Faculty of Economics – University of Coimbra INFER Workshop on Heterodox Economics 17th of April 2015



Financialisation and the Portuguese Real Investment: a Supportive or a Disruptive Relationship?

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Overview

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- III. Data
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I. The Relation between Financialisation and Real Investment

- Mainstream economics advocates that financial sector plays a crucial role in boosting the real investment by non-financial corporations (e. g. Orhangazi (2008), Palley (2007), Demir (2008)):

 — Higher availability of funds;
 - □ An increase of the efficiency in resources allocation;
 - □ A reduction of market imperfections;
 - □ A reduction in transaction costs;
 - □ A decrease of assymemtry of information;
 - □ The provision of risk management services.

I. The Relation between Financialisation and Real Investment (cont.)

- Nevertheless, the literature on financialisation typically argues that this phenomenon has hampered the real investment of nonfinancial corporations through two differente channels (Orhangazi, 2008a and 2008b), Hein (2009), Hein and Van Treeck (2010), among others).
 - □ First, the rise of investment in financial assets by non-financial corporations diverts funds from real activities and other productive projects ("crowding out" effect); The non-financial corporations have become more engaged in financial activities, since shareholders are more concerned with short-term profitability;
 - Second, there are strong pressures over the non-financial corporations to increase their payments to financial markets' investors in the form of interests or dividends, which also restrains the available funds to put in place new productive investments.

I. The Relation between Financialisation and Real Investment (cont.)

- Despite the increasing amount of theoretical work on the effects of financialisation on investment, empirical studies on the impact of that phenomenon are still limited (Onaran *et al.* (2011)).
- Most of these studies find statistical evidence supporting the theoretical claim that the phenomenon of financialisation has had a negative impact on investment (Stockhammer (2004), Orhangazi (2008a and 2008b), Van Treeck (2008) and Onaran *et al.* (2011)).
- This paper aims to evaluate the impact of financialisation on the Portuguese real investment, contributing to the literature in two aspects:
 - □ It focuses on the Portuguese reality, whereas the most of studies on that subject are centered on the USA or the UK;
 - □ It uses a VECM, which allows distinguishing the short-term from the long-term effects of financialisation on investment.

II. Economic Modelisation

We propose to estimate an equation where investment of nonfinancial corporations is a function of the traditional variables (profitability, level of debt, cost of capital, savings rate and the business cycle) and two other variables related to financialisation (financial receipts and financial payments):

$$I_{t} = \beta_{0} + \beta_{1}P_{t-1} + \beta_{2}D_{t-1} + \beta_{3}CC_{t-1} + \beta_{4}SR_{t-1} + \beta_{5}BC_{t-1} + \beta_{6}FR_{t-1} + \beta_{7}FP_{t-1} + \eta_{t}$$

$$\beta_1 > 0, \beta_2 < 0, \beta_3 < 0, \beta_4 > 0, \beta_5 > 0, \beta_6 < 0, \beta_7 < 0$$

III. Data

- Annual data between 1977 and 2013, constituting a total sample with 37 observations (this is the period and the frequency for which all data are available);
- The phenomenon of financialisation became more preponderant in Portugal during the 1990s (Lagoa *et al.* (2013));
- The investment is a long-term decision (investment projects usually take more time than one year), so annual data it is likely to capture the determinants of real investment than higher frequency data.

III. Data (cont.)

- We collect annual data for the following seven variables:
 Gross fixed capital formation;
 - □ Gross operating surplus;
 - Net lending / net borrowing;
 - Real interest rates;
 - □ Savings rate;
 - □ Gross domestic product;
 - □ Financial receipts;
 - □ Financial payments.

IV. Methodology

Our methodology involves six stages:
 Unit root tests (ADF and PP tests);

□ Johansen methodology (Trace and Maximum Eigenvalue tests);

- □ Diagnostic tests (Autocorrelation, Normality and Stability tests);
- □ VECM estimation;
- □ Granger causality tests;
- □ Impulse response functions.

V. Empirical Results and Discussion 1. Unit root tests

We conclude that our seven variables are non-stationary in levels but stationary in first differences, i. e. they are all integrated of order one according to the ADF and PP tests.

