The effects of financialization and financial development on investment: Evidence from firm-level data in Europe

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Outline of the presentation

1. Introduction

2. Accumulation of fixed assets and financialization

3. Data and stylized facts

4. Estimation methodology and specifications of the investment function

5. Econometric estimations for Europe

6. Conclusions

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Introduction (1)

> Robinson (1952:86) "where enterprise **leads** finance **follows**"
  – endogeneity of 'financial sector development'

> **Disproportionate growth** of financial activities compared to the financing requirements in the last decades

> How this imbalance affected the **accumulation processes** in the non-financial sector?

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Introduction (2)

> ***Pre-2008 Mainstream lit.*** : positive relationship between FMKTs development and accumulation, efficiency, TFP, financing constraints (King and Levine, 1993; Gilchrist and Himmelberg, 1995; Beck et al., 2000; Love, 2003; Beck and Levine, 2004; Love and Zicchino, 2007)

> ***Post-2008 Mainstream lit.*** : more cautious about this relationship (Cecchetti and Kharroubi, 2012; Beck et al., 2014) '*Threshold effect*' (Law and Singh,2014; Sahay et al., 2015; Arcand et. al, 2015; Cournède et al. 2015)

> ***Post-Keynesian financialization lit.***: harmful impact on economic systems (Epstein, 2005), income distribution (Onaran et al., 2010; Guschanski and Onaran 2016), investment (Stockhammer, 2004; Orhangazi, 2008; Demir, 2009; Tori and Onaran, 2015; Tori and Onaran, 2017b)

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Accumulation of fixed assets and financialization: The PK literature (1)

> **Deeper connection** (not just quantitative) between financial markets and production

> **Structural changes** that led to **stagnant** investment and growth

> Financial markets are **extracting revenues** from the productive sector

> NFCs are increasignly engaging in **financial investments**

→ In the context of **financialized economies** the traditional models of investment may be **mispecified**

→ Need for additional evidence at the microeconomic level

Accumulation of fixed assets and financialization: The PK literature (2)

	Authors	Period	Variables	Countries	Findings
MACRO	Stockhammer (2004)	1965 - 1994	Capacity utilization, profit share, interest rate. Financial incomes, financial payments	USA, UK, France, Germany	Increasing SVO caused a general *slowdown* in accumulation.
	van Treek (2008)	1965 - 2004	Profit rate, profit share, output growth, interest payments, dividend payments	USA, UK, France, Germany	Increase in the rentiers' share had a *negative* impact on investment
MICRO	Orhangazi (2008)	1973-2003	Lagged investments, sales, operating income, equity in earnings, financial payments, debt level	USA	*Negative* effect of financial payments and debt, crowding-out effect of financial incomes
	Demir (2009)	1991 - 2003	Risk and uncertanitny, credit from the banking sector, real GDP, gap between returns on fixed and financial assets	Argentina, Mexico, Turkey	Preference towards reversible short-term financial investment reduce fixed investment
	Tori and Onaran (2015)	1985 - 2014	Lagged investments, sales, operating income, financial payments, financial incomes, debt, Tobin's Q	UK	*Negative* effect of both financial payments and incomes, especially in manufacturing
	Tori and Onaran (2016)	1995-2015	Lagged investments, sales, operating income, financial payments, financial incomes	Developed, Emerging, and developing countries	*Negative* effect of both financial payments and incomes (not in *China*)

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Motivation and Contributions

The state of the art

Lack of evidence at the **firm-level**

Main focus on the **USA**

Key Contributions

a) ***Extension*** of the earlier PK investment model of firm-level investment

b) ***Worldscope*** database allows us to build a consistent measure for companies' financial activities

c) First ***micro-econometric evidence for Europe*** on the effects of financialization on physical investment

d) New evidence on the effect of **Financial Development** (Love and Zicchino, 2007)

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Data and stylized facts

The dataset

- Publicly listed non-financial companies in the EU14 (AUT, BEL, DNK, FIN, FRA, GER, GRE, IRL, ITA, NLD, PRT, SPA, SWE, U.K.) from Worldscope database (Thomson Reuters)

- Period 1995-2015 (data availability)

The sampling process

- Exclusion of companies with negative avg. profit rate (*bankruptcy signal*)
- Exclusion of companies with I/K > 2.5
- Exclusion of outliers in the low and top 1% tails

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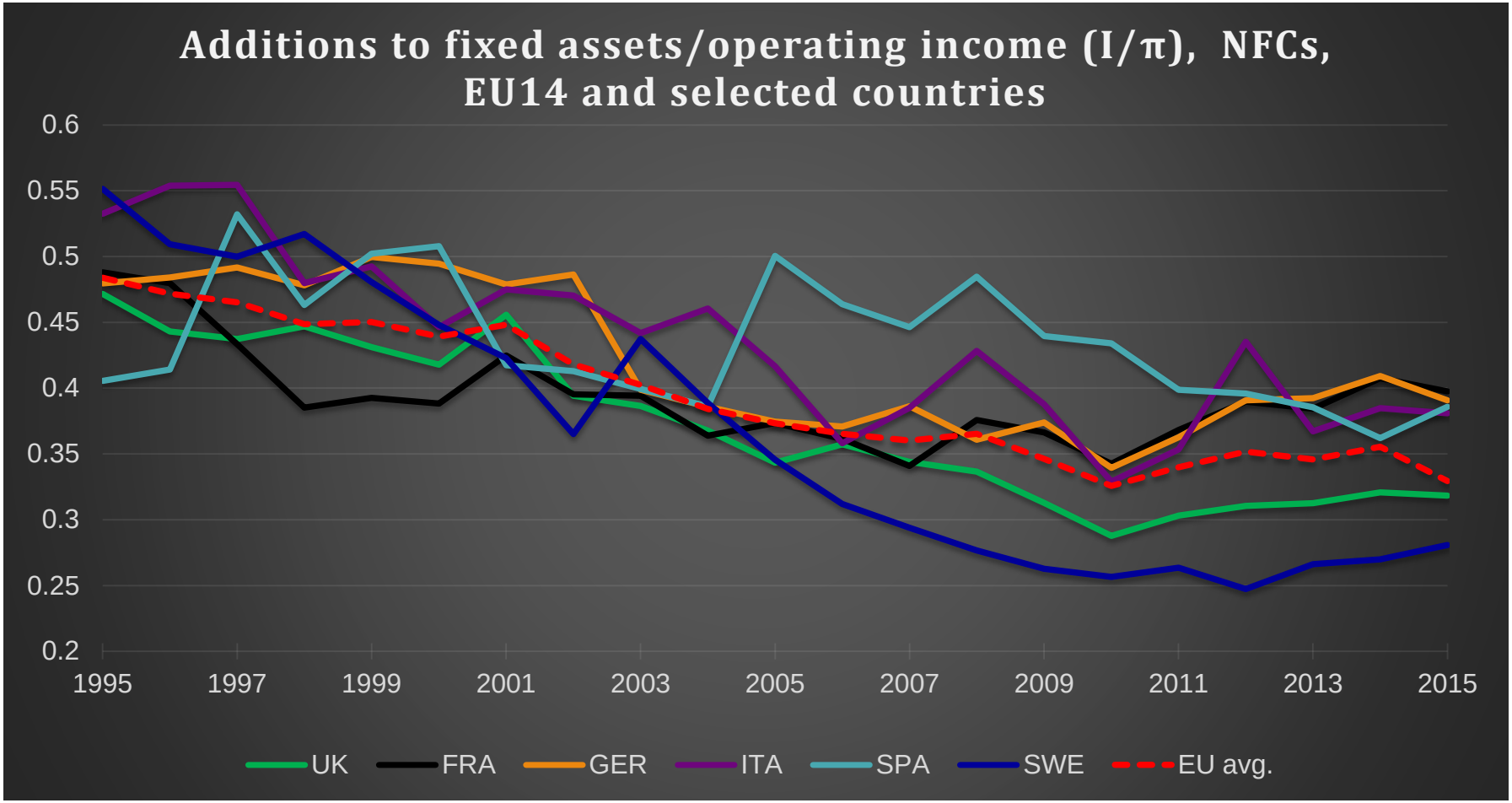
Stylized facts (1)



