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D3.10 Changes in the relationship between the financial and the real sector and the present and financial economic crisis in the EU.

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D3.10 Changes in the relationship between the financial and the real sector and the present and financial economic crisis.

1.- Changes in the Relationship between the Financial and Real sector: A long run macro analysis

1. The “Vanishing Effect” of finance on growth and the Inverted “U” shape relationship
2. Disentangling which aspects of finance are more detrimental/benning for economic growth

2.- Financialisation of non financial corporations

1. Financing gap and external resources of NFC
2. Changes in the external sources
3. Bank credit demand

The main point in the first part is to add new evidence on a growing consensus that puts into question what until recently was an unquestionable truth: *“...a **strong positive causal link between financial depth and long run economic growth**”* (Ross Levine, 2005).

- Rousseau, P.L. and Wachtel, P. (2011): *“What is Happening to the impact of financial deepening on Economic Growth?”* → **The Vanishing Effect**
- Arcand, J.L. et al. (2012): *“Too Much Finance?”* → **Inverted “U” shape Effect**
- Cecchetti, S and Kharroubi, E. (2012): *“Reassessing the impact of finance on growth”* → more finance is definitely not always better
- Sawyer, M (2013): *“Financial Development, financialisation and Economic Growth”* → a positive result between the financial sector and economic growth is not a general and universal one
- Creel, J. et al. (2015): *“Financial Stability and Economic Performance”* → for **EU countries** financial depth does not positively influence economic performance

1. The Vanishing Effect of finance on growth and the Inverted “U” shape relationship

$$\dot{y}_{i,t} = \alpha y_{i,t-1} + \beta' X_{i,t} + \gamma F_{i,t} + \delta_t + \mu_i + \varepsilon_{i,t} \quad (i) \text{ Linear specification}$$

$$\dot{y}_{i,t} = \alpha y_{i,t-1} + \beta' X_{i,t} + \gamma_1 F_{i,t} + \gamma_2 F_{i,t}^2 + \delta_t + \mu_i + \varepsilon_{i,t} \quad (ii) \text{ Quadratic specification}$$

y: GDP per capita growth

αy : initial GDP per capita

X: controls for Inflation and Education

F: Domestic credit to private sector; Gross Added Value and Employment of Financial System (%GDP)

1970- 2013 for 24 EU countries

General Method Moments (GMM) dynamic panel estimation over 5 year windows period averages

Table 3. Results. Robust Arellano and Bond GMM Estimates of Economic growth. Dynamic panel-data estimation, two-step difference GMM. Dependent variable: GDPper capita growth. Financial depth measured by “ Bank Credit”.

	(1970-2013)		(1970-1989)		(1990-2013)	
	Linear	Quadratic	Linear	Quadratic	Linear	Quadratic
log GDPpc(t-1)	-0.114 (2.09)**	-0.161 (2.44)**	-0.597 (3.93)***	-0.565 (3.15)***	-0.096 (2.25)**	-0.108 (2.68)***
Education	0.068 (0.37)	0.052 (0.29)	0.211 (0.62)	0.044 (0.11)	-0.026 (0.11)	-0.01 (0.05)
Inflation	-0.222 (1.06)	-0.18 (0.94)	-1.388 (1.90)*	-1.572 (1.65)*	-0.153 (1.19)	-0.154 (1.09)
log Credit	-0.025 (0.61)		0.137 (2.17)**		-0.002 (0.06)	
Credit1		-0.023 (0.19)		0.549 (0.93)		0.004 (0.04)
Credit2		-0.023 (0.66)		-0.261 (0.52)		-0.017 (0.53)
Obs.	140	140	33	33	107	107
Arellano-Bond test						
AR(1)	-3.83	-3.89	-0.35	-0.51	-1.50	-1.52
<i>p-value</i>	0.000	0.000	0.727	0.612	0.133	0.130
Arellano-Bond test						
AR(2)	0.95	1.22	-	-	-1.75	-1.69
<i>p-value</i>	0.340	0.223	-	-	0.080	0.091
Sargan Test of						
Overid.Restrictions	61.03	57.96	18.06	5.57	44.47	44.63
<i>p-value</i>	0.000	0.000	0.000	0.018	0.000	0.000
Hansen Test of						
Overid.Restrictions	19.25	18.72	6.92	6.49	21.75	21.26
<i>p-value</i>	0.004	0.005	0.031	0.011	0.001	0.002

Note. Time dummies included. Windmeijer's (2005) robust standard errors in parenthesis. All available instruments included. *Significant at 10%. **Significant at 5%. ***Significant at 1%.

Bank Credit Vanishing Effect in the EU

Results show an important change in the long run relationship between finance and growth in the EU.

Credit had a positive causal effect in EU countries during the 70s and 80s, but not thereafter. As time passes by and financial depth increases, a point is reached when finance stops to become an engine for growth.

This result is robust to a possible misspecification of the model. The quadratic specification shows there is no inverted “U” shape relationship.

2. Disentangling what aspect(s) of financialisation are more benign or detrimental for growth

GAV and employment of the financial sector may be two other variables capturing, from a real side perspective, the financialization phenomenon → robustness check

Table 4. Results. Robust Arellano and Bond GMM Estimates of Economic growth. Dynamic panel-data estimation, two-step difference GMM. Dependent variable: GDPper capita growth.

Financial depth measured by "GAV".

	(1970-2013)		(1970-1989)		(1990-2013)	
	Linear	Quadratic	Linear	Quadratic	Linear	Quadratic
log GDPpc(t-1)	-0.223	-0.22	-0.471	-0.488	-0.173	-0.17
			(11.32)**	(11.44)**		
Education	(7.24)***	(7.20)***	*	*	(4.83)***	(5.15)***
	-0.287	-0.283	-0.144	0.08	-0.106	-0.093
	(1.63)	(1.60)	(1.89)*	(0.51)	(0.49)	(0.41)
Inflation	-1.919	-1.872	-1.756	-1.872	-0.697	-0.684
	(4.18)***	(3.92)***	(8.91)***	(8.03)***	(1.77)*	(1.77)*
log GAV	-0.045		0.045		-0.053	
	(0.65)		(0.80)		(1.00)	
GAV1		-0.902		16.852		-1.258
		(0.52)		(2.64)***		(0.8)
GAV2		1.892		-163.334		2.971
		(0.39)		(2.62)***		(0.63)
Obs.	101	101	20	20	81	81

GAV

Results show that there is no linear relationship between the financial and real sector in any of the periods analyzed. However, there is evidence of a link in the quadratic specification, but only for the period (1970-1989). Apparently, proxying financialization with a real variable (GAV) shows that in the period 1970-1989 there is a threshold from which financial activity becomes detrimental for growth.

