

Should We Fear the Walking Dead?

The Role of Zombie Firms for Productivity Developments in Portugal

Orador: Christian Osterhold - Nova School of Business & Economics

As opiniões expressas não refletem necessariamente as opiniões do GPEARI

A Economia Portuguesa: Ensaio sobre alterações estruturais
25 Janeiro 2018

1. Motivation

**The
Economist**

The productivity slowdown

Attack of the zombie firms



FT
FINANCIAL
TIMES

Beware the zombies sucking capital
away from others

**Bloomberg
Markets**

Zombie Nation: In Japan, Zero Public Companies Went Bust in 2016

By Jason Cienfield
April 4, 2017, 11:00 PM GMT+2

GROWTH AND PRODUCTIVITY

Zombie companies haunt the Canadian economy

live**mint**

Zombie companies stop productivity growth

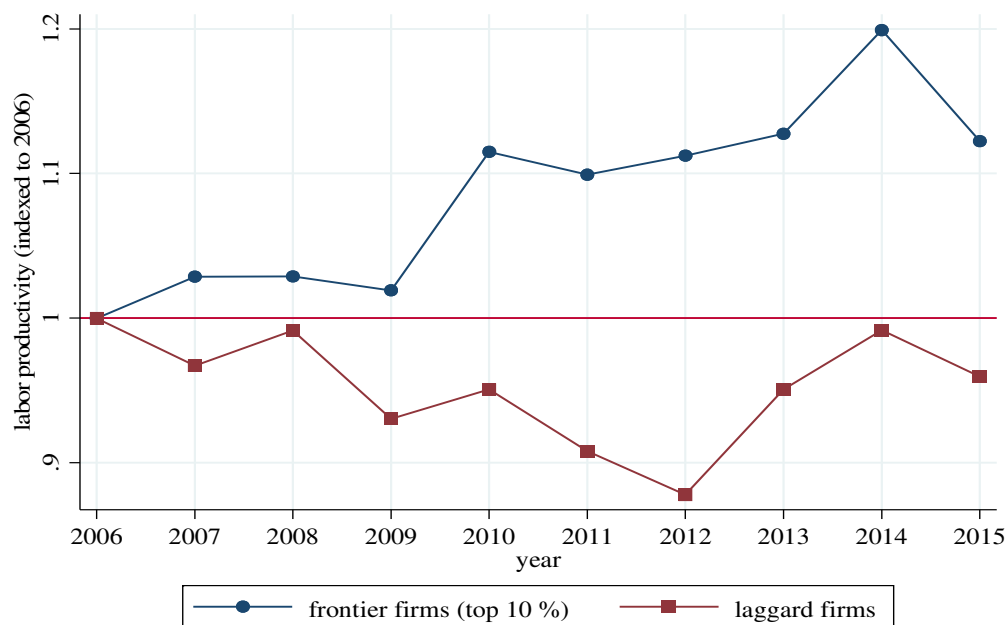
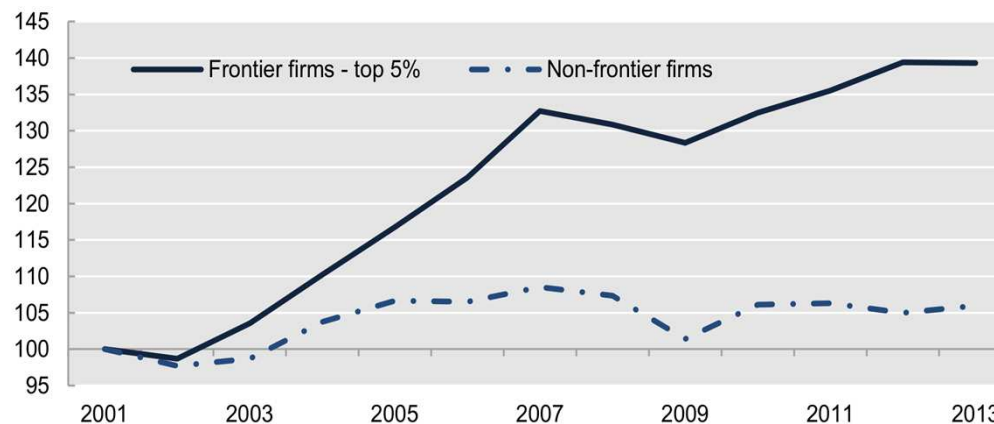
Last Published: Tue, May 09 2017. 01 59 AM IST



