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25 September 2012

Online at <https://mpra.ub.uni-muenchen.de/42133/>  
MPRA Paper No. 42133, posted 27 Oct 2012 18:58 UTC

# **“Financial constraints to enterprise investments: an international analysis on financial accounts of OECD countries”**

**By Giuseppe Cinquegrana♣ and Paola De Rita\*\***

## **Abstract**

Since the '80s, economic literature has stressed the importance of external financing on enterprises' investment decisions; in particular the pecking order theory highlighted the existence of a hierarchy of financing sources, an approach that originates from the existence of asymmetric information between fund borrowers and lenders. The presence of effective financial constraints to the realisation of investments of productive units was reasserted in the work by Fazzari, Hubbard and Petersen (1988), which was followed by ample empirical and theoretical analysis of enterprises' information opacity, of the consequent effects on access to external financing and of the lower cost of financing originating from internal cash flows generated by enterprise management.

The present contribution delves into the analysis of the possible existence of financial constraints to enterprises' investment decisions in different OECD countries, using as analytical tools the indicators of the composition of financial instruments within the liabilities and the net lending-net borrowing for the sector of non-financial corporations. The sources of information are OECD databases on financial and non-financial accounts per institutional sector.

**Key words:** *information asymmetries, financial constraints, enterprises, financial accounts, liabilities, corporate investments, net lending-net borrowing.*

*Opinions expressed in the present work are exclusively the authors'; in no way do they involve the responsibilities of the institutions they belong to.*

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**1. Introduction.**

**2. Financial constraints, the financial structure and the investment policies of enterprises.**

**3. Data, methodology of analysis and results.**

**ANNEX 1**

## 1. Introduction

The aim of this work is the analysis of the existence of financial constraints to investment decisions of non-financial corporations and the difference among some OECD countries, in particular between the Euro North and the Euro South, in terms of availability of financial resources for enterprises<sup>1</sup>.

In the bank-oriented interpretation of the financial system bank credit is the driving force of economic development, especially at the beginning of a great thrust towards industrialisation, as took place in Germany and Italy in the XIX century<sup>2</sup>, where big universal banks permitted medium/long-term investments in highly technologically innovative sectors. In the last part of the previous century, intense and stable relationships over time between banks and enterprises have been typical of economic systems characterised by limited access to capital markets and by a productive sector made up of small and medium enterprises<sup>3</sup>.

Recent theories on the existence of financial intermediaries draw attention to the role of the bank as a central collection point of information on the borrower and as an institution dedicated to monitoring the risk profile of counterparties. The credit intermediary can make use of internal specialised resources in evaluating the quality of enterprise investment projects; these instruments improve as the business relationship with the enterprise continues and thus allows overcoming the classic moral hazard and adverse selection problems connected with the presence of asymmetric information.

Since the '80s, economic literature has stressed the importance of external financing<sup>4</sup> on enterprises' investment decisions; in particular the pecking order theory<sup>5</sup> highlighted the existence of a hierarchy of financing sources, an approach that originates from the existence of asymmetric information between fund borrowers and lenders. The presence of effective financial constraints to the realisation of investments of productive units was reasserted in the work by Fazzari, Hubbard and Petersen (1988), which was followed by ample empirical and theoretical analysis of enterprises' information opacity, of the consequent effects on access to external financing and of the lower cost of financing originating from internal cash flows generated by enterprise management.

The paper develops as follows.

Paragraph 2) outlines a brief review of literature on financial constraints to enterprises and on the relation between internally generated cash flows and investments made. It begins with contributions by Fazzari, Hubbard and Petersen (1988) and Kaplan and Zingales (1997) and arrives at the more recent analyses by Altı (2003) and Moyen (2004).

The data, regarding some OECD countries, stem from OECD data base on financial accounts: data and methodology of analysis are presented in paragraph 3) along with some tentative concluding comments on the issue.

## 2. Financial constraints, the financial structure and the investment policies of enterprises

Literature on the financial structure of enterprises finds the turning point in the theoretical and econometric analysis of the decisive factors of financial constraints on investment decisions in the article by Fazzari, Hubbard and Petersen (1988)<sup>6</sup>. FHP underline that enterprises that denote restrictions in financing conditions are those that present a monotonous direct proportion between internally generated cash flows and investments made; which fact reflects in the first place the price difference between financing from external and internal sources, which are not perfect substitutes in

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<sup>1</sup> For a detailed report on the matter see Bianco M. (1997) and Sarno D., Cinquegrana G. (2009).

<sup>2</sup> See Gershenkron (1962).

<sup>3</sup> Italy and Germany are exemplary cases in this regard.

<sup>4</sup> See Fazzari, Hubbard and Petersen (1988).

<sup>5</sup> See Myers and Mailuf (1984) and Myers (1984).

<sup>6</sup> In this paper FHP stands for the article by Fazzari, Hubbard e Petersen (1988).

the presence of imperfect financial markets or of agency costs between managers and financiers<sup>7</sup>. Deformations in financial markets represent, in effect, the main restrictions to the irrelevance of the financial structure of enterprises as suggested by the Modigliani-Miller theorem and are essentially due to an inefficient distribution of information among the various economic agents. Asymmetric information between borrowers and lenders of funding on the effective reliability, profitability and risk of the investment projects puts the financiers in front of the typical lemons' problem<sup>8</sup>. The latter, not having at their disposal all the information needed to correctly evaluate the credit merit of the enterprise, cannot properly distinguish between performing and non-performing borrowers; they therefore request a premium on the financing cost that repays them for the risk assumed in financing enterprises that didn't merit the credit. This premium is completely integrated in the spread, borne by the enterprise, between the costs of external and internal financing sources. Models of credit rationing, Stiglitz and Weiss (1981), those of adverse selection in share markets, Myers and Mailuf (1984), those of agency costs in the relationship between principal and agent, Jensen and Meckling (1976), highlight the deformations present in financial markets that entail a higher compensation of external funds with respect to self-financing.