Note. Tests for AR(1) and AR(2) processes are behaved as expected. Sargan and Hansen tests reject over identification.

Time dummies included. Windmeijer's (2005) robust standard errors in parenthesis. All available instruments included. *Significant at 10%. **Significant at 5%. ***Significant at 1%.

2. Disentangling what aspect(s) of financialisation are more benign or detrimental for growth

Table 5. Results. Robust Arellano and Bond GMM Estimates of Economic growth. Dynamic panel-data estimation, two-step difference GMM. Dependent variable: GDPper capita growth. Financial depth measured by "Employment".

	(1970-2013)		(1970-1989)		(1990-2013)	
	Linear	Quadratic	Linear	Quadratic	Linear	Quadratic
log GDPpc(t-1)	-0.221 (6.70)***	-0.215 (5.53)***	-0.571 (4.42)***	-0.555 (9.14)***	-0.142 (3.64)***	-0.121 (2.77)***
Education	-0.278 (1.26)	-0.267 (1.14)	-0.117 (0.84)	-0.305 (2.03)**	-0.031 (0.14)	0.053 (0.21)
Inflation	-1.706 (4.47)***	-1.747 (4.71)***	-1.241 (1.86)*	-1.337 (3.96)***	-0.574 (1.69)*	-0.697 (2.24)**
log Employment	-0.024 (0.31)		0.003 (0.03)		-0.058 (0.86)	
Employment1		-1.199 (0.42)		2.187 (0.71)		-3.721 (1.52)
Employment2		3.795 (0.32)		-27.312 (1.52)		15.056 (1.48)
Obs.	114	114	30	30	84	84
log GDPpc(t-1)	-0.221	-0.215	-0.571	-0.555	-0.142	-0.121

Note. Tests for AR(1) and AR(2) processes are behaved as expected. Sargan and Hansen tests reject over identification.

Time dummies included. Windmeijer's (2005) robust standard errors in parenthesis. All available instruments included. *Significant at 10%. **Significant at 5%. ***Significant at 1%.

Employment

The result confirms that there is no relationship between the financial and real sector in the EU; nor for the whole period, neither for the second period. Moreover, when employment is used as proxy for the financial sector, there is no evidence of relationship in the first period analyzed (1970-1989).

- The *main* conclusion is that since the 90s the positive relation between bank credit and GDP growth vanishes
- We have explored a possible explanation of this broken link between finance and economic growth
- Our hypothesis is that the financialisation of NFC matters

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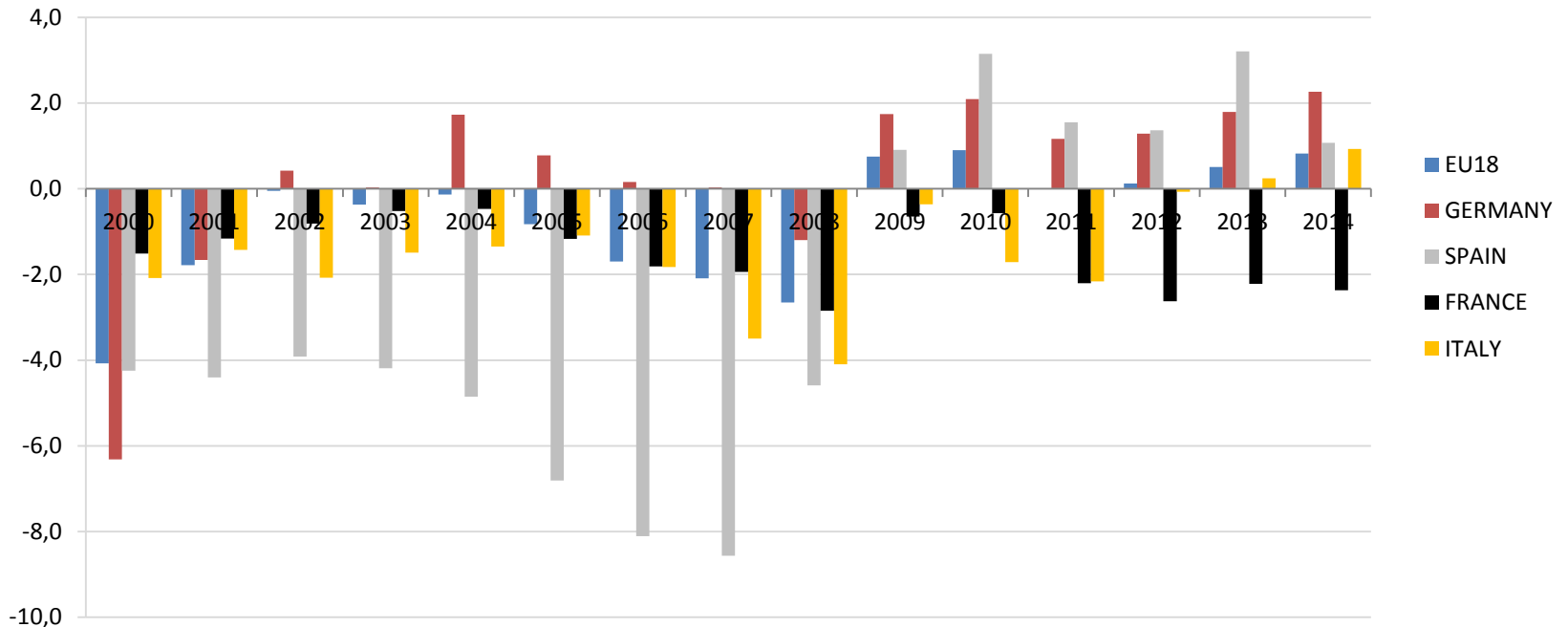
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Figure 1. Financing gaps over GDP



