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On the determinants of firms’ financial surpluses and deficits¹

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¹ This paper was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

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According to macroeconomic predictions firms are expected to be net borrowers: the net change of their financial assets should be smaller than the net change of their financial liabilities. However in the last years firms were often net lenders in countries such as Japan, the UK, Germany and the Netherlands. On the contrary firms remained on average net borrowers in countries such as France, Italy and the US. We investigate the sources of corporate sector surpluses and deficits using panel data techniques. Our statistics include 18 industrial countries over the period 1995-2014. We find that firms' surpluses and deficits are linked to national output gaps, ratios of corporate investment to GDP, private consumption, net foreign direct investments and companies' profits. This econometric evidence is robust to the inclusion in the regressions of variables such as oil price, firms' leverage, countries' financial openness.

Keywords: Net lending/borrowing, corporate sector, corporate saving glut, panel data.

JEL classification: E2, G3, F6

1. Introduction and motivation

According to macroeconomic predictions, non-financial corporations should usually act as net borrowers – with the net acquisition of financial assets smaller than the net incurrence of financial liabilities – in order to satisfy their financial needs and to realize investments. This status of firms is generally counterbalanced by the household net lender behavior which channels the financial resources to firms directly or throughout the financial system.

Contrary to these expectations, in the last years corporate net lending prevailed in several countries. In 2014 UK firms reported a financial surplus of 0.8 percent of GDP. In 2013 the surplus was 2.8 per cent for Irish firms, 6.9 per cent of GDP for the Dutch corporate sector and achieved 4 per cent of GDP for German firms. The Economist wrote a note on “The Corporate Saving Glut” already in 2005.

The goal of this paper is to shed light on determinants of corporate surpluses and deficits in the main industrial economies. The evidence is tricky to interpret and there are still few contributions on the subject. In the literature different explanations have been proposed.

André et al (2007) studied corporate net lending in the period 2001-2005 in the main OECD countries and found among the explanatory factors the fall of corporate investment, the growth of net foreign investment abroad, and increasing profit shares, possibly related to wage moderation and low interest rates. The increase of net lending was judged as partly temporary. IMF (2006) addressed the issue looking at corporate high savings in G7 countries. The excess debt and the accumulation of physical capital during the 1990s were considered two relevant culprits of net lending but other cyclical and structural factors also played a role, such as firm’s high profits, a lower relative price of capital goods, the choice of companies to purchase assets abroad and to increase their cash holdings.

Firms’ net lending became even higher after the global financial crisis and recently Gruber and Kamin (2015) analyzed the phenomenon in G6 economies conducting panel regressions over long time horizons (1961-2001; 1961-2006; 1961-2013). Their main result is that the increase of the corporate saving glut is related to lower investment. The weakness in investment spending was particularly intense after the global financial crisis but corporate investment was disappointing also in the years preceding the collapse of Lehman Brothers. Gruber and Kamin emphasize that

corporate payouts to investors in the form of dividends and equity buybacks have also increased: this is inconsistent with the idea that prudent firms were cutting investments to strengthen their balance sheets.

However the opinion that firms reduce their investments because of financial issues is widespread in the literature. Armenter and Hnatkovska (2014) develop a theoretical model to explain the occurrence of firms' net lending putting the attention on the precautionary motive: firms accumulate financial assets in order to avoid being financially constrained in the future.

In emerging countries firm surpluses have been sometime explained by credit constraints¹, but also in industrial economies banks could not be able to reach all the segments of firms. Brufman et al. (2013) focus on the role of financial constraints to analyze the excess of savings, using micro data on firms for France, Germany, Italy, UK and Japan over the period 1997-2011. The excess of saving is related to a decline of investments. Moreover firms reduced leverage and the share of operating assets in total assets. These trends were stronger among the more credit constrained and the less dynamic firms.

While there is a broad consensus on the effect of investments on net lending/net borrowing, the evidence is more uncertain for consumption. A slowdown of consumption might induce firms to reduce their investments diverting resources towards the accumulation of financial assets. As already mentioned another possible explanation of firms' net saving is their internationalization. Globalization caused deindustrialization in rich countries. Firms invested abroad, where expected returns are higher, because of lower wages and looser regulation. Therefore firms cut external finance inside the domestic borders and collected financial resources abroad.

Taking into account the previous literature, the novelty of our paper is the analysis of corporate net lending/ net borrowing in a sample of 18 countries over the years 1995-2014. Through econometric techniques, we study the variables which, *ceteris paribus*, may better contribute to explain the non-financial corporations behavior. After this introduction, Section 2 discusses the main issues on financial accounts and accounting identities, and summarizes how globalization of production may influence net lending/borrowing. Section 3 describes the dataset and focuses on

¹ Looking at 18 emerging countries, Caballero et al. (2015) claim that firms often act like financial intermediaries to gain from carry trade type activities where capital controls, particularly controls on inflows, are diffuse.

the aggregate evidence on firms' net lending/borrowing in the last 20 years. Section 4 reports some econometric estimates along with a discussion of the empirical results. Conclusions follow.

2. A glance at national accounts definitions

In this paragraph we summarize some definitions of the variables used in the paper. Our indicators are mainly based on the System of National Accounts.

The national accounts describe the economic process, from the production and generation of income, through its distribution and redistribution along with its use for final consumption. The last part of the process involves the use of saving and the accumulation of non-financial and financial assets. In national accounts the economy is divided into institutional sectors, which are characterized by homogeneity in functions, choices, and decisions. Among the sectors, non-financial corporations collect the units involved in production of goods and non-financial services. Firms' output, net of intermediate consumption and taxes less subsidies on products, defines the gross value added (the net definition requires the subtraction of consumption of fixed capital). The sequence of accounts showed in Table 1 describes the formation of non-financial corporation's net saving and its relationship with net lending/net borrowing. In particular:

$$\text{Net lending/net borrowing balance} = \text{Saving} - \text{Investment} \quad (1)$$

The sequence of accounts is completed by the financial account, that shows how firms invest net lending in the different financial instruments or, viceversa, how firms collect liabilities – loans, shares and other equity, bonds – to fund the net borrowing needs. This implies that net lending/net borrowing from capital account is equivalent to net lending/net borrowing from financial account:

$$\text{Net lending/net borrowing} = \text{Saving} - \text{Investment} = \text{Financial Assets flows} - \text{Financial Liabilities flows} \quad (2)$$

In national accounts transactions are based on the notion of residence. The residence identifies the territory where business activities take place. Globalization increased interactions across national economies and made more ambiguous the definition of residence. Production patterns changed as firms organised their activities in the most cost-effective way (UNECE, 2011): we may refer to phenomena

Table 1 - A Simplified scheme of non-financial corporation accounts

Production Account	Output - Intermediate Consumption -/+ Taxes less subsidies on products Gross Value Added
Income Account	- Compensation of Employees - Other taxes/subsidies on production Gross Operating Surplus - Consumption of Fixed Capital Net Operating Surplus
Distribution of Income Account	+ Total property income, receivable + Social Contributions + Other current transfers - Property Income paid - Current taxes on income, wealth - Social benefits - Other current transfers Net saving
Capital Account	+ Consumption of Fixed Capital Gross saving - Gross fixed capital formation - Change in Inventories - Acquisition less disposals of non-produced non-financial assets Net Lending/Net Borrowing

such as global value chains and the increase of foreign direct investments (Cappariello and Felettigh 2015 and Federico 2016). Similar features invested financial markets and increased interconnections between financial systems (Infante, Pozzolo, Tedeschi 2012; Bartiloro and di Iasio, 2012). In the organization of economic activity the importance of national borders weakened and challenged in turn the ability to measure economic phenomena. The activity of multinational enterprises (MNEs) is difficult to capture both for national statisticians and policy considerations (UNECE, 2011). For instance prices for goods and services exchanged between group entities differ from market prices, introducing distortions in the value of trade (Eggelte et al., 2014).