		Level			First Difference	
Variable	Intercept	Trend and Intercept	None	Intercept	Trend and Intercept	None
Ι	0,007	0,022*	0,305	0,006*	0,032	0,001
Р	0,344*	0,616	0,917	0,000	0,002	0,000*
D	0,403	0,651	0,098*	0,000	0,000	0,000*
СС	0,006	0,006	0,195*	0,000	0,000	0,000*
SR	0,700	0,870	0,256*	0,000	0,001	0,000*
BC	0,145	0,617*	0,032	0,001	0,002*	0,000
FR	0,172*	0,097	0,625	0,015	0,066	0,000*
FP	0,015	0,712*	0,161	0,002	0,040	0,000*
		Level			First Difference	
Variable		Trand and			Trand and	

Variable	Intercept	Trend and Intercept	Trend and None Intercept		Trend and Intercept	None		
Ι	0,238*	0,394	0,344	0,016	0,078	0,001*		
Р	0,021*	0,182	0,890	0,000	0,002	0,000*		
D	0,363	0,582	0,097*	0,000	0,000	0,000*		
CC	0,006	0,005*	0,004	0,000	0,000	0,000*		
SR	0,714	0,335*	0,393	0,000	0,000	0,000*		
BC	0,147	0,105*	0,036	0,000	0,000	0,000*		
FR	0,219*	0,360	0,618	0,003	0,015	0,000*		
FP	0,233*	0,377	0,514	0,005	0,028	0,000*		

V. Empirical Results and Discussion (cont.) 2. Johansen methodology

After that, we conclude that the optimal number of lags to an unrestricted VAR is two (Liew (2004) and perform the Trace and Maximum Eigenvalue tests, concluding that our seven variables are cointegrated.

Lag	LR	FPE	AIC	SC	HQ
0	n. a.	1,3e-25	-34,6	-34,3	-34,5
1	261,1*	2,4e-28	-41,0	-37,8*	-39,9*
2	77,5	2,3e-28*	-41,6*	-35,6	-39,6

Note: * indicates the optimal lag order selected by the respective criteria

Data trend	None	None	Linear	Linear	Quadratic
(Test Type)	(No intercept No trend)	(Intercept No trend)	(Intercept No trend)	(Intercept Trend)	(Intercept Trend)
Trace test	1	2	3	3	3
Maximum Eigenvalue test	1	1	1	2	2

Note: AIC criteria selects the fourth model (the level data and the cointegrating equations have linear trends) and suggests an unrestricted VAR with three lags, but SC selects the second model (the level data have no deterministic trends and the cointegrating equations have intercepts) and confirms an unrestricted VAR with one lag

V. Empirical Results and Discussion (cont.) 3. Diagnostic tests

- Against this backdrop, we run a VECM considering one cointegrating vector and the second specification model.
- We also conduct a set of dignostic tests, in order to assess if the model is adequate.

Test	P-value
Autocorrelation LM test (up to one lag)	0,601
Normality test (Jarque-Bera)	0,037
Stability (AR root) test	Seven eigenvalues

The model passes in all tests and does not suffer from any econometric problem, which confirms that the model is well specified and the robustness of our results.

V. Empirical Results and Discussion (cont.) 4. VECM estimation

We choose the variable of investment as the normalising one, given our interest in studying the relationship between this variable and the remaining ones.

Variable	P_{t-1}	<i>D</i> _{<i>t</i>-1}	CC_{t-1}	SR_{t-1}	BC_{t-1}	FR_{t-1}	FP_{t-1}	β_0
	1,490***	-0,442***	-1,066***	0,528***	0,499***	1,140***	-0,221***	-0,425***
I_{t-1}	(0,135)	(0,061)	(0,101)	(0,154)	(0,131)	(0,206)	(0,073)	(0,069)
	[-11,019]	[7,213]	[10,542]	[-3,432]	[-3,816]	[-5,547]	[3,022]	[6,204]

Note: Standard errors in (), t-statistics in [] and *** indicates statistically significance at 1% level