During the '90s abundant empirical verification seemed to support FHP's hypothesis, since the enterprises, classified with a priori criteria, such as size, dividend payout or leverage, showed that with increased cash flow the investment projects made by each enterprise effectively increased.

Kaplan and Zingales (1997)<sup>9</sup> strongly criticise FHP and sustain that there are emblematic cases in which financially conditioned enterprises (for example with high indebtedness, a weak cash flow and a high probability of financial difficulty) do not invest, thus presenting little sensitivity of investments to cash flow. According to KZ, not necessarily does the econometric verification of a positive relation between cash flow and investments demonstrate that enterprises are subject to financial restrictions in their decisions on expenses to undertake. KZ, in their theoretical criticism, affirm that the presence of an additional cost for the use of external funding implies that investments are directly proportional to internal finances and, therefore, also enterprises with less constraints<sup>10</sup>, present a monotonous increasing proportion between investments and cash flow<sup>11</sup>.

Gomes (2001) and Alti (2003) underline that sensitivity to cash flow can be generated by an economic context without financial friction and, therefore, the sensitivity of investments to cash flow does not necessarily indicate the presence of financial constraints. For example, enterprises that are uncertain of the quality-profitability of investment projects are induced to achieve high cash flows to dispel the doubts on their own real conditions: it is for these reasons that, in general, younger enterprises are more sensitive to fluctuations in cash flow in respect to others.

Almeida and Campello (2001) describe a single period model in which enterprises can take on restrictions in the credit market. Non-constrained enterprises do not present any sensitivity to cash flow, while enterprises with constraints to access credit demonstrate a positive sensitivity that increases in proportion to increases in guarantees given.

With greater information asymmetries, there is a greater sensitivity of investments to cash flow; this is what Povel and Raith (2001) sustain in a model where enterprises' investments are not directly observable by financial market dealers.

Moyen (2004) carried out a comparative analysis of FHP's and KZ's approaches elaborating two theoretical models, the first is an unconstrained model in which enterprises have perfect access<sup>12</sup> to

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<sup>7</sup> Financiers are considered in a broad sense, thus they can be shareholders, banks that supply credit and those who have underwritten stock issued by the enterprise.

<sup>8</sup> See Akerlof (1970).

<sup>9</sup> In this paper KZ stand for the article by Kaplan and Zingales (1997).

<sup>10</sup> The unrestricted enterprises, in the KZ criticism, are those not constrained by a non-performing corporate situation, i.e. with low debt, large cash flow and good performance.

<sup>11</sup> Criticism of KZ also assumed an empirical implication insomuch as the authors, reclassifying the enterprises sampled by FHP with different criteria, produce results in disaccord with those highlighted by FHP.

<sup>12</sup> Absence of friction and viscosity in collecting funds to implement productive activity.

external funding sources, the second is instead a constrained model where enterprises cannot turn to the financial system to obtain risk capital and debt. The main results of these models are two: enterprises with a low dividend payout, following thus one of FHP's criteria in identifying financially constrained enterprises, present investments that are significantly sensitive to cash flow with respect to those with a high dividend payout; on the other hand, using the constrained model to identify enterprises with financial constraints, leads to the result indicated by KZ according to which investments of constrained enterprises are less sensitive to cash flow compared to those that are less constrained.

### **3. Data, methodology of analysis and results.**

By exploring the data an attempt is made to take a macroeconomic viewpoint about the differences between some OECD countries regarding the financial restrictions that affect the investment decisions of non-financial enterprises. The starting point is the analysis of the distribution of the liabilities by financial instrument for some OECD countries, taking into account the relevant financial system prevailing in each of them, i.e. market or banking oriented models.

Secondly, considering that in a macroeconomic analysis and moving from an FHP-like approach, the investment decisions are not financial constrained if the internally generated enterprise cash flow does not affect in a positive manner the investments of the enterprise, we compare the net lending / net borrowing (divided by GDP) of the non-financial corporations in national accounts, taken as a proxy of the cash flow, with their respective investment growth rate.

In order to analyse the financial constraints on investments of corporations, first of all, we use the complete set of non-consolidated financial accounts data by country provided by the OECD data for the period 1995-2010. Further, from the national accounts OECD STATS we take the following time series by country for the years 2000-2010: gross domestic product at market prices (GDP), gross capital formation and net lending / net borrowing of non-financial corporations. Some missing information in OECD STATS has been recovered through the EUROSTAT database on national accounts of European member states.

The OECD countries considered in this work are Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, the United Kingdom and the United States. In order to compare countries of different areas the countries have been aggregated taking into account the Euro Area<sup>13</sup>, further diversifying it in a Euro North Area and a Euro South Area<sup>14</sup>. In the Euro North Area the following countries are included: Austria, Belgium, the Czech Republic, Finland, France, Germany, Ireland, Luxembourg, the Netherlands, the Slovak Republic and Slovenia; while Greece, Italy, Portugal and Spain form the Euro South Area.