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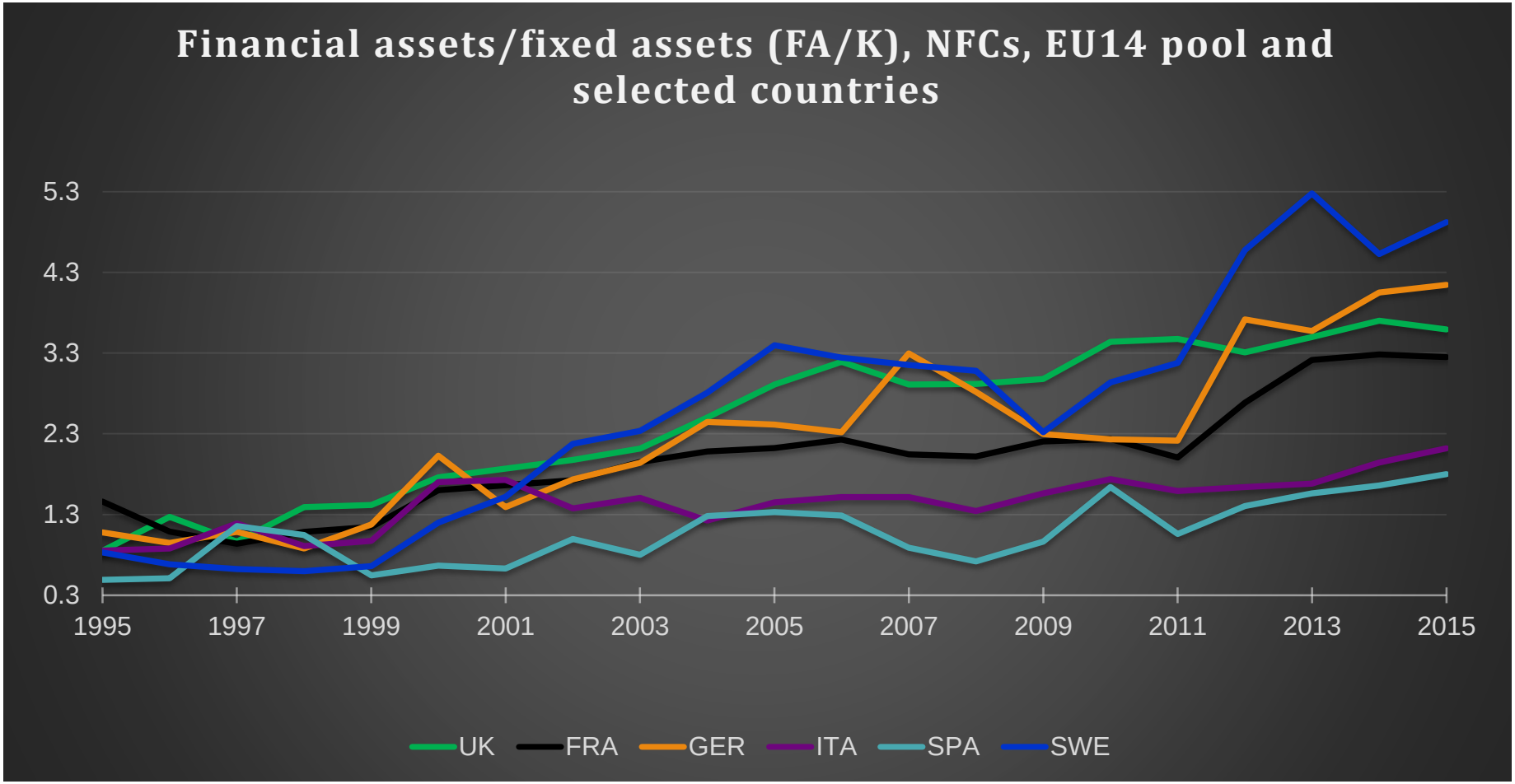
Stylized facts (2)



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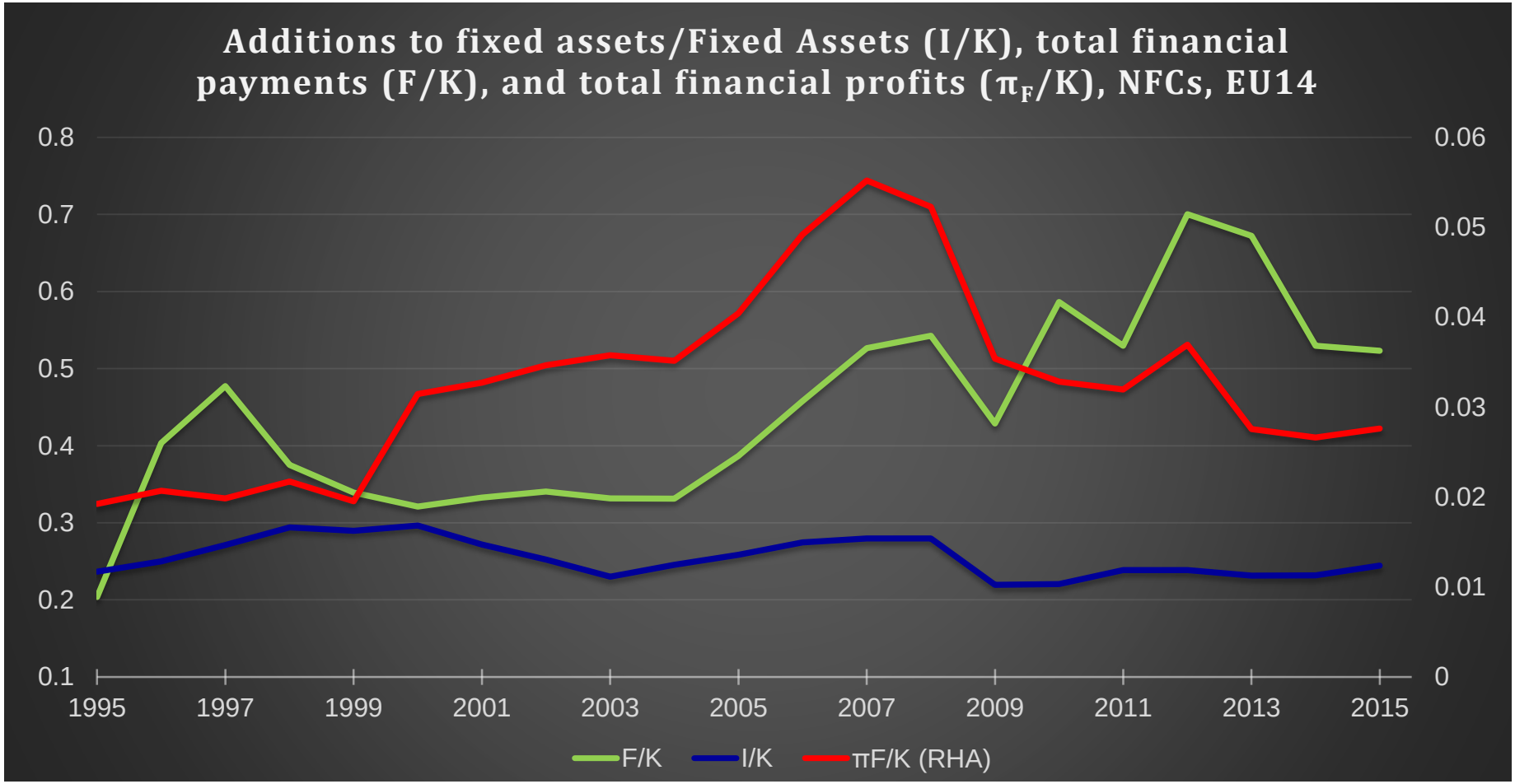
Stylized facts (3)



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Estimation methodology

Difference-Generalized Method of Moments (GMM) (Holtz-Eakin, Newey, and Rosen, 1988; Arellano and Bond, 1991)

Our dependent variable (*I/K*) is **dynamic**, and **path dependent → *j* lags of the dependent variabale** as explanatory variable. Standard estimator (i.e. OLS or GLS) would be inconsistent.