The high presence of MNEs may play an important role in explaining net lending of non-financial corporations in some economies. If a company decided to move its production in another country through a subsidiary, to exploit lower production costs, any investment run by the MNE through its subsidiary would be recorded in the foreign country. In the national account system, the acquisition of the subsidiary – the foreign direct investment abroad – would affect only the financial

account of the parent company country, reducing cash holdings and increasing shares and other equities in the asset side (with a symmetric impact on the rest of the world sector). Since the investment is made by the subsidiary, the capital account of the parent company country remains unaffected, while the investment is recorded in the host country. The earnings generated by the subsidiary are assigned to the headquarters, thus improving the distribution of income account and in turn net lending (Eggelte et al., 2014). In case of reinvested earnings, e.g. to fund an expansion of investments of the subsidiary, they are still recorded in the distribution of income account of the parent company (improving the net lending position) and correspondingly increase the shares and other equity item in the financial accounts. This statistical rule implies an improvement of the net lending position of the parent company country and a corresponding worsening of the net borrowing/lending of the corporate sector of the subsidiary country, reducing the current account balance. In brief, we confirm the importance of taking into account net foreign direct investments to analyse firm net lending/borrowing.

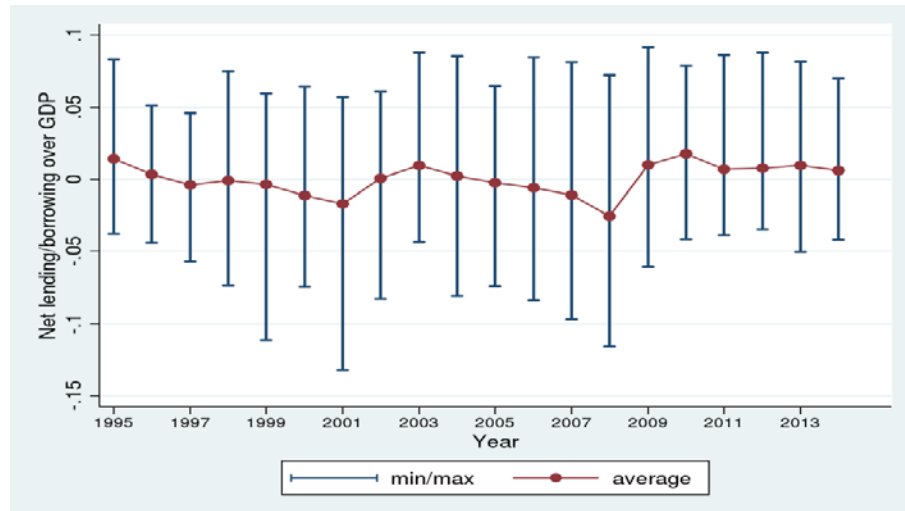
3. Descriptive statistics

Our data set includes 18 countries, 16 European nations plus the US and Japan. We collected data from 1995 to 2014 following the ESA2010 and SNA2008 standards². In the last 20 years the pattern of non-financial corporation net lending/borrowing may be split into four phases (figure 1). First, net borrowing prevailed during the bubble of 1995-2001, when firms raised new capital exploiting the positive phase of the Stock Exchange. Second, from 2002 to 2003 the burst of the bubble led to the prevalence of net lending, as underlined by IMF (2006). Later on the world economy came back to a positive growth and net borrowing reappeared, reaching its local maximum in 2008. Finally, the global financial crisis caused the "Great Recession" while the debt sovereign crises was accompanied by recessions or low growth in many European countries: therefore from 2009 to 2014 firms came

² We take net lending/net borrowing figures from the national financial accounts; in many countries there are some discrepancies with corresponding figures taken from capital accounts (see Cagetti et al 2012 on the US).

back to net lending.³ When net borrowing prevailed – e.g. in 1999, 2001 or 2008 – the dispersion of countries was greater than that observed when net lending predominates, e.g. in 1995 or 2014.

Figure 1 Non-Financial corporations net lending/borrowing
(averages, 1995-2014)



The average behavior of firms hides a strong heterogeneity across countries. For this reason we now distinguish between net lender and net borrower nations (which are to be meant as countries whose non-financial corporation sectors behaves respectively as net lender or net borrower).

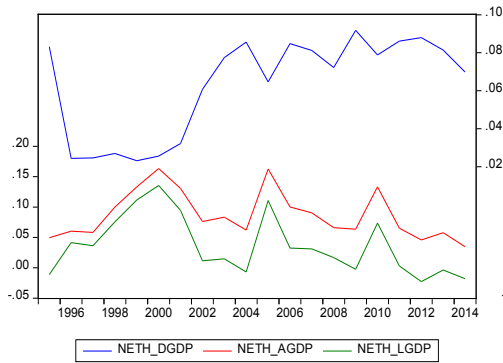
In our sample, there are eight countries where firms were net lenders in most of the years. This was the case of Germany, Denmark, Ireland, Switzerland, the Netherlands, Finland, the UK and Japan (Figure 2). Taking into account the average of 1995-2014, net lending was 6 per cent of GDP in the Netherlands, 3 per cent in Japan and Denmark, 2 per cent in Switzerland and 1 per cent or less in the remaining countries. While the Netherlands, the UK and Denmark show a net surplus in all the years (except for 2008 and in some cases around the 2012 sovereign debt crisis), firms in Germany display a positive saving in almost the years except from 2000 and 2008 for Germany in which liabilities ratio on GDP were higher than the assets ratio on GDP; firms in Switzerland and Germany display a positive saving in almost the years

³ This may be interpreted as a sort of rebalancing analogous to that of current account balances after the financial crisis (see Cesaroni and De Santis, 2015).

