Are public credit guarantees a driver for SMEs economic growth? Evidences from the Italian Central Guarantee Fund

Monica Rossolini, Assistant Professor, University of Milan-Bicocca, Milan
Veronica Vecchi, Professor, SDA Bocconi School of Management, Bocconi University, Milan
Stefano Caselli, Full Professor, Department of Finance, Bocconi University, Milan
Guido Corbetta, Full Professor, Department of Management, Bocconi University, Milan

This paper studies the effect of government credit guarantees on firms' performance in Italy, which is among the first countries worldwide for the amount of guarantees provided. The focus is on guarantees granted to micro, small and medium size firms by the Italian national guarantee program (Fondo Centrale di Garanzia - FCG) during the financial crisis. The topic is of great interest for policy makers, considering that guarantee schemes represent an integral part of SMEs policies both in developed and emerging countries, absorbing relevant part of public budgets. However, their financial sustainability and effects are still under discussion. Based on a unique sample of firm-level data, the aim of the paper is to assess the effectiveness of the FCG and, more specifically, the focus is the evaluation of the economic additionality of the program, measured through an analysis of the effects generated on the return on investments (ROI) of guaranteed firms. Results confirm the positive effects of the guarantee program on firms' profitability, with some relevant differences among firms of different size and sectors. Therefore Governments across the world should prefer a selective approach when designing the guarantee program, rather then a generalized program targeted to all types of firms and sectors.

1. Introduction

Small and medium-sized enterprises (SMEs) are one of the main actor in the worldwide economy, where they represent more than 98% of all firms.

In Europe, SMEs have a greater role in leading job creation and economic growth: they employ two-thirds of Euro area workforce (almost 90 million people) and they generate about 58% of total added value[1] (European Investment Fund, 2014). These figures are not much different in Asia and U.S (OECD, 2014, Asia Development Bank, 2014). There is a strong consensus among Academia and Institutions on the crucial role played by SMEs for improving social cohesion, reducing poverty and fostering regional and local development (Peterson 1977; Drever et al. 1999; Aimini, 2004; Beck et al., 2005; Vecchi et al. 2014). For these reasons, SMEs development represents one of the priority of policy makers in many countries across the world, as well as they are the focus of regional development banks programs (IFC, EBRD, African and Asian Development Banks, just to cite few examples).

However, their capacity to contribute to economic and social development can be hampered by their weak financial structure and especially by their equity gap that makes harder the access to credit (Stiglitz and Weiss 1981, Cressy 2002). Further, even if obvious, they are more exposed to financial turmoil, as it happened during the last financial crisis (ECB 2014a and b).

Therefore to sustain SMEs economic development or recovery, many Governments, at different institutional levels, have put in place guarantee schemes or other forms of financial supports, such as grants, subsidized loans or equity (OECD, 2013). Among them, loan guarantee programs are certainly the dominant approach (Beck et al. 2010; OECD 2013), with more than 2.250 guarantee schemes worldwide (Green 2003). For this reason, Cowling and Mitchell (2003) affirmed that loan guarantees represent an integral part of SMEs public policies in both developed and emerging countries. Honohan (2010) also underlined that the attractiveness for politicians also depends on the consensus effect that these policies are able to generate in the short term. Despite the popularity, scholars are sceptical about their financial sustainability (Vogel and Adams 1997) and outcome measurement is difficult for the lack of financial data (Samuhj et al. 2012).

This paper tries to contribute to the debate, with a research focused on the widest Italian credit guarantee program, Fondo Centrale di Garanzia (Central Guarantee Fund, hereafter FCG), based on a unique firm-level data set.

The Italian case is relevant as guarantee schemes account for 2.1% of national GDP, representing the highest percentage in Europe (European Investment Fund, 2014). According to OECD data (2014), Italy is the first country in Europe for value of guarantee and counter-guarantee activated (EUR 32.9bn), followed by France (EUR 16.5bn), Germany (EUR 5.8bn), and Spain (EUR 4.7bn). The lead role of Italy in the guarantee market is certainly due to the fact that it has the highest number of SMEs out of the total number of firms compared to other European countries – 99,9% of firms are SMEs, of which 94.6% are micro firm (OECD, 2014). Italian

---

[1] Gross value added is the difference between output and intermediate consumption. As an aggregate measure of production, GDP is equal to the sum of the gross value added of all resident institutional units (i.e. industries) engaged in production, plus any taxes and minus any subsidies, on products not included in the value of their outputs. http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Category: Glossary

SMEs represent the 17.2% of total European SMEs (European Commission 2014). Further, since '50 Italian SMEs have relied on one of the widest network of Mutual Guarantee Institutions (more than 500), in which members provide mutual collaterals.

Thanks to an institutional agreement between our University and the Italian Ministry for Economic Development, which manages the FCG, we accessed the national program database on confidential basis, containing information about 20.000 SMEs supported in the period 2007-2009 (before and during the global economic and financial crisis).

The FCG is active since 2000, but its role was reinforced in 2008, when it was increased by about 2 billion euros for the period 2008-2012 and then by further 1.2 billion euros for the period 2013-2014, becoming the main public facility to enhance SMEs access to credit during the crisis. According to Zecchini and Ventura (2009), in the period 2000 – 2004 FCG has reduced SMEs' borrowing cost and eased their financing constraints. However, the commitment of an increased amount of public money should be justified also by the effects generated on SMEs economic growth and on society at large.

Therefore, the aim of the paper is to assess the effectiveness of the FCG measured in term of its impact on the economic profitability of the firms guaranteed. In other words, the aim is to assess the economic additionality of the program. Further, we evaluate if there are variations related to the size of the firms supported, ie, micro, small or medium and the sector in which they operate, in order to understand the appropriateness of guarantee programs for diverse typologies of businesses.

Through the application of different methodologies, the paper shows that FCG has generated an increase in the profitability of guaranteed firms in a period of economic downturn, however with some relevant differences across firms per dimension and sector.

Even if the paper is country focused, as all the other studies carried on so far, it sheds the light on one of the largest and most significant guarantee program in Europe, considering its effect during an economic downturn period on different firms' targets, thus providing useful suggestions for policy makers, who are continuously in search for measures to sustain economic development, especially when the crisis hits hard.

The paper is structured as follows. After a brief presentation of the main features of FCG in section 2; section 3 analyses the main evidences related to the economic additionality of guarantee schemes and the ways in which it can be analysed. In section 4 we describe our approach to assess the economic additionality of FCG, whilst in section 5 presents our methodology. Section 6 discusses the main results of the analysis from which we have derived some recommendations for policy makers, which are addressed in section 7.

