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The impact of Credit Guarantee Schemes on SMEs bankruptcies: an international overview

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Abstract

The paper investigates if Credit Guarantee Schemes (CGSs) have an effect on Small and Medium Enterprises (SMEs) bankruptcies. In such a framework, some recent studies are devoted to deepen the issue at national level. Most of them conclude that the CGSs may increase the probability of SMEs bankruptcies, suggesting the questions of moral hazard and adverse selection as possible motivations. In our analysis we consider a selection of countries examined by the Organisation for Economic Cooperation and Development (OECD) and perform a simple linear regression study in order to analyze the effectiveness of CGSs at international level. Results from the analysis are mixed, suggesting that the CGSs do not necessarily have a positive or negative impact on SMEs bankruptcies and more motivations are to be found in the specific country peculiarities.

JEL classification numbers: G21, G28, G29
Keywords: Guarantee schemes, Credit, Default, Moral hazard, Adverse selection

1 Introduction

Credit guarantee schemes (CGSs) are the most widespread tools put in place by a variety of governments worldwide to foster Small and Medium Enterprises (SMEs) access to finance. They typically provide a partial guarantee for a bank credit to

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viable SMEs that are not able to access traditional bank credit due to their lack of adequate guarantees or track record, or both. The guarantee would be triggered in the event of debtor default.

Although in the last decades there has been an increase of the schemes worldwide, in recent years they have also been used as a counter cyclical policy tool (OECD, 2018). This is because the global economic and financial crisis started in 2007 highlighted significant difficulties for SMEs in accessing the credit from banks. These difficulties have also been amplified the regulatory response to the crisis, known as "Basel III", which requires credit institutions to increase the amount of regulatory capital, to improve its quality and to increase the volume of liquid assets that banks have to hold.

Obviously each country has its own scheme that differ, for example, in terms of objectives, ownership structures, legal and regulatory frameworks, operational characteristics, eligibility criteria and credit risk management (OECD, 2018; Leone & Vento, 2012).

In this paper, using a regression analysis performed on OECD data, we try to find evidence on the impact of CGSs on SMEs bankruptcies in several countries. In literature there are few papers devoted to this topic and the studies are generally carried out at the national level. Most of the studies suggest that loan guarantees are associated with increased default risk of beneficiary companies. Economic reasons could be due to problems of adverse selection and moral hazard. Saito and Tsuruta (2014), e.g., suggest that CGSs would increase both adverse selection and moral hazard. Regarding the adverse selection, as banks are insured against incurring losses from default, riskier small businesses are more likely to obtain loans with guarantees. Instead, with reference to moral hazard, small businesses with guaranteed loans are more likely to default, because banks are less interested in carrying out both rigorous screening and monitoring of the borrowers. Moreover, the lack of requirement for collateral in the CGSs may also reduce managerial efforts on the part of borrower firms (Ono et al., 2013).

The paper is structured as follows. Section 2 presents a literature review on the concerned topic. Section 3 describes data and methodology adopted in the analysis, and Section 4 presents the empirical results. Lastly, Section 5 summarizes the paper and proposes some conclusions.

2 Literature review

Several empirical studies have evaluated the performance and cost-effectiveness of the CGSs for SMEs. In general, they provide evidence that CGSs are positive for SMEs access to debt finance, by increasing the availability of credit or reducing its costs, or both. Moreover, there is some evidence that CGSs have positive effects also on employment levels, while there is a lack of evidence of improved company performances in terms of investments and productivity. Furthermore some studies

suggest that there is a relationship between the guarantee and SMEs bankruptcies. Most of them found that loan guarantees are associated with increased default risk of beneficiary firms (OECD, 2017).

D'Ignazio and Menon (2013) found, among other things, some evidence that a partial credit guarantee program in Italy slightly affected the risk of moral hazard. The probability of default for a treated firm becomes larger than that of an otherwise identical untreated company in the two years following the treatment, while the impact is negligible if a longer period is considered.

Also de Blasio et al. (2018), analyzing the effect of programs provided by the Italian *Fondo di Garanzia* on the firms probability of default, found that the scheme increased the likelihood that a firm will become unable to repay its loans.

Uesugi et al. (2010) identified the impact of a massive credit guarantee program implemented by the Japanese government from 1998 to 2001, finding that the program increased the credit availability and also that the default rates among the treatment groups were no smaller than for those in the control groups.

Furthermore, Ono et al. (2013), using a panel dataset of about 2500 observations during the 2007-2009 period, examined the effectiveness of Japan's Emergency Credit Guarantee Program in increasing the credit availability and improving the ex-post performance of small businesses. They found that the Program significantly improved credit availability for treated firms. However, their study also showed that the ex-post performance of firms that received ECG loans from the main bank deteriorated more than that of firms that received non-ECG loans. They did not find a similar deterioration when a non-main bank extended ECG loans. Their findings therefore suggest that a close firm-bank relationships may have a negative impact on the effectiveness of public credit guarantees.