Four reasons to use GMM for our analysis (Roodman, 2009)

1) A small T/large N sample (efficiency)

2)By differencing variables, eliminates unobservable companies – fixed effects

3) Some regressors are not 'strictly exogenous'. GMM can handle the **presence of endogeneity**

4) GMM can address **autocorrelation** problems of 'internal instruments'

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Specification of the investment function

Capital accumulation:

a) An intrinsically dynamic phenomenon (Kalecki, 1954)

b) Irreversible (Lopez and Mott, 1998)

- *overlapping time-periods*
- *path dependency*

→ The importance of the lagged level of investment as a explanatory variable (Ford and Poret, 1991; Kopcke and Brauman, 2001; Orhangazi, 2008b; Arestis et al., 2012)

$$\left(\frac{I}{K}\right)_{it} = \beta_0 + \beta_1 \sum_{j=1}^{2} \left(\frac{I}{K}\right)_{it-j} + \beta_2 \sum_{j=1}^{2} \left(\frac{\pi - CD}{K}\right)_{it-j} + \beta_3 \sum_{j=1}^{2} \left(\frac{S}{K}\right)_{it-j} + \beta_4 \sum_{j=1}^{2} \left(\frac{\pi_F}{K}\right)_{it-j} + \beta_5 \sum_{j=1}^{2} \left(\frac{F}{K}\right)_{it-j} + \beta_6 \sum_{j=1}^{2} (Q)_{it-j} + \beta_t + \varepsilon_{it} \quad (1.)$$

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$$\left(\frac{I}{K}\right)_{it} = \beta_0 + \beta_1 \sum_{j=1}^{2} \left(\frac{I}{K}\right)_{it-j} + \beta_2 \sum_{j=1}^{2} \left(\frac{\pi - CD}{K}\right)_{it-j} + \beta_{2.1} \sum_{j=1}^{2} \left[\left(\frac{\pi - CD}{K}\right) * D_{nLFD}\right]_{it-j}$$
$$+ \beta_3 \sum_{j=1}^{2} \left(\frac{S}{K}\right)_{it-j} +$$
$$+ \beta_4 \sum_{j=1}^{2} \left(\frac{\pi_F}{K}\right)_{it-j} + \beta_{4.1} \sum_{j=1}^{2} \left[\left(\frac{\pi_F}{K}\right) * D_{LFD}\right]_{it-j} + \beta_5 \sum_{j=1}^{2} \left(\frac{F}{K}\right)_{it-j}$$
$$+ \beta_{5.1} \sum_{j=1}^{2} \left[\left(\frac{F}{K}\right) * D_{LFD}\right]_{it-j} + \beta_6 \sum_{j=1}^{2} \left(\frac{TA}{TD}\right)_{it-j} + \beta_{6.1} \sum_{j=1}^{2} \left[\left(\frac{TA}{TD}\right) * D_{LFD}\right]_{it-j}$$
$$+ \beta_7 \sum_{j=1}^{2} (Q)_{it-j} + \beta_t + \varepsilon_{it}$$

3.

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4.

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Estimation results

Variable	(1)[I]	(2)[II]	(3)[III]
$(I/K)_{t-1}$	0.299***	0.321***	0.306***
	(0.050)	(0.042)	(0.050)
$(I/K)_{t-2}$	-0.059**		-0.057**
	(0.024)		(0.028)
$(S/K)_{t-1}$	0.303***	0.225***	0.219**[*]
	(0.074)	(0.081)	(0.055)
$(S/K)_{t-2}$	0.596***	0.350**	0.416**
	(0.207)	(0.177)	(0.181)
$[(\pi - CD)/K]_{t-1}$	0.030***	0.005	0.034***
	(0.010)	(0.012)	(0.010)
$[(\pi - CD)/K]_{t-1} * D_{20}$			0.045
			(0.031)
$(\pi_F/K)_{t-1}$	-0.070***	-0.071**	-0.067**
	(0.026)	(0.029)	(0.029)
$(\pi_F/K)_{t-2}$	-0.032**	-0.031*	-0.047**
	(0.015)	(0.018)	(0.020)
$(\pi_F/K)_{t-1} * D_{20}$			0.098**
			(0.042)
$(\pi_F/K)_{t-2} * D_{20}$			0.176**
			(0.073)
$(F/K)_{t-1}$	-0.122***	-0.155***	-0.049***
	(0.046)	(0.059)	(0.018)
$(F/K)_{t-2}$	-0.112***	-0.099**	
	(0.043)	(0.045)	
$(F/K)_{t-2} * D_{20}$			-0.141**
			(0.063)
$\Delta(TD/TA)_{t-1}$	-0.031***	-0.025**	-0.016*
	(0.010)	(0.012)	(0.009)
$(Q)_{t-1}$	0.117*	0.155**	0.149***
	(0.067)	(0.067)	(0.033)

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-0.12 vs. +0.16

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$(Q)_{t-1}$	0.117*	0.155**	0.149***
	(0.067)	(0.067)	(0.033)

-0.05 vs. -0.20

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Single country estimations

	UK	*SWE*	*GER*	*SPA*	*ITA*
$(I/K)_{t-1}$	0.409***	0.283***	0.393***	0.457***	0.275***
	(0.029)	(0.065)	(0.101)	(0.066)	(0.041)
$(S/K)_{t-1}$	0.310***	0.224**	0.731*	0.461***	0.256**
	(0.061)	(0.108)	(0.374)	(0.177)	(0.124)
$[(\pi - CD)/K]_{t-1}$	0.023*		0.025	0.011	0.055*
	(0.013)		(0.020)	(0.034)	(0.029)
$[(\pi - CD)/K]_{t-2}$		0.121*			
		(0.065)			
$(\pi_F/K)_{t-1}$	-0.036**	-0.107**	-0.062*		-0.033*
	(0.016)	(0.049)	(0.033)		(0.020)
$(\pi_F/K)_{t-2}$		-0.059**		-0.053**	
		(0.025)		(0.025)	
$(F/K)_{t-1}$	-0.091***	-0.026		-0.383***	0.003
	(0.017)	(0.030)		(0.100)	(0.049)
$(F/K)_{t-2}$			-0.063***		
			(0.021)		
$(Q)_{t-1}$	0.172***				
	(0.028)				
$(Q)_{t-2}$	-0.059***				

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			(0.021)		
$(Q)_{t-1}$	0.172***				
	(0.028)				
$(Q)_{t-2}$	-0.059***				

Single country estimations

	UK	*SWE*	*GER*	*SPA*	*ITA*
$(I/K)_{t-1}$	0.409***	0.283***	0.393***	0.457***	0.275***
	(0.029)	(0.065)	(0.101)	(0.066)	(0.041)
$(S/K)_{t-1}$	0.310***	0.224**	0.731*	0.461***	0.256**
	(0.061)	(0.108)	(0.374)	(0.177)	(0.124)
$[(\pi - CD)/K]_{t-1}$	0.023*		0.025	0.011	0.055*
	(0.013)		(0.020)	(0.034)	(0.029)
$[(\pi - CD)/K]_{t-2}$		0.121*			
		(0.065)			
$(\pi_F/K)_{t-1}$	-0.036**	-0.107**	-0.062*		-0.033*
	(0.016)	(0.049)	(0.033)		(0.020)
$(\pi_F/K)_{t-2}$		-0.059**		-0.053**	
		(0.025)		(0.025)	
$(F/K)_{t-1}$	-0.091***	-0.026		-0.383***	0.003
	(0.017)	(0.030)		(0.100)	(0.049)
$(F/K)_{t-2}$			-0.063***		
			(0.021)		
$(Q)_{t-1}$	0.172***				
	(0.028)				
$(Q)_{t-2}$	-0.059***				