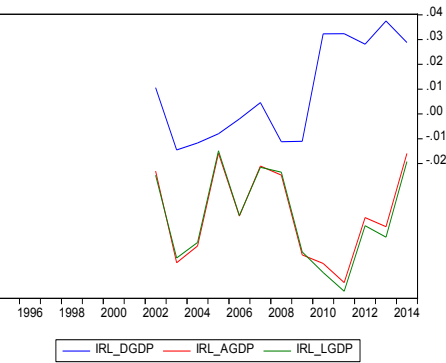
In the rest of our sample firms are mostly net borrowers (Figure 3). Taking into account the average of the period 1995-2014, net borrowing was 3 per cent of GDP in Portugal and Greece, 2 per cent in Spain and Italy, 1 per cent in

Figure 2 Countries where non-financial firms are net lenders, 1995-2014*

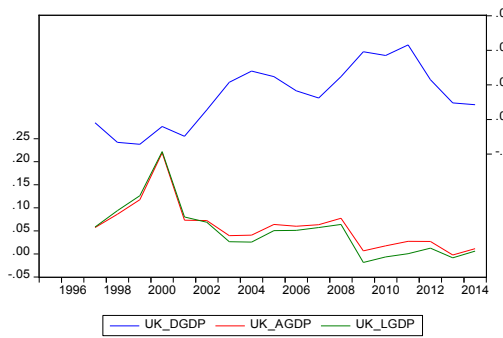
Netherlands



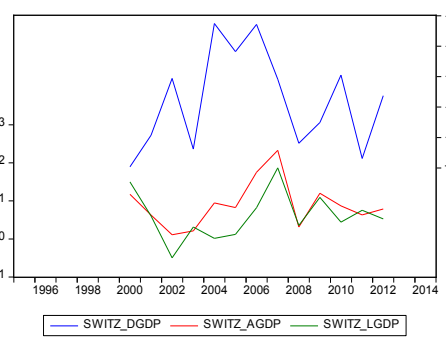
Ireland



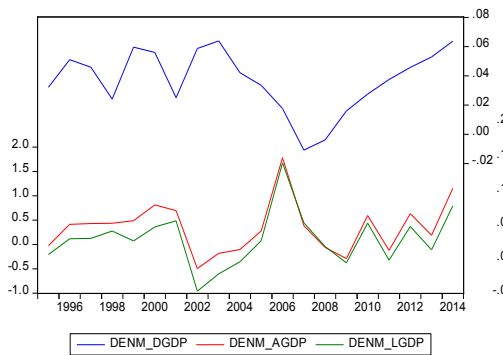
United Kingdom



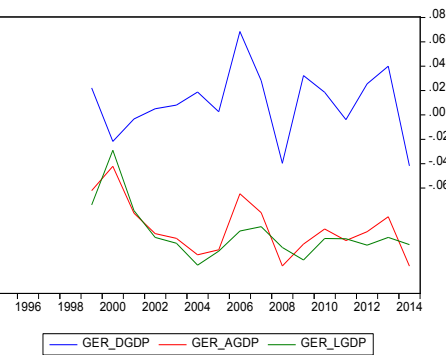
Switzerland



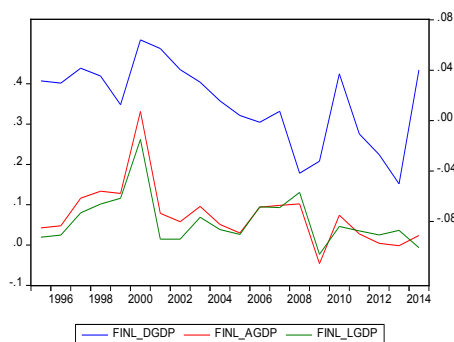
Denmark



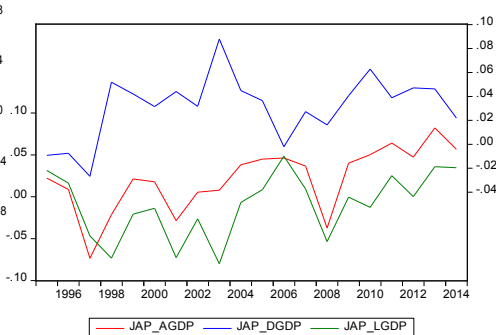
Germany



Finland



Japan

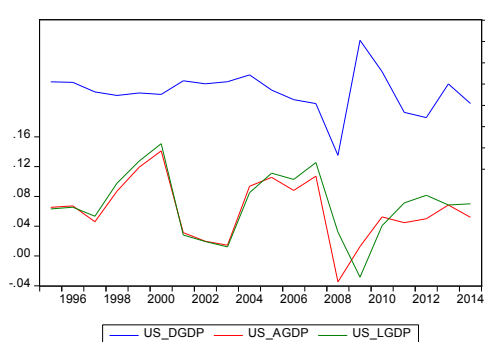


* The blue line is firms' net lending as a percentage of GDP - right hand scale. The red line is the net change of firms' financial assets as a ratio of GDP - left hand scale. The green line shows the net change of firms' financial liabilities as a ratio of GDP - left hand scale.

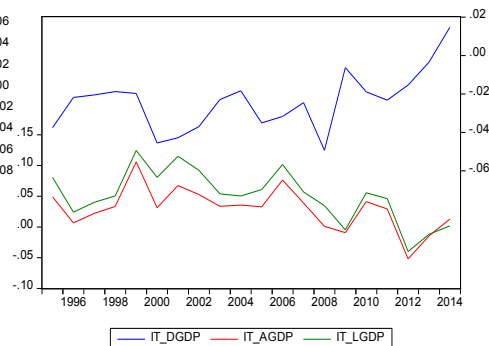
Austria, France and Sweden. Net borrowing was on average smaller than 1 per cent in Belgium, Norway, and the US. The yearly evolution of net borrowings shows differences across countries linked to the different impacts of the global financial crisis and the European sovereign debt crisis.