2. Productivity Growth Slowdown

OECD sample 2001 – 2013

Andrews, Criscuolo and Gal (2016)



Portuguese Economy 2006 – 2015

Authors own calculation based on IES.
Public services industries excluded.

3. Zombie Firms in Portugal

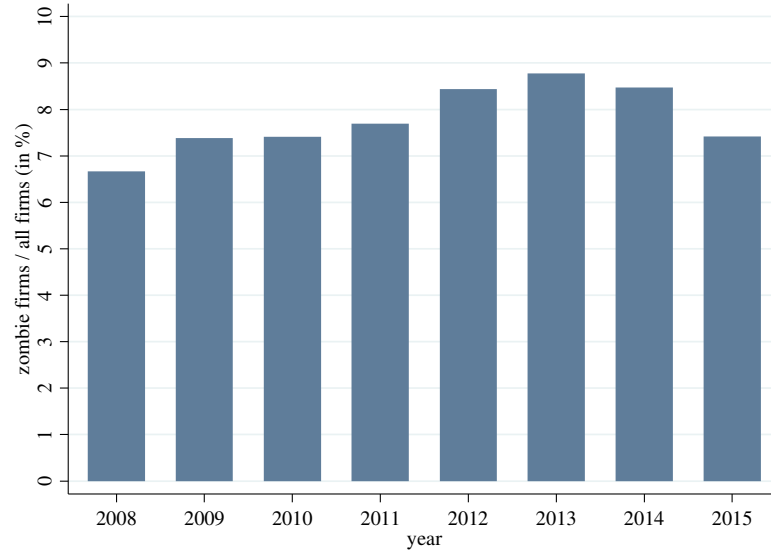
What are zombie firms?

- Older than 10 years
- Operating income cannot cover interest expenses
- 3 consecutive years*

*“Firms that would typically exit in a competitive market”**

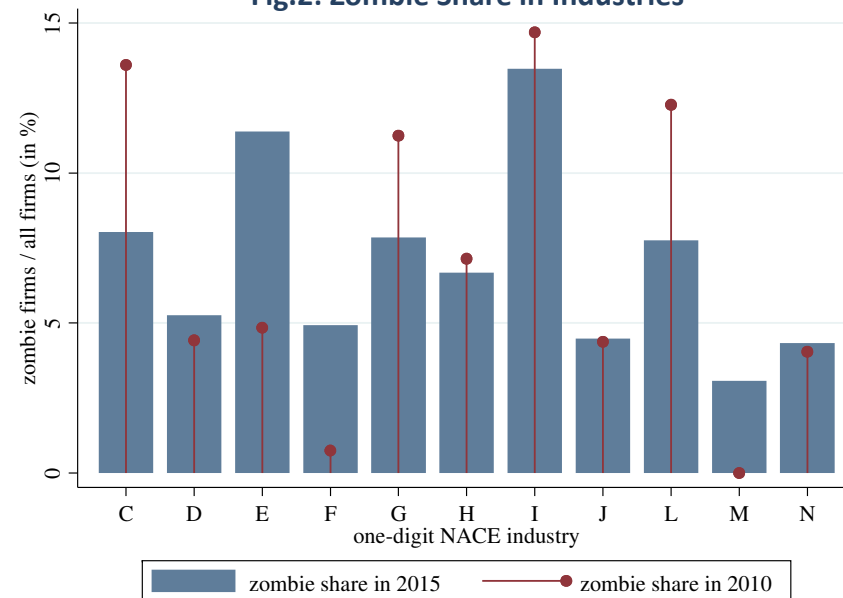
*following Adalet McGowan et al., 2017, Bank of Korea, 2013 and Andrews and Petroulakis, 2017

Fig.1: Zombie Share in Portugal



Authors own calculation based on IES.