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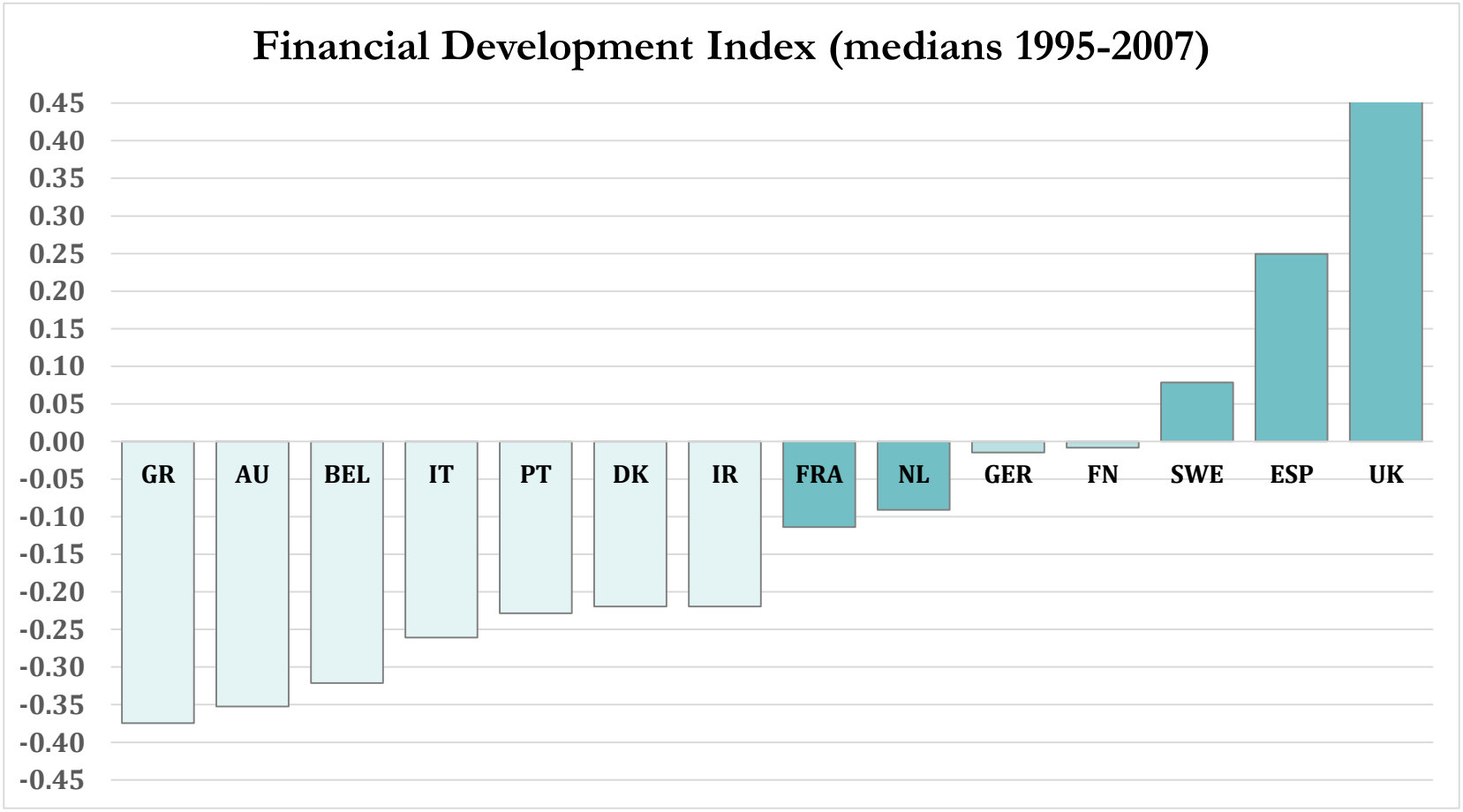
Financial Development Index (medians 1995-2007)



FD index: Index *1* + *F*index *1* from Demirguc-Kunt and Levine (1996), Beck et al. (2000)
Index 1 = the sum of (standardized indices of) market capitalization to GDP, tot. value traded to GDP, and turnover (*stock mkt activity*)
Findex1 = sum of (standardized indices of) ratio of liquid liabilities to GDP (i.e. M3/GDP), and ratio of domestic credit to private sector to GDP (*fin. intermediaries*)

	3	4
$(I/K)_{t-1}$	0.372***	0.328***
	(0.038)	(0.042)
$(S/K)_{t-1}$	0.184***	0.218***
	(0.082)	(0.082)
$(S/K)_{t-2}$		0.096**
		(0.044)
$[(\pi - CD)/K]_{t-1}$	0.011*	0.015*
	(0.005)	(0.009)
$[(\pi - CD)/K]_{t-1} * D_{LFD}$	0.221*	0.275**
	(0.118)	(0.132)
$(\pi_F/K)_{t-1}$	- 0.132***	- 0.158***
	(0.038)	(0.042)
$(\pi_F/K)_{t-2}$	- 0.099***	- 0.083***
	(0.026)	(0.030)
$(\pi_F/K)_{t-1} * D_{LFD}$	0.167***	0.162***
	(0.046)	(0.050)
$(\pi_F/K)_{t-2} * D_{LFD}$	0.187***	0.140**
	(0.049)	(0.055)
$(\pi_F/K)_{t-1} * D_{20}$		0.104**
		(0.047)
$(F/K)_{t-1}$	- 0.081*	- 0.107*
	0.044	(0.060)
$(F/K)_{t-1} * D_{LFD}$	- 0.050	- 0.079**
	(0.036)	(0.031)
$(F/K)_{t-1} * D_{20}$		0.287
		(0.204)
$\Delta(TD/TA)_{t-1}$	- 0.030***	- 0.029***
	(0.008)	(0.009)
$\Delta(TD/TA)_{t-1} * D_{LFD}$	0.056***	0.048**
	(0.021)	(0.021)
$(Q)_{t-1}$	0.157**	0.113***
	(0.034)	(0.033)

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	3	4
$(I/K)_{t-1}$	0.372***	0.328***
	(0.038)	(0.042)
$(S/K)_{t-1}$	0.184***	0.218***
	(0.082)	(0.082)
$(S/K)_{t-2}$		0.096**
		(0.044)
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	(0.005)	(0.009)
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	(0.038)	(0.042)
$(\pi_F/K)_{t-2}$	- 0.099***	- 0.083***
	(0.026)	(0.030)
$(\pi_F/K)_{t-1} * D_{LFD}$	0.167***	0.162***
	(0.046)	(0.050)
$(\pi_F/K)_{t-2} * D_{LFD}$	0.187***	0.140**
	(0.049)	(0.055)
$(\pi_F/K)_{t-1} * D_{20}$		0.104**
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$(F/K)_{t-1}$	- 0.081*	- 0.107*
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	(0.036)	(0.031)
$(F/K)_{t-1} * D_{20}$		0.287
		(0.204)
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	(0.008)	(0.009)
$\Delta(TD/TA)_{t-1} * D_{LFD}$	0.056***	0.048**
	(0.021)	(0.021)
$(Q)_{t-1}$	0.157**	0.113***
	(0.034)	(0.033)

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	Internal finance (long-run coefficients)
HFD	0.03
LFD	0.64

