Discussion of "Insolvency Regimes, Zombie Firms and Capital Reallocation"

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Paper does 3 things

- **Country:** Collects data on cross-country insolvency regimes (39 countries, 2010 and 2016)

- **Sector:** Asks whether the effect of insolvency regimes on share of zombie firms is higher in high turnover sectors

- **Firm:** Estimates the effect of insolvency regime on firm level investment/reallocation in high turnover sectors (use only 12 countries for TFP estimation)

Overarching theme: EXIT barriers $\Rightarrow$ productivity slowdown

2 Key Findings

In countries with higher personal costs to failed entrepreneurs and barriers to restructuring:

- More industry capital sunk in zombie firms in high turnover industries

- In these industries capital is not allocated to productive firms

Very nice paper, great data and careful analysis!

My comments will be on:

- Data Coverage and Representation

- Defining "Zombies"

- Identification

DATA

Data Coverage and Representation

- Use countries in ORBIS that has more than 40 percent coverage of the economy and available data to calculate TFP.

- Most of their countries has around 70 percent coverage and mimics firm size distribution (Kalemli-Ozcan et al. (2015))

|		Share of Wage Bill
ORBIS-AMADEUS	1-19 employees	0.19
	20-249 employees	0.47
	250+ employees	0.34
Eurostat (SBS)	0-19 employees	0.20
	20-249 employees	0.43
	250+ employees	0.37

- **For selection:** randomly draw firms in country-sector bins that have less firms than official data and re-weight—**but this does not matter for results?**
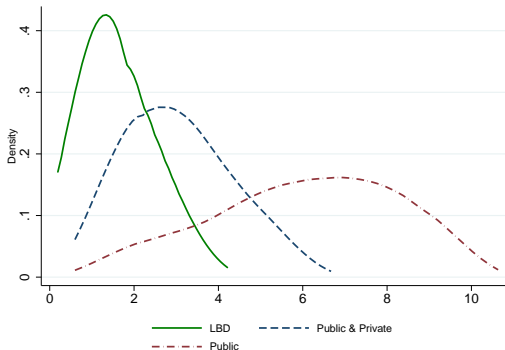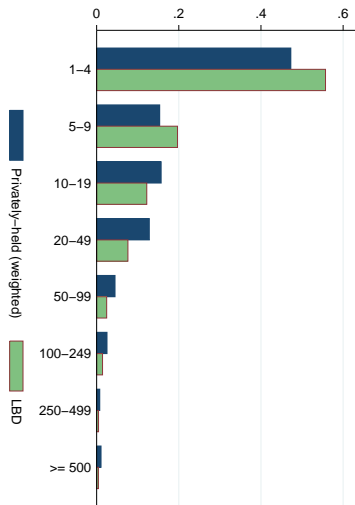
Dinlersoz et al. 2017, Leverage over the Life Cycle of US Firms

ZOMBIE FIRM DEFINITION

Zombie Firm Definition: Endogeneity Issues
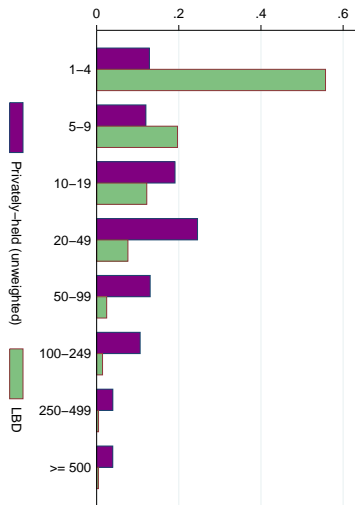
In 2013: 10 years old; has interest coverage ratio < 1 (profits/interest)

Sum K of these firms in a two-digit industry; divide by total industry K
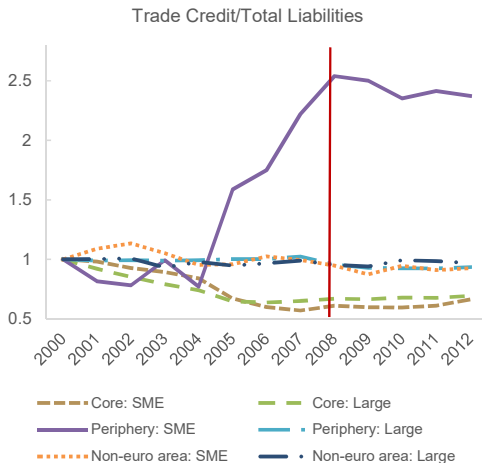
- Fixed and variable interest rate loans mixed–monetary policy directly effects this ratio (QE period)