Variable	ΔI_t	ΔP_t	ΔD_t	ΔCC_t	ΔSR_t	ΔBC_t	ΔFR_t	ΔFP_t
Error	-0,287**	0,275*	0,963*	-0,053	0,207*	-0,118	0,041	0,542*
Correction	(0,168)	(0,168)	(0,607)	(0,295)	(0,161)	(0,209)	(0,130)	(0,401)
Term	[1,700]	[1,635]	[1,586]	[-0,180]	[1,290]	[-0,566]	[0,314]	[1,350]

Note: Δ is the operator of the first differences, standard errors in (), t-statistics in [], ** indicates statistically significance at 5% level and * indicates statistically significance at 10% level

Variable	ΔI_{t-1}	ΔP_{t-1}	ΔD_{t-1}	ΔCC_{t-1}	ΔSR_{t-1}	ΔBC_{t-1}	ΔFR_{t-1}	ΔFP_{t-1}
	0,193*	0,283**	-0,145*	-0,042	0,370*	0,068	0,423	-0,182
ΔI_t	(0,137)	(0,161)	(0,099)	(0,131)	(0,236)	(0,158)	(0,347)	(0,162)
	[1,404]	[1,751]	[-1,456]	[-0,317]	[1,567]	[0,432]	[1,219]	[-1,118]

Note: Δ is the operator of the first differences, standard errors in (), t-statistics in [], ** indicates statistically significance at 5% level and * indicates statistically significance at 10% level

V. Empirical Results and Discussion (cont.) 5. Granger causality tests

Then, we perform the Granger Causality tests, which measure how past changes on one variable (with all variables constants) affect investment in the short-term.

Null hypothesis	Chi-square	P-value
$\Delta P_t \rightarrow \Delta I_t$	3,066	0,080
$\Delta D_t \rightarrow \Delta I_t$	2,119	0,145
$\Delta CC_t \rightarrow \Delta I_t$	0,100	0,751
$\Delta SR_t \rightarrow \Delta I_t$	2,458	0,117
$\Delta BC_t \rightarrow \Delta I_t$	0,187	0,666
$\Delta FR_t \rightarrow \Delta I_t$	1,485	0,223
$\Delta FP_t \rightarrow \Delta I_t$	1,249	0,264

Note: ightarrow means does not Granger cause and ${\it \Delta}$ is the operator of the first differences

We conclude that the contemporaneous investment of the Portuguese non-financial corporations is only affected by the past values of debt, as well as by profitability.

V. Empirical Results and Discussion (cont.) 6. Impulse response functions

The impulse response functions allow to measure how an unanticipated shock to one variable affects in a dynamic way investment.



VI. Conclusion

- We estimated an equation to describe the investment behaviour of the Portuguese non-financial corporations, using macroeconomic data.
- After concluding that all variables are integrated of order one, we found statistical evidence supporting the existence of a cointegration relationship between our seven variables.
- In the long-term, we are able to identify that the financial payments exerts a negative impact on the Portuguese real investment, in accordance with the literature on financialisation.

VI. Conclusion (cont.)

- However, the financial receipts influence positively real investment, which can be explained by the existence of a huge amount of small and medium corporations in Portugal who face higher funding constrains and therefore are forced to use all incomes (even financial incomes) to realize new investment projects.
- On the short-term, both measures of financialisation are not statistically significant to explain the evolution of real investment.
- The profile of the impulse response functions (that combines the short and the long-term responses) illustrates that the variable of financial receipts and financial payments has had a negative impact on real investment.

VI. Conclusion (cont.)

- Therefore, we are able to identify a disruptive relationship between financialisation and the real investment of the Portuguese nonfinancial corporations (mainly through financial payments).
- Finally, we would like to propose some extentions of this work to future research regarding this field:
 - □ Analyse the effects of financialisation to the other components of aggregate demand;
 - Analyse the statistical relevance of these two channels using data at a corporation-level or at a country-level;
 - □ Analyse not the effects of financialisation, but the causes to the financialisation of the non-financialisation corporations.

Thank you!



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