"Small business groups, bank financing and the great recession"

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Aim of the paper

- The main aim of this paper is to analyse the presence and intensity of bank financial constraints in companies belonging to business groups compared to stand-alone companies.

- We consider the period 2010-2012 when the financial crisis and the subsequent recession determined a situation of severe credit crunch.

- Our focus is on bank financing since it represents the main external source of finance for Italian companies.

Background

- Previous studies demonstrated that business groups allow affiliated firms to have an easier access to bank financing compared to standalone companies (Belenzon, Berkovitz, & Rios, 2013; Iacobucci, 2012; Lee, Park, & Shin, 2009; Samphantharak, 2003).

- Moreover, business groups create an internal capital markets that may help controlled companies in case of financial problems (Fan, Wong, & Zhang, 2005).

- Firms belonging to groups may not only benefit from internal resources but also from the superior ability to raise external financing given the implicit guarantee resulting from group affiliation (Gopalan, Nanda, & Seru, 2007).

- Up to now, the literature focused on the internal capital market rather than latter aspect.

Background

- The paper investigates the relationship between these two mechanisms (i.e. internal capital market versus external financing) and whether in collecting external resources the centralization at the head of the group prevails on the financing of controlled companies (decentralization).

- If decentralization is prevalent we expect that controlled companies in business groups received a higher amount of bank loans than standalone companies(*affiliation effect*).

- On the contrary, if centralization in the acquisition on external financing is prevalent, banks prefer financing the head of a group for the implicit guarantee deriving from the diversification of controlled companies (*portfolio effect*). In this case, controlled companies will benefit from the internal financing provided by the head.

Research Hypotheses

During the financial crisis and the subsequent recession period we expect to verify the following hypothesis:

- H1: During the financial crisis, firms belonging to business groups are expected to show an easier access to bank financing.

Moreover, we investigate which of the two effects, the affiliation or the portfolio effect, is prevalent.

For this aim, we test the following alternative hypotheses:

- H2a: If the portfolio effect is prevalent, we expect that heads of groups are more likely to raise bank financing than affiliated firms;

- H2b: If the affiliation effect is prevalent, there should be no difference in raising bank financing between heads and controlled firms.

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Data

- This paper uses a **novel dataset of Italian business groups**, developed by using ownership information about joint stock companies drawn from the AIDA database. This database provides financial and economic information for manufacturing firms, belonging or not to business groups, for the period 2008-2012.

- Data refer to **155,841** Italian **manufacturing** joint stock companies. Of the latter **28,167** are group firms. This allows us to identify the map of Italian business groups with at least one of their firms in the manufacturing sector.

Data

- **Table 1. List of variables**

Variable	Description
Bank loans	Index of external financing: ratio between bank loans on the total assets
Infra-Group	Index of internal financing: ratio between the sum of debts towards controlled and controlling companies and the total assets
Group	Dummy variable used to discriminate whether the firm belongs to a group (1) or not (0)
Head	Dummy variable used to discriminate heads of groups from affiliated firms
Age	Firm's age at year 2012
Cash-flow	Ratio between the sum of net profit and amortization on total assets
Sector	Dummies for industry sectors (22 manufacturing sectors)
District	Dummy variable used to discriminate whether the firm belongs to an industrial district (1) or not (0)
Firm size	Logarithm of the employees of the firm (year 2008)

Methodology

To **test H1**, we use:

- as main dependent variable "*bank loans*", that we consider as an index measuring the intensity of bank financing;

- as explanatory variables: the "group" dummy and the "Infra-group";

- as control variables: firm size at 2008, the age of firm at 2012, firm's cash-flow at 2008, the localization in an industrial cluster, the industry sector to which the company belongs to.

To **test H2**, we use:

- as main dependent variable both "*bank loans*" and "Infra-group";

- as explanatory variable: "head";

- as control variables: firm size at 2008, the age of firm at 2012, firm's cash-flow at 2008, the localization in an industrial cluster, the industry sector to which the company belongs to.

Methodology

- Specifically, we use a Heckman two-step estimation in order to control for the possible presence of two distinct mechanisms at work: the first one (selection equation) for the decision to access to bank financing; the second one (outcome equation) to decide the amount of such debt.

- More precisely, in the first step we estimate a Probit model (selection equation) for the probability to raise a bank loan.

- In the second step, we estimate an OLS model for the variable Bank loan only for those firms exhibiting positive values of this variable.