The financial instruments<sup>15</sup> on the liability side of the financial accounts of each OECD country considered are the following:

- Loans;
- Securities other than shares;
- Shares and other equity;
- Other accounts payable.

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<sup>13</sup> In this work the countries included in the Euro Area are the ones included in OECD financial accounts: Austria, Belgium, the Czech Republic, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, the Slovak Republic, Slovenia. and Spain.

<sup>14</sup> See also Rapporto CER 2012, Centro Europa Ricerche S.r.l. for a similar approach.

<sup>15</sup> For a detailed description of these variables see SNA2008.

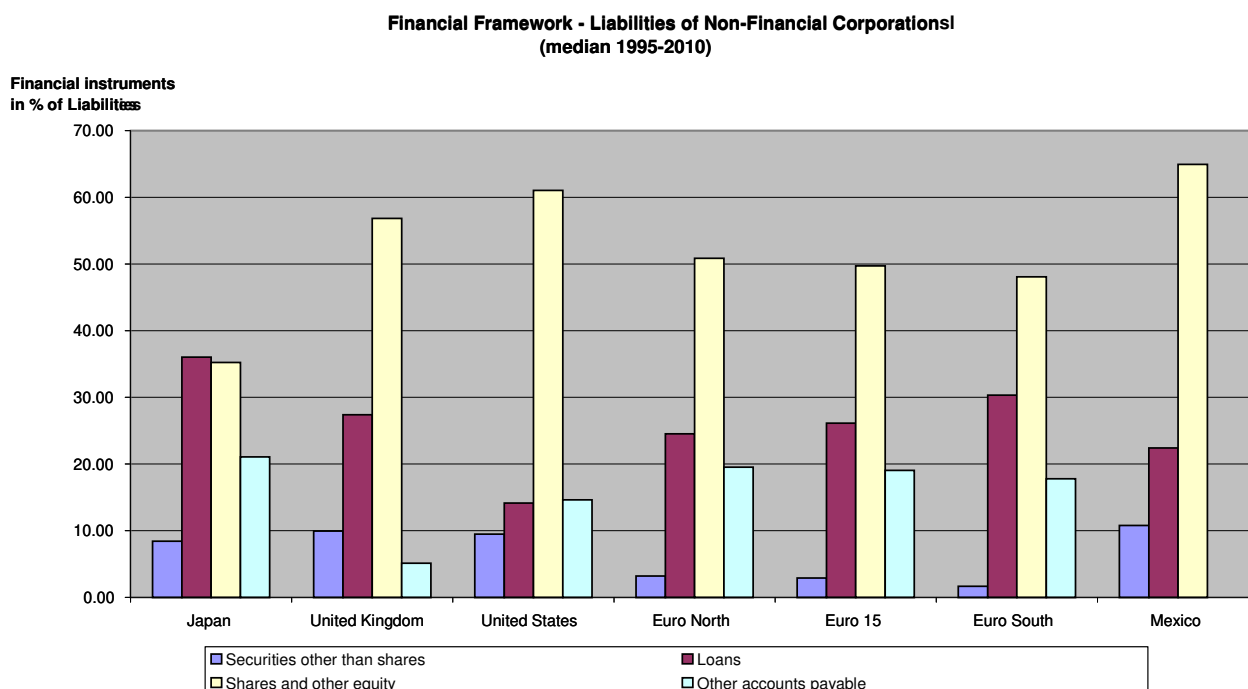
The approach applied consists in analysing the financial framework on the liability side of each observed country, in particular we consider the percentage distribution of each financial instrument on the total liabilities for the non-financial corporation sector (see Figure I-Annex I).

According to the pecking order theory that considers a hierarchy of financing sources, the importance of the financial instruments on the corporate financial framework follows a ranking where equity holds the first position because in efficient markets the opportunity cost of this instrument is the best.

Securities soon follow on equity while loans pay the largest funding cost, even if banking relationship is a second best solution for financing in the presence of asymmetric information.

The financial framework of the Euro Area (separated in North and South), Japan, the United Kingdom, the United States and Mexico is reported in Figure 1.

Figure 1



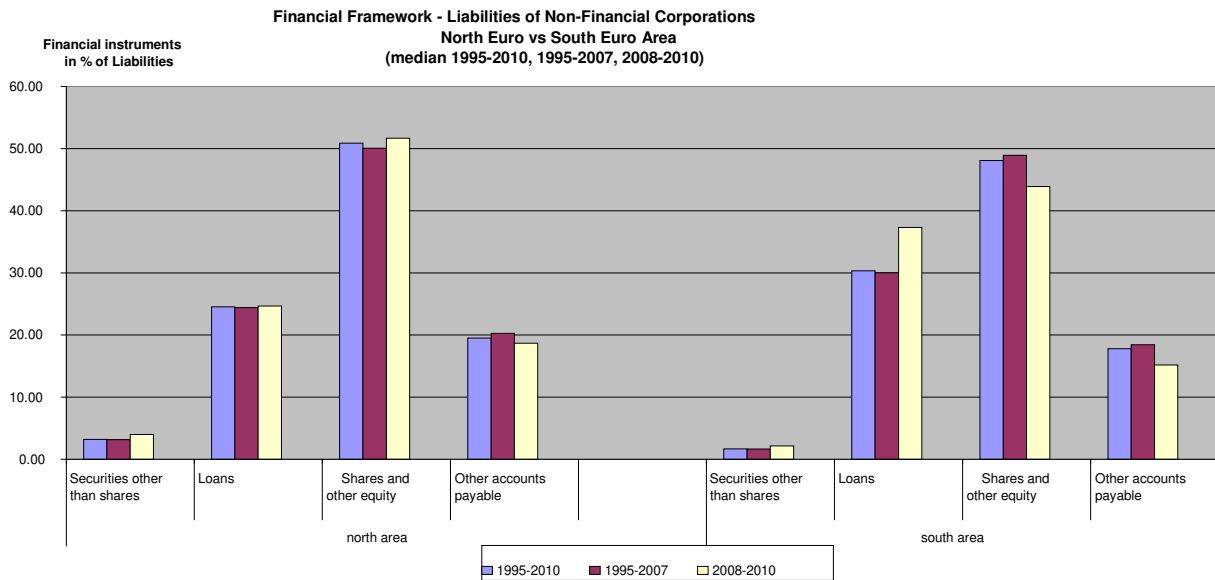
Source: our elaborations on OECD data.

