walking dead - zombie firms, spillovers and exit

Motivation: productivity paradox - firm level

Figure: Widening productivity gap between the best and the rest

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Motivation: productivity paradox - firm level

Breakdown in diffusion mechanism

winner takes it all dynamic (e.g. Autor et al., 2017; Grullon et al., 2018); poor governance, increased short-termism, managerial limitations in absorbing ICT (e.g. Gutierrez and Phillipon, 2017; Pellegrino and Zingales, 2017)

Depressed creative destruction

increased misallocation of resources, across and within sectors (e.g. Gopinath et al., 2017; Dias et al., 2014); curtailed firm dynamics (Criscuolo et al., 2014; Decker et al., 2016); evergreening of loans (Duval et al., 2017; Acharya et al., 2017)

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Motivation: role of zombie firms

Zombie definition

- Subsidized credit: interest rate gap viv-a-vis firms with AAA-rating (Caballero et al., 2008)

- Operating income < Interest expenses 3 consecutive years, age > 10 years old (Adalet McGowan et al., 2017)

- ROA < 0, NetInv < 0, EBITDA to debt < 5% 2 consecutive years (Storz et al., 2017)

- ROA < Cost of Capital safest borrowers (3 years average), financial debt to assets > 40% (Schivardi et al., 2017)

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Intensive margin Reinforce existing results on spillovers and
resource allocation

Extensive margin Novel evidence on exit and restructuring

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Why Portugal?

- High zombie prevalence $+$ crisis

- Data coverage

- Largest drop in OECD insolvency indicator

- Cross-country regularities

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Firm level data

- IES (Informacao Empresarial Simplificada)

- 2006-2015

- Non-financial corporations (NACE Rev. 2, 10-83 exc. 64-66)

- Industry deflators at one digit level (source: *Statistics Portugal*)

- After data cleaning N=1 875 545 (343 180 firms)

Data

Figure: Zombie v. non-zombie ($\geq$ 10 years old)

Variable	Unit	Zombie	Non-Zombie
Total Workers	unit	23	15
Turnover	10^3 €	3.168	1.871
Tangible Assets	10^3 €	1.418	546
Intangible Assets	10^3 €	191	136
Firm Age	years	24	22
Labor Prod Deviation	%	- 57	19
No of Obs	unit	111.527	662.328

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RQ1: intensive margin - spillovers capital growth

Figure: Share of capital held by zombies, 2013 & 2015

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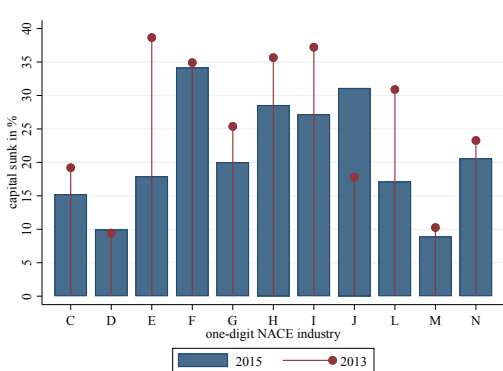
Public policy as possible remedy
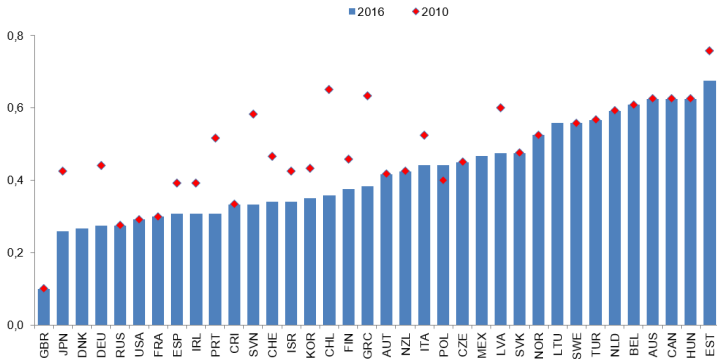
Insolvency Framework - Adalet McGowan et al. (2017)

- High barriers to exit foster zombie firm survival
- Insolvency indicator as measure
- Call for structural reforms
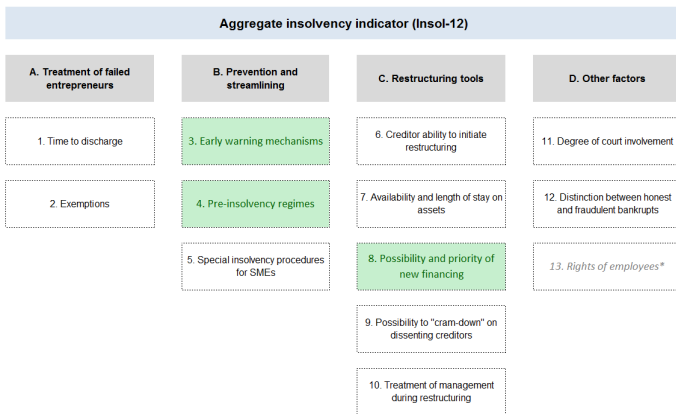
Weak banking sector health - Acharya et al. (2017)

- Bank forbearance

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OECD insolvency indicator: 2010 and 2016

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OECD insolvency indicator

The structure of the OECD insolvency indicator

Aggregate insolvency indicator (Insol-12)			
A. Treatment of failed entrepreneurs	**B. Prevention and streamlining**	**C. Restructuring tools**	**D. Other factors**
1. Time to discharge	3. Early warning mechanisms	6. Creditor ability to initiate restructuring	11. Degree of court involvement
2. Exemptions	4. Pre-insolvency regimes	7. Availability and length of stay on assets	12. Distinction between honest and fraudulent bankrupts
	5. Special insolvency procedures for SMEs	8. Possibility and priority of new financing	13. Rights of employees*
		9. Possibility to "cram-down" on dissenting creditors	
		10. Treatment of management during restructuring	

RQ3: exit and public policy

	(1) exit	(2) exit
L.zombie	0.056***	0.056***
	(0.007)	(0.007)
L.zombieexitbarriersUK	-0.001**	-0.001**
	(0.001)	(0.001)
Observations	535835	535835
Adjusted R^2	0.015	0.015
Industry-Year FE	yes	yes
Age and size controls	yes	yes
Turnover growth control	no	yes

Standard errors in parentheses

* $p < .10$, ** $p < .05$, *** $p < .01$

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RQ3: exit and public policy

- The recent reforms in the insolvency framework (-0.2) increased the differential of Z v. NZ exit rates by 0.8p.p., comparing one of the most exposed sectors (administrative activities) to one of the least exposed (machinery and equipment production)

- Fully moving to best practices (-0.3) would increase the differential further by 1p.p.

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RQ4: zombie restructuring/exit and public policy

	(1) restructure	(2) restructure	(3) exit	(4) exit
L.LaborProd	0.037**	0.039***	-0.029***	-0.030***
	(0.014)	(0.015)	(0.010)	(0.010)
LlaborprodLexitbarriersUK3	-0.002	-0.002	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)
Observations	32499	32499	33299	33299
Adjusted R^2	0.018	0.019	0.011	0.011
Industry-Year FE	yes	yes	yes	yes
Age and size controls	yes	yes	yes	yes
Turnover growth control	no	yes	no	yes

Standard errors in parentheses

* $p < .10$, ** $p < .05$, *** $p < .01$

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Conclusions

- High prevalence of zombies, which are less productive than healthy firms, depressed aggregate productivity

- Negative spillovers on firm level capital growth, depressed intra-sectorial reallocation

- Zombie positive selection but distortions prevail

- Role for public policy - lower exit barriers foster exit and restructuring