Figure 3 Countries where non-financial firms are net borrowers, 1995-2014*

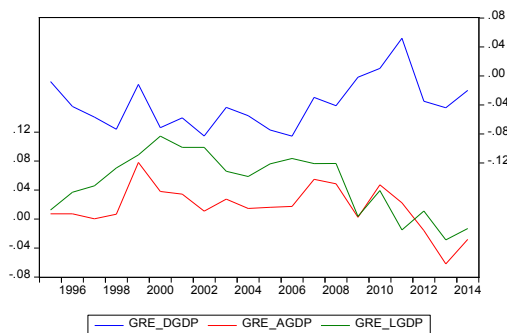
United States



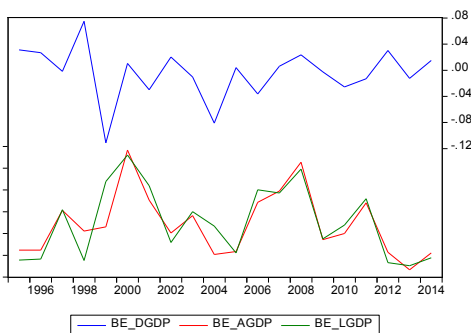
Italy



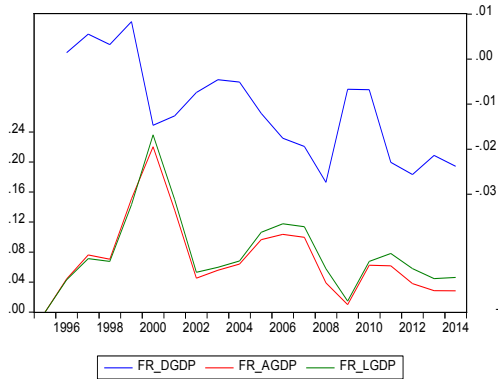
Greece



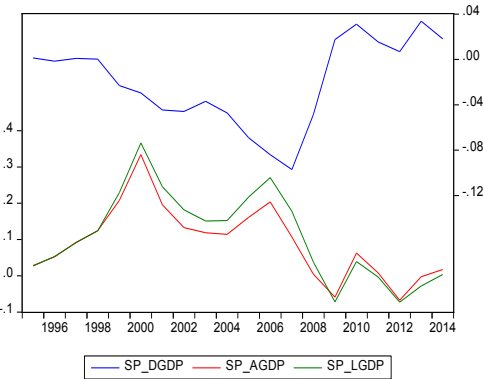
Belgium



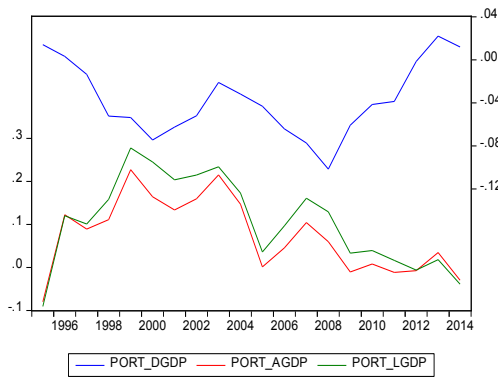
France



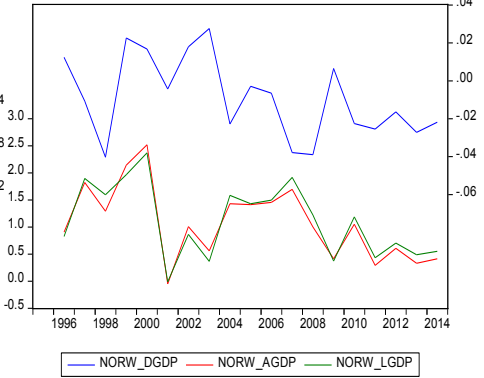
Spain



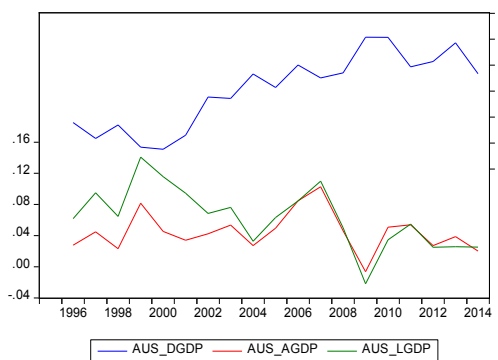
Portugal



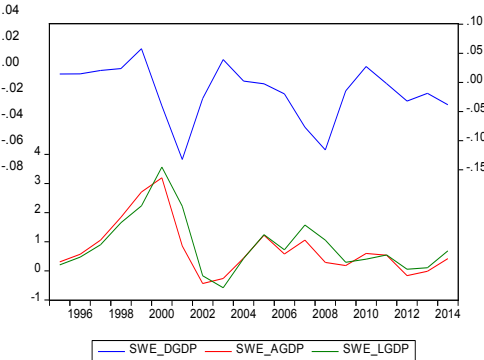
Norway



Austria



Sweden



* The blue line is firms' net lending as a percentage of GDP - right hand scale. The red line is the net change of firms' financial assets as a ratio of GDP - left hand scale. The green line shows the net change of firms' financial liabilities as a ratio of GDP - left hand scale.

Our data set includes indicators coming from different sources. Net lending and net borrowing are taken from the national financial accounts available in the OECD statistical database. Balance of payments statistics come from the Milesi Ferretti

(2015) archive. Table 2 reports a description of the variables together with their expected sign in the regressions.

Now we discuss how our explanatory variables may be associated to non-financial corporations' net lending/borrowing.

Output gap. The output gap is a summary indicator of the cyclical stance. An expansionary phase of the business cycle, measured by a positive output gap, corresponds to a high effective demand. The increase in demand will induce firms to invest thus lowering their surpluses or increasing their net borrowing. The output gap should also catch the impact of financial crises.⁴

Table 2 - Data description and variables definition

Variable	Description	Expected sign
Net lending/net borrowing (NBLGDP)	Net lending/net borrowing as a percentage of GDP.	Dependent variable
Output gap	$(\text{Effective GDP} - \text{Potential GDP})/\text{Potential GDP} \times 100$.	Negative
Net FDI/GDP	Net foreign direct investment as a ratio to GDP.	Positive
Investment/GDP	Gross investment rate of corporate sector as a ratio of GDP	Negative
Consumption/GDP	Share of private consumption to GDP.	Negative
Profits/GDP	Profits after net interest and taxes as a ratio to GDP: profits are defined as the sum of gross operating surplus and property income minus the sum of interest rate paid and taxes (as in IMF 2006).	Positive
Oil price	Price of Brent in US dollars.	Negative
Interest rates spread	Long term – short term interest rates on deposits.	Positive
Leverage	Loans and bonds issued by firms as a ratio of total financial liabilities.	?
Financial openness	The sum of financial assets plus financial liabilities/GDP	?

⁴ We are conscious that output gap estimates are subject to a degree of uncertainty and can vary depending on the method adopted. We use the OECD database where the production function approach is used to estimate potential output.

Net FDI to GDP ratio. For each country this variable measures the difference between flows of outward foreign direct investments and flows of inward foreign direct investments. As discussed in the introduction and in paragraph 2, a positive value of net FDIs should be associated to greater net lending/smaller net borrowing.

Investment to GDP ratio. As in the case of the output gap, a greater investment/GDP ratio should lower net lending and increase net borrowing by firms.

Consumption to GDP ratio. Similarly to investment, a greater consumption/GDP ratio should lower net lending and increase net borrowing by firms.

Profits to GDP ratio. Profits should be positively linked to net lending, as higher profits decrease the need of firms' to raise new financial liabilities. This choice may be rationalized in the framework of the pecking order theory (Myers and Majluf 1984).

Oil price. This control variable is a proxy for supply shocks, a rise of oil price should make firms' costs greater, thus leading to smaller net lending or greater net borrowing.

Interest rate spread. We use this indicator as a proxy of uncertainty. According to Campbell and Shiller (1991), the yield spread between longer and shorter term interest rate predicts a future change in interest rates, due to expectations of an higher monetary policy short-term rate. Therefore a higher spread can be interpreted as a proxy of uncertainty over future economic conditions, which might imply a liquidity hoarding by firms as a response.

Leverage. This variable might influence non-financial corporations' net borrowing/lending but its sign is not easy to determine a priori. Firms wanting to raise investment might fund their decisions increasing their debt level and therefore the leverage ratio: in this case we would expect a negative relationship between the leverage ratio and net lending/borrowing. On the other hand, high-leverage positions may have a negative impact on investment and therefore a positive impact on net lending, predicting a balance-sheet adjustment for highly indebted non-financial corporations (see IMF 2006). Furthermore, high-leverage positions may affect investments through the financial accelerator mechanism (Bernanke and Gertler 1989), by reducing firms' net worth and collateral.

Financial openness. It is difficult to select the effects of a greater financial openness on net flows of financial assets and financial liabilities as both the variables might be influenced in the same way.

All our original variables are expressed in US dollars. We also included country dummies in the regressions. Most of the independent variables are lagged one period to manage issues of endogeneity.