Financing gap: net lending (+)/net borrowing (-) from non-financial accounts broadly equals gross saving and net capital transfers minus gross capital formation

Figure 2. Gross Fixed Capital Formation (NFC) over GDP

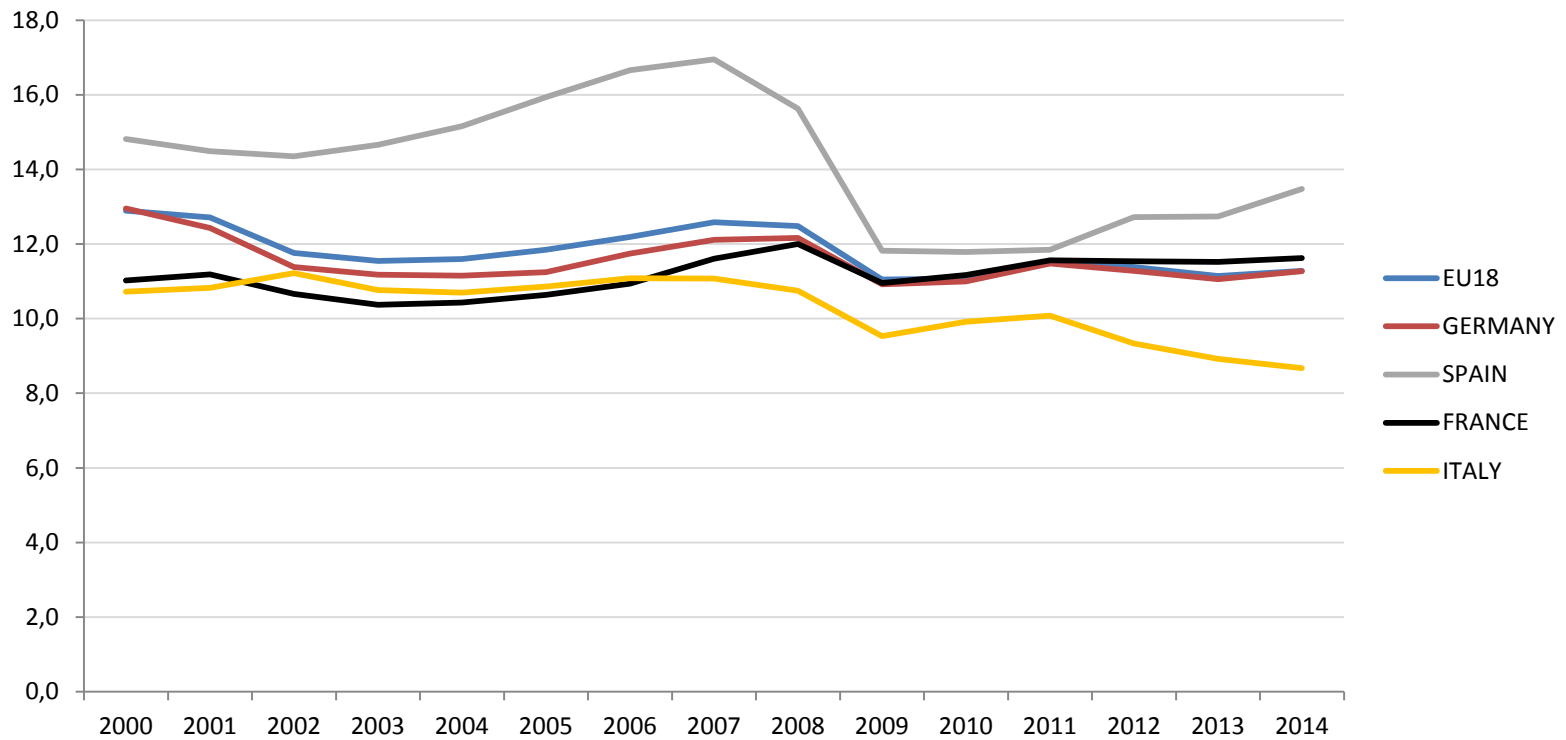


Figure 3. Gross Saving (NFC) over GDP

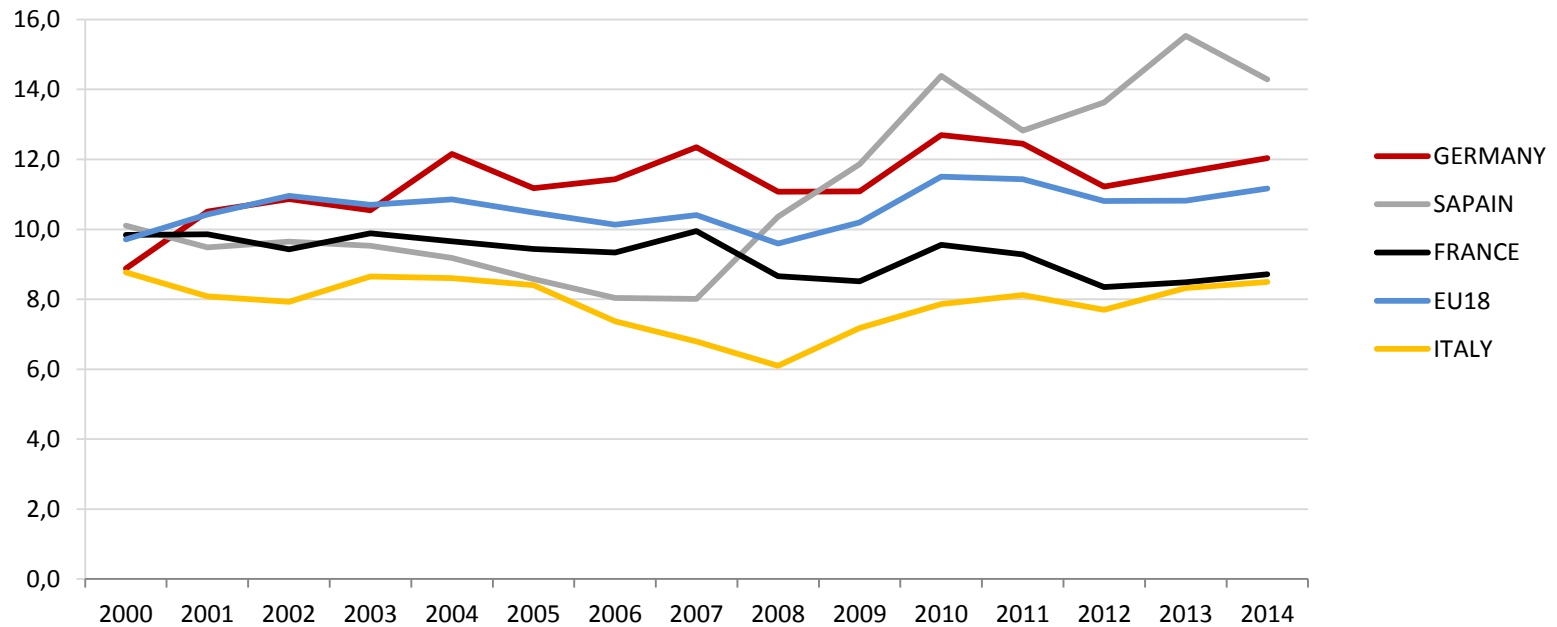


Figure 4. Coverage rate of Gross Fixed Capital Formation by Internal Funds (NFC)

