EUROPEAN CENTRAL BANK
EUROSYSTEM

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Financial Constraints and Employment Changes -

Applying the CompNet Financial Module

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Motivation

Research Question

- **Which financial characteristics determined the employment decisions of firms during the Great Recession?**

- This project contributes to the literature studying the transmission of financial shocks to the real economy.
- We draw on rich financial data covering many aspects of firm finance.
- We focus on ten European countries during 2005 to 2012.
- We uncover differences between factors for growth and for decline in employee numbers.

Data

CompNet dataset

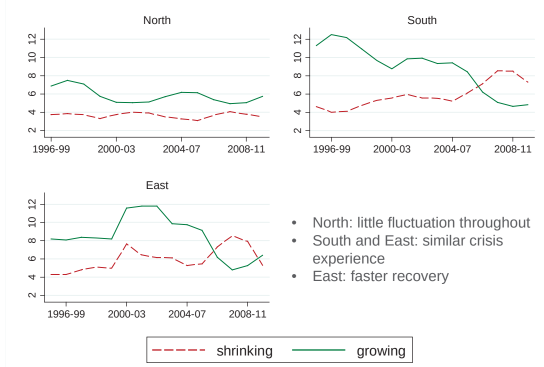
- Firm-level based data, aggregated at the level of sectors, size classes and firm growth within countries and years. Firm growth is measured in terms of movement between size classes in a three-year window (following the same firms).
- Three categories of firms: shrinking, staying in the same size class, growing.
- Categories of financial variables: Performance, Structure of external funding, Financial fragility, Financial independence, Credit/investment constraint.

Data limitations

- No information on firms that exited the market.
- No growth/decline measured for firms that grew/shrank not enough to change size class.
- Cannot detect whether the jump is of one or of more size classes.

Descriptive statistics

Firm growth by region

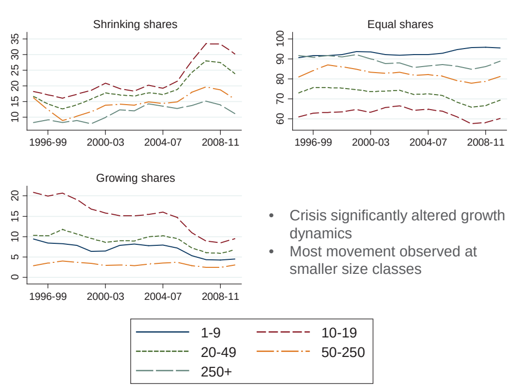


- North: little fluctuation throughout
- South and East: similar crisis experience
- East: faster recovery

Note: North includes BE, DE, and FI; South includes ES, IT, and PT; East includes EE, LT, RO, and SI.

Descriptive statistics

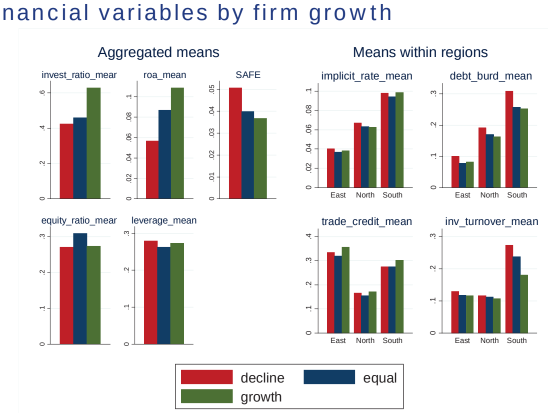
Firm growth by size class



- Crisis significantly altered growth dynamics
- Most movement observed at smaller size classes

Descriptive statistics

Financial variables by firm growth



Estimation

Econometric model

- We estimate the impact of financial variables on changes to firms' size class by multinomial logit.
- The dependent variable is categorical: indicates whether a firm reduced its employee numbers, stayed in the same size class, or moved to a higher size class in the three-year period following observation of the financial characteristics.
- Control for country, sector, size class, year, changes in output of the sector and labour productivity.

Selection of the indicators

- CompNet includes various categories of financial indicators. We do a correlation analysis within each category to choose between variables that are highly correlated.
- We estimate a multinomial logit covering all categories of indicators for a comprehensive of picture of firm finance.

Results

Estimated coefficients:

	(1) means	(2) medians
Shrinking firms		
Investment ratio	0.3878	-9,6447***
RoA	**-26,0432*** **	**-37,8965*** **
Equity ratio	**-12,5734*** **	**-18,1157*** **
Leverage	8,0804	3,3155
Trade credit	0,8760	-1,0909
Implicit rate	21,7811**	25,3890
Inventory turnover	-0,5734	-7,0345*
Debt burden	4,5867	8,1306***
Cash holdings	**23,0450*** **	**22,9293*** **
Collateral	-10,7533***	-7,0527*
Credit contraints	**18,5533*** **	**25,4470*** **
Investment constraints	-0,3453	-0,0386
Growing firms		
Investment ratio	**8,2309*** **	**16,0828*** **
RoA	**18,8662*** **	**28,0258*** **
Equity ratio	**-13,2138*** **	**-19,9044*** **
Leverage	27,7480***	8,3354*
Trade credit	7,9965**	3,5336
Implicit rate	20,3849***	1,3447
Inventory turnover	-2,8167**	-6,5030
Debt burden	-14,5812***	-1,2127
Cash holdings	**-24,3238*** **	**-27,4666*** **
Collateral	-13,0721***	-1,0086
Credit contraints	**-31,4887*** **	**-30,5593*** **
Investment constraints	-1,0970	-0,8943
Productivity controls	*Y*	*Y*
Sectoral output controls	*Y*	*Y*
Country dummies	*Y*	*Y*
Sector dummies	*Y*	*Y*
Size class dummies	*Y*	*Y*
Year dummies	*Y*	*Y*
Pseudo R-squared	*0,4571*	*0,5265*
N	*1493*	*1346*

Straightforward: higher RoA is correlated with lower probability of shrinking and higher probability of growing.

More equity is associated with a lower probability of shrinking and a lower probability of growing: expensive source of finance?

Growing or shrinking? Investment ratio is strongly associated with growing but it's not equally correlated with a lower probability of shrinking.

Higher cash holdings are associated with higher probability of shrinking and lower probability of growing: lack of investment alternatives?