Table 3 - Descriptive statistics

	Observations	Mean	Std. Dev.	Min	Max	Unit of measure
Net lending/net borrowing (NBLGDP)	336	0.00015	0.0391	-0.13	0.092	Ratio
	361	-0.247	3.088	-15.81	9.206	Percentage
Output gap						
Oil Price	360	55.96	33.76	14.19	113.04	US dollars
FDI_net_GDP	360	0.081	0.253	-0.996	1.075	Ratio
Investment/GDP	335	0.119	0.022	0.042	0.169	Ratio
Leverage	346	0.647	0.212	0.342	1.423	Ratio
Consumption/GDP	335	0.549	0.0723	0.384	0.708	Ratio
Financial openness	340	5.68	5.59	0.84	36.62	Ratio
Profits/GDP	335	0.21	0.076	0.0059	0.373	Ratio
Spread	317	1.611	2.109	-5.44	21.93	Percentage

Table 3 reports some descriptive statistics on the dependent and independent variables used in the econometric section. In line with Figure 1, on average net lending prevails, as the NLBGDP variable is slightly positive over the period when all countries are considered. Furthermore, the indicator spans from a minimum value of -13 per cent – a very high net borrowing reached by Sweden in 2001 – and a maximum value of a net lending of 9 per cent reached by the Netherlands in 2009. The ratio of corporate investment to GDP is around 12 per cent while the ratio of private consumption to GDP is about 55 per cent. The net flow of FDI is on average positive as our sample includes advanced economies. The profit share of the corporate sector is on average roughly 20 per cent while the leverage is around 65 per cent.

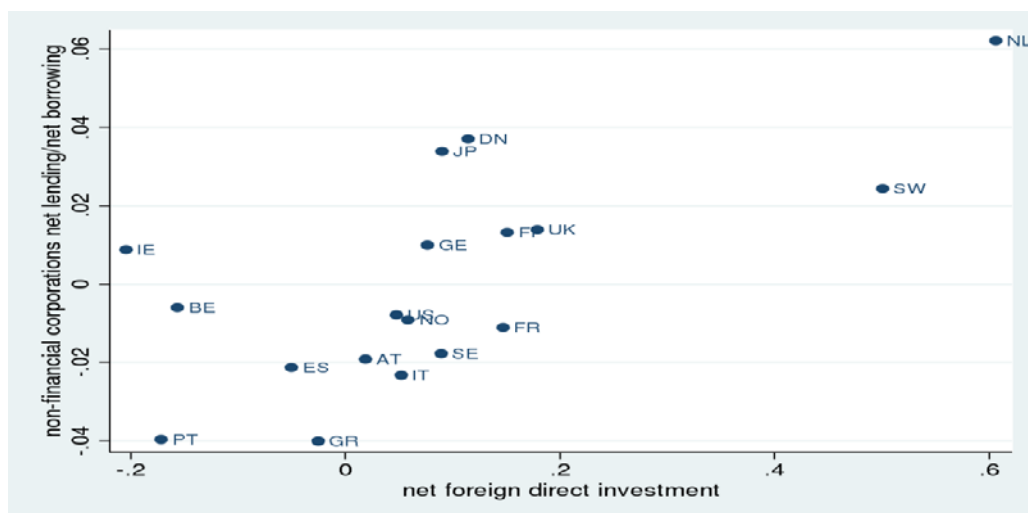
Table 4 - Correlation between net lending/borrowing and main independent variables (1995-2014)

	NLB/ GDP	Net FDI/ GDP	Out- gap(11)	Inv/ GDP(11)	Fin- open(11)	Cons/ GDP(11)	Oil Price	Spread	Leve- rage	Profits/ GDP
NLB/GDP	1.00									
Net FDI/GDP	0.48	1.00								
Outgap_11	-0.23	-0.17	1.00							
Inv/GDP (11)	-0.15	0.01	0.25	1.00						
Finopen (11)	0.28	0.31	0.00	-0.05	1.00					
Cons/GDP (11)	-0.21	-0.13	-0.19	-0.39	-0.32	1.00				
Oil Price	0.05	0.16	-0.10	-0.15	0.54	0.04	1.00			
Spread	0.11	-0.03	-0.43	-0.35	0.07	0.26	0.23	1.00		
Leverage	-0.04	0.02	-0.03	-0.25	-0.09	0.21	-0.09	0.29	1.00	
Profits/ GDP	0.26	0.43	-0.05	0.24	-0.07	0.09	-0.06	-0.19	-0.23	1.00

To give a first look at the linkages among data, Table 4 reports the correlations between our dependent variable – the ratio of net lending/borrowing to GDP – and the regressors. As expected the correlation between investments ratio to GDP, consumption ratio to GDP and output gap, on one side, and NLBGDP, on the other side, is negative. The correlation between profits/GDP and NLBGDP also goes in the predicted positive direction since higher profits are associated with higher firms surpluses. Quite the opposite the correlation of leverage and the dependent variable is very low and negative.

Figure 4 reports a scatter plot of net lending/borrowing, on the vertical axis, and FDI's on the horizontal axis, taking into account for each country the average values over the periods 1995-2014.

Figure 4 Net lending/borrowing and net FDIs (averages 1995-2014)



Countries with high net direct investments abroad tend to be associated with thrifty firms. The picture is therefore coherent with previous evidence (Eggelte et al., 2014): countries with a large number of multinational enterprises, like the Netherlands and Switzerland, have more likely non-financial firms behaving as net lenders.

4. Empirical results

To analyze the determinants of firms' surpluses and deficits, we estimate a panel fixed effects model for the 18 countries considered over the period 1995-2014. Our baseline equation takes the form:

$$Y_{it} = \beta_i + \beta_0 * outputgap_{it} + \beta_1 * FDI_{it} + \beta_2 * consgdp_{it} + \beta_3 * Igd_{it} + \beta_4 * profitsgdp + \beta_5 * control_{it} + e_{it}$$

where the dependent variable y is firms' net lending/borrowing as a ratio of GDP. FDI is the ratio of net foreign direct investment to GDP; Igd is the ratio of corporate investment to GDP and $profitsgdp$ is the share of firms' profits. Leverage is given by loans and bonds issued by firms as a ratio of total financial liabilities. Control is a group of control variables such as oil price, interest rate spread, consumption, output gap and financial openness.

Table 5 reports the results of our regressions. We used six different models.

The first model includes four variables, namely, FDIs, investments and controls for oil price, consumption and output gap. The output gap has a negative

sign, as expected. The greater the output gap – i.e. the difference between real and potential GDP – the smaller firms' net lending and the greater their net borrowing. The net foreign direct investments are positively associated to net lending/borrowing. If outward FDI investments are larger than inward FDI, firms will tend to register a greater net lending (see Palenzuela and Dees, 2016 for a similar approach). The ratio of investment to GDP has a negative influence on net lending/borrowing as in Gruber and Kamin (2015). Consumption also has a negative coefficient, although not statistically significant. Oil price has a negative effect: a higher cost of oil increases firms' costs, thus leading to a smaller net lending or to a greater net borrowing.

The second model adds the share of corporate profits to GDP as regressor. This variable enters the regression with a positive sign: greater profits contribute to increase firms' surpluses, both through a larger accumulation of financial assets and a smaller need of raising financial liabilities. As far as the previous independent variables are concerned, we got the same results of the model in the first column; moreover the consumption/GDP ratio is now statistically significant.

The third model adds the interest rate spread to the previous regressors with the aim to control for uncertainty. The interest rate spread enters with a positive and statistically significant coefficient: an increase of uncertainty pushes firms towards accumulating financial assets or reducing their liabilities. The coefficients of foreign direct investments, of corporate investment and of private consumption confirm the signs and statistical significance found in model 2, while the output gap is not significant.

The fourth column adds firms' leverage as a new independent variable. The effect of this variable on net lending/borrowing is negative. A higher leverage implies greater flows of financial liabilities, thus reducing firms' surpluses or increasing their net borrowing. The other variables confirm the previous results with the exception of the output gap.