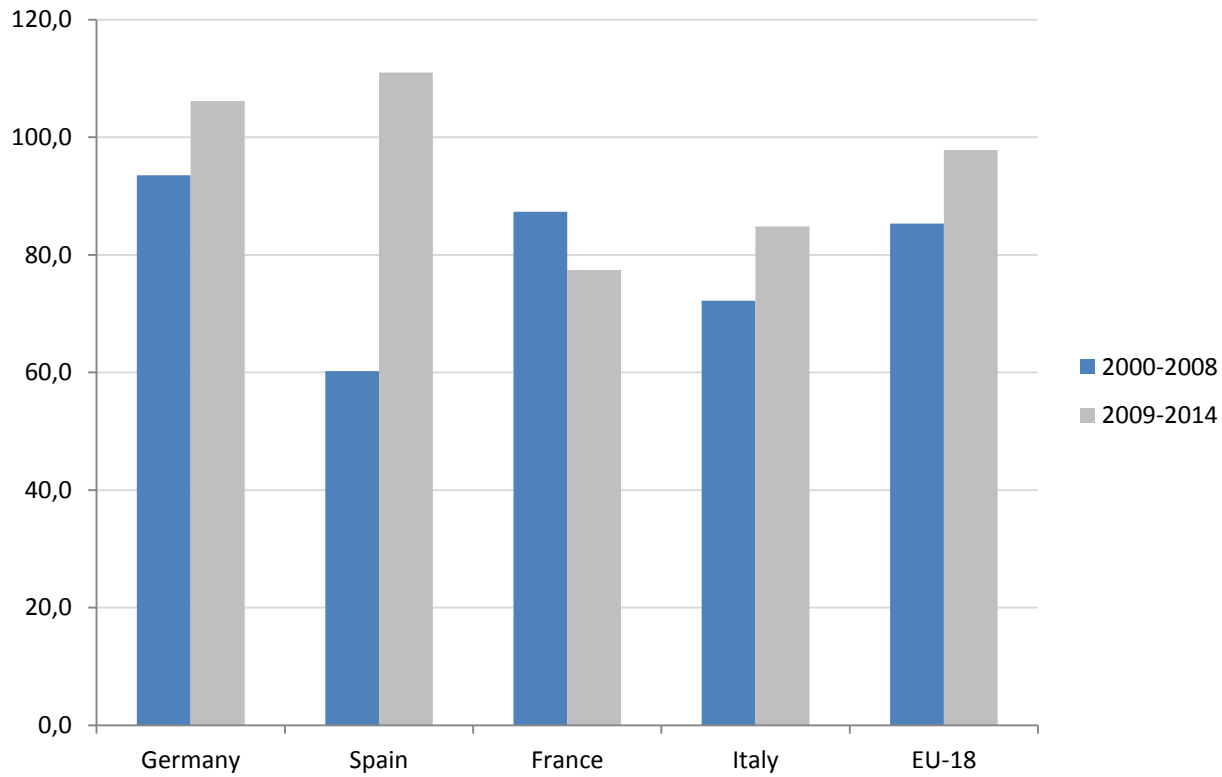
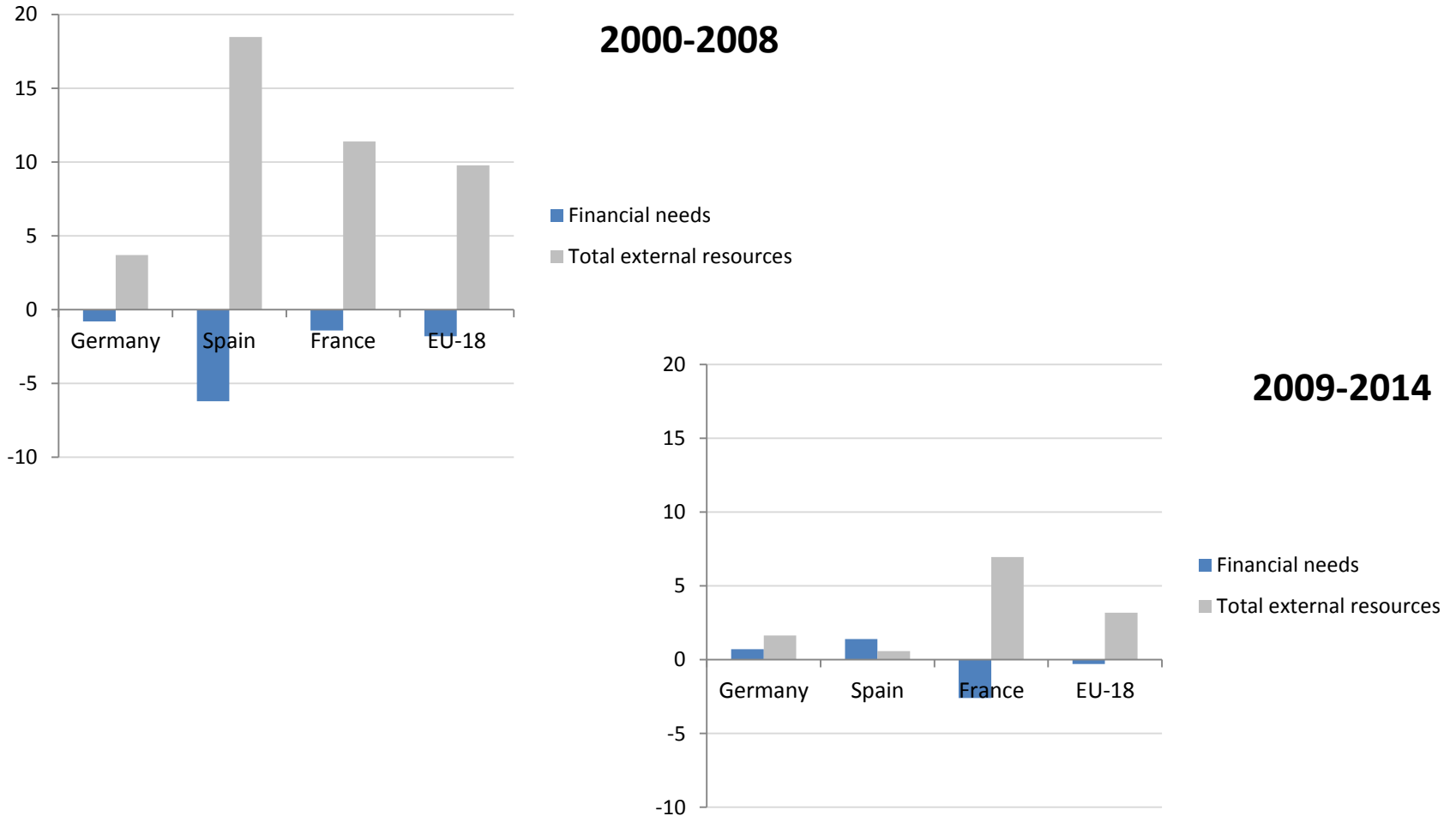