Fig.2: Zombie Share in Industries



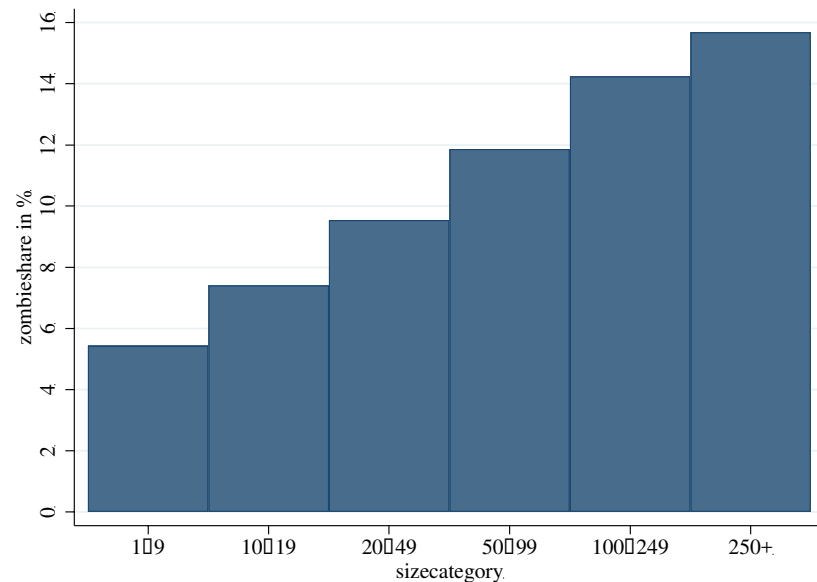
Authors own calculation based on IES.

4. Direct Consequences of Zombies

Why should we worry?

- They are **larger** and **less productive**
- Do not seem to catch up
- Portugal has **more zombies** than the OECD sub-sample

Fig.3: Zombie Share in Firm Size Categories



Authors own calculation based on IES.

Fig.4: Zombies vs. non-Zombies

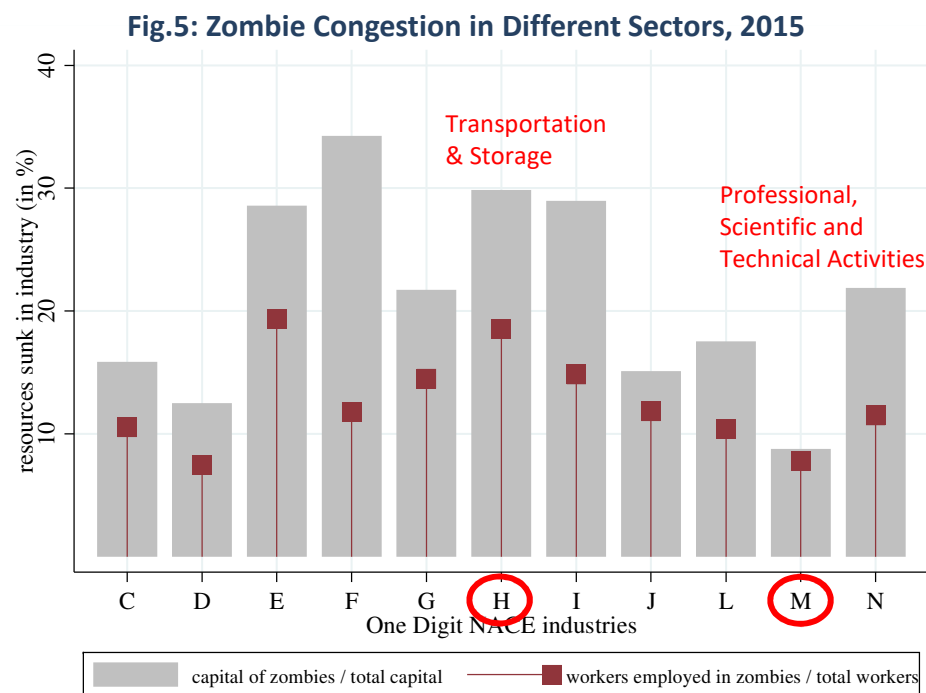
Variable	Unit	Zombie	Non-Zombie
Total Workers	unit	23	15
Turnover	10 ³ €	3183	1911
Tangible Assets	10 ³ €	1418	579
Intangible Assets	10 ³ €	193	124
Operating Length	years	24	22
Labor Productivity	€	3,57	11,79
No of Obs	unit	111.609	661.258