The fifth column considers an indicator of financial openness as an alternative to foreign direct investments, following the choice of Caballero et al (2015). This variable is statistically significant and enters with a positive sign, confirming the role of internationalization: a greater financial integration contributes to increase firms' surpluses. The other coefficients are in line with those of the previous models.

The sixth model includes a dummy for the years 2008-2011 (the crisis years) and an interaction term between leverage and the crisis dummy. We try to capture a

different effect of leverage on net lending/borrowing during the global financial crisis. Coherently with our discussion in the previous section, on average leverage has a negative association with net lending/borrowing of firms since an increase in debt would imply greater flows of financial liabilities to fund investment spending. But the global financial crisis and the debt sovereign crisis in European countries required a rebalancing phase for the most leveraged firms. This is suggested by our interaction term: during the crisis leverage is positively associated with net lending, signaling a hoarding of liquidity to cope with high debt level. Since the outbreak of the financial crisis, non-financial corporations underwent a decline of the ratio of debt to total assets (see ECB 2012). The decline reflected both demand and supply-side factors which affected credit to corporate sector. For the demand side, lower levels of economic activity, in particular lower capital formation, contributed to a reduction in external financial needs. Deleveraging is furthermore consistent with the idea of a balance sheet recession (Koo 2001 and 2012).

Table 5 - Baseline regressions
(fixed effects estimator, 1995-2014)

Dependent variable Net Lending/Borrowing	[1]	[2]	[3]	[4]	[5]	[6]
Output gap_I1	-0.001* (0.00)	-0.002** (0.00)	-0.001 (0.00)	-0.001 (0.00)	-0.001 (0.00)	-0.002* (0.00)
FDI / GDP	0.039*** (0.00)	0.031*** (0.01)	0.034*** (0.01)	0.027** (0.01)		0.023** (0.01)
Investment/GDP_I1	-0.918*** (0.18)	-0.956*** (0.18)	-0.918*** (0.18)	-0.89*** (0.18)	- 0.903*** (0.18)	-0.813*** (0.11)
Oil price	-0.0001* (0.00)	- 0.0001** (0.00)	- 0.0001** (0.00)	- 0.0001*** (0.00)	-0.0002*** (0.00)	-0.0001** (0.00)
Consumption/GDP_I1	-0.079 (0.11)	-0.257** (0.13)	-0.314** (0.13)	-0.264** (0.13)	-0.302** (0.13)	-0.265** (0.13)
Profits / GDP_I1		0.2481** * (0.08)	0.218*** (0.08)	0.201*** (0.08)	0.238*** (0.08)	0.183** (0.08)
Spread rate			0.003** (0.00)	0.003*** (0.00)	0.003** (0.00)	0.003*** (0.00)
Leverage				-0.037** (0.02)		-0.040** (0.02)
Financial Openness_I1 (over GDP)					0.002*** (0.00)	
Crisis dummy						-0.042*** (0.01)
Leverage*Crisis						0.062*** (0.02)

Constant	yes	yes	yes	yes	yes	yes
Country fixed effects	yes	yes	yes	yes	yes	yes
R2	0.19	0.30	0.34	0.32	0.31	0.33
Observations	307	307	299	299	299	299
Groups	18	18	18	18	18	18
(standard errors in parenthesis)						

***, ** and * denote significance at the 1%, 5% and 10% respectively

4.1 First robustness check: splitting the countries

As said, our previous results refer to countries that show a great heterogeneity of firms' net lending and net borrowing and one might envisage that surpluses and deficits may be influenced by different variables. Therefore we split our sample into two different subsets: 8 countries where firms are net lenders and 10 countries where firms are net borrowers over the period 1995-2014 (as shown by Figures 2 and 3). The goal of the exercise is to analyze if determinants of firms' surpluses are different from those of deficits.

Table 6 Splitting the countries
(fixed effects estimator, 1995-2014)

Dependent variable: firms' net lending/net borrowing	Net lender countries	Net borrower countries
Output gap _{t-1}	-0.002* (0.00)	-0.000 (0.00)
FDI / GDP	0.030** (0.01)	0.041 (0.04)
Investment/GDP _{t-1}	-0.939*** (0.26)	-1.020*** (0.28)
Oil price	-0.0003*** (0.00)	0.000 (0.00)
Consumption/GDP _{t-1}	-0.335** (0.16)	-0.158 (0.20)
Profits / GDP _{t-1}	0.138 (0.14)	0.213** (0.10)
Spread rate	0.001 (0.00)	0.002* (0.00)
Leverage	-0.036 (0.03)	-0.041* (0.02)
Crisis dummy	-0.040* (0.02)	-0.041** (0.02)
Leverage*Crisis	0.065* (0.04)	0.055** (0.02)
Constant	yes	yes
Country fixed effects	yes	yes

R2	0.31	0.18
Observations	127	172
Groups	8	10
(standard errors in parenthesis)		

***, ** and * denote significance at the 1%, 5% and 10% respectively

For net lender countries (first column of Table 6) macroeconomic variables – such as the output gap, foreign direct investments, investments and consumption – confirm the results obtained for all the countries and reported in Table 5, while profits and leverage are statistically not significant. On the contrary, the net borrowing of firms (second column of Table 6) is associated with investments but also with profits and leverage. Our interpretation is that balance sheet variables matter for net borrowers firms while they are not able to influence the choices of net lending companies. Finally the crisis dummy (for the years 2008-2011) and the interaction between leverage and crisis are associated in a similar way with firms structurally in surplus or in deficit. In other words, the crisis weakened the demand conditions, worsening the firms economic results, this in turn reduced net lending and contributed to a reduction of new borrowing in all the countries.

4.2 A robustness check along the time period

Up to now, our regressions took into account twenty years, characterized by different macroeconomic conditions. Now we study if the links between firm net lending/borrowing and our explanatory variables have been different during the Great Moderation years and in the Great Recession years.

Table 7 - Splitting the time period
(fixed effects estimator, 1995-2006 and 2007-2014)

Dependent variable: firms' net lending/net borrowing	1995-2006	2007-2014
Outgap_1	-0.002 (0.002)	-0.001 (0.002)
FDI/GDP	0.023** (0.011)	0.033 (0.028)
Investment/GDP_1	-1.010** (0.395)	-0.982** (0.391)
Oil price	-0.0003** (0.0001)	-0.0003** (0.0001)
Consumption/GDP_1	-0.496*** (0.240)	-0.283 (0.321)

Profits/GDP_I1	0.408** (0.139)	0.047 (0.129)
Spread rate	0.0007 (0.002)	0.0025** (0.001)
Leverage	-0.094** (0.040)	0.035 (0.029)
Constant	yes	yes
Country fixed effects	yes	yes
R2	0.30	0.19
Observations	158	141
Groups	18	18
(standard errors in parenthesis)		

***, ** and * denote significance at the 1%, 5% and 10% respectively

Our Table 7 reports the results of the estimates for the period 1995-2006⁵ (first column) and the time span 2007-2014. We use the last model of Table 5 (column 6) which contains all the independent variables. Looking at the years 1995-2006 we confirm the correlation among foreign direct investments, domestic investments, consumption, profits, leverage and the left hand side variable as in the whole sample. As far as the period 2007-2014 is concerned, domestic investment confirms their association with surplus and deficits of firms. In this subsample uncertainty, proxied by interest rate spreads, is also statistically significant, showing that during the two crises firms took into account interest rates differentials in setting their financial plans. Overall some variables look more robust during the Great Moderation years than during the Great Recession period, this is the case of foreign direct investment which experienced a fall during the crisis period more likely due to the fall in business expectations.

