

Firm Investment Dynamics in Manufacturing Sector

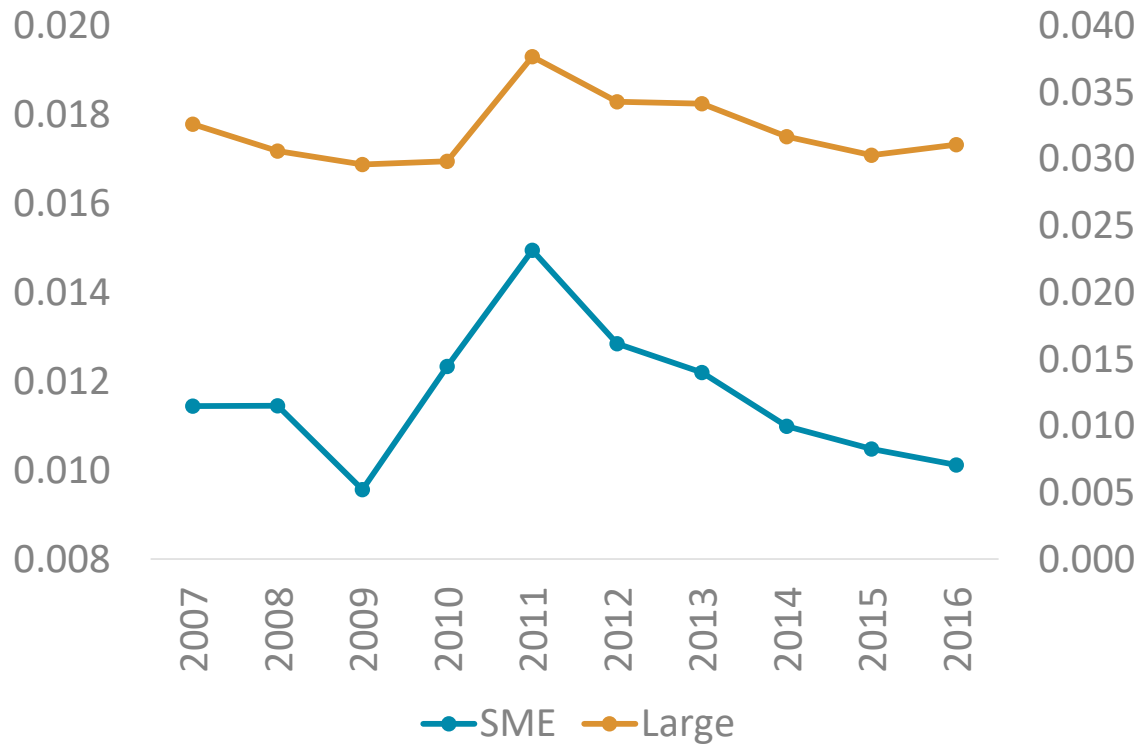
Fatih Yılmaz & M. Seyit Cilasun

Structural Economic Research Department
Central Bank of Republic of Turkey

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SME investment rate dropped more than large firms in the post-2013 period