	3	4
$(I/K)_{t-1}$	0.372***	0.328***
	(0.038)	(0.042)
$(S/K)_{t-1}$	0.184***	0.218***
	(0.082)	(0.082)
$(S/K)_{t-2}$		0.096**
		(0.044)
$[(\pi - CD)/K]_{t-1}$	0.011*	0.015*
	(0.005)	(0.009)
$[(\pi - CD)/K]_{t-1} * D_{LFD}$	0.221*	0.275**
	(0.118)	(0.132)
$(\pi_F/K)_{t-1}$	- 0.132***	- 0.158***
	(0.038)	(0.042)
$(\pi_F/K)_{t-2}$	- 0.099***	- 0.083***
	(0.026)	(0.030)
$(\pi_F/K)_{t-1} * D_{LFD}$	0.167***	0.162***
	(0.046)	(0.050)
$(\pi_F/K)_{t-2} * D_{LFD}$	0.187***	0.140**
	(0.049)	(0.055)
$(\pi_F/K)_{t-1} * D_{20}$		0.104**
		(0.047)
$(F/K)_{t-1}$	- 0.081*	- 0.107*
	0.044	(0.060)
$(F/K)_{t-1} * D_{LFD}$	- 0.050	- 0.079**
	(0.036)	(0.031)
$(F/K)_{t-1} * D_{20}$		0.287
		(0.204)
$\Delta(TD/TA)_{t-1}$	- 0.030***	- 0.029***
	(0.008)	(0.009)
$\Delta(TD/TA)_{t-1} * D_{LFD}$	0.056***	0.048**
	(0.021)	(0.021)
$(Q)_{t-1}$	0.157**	0.113***
	(0.034)	(0.033)

	Financial Incomes (long-run coefficients)	
	Large	**Small**
HFD	-0.36	-0.20
LFD	0.00	0.60

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	3	4
$(I/K)_{t-1}$	0.372***	0.328***
	(0.038)	(0.042)
$(S/K)_{t-1}$	0.184***	0.218***
	(0.082)	(0.082)
$(S/K)_{t-2}$		0.096**
		(0.044)
$[(\pi - CD)/K]_{t-1}$	0.011*	0.015*
	(0.005)	(0.009)
$[(\pi - CD)/K]_{t-1} * D_{LFD}$	0.221*	0.275**
	(0.118)	(0.132)
$(\pi_F/K)_{t-1}$	- 0.132***	- 0.158***
	(0.038)	(0.042)
$(\pi_F/K)_{t-2}$	- 0.099***	- 0.083***
	(0.026)	(0.030)
$(\pi_F/K)_{t-1} * D_{LFD}$	0.167***	0.162***
	(0.046)	(0.050)
$(\pi_F/K)_{t-2} * D_{LFD}$	0.187***	0.140**
	(0.049)	(0.055)
$(\pi_F/K)_{t-1} * D_{20}$		0.104**
		(0.047)
$(F/K)_{t-1}$	- 0.081*	- 0.107*
	0.044	(0.060)
$(F/K)_{t-1} * D_{LFD}$	- 0.050	- 0.079**
	(0.036)	(0.031)
$(F/K)_{t-1} * D_{20}$		0.287
		(0.204)
$\Delta(TD/TA)_{t-1}$	- 0.030***	- 0.029***
	(0.008)	(0.009)
$\Delta(TD/TA)_{t-1} * D_{LFD}$	0.056***	0.048**
	(0.021)	(0.021)
$(Q)_{t-1}$	0.157**	0.113***
	(0.034)	(0.033)

	Financial Incomes (long-run coefficients)	
	Large	**Small**
HFD	-0.36	-0.20
LFD	0.00	0.60

	3	4
$(I/K)_{t-1}$	0.372***	0.328***
	(0.038)	(0.042)
$(S/K)_{t-1}$	0.184***	0.218***
	(0.082)	(0.082)
$(S/K)_{t-2}$		0.096**
		(0.044)
$[(\pi - CD)/K]_{t-1}$	0.011*	0.015*
	(0.005)	(0.009)
$[(\pi - CD)/K]_{t-1} * D_{LFD}$	0.221*	0.275**
	(0.118)	(0.132)
$(\pi_F/K)_{t-1}$	- 0.132***	- 0.158***
	(0.038)	(0.042)
$(\pi_F/K)_{t-2}$	- 0.099***	- 0.083***
	(0.026)	(0.030)
$(\pi_F/K)_{t-1} * D_{LFD}$	0.167***	0.162***
	(0.046)	(0.050)
$(\pi_F/K)_{t-2} * D_{LFD}$	0.187***	0.140**
	(0.049)	(0.055)
$(\pi_F/K)_{t-1} * D_{20}$		0.104**
		(0.047)
$(F/K)_{t-1}$	- 0.081*	- 0.107*
	0.044	(0.060)
$(F/K)_{t-1} * D_{LFD}$	- 0.050	- 0.079**
	(0.036)	(0.031)
$(F/K)_{t-1} * D_{20}$		0.287
		(0.204)
$\Delta(TD/TA)_{t-1}$	- 0.030***	- 0.029***
	(0.008)	(0.009)
$\Delta(TD/TA)_{t-1} * D_{LFD}$	0.056***	0.048**
	(0.021)	(0.021)
$(Q)_{t-1}$	0.157**	0.113***
	(0.034)	(0.033)

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	Financial Payments (long-run coefficients)	
	Large	**Small**
HFD	-0.16	0.00
LFD	-0.28	0.00

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Economic effects (1) *based on estimation 3*

	FD	S/K	(π-CD)/K	π_F/K	F/K	Δ(TD/TA)
Germany	HIGH	0.22	0.05	-0.49	-0.06	0.00
Spain	HIGH	0.04	0.01	-0.26	-0.07	-0.02
Finland	HIGH	0.36	0.02	-0.28	-0.13	0.01
France	HIGH	0.23	0.02	-0.16	-0.07	0.00
The Netherlands	HIGH	0.18	0.01	-0.29	0.00	0.00
Sweden	HIGH	0.54	0.03	-0.71	-0.24	0.00
UK	HIGH	0.25	0.02	-0.50	-0.13	-0.01
Belgium	LOW	0.15	0.53	0.08	-0.15	0.00
Denmark	LOW	0.21	0.25	0.04	-0.26	0.00
Greece	LOW	-0.06	-0.11	0.02	0.06	0.00
Ireland	LOW	0.39	0.49	-0.01	-0.19	0.00
Italy	LOW	0.25	0.39	0.05	-0.12	0.00
Austria	LOW	0.02	0.37	0.03	-0.27	0.00
Portugal	LOW	0.22	0.06	0.26	-0.11	0.00

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	FD	S/K	(π-CD)/K	π_F/K	F/K	Δ(TD/TA)
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	FD	S/K	(π-CD)/K	π_F/K	F/K	Δ(TD/TA)
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France	HIGH	0.23	0.02	-0.16	-0.07	0.00
The Netherlands	HIGH	0.18	0.01	-0.29	0.00	0.00
Sweden	HIGH	0.54	0.03	-0.71	-0.24	0.00
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Greece	LOW	-0.06	-0.11	0.02	0.06	0.00
Ireland	LOW	0.39	0.49	-0.01	-0.19	0.00
Italy	LOW	0.25	0.39	0.05	-0.12	0.00
Austria	LOW	0.02	0.37	0.03	-0.27	0.00
Portugal	LOW	0.22	0.06	0.26	-0.11	0.00

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Economic effects (1) *based on estimation 3*

	FD	S/K	(π-CD)/K	π_F/K	F/K	Δ(TD/TA)
Germany	HIGH	0.22	0.05	-0.49	-0.06	0.00
Spain	HIGH	0.04	0.01	-0.26	-0.07	-0.02
Finland	HIGH	0.36	0.02	-0.28	-0.13	0.01
France	HIGH	0.23	0.02	-0.16	-0.07	0.00
The Netherlands	HIGH	0.18	0.01	-0.29	0.00	0.00
Sweden	HIGH	0.54	0.03	-0.71	-0.24	0.00
UK	HIGH	0.25	0.02	-0.50	-0.13	-0.01
Belgium	LOW	0.15	0.53	0.08	-0.15	0.00
Denmark	LOW	0.21	0.25	0.04	-0.26	0.00
Greece	LOW	-0.06	-0.11	0.02	0.06	0.00
Ireland	LOW	0.39	0.49	-0.01	-0.19	0.00
Italy	LOW	0.25	0.39	0.05	-0.12	0.00
Austria	LOW	0.02	0.37	0.03	-0.27	0.00
Portugal	LOW	0.22	0.06	0.26	-0.11	0.00