Mexico, the United States and the United Kingdom present higher percentages of equity than Japan where loans are the first instrument even if only by a tiny measure. In Japan the financial system is traditionally banking oriented with a crucial importance of the banking relationship in the development of enterprises. Also in Europe the main countries are historically characterised by loans as a determinant factor for economic growth (see Gerschenkron, 1962). In the Euro South Area the share of securities is lower than the other countries and areas confirming that bank credit is one of the main factors for covering the funding needs of enterprises. Another common characteristic for Japanese and European corporations is the large weight of other accounts payable, in other terms the trade debts towards other enterprises or other institutional sectors: an alternative way for them to fund their expenditures.

It might be worth considering the role that such a financial structure played during the financial crisis in the Southern Euro area. The capital inflow needed to finance investments is provided, under normal conditions, by banks extending credit in a demand driven process. The crucial role of the bank-client relationship is confirmed looking at the historical trends (see Figure 2) : from 2008 to 2010, in the Euro South area, compared to the North, the relative importance of shares as a means of funding is widely decreased to the advantage of banking credit. Over the last four years banks

stopped lending to each other thus reflecting the difficult conditions in the inter-bank market and eventually have been providing less credit to the rest of the economy, which causes a severe collapse in output, especially where the economic structure is still heavily dependent on the banking system<sup>16</sup>.

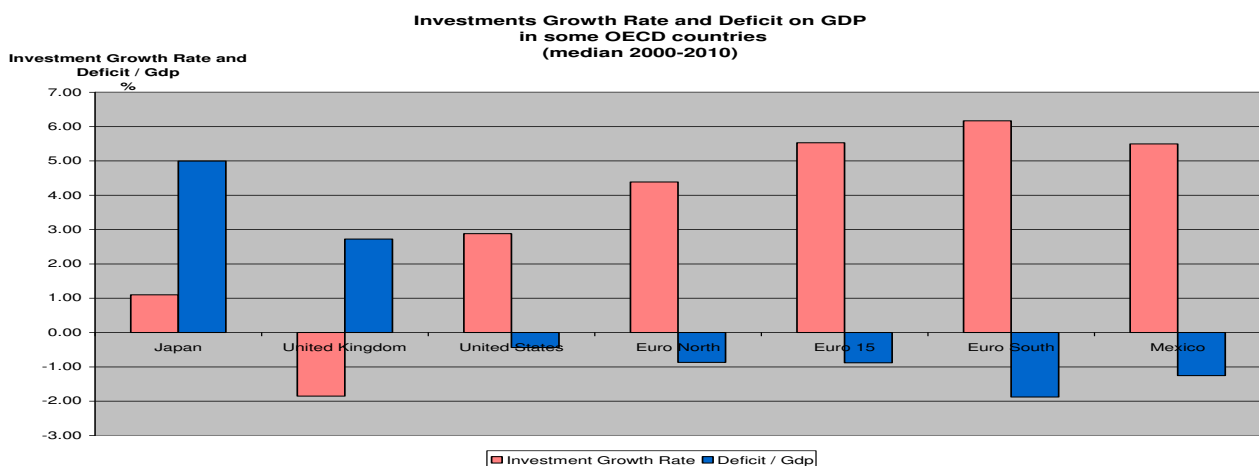
Figure 2



Source: our elaborations on OECD and EUROSTAT data.

The relationship between the investment decisions and the cash flow of the enterprises in a national accounts view is reported in Figure 3 where net lending / net borrowing on GDP has been compared with the investment growth rate for the same OECD countries and areas (see Figure II, Annex I, for a complete set of statistics for each country observed).

Figure 3



Source: our elaborations on OECD and EUROSTAT data.

<sup>16</sup> The crisis also set off the balance sheet deleveraging process for financial intermediaries whereby they have reduced assets and liabilities, further fuelling the recession process. Capital coefficients required by Basel III context have also been a prominent driver in this process.