Firm Level Average Investment Rate by Size



Source: Authors' calculation from EIS

Last Data: 2016

Firm Investment Share by Size

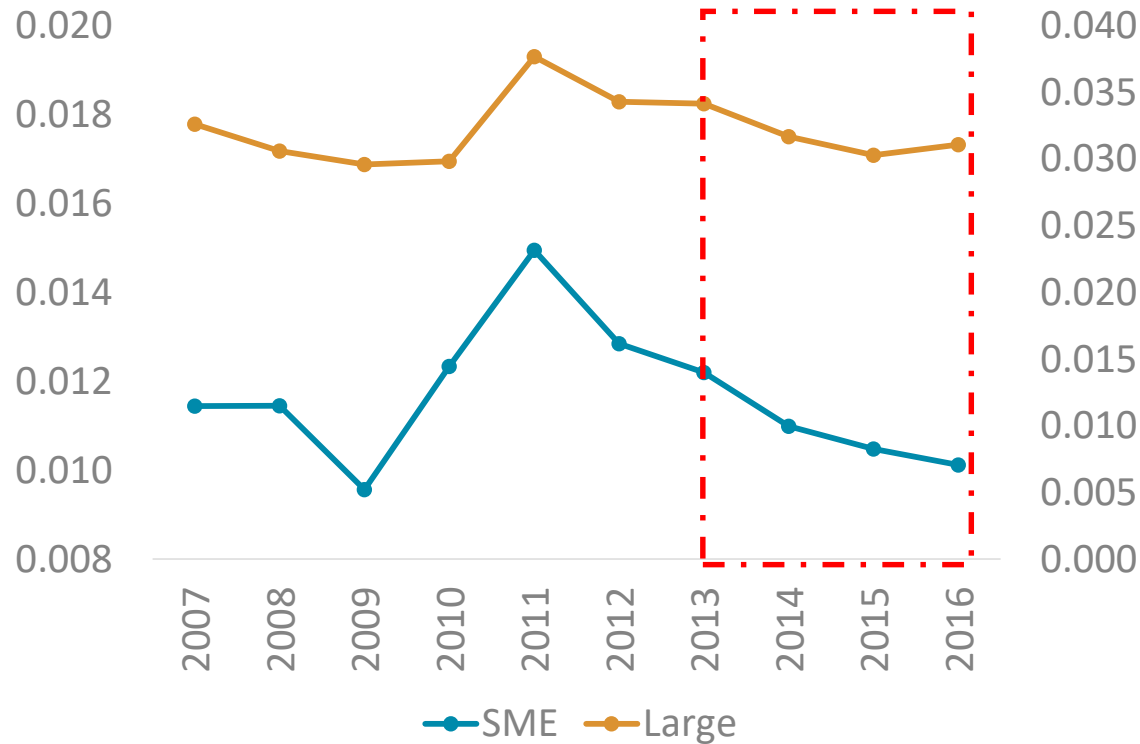


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SME investment rate dropped more than large firms in the post-2013 period

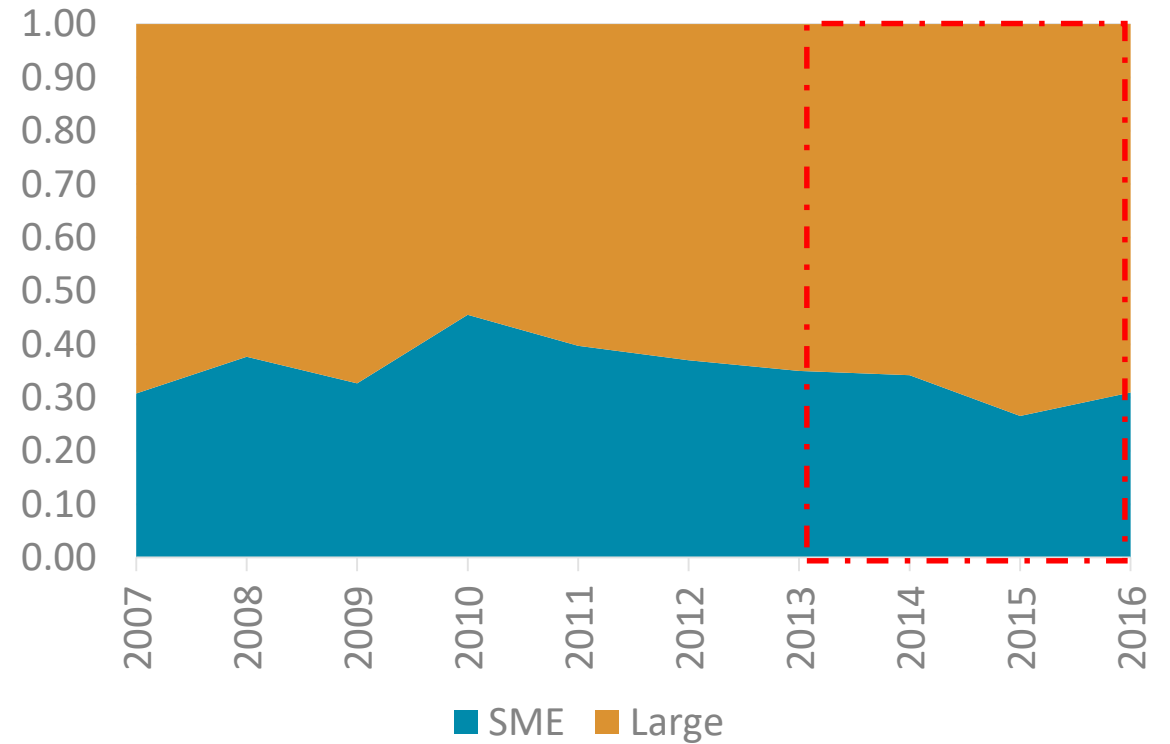
Firm Level Average Investment Rate by Size