2. The Italian Central Guarantee Fund

The FCG is the main public program in Italy to improve access to credit and therefore to sustain the economic growth of micro, small and medium enterprises. The FCG provides direct guarantees to banks or counter-guarantees to Mutual Guarantee Institutions (MGIs). In the period 2007 – 2009, which is the focus of this paper, the FCG granted 5 billion euros of guarantees, which allowed SMEs to activate about 9.5 billion euros of loans.

3

With reference to the relevant factors of a loan guarantee program, as defined by Riding and Haines (2001), table 1 summarizes the main features of FCG (Casalini and Rossolini, 2015).

Table 1 The main features of the Italian Central Guarantee Fund

Degree of Discretion in lending	Banks, MGIs and other financial intermediaries require the FCG to issue a guarantee to certain firm that has applied for a loan
Eligibility conditions	Only small- and medium-sized firms, as defined by EU regulations[2] and SME consortia are eligible for the program.
Application selection	The application selection by the FCG is based on quantitative variables related to the borrower. Through the application of scoring models, the FCG assesses the eligibility of borrowing firms via a set of common economic and financial ratios. There are not preferences for specific projects or sectors, only a minimum acceptable level of financial and economic robustness is required.
Eligible borrowings	-Factoring for credits towards the public sector (Italian Authorities have the longer payments duration in Europe, Intrum 2014[3]) -Financial operations with a maturity longer than 36 months -Consolidation of short term liabilities - Operations on equity capital -Other financial operations
Guarantee Coverage Rates	The guarantee coverage rates are up to 80% of loans for direct guarantees; up to 90% for MGI guarantee that cannot, however, exceed 80% of the loan. The rates are lower for operations on equity capital and consolidation of short term liabilities.
Fees	Applied by FCG to guaranteed companies; they range from 0,25% up to 3% of the guarantee amount depending on the type of operation and the type of guarantee.
Types of Guarantee	Direct guarantee: the FCG provide a direct guarantee to banks, which grant loans Counter-guarantee to MGIs: the FCG provide a guarantee to the MGI acting as first level guarantor Co-guarantee with MGIs: the guarantee to the lending bank is granted in part by MGI and in part by the FCG.
Maximum amount guaranteed	The maximum amount guaranteed is EUR 2.5 million euro, otherwise for consolidation of short-term liabilities and others operations is EUR 1.5 million.
Funding	Annual allocation from Italian State budget

Source: adapted and updated from Zecchini and Ventura (2009)

3. The effect of public guarantee scheme: what we know so far from the literature

Among public financial programs to sustain business development, guarantee schemes have attracted the attention of many scholars, mainly with a country focus, with the aim of measuring the additionality generated (Bannock and Partners, 1997).

Actually, a public guarantee scheme should generate additional benefits and, therefore, it should not be directed toward those companies that would anyway have accessed the banking system (Curran, 2000; Ferrando and

---

[2] SMEs are defined by the European Commission as having fewer than 250 employees. They should also have an annual turnover of up to EUR 50m, or a balance sheet total of no more than EUR 43m (Commission Recommendation of 6 May 2003)

3 http://www.intrum.com/Documents/Italy/EPI/2014/EPI_2014_ENG.pdf

Rossolini, 2015). The additionality of a guarantee program can be assessed with reference to two components: financial or economic.

Financial additionality (FA) measures the benefits generated by the scheme in terms of increased resources available from the banking system. Once received the funding, companies should use it to sustain and improve the core business by implementing investments and projects capable of generating positive externalities, such as an increased performance and/or more revenues, which can eventually lead to higher profitability (and therefore more taxes for the Government) and employment (therefore more wealth for the society at large) (Lerner, 2002). This latter benefit is the so-called economic additionality (EA). We can say that the FA is the output of a public guarantee program, whilst the EA represents the outcome. Therefore what is relevant for policy makers is the assessment of the economic additionality (Kang and Heshmati, 2008; Panetta, 2012).

Scholars seem to agree about the FA of public guarantees (Levitsky, 1997; Benavente et al., 2006; Boocock and Shariff, 2005; Cowling, 2010; Riding et al. 2007), showing an increased numbers of loans and a reduced interest rate applied to beneficiaries. Whilst, evidences about the EA are still ambiguous (Samuhj et al. 2012). Table 2 shows a synthesis of the main EA findings of the country – specific literature on guarantee schemes.

Table 2: Evidences from the literature on economic additionality of guarantee scheme

| Author | Country | Guarantee program | Sample | | Results | Methodology |
			Period	Number and type of firms		
Anuchitworawong *et al.*, 2006	Thailand	Small Business Credit Guarantee Corporation (SBCG)	2002-2005	SBCG dataset	Positive correlation between employment and loans borrowed; but no direct evidence on the effect of the program on employment.	Elasticity of the employment respect to the total sales revenues of the firms
Armstrong *et al.*, 2010	USA	Small Business Administration guarantee lending program	1991-2001	357.442 firms	High correlation between employment and amount of guaranteed loans	Cross section regression with GLS estimator and fixed effects
Benavente *et al.*, 2006	Cile	FOGAPE	2000-2005	84.640 firms 141.260 loans	Guaranteed firms increased revenues and profit after 5 years	They build a model with good and bad borrowers.
Boocock and Shariff, 2005	Malesia	New Principal Guarantee Scheme	1998-2000	92 firms	Better performance and increased revenues for guaranteed firms in respect to Country's SMEs.	OLS regression

					Increase in Country's revenues.	
Bradshaw, 2002	USA - California	California State Loan Guarantee Program	1990-1998	1.166 firms 1990-1996	Increase of employment; Increase of State's revenues so that the program's cost was covered.	Descriptive analysis comparing firms data before and after the guarantee
Hancock et al., 2007	USA	7(a) Loan Guarantee Program	1990-2000	Data from 7(a)LGP and a sample of banks	Guaranteed companies resulted less cyclical and they increased their economic performances and employment.	OLS Regression
Kang and Heshmati, 2008	Korea	Korea Credit Guarantee Fund	2001-2004	200.165 firms	Guaranteed companies increased sales and productivities. No effect on employment.	OLS regressions and Instrumental variables model
Lelarge et al., 2008	Francia	Oseo	1989-2000	1.362 guaranteed firms 205.852 non guaranteed firms	Faster growth of new guaranteed companies	Difference-in-differences methodology on different outcome variables
Oh et al., 2009	Korea	Korea Credit Guarantee Fund	2000-2003	More than 40.000 firms	Guaranteed companies maintained their size during the Asiatic crisis and increased their resilience. No increase of R&D investments.	Matching Estimator
Riding e Haines, 2001	Canada	Canadian Small Business Loans Act	1995	682 guaranteed firms 850.000 non guaranteed firms	Increased employment rate among guaranteed companies. It supported the generation of new firms.	Descriptive analysis comparing guaranteed firms data with those of not guaranteed firms
Riding et al., 2007	Canada	Canadia Small Business Fianancing (CSBF)	2000	19.000 firms	Increased employment rate among guaranteed companies.	Logit Regression

| Uesugi *et al.*, 2010 | Giappone | Special Credit Guarantee Programme | 1998-2001 | 1.344 guaranteed firms 2.144 non guaranteed firms | Increased investments and ROI among guaranteed companies. | Probil regression, OLS regression and Matching Estimator |

Source: adapted and updated from Panetta (2012)

To study the EA, authors have measured the performance of firms through two sets of indicators, (see Table 3): those focused on the growth of firms and those on its profitability.