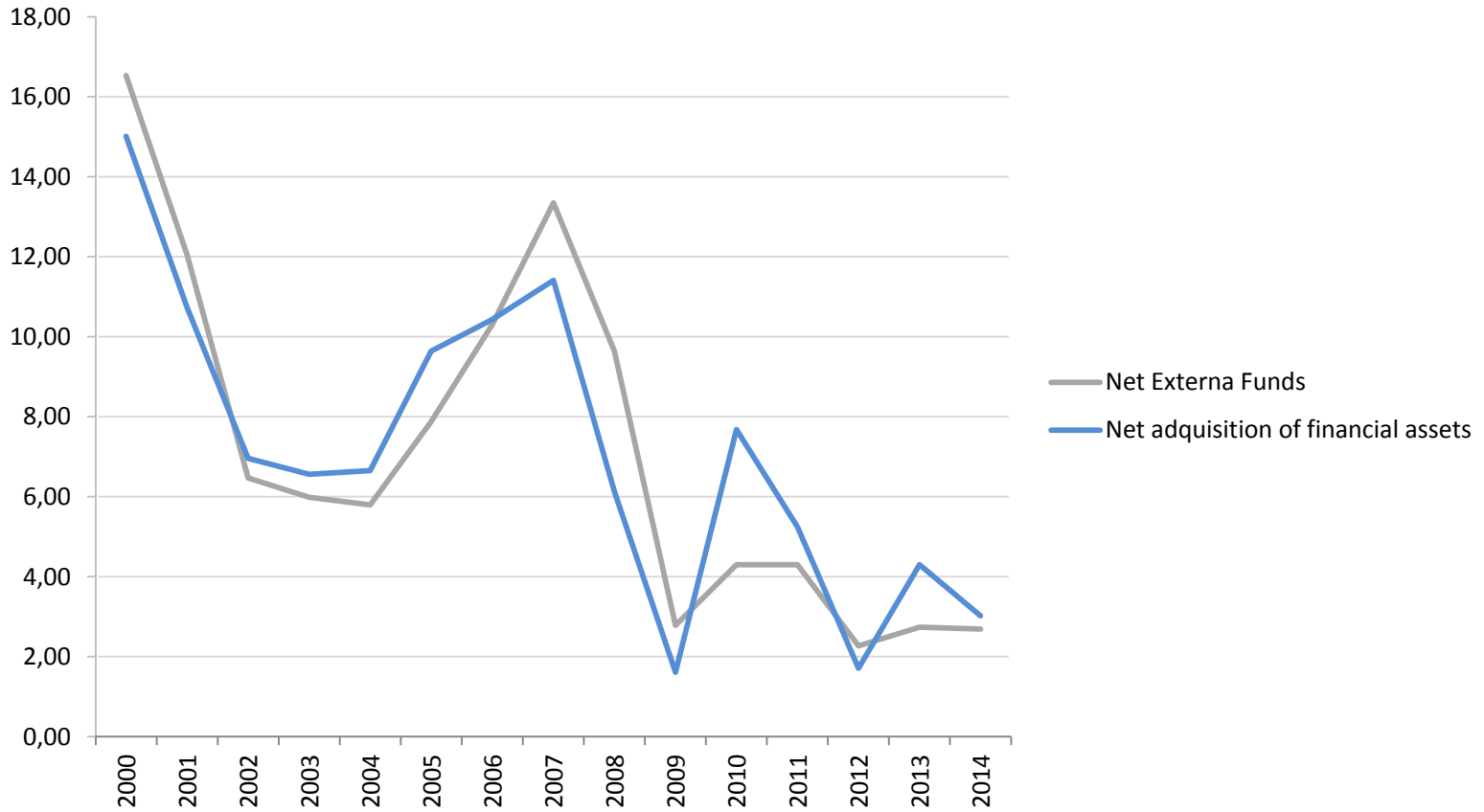