Source: Authors' calculation from EIS

Last Data: 2016

Firm Investment Share by Size



Source: Authors' calculation from EIS

Last Data: 2016

Overview of the Research focus

- ▶ SME investment rate dropped more than large firms in the post-2013 period
- ▶ The question is “what can explain this divergence in the data?”
 - Credit standards
 - are stretched in the post-2013 period (e.g., FED’s tapering period and on)
 - hard brake after a long QE period
 - SMEs are hit more than large firms
- ▶ Policy challenge is to ease credit access for SMEs, while making sure the funds are directed to investment!

Rest of the Presentation

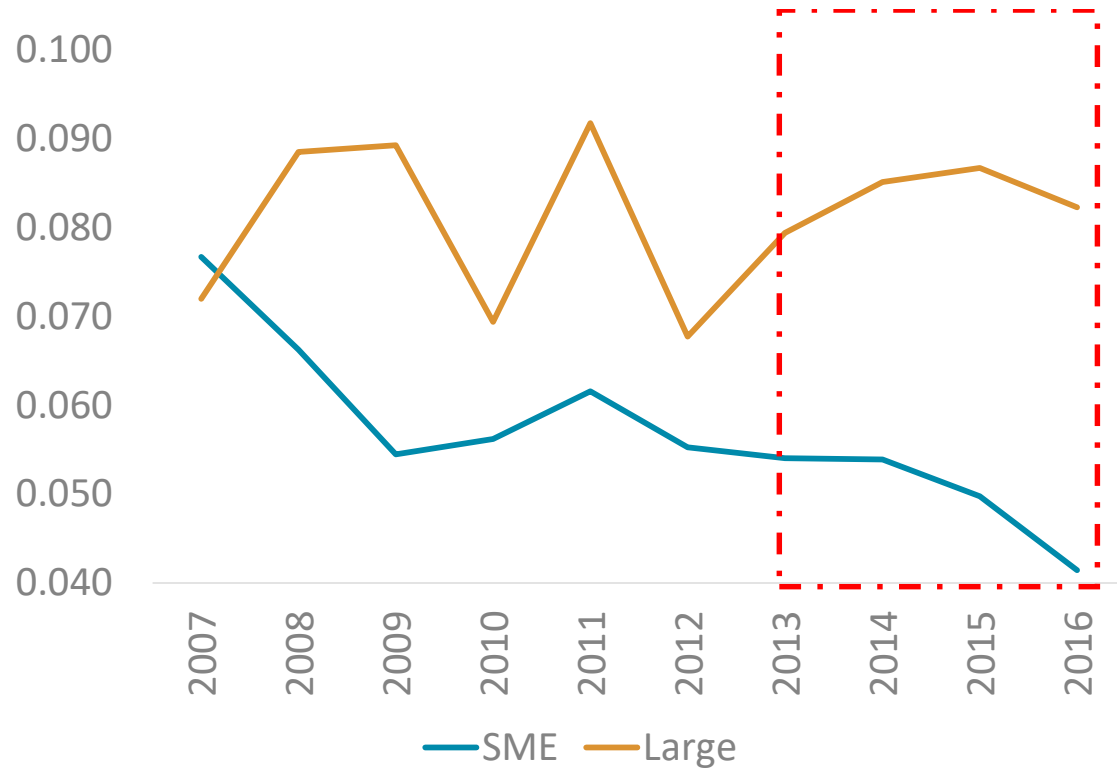
- ▶ Financing trends change in the post-2013
- ▶ Regression analysis
- ▶ Conclusion

The background features a series of overlapping, wavy, teal-colored lines that create a sense of movement and depth, resembling a stylized wave or a complex data visualization. The lines are thin and densely packed in some areas, creating a mesh-like effect.

How did financing trends
change in the post-2013
period?