Authors own calculation based on IES.

5. Indirect Consequences of Zombies

Why should we worry (2)?

- They have **negative effects** on growth opportunities of healthy firms
- **Stifle reallocation**, example: “zombie firms pay exaggerated wages relative to their productivity”



- ↓ Less employment growth
 - ↓ Less capital growth
 - ↓ Less labor productivity
- ... of the typical healthy firm

Authors own calculation based on IES.

6. Why do Zombies Stay in the Market?

Weak Banking Sector Health

High Barriers to Exit

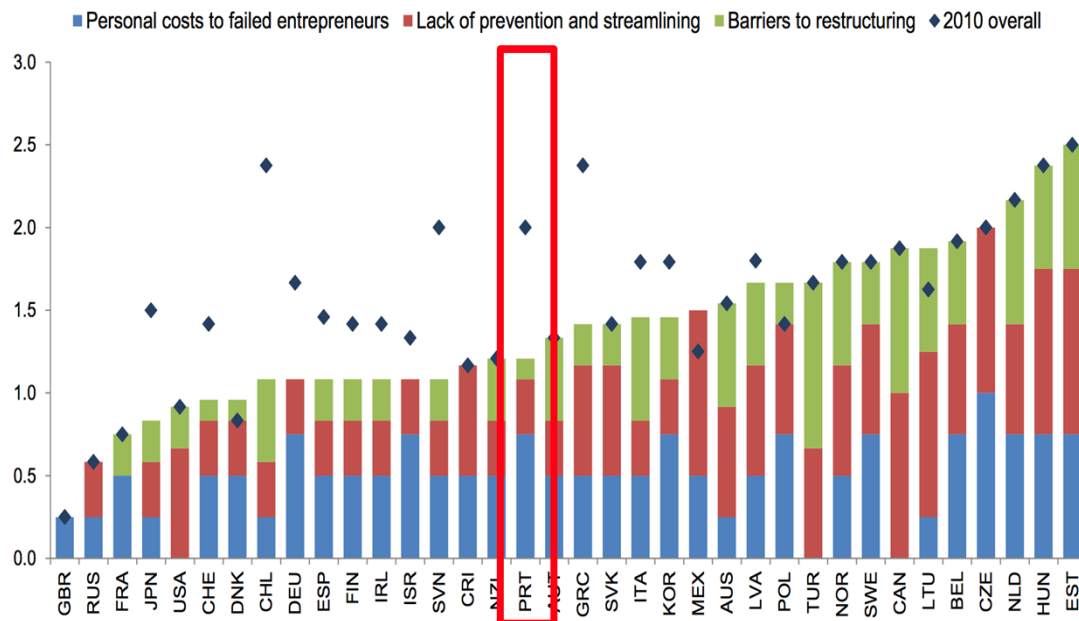
(... among others)

7. How to Kill a Zombie

Insolvency reforms as partial solution

- **High barriers to exit** delay the exit or restructuring of zombies (Adalet McGowan et al., 2017)
- Recent structural reforms (2011/2012) have **potentiated the exit** of zombie firms

Fig.6: OECD Insolvency Indicator



source: Adalet McGowan et al., 2017b

Table 1: Exit Probability Model

$$Exit_{i,s,t} = \beta_0 + \beta_1 Z_{i,s,t-1} + \beta_2 exb_{s,t} + \beta_3 Z_{i,s,t-1} \times exb_{s,t} + FE_{s,t} + \varepsilon_{i,s,t}$$