- Profits are endogenous to economic conditions

- Firms can still be "alive" even they cannot make their interest payments and might innovate–(de-leveraging period)

Being zombie in 2000, predicts innovative activity in next 5 years

$$\Delta log(patents)_{i,05-00} = \alpha + \beta D\ (Zombie_{i,00}) + \epsilon_i$$

$N = 10,789$; $\beta = 0.01$, $t = 3.97$ (Spain and Italy)

Role of Trade Credit: Key source of finance for SME

Trade Credit/Total Liabilities

Legend:
- Core: SME
- Core: Large
- Periphery: SME
- Periphery: Large
- Non-euro area: SME
- Non-euro area: Large

Firms may not have access to secured (bank) debt but can finance
themselves with unsecured debt (trade credit)

# Industries with higher trade credit finance have higher share of zombies

Correlation: Periphery
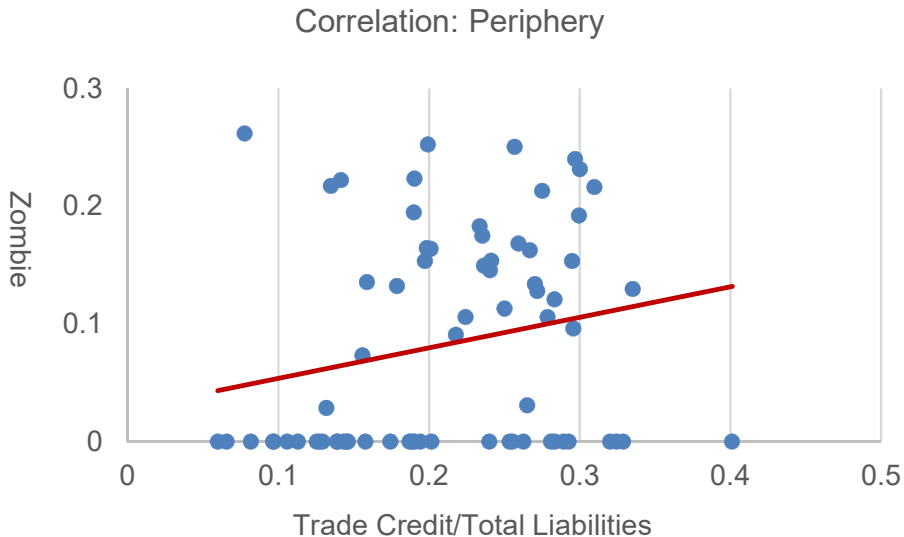
- Industries with higher trade credit finance have higher interest payments to profits ratio (low coverage) and have higher share of zombies

- Industries financed with trade credit also have high turnover: correlation 0.85

- A firm level logistic regression of bankruptcy probability on trade credit shows that, probability declines more for firms who are financial constrained (Guiness et al. 2016, Yesiltas 2016)

IDENTIFICATION

How much country variation is there in insolvency?
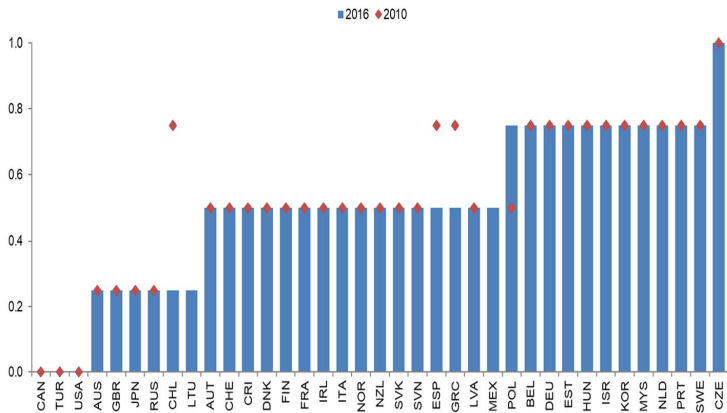
Identification: Country-Sector Regressions

$$Zombie\ K/K_{cs} = \alpha_s + \omega_c + \beta Insol_c \times Exp_s + \gamma Pol_c \times Exp_s + \epsilon_{cs}$$