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Economic effects (1) *based on estimation 3*

	FD	S/K	(π-CD)/K	π_F/K	F/K	Δ(TD/TA)
Germany	HIGH	0.22	0.05	-0.49	-0.06	0.00
Spain	HIGH	0.04	0.01	-0.26	-0.07	-0.02
Finland	HIGH	0.36	0.02	-0.28	-0.13	0.01
France	HIGH	0.23	0.02	-0.16	-0.07	0.00
The Netherlands	HIGH	0.18	0.01	-0.29	0.00	0.00
Sweden	HIGH	0.54	0.03	-0.71	-0.24	0.00
UK	HIGH	0.25	0.02	-0.50	-0.13	-0.01
Belgium	LOW	0.15	0.53	0.08	-0.15	0.00
Denmark	LOW	0.21	0.25	0.04	-0.26	0.00
Greece	LOW	-0.06	-0.11	0.02	0.06	0.00
Ireland	LOW	0.39	0.49	-0.01	-0.19	0.00
Italy	LOW	0.25	0.39	0.05	-0.12	0.00
Austria	LOW	0.02	0.37	0.03	-0.27	0.00
Portugal	LOW	0.22	0.06	0.26	-0.11	0.00

	FD		π_F/K	F/K
Germany	HIGH	LARGE	-0.39	-0.06
		SMALL	-0.36	0.00
Spain	HIGH	LARGE	-0.21	-0.09
		SMALL	-0.30	0.00
Finland	HIGH	LARGE	-0.26	-0.20
		SMALL	-0.24	0.00
France	HIGH	LARGE	-0.16	-0.07
		SMALL	-0.36	0.00
The Netherlands	HIGH	LARGE	-0.25	-0.03
		SMALL	-0.22	0.00
Sweden	HIGH	LARGE	-0.47	-0.27
		SMALL	-0.49	0.00
UK	HIGH	LARGE	-0.42	-0.16
		SMALL	-0.35	0.00
Belgium	LOW	LARGE	0.00	-0.62
		SMALL	1.12	0.00
Denmark	LOW	LARGE	0.00	-0.34
		SMALL	0.20	0.00
Greece	LOW	LARGE	0.00	0.08
		SMALL	0.56	0.00
Ireland	LOW	LARGE	0.00	-0.14
		SMALL	2.20	0.00
Italy	LOW	LARGE	0.00	-0.13
		SMALL	0.58	0.00
Austria	LOW	LARGE	0.00	-0.29
		SMALL	-0.41	0.00
Portugal	LOW	LARGE	0.00	-0.15
		SMALL	-0.12	0.00

Economic effects (2)

based on estimation 4

- In countries with high FD the 'size effect' is not confirmed
- Both small and large companies experienced negative effect of financial incomes

	FD		π_F/K	F/K
Germany	HIGH	LARGE	-0.39	-0.06
		SMALL	-0.36	0.00
Spain	HIGH	LARGE	-0.21	-0.09
		SMALL	-0.30	0.00
Finland	HIGH	LARGE	-0.26	-0.20
		SMALL	-0.24	0.00
France	HIGH	LARGE	-0.16	-0.07
		SMALL	-0.36	0.00
The Netherlands	HIGH	LARGE	-0.25	-0.03
		SMALL	-0.22	0.00
Sweden	HIGH	LARGE	-0.47	-0.27
		SMALL	-0.49	0.00
UK	HIGH	LARGE	-0.42	-0.16
		SMALL	-0.35	0.00
Belgium	LOW	LARGE	0.00	-0.62
		SMALL	1.12	0.00
Denmark	LOW	LARGE	0.00	-0.34
		SMALL	0.20	0.00
Greece	LOW	LARGE	0.00	0.08
		SMALL	0.56	0.00
Ireland	LOW	LARGE	0.00	-0.14
		SMALL	2.20	0.00
Italy	LOW	LARGE	0.00	-0.13
		SMALL	0.58	0.00
Austria	LOW	LARGE	0.00	-0.29
		SMALL	-0.41	0.00
Portugal	LOW	LARGE	0.00	-0.15
		SMALL	-0.12	0.00

Economic effects (2)

based on estimation 4

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- In countries with high FD the 'size effect' is not confirmed
- Both small and large companies experienced negative effect of financial incomes
- In countries with low FD only small firms experienced a positive effect of financial incomes

	FD		π_F/K	F/K
Germany	HIGH	LARGE	-0.39	-0.06
		SMALL	-0.36	0.00
Spain	HIGH	LARGE	-0.21	-0.09
		SMALL	-0.30	0.00
Finland	HIGH	LARGE	-0.26	-0.20
		SMALL	-0.24	0.00
France	HIGH	LARGE	-0.16	-0.07
		SMALL	-0.36	0.00
The Netherlands	HIGH	LARGE	-0.25	-0.03
		SMALL	-0.22	0.00
Sweden	HIGH	LARGE	-0.47	-0.27
		SMALL	-0.49	0.00
UK	HIGH	LARGE	-0.42	-0.16
		SMALL	-0.35	0.00
Belgium	LOW	LARGE	0.00	-0.62
		SMALL	1.12	0.00
Denmark	LOW	LARGE	0.00	-0.34
		SMALL	0.20	0.00
Greece	LOW	LARGE	0.00	0.08
		SMALL	0.56	0.00
Ireland	LOW	LARGE	0.00	-0.14
		SMALL	2.20	0.00
Italy	LOW	LARGE	0.00	-0.13
		SMALL	0.58	0.00
Austria	LOW	LARGE	0.00	-0.29
		SMALL	-0.41	0.00
Portugal	LOW	LARGE	0.00	-0.15
		SMALL	-0.12	0.00

Economic effects (2)

based on estimation 4

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- In countries with high FD the 'size effect' is not confirmed
- Both small and large companies experienced negative effect of financial incomes
- In countries with low FD only small firms experienced a positive effect of financial incomes
- Positive effect of financial incomes for smaller NFCs at the aggregate level seems to be driven by the ones in low FD environment

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Conclusion (1)

→ Financialization had a fundamental role in ***suppressing the rate of physical accumulation*** *of NFCs in Europe*

In Europe we find:

> Robust ***negative impact*** of financial incomes and financial payments on NFCs' investment

> At a first sight, dimension 'matters'...

On aggregate, the effect of financial incomes is:

- *Positive* for *smaller* companies ('financially constrained')
- *Negative* for *larger* companies (they create the vast majority of *K*)

> In a financialization framework the change in the level of ***debt*** is a less robust explanatory variable explaining firm-level investment

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Conclusion (2)

Financial development

> is certeninly **easing** the 'internal finance' constraint

> When 'controlling' for financialization (incomes and payments) higher levels of financial development (index) increase the overall ***negative effect*** *of financial incomes* on NFCs investment

> In countries with high FD both ***big*** and ***small*** companies' investment are negatively effected by their financial incomes

> seems to spport investment in smaller companies in countries with relatively ***low*** FD levels

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Conclusion (3)

How to get out of the recession?

> The financialization of the European system favoured by a political processes aimed at the deregulation (liberalization) of financial markets and at reduction of tax rates for corporations (Bieling, 2013).

> De-financialization (socio)economic program?

> Fiscal policies from 'realized' profits to '*re-invested*' profits

> Need for a vast programme of *public investment* to provide the private initiative with a sustainable *incentive structure* (Stockhammer, 2015; Onaran, 2016)

> Reconsideration of the process of European (financial) intetgration guided by '*market-rules prominence*'

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APPENDICES

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Variables definition and codes.