Figure 5. External resources and financial needs (NFC) over GDP



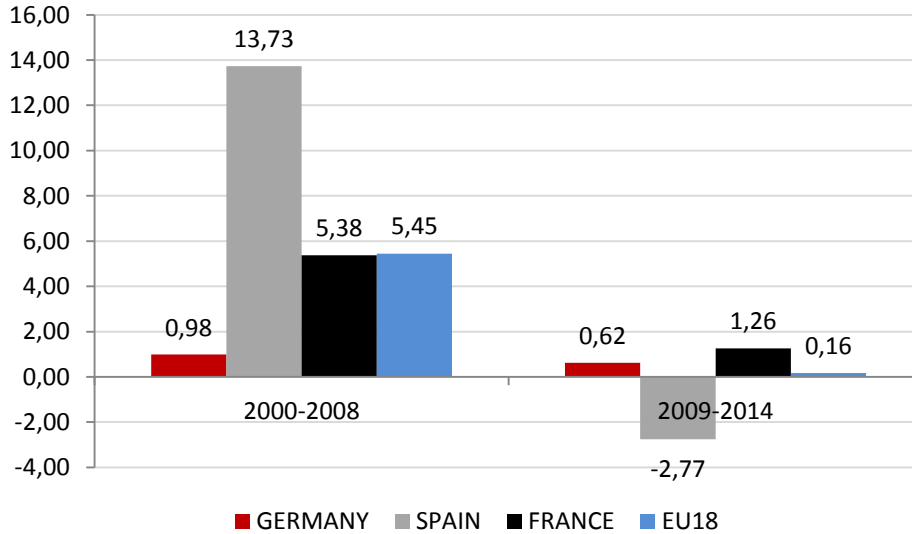
Total external resources = Bank loans + Debt securities + Equities

Figure 6. Financialisation of non-financial corporatios (*). EU-18



(*) Transactions in financial assets and liabilities

Figure 7. Evolution of external sources of financing. Bank Loans over GDP



← Transactions

→ Closing balance-sheet

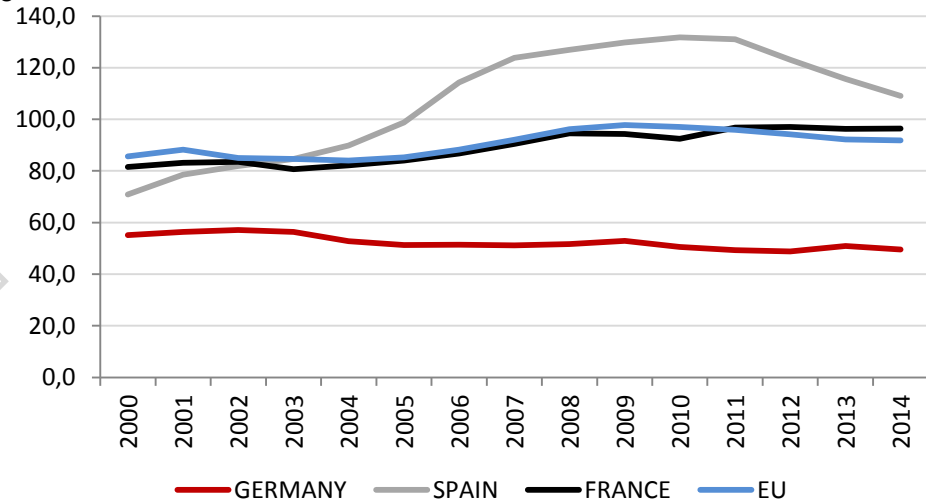
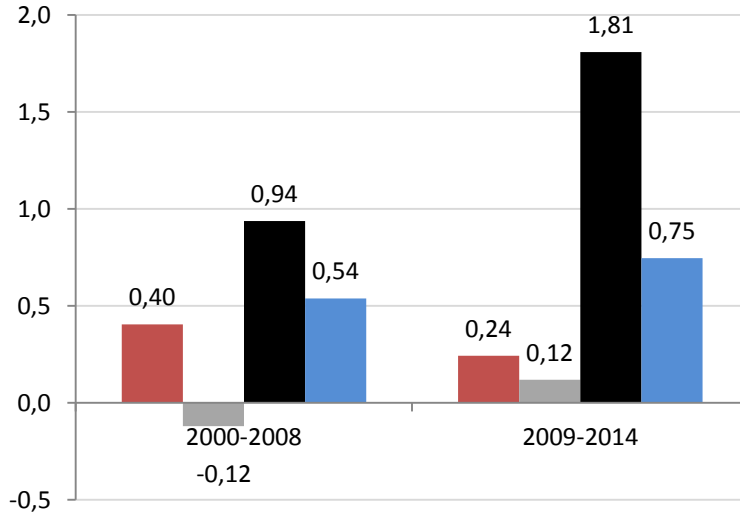


