

# The Valuation and Cost of Credit Insurance Schemes for SMEs: The Role of the Loan Guarantee Associations

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**L**OAN GUARANTEE ASSOCIATIONS (LGA) have a relatively long history<sup>1</sup>. They have been used in most countries in Europe and elsewhere, to stimulate lending for a variety of purposes, but most often to help small and medium-size enterprises (Levitsky and Prasad, 1987). The primary assumption behind these programs is that disadvantaged groups, like small and medium enterprises (SMEs), are unable to access formal loans because of credit market imperfections. Loan Guarantee Programs are thought to overcome some of these imperfections by allowing lenders to shift part of the loan recovery risk to the guarantor (LGA), the risk being typically those that can not be secured by collateral furnished by small and new borrowers. In a large measure, policy-makers see guarantee programs as collateral substitutes for disadvantaged borrowers.

Loan Guarantee schemes are often part of a package of subsidised activities that instead of attaching a subsidy directly to the loan — as in directed credit — focus on altering lender behaviour by pooling or covering loan-recovery risk. The loan guarantee covers part of the lender's risk of not being able to recover loans made to target groups. It is often further argued that once lenders have experienced with new clients covered by loan guarantee schemes these clients will later be able to graduate by borrowing without subsidised loan guarantees: partly because lenders assemble sufficient information about these new borrowers to make loans to them later without special guarantees (Vogel and Adams, 1996).

The focus of this article is on mutual or government backed loan guarantees schemes to private business. The financing of small business through

direct loans or as a last resort guarantee for loans has become a major component of government disbursements to the private sector.

The objective of the schemes is to induce lenders covered under the guarantee programs to lend to individuals and firms they would otherwise not accept as clients. Despite the popularity of these programs, there is a dispute about their effectiveness: what is the extent of the supposed financial distortions on credit markets they try to solve and how to measure the cost and benefits of guarantee loan programs. With the existing tools for a cost-benefit analysis of business promotion programs still at a rudimentary stage, a major gap therefore exists in the finance and economics literature with respect to the valuation of the costs of these guarantee loan programs.

This study provides a framework for the valuation of the costs associated with loan guarantee programs and will try to justify public support to LGA as a second best decision rule, in imperfect financial markets. We will develop a valuable model for loan guarantees that measures the direct costs of mutual or government-sponsored loans to small business in terms of calculating the operating expenses and income generated by the LGA and being charged (net of any subsidies) to SMEs in relation with the average interest cost savings of the borrowing firm. The model can be used for program evaluation where the primary interest is the effectiveness of a particular lending program in achieving the anticipated benefits in terms of reduced debt costs and additional lending.

We will begin our discussion by providing background on loan guarantee

programs and move next to a discussion of financial market imperfections and the extent to which loan guarantee associations (LGA) can be a solution to these problems. We then focus on the main characteristics of loan guarantee programs in Europe, their relative costs and benefits, providing a model for cost calculation, and conclude with a few suggestions and remarks related to loan guarantees. The application of the model is illustrated through a valuation analysis of the small business guarantee loan programs of the LGA in Spain, and comparisons are being made with similar programs of other European Union countries.

### **Capital Market Imperfections: the Background**

Discussions of using loan guarantee programs to overcome market imperfections usually first note that there are a variety of imperfections that are said to affect credit markets. Externalities and asymmetries with respect to information are among the credit market imperfections most often noted and used to justify interventions (Stiglitz and Weiss, 1981). The externalities argument is straightforward: externalities arise because valuable information is costly to produce but almost costless to disseminate, so that not enough will be found because the producer cannot capture all the benefits. The asymmetric information argument — basically, that borrowers will always know more about their ability and willingness to repay than lenders — show that interest rate increases can lead to adverse selection (good borrowers will opt out) and more hazard (more risky projects will be chosen) so that lenders may find that it is optimal to ration credit rather than

increasing interest rates to their 'equilibrium' levels.

Although all firms are subject to the problems associated with capital market imperfections, SMEs appear to be particularly affected (Storey, 1994). For instance, small businesses tend to be newer, privately-owned companies without an established public track record (Petersen and Rajan, 1994). Due to fiscal reasons or lack of knowledge, SMEs often apply incorrectly the accounting principles of value to reflect their economic, financial, and patrimonial situation. Consequently, the information given turns out to be insufficient, biased, and, occasionally, unreliable to the lender<sup>2</sup>. When this asymmetric information problem is present in the loan relationship, it makes difficult the double coincidence of wants (Caminal, R., 1995) by means of which the interest rate should fulfil two main conditions: (i) the interest rate should be equal or less than the expected outcome of the investment projects, on the side of the demand, and (ii) to assure an internal rate that includes both the costs of insolvency and monitoring borrower behaviour, on the side of the offer. Binks, Ennew and Reed (1992) argue that restricted access to finance is not attributable directly to size, but is instead a result of the problems associated with the availability of information from which projects are evaluated<sup>3</sup>. The interest rate charged by the lending institutions to the SMEs is larger than the ones charged for large firms because the latter can generate their own information, while for smaller firms the information is not always readily available or easy to verify.