Symbol	*Variable*	*Definition*	*Worldscope Code*
I	Investment	Addition to fixed assets	WC04601
K	Capital stock	Net fixed capital stock	WC02501
S	Sales	Net sales	WC01001
π	Net profit rate	Operating income-depreciation	WC01250-WC04051
F	Financial Payments	Interest + cash dividends paid	WC01251+ WC04551
π_F	Non-operating profit	Non-operating profit from interest and dividends	WC01266+ WC01268
FA	Financial assets	Cash, other investment, short-term investment	WC02003+ WC02250+ WC02008
Q	Average Tobin's Q	(Market share price*common share outstanding + total liabilities)/total assets	$\frac{\text{WC08001 + WC03551}}{\text{WC02999}}$
TD	Total debt	sum of long-term and short-term debt	WC03255
FD	Financial Development	Standardized average of Stock market and financial intermediaries development over GDP	Index1 + Findex1

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Estimation results, other countries

	AUT	DNK	FNL	BLG	PRT	IRL	GRE	NTH
$(I/K)_{t-1}$	0.378***	0.191**	0.348***	0.096	0.269***	0.432*	0.382**	0.294***
	(0.092)	(0.084)	(0.056)	(0.069)	(0.102)	(0.251)	(0.175)	(0.089)
$(S/K)_{t-1}$	0.751***	0.501*	0.534***	0.036	1.302*	0.732	0.477	0.191**
	(0.207)	(0.287)	(0.205)	(0.155)	(0.792)	(0.550)	(0.398)	(0.088)
$[(\pi - CD)/K]_{t-1}$	0.045	0.075**	0.010	0.068**	-0.067	0.024	-0.025	0.011
	(0.039)	(0.036)	(0.052)	(0.025)	(0.064)	(0.095)	(0.045)	(0.027)
$(F/K)_{t-1}$	0.024	-0.249**	-0.238***	0.034	-0.435***	-0.528*	0.254	-0.097***
	(0.092)	(0.098)	(0.091)	(0.074)	(0.158)	(0.269)	(0.164)	(0.037)
$(\pi_F/K)_{t-1}$	-0.214**	0.081	0.033	0.049*	-0.050	-0.147**	-0.032	-0.076**
	(0.084)	(0.071)	(0.035)	(0.030)	(0.075)	(0.058)	(0.051)	(0.034)
$(Q)_{t-1}$	0.151*	0.245**						-0.252***
	(0.092)	(0.119)						(0.064)
Number of Observations	470	708	561	684	314	536	580	904
Number of Firms	76	89	84	82	54	55	92	94
Number of Instruments	34	34	32	32	32	32	32	34
p-value Hanses test	0.735	0.485	0.468	0.445	0.085	0.097	0.599	0.410
p-value A-B test (AR 2)	0.242	0.727	0.022	0.696	0.427	0.909	0.622	0.001
Time effects	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*
p-value Wald test for time effects	0.003	0.000	0.000	0.000	0.001	0.005	0.002	0.011

Variable		Mean	Std. Dev.	Observations	
I/K	overall	0.25	0.20	N =	25726
	between	0.16	1.10	n =	2881
	within	0.14	-0.442	T-bar =	15.9
S/K	overall	13.49	28.98	N =	25726
	between	33.92	0.062	n =	2881
	within	15.60	-281.82	T-bar =	15.6
$(\pi - CD)/K$	overall	0.66	2.50	N =	25726
	between	2.10	-17.98	n =	2881
	within	1.93	-74.66	T-bar =	15.1
π_F/K	overall	0.032	0.12	N =	25726
	between	0.056	0.89	n =	2881
	within	0.10	-.86	T-bar =	15.8
F/K	overall	0.46	3.41	N =	25726
	between	2.79	85.69	n =	2881
	within	2.59	-85.19	T-bar =	15.1
I/π	overall	0.38	0.26	N =	25726
	between	0.22	0.97	n =	2881
	within	0.18	-0.25	T-bar =	15.2
FA/K	overall	2.44	13.77	N =	25726
	between	9.86	0.10	n =	2881
	within	10.48	-317.04	T-bar =	15.6
Q	overall	1.54	0.99	N =	25329
	between	0.71	0.34	n =	2864
	within	0.73	-3.43	T-bar =	15.7

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Sample coverage

	(a) Number of observations	(b) Share of total observations	(c) Number of firms	(d) Share of total firms	(e) Firms with avg. Ta < 20pTa (%)	(f) Firms with avg. Ta >80pTa (%)	Difference (f-e)
Country							
Austria	470	0,02	76	0,03	12 (15,79)	18 (23,68)	7,89
Belgium	684	0,03	82	0,03	21 (25,61)	28 (34,15)	8,54
Denmark	708	0,03	89	0,03	18 (20,22)	32 (35,96)	15,73
Finland	561	0,02	84	0,03	24 (28,57)	36 (42,86)	14,29
France	3557	0,14	417	0,14	109(26,14)	132(31,65)	5,52
Germany	3438	0,13	400	0,14	85 (21,25)	119(29,75)	8,50
Greece	580	0,02	92	0,03	38 (41,30)	49 (53,26)	11,96
Ireland	536	0,02	55	0,02	6 (10,91)	11 (20,00)	9,09
Italy	1456	0,06	176	0,06	36 (20,45)	56 (31,82)	11,36
Netherlands	904	0,04	94	0,03	19 (20,21)	34 (36,21)	15,96
Portugal	314	0,01	54	0,02	7 (12,96)	11 (20,37)	7,41
Spain	1039	0,04	116	0,04	35 (30,17)	60 (51,72)	21,55
Sweden	1998	0,08	231	0,08	55 (23,81)	68 (29,44)	5,63
United Kingdom	9481	0,37	915	0,32	180(19,67)	276(30,16)	10,49
EU14	25726	1,00	2881	1,00	645(22,39)	930(32,28)	9,89

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Descriptive statistics for selected countries

	Variable													
	I/K		S/K		$(\pi - CD)/K$		π_F/K		F/K		I/π		FA/K	
Country	*mean*	*s.d.*	*mean*	*s.d.*	*mean*	*s.d.*	*mean*	*s.d.*	*mean*	*s.d.*	*mean*	*s.d.*	*mean*	*s.d.*
France	0.31	0.24	5.29	2.80	0.74	1.55	0.03	0.06	0.32	0.54	0.38	0.26	2.03	4.01
Germany	0.28	0.21	4.50	1.26	0.55	1.76	0.04	0.10	0.30	0.68	0.40	0.27	2.34	6.71
Italy	0.21	0.15	7.35	0.86	0.38	0.86	0.02	0.05	0.27	0.56	0.42	0.26	1.49	3.41
Spain	0.18	0.15	4.97	7.39	0.27	0.50	0.02	0.05	0.30	0.64	0.43	0.26	1.09	2.48
Sweden	0.29	0.21	7.24	3.26	1.00	1.25	0.06	0.17	0.75	1.76	0.33	0.25	2.95	6.84
United Kingdom	0.25	0.19	5.07	7.65	0.83	1.34	0.03	0.09	0.43	0.92	0.35	0.26	2.67	6.53

- The true effect of explanatory variable 'x' will be equal to the sum of the interacted and the non-interacted coefficient.

- The discussion is a bit more complex when more than one interaction for the same variable is included in the specification.

- Taking financial income as an example, the estimated coefficient β_4 will correspond to the effect of this variable for companies lying in the top 80% of the distribution in terms of total assets, which also are in country with high FD.

- Coefficient $\beta_{4.1}$ will be the effect of financial incomes in the companies in the top 80% of the size distribution but based in countries with low FD.

- Coefficient $\beta_{4.2}$ will reveal the effect of this variable in relatively smaller companies (the low 20% of the size distribution), irrespective of their location in terms of FD.

- The result of $\beta_4 + \beta_{4.2}$ will be the effect of financial incomes in relatively smaller companies based in countries with low FD.