Empirical results

- **Table 2. Determinants of bank loans (Heckman two-step estimation)**

	Bank loans (2012)	Bank loans (2012)	Bank loans (2010)	Bank loans (2010)
Group	-0.0442***	-0.0362***	-0.0275***	-0.0189***
	(0.000)	(0.000)	(0.000)	(0.001)
Infra-Group	.	-0.3895***	.	-0.4368***
	.	(0.000)	.	(0.000)
Firm size	-0.0364***	-0.0360***	-0.0357***	-0.0356***
	(0.000)	(0.000)	(0.000)	(0.000)
Cash-flow	-0.7778***	-0.7919***	-0.5533***	-0.5673***
	(0.000)	(0.000)	(0.000)	(0.000)
Age	-0.0010***	-0.0010***	-0.0010***	-0.0011***
	(0.000)	(0.000)	(0.000)	(0.000)
District	0.0162***	0.0146**	0.0189***	0.0171***
	(0.001)	(0.012)	(0.000)	(0.000)
Industry dummies	NO	NO	NO	NO
	Dummy Bank loans	**Dummy Bank loans**	**Dummy Bank loans**	**Dummy Bank loans**
Group	0.4586***	0.4688***	0.4515***	0.4492***
	(0.000)	(0.000)	(0.000)	(0.000)
Infra-Group	.	-0.6282***	.	0.1965
	.	(0.001)	.	(0.238)
Firm size	0.6133***	0.6163***	0.5807***	0.5802***
	(0.000)	(0.000)	(0.000)	(0.000)
Cash-flow	-0.2241***	-0.2276***	-0.1315***	-0.1310***
	(0.000)	(0.000)	(0.000)	(0.000)
Age	0.0080***	0.0080***	0.0083***	0.0083***
	(0.000)	(0.000)	(0.000)	(0.000)
District	0.0473***	0.0455***	0.0404***	0.0405***
	(0.003)	(0.005)	(0.004)	(0.004)
Industry dummies	YES	YES	YES	YES
Mills	-0.0819***	-0.0814***	-0.0741***	-0.0755***
	(0.000)	(0.000)	(0.000)	(0.000)
Observations	53,395	53,386	65,972	65,962
Wald Chi-squared	71.4838	127.2542	119.6647	237.5282

P>|z| in parentheses
* p<0.10, ** p<0.05, ***p<0.01

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Empirical results

- Table 3. Determinants of Bank loans for affiliated firms (Heckman two-step estimation)

	Bank loans (2012)	Bank loans (2010)
Head	0.0329***	0.0349***
	(0.001)	(0.000)
Firm size	-0.0349***	-0.0327***
	(0.000)	(0.000)
Cash-flow	-0.8213***	-0.9363***
	(0.000)	(0.000)
Age	-0.0008***	-0.0009***
	(0.002)	(0.000)
District	0.0135*	0.0222***
	(0.097)	(0.000)
Industry dummies	NO	NO
	Dummy Bank loans	**Dummy Bank loans**
Head	0.2652***	0.2394***
	(0.000)	(0.000)
Firm size	0.5344***	0.5966***
	(0.000)	(0.000)
Cash-flow	-0.4953***	-0.2322***
	(0.000)	(0.000)
Age	0.0044***	0.0040***
	(0.000)	(0.000)
District	0.1312***	0.1087***
	(0.000)	(0.000)
Industry dummies	YES	YES
Mills	-0.0779***	-0.0582***
	(0.003)	(0.002)
Observations	13,248	15,121
Wald Chi-squared	68.7693	120.9084

P>|z| in parentheses

* $p<0.10$, ** $p<0.05$, *** $p<0.01$

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Empirical results

- Table 4. Determinants of Infra-group debts (Heckman two-step estimation)

	Infra-Group (2012)	Infra-Group (2010)
Head	-0.0364***	-0.0475***
	(0.000)	(0.000)
Firm size	-0.0108*	-0.0113**
	(0.088)	(0.005)
Cash-flow	-0.0293***	-0.2190***
	(0.000)	(0.000)
Age	-0.0004***	-0.0005***
	(0.004)	(0.000)
District	-0.0171***	-0.0176***
	(0.000)	(0.000)
Industry dummies	NO	NO
	Dummy Infra-group	**Dummy Infra-Group**
Head	-0.3518***	-0.4555***
	(0.000)	(0.000)
Firm size	0.3834***	0.4300***
	(0.000)	(0.000)
Cash-flow	0.0119	-0.0870*
	(0.904)	(0.067)
Age	0.0011	0.0002
	(0.216)	(0.816)
District	-0.0073	-0.0456*
	(0.790)	(0.077)
Industry dummies	YES	YES
Mills	-0.0087	0.0021
	(0.77)	(0.913)
Observations	13,248	15,121
Wald Chi-squared	89.1153	144.4530

P>|z| in parentheses

* p<0.10, ** p<0.05, ***p<0.01

Conclusions

- The main aim of this paper is to analyse the presence and intensity of bank financial constraints in companies belonging to business groups compared to standalone companies during a period of credit crunch.