Quite intuitively, the policy maker looks at the growth of firms in terms of employment and revenues (Davidsson et al. 2006 and 2008); the latter as a determinant of a country's GDP (gross domestic product). When assessing the EA it is also important to look at the creation of value and profitability (Alvarez and Barney, 2004), measured primarily in terms of return on investment (ROI) and return on equity (ROE) (Murphy et al. 1996). Davidsson et al. (2009) underline that enterprises that grow fast in the short period may become weaker in the long term if they are not profitable. This suggests that public policies should also stimulate profitability to ensure a sustainable growth in the long term.

However, the effectiveness of a guarantee program depends also on the selection criteria used (Uesugi et al. (2010): the more precisely firms are selected, the better are the results generated on the economic system. In other words, guarantee should be targeted where they can generate the better results, especially when public budget are curtailed.

Table 3: Measures of Economic Additionality

Performance dimension	Indicator	Relevant outcome for the policy maker	References
Growth	Employment	Employment	Chaganti *et al.*, 2002; Davidsson e Delmar, 1997; Hoogstra e van Dijk, 2004; Kang e Heshmati, 2008; Mole *et al.*, 2009; Oh *et al.*, 2009; Smallbone *et al.*, 1995
	Revenues	GDP	Davidsson et al., 2002; Dobbs e Hamilton, 2007; Kang e Heshmati, 2008; LeBrasseur et al., 2003; McMahon, 2001; Mole et al., 2009; Murphy et al., 1996; Oh et al., 2009
Profitability	Return on investment (ROI)	Sustainable growth and durability	Alvarez e Barney, 2004; Davidsson *et al.*, 2009; Murphy *et al.*, 1996
	Return on equity (ROE)		

Source: authors' elaboration

4. The Economic Additionality and research hypothesis

Considering the time-frame sensitivity of such policies and that the externalities on welfare generated by a guarantee schemes can be visible only after several years, Honohan (2010) suggests to focus the appraisal on

intermediate outcomes, such as the number and volume of additional loans and the response of beneficiaries in terms of investments and productivity. Considering that the first measure belongs to FA, we focus on profitability as a measure of EA, turning down the desire to measure the effect on the employment, which requires a longer period of observation.

As discussed above, profitability is a better outcome measure compared to the growth rate, as it supports the firm's long term sustainability. According to Murphy et al. (1996) and Davidsson et al. (2009), the profitability related to a new investment funded by leveraging a guarantee can be measured using the ROI ratio. *Inter alia*, ROI allows also considering the increase in sales and therefore it is a more complete measure. ROI is even more appropriate than the ROE, as a guarantee should lead to an increase in the operating income of firms, to be used to expand the business, rather than in the net income of their shareholders. Additionally, as the aim of the guarantee is to increase the access to loans to fuel investments, ROI is an implicit measure of the ability of the firms to use additional sources of funding to implement investments able to increase the operating profitability.

Leveraging this approach, we have defined two research hypothesis related to the profitability of the beneficiary firms.

First Hypothesis: FCG improves the capacity of firms to increase the capital invested with a positive effect on their profitability.

Second Hypothesis: The impact of the public guarantee on firm's profitability is different among firms of different size and sectors.

The second hypothesis is rooted in the conclusions from Uesugi et al. (2010) that affirm that the degree of EA of guarantee schemes depends also on their target. Therefore, it is relevant for the policy maker, which has to design a guarantee scheme, to understand what are the more effective financial measures to be used accordingly to the size, features and needs of firms (Samujh et al. 2012).

5. Sample and methodology

To test the hypothesis we use a sample of firms guaranteed by the FCG between 2007 and 2009. Data have been sourced by a unique database that the FCG Management Committee provided to our University under an Institutional agreement, with the aim to generate relevant research. The initial dataset consists of 51,498 observations, each of them related to a single transaction, i.e. the issuance of a guarantee to a single firm. For each transaction, the database collects the following information:

- size, geographical area and economic sector of the firm guaranteed;
- amount and expiry of the guaranteed loan, guarantee coverage rate, type of guarantee, and type of intermediary that applied to the FCG (bank or Mutual Guarantee Institution).

We have completed the dataset with other economic and financial information, sourced from Aida Bureau Van Djik, for each beneficiary firm with at least a guarantee issued in the relevant period. However, as many applicant firms are micro companies for which the availability of balance sheet information is scarce, we have reduced our analysis to 24,637 transactions, covering the 47.8% of the whole population of FCG's transactions. Table 4 summarizes the data used for our analysis.

Table 4 - The characteristics of applications accepted between 2007 and 2009 by FCG

	Year in which the guarantee was issued			
	2007	2008	2009	**Total**
Applications accepted (number) - transaction	6,011	6,526	12,100	**24,637**
Average size of loan (€) obtained	238,312	231,806	255,070	**244,819**
Loan Coverage Rate (%) – Guarantee / Loan	52.0%	51.0%	54.0%	**53.0%**
Loan average maturity (months)	47.8	46.8	44.6	**46.0**
Type of guarantee				
Direct guarantee	23.3%	20.0%	25.0%	**23.3%**
Co guarantee	0.0%	0.0%	0.2%	**0.1%**
Counter guarantee	76.7%	80.0%	74.8%	**76.6%**
Originator (%)				
Mutual Guarantee Institutions	71.8%	76.5%	74.8%	**74.5%**
Banks	28.1%	23.3%	24.4%	**25.0%**
Others (i.e., factoring and leasing companies)	0.1%	0.2%	0.8%	**0.5%**

Actually, the 24,637 transactions are referred to 15,775 firms guaranteed: it means that more than a guarantee has been issued to the same firm. These firms represent the 52% of guaranteed firms in the period analysed.