Figure 8. Evolution of external sources of financing. Debt over GDP



← Transactions

→ Closing balance-sheet

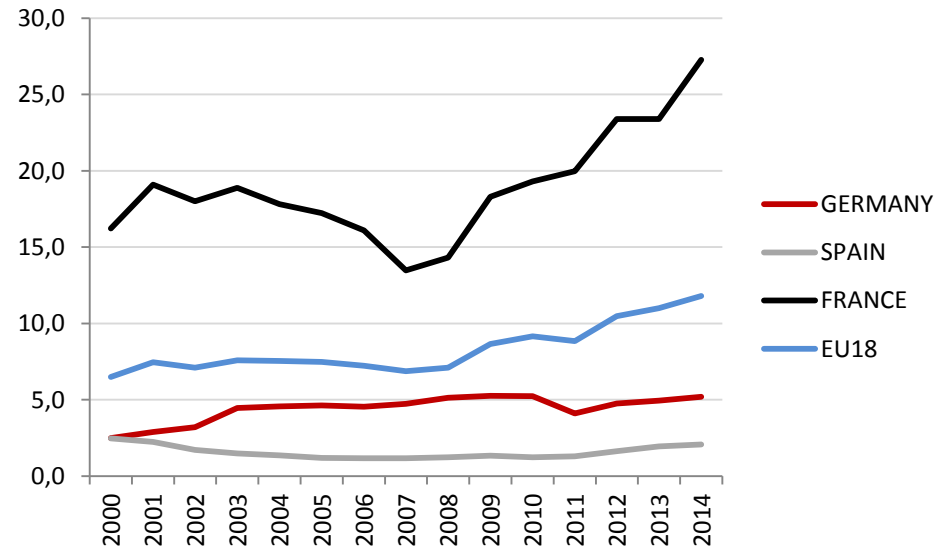


Figure 9. Evolution of external sources of financing. Equities over GDP

Transactions

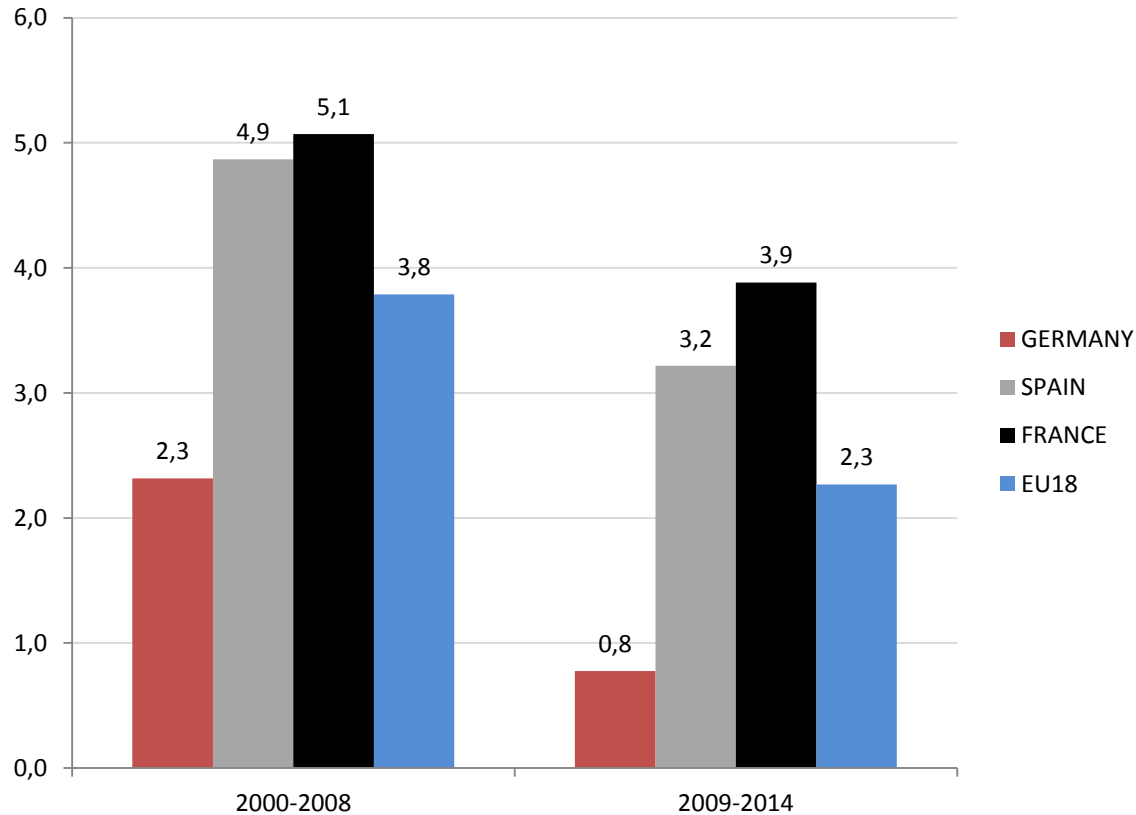
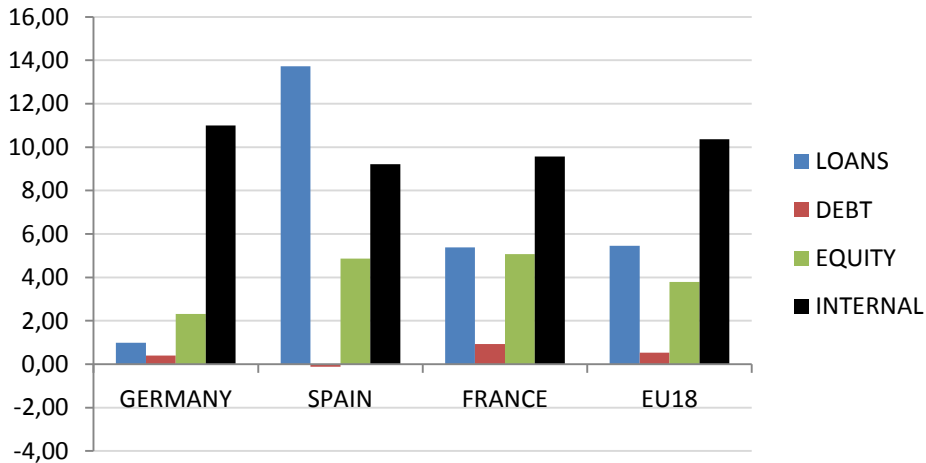