SME profitability and sales growth dropped more in the post-2013 period

Firm Level Average Profitability Rate by Size (ROA= EBIT/Total Assets)



Source: Authors' calculation from EIS

Last Data: 2016

Firm (Real) Sales Growth by Size

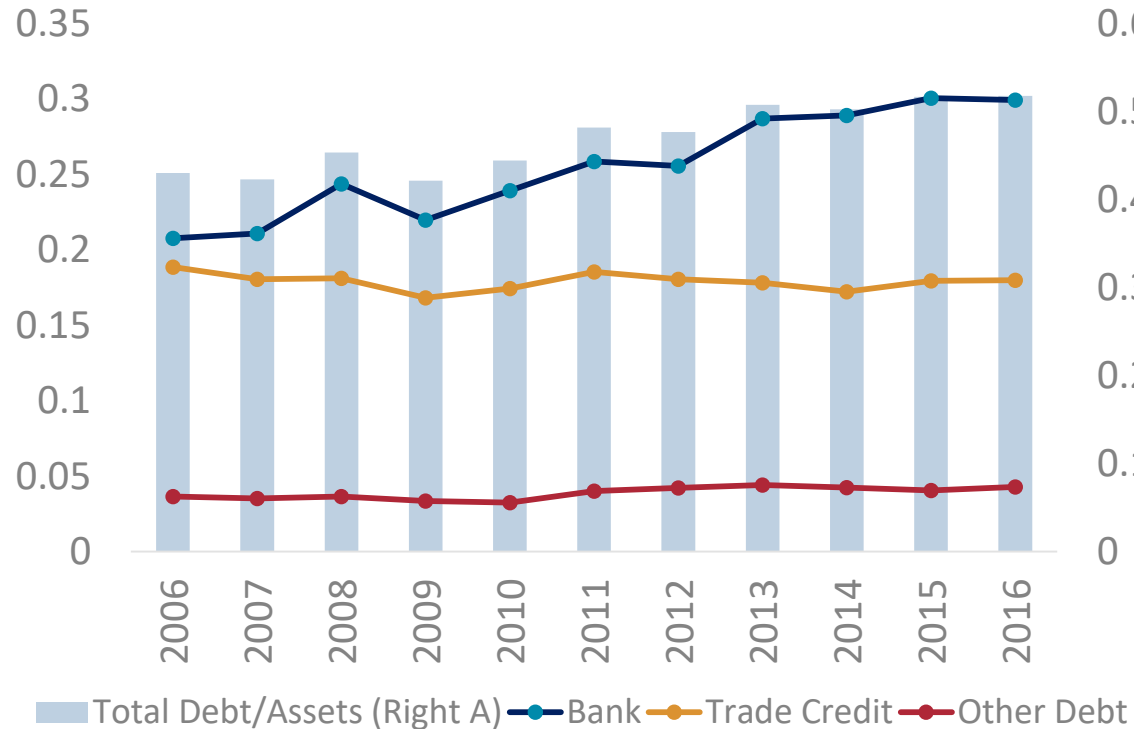


Source: Authors' calculation from EIS