Even if the marginal income of the investment projects happen to be greater than the credit cost, the credit is often

unavailable for SMEs because when enterprises are willing to invest in high-risk projects with those interest rates, lenders opt to ration the credit to them. There is an 'equilibrium-price', even when the credit demand exceeds the offer, but when the lenders have reached an optimum interest<sup>4</sup> they prefer to grant credit only to a few applicants instead of increasing the interest rate (Jaffee and Russell, 1976; Stiglitz and Weiss, 1981; Keasey and Watson, 1993, 1994).

Loan guarantee programs for SMEs has been therefore rationalised on the basis of positive and normative considerations. The positive arguments justify public financing support of private investment as an efficient response to the failure of private credit market, whereas the normative arguments support a wide variety of public benefit arguments such as employment, economic diversification, and technical growth (Mensah, 1996). With respect to market imperfections, the key theoretical and empirical questions relate to the causes of credit market failure, the extent to which it exists in the credit markets, and the effectiveness of government loan guarantee programs as market correction mechanisms.

### **Loan Guarantee Programs in the European Union**

Although justifications to loan guarantee programs typically begin with reference to one or more financial market imperfections or distortions, there is rarely any further analysis along these lines (Meyer and Nagarajan, 1996). Rather, the discussion usually shifts to other types of reasons including the assumption that SME are faced with a systematic lack of access to credit and, moreover, that the economy in general

and SMEs in particular, would benefit from increased access to credit. Given the pervasiveness of this line of reasoning, it seems essential to address the issue of the effectiveness and efficiency of loan guarantee programs in providing additional credit access and their costs and benefits, regardless of their justification.

In the European Union (EU), close to 99 per cent of the firms are small and medium enterprises (SMEs), of which 94 per cent are micro-firms with less than 10 employees, that employ roughly one-third of the workforce and are also concerned with around one-third of total sales and almost half global import and export volume<sup>5</sup>.

Given the fact that SMEs are the mostly harmed by the effects of these credit market imperfections many governments have come up with measures to correct, if not completely avoid, the effects of the aforementioned credit rationing. The European Commission (COM(93) 528 final) expressed one and again its concern over the difficulties that borrower SME enterprises encounter in connection with the use of security<sup>6</sup>.

Most countries in the European Union count with some institutional framework to issue guarantees that under certain conditions cover the risk involved in loans subscribed by small businesses. The purpose of such schemes is to encourage financial institutions to lend to SMEs, which are either unwilling or unable to provide adequate collateral and although several legal and financial reforms to reduce the cost of cover have been introduced lately in the management of LGA, there are still some concerns relating credit rationing that remains still unsolved.

Even though they are quite diverse, all

national schemes can be reduced down to basically two families<sup>7</sup>:

**Mutual guarantee-type schemes (MGS)**, where a (legally private) society grants a guarantee in favour of a SME *vis-a-vis* the loaner (usually the bank) whereby the former backs the payment of the loan (interest and principal) in case of default of the borrower. Strictly speaking, the system is deemed mutual when the membership of the guaranteeing society is basically made up of SME that benefit from the guarantee under a self-help philosophy.

**Public guarantee schemes (PGS)**, where a Public Administration grants a guarantee (usually through a Guarantee Fund) in favour of a SME in the same conditions as above, although the former backs the payment. Application of PGS is usually more limited than that of MGS as they are part of specific publicly funded programs, or apply to specifically targeted markets or geographic areas.

Private schemes of the mutual equivalent type first appeared in countries with a strong tradition of guild or craft sectorial organisation in harsh financial times. This is the case of Austria, Belgium (mixed), Denmark, France (mixed), Germany, Italy, Luxembourg, Portugal, Spain and Switzerland. Public schemes are more prevalent in countries like Greece, the Netherlands and the United Kingdom and also partially in Belgium and France, although there is often some kind of fund or public support or financial backing in many mutual guarantee type schemes (see Table 1).

The set of basic relations applies to all the different schemes, both public and private. The typical guaranteed operation is a loan involving the following agents:

- The borrower, a SME;