Then, we have developed a consistent control sample, formed by comparable firms that haven't received in the relevant period any guarantee from the FGC (Rubin 1974). However, we can't exclude that they haven't receive any guarantee at all, for example from a MGI, but certainly not from FCG, which is the object of the analysis.

From Aida Bureau van Dijk we have downloaded the entire universe of Italian companies and randomly selected 23,000 comparable firms on the basis of size, geographic area and economic sector. We have then excluded from the control sample those companies that have received the guarantee from the FGC. Table 5 summarizes the main features on our samples.

Table 5: The samples

	Guaranteed Firms	**Control sample**
Number of firms	**15,562**	**22,930**
Firms Size (%) *		
Micro	45.4%	45.9%
Small	41.5%	41.3%
Medium	13.1%	12.8%
Geographical area (%)		
North	48.0%	54.0%
Centre	17.9%	16.6%

South and Islands	34.1%	29.3%
Economic Sector (%) **		
Agriculture	0.2%	0.2%
Industry	39.7%	41.3%
Constructions	8.6%	8.7%
Trade and other Services	51.5%	49.7%
Financial data		
Total Assets (euro)	4,339,337	5,345,872
Liquidity Ratio	0.8584	1.2335
Debt/Equity ratio (financial leverage)	3.67	2.71
Sales (thousand euro)	4,443.94	5,135.87
Employees (number)	13.71	22.24
Return on Investment (ROI %)	6.49	5.59

* The size classification takes into account both the number of employees, turnover and balance sheet total, following the criteria of the European Union for SMES.

** Following the methodology of the Statistical Bulletin of the Banca d'Italia, for the classification of sectors was adopted the classification ATECO 2007 arranged by ISTAT (2009). The sectoral breakdown is composed as follows: Agriculture = section A; Industry = sections B, C, D, E; Construction = section F; Services = sections G, H, I, J, K, L, M, O, P, Q, R, S, T Source: Processing of the author on data from Management Committee of the FCG and Aida Bureau van Dijk.

To test the first hypothesis we use two different methodological approaches: Generalized Least Square panel models with random effects and the Nearest Neighbour Matching Estimator.

Compared to other relevant methodological approaches used in the literature so far, as reported in section 3, we haven't used the difference-in-differences analysis (DID) because the DID estimator relies on the assumption that the average outcomes for the treated units and the control ones would have followed parallel paths over time in the absence of the treatment (the guarantee). This assumption could be quite realistic when the analysis if focused on borrowing cost (Zecchini and Ventura 2009) but it is not realistic when we measure the effect of the guarantee on ROI.

We run separately two panel regressions considering, alternatively, as dependent variable the ROI after one year and after two years from the guarantee issuance, respectively synthetized in the following equations.

$$Y_{i,t+1} = \beta x_{i,t} + \alpha + \mu_{i,t} + \varepsilon_{i,t} \quad \text{eq.1}$$
$$Y_{i,t+2} = \beta x_{i,t} + \alpha + \mu_{i,t} + \varepsilon_{i,t} \quad \text{eq. 2}$$

Where $\beta x_{i,t}$ represent a vector of independent variables for firm i at time t.

The independent variables considered are: ROI at the year of the guarantee issuance, geographical area, economic sector/industry, total assets, liquidity ratio, number of employees, financial leverage, guarantee by the CGF and year of issuance (as illustrated in Table 6).

To verify the robustness of our results, we run also a matching estimation with the Nearest-Neighbour Matching Estimator. Actually, to assess the effect of the guarantee, the ideal experiment should be to compare the profitability growth of a firm with and without guarantee. However, as we cannot observe the counterfactual, we use a matching estimator.

Using a formal notation, Y_i1 is the value of the outcome variable (in our analysis the profitability growth) when unit i is subject to treatment (i.e., the issuance of the guarantee) and Y_i0 is the value of the same variable before the treatment. The effect of the guarantee on firm i is then $e_i=Y_i1-Y_i0$, in other words the variation in the ROI after that the guarantee has been granted.

The 'true' expected effect on the treated population (i.e., the firms that obtain the guarantees) is then:

$$e \mid T=1 = E(Y_i1 \mid T_i = 1) - E(Y_i0 \mid T_i = 1)$$

where T=1 (=0) if the firm i obtained guarantee (or it did not).

The problem here, as discussed, is that $E(Y_i0 \mid T_i = 1)$ cannot be directly observed. Matching estimators (Imbens, 2004) provide a possible solution to this problem. They assign to treated individuals the missing potential outcomes Y_{i0} by using those of comparable individuals (i.e., with similar values of 'relevant' pre-treatment variables) not exposed to the treatment.

What makes a variable 'relevant' and appropriate is the extent to which the variable affects the probability of being subject to treatment. Several matching estimators exist (see Imbens (2004)). In this paper, we use the Nearest Neighbor Matching Estimator, where the treatment variable is the presence of the FCG guarantee, whilst, the outcome variable is delta ROI calculated as the difference between, respectively, ROI after 1st and after 2nd year and ROI at the time of the guarantee issuance (Delta ROI_1 year; Delta ROI_2 year).

We control for independent variables related to geographical area, economic sector/industry, year, total asset, number of employees, liquidity ratio and financial leverage as well as for the starting value of ROI at the year of the guarantee. The simple matching estimator might be biased in finite samples when the matching is not exact. For this reason we run a bias corrected matching estimator (Abadie et al., 2001). The bias adjusted variables are: geographical area, economic sector/industry, year, total asset, number of employees, liquidity ratio and financial leverage, value of ROI at the year of the guarantee. The estimation of the average treatment on the sample has been run with four matches[4], controlling for heteroskedasticity (Abadie et al., 2001).

To verify the first hypothesis the matching estimator is run on the whole sample, whereas to verify the second hypothesis we investigate in-depth our data considering subsamples of firms in terms of size: micro, small and medium firms; and sectors: agriculture, manufacturer, construction and service. We proxy the size of firms with the number of employees: micro firms have a number of employees less than or equal to 10; small firms have a number of employees between 11 and 50; medium firms have a number of employees between 51 and 250. Using the nearest-neighbour matching estimator described above, we estimate for these subsamples the effect of the guarantee on profitability (measured by the ROI increase after one and two years to the guarantee).

---

[4] Authors decide to use 4 matches according with Abadie and Imbens (2002) who demonstrate, in simulations, the well performance in terms of mean-squared error using a number of matches equal to 4.