Last Data: 2016

SME bank leverage dropped more in the post-2013 period

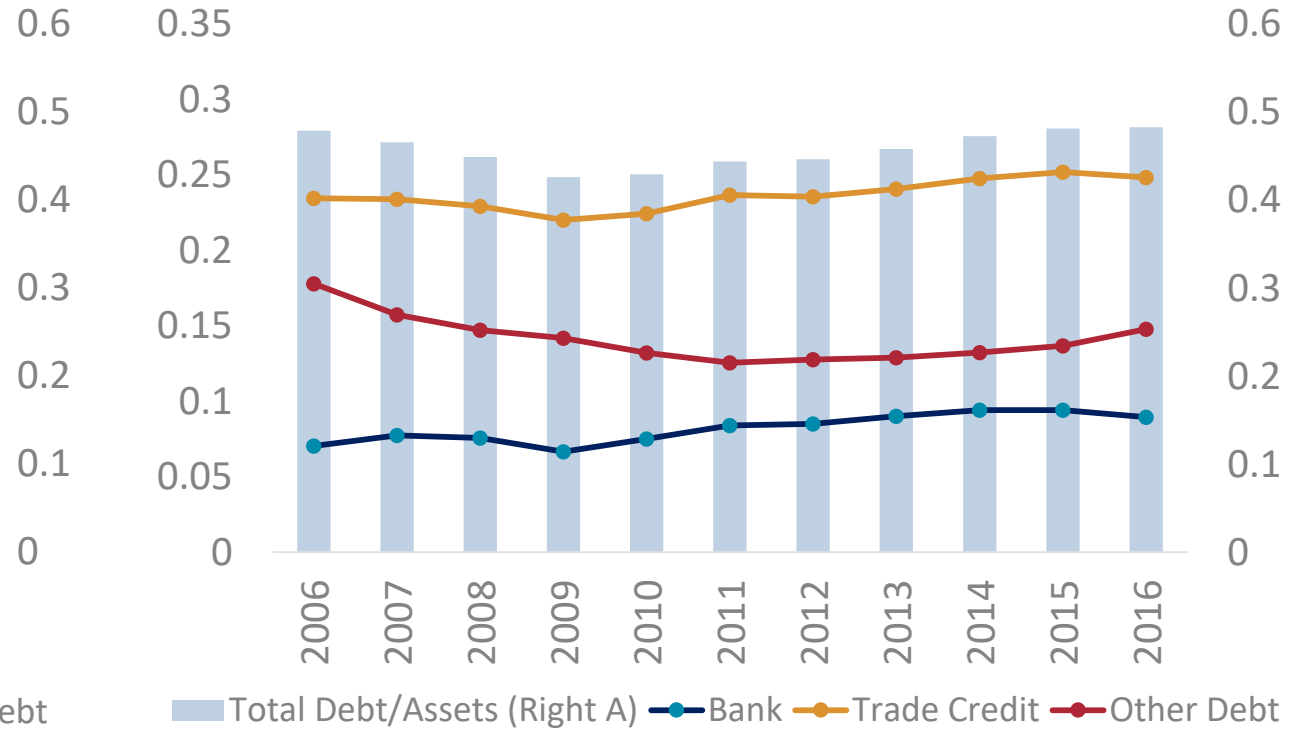
Large Firms Leverage Decomposition (Leverage=Debt/Assets)



Source: Authors' calculation from EIS

Last Observerat,on: 2016

SMEs Leverage Decomposition (Leverage= Debt/Assets)