**Table 1**  
**Guarantee Schemes in Europe**

<i>Country</i>	<i>Mutual Guarantee</i>	<i>Public Schemes</i>
	Prevalent in Austria, Belgium, Denmark, France, Germany, Italy, Luxembourg, Spain and Switzerland. Pilot project in Portugal.	Prevalent in the Netherlands and the United Kingdom. Also available in France and Belgium. With much smaller scope, Greece, Portugal and all other countries (program specific).
AUSTRIA	8 societies regional base. Not affiliated to the European Associations (AECM). Public guarantees also available through two national Funds.	
BELGIUM	17 societies. Integrated into AECM. Public guarantees available through a National Fund.	
DENMARK	12 societies with strong branch ties. Not affiliated to AECM Small dimension.	
FRANCE	277 societies. Affiliated to AECM. Regional Funds available (nationwide) managed by SOFARIS. There are three separated networks.	
GERMANY	24 societies. Affiliated to AECM.	
GREECE	Public guarantees available but with small dimension.	
IRELAND	Public guarantee available (Development Finance Scheme). Small relevance.	
ITALY	573 societies. Affiliated to AECM. Five different networks.	
LUXEMBOURG	2 societies (one for crafts and the other for trade). Not affiliated to AECM. Small relevance.	
THE NETHERLANDS	Public guarantees available through two Funds (one for risk capital and one for loans).	
PORTUGAL	Pilot project (one society set up in 1995). Previously public guarantees available but with small incidence.	
SPAIN	18 societies. Public guarantees available for special programs.	
SWITZERLAND	10 regional co-operatives for crafts and 1 nationwide for industry.	
UNITED KINGDOM	Public guarantees available through the Loan Guarantee Scheme.	
<i>Source: J. L. Llorrens (1995), 'Loan Guarantee Systems for SMEs in Europe'; p4.</i>		

- The lender, a financial institution (a Bank for short);
- The guarantor (LGA);
- The second-degree guarantor (SDG).

The fourth agent can be a private, mutual-type society or a public institution (usually a Fund) and the way it operates can be very different from one country to another. And it may not exist at all.

These institutions (LGA) are usually

based on a region and some of them are sector oriented — e.g. along broad branches of Industry, Trade, Transportation. It is frequent that they join into sectorial, regional or national associations that in most cases perform representative and lobbying roles, but in some cases offer certain specialised common services. In Spain all guarantee societies set up a specialised society

(CERSA) to reinsure collectively their individual risks.

The ties between the LGA and the financial institutions determine the way they operate in regard to each other: Some LGA work exclusively with their banks or credit institutions, and therefore are perceived as part of the banking subsystem (like in Belgium and France), while many others work with any bank (Austrian, German, Italian and Spanish cases). Thus, in these countries LGA are visioned as a special type of independent financial intermediaries. This independence allows them to develop additional services to the benefit of SMEs, e.g. financial advising, training, etc.

The process of approval of the guarantee is connected with the kind of loan application and depends on the type of relationship established between the guarantee society and the financial institution. It usually starts at the Bank chosen by the SME. After evaluating the circumstances of the applicant, the bank may decide that guarantees are needed. If such is the case the bank will pass the file directly to the guarantee society and together, bank and guarantee society, will or will not approve the operation. The SME may not even get directly in contact with the guarantee association (e.g. in Germany and Belgium) or approach the craft of professional association to which it belongs (like in France or Italy). In Spain the process is sometimes slightly different. Normally the SME approaches the LGA and once the operation (risk) has been approved then it moves to the bank and asks for the desired loan. Hence the bank receives a file that has already been thoroughly analysed. The most active LGA develop strong market initiatives to spread their services and be introduced to a larger number of SMEs.

There are also differences in the proportion of risk covered by the guarantee. In Spain, LGAs guarantee all the risks of the operation (100 per cent). In the other side Belgium LGAs cover only 50 per cent of the risks involved (in other words, Banks and LGAs) share the risk of the operation in equal terms. In France and Germany, the average coverage is around 80 per cent, with LGAs ascribed to the Banks network increasing that share towards full 100 per cent. In Italy, the situation is far more diverse, depending on the agreements with each Bank, although average coverage is close to 50 per cent.

Time required to get the guarantee approved also varies from one country to another depending on the type of procedure. Shorter lags occur in Belgium, where less than a week is needed to get it approved, given the tight relationship between banks and LGAs. In Spain, two to three weeks are needed from the moment in which the LGA collect all required information. In Germany however, the time span is longer, as the standard operation consumes four weeks (and up to six weeks depending on its size) from the moment the bank transfers the file.

### **The Situation of the LGA in Spain**

Spain included in 1996 around 12 per cent of all European SMEs of which 99.8 per cent had less than 250 employees. These firms have the same financial weaknesses of their European counterparts are are, therefore, prone to look for the same solutions in the financial markets. These weaknesses can be summarised in the following three points: i) a limited capability to generate their own self-financing resources; ii) expensive debt funding, due to debt costs, which are

significantly greater for small firms than for larger ones; and iii) the constant dependency of financial intermediaries, particularly commercial banks.

Among the measures usually taken by government to help the financing of SMEs we can mention the following:

- Special lines of financing with subsidised interest rates<sup>8</sup> or backed by the Government in agreement with financial intermediaries. In Spain, these lines of credit are channelled through the Public Credit Institute (Instituto de Crédito Oficial, ICO), which partly belonged to Argentaria, at the time, the most important state-owned banking group.
- Public promotion and regulation of financial schemes or firms usually known under the name of Credit Guarantee Schemes (CGS) or Loan Guarantee Associations (LGA) aimed at taking care of the SME's financial problems (Koning de A., and Snijders, J., 1992). In Spain, the LGA take the name of *Sociedades de Garantía Recíproca* (SGR). The members of these associations are, currently, small and medium-sized enterprises and regional authorities. In 1996, Regional Governments controlled more than 50 per cent of all LGA resources.