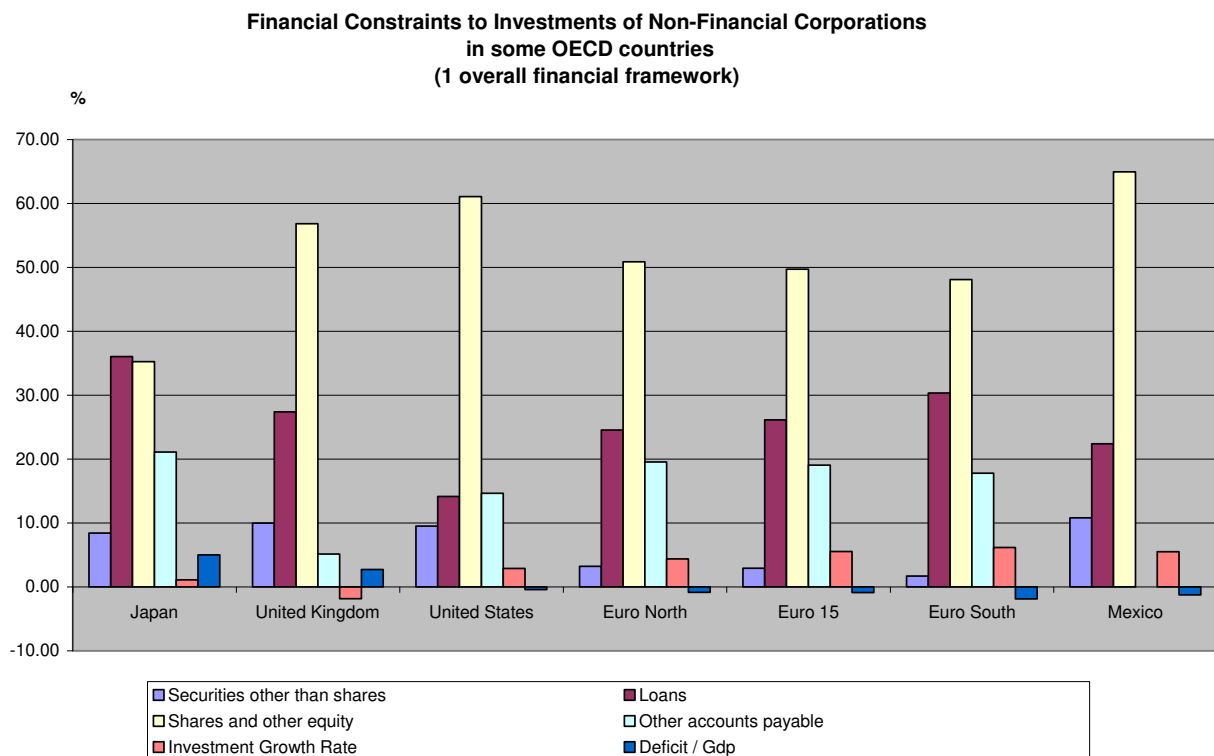
In the UK the liquidity might have been directed to reduce liabilities rather than augmenting investments.

Japanese enterprises experienced consistent cash flows in the period 2000-2010 that may have gone to fund not only domestic investments but also both other domestic sectors and the international one. This trend is consistent with the carry trade that has characterized the Japanese economy from the 90s: funds borrowed in Japan at low interest rates have moved towards countries offering higher financial returns and with steeper yield curves.

The greatest net borrowing on GDP is to be found in the Euro South enterprises, characterised also by the highest investment growth rate in the observed years.

The entire picture encompassing both financial framework and investments - cash flow relation is shown in Figures 4 to 6.

Figure 4



Source: our elaborations on OECD data, EUROSTAT data.

A measure of the *financial market deepening* for each country according to the pecking order theory is reported in Figure 5. It is calculated using the following formula:

$$FMD_i = EQUITY_i + BONDS_i - LOANS_i - OTHER_i \quad [3.1];$$

where

$FMD_i$  : *Financial Market Deepening* for each  $i$  OECD country / area ;

$EQUITY_i$  : Shares and other equity on total liabilities (%) for each  $i$  OECD country / area ;

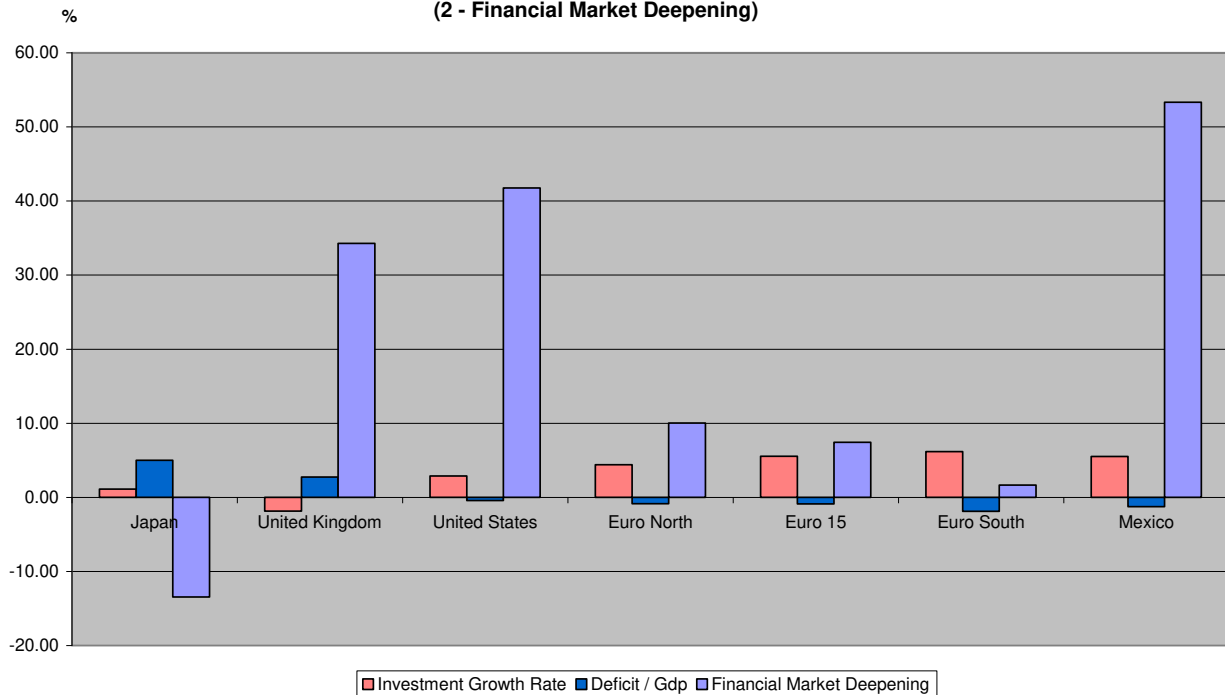
$BONDS_i$  : Securities other than shares on total liabilities (%) for each  $i$  OECD country / area ;