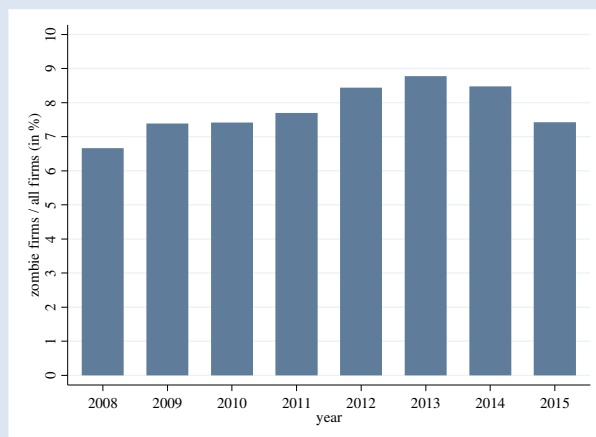
	(1) Exit	(2) Exit
Lag Zombie (Lag Z)	0.057*** (0.004)	0.043*** (0.004)
Barriers to Exit	-0.023*** (0.000)	-0.014*** (0.001)
Lag Z X Exitbarriers	-0.003*** (0.000)	-0.003*** (0.000)
Industry Labor Sunk		-0.036*** (0.007)
Industry Capital Sunk		
Observations	1018555	1018191
Fixed Effects	yes	yes
Year FE	no	yes
Industry FE	no	no
R2 within	0.063	0.097
R2 overall	0.000	0.001
R2 between	0.157	0.331

Standard errors in parentheses
* $p < .10$, ** $p < .05$, *** $p < .01$

8. Take-Aways

Should we fear the walking dead?

- Larger and less productive
- Negative spillovers
- 2013 marks a turning point



Insolvency reforms as one remedy

- Portugal made progress in lowering barriers to exit
- Insolvency reforms **disproportionately** impact zombie exit
 - ✓ Better reallocation of resources

➤ **However**, complimentary measures have to be taken

Obrigado!

Christian Osterhold, Nova School of Business & Economics and
Ana Fontoura Gouveia, GPEARI - Ministry of Finance & Nova SBE

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A1. References

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Caballero, Ricardo J., Takeo Hoshi, and Anil K. Kashyap. 2008. "Zombie lending and depressed restructuring in Japan." *The American Economic Review* 98(5): 1943-1977.

A2. Descriptive Statistics

Variable	Unit	Mean	Median	Std. Dev.	Min	Max
Turnover	10 ³ €	1401	151	29029	0	9.699.709
Tangible Assets	10 ³ €	456	22	15652	0	4.615.280
Intangible Assets	10 ³ €	91	0	8879	0	2.964.748
$\Delta \log$ Capital		-0,103	-0,103	0,565	-2,752	2,977
Labor Productivity	€ / h	10	7	52	-7716	19.610
Total Workers (Emp)	per firm	12	4	114	1	22.768
$\Delta \log$ Emp		-0,012	0	0,315	-6,974	5,437
Exit	dummy	0,084	0	0,278	0	1
Exit Non-Zombie	dummy	0,081	0	0,273	0	1
Exit Zombie	dummy	0,132	0	0,339	0	1

Authors own calculation based on IES.

A3. Other Zombie Definitions

More Data demanding

- Caballero et al., 2008: Firms potentially receiving subsidized bank
- Actual observed interest payments are compared to an estimated benchmark
- Econometric conclusions of the OECD are robust to both specifications

Less Data demanding

- Bank of England, 2013: firms with negative profits

A4. Laggard Firms as Burden

Weak firms are an increasing burden.