Similarly, Saito and Tsuruta (2014), focusing on Japanese credit guarantee schemes and using bank-level data, observed a positive correlation between the amount of loans with guarantees and ex-post default risk.

Analyzing a French Loan Guarantee Program, Lelarge et al. (2010) found, among other things, that the firms which obtained a guaranteed loan experienced a subsequent significant and sizable increase in their bankruptcy probability, suggesting that the increase in risk may be a serious problem of such loan guarantee programs.

Lastly, a study in Agnese et al. (2018) analyzed the United Kingdom framework of guarantee schemes in favour of SMEs during the period 2009-2015, in order to gain insights on the role that the UK scheme played in favour of SMEs. The empirical evidence of a regression analysis showed that CGSs possibly played a minor role, compared to macroeconomic indicators as GDP, in dealing with SMEs bankruptcies.

In contrast to the above studies, Farinha et al. (2016) found that the effect of an unprecedented large increase in the volume of loan guarantees granted to Portuguese SMEs in 2009 consisted of a decrease in the probability of a firm exit and loan default.

Also Hancock et al. (2007), using state-level U.S. data to estimate the effects of credit guarantees provided by the *Small Business Administration*, found that the guaranteed loans tend to reduce, albeit modestly, business failures and bankruptcies.
Kang and Heshmati (2008) evaluated the effects of credit guarantee on the survival and performance of SMEs in the Republic of Korea. The results indicate that credit guarantee enabled guaranteed firms to achieve good performances in general. On the other hand, the effect of guarantee on survival rates of SMEs is mixed, as there is difference between the contemporary effect and the lagged effect.
Similarly, Oh et al. (2009) evaluated the effect of the Korean credit guarantee policy by comparing a large sample of guaranteed firms and matched non-guaranteed firms from 2000 to 2003. Results suggest that credit guarantees affected positively the employment, the wage levels and the survival rate of supported firms.

3 Data and methodology

The literature on the relationship between the CGSs and SMEs bankruptcies summarized in the previous section generally focuses the analysis on specific countries. In such cases thorough analysis are performed using detailed information of each enterprise coming from specialized databases, and the probability of default is evaluated.
In the present paper we shall perform a different kind of study by considering data obtained from the latest report of OECD (OECD, 2018). Such observations consist of aggregated supply-side data provided by financial institutions, statistical offices and other government agencies. The nature of the aggregated data obtained from the same international organization allows to foster some descriptive comparative comments on different countries.
The specific data are time series related to the yearly number of SMEs bankruptcies and magnitude of government loan guarantees available to banks and other financial institutions. The indicator “Government loan guarantees” shows the extent of public support for the financing of SMEs in the form of credit guarantees (and not in the form of direct funding). The time interval considered ranges from 2007 to 2016, therefore time series of 10 observations will be analyzed. The dataset has been built with the aim of providing a global international scenario, so the countries have been selected from all over the world: Colombia, France, Greece, Italy, Japan, Republic of Korea, Spain, Turkey, USA. The data are reported in Table 1.

Table 1: OECD data on SMEs bankruptcies and government loan guarantees

		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Colombia	Gov. Loan	560	1390	1820	1940	5460	6190	7140	7510	7720	10520
	# Bankr.	33	95	149	159	178	116	156	141	164	200
France	Gov. Loan	5.850	6.861	11.267	11.883	9.826	8.465	8.925	7.800	8.000	8.400
	# Bankr.	51301	55524	63163	60298	59451	61066	62507	62371	63026	58037
Greece	Gov. Loan	19.929	23.232	25.587	22.438	19.951	19.315	17.234	16.509	15.121	12.805
	# Bankr.	513	359	355	355	445	415	392	330	189	108
Italy	Gov. Loan	1.146	1.160	2.756	5.225	4.435	4.036	6.414	8.392	10.216	11.570
	# Bankr.	6161	7506	9381	11233	12154	12542	14129	15686	14733	13521
Japan	Gov. Loan	29368	33919	35850	35068	34446	32078	29778	27701	25761	23873
	# Bankr.	14091	15646	15480	13321	12734	12124	10855	9731	8812	8446
Korea	Gov. Loan	39730	42961	56381	56195	55457	56940	59517	60336	60947	62670
	# Bankr.	2294	2735	1998	1570	1359	1228	1001	841	720	555
Spain	Gov. Loan	5.55	7.70	11.00	10.10	12.00	11.00	13.00	9.10	7.60	6.50
	# Bankr.	894	2550	4463	4187	4912	6627	7517	5096	3927	3114
Turkey	Gov. Loan	0.053	0.285	0.565	0.939	1.123	1.114	1.061	1.392	1.641	5.318
	# Bankr.	52	47	50	68	72	141	69	99	108	222
USA	Gov. Loan	21	16	15	22	19	23	23	25	28	29
	# Bankr.	28322	43546	60837	56282	47806	40075	33212	26983	24735	24114