Variable	Description	Abbreviation
Total Assets	Total Asset of company at the year of guarantee issuance and for the control sample the total Assets in the first year of analyses	Assets
Liquidity Ratio	(Current assets - Stocks) / Current liabilities	Liquidity
Debt/Equity Ratio	(Non current liabilities + Loans) / Shareholders funds) * 100	Leverage
Sales	Amount of Sales at the year of guarantee issuance for the control sample the Sales amount in the first year of analyses	Sales
Employees	Number of employee at the year of the guarantee, for the control sample the number of employees in the first year of analyses	Employment
Return on Investment	Operating profit / capital invested	ROI
Guaranteed	This variable takes a value of 1 with the FCG guarantee, 0 without	CGF_Guarantee

6. Main Results

In this section we present the main results of our analysis. Table 7 and 8 report the results of the panel regressions with ROI as dependent variable, respectively at time t+1 and t+2.

The analysis shows that the guarantee is statistically significant in influencing the profitability of the companies.

Guaranteed firms show a profitability of 0.57 basis points higher than non-guaranteed firms. In other words, thanks to the guarantee, firms have borrowed money to increase investments and after one year they have generated a higher operating profitability. Another interesting result concerns the variable "Employees".

The analysis shows that an increase of one person in the number of employees at time t seems to generate an increase in the ROI at the time t+1 of 0.01 basis points. The control variables relating to the geographical area and industry demonstrate that companies in the Northern regions are more profitable than those in the South; as well as firms operating in the construction sector are more profitable than those operating in the service and trade, as opposed to the agriculture sector, which shows a general lower profitability.

With reference to ROI calculated after two years from the guarantee issuance, we note that the guarantee has allowed the firms to increase their profitability by 0.59 basis point compared to non-guaranteed ones. As in the previous case, we note also a positive effect of employment. An increase of one unit in the number of employees at time t generates an increase in ROI at time t+2 of 0.008 basis points. Once again it is confirmed that companies in the Northern regions are more profitable than those in the Southern regions and the construction sector is the most profitable among the industries analysed.

Table 7 - The 1- year profitability - GLS Panel Regression results

ROI t1	I			II			III		
Variables	Coef.	Robust Std.Err.	Sig.	Coef.	Robust Std.Err.	Sig.	Coef.	Robust Std.Err.	Sig.
Constant	1261.615	23.761	***	1351.629	25.8407	***	1343.477	26.022	***
CGF_Guarantee	0.5366	0.0605	***	0.5427	0.0676	***	0.5746	0.0688	***
Asset				-0.0000	0.0000	***	-0.0000	0.0000	***
Liquidity				-0.0281	0.0315		-0.0253	0.0317	
Leverage				0.0011	0.0011		0.0013	0.0011	
Employment							0.0101	0.0016	***
ROIt	0.2230	0.0051	***	0.2232	0.0052	***	0.2217	0.0053	***
North	0.24052	0.0698	***	0.2694	0.0767	***	0.2757	0.0771	***
Centre	0.1234	0.0905		0.2409	0.1013	**	0.2685	0.1016	***
Agricolture	-1.4309	0.4490	***	-1.55825	0.4983	***	-1.6399	0.4984	***
Manufacture	0.0645	0.0648		0.0464	0.0721		-0.0077	0.0731	
Construction	0.6074	0.1059	***	0.6011	0.1171	***	0.6013	0.1178	***
Year	-0.6265	0.0118	***	-0.6711	0.0129	***	-0.6670	0.0130	***
Number of observation	139860			116715			114289		
Number of group	33045			27883			27755		

"***", "**" and "*" indicate 1%, 5% and 10% significance levels, respectively. The dependent variable is the ROI after 1 year to the guarantee. The regressors are considered at time t (the year of the guarantee) and they are: the presence of a guarantee, the total asset, the liquidity ratio, the leverage ratio, the number of employees, ROI, geographical area (the omitted variable is South) and industry (the omitted variable is "Service and Trade"). Variable "year" is considered to account for the firms guaranteed in different years.

Table 8 - The 2-year profitability GLS Panel Regression results

ROIt2	I			II			III		
Variables	Coef.	Robust Std.Err.	Sig.	Coef.	Robust Std.Err.	Sig.	Coef.	Robust Std.Err.	Sig.
Constant	1467.605	33.4829	***	1576.65	36.0320	***	1582.22	36.5714	***
CGF_Guarantee	0.6385	0.0778	***	0.5807	0.0841	***	0.5957	0.0863	***
Asset				-0.0000	0.0000	***	-0.0000	0.0000	***
Liquidity				-0.0034	0.0373		-0.0136	0.0376	
Leverage				0.0007	0.0012		0.0008	0.0012	
Employment							0.0080	0.0019	***
ROIt	0.0758	0.0034	***	0.0745	0.0037	***	0.0760	0.0037	***
North	0.2452	0.0895	***	0.2320	0.0954	**	0.2371	0.0967	**
Centre	0.0940	0.1161		0.0554	0.1259		0.0405	0.1280	
Agricolture	-2.0313	0.6144	***	-1.8110	0.6722	***	-1.8744	0.6847	***
Manufacture	0.0399	0.0833		0.1316	0.0898		0.1154	0.0916	
Construction	0.5494	0.1366	***	0.6084	0.1475	***	0.5858	0.1483	***
Year	-0.7290	0.0167	***	-0.7831	0.0179	***	-0.7858	0.0182	***
Number of observation	112,043			94,565			91,257		
Number of group	30,608			26,190			25,815		

"***", "**" and "*" indicate 1%, 5% and 10% significance levels, respectively. The dependent variable is the ROI after 2 year to the guarantee. The regressors are considered at time t (the year of the guarantee) and they are: the presence of a guarantee, the total asset, the liquidity ratio, the leverage ratio, the number of employees, ROI, geographical area (the omitted variable is South) and industry (the omitted variable is "Service and Trade"). Variable "year" is considered to account for the firms guaranteed in different years.

As explained in section 5, to verify the robustness of our results we estimate the effect of the program using a Nearest Neighbour Estimator. The treatment variable is an indicator variable equal to 1 for the firm that

obtained a guarantee by FCG and 0 (zero) otherwise. The outcome variable is the profitability growth rate after one and two years from the issuance of the guarantee (measured by ROI). Results shown in table 9 confirm the positive impact of the treatment variable "guarantee" on the profitability growth. The guarantee has increased the profitability of firms by 0.17 basis points after 1 year and by 0.53 basis points after two years. The results achieved confirm the findings of the panel data analysis, even if they show a smaller growth rate in the first year after the guarantee. The results achieved with the two methods are quite similar when considering a period of two years after the issuance of the guarantee[5].