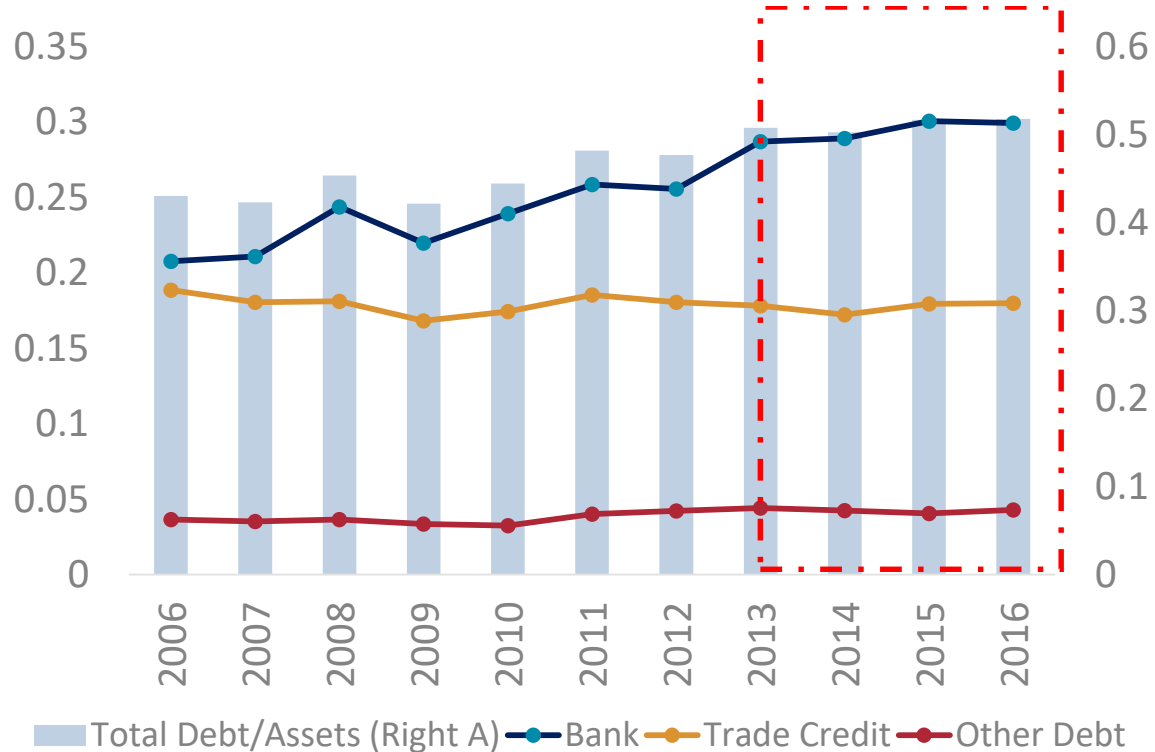


Source: Authors' calculation from EIS

Last Observerat,on: 2016

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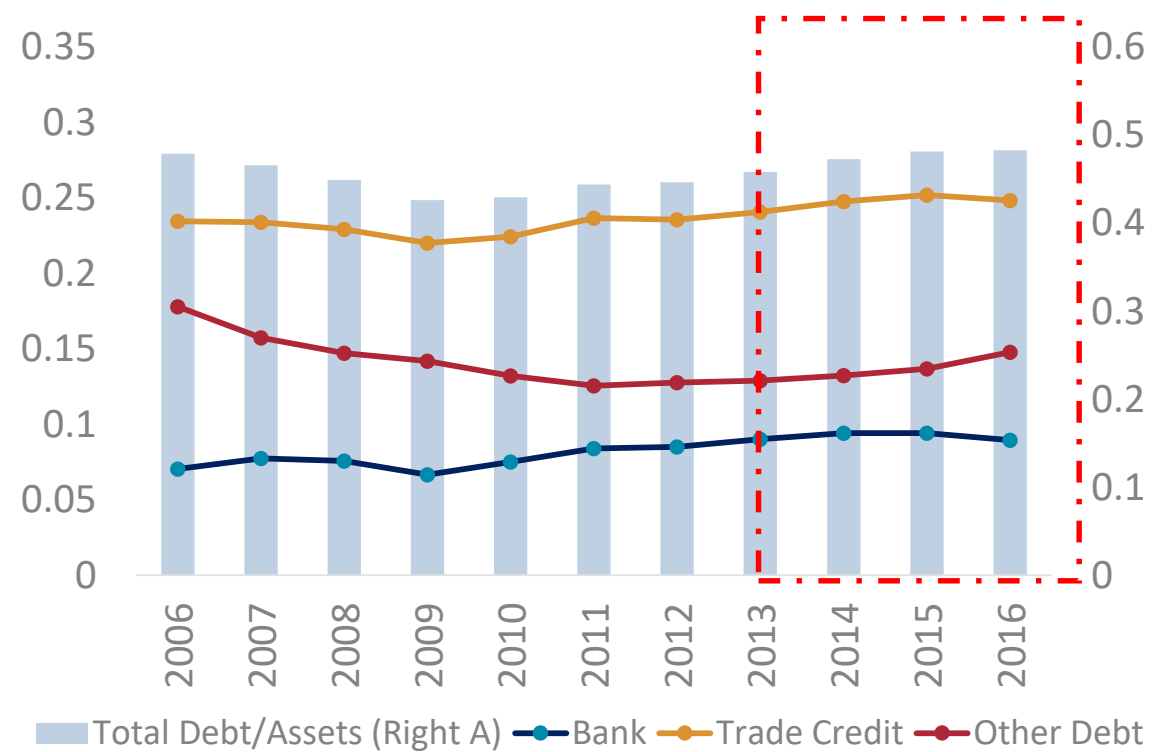
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Regression Analysis: Which means of finance is more important?