$LOANS_i$  : Loans on total liabilities (%) for each  $i$  OECD country / area ;

$OTHER_i$  : Other accounts payable on total liabilities (%) for each  $i$  OECD country / area.

Figure 5

**Financial Constraints to Investments of Non-Financial Corporations  
in some OECD countries  
(2 - Financial Market Deepening)**



Source: our elaborations on OECD and EUROSTAT data.

Mexico and the United States seem to be characterised by enterprises with the greatest financial market deepening while the Japanese enterprises show a direct relationship between investment growth rate and cash flow and a negative size of the financial market deepening.

Even though for Euro South enterprises access to financial markets is too constrained with a low FMD, the restrictions on investment planning might not be so relevant because the trade debts seem to compensate for the reduced size of equity and bond issues as funding instruments. In this regard Figure 6 shows a measure of gross financial market deepening not considering the other accounts payable in the calculation of the deepening according to the following formula:

$$GFMD_i = EQUITY_i + BONDS_i - LOANS_i \quad [3.2];$$

where

$GFMD_i$  : *Gross Financial Market Deepening* for each  $i$  OECD country / area ;

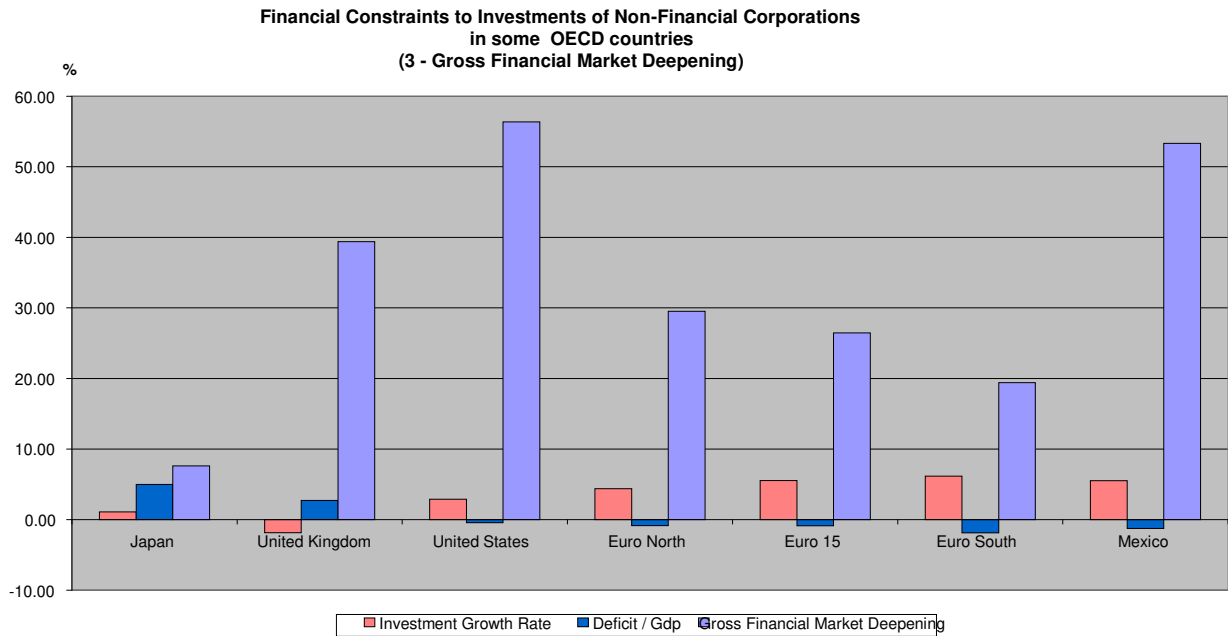
$EQUITY_i$  : Shares and other equity on total liabilities (%) for each  $i$  OECD country / area ;

$BONDS_i$  : Securities other than shares on total liabilities (%) for each  $i$  OECD country / area ;

$LOANS_i$  : Loans on total liabilities (%) for each  $i$  OECD country / area ;

An interesting point is the fact that Euro South enterprises are able to obtain a higher investment growth rate than the Northern ones even though they possess fewer resources on the financial markets in gross terms (*Gross Financial Market Deepening*) and a larger deficit on GDP. That fact might possibly point to two different behavioural patterns in Europe. During the European Monetary Union era there was a relatively more reluctant attitude of the North area companies to credit borrowing – see also Figure 1 to this extent – and investment. Not all the inflow received was channelled to investments; part of it may have been conveyed to other sectors/areas. Given that, on its side, the Government hasn't always been a borrower with a need to absorb additional cash flow in the system, it might be conjectured that the Euro North area have financed to some extent the Euro South area on commercial terms (in particular intra-group loans) or by banking financing.