Table 9 – Average treatment effect on the threated estimated in terms of ROI for firms supported by FCG (all sample)

	Profitability growth 1 year after guarantee (ROIt+1-ROIt)			Profitability growth 2 year after guarantee (ROIt+2-ROIt)		
	ATT	P-value		ATT	P-value	
Treatment (1 vs 0)	0.1687	0.024	**	0.5301	0.000	***
Obs.	116,717			94,615		

Nearest-neighbour matching estimator for the average treatment effect for the treated, estimated based on all sample of firms. Number of matches (M): 4. Outcome variable: ROI growth rate after one and two year from the guarantee. Treatment variable: guarantee granted by the FCG . Matching variables: geographical area, industry, year, total asset, number of employees, liquidity ratio and financial leverage , starting value of ROI at the year of the guarantee. Bias adjusted variables: geographical area, industry, year, total asset, number of employees, liquidity ratio and financial leverage, starting value of ROI at the year of the guarantee. We estimate the standard errors allowing for heteroskedasticity. "***", "**" and "*" indicate 1%, 5% and 10% significance levels, respectively.

The results confirm the first hypothesis: *the public guarantee improve the capacity of firms to increase the capital invested with a positive effect on firms' profitability.*

To check the second hypothesis, we have used the Nearest-Neighbour Matching Estimator presented in Section 5 to run separated analysis for the three subsamples: micro firms, small firms and medium firms. Table 10 shows differences in firms' profitability after one year and two years from the guarantee issuance. The results confirm the positive effect of the guarantee on the firm's profitability but with some relevant variations across firms' size and sectors.

Small and medium firms show a quite similar result. The effect of the guarantee on ROI is concentrated in the first year after the guarantee issuance: the public guarantee generates an increase of the ROI after one year of 0.42 basis points for small-sized firms and 0.48 basis points for medium-sized firms.

Micro-sized firms show opposite results: the guarantee seems not to generate any increase in ROI after one year, whereas the increase is about 0.57 basis points after two years.

---

[5] To verify the robustness of the estimation we also conducted the same analyses with Propensity Score Matching obtaining similar results. The guarantee generates a ROI increase of 0.26 basis points after one year and 0.64 basis points after two years. These results are available from the authors on request.

This different timing with which the guarantee generates its effect on the firm's ROI could depend on several reasons: a scarcer efficiency of micro firms in the use of the credit accessed thanks to the guarantee; different types and scopes of guaranteed loans or, also, a sectorial peculiarity. Based on available data, we can only verify if the sector is relevant in the explanation of the effects of guarantee on the firms' ROI.

Table 10 - Average treatment effect on the threated estimated in terms of ROI for firms supported by FCG (micro, small medium firms)[6]

	Profitability growth 1 year after guarantee (ROIt+1-ROIt)			Profitability growth 2 yfear after guarantee (ROIt+2-ROIt)		
Treatment (1 dvs 0)	Micro firms	Small firms	Medium firms	Micro firms	Small firms	Medium firms
ATT	-0.0499	0.4207	0.4858	0.5706	0.4647	0.4859
P.Value	0.645	0.000***	0.018**	0.000***	0.001***	0.084*
Obs.	59314	42072	15329	48991	32981	12634

Nearest-neighbor matching estimator for the average treatment effect for the treated, estimated based separately on micro, small and medium firms. Number of matches (M): 4. Outcome variable: ROI growth rate after one and two year from the guarantee. Treatment variable: guarantee granted by the FCG Matching variables: geographical area, industry, year, total asset, number of employees, liquidity ratio and financial leverage , starting value of ROI at the year of the guarantee. Bias adjusted variables: geographical area, industry, year, total asset, number of employees, liquidity ratio and financial leverage, starting value of ROI at the year of the guarantee. We estimate the standard errors allowing for heteroskedasticity. "***", "**" and "*" indicate 1%, 5% and 10% significance levels, respectively.

Table 11 shows the sector distribution by firms' size.

Micro firms are mainly concentrated in the service sector (57.94%); whereas the majority of medium firms are in the industry sector (56.90%). Small firms mainly operate in the industry (50.17%) and trade and other services (40.16%) sectors.

Table 11 – Sector distribution for micro-small and medium sized firms

	Micro	Small	Medium
Agricolture (%)	0.15	0.29	0.36
Industry/Manufacturing (%)	33.15	50.17	56.90
Construction (%)	8.76	9.38	7.16
Trade and other Services (%)	57.94	40.16	35.58

In the light of these strong differences among sectors, we have created different subsamples considering separately for each sector the performance of micro, small and medium sized firms.

Using the Nearest Neighbour Estimator presented in section 5 we have estimated the effect of the guarantee on the profitability of firms considering the interaction between sectors and firms' size. As in the previous

---

[6] To verify the robustness of these results we made the estimation also considering a number of matches equal to two and equal to three, obtaining similar results. All the effects are confirmed only the effect of the guarantee on the two-years profitability of medium firms is not confirmed with matches equal to 2. In any case this finding was already evident also from the previous analysis where it was significant but with a negligible value. These results are available from the authors on request.

analysis, we have used the ROI increase after one and two years as the outcome variable. Table 12 shows the different performances of micro, small and medium firms in each sector.

Overall, for small firms the guarantee seems to have generated better results in the manufacturing sector (with a ROI increase of 0.59 basis points in the first year and 0.85 basis point after two years); a decent effect appears also in trade and other services sector (0.35 basis points in the first year).

On the contrary the guarantee has not generated effects on the profitability of medium firms operating in the manufacturing sector, although this investment intensive sector has a high concentration of medium-sized firms (about 57%). For medium firms the guarantee has played as profitability booster only in trade and other services sector (0.82 basis point in the first year, with an increase of other 0.10 basis points in the second year).

For micro firms the guarantee has proven relevant in the construction sector (with 1.37 basis points increase in ROI after two years) and also in trade and other services sector (0.59% after two years). Construction is high intense capital sector, with deferred revenues.

These results confirm the second hypothesis: overall the impact of the public guarantee on firm's profitability is positive for micro, small and medium firms, but with significant variations across sectors and sizes.