Data and key summary statistics

- ▶ Source: Enterprise Information System (EIS) from Ministry of Industry and Science
- ▶ Coverage: Tax registered firms in manufacturing sector, which reported both balance sheets and income statements
- ▶ Data Cleaning: Key variables are cleaned by dropping the ∓ 3 .std. dev from the mean

Summary Statistics of Key Variables

Variable	All Firms					SMEs			Large Firms		
	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Invest. Rate	876,593	0.01	0.07	-0.79	0.80	862,694	0.01	0.07	13,899	0.03	0.07
Sales Growth	876,593	0.05	0.56	-1.87	1.92	862,694	0.04	0.56	13,899	0.08	0.28
Cash Flow	876,593	0.28	0.77	-3.77	4.53	862,694	0.28	0.77	13,899	0.11	0.34
Δ debt/Assets	824,909	0.09	0.30	-1.00	1.00	811,146	0.09	0.30	13,763	0.10	0.20

General investment model estimated

$$\left(\frac{\text{Inv}}{\text{Net Sales}}\right)_{it+1} = \beta_0 + \beta_1 \text{cash flow}_{it} + \beta_2 \text{sales growth}_{it} + \beta_3 \left(\frac{\Delta \text{debt}}{\text{assets}}\right)_{it} + \beta_4 \text{leverage}_{it} + \gamma \text{controls}_{it} + \text{fixed effects} + e_{it}$$

- ▶ Change in access to debt is $\frac{\Delta \text{debt}}{\text{assets}}$ - e.g., bank, trade credit, other, long vs short-run
- ▶ Controls are size, age, productivity and publicly listed
- ▶ Fixed effects are firm, sectorXtime, regionXtime, year
- ▶ See Kalemli-Özcan et. al. (2018) and Gebauer et. al (2017)

General Regression Results

	Type of Debt		Maturity of Debt	
	[1] SME	[2] Large	[3] SME	[4] Large
Chg. Bank Credits/ Assets	0.00478*** (0.000759)	0.0391*** (0.00640)		
Chg. Trade Credits/ Assets	0.000980** (0.000401)	0.0143** (0.00666)		
Chg. Other Credits/ Assets	0.00209*** (0.000520)	0.0153 (0.0100)		
Chg. Short-Run Debt/Assets			0.00175*** (0.000354)	0.0228*** (0.00451)
Chg. Long-Run Debt/Assets			0.00420*** (0.000903)	0.0441*** (0.00859)
Total Lev. 2nd percentile	-0.00129*** (0.000368)	0.00255 (0.00275)	-0.00129*** (0.000369)	0.00266 (0.00275)
Total Lev. 3rd percentile	-0.00239*** (0.000446)	-0.00539 (0.00368)	-0.00247*** (0.000448)	-0.00504 (0.00368)
Total Lev. 4nd percentile	-0.00323*** (0.000527)	-0.00645 (0.00434)	-0.00316*** (0.000530)	-0.00660 (0.00439)
Observations	580,487	10,589	575,721	10,583
R-squared	0.258	0.326	0.258	0.329