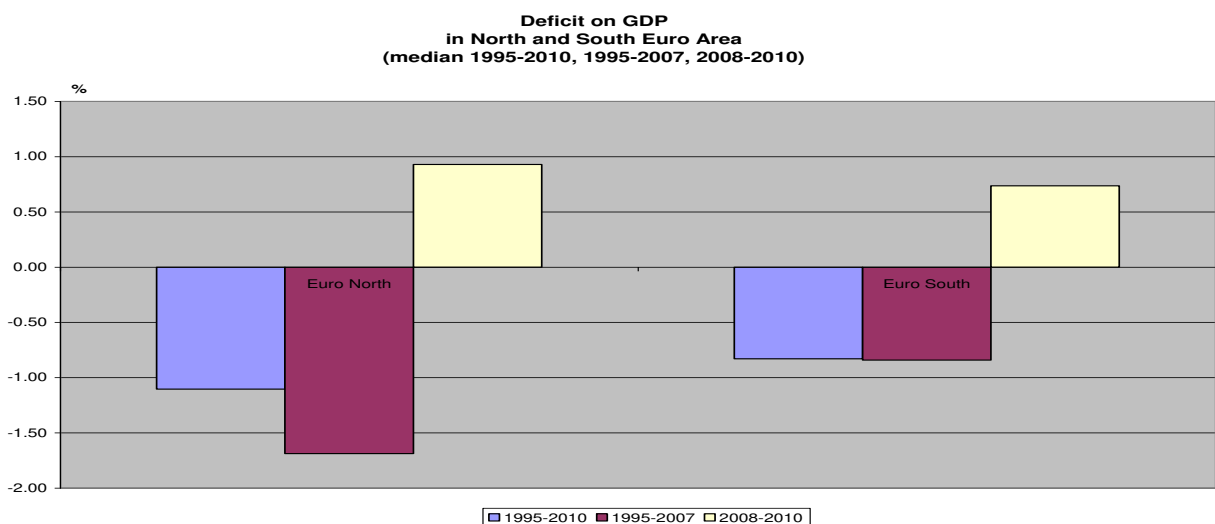
Figure 6



Source: our elaborations on OECD and EUROSTAT data.

In terms of historical trends, in respect only to the Euro area countries, see figure 7, from 2008 to 2010, coinciding with the on-going financial crisis, Northern Europe seems to have benefitted from the business restructuring undertaken in the middle of 2000<sup>17</sup>, as shown by the relative higher growth of cash flow compared to the South (more than 26 %).

Figure 7



<sup>17</sup> See Rapporto CER 2012, Centro Europa Ricerche S.r.l.

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OECD data

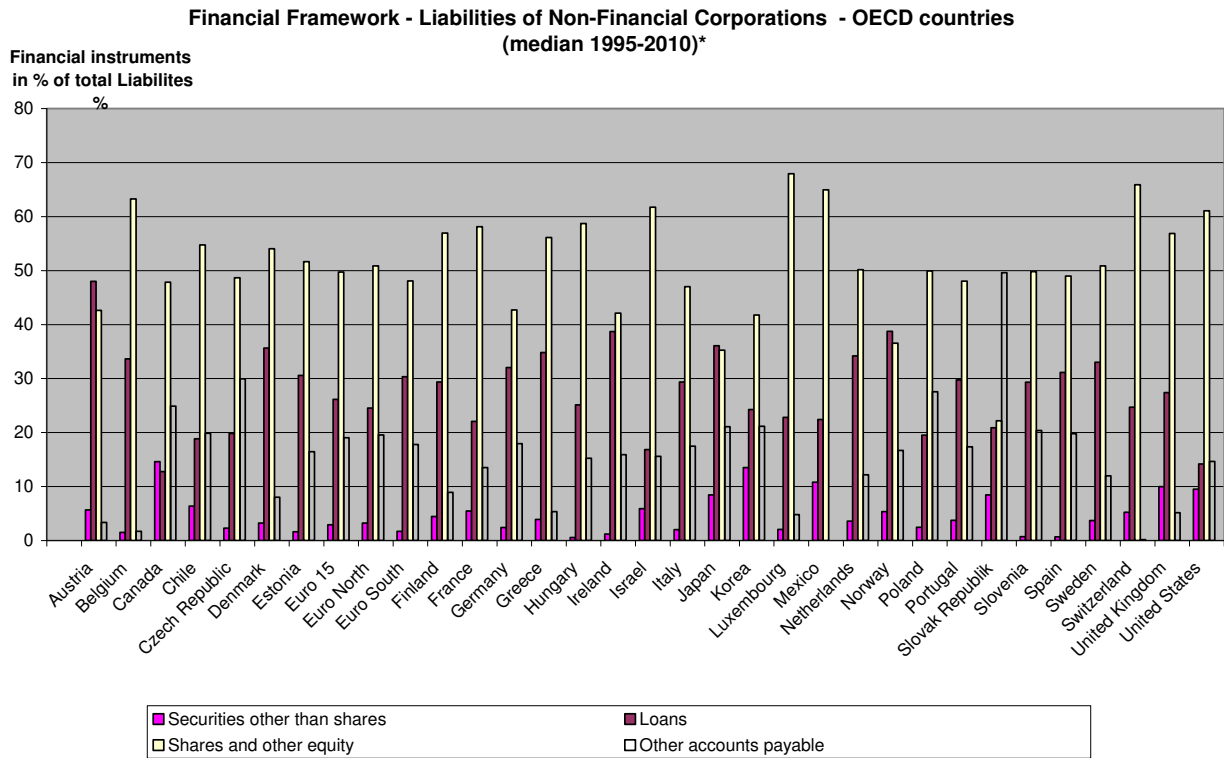
[http://stats.oecd.org/Index.aspx?DatasetCode=SNA\\_TABLE720#](http://stats.oecd.org/Index.aspx?DatasetCode=SNA_TABLE720#)