5. Conclusions

Traditional corporate sector theories predict that firms run deficits to finance investment projects. However since the mid-1990s in many industrial countries non-financial corporations registered financial surpluses while in other countries companies remained net borrowers.

In this paper we tried to detect the causes of firms' surpluses and deficits, focusing on the role of the output gap, aggregate demand components, net foreign

⁵ 2006-2007 is a kind of divide between the *good days* and the crisis time. First signals of the crisis emerged during 2007, meanwhile it was the Lehman collapse in 2008 to raise markets volatility and uncertainty in many developed economies and to mark the inception of financial crisis. Our decision to break the sample in 2006 is more conservative, at the same time the results are almost unaffected choosing as a breaking year 2007.

direct investments, profits, and leverage. In the econometric exercises the dependent variable is the difference between the annual flow of firms' financial assets and the annual flow of financial liabilities.

Studying 18 industrial countries from 1995 to 2014, the paper reached five main conclusions.

First, there is a negative association between output gaps and firms' surpluses and deficits. A higher (more in the positive) output-gap is linked to smaller firms' surpluses and greater deficits. This is reasonable as the output gap is an indicator of the cyclical stance.

Second, looking at demand components, firms' greater investments and higher private consumptions, both as a ratio of GDP, are associated to greater deficits and smaller surpluses. This evidence coincides with that found in previous studies on the impact of investment on firms' flows of financial assets and liabilities. In our regression the association of investment with firms' surpluses and deficits is more robust than that of private consumption.

Third, net foreign direct investments show a positive association with non-financial corporations' net lending: firms that strongly invest abroad tend to reduce their net borrowing. In the Netherlands, Japan, the UK, Germany and other countries large multinationals have a strong influence on the aggregate financial position of the corporate sector.

Fourth, profits are positively linked with net lending: a high profitability reduces the need to collect financial liabilities. This behavior is consistent with the pecking order theory of financing choices.

Fifth, leverage is negatively related to firm net lending/borrowing. An higher leverage ratio implies greater flows of financial liabilities. However the interaction between our leverage variable and a dummy for the crisis period of 2008-2011 obtains a positive coefficient. In these years firms tried to deleverage after the excesses of the years preceding the global financial crisis.

Overall, investments and profits are the variables that have the most robust influence on firms' net lending/net borrowing. The results of the regressions are robust to the use of different control variables such as oil price, a measure of uncertainty, financial openness. In the future we would like to enlarge the set of

countries analyzed and to consider other explanations of non-financial corporation net lending/borrowing. We also would like to discriminate better between the real and the financial variables that are associated to net lending/borrowing. We leave these subjects to future research.

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On the determinants of firms’ financial surpluses and deficits¹

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Bank of Italy

¹ This presentation was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

On the determinants of firms' financial surpluses and deficits

*IFC Biennial Conference
Basel, September, 8 2016*

Tatiana Cesaroni (joint with De Bonis and L. Infante)

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Motivations of the paper

- Non-financial corporations usually act as net borrowers
 - In last years, in many countries corporate savings increased and some firms became net lenders
 - This paper attempts to shed light on this evidence:
 - *How spread is the excess savings?*
 - *What are the main forces driving the phenomenon?*
 - *Are there differences across countries?*
 - Our exercise is performed on a large number of developed countries over a long time horizon
-

Literature and previous evidence: a glance

- The corporate *net lender status* during the first mid of 2000s was considered the reaction to: the **excess debt** and **accumulation of physical capital** during the 1990s (IMF, 2006)
 - Further factors for the same period have been investigated: **the fall of corporate investment, the growth of net foreign investment abroad** (Andrè et al, 2007)
 - Recently, Gruber and Kamin (2015) still stressed the low **investment** level along with an increase in **corporate payouts**
 - Theoretical papers emphasize the **precautionary motive** of firms, the accumulation of financial assets avoids future constraints (Armenter and Hnatkovska, 2014)
-