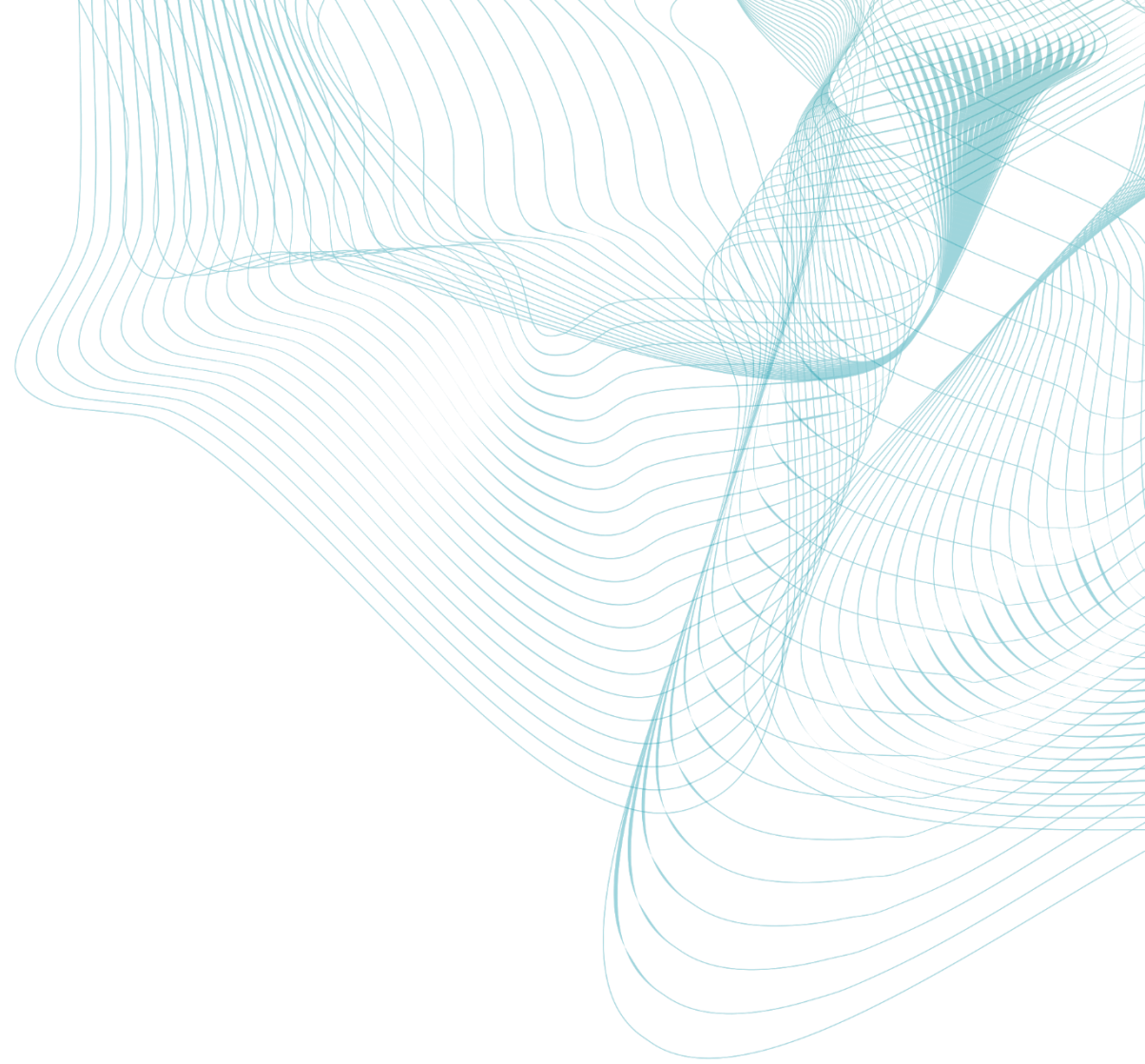
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Are the shifts in
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Are the shifts in the trends significant?

- Is the drop in investment rate significantly large for SMEs?

$$\left(\frac{\text{Inv}}{\text{Net Sales}}\right)_{it+1} = \beta_0 + \beta_1 \text{sme}_i + \beta_2 \text{post2013}_t + \beta_3 \text{smeXpost2013}_{it} + \beta_4 \left(\frac{\Delta \text{debt}}{\text{assets}}\right)_{it} + \beta_5 \text{leverage}_{it} + \gamma \text{controls}_{it} + \text{fixed effects} + e_{it}$$

- Is the drop in bank finance significant for SMEs?

$$\left(\frac{\Delta \text{Bank Credit}}{\text{Assets}}\right)_{it+1} = \beta_0 + \beta_1 \text{sme}_i + \beta_2 \text{post2013}_t + \beta_3 \text{smeXpost2013}_{it} + \beta_4 \text{leverage}_{it} + \gamma \text{controls}_{it} + \text{fixed effects} + e_{it}$$

- post2013: 2014-2016 , pre2013: 2010-2012

Shifts appear to be significant

	(1)	(2)
	Investment/Net Sales	Chg. Bank Credit /Assets
SMEXpost2013	-0.00579*** (0.00167)	-0.00608* (0.00353)
Observations	408,839	431,719
R-squared	0.311	0.264



Shifts appear to be significant

	(1)	(2)
	Investment/Net Sales	Chg. Bank Credit /Assets
SMEXpost2013	-0.00579*** (0.00167)	-0.00608* (0.00353)
Observations	408,839	431,719
R-squared	0.311	0.264



Overview of the results

- ▶ SME investment rate dropped significantly in the post-2013 period
- ▶ Our result show that
 - bank credit – among other debt instruments – and long-run credit access have the strongest association with higher investment
 - in the post-2013 period, SME bank credit access dropped significantly, which is attributed to the large decline in the SME investment
- ▶ Supportive policies for SME credit access are needed
 - The challenge is to making sure the funds are directed to investment!