These associations were created in 1978 and are regulated by the Credit Companies Discipline and Intervention Law by means of which the LGA are controlled and inspected by the Bank of potential Spain. Nowadays there are 19 LGA of which only one belongs to a single industrial sector (road transportation). The other 18 LGA issue guarantees to any SME registered in their local region.

There are two kinds of SME members in any LGA: i) SME that are founding

members and provide LGA with supporting funds; and ii) those participant members that are only potential beneficiaries and users of the guarantee system. Basically the system works as follows: the firm members of the LGA when asking for a loan or credit in a bank or other financial institution present the guarantee of the LGA they belong, which often has the support of a government reinsurance agency (CERSA) as a second degree guarantor<sup>9</sup>.

The main characteristics of the guarantees supplied by LGA in Spain during the period 1991–1995 are presented in Table 2. We have used data from the *Compañía Española de Sociedades de Garantía Recíproca* (CESGAR), the Association that includes all 19 LGA in the country. Among their main characteristics, the most important are:

- i) SMEs search for medium- and long-term finance. In average terms, between 9 and 95 per cent of applications for guarantees are for operations with more than one-year maturity period.
- ii) Contrary to what was expected, and given the fact that the active book-keeping of assets simplifies the formalisation of guarantees, the majority of enterprises that apply for guarantees are those in the industrial sector. During the analysed period, these business sector represented from 36 to 49 per cent of total firms, followed by companies from the services and commercial sectors, due, consequently, to their lack of tangible assets to hand in as guarantees.
- iii) Savings and loan banks and private banks were the guarantees' main beneficiaries with about 80 per cent of total loan guarantees, in average terms.

- iv) In 1996 around one-third of the guarantees provided by the LGA went to new enterprises, while the remaining two-thirds were provided for technical and asset improvement guarantees<sup>10</sup>.
- v) Finally (see Table 3), the average interest rate paid by SMEs guarantee applicants (11.54 per cent) was not significantly different from the one paid by larger companies (10.80 per cent). During 1995 and 1996 the most recently available years with both data<sup>11</sup>, the average interest rates paid by small and medium enterprises were 11.6 per cent and 10.3 per cent, and 9.5 and 8.7 per cent respectively. For large companies the debt cost in the same period (a benchmark for low risk) was 8.8 and 7.8 (that is a difference of 2.8 per cent for small- and around 0.9 per cent for medium-size companies). Considering that during those years the guarantee cost, in average terms, was around 2.6 per cent, this makes LGA backing worthwhile for small, but not medium enterprises<sup>12</sup>.

Several legal and financial reforms have been lately introduced in the management of LGA to reduce the cost of cover and, as a result, the mechanism of the mutual loan guarantees in Spain shifts upwards the average cost of bank borrowing by as much as 1.6 per cent (instead of the previous 2.6 per cent). On the other side of the balance, it makes borrowing easier (and often even possible) although there are still some concerns relating to credit rationing that remain unsolved.

#### **Assessing the Effectiveness of the LGA**

As far as we know, no comprehensive evaluation of loan guarantees has been

conducted since the works of Mintz, Carrière and McCaughey in 1984 and the study of Levitsky and Prasad in 1987. They concluded that it was difficult to demonstrate that much additional lending occurred because of the small and medium business loan programs (Meyer and Nagarajan, 1996). Subsequent empirical evidence has been concentrated in the role and level of public subsidies involved in government guaranteed loans (Rhyne, 1988; Brent, 1991; Mensah, 1996) and results have been mixed.

At least three important questions should be asked about loan guarantee programs in assessing their effectiveness and efficiency in reaching SME:

- Do these programs significantly alter behaviour in the desired directions?
- Are the costs of these programs less than their benefits?
- Could the resources committed to loan guarantee schemes be used more effectively?

Usually, three categories of costs accompany loan guarantee programs: the costs of setting up the LGA, the costs incurred to run and participate in the guarantee program, and the additional cost of funding the program to sustain (defaults) operations (Llorens, 1995).

*.Set up or acquisition costs:* In many cases, establishing a loan guarantee program involves setting up a new organisation (LGA), or a new office in an existing organisation to administer the program. Typically, donors, industries or governments cover all or most of the costs of setting up these facilities. Offices, equipment, employee salaries and associated benefits, and the expenses of advertising the program to potential participants are major parts of these set-up costs.