Table 12 – Average treatment effect on the threated estimated in terms of ROI for firms supported by FCG (by sector and size)

	Profitability growth 1 year after guarantee (ROIt+1-ROIt)	Profitability growth 2 year after guarantee (ROIt+2-ROIt)
Treatment (1 vs 0)	ATT	ATT
Micro-sized firms		
Industry	-0.1852 (0.282)	0.3058 (0.151)
Construction	0.0976 (0.809)	1.3772 (0.003***)
Trade and other services	0.0443 (0.766)	0.5997 (0.001***)
Small-sized firms		
Industry	0.5954 (0.000***)	0.8563 (0.000***)
Construction	-0.6148 (0.100*)	-0.8719 (0.089*)
Trade and other services	0.3546 (0.049**)	0.1651 (0.485)
Medium-sized firms		
Industry	0.4105 (0.110)	0.1528 (0.664)
Construction	0.2232 (0.758)	0.8936 (0.314)
Trade and other services	0.8270 (0.030**)	0.9105 (0.094*)

Nearest-neighbor matching estimator for the average treatment effect for the treated, estimated based separately on micro, small and medium firms. Number of matches (M): 4. Outcome variable: ROI growth rate after one and two year from the guarantee. Treatment variable: guarantee granted by the FCG. Matching variables: geographical area, year, total asset, liquidity ratio and financial leverage , starting value of ROI at the year of the guarantee. We estimate the standard errors allowing for heteroskedasticity. P-values are in bracket: "***", "**" and "*" indicate 1%, 5% and 10% significance levels, respectively. We do not consider agriculture sector because of the low number of observations.

7. Conclusions

Our study has analysed the effect of the Italian national guarantee program on firm's profitability. Although our research is Italy – based, as many others that are country specific, our findings have a clear international relevance. The paper focuses on the performance of the guarantee scheme in a period of economic downturn period, when Governments (in many countries) are generally pushed to increase the allocation of capital to these kind of financial instruments (ECB, 2014), often without a clear feedback from the performance of past policies, also because, as underlined in section 3, the effectiveness of these programs is still under discussion. Our study adds useful insights about the economic additionality of public guarantee schemes and its relevance is grounded in the fact that Italy is the country that offers the highest value of guarantees in Europe, targeted to SMEs, which are the backbone of many economic systems across the world.

The study confirms that public guarantee schemes can play a relevant role within public policies for economic and entrepreneurial development, as underlined by Cowling and Mitchell (2003). In particular, the Italian FCG has uplifted the SMEs' profitability: the average ROI of Italian SMEs was 7.6% in the period 2007 – 2013, falling down from 9.4% in 2007 to 6.5% in 2009 (SDA Bocconi 2014). Then, from 2010, a weak recovery has started.

Going back to the two hypothesis at the basis of our study, our findings show that the FCG has acted as a profitability booster for Italian SMEs, allowing them to access to new debt to run new investments necessary for sustain the profitability during the economic downturn.

The magnitude of this effect is different among firms of different size and sectors. The paper shows that small an medium firms have the highest increase in ROI in the first year; whilst for micro firms the effect of guarantee on ROI is postponed to the second years, although it is greater.

These differences can be explained by looking at the sectors in which firms operate. Although the great majority of small and medium size firms are concentrated in the manufacturing sector, the guarantee has proved useful and discriminating only for the small ones; on the contrary for the medium ones its effect on ROI is not substantial.

For micro firms the guarantee has proven very effective in the construction sector, where, however, a very small number of firms operate.

Quite surprisingly, the guarantee has played as booster for the ROI for all the companies operating in the trade and other services sector, even if with a postponed effect for the micro ones: actually, this is a sector with lower capital requirements in respect to the others, where companies have probably used the guarantee to sustain their working capital needs.

This paper has clearly shown that public guarantee schemes are not a financial remedy for all seasons and all businesses. It is important for policy makers to understand the needs of SMEs related to their size and sector and to design, implement and monitor accordingly the scheme.

Even if focusing the program on specific types of companies and sectors may be more complex and probably less popular, it may be the most value for money approach for Governments, especially in downturn periods,

when public budgets are curtailed and an effective support to businesses struggling with the economic crisis should be among the top priorities.

These results seem to be promising for expanding the research on a longer time span, taking into consideration also the effects in period of economic expansion. Further and beyond the country – focus, this study has also offered to scholars and practitioners a further methodological approach to assess the economic additionality of public guarantee schemes.

8. References

Alvarez, S. A., & Barney, J. B. (2004). Organizing rent generation and appropriation: toward a theory of the entrepreneurial firm. *Journal of Buhsiness Venturing*, *19*(5), 621-635.

Abadie, A., Drukker, D., Herr, L. J., Imbens G.W. (2001). Implementing Matching Estimators for Average Treatment Effects in Stata, *Stata Journal,1*(1), 1-18.

Amini, A. (2004). The distributional role of small business in development. International Journal of Social Economics, 31(4), 370-383.

Anuchitworawong, C., Intarachote, T., & Vichyanond, P. (2006). The Economic Impact of Small Business Credit Guarantee. *TDRI Quarterly Review*, *21*(6), 17-21.

Armstrong, C. E., Craig, B. R., Jackson III, W. E., & Thomson, J. B. (2010). *The Importance of Financial Market Development on the Relationship between Loan Guarantees for SMEs and Local Market Employment Rates*. Federal Reserve Bank of Cleveland Working Paper.

Asia Development Bank (2014). Asia Small and Medium-sized Enterprise (SME) Finance Monitor 2013, available on line: **http://www.adb.org/publications/asia-sme-finance-monitor-2013**

Bannock and Partners. (1997). *Credit Guarantee Schemes for Small Business Lending: A Global Perspective.* London: Graham Bannock and Partners.

Beck, T., Demirguc-Kunt, A., & Levine, R. (2005). SMEs, growth, and poverty: cross-country evidence. Journal of economic growth, 10(3), 199-229.

Beck, T., Klapper, L. F., & Mendoza, J. C. (2010). The typology of partial credit guarantee funds around the world. *Journal of Financial Stability, 6*(1), 10-25.

Benavente, J.M, Galetovic A., Sanhueza R, (2006). Fogape: an economic analysis. University of Chile Economics Department, Working Paper 222.

Boocock, G., & Shariff, M. N. M. (2005). Measuring the Effectiveness of Credit Guarantee Schemes Evidence from Malaysia. International Small Business Journal, 23(4), 427-454.

Bradshaw, T. K. (2002). The contribution of small business loan guarantees to economic development. *Economic Development Quarterly, 16*(4), 360-369.

Casalini F, Rossolini M. (2015); "Gaps in SME policy implementation: the case of the Italian Central Guarantee Fund. In Brusoni M., Farr-Warthon B., Farr-Warthon R., Vecchi V. (Eds), Managerial Flow and the Implementation of Local Development Policies. Abingdon: Routledge.

Chaganti, R., Cook, R. G., & Smeltz, W. J. (2002). Effects of styles, strategies, and systems on the growth of small businesses. Journal of Developmental Entrepreneurship, 7(2), 175-192.

Cowling, M. (2010). The role of loan guarantee schemes in alleviating credit rationing in the UK. Journal of Financial Stability, 6(1), 36-44.