- Specifically, this period appears interesting to be investigated because it is characterized by the financial crisis of 2008-2009 and by the consequent credit crunch.

- In Italy the situation of credit rationing has continued for several years after the international financial crisis.

Conclusions

The main results may be summarized in the following way:

- The **affiliation to a business group** facilitates affiliated firms in the access to bank financing. In this sense, belonging to a business group is a ***complement* to bank financing** (**Hypothesis 1**). At the same time, however, belonging to a business group reduces the amount of bank financing: in this sense, the affiliation to a business group is a ***substitute* to bank financing**.

- The presence of the **internal capital market** (*Infra-Group*) is a ***substitute*** both for the decision to access bank financing and for the decision about the amount of such financing.

- Finally, when considering centralization versus decentralization in raising bank financing in business groups, the **portfolio effect** prevails on the affiliation effect. This means that, in general, business groups provide further financial benefits to affiliated firms besides the internal capital market (**Hypothesis 2**).

Conclusions

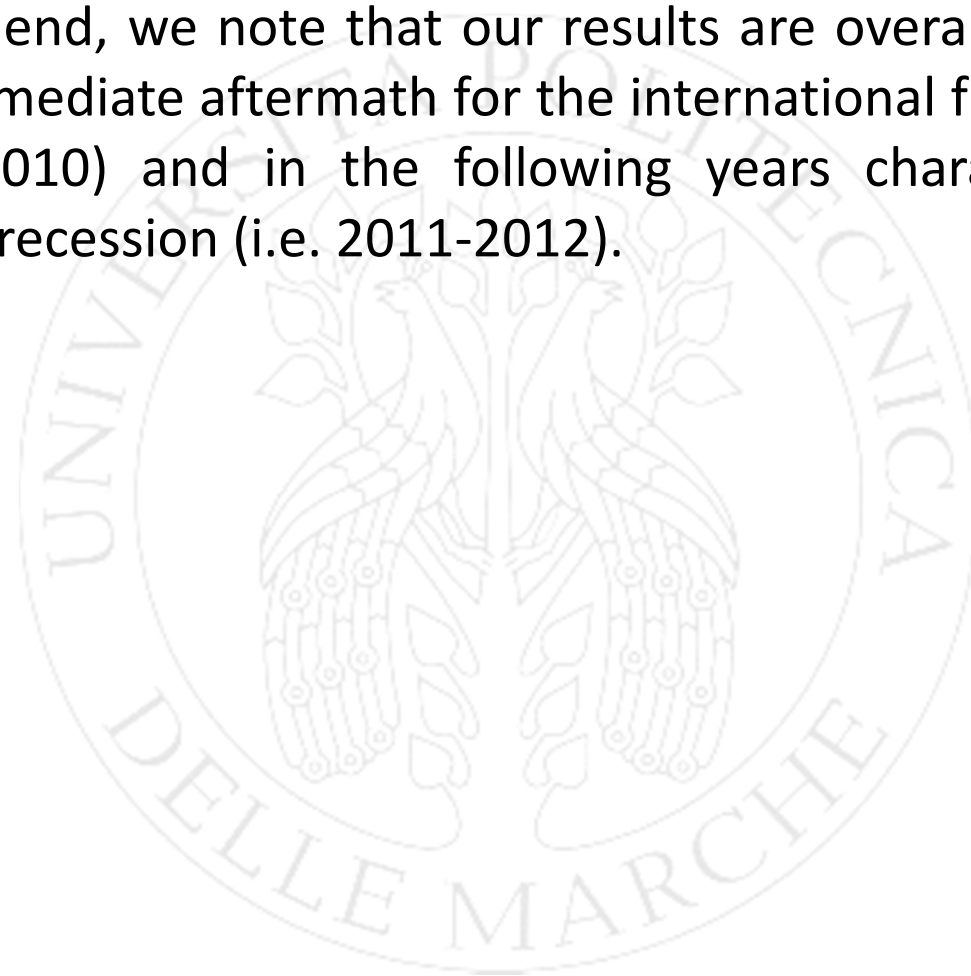- At the end, we note that our results are overall verified both in the immediate aftermath for the international financial crisis (i.e. 2009-2010) and in the following years characterized by the Italian recession (i.e. 2011-2012).

THANKS FOR YOUR ATTENTION!