Figure 10. Three different models

2000-2008



← Transactions over GDP

Transactions over GDP →

2009-2014

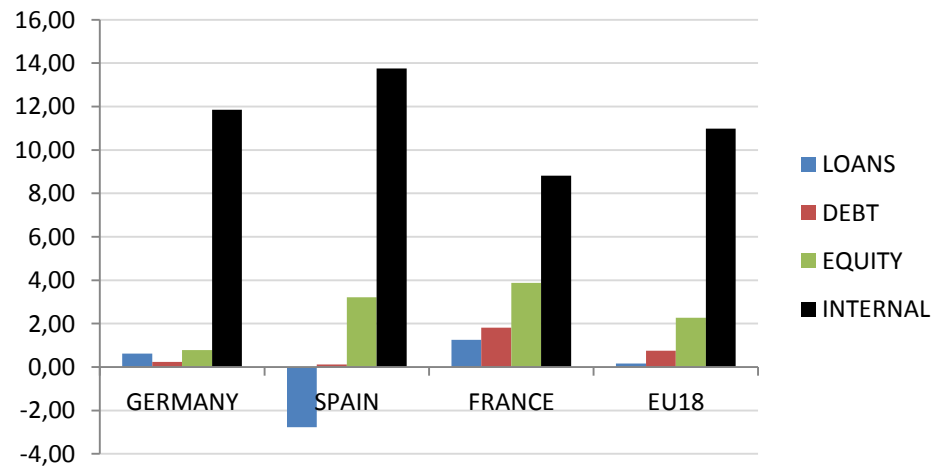
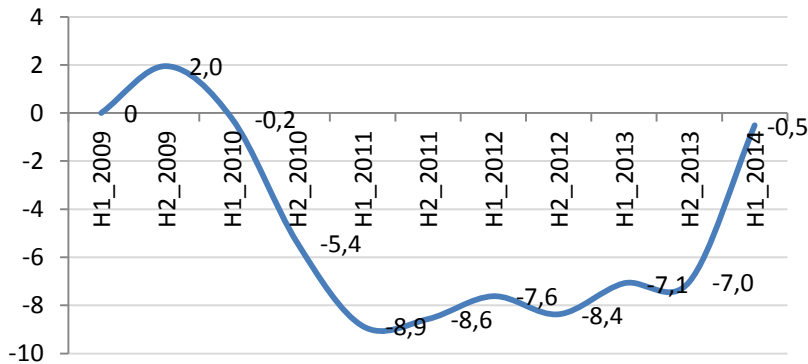
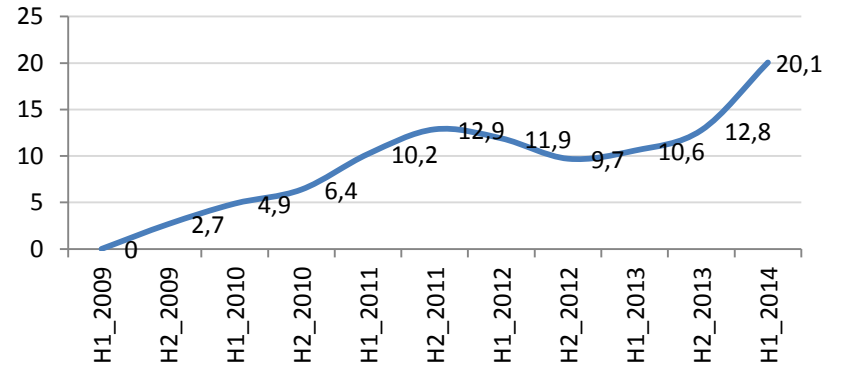


Figure 11. Accumulated variations of bank loan demand of NFC (semester –over-semester)

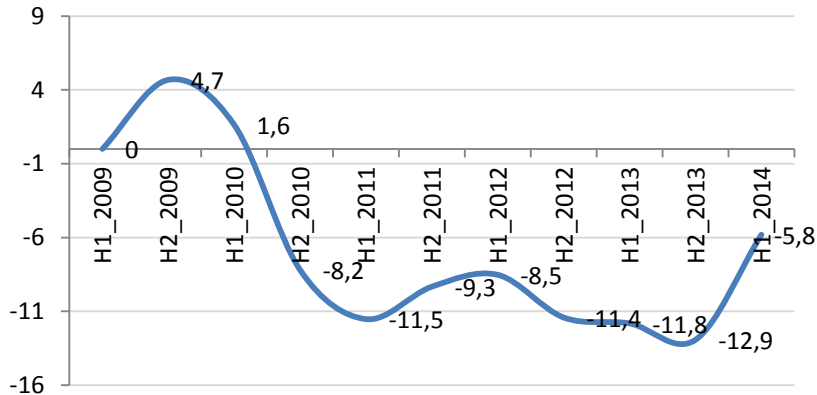
EU-18



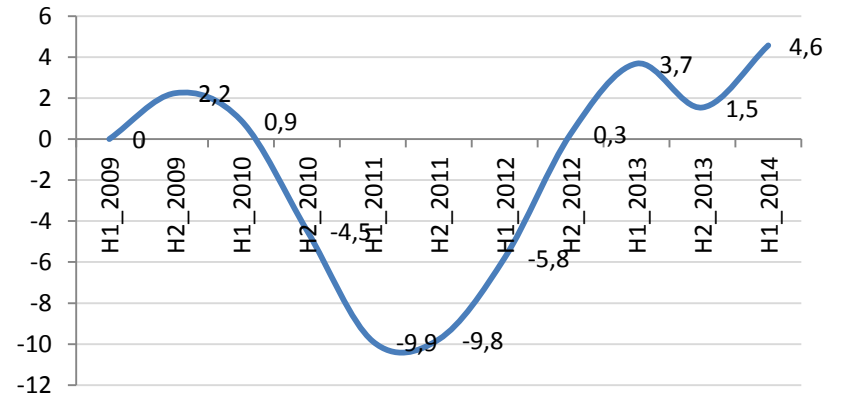
FRANCE



SPAIN



GERMANY



Conclusions

- This paper analyses the relationship between financial depth and economic growth in the European Union.
 - Our results support evidence of no causal relationship between financial depth and economic growth in the European Union for the whole period (1970-2013).
 - However, results for different sub-periods provide evidence of a positive link between credit and growth in the EU from 1970 to 1989 that disappears in the period 1990-2013.
- The potential explanation for the absence of the link between finance and growth could be related to the financialisation of NFC
 - The external resources captured by NFC during the booming years (2000-2008) are more connected to the acquisitions of financial assets than to real investment
 - However, we have identified three different models: German, Spanish and the remaining European countries model
 - The drop in the credit demand of the NFC may be the result of the decreasing in their financial activity rather than the result of the tightening of the credit supply. The deleveraging process also matters since this process has been driven by financialisation of NFC