Cowling, M. and P. Mitchell, 2003, Is the small firms loan guarantee scheme hazardous for banks or helpful to small business?, Small Business Economics 21(1), 63–71.

Cressy, R., 2002. Funding gaps: A Symposium, The Economic Journal, 11(2), February: F1–F16.

Curran, J. (2000). What is small business policy in the UK for? Evaluation and assessing small business policies. International small business journal, 18(3), 36-50.

Davidsson, P., & Delmar, F. (1997). High-growth firms: Characteristics, job contribution and method observations. In RENT XI Conference, Mannheim, Germany.

Davidsson, P., Delmar, F., & Wiklund, J. (2006). Entrepreneurship as growth; growth as entrepreneurship. Entrepreneurship and the Growth of Firms, 21-38.

Davidsson, P., Kirchhoff, B., Hatemi–J, A., & Gustavsson, H. (2002). Empirical analysis of business growth factors using Swedish data. Journal of small business management, 40(4), 332-349.

Davidsson, P., Steffens, P. R., & Fitzsimmons, J. (2008). Performance assessment in entrepreneurship research: is there a pro-growth bias? Available on line http://eprints.qut.edu.au/archive/00012040

Dobbs, M., & Hamilton, R. T. (2007). Small business growth: recent evidence and new directions. International Journal of Entrepreneurial Behaviour & Research, 13(5), 296-322.

European Central Bank (2014a) Monthly Bulletin July 2014.

European Central Bank (2014b), Financial Integration in Europe, April 2014.

European Commission (2014). Annual Report on European SMEs 2012/2013 A partial and fragile recovery.

European Investment Fund (2014), European Small Business Finance Outlook, Working Paper 26.

Ferrando A., Rossolini M. (forthcoming), SMEs access to credit: are government measures helpful for constrained firms. In Caselli S., Corbetta G., Vecchi V. (Eds), Public Private Partnerships for infrastructure and enterprise funding. Principles, Practices and Perspectives. New York: Palgrave.

Green, A. (2003). Credit guarantee schemes for small enterprises: an effective instrument to promote private sector-led growth?. UNIDO, Programme Development and Technical Cooperation Division.

Hancock, D., Peek, J., & Wilcox, J. A. (2007). The repercussions on small banks and small businesses of bank capital and loan guarantees. Working Paper 07-22, Financial Institutions Center, Wharton University.

Honohan, P. (2010). Partial credit guarantees: principles and practice. Journal of Financial Stability, 6, 1-9.

Hoogstra, G. J., & van Dijk, J. (2004). Explaining firm employment growth: does location matter?. Small Business Economics, 22(3-4), 179-192.

Kang, J. W., & Heshmati, A. (2008). Effect of credit guarantee policy on survival and performance of SMEs in Republic of Korea. Small Business Economics,31(4), 445-462.

LeBrasseur, R., Zanibbi, L., & Zinger, T. J. (2003). Growth momentum in the early stages of small business start-ups. International Small Business Journal,21(3), 315-330.

Lelarge, C., Sraer, D. A., & Thesmar, D. (2008). Entrepreurship and Credit Constraints-Evidence from a French Loan Guarantee Program. Techincal Report, University of California.

Lerner, J. (2002). When bureaucrats meet entrepreneurs: the design of effective public venture capital programs. The Economic Journal, 112(477), F73-F84.

Levitsky, J. (1997b). Credit guarantee schemes for SMEs–an international review. Small Enterprise Development, 8(2), 4-17.

McMahon, R. G. (2001). Business Growth and Performance and the Financial Reporting Practices of Australian Manufacturing SMEs. Journal of Small Business Management, 39(2), 152-164.

Mole, K. F., Hart, M., Roper, S., & Saal, D. S. (2009). Assessing the Effectiveness of Business Support Services in England Evidence from a Theory-Based Evaluation. International small business journal, 27(5), 557-582.

Murphy, G. B., Trailer, J. W., & Hill, R. C. (1996). Measuring performance in entrepreneurship research. Journal of business research, 36(1), 15-23.

OECD (2013). SME and Entrepreneurship Financing: The Role of Credit Guarantee Schemes and Mutual Guarantee, CFE/SME(2012)1/FINAL

OECD (2014). Financing SMEs and Entrepreneurs 2014: An OECD Scoreboard, available on line: http://www.oecd.org/cfe/smes/financing-smes-scoreboard-2014.htm

Oh, I., Lee, J. D., Heshmati, A., & Choi, G. G. (2009). Evaluation of credit guarantee policy using propensity score matching. Small Business Economics, 33(3), 335-351.

Panetta, I., C. (2012). An analysis of credit guarantee schemes. In Leone, P., & Vento, G. A. (Eds). (2012). Credit guarantee institutions and SME finance. Palgrave Macmillan.

Peterson, R. (1977). Small Business: Building a Balanced Economy. Press Porcepic, Ontario.

Riding A.L, Haines, G. Jr. 2001, Loan Guarantees: cost of default and benefits to small firms, Journal of business venturing, 16, 595-612.

Riding, A., Madill, J., & Haines Jr, G. (2007). Incrementality of SME loan guarantees. Small Business Economics, 29(1-2), 47-61.

Rubin, D. B. (1974). Estimating causal effects of treatments in randomized and nonrandomized studies. Journal of educational Psychology, 66(5), 688.

SDA Bocconi (2014), Small & Medium Enterprises Knowledge centre, July report.

Samujh, R. H., Twiname, L., & Reutemann, J. (2012). Credit Guarantee Schemes Supporting Small Enterprise Development: A Review. Asian Journal of Business and Accounting, 5(2), 21-40.

Smallbone, D., Leig, R., & North, D. (1995). The characteristics and strategies of high growth SMEs. International journal of entrepreneurial behaviour & research, 1(3), 44-62.

Stiglitz, J. and A. Weiss, 1981, Credit rationing in markets with incomplete information, American Economic Review 71(2), 393–409.

Uesugi, I., Sakai, K., & Yamashiro, G. M. (2010). The effectiveness of public credit guarantees in the Japanese loan market. Journal of the Japanese and International Economies, 24(4), 457-480.

Vecchi V., Brusoni M., Borgonovi E., (2014). Local authorities for small-medium enterprises: a public management approach to execute competitiveness policies. *Public Management Review,* 16(2), 256-273.

Vogel, R. C. , Adams, D. W. (1997). Costs and benefits of loan guarantee programs. The Financier, 4(1–2), Feb/May.

Zecchini, S., & Ventura, M. (2009). The impact of public guarantees on credit to SMEs. Small Business Economics, 32(2), 191-206.