Three policy-induced interconnected causes (following the OECD Work Stream)

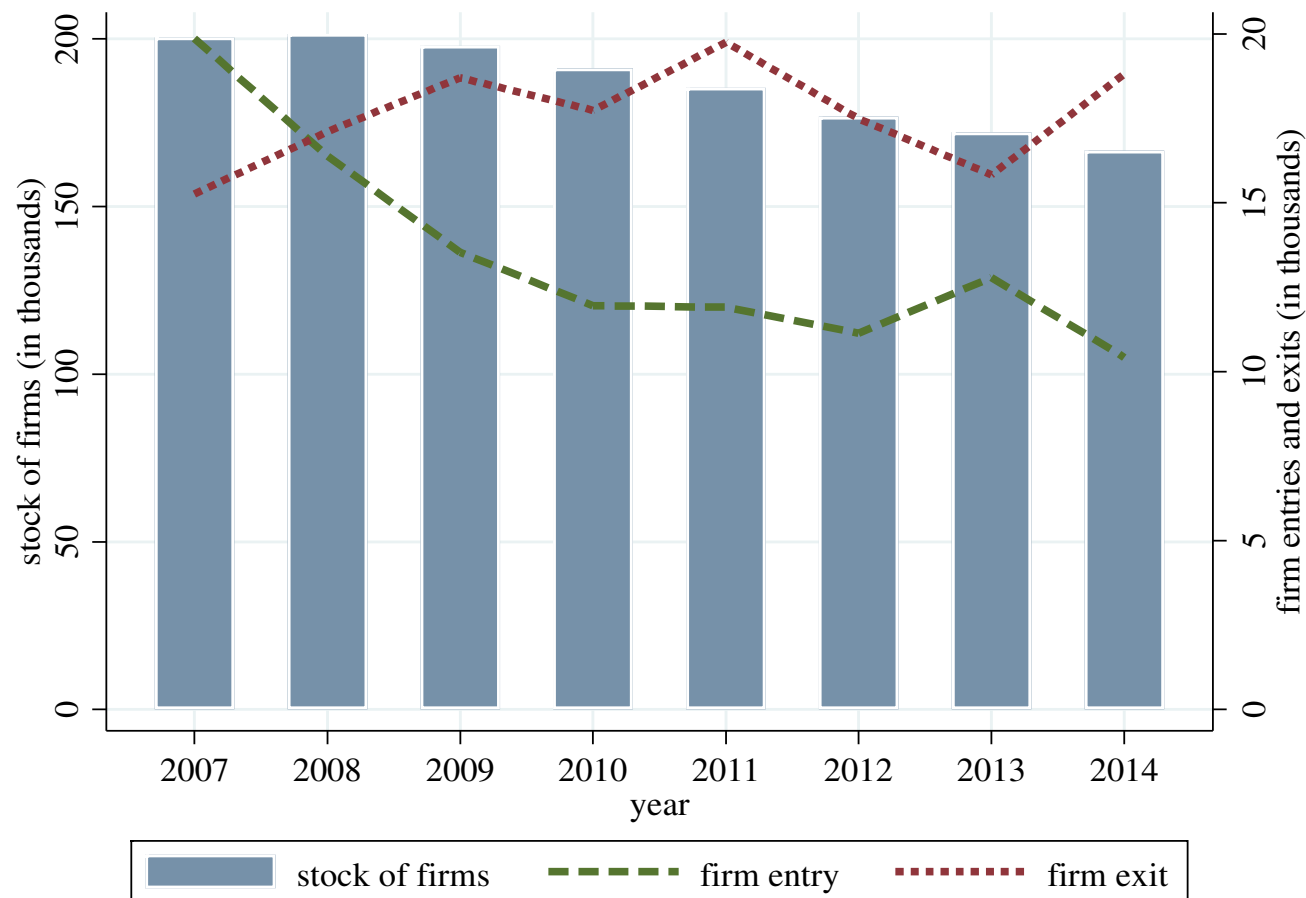
1. *Rising Productivity Dispersion*
 - Frontier vs. Laggards
 - Breakdown in the technological diffusion mechanism

2. *Higher Resource Misallocation*
 - It is more difficult for productive firms to grow

3. *Declining Business Dynamism*
 - Fewer new businesses (see A5)
 - **More zombie firms**

What can also be observed that the crisis had no cleansing mechanism! That's why focusing on the **exit barriers** is important!

A5. Declining Business Dynamism



A6. Zombie vs Non-Zombie Development