Source: OECD, "Financing SMEs and Entrepreneurs 2018: An OECD Scoreboard", OECD Publishing, Paris, 2018.
Variables: "Gov. Loan" represents the yearly government loan guarantees (Local Currency Unit, in billion); "# Bankr," is the yearly number of SMEs bankruptcies

Some of these countries have been analyzed in more ad-hoc studies reported in the literature review of Section 2. This will also allow to perform some illustrative comparisons with the country specific literature, in which different source and kind of data are used. To note that for some countries we did only have access on the information of bankruptcies for all enterprises, not only SMEs. However, as long as the number of SMEs is generally a considerable large percentage of the total number of country enterprises, we shall consider the result as a suitable approximation.
For each selected country we shall perform a simple linear regression analysis on OECD data: $Y_i = \alpha + \beta X_i + \epsilon_i$, where Y_i is the number of SMEs bankruptcies and X_i is the government loan guarantees in the i-th year. This analysis will allow to gain insights on the relationship of these two variables basing on aggregated data.

4 Empirical results

The results of the analysis are reported in Table 2. "Beta" represents the estimate of the coefficient related to the explanatory variable "Government loan

guarantees". We then report the results on the P-value related to "Government loan guarantees", in order to evaluate its significance, and the R square as a measure of the model goodness of fit.

Table 2: Results from the linear regression analysis

	Colombia	France	Greece	Italy	Japan	Korea	Spain	Turkey	USA
Beta	9.48E-12	1.23E-06	1.79E-08	7.37E-07	5.39e-10	-8.40E-11	6.76E-07	3.37E-08	-2.23E-06
P-value	0.03	0.06	0.07	0.002	0.001	0.0004	0.001	0.00001	0.008
R^2	0.45	0.36	0.35	0.71	0.73	0.80	0.76	0.84	0.59

Source: our own calculations on OECD (2018) data

The sign of the estimated value of "Beta" gives an indication on whether the government loan guarantees have a positive or a negative impact on SMEs bankruptcies. A positive value may suggest that the more a government support SMEs through CGSs, the more SMEs bankruptcies are likely to occur. This could be due, as already said, to questions as adverse selection and moral hazard. Our results suggest this kind of conclusion for several countries, some of which with a good empirical evidence. In this respect, the model results for Italy, Japan, Spain and Turkey display a R square larger than 70%, and a significant P-value for "Beta". Other countries (Colombia, France and Greece) provide an estimate of "Beta" with positive sign, but with much less significance and reliability. On the other hand, the results for Korea and USA suggest, with a considerably large empirical evidence, are favorable in decreasing the number of SMEs defaults.

These conclusions seem to support the idea that no generalized statement can be easily made on the effectiveness of CGSs, possibly the peculiarities of each country and the structure of each specific CGS play an important role.

In the light of above, we also want to highlight that the results of our model confirm some of the studies in literature on probability of default related to SMEs described in Section 2. For example, the study of Italian SMEs in De Blasio et al. (2018) or the Japanese SMEs in Ono et al. (2013) concluded for a negative impact of the credit guarantee schemes, as in our study; with reference to French SMEs (Lelarge et al., 2010) we observed, instead, a less strong impact. Studies for SMEs in the US (Hancock et al., 2007) and for SMEs in the Republic of Korea (Oh et al., 2009), on the other hand, concluded for a general positive effect of loan guarantees.

Despite in our study we employed aggregated data composed by short time series as dependent and explanatory variables, we were able to gain general indications being in agreement with more comprehensive studies. This may possibly encourage to extend some of the studies in literature to more recent time periods. More in general, our model could serve as a supportive tool for conducting more thorough analysis, in order to understand the complex question related to the effectiveness of CGSs.

5 Conclusion

In most advanced and developing countries there are different forms of guarantee schemes in favour of SMEs. This is more evident as a consequence of 2007-2008 financial crisis, which imposed regulatory reforms that, indirectly, could make less convenient for banks to lend to SMEs.

The attempt of evaluating the quality and effectiveness of such schemes is complex and multifaceted. In particular, it is challenging when different countries are considered, because it is not easy to isolate the role of credit guarantees as well as each country has its own peculiarities, having an influence on the survival of SMEs. Furthermore, the issue of moral hazard and adverse selection is a further source of inhomogeneity.

The empirical analysis of this paper confirmed the mixed conclusions on the impact of CGSs on SMEs bankruptcies, with respect to different countries (Colombia, France, Greece, Italy, Japan, Republic of Korea, Spain, Turkey, USA). In this study we used aggregated data, but deeper and more significant conclusions might be drawn if more detailed data were considered. This is a direction for future studies devoted to understand the question at the international level. In this perspective, the model analyzed in the paper could serve as a supportive tool for conducting more comprehensive analysis.

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