Eurostat data

[http://epp.eurostat.ec.europa.eu/portal/page/portal/national\\_accounts/data/database](http://epp.eurostat.ec.europa.eu/portal/page/portal/national_accounts/data/database)

ANNEX I

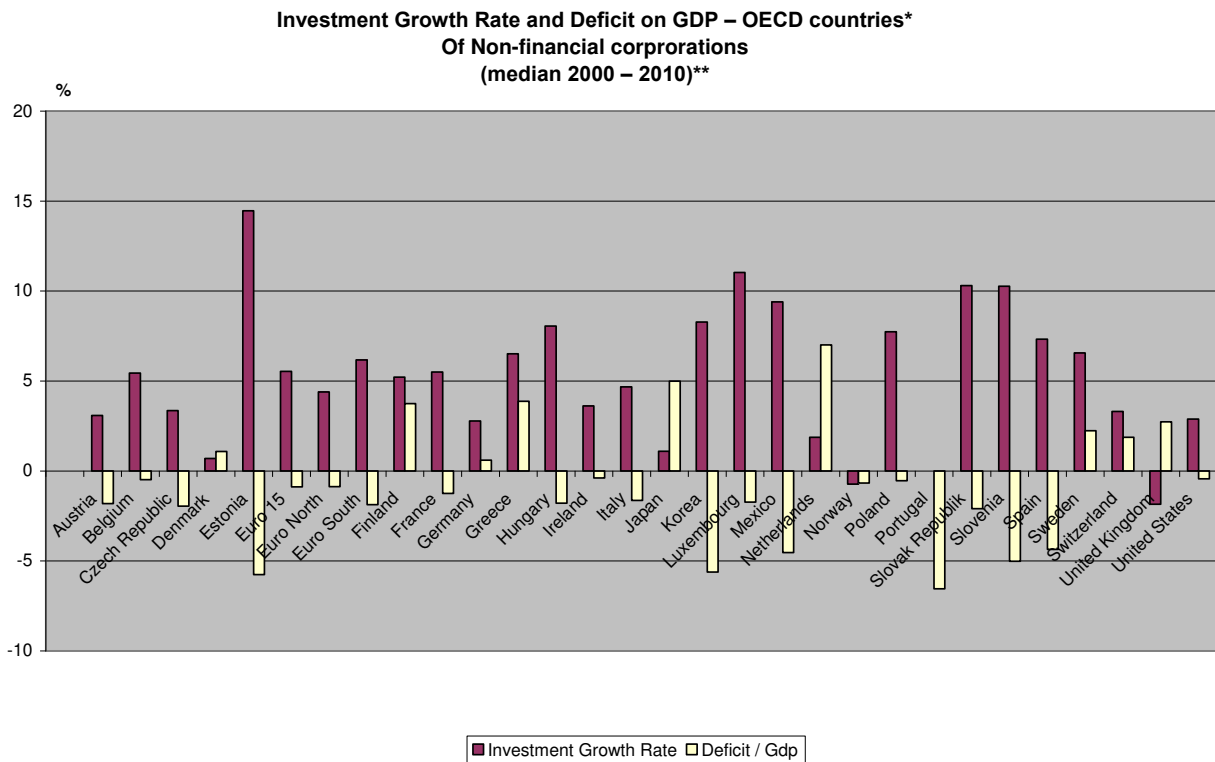
Figure I



Source: our elaborations on OECD data.

\* Financial Liabilities are available for Chile from 2005 to 2010, for Ireland from 2001 to 2010, for Israel from 2010, for Korea from 2002 to 2010, for Luxembourg from 2006 to 2010, for Mexico from 1997 to 2010, for Slovenia from 2001 to 2010, for Switzerland from 1999 to 2009.

**Figure II**



Source: our elaborations on OECD and EUROSTAT data.

\* Canada, Chile and Israel have not been included in this figure because in OECD database there are not data on investments and deficit for non-financial corporations.

\*\* Investment Growth Rate is available for Greece from 2006 to 2010, for Ireland from 2003-2010, for Japan from 2002 to 2010, for Luxembourg from 2007 to 2009, for Mexico from 2004 to 2010. Deficit on GDP is available for Greece from 2005 to 2010, for Ireland from 2002-2010, for Japan from 2001 to 2010, for Luxembourg from 2006 to 2010, for Mexico from 2003 to 2010.