**Table 2**  
**Guarantee Characteristics (in percentages)**

	1991	1992	1993	1994	1995
Period of the Guarantees					
less than 12 months	5.39	7.88	7.9	7.92	10.32
from 12 and 36 months	12.63	9.56	9.7	13.20	15.54
more than 36 months	81.98	84.54	82.4	78.88	74.14
<i>Distribution by Sectors</i>					
Industrial	38.16	39.22	37.91	38.01	36.21
Tertiary	27.32	27.72	27.57	28.56	31.35
Commercial	18.12	16.89	17.04	15.96	15.57
Construction	9.46	9.99	11.18	12.77	13.56
Primary	6.94	6.18	6.09	4.70	3.31
<i>Institutions</i>					
Financial Guarantee	87.08	82.82	89.67	86.41	84.24
Savings and Loan Banks	54.25	53.59	46.25	31.66	45.57
Private Banks	25.62	31.68	30.61	47.41	32.14
Credit Societies	7.10	7.74	6.98	6.45	6.05
Other Entities	6.62	2.73	1.66	1.25	2.00
State Banks	6.41	4.26	3.22	2.45	1.60
Other	NA	NA	11.10	10.78	12.64
Technical Guarantees	12.02	17.18	10.33	13.59	15.76
(*) Average period	62.5 mths	65.04 mths	NA	NA	71.13 mths
Average Loan interest rate	13.60	13.04	NA	NA	11.54

(\*)Results from the weighting of the period and interest rate of each LGA.

Source: Authors' elaboration from Compañía Española de Sociedades de Garantía Recíproca (CESGAR).

**Table 3**  
**Debt Ratio (DR) and Financial Costs (FC) (in percentages)**

<i>Firms' Size</i>	86	87	88	89	90	91	92	93	94	95	96	<i>Avrge</i>
Small Firms												
(DR)	36.6	37.5	38.9	40.5	40.6	40.6	43.0	41.2	39.1	38.5	37.6	39.5
(FC)	11.7	12.4	12.8	14.1	15.0	15.9	14.2	13.9	11.8	11.6	10.3	13.0
Medium Firms												
(DR)	34.1	36.1	36.7	38.5	38.7	39.9	39.2	37.2	36.4	33.0	33.3	36.7
(FC)	11.6	11.5	10.7	12.0	13.0	12.9	12.7	12.2	9.4	9.5	8.7	11.2
Large Firms												
(DR)	47.2	48.6	48.1	52.1	50.6	52.3	52.8	50.6	49.0	46.2	42.6	49.1
(FC)	10.3	11.5	11.0	11.5	12.2	11.9	11.3	10.8	8.8	8.8	7.8	10.5

Source: Our own computation from Central de Balances del Banco de España data (1996).

*Operating costs:* In addition to the obvious costs incurred in the guaranteeing agency to operate its program, lenders

and borrowers usually incur additional transaction costs to participate in the program, like the *opening or study rate*

(usually paid only once) and the *maintenance rate* (paid every year in proportion to the outstanding risk).

*Guarantee fund contribution (GFC)*: Usually this contribution takes the form of a refundable deposit in proportion of the outstanding risk (2 per cent in France, variable in Italy, and as high as 6 per cent in Spain, prior to the 1994 reform). Only the financial cost of this deposit, however, should be included in the calculations, in a financially 'sound' LGA.

Nevertheless, lenders also incur additional costs when they make claims on defaulted loans covered by guarantee programs, that must be covered by the guarantee fund. These costs and also additional transaction costs may be substantial and can be increased in cases of disputes with the guaranteeing agency. With the exception of the administrative and operating costs, a disbursement is made only if the loan goes into default and the guarantee is called, this making resource cost of the loan guarantee a contingent obligation.

The valuation of loan guarantees as contingent obligation has been addressed in the options valuation literature. The basis of the valuation of a loan guarantee is that the value of a bank loan's risk-free value less the value of a put option written on the assets of the borrowing firm and sold to the shareholders of the borrowing firm by the bank. The bank's risk premium is reflected in the option premium of the put option allows the shareholders to walk away from their obligation to the bank when the company is insolvent. When the government puts in place a loan guarantee, the cost of the put option is assumed by the government, thus relieving the borrowing firm of the cost of the risk premium that

it would have paid for bank financing. The cost of the loan guarantee to the government is, therefore, the option premium. For empirical work, however, valuation of the put option in a loan guarantee presents some intractable problems. When a loan is amortised (as is the case with many government loan schemes), the put option is a package of sequential options, each with an exercise price equal to the payment due on the loan for a particular year. A second problem that is especially severe for small firms is how to obtain the market values of the assets of the borrowing firm on which the put option is assumed to be written (Mensah, 1996).

As we have mentioned, we will try to develop a model for the calculation of the operating costs of the LGA, based on the main charges to the participating firms in most countries of the European Union, taking Spain as the baseline case. Although operating and guarantee costs are fairly uniform in most countries in the European Union, unfortunately, is very difficult to find any evaluation of loan guarantee programs that carefully documented the costs of setting up, subsidising, and participating in loan guarantee programs. Among the exceptions the mentioned work of Mintz, Carrière, and McCaughey (1984) analysed the opportunity cost of a loan guarantee as being the sum of the cost of default and the operating cost of processing loans less any fees charged by government.

One more way to assess the guarantee cost is to calculate the difference between the internal rate of return (IRR) of a loan with and without guarantee (Ubeda, F., 1996). This difference is the implicit cost of the guarantee. The loan provided by a bank or other financial institution, with

the guarantee of a LGA, has to be at least 2.5 per cent below market rate for similar ungranted loans.