Figure 1. Additions to fixed assets/Fixed Assets (I/K), total payments (F/K), and total financial profits (π_F/K), NFCs, UK

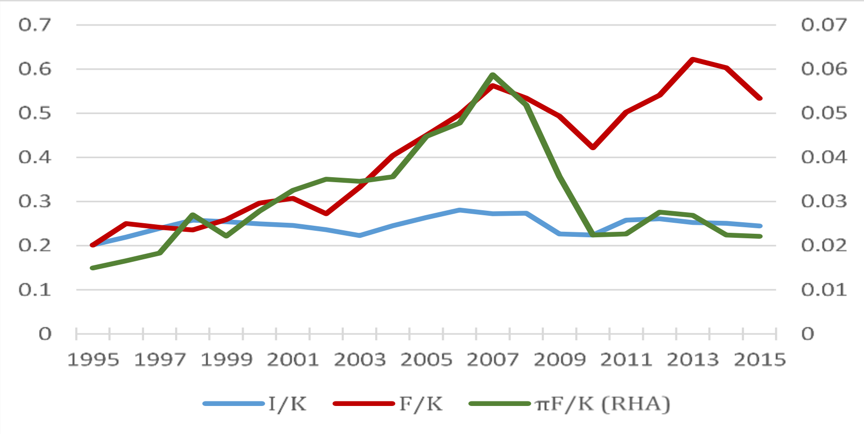


Figure 2. Additions to fixed assets/Fixed Assets (I/K), total payments (F/K), and total financial profits (πF/K), NFCs, France

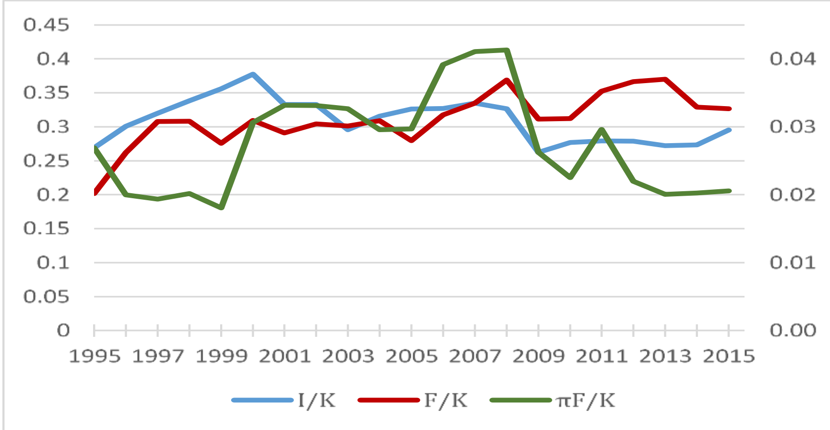


Figure 3. Additions to fixed assets/Fixed Assets (I/K), total payments (F/K), and total financial profits (πF/K), NFCs, Germany

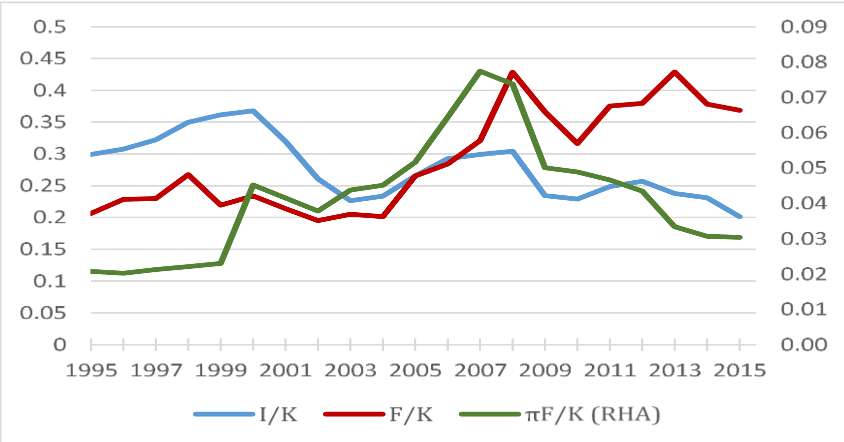


Figure 4. Additions to fixed assets/Fixed Assets (I/K), total payments (F/K), and total financial profits (πF/K), NFCs, Italy

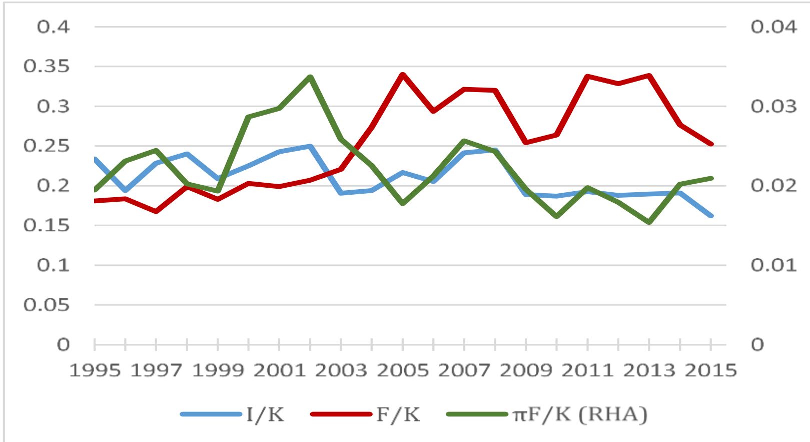


Figure 5. Additions to fixed assets/Fixed Assets (I/K), total payments (F/K), and total financial profits (πF/K), NFCs, Spain

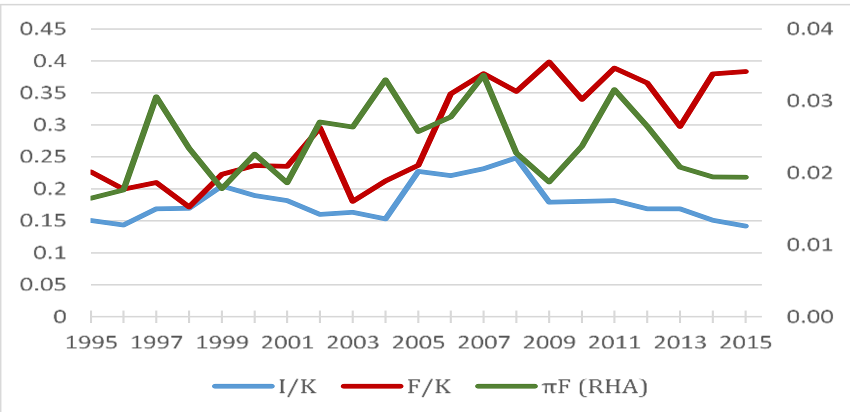
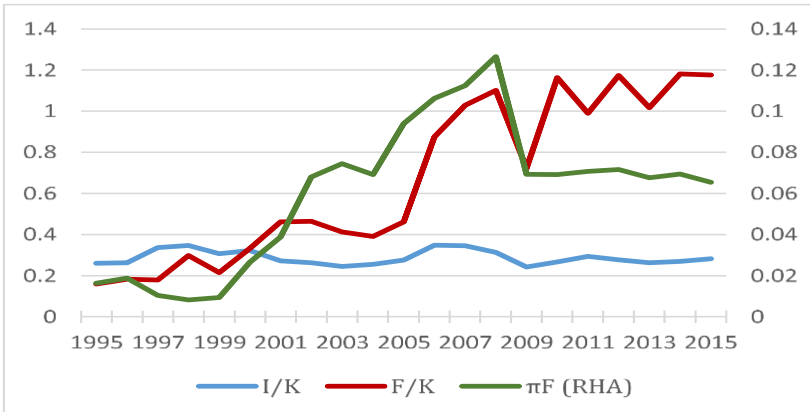


Figure 6. Additions to fixed assets/Fixed Assets (I/K), total payments (F/K), and total financial profits (πF/K), NFCs, Sweden



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