- Zombie share might be higher in certain country-sectors due to other reasons–leverage, trade credit, ...in a crisis country

- When

$$Pol_c * Exp_s$$

controlled, only personal cost indicator survives

<u>Better to run:</u>

$$Zombie\ K/K_{cst} = \alpha_s \times \omega_c + \lambda_t \times \omega_c + \beta Insol_{ct} \times Exp_s + \gamma Pol_{ct} \times Exp_s + \epsilon_{cst}$$

- <u>Lack of time variation in insolvency measures?</u> Figures show big changes from 2010 to 2016, especially for European countries

$$\Delta K_{icst} = \beta TFP_{icst} + \lambda Insol_c \times Exp_s \times TFP_{icst} + \alpha_s \times TFP_{icst} + \omega_c \times TFP_{icst} + \epsilon_{icst}$$

- Firm age and size are controlled but firm productivity is endogenous, varying over time, includes demand for firm's goods
- Can use firm fixed effects, demean the interaction/time invarying firm TFP, need to use time effects
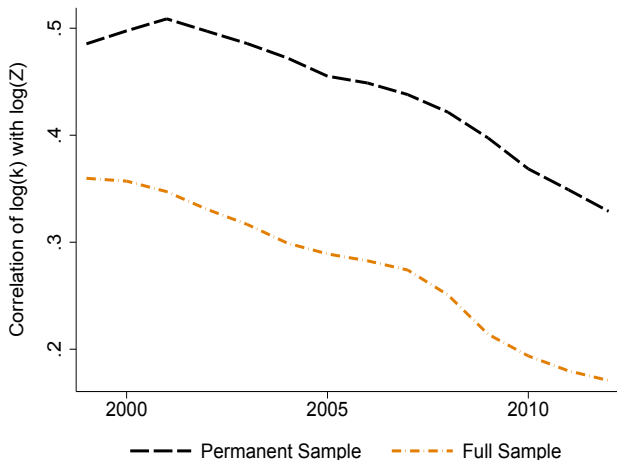- Quantitative effects might be miscalculated since they rely on

$$\lambda = -0.01$$

but there is a direct effect from
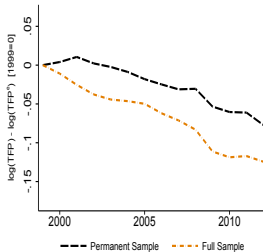
$$\beta = 0.03$$

- Why is this regression is informative for reallocation?
- <u>Alternative:</u> High TFP firms do not attract capital in high turnover industries due to <u>financial frictions</u>
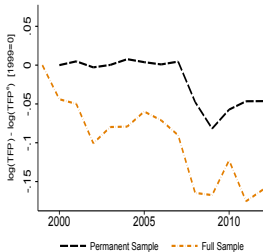
Productive firms get less K over time

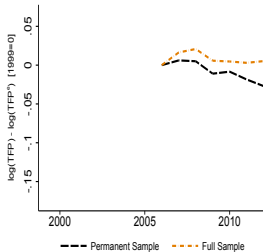Gopinath et al. 2017, Capital Allocation and Productivity in South Europe
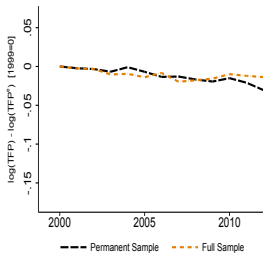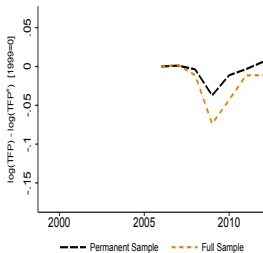
Financial Friction driven Misallocation

(a) Spain

(b) Italy

(c) Portugal

(d) France

(e) Germany

(f) Norway

Minor Issues

- Effects are very large: $1/4$ th of the decline in aggregate I in Italy from 08 to 13; $1/2$ of misallocation is accounted by zombies in all countries?

- Why does composite index give equal weights to each insolvency measure, why not principal components?

Conclusion

- **Great paper, valuable new data and superb research agenda!**

- It is **highly plausible** that country insolvency regimes do affect reallocation and a failure at the exit margin will lead to a productivity slowdown

- Paper will be stronger if the authors can straighten out the identification issues, pinning down robustness of their channel relative to alternatives