### **A Model for the Evaluation of the Costs of the Guarantees**

LGA have been in existence in Spain for about 20 years and they have recently seen their Legal Regime reformed (Law 1/1994 and a new administrative procedure). To obtain a guarantee SMEs have to contribute the following:

a) *Fix Contributions*: which are due when applying for a guarantee and that are recovered once the credit is returned to the bank. Its function is to allow LGA to arrange for such resources as far as risk of non-payment do exist from the SME's side. The most important contribution, given the mutual character of LGA, is their share in the social capital and the Guarantee Fund Contribution (GFC).

b) *Non-recoverable Contributions*: These are (administrative and operating) sunk costs and they do not depend on whether the guarantee is eventually granted or not (opening or study rate) or will depend on the size and time to maturity (maintenance rate).

Table 4 present the guarantee cost's calculation s for a given operation<sup>15</sup>, which obviously changes when the terms are modified, once the recoverable costs increase along with the opportunity costs during the period. The Law 11/94 has introduced, among other, a substantial modification that affects the guarantee's cost, thus eliminating contributions to the GFC, of which 5 per cent were derived from the the applied guarantee. In the cost guarantee calculations we do not include the set up cost of the LGA and reinsurance cost as this is provided, between certain limits, free of charge by the government agency CERSA. Thus,

when the average insolvency rate is higher than the 1.25 per cent of granted credits, penalty will equal the insolvency rate minus 1.25 per cent and when the insolvency rate is higher than 2.5 per cent the penalty will be the insolvency rate less 1 per cent.

As we can see in Tables 4 and 4a, the guarantee's cost, according to the redemption's method used for the calculations — with fixed quotas — is 1.6 per cent, for an operation that requires 10 million pesetas and with a payment plan of five years. Before present legislation, the guarantee's cost was actually of 2.6 per cent.

The guarantee cost has been calculated for loans up to ten million pesetas (or other currency equivalents) and with maturities of five years or lower<sup>14</sup>. Opportunity costs for members' contributions have been calculated according to nominal interest rates for five years' deposits. This interest rate includes the expected inflation rates and this is the only reason why inflation has not been considered in our analysis. Divergent inflation rates will lead to interest rate spreads and eventually to differences in the cost guarantee<sup>14</sup>.

There are currently LGA in seven countries of the EU (see Table 5). All LGA present sharp differences among themselves in terms of legal status, links with the credit system, government support measures, services to enterprises and levels of affiliation. However, in spite of the differences shown so far, the LGA way of functioning is rather similar all over Europe and although the level of charges for the different services provided may differ significantly from one country to another, those differences will be mainly in terms of the government subsidy involved in the start-up and

## Table 4 Cost of the Guarantee

### *i) Recoverable Contributions*

a) Share Capital underwriting of the LGA (SC). There is no uniformity in relation with the share capital to be underwritten and it depends on each LGA. For each underwritten peseta, it could be guaranteed (guarantee amount: GA) between 25 and 200 pesetas (Sesto-Pedreira, 1994). At the moment of the guarantee's request there should be a deposit:

$$C = \frac{SC}{100} * GA$$

Considering opportunity cost.

$$\frac{SC}{100} * GA [(1+i)^n - 1]$$

For the assessment of the opportunity cost we apply the average interest rate for five years. A more accurate assessment will be possible by applying an estimate interest rate for the following five years.

### *ii Non-recoverable Contributions*

b) Studies' Expenses (SE). This contribution is to support the studies of the project's viability and it is 0.5 per cent of the solicited guarantee, amount to be deposited in both, whether the guarantee is granted or not.

$$E = \frac{SE}{100} * GA$$

c) Pending Balance Commission (PBC). Percentage to apply on the pending balance at the end of each year of the loan duration and it depends whether it is a technical or a financial guarantee. Its purpose is to cover the possible insolvency of the endorsed partner and will depend on the redemption method of the loan granted by the financial entity.

### *iii Guarantee Total Cost*

The guarantee's total cost in absolute terms (TC) is equal to the sum of all costs.

$$TC = \left\{ \frac{GA}{100} [(1+i)^n - 1] (SC) + (SE) \right\} + PBC$$

The guarantee's average total cost (ATC) is equal to the total cost in absolute terms divided by the sum of the pending balance unpaid at the end of period t. This method allows us to calculate it in function of the same amount on which the lender applies the interest rate on the pending balances.

$$ATC = \frac{\left\{ \frac{GA}{100} [(1+i)^n - 1] (SC) + (SE) \right\} + PBC}{\sum_{t=1}^n BL_t}$$

In this example, the ATC will be:

$$ATC = \frac{\left\{ \frac{10,000,000}{100} [(1+0.075)^5 - 1] (2) + 0.5 \right\} + (PBC)}{\sum_{t=1}^5 PB_t}$$

\*Loan redemption with fixed quotas (or constant annuities) (Table 4a).

$$ATC = 0.106 = 1.6\%$$

### Table 4a Assessment of the Pending Balance Commission (PBC): Loan Redemption with Fixed quotas

The assessment of a constant annuity is:

$$\alpha = \frac{SV_c}{a_{n|i}}$$

Year      Pending Balance to be paid (PB) at the end of period 1

$$1 \qquad \qquad \qquad SV_1 = SV_c(1+i) - \alpha$$

$$2 \qquad \qquad \qquad SV_2 = SV_1(1+i) - \alpha = [SV_c(1+i) - \alpha](1+i) - \alpha \\ = SV_c(1+i)^2 - \alpha(1+i) - \alpha$$

$$3 \qquad \qquad \qquad SV_3 = SV_2(1+i) - \alpha = [SV_c(1+i)^2 - \alpha(1+i) - \alpha](1+i) - \alpha \\ = SV_c(1+i)^3 - \alpha(1+i)^2 - \alpha(1+i) - \alpha$$

$$n-1 \qquad \qquad \qquad SV_{n-1} = SV_c(1+i)^{n-1} - \alpha(1+i)^{n-2} - \dots - \alpha(1+i) - \alpha \\ = SV_c(1+i)^{n-1} - \alpha(S_{n-1|i})$$

The pending balance at the end of period n is zero. Being:  
equal to the future value of an annual annuity postpayable.

$$S_{n-1|i} = a_{n-1|i}(1+i)^{n-1}$$

The total of the paid commission is equal to the sum of the pending balances per commission rate

$$\frac{CSV}{100} \{ [SV_c(1+i) - \alpha] + \dots + [SV_c(1+i)^{n-1} - \alpha(S_{n-1|i})] \}$$

guarantee fund and not so much in their ways of operation.

Based as a starting point on the methodology of Tables 4 and 4a, and with the information available, calculations of the guarantee costs are shown in Table 6, and will offer an average total cost as follows: Belgium (0.9 per cent), France (0.4 per cent), and Germany (1.5 per cent), making the use of the LGA usually worthwhile.

European SMEs which participate in the mutual guarantee system assume a

guarantee cost that is lower than the interest rate differential between short to medium-term operations and long-term operations, depending on the incoming information from the databases of EU country members, harmonised through the BACJ program (Bank for the Accounts of Companies Harmonised). An interesting point that reflects the acceptance degree of the mutual guarantee system is that in France and Italy around 30 per cent of all SMEs participate in the system, being their

guarantee cost the lowest of all analysed countries, in percentage terms<sup>16</sup>.

We have up to now assessed the relative costs of the use of the LGA programs compared with the interest loan savings, although there is still pending the theme of additional access to the credit. It is not possible, however, to arrive at definitive conclusions about the effectiveness of loan guarantee programs until more careful and comprehensive evaluations are done. There is usually too little information on these schemes to determine the costs and specially their benefits. As it has been mentioned before, "With respect to externality goals, the information usually provided by the loan guarantee programs is not enough to conclusively state whether LGA loans produce enough benefits to compensate for the subsidy" (Rhyne, 1988, p91).

The difficulty of analysing the impact of credit programs is well understood. To assess the impact of loan guarantees it is necessary to estimate the 'counterfactual', that is, what would the borrower have done without the loan, then compare that with what was done with

the loan. The counterfactual can never be measured directly, so some proxy is needed (Meyer and Nagarajan, 1996). Most of the benefits generated by a loan guarantee program are concentrated in the *additional lending* induced by the transfer of part of the lender's loan recovery risk to the guaranteeing organisation. Both borrowers and society would benefit from the increases in net income realised by borrowers who were supposedly more severely credit rationed before the help provided the loan guarantee program. Unfortunately, these increases in net income can only be proxied by loan recovery performance. Borrowers are more likely to repay loans that help them significantly increase their incomes. Additionally net incomes can only occur if additional borrowers receive loans because of the incentives provided to lenders by loan guarantee programs.

The issue of sustainability and subsidies also raises issues for the introduction of new guarantee programs. The argument that government lending guarantees resolves a market failure problem is often undermined by the

**Table 5**  
**Loan Guarantee Associations in the EU**

Country	Number of SMEs in the Country(*)	Number of LGA	SMEs in the System		
			Number(**)	% of Total SMEs	% on GDP
Austria	188,000	8	5,409	2.87	NA
Belgium	396,000	17	10,000	2.52	0.2
France	1,956,000	277	630,000	32.2	1.6
Germany	2,420,000	24	31,172	1.29	0.2
Italy	3,243,000	573	914,291	28.20	0.6
Portugal	626,000	1	100	0.02	NA
Spain	2,166,000	19	43,751	2.02	0.2

Source:(\*) Eurostat, 'Enterprises in Europe' (1996)

(\*\*) European Association of Mutual Guarantees (1994)

large subsidy component and high rate of default among borrowers. The subsidies and loss rates in government loan guaranteed programs make it necessary to look for alternative rationalisations for such programs. One promising approach is to analyse government financing of private investment as public investment decisions with private sector firms being the instruments of public investment. Stated in these terms, the financing of private sector investment can be justified as second best option in an imperfect financial market setting.