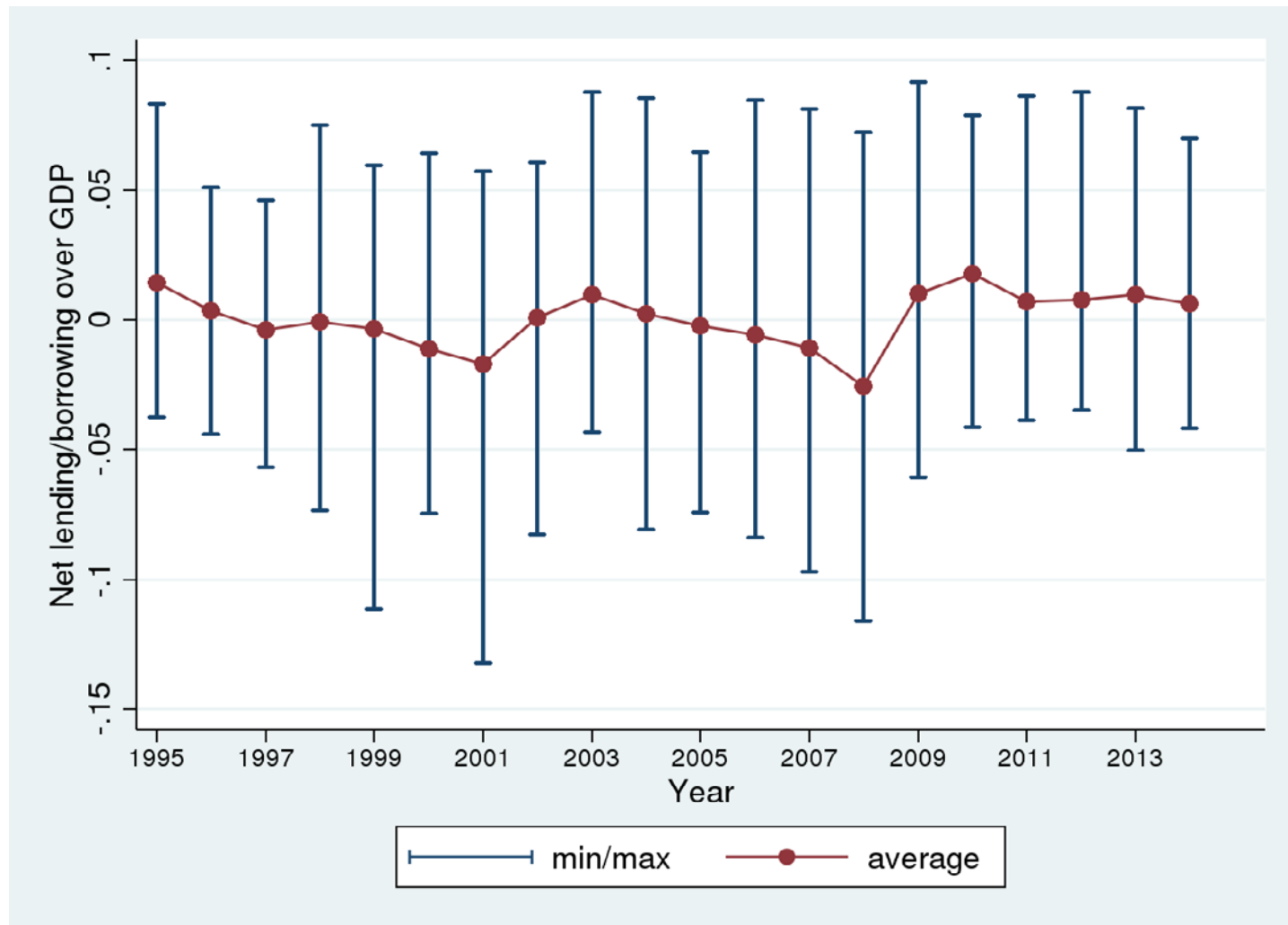
Data set description

- Country level analysis, data are mainly related to non-financial corporations
 - Data come from OECD and Milesi Ferretti data base
 - 18 countries => 16 European countries plus US and Japan
 - 8 net lenders countries (Germany, Denmark, Ireland, Switzerland, the Netherlands, Finland, UK and Japan)
 - 10 net borrowers (Italy, France, Spain, Belgium, Greece, Portugal, Norway, Austria, Sweden and US)
 - Time spans from 1995 to 2014
 - Annual data
 - The explanatory variables try to catch Aggregate Demand and Supply factors, Uncertainty, Debt of corporate sector level etc.
-

The variables used: definitions

<i>Variable</i>	<i>Description</i>
Net lending/net borrowing (NBLGDP)	Net lending/net borrowing as a percentage of GDP
Output gap	$(\text{Effective GDP} - \text{Potential GDP}) / \text{Potential GDP} * 100$.
Net FDI/GDP	Net foreign direct investment as a ratio to GDP
Investment/GDP	Gross investment rate of corporate sector as a ratio of GDP
Consumption/GDP	Share of private consumption to GDP
Profits/GDP	Profits After Net Interest and Taxes is defined as the sum of gross operating surplus and property income minus the sum of interest rate paid and taxes to GDP
Oil price	Price of Brent in US dollars.
Interest rates spread	Long term – short term interest rates on deposits
Leverage	Loans and bonds issued by firms as a ratio of total financial liabilities
Financial openness	$(\text{Financial assets plus financial liabilities}) / \text{GDP}$
Trade openness	$(\text{Exports plus Imports}) / \text{GDP}$

Non-financial corporations net lending/borrowing: an *average* view



The econometric model

- We use a panel data with country fixed effects model aimed at analyzing the determinants of net lending/borrowing of non-financial corporations. We use a simple regression analysis as follows:

$$Y_{it} = \alpha_i + \beta_1 * profits_{it} + \beta_2 * FDI_{it} + \beta_3 * consumption_{it} + \beta_4 * controls_{it} + e_{it}$$

- We focus on FDI, profits and consumption but we also consider a set of control variables such as output gap, oil price, leverage, corporate investments to GDP, interest rates spreads.
- In order to investigate the role of heterogeneity between countries we also split the sample and run two regressions over the set of net lenders and the one of net borrowers countries.

A panel data regression analysis

(1995 – 2014)

Dependent var. Net Lending/Borr.	[a]	[b]	[c]	[d]	[e]	[f]
Output gap_11	-0.001* (0.00)	-0.002** (0.00)	-0.001 (0.00)	-0.001 (0.00)	-0.001 (0.00)	-0.002* (0.00)
FDI / GDP	0.039*** (0.00)	0.031*** (0.01)	0.034*** (0.01)	0.027** (0.01)		0.023** (0.01)
Investment/GDP_11	-0.918*** (0.18)	-0.956*** (0.18)	-0.918*** (0.18)	-0.89*** (0.18)	-0.903*** (0.18)	-0.813*** (0.11)
Brent	-0.0001* (0.00)	-0.0001** (0.00)	-0.0001** (0.00)	-0.0001*** (0.00)	-0.0002*** (0.00)	-0.0001** (0.00)
Consumption/GDP_11	-0.079 (0.11)	-0.257** (0.13)	-0.314** (0.13)	-0.264** (0.13)	-0.302** (0.13)	-0.265** (0.13)
Profits / GDP_11		0.2481*** (0.08)	0.218*** (0.08)	0.201*** (0.08)	0.238*** (0.08)	0.183** (0.08)
Spread rate			0.003** (0.00)	0.003*** (0.00)	0.003** (0.00)	0.003*** (0.00)
Leverage				-0.037** (0.02)		-0.040** (0.02)
Financial Openness_11 (over GDP)					0.002*** (0.00)	
Crisis						-0.042*** (0.01)
Leverage*Crisis						0.062*** (0.02)
Constant	yes	yes	yes	yes	yes	yes
Country fixed effects	yes	yes	yes	yes	yes	yes
R2	0.19	0.30	0.34	0.32	0.31	0.33
Observations	307	307	299	299	299	299
Groups	18	18	18	18	18	18

Main findings

The results from the six regressions show that:

- The net foreign direct investments are positively associated to net lending borrowing (if outward FDI is higher firms tend to be net lenders (see also Palenzuela and Dees 2016).
 - An increase of domestic Investments contributes to reduce net lending (or to increase net borrowing).
 - Output gap enters with the expected negative sign
 - Profit share to GDP is significant and contributes to increase net lending/borrowing
 - Oil price is significant and shows the expected negative sign
 - An increase in Private Consumption contributes to lower net lending and to increase net borrowing
 - An increase of uncertainty increases net lending (precautionary motive hypothesis)
 - An increase of leverage increases net borrowing (or reduces net lending)
-

Splitting the results across countries

Net Lending/Borr.	Net lender countries	Net borrower countries
Output gap_11	-0.002* (0.00)	-0.000 (0.00)
FDI / GDP	0.030** (0.01)	0.041 (0.04)
Investment/GDP_11	-0.939*** (0.26)	-1.020*** (0.28)
Brent	-0.0003*** (0.00)	0.000 (0.00)
Consumption/GDP_11	-0.335** (0.16)	-0.158 (0.20)
Profits / GDP_11	0.138 (0.14)	0.213** (0.10)
Spread rate	0.001 (0.00)	0.002* (0.00)
Leverage	-0.036 (0.03)	-0.041* (0.02)
Crisis	-0.040* (0.02)	-0.041** (0.02)
Leverage*Crisis	0.065* (0.04)	0.055** (0.02)
Constant	yes	yes
Country fixed effects	yes	yes
R2	0.31	0.18
Observations	127	172
Groups	8	10

Conclusions

- Traditional corporate sector theory predicts that firms run deficits to finance investment spending...
 - ...since mid-1990s many industrial countries have been experiencing surpluses
 - Our results suggest that net lending/borrowing is clearly negatively associated to investment spending and in turn to demand condition, proxied by consumption level
 - At the same time, globalization affected the organization of the production within countries increasing the convenience to invest abroad. Foreign direct investment therefore turns out to be positively associated to net lending/borrowing
 - Firms debt level plays an important role in our story, while it seems that in good time the leverage negatively affects the balance of non-financial corporation, firms try to deleverage during the global financial crisis
-

THANK YOU FOR YOUR ATTENTION