### Summary and Concluding Remarks

Credit guarantee schemes are set up with the purpose of covering some portion of the losses incurred when borrowers default on loans. The purpose of such schemes is to encourage financial institutions and, in particular, commercial banks, to lend to small businesses with viable projects and good prospects of success but which are unable to provide adequate collateral or which do not have a suitable record of financial transactions to prove that they are creditworthy (Levitsky and Prasad, 1987).

Discussions of using loan guarantee programs usually are centred in the need to overcome market imperfections. Market imperfections have normally negative impacts on the whole level of investment in the economy as the monetary flows of the credit market are not always channelled toward the best and more profitable investment opportunities.

The market imperfections alone, however, are not a justification for establishing a loan guarantee program as there may be other interventions that are more appropriate (Vogel and Adams, 1996). One of the issues is the cost of creating and maintaining the institutions that provide loan guarantees (LGA) and the possible importance of the additional transaction costs that may be imposed on the lending and borrowing parties by the insertion of an additional institution in the credit relationship. The impact of credit guarantees is unclear and there is plenty of controversy by both theorist and practitioners. Since most programs are subsidised, it is logical to expect that a comprehensive credit guarantee program will be affected by severe adverse

**Table 6**  
**Cost of the Guarantee Schemes in Several Countries**

<i>Country</i>	<i>Affiliation Share</i>	<i>Guarantee Fund Contribution</i>	<i>Opening Fee</i>	<i>Maintenance Fee</i>
Austria	No	No	0.5%	0.5%
Belgium	Up to 2%	No	0.5%	0.25%
France	Around 0.1%	2%	No	From 0.25% to 0.5%
Germany	No	No	1%	From 0.5% to 1%
Italy	Variable	Variable (from 5,000 to 10,000 EURO)	Variable	From 0.5% to 1.5% on interest paid
Portugal	350 EURO	No	From 0.5% to 1%	From 1% to 2%
Spain	Fro 1% to 4%	No	From 0.25% to 0.5%	From 1% to 2%

Source: Llorens, J. L. (1995), 'Loan Guarantee Systems for SMEs in Europe'; p16.

selection and moral hazard problems. Many sceptics conclude that guarantees represent subsidised credit loans dressed in new clothes (Meyer and Nagarajan, 1996).

Due to the difficulties in evaluating the effectiveness of the LGA, perhaps the more efficient way of doing this will be to evaluate carefully the performance of a handful of current schemes that are nominated by their designers and implementers as being successful. The results of such assessment would likely provide a benchmark or upper bound on the performance of most credit guarantee schemes.

This study has presented a model for the valuation in terms of cost-benefit analysis of government or mutual loan guarantees programs for SME private investment. The structure of the model reflects the notion that, under a guaranteed loan scheme, an investment is undertaken using a private firm guarantee (the LGA) as the medium, when the savings in borrowing interest rates more than compensate for the costs of the guarantees (as is the case in Spain and several other EU countries being examined).

Within the context of the limited literature on guaranteed loan program, this article's contribution is two-fold. First, it contributes to study of the cost-benefit side of government or mutual sponsored loan programs, which most of the existing literature has defined in terms of implicit subsidies rather than direct benefits. Second, it introduces a method for recognising the cost and calculating the values resulting from the operating expenses of the LGA and the contribution for the failure of firm's loans. This methodological contribution provides opportunities for enriching the

few direct-benefit-oriented studies on loan guarantee programs.

The article points to several directions for additional research. First, the additionality of a loan is based on the assumption that there are no private lenders willing to make the loan in the absence of the loan guarantee. To the extent that loan guarantees crowd out private lenders, private output is lost. Thus further research is needed to establish the magnitude of such crowding out, if any.

### Notes

1. In 1917, the first 'Sociétés de Caution Mutuelle' were born in France and they served as the main basis for the Spanish system. In 1929 these societies were regulated in Belgium and they were called 'Sociétés de Caution Mutuelle'. After World War II the 'Kreditgarantiegemeinschaften' was conceived as an instrument of support for the German economy. In 1973 this concept began its development in Italy. In Portugal and Austria this system was introduced recently.
2. "... There are two other agency problems that are of particular concern to bankers in the lending to small business: i) wealth transfer, and ii) 'in kind' compensation. Small firms have considerable operational flexibility, particularly in reacting to changes in technology or business conditions. This flexibility makes it easy to transfer assets to other uses in response to a changing business environment. Finally, owner-managers can increase 'in kind' compensation by manipulating prerequisites, thereby diminishing even further the funds available for creditors" (Apilado *et al.* 1992).
3. Clearly, size and risk may be statistically related. As Storey (1994, p78) point out "[t]he fundamental characteristic, other than size *per se*, which distinguishes small firms from large is their higher probability of ceasing to trade".



4. By this it should be understood as such, the interest rate above which the lenders' outcome can be diminished, despite the existence of an excessive demand of credit. An increase of the interest rate can double assume that, i) although some borrowers might be willing to assume the high cost, the probability of paying back could decrease and, at the same time reducing the quality of the lender's portfolio; and that ii) the higher interest rates might be an incentive to invest in high-risk projects with some probabilities of big returns, but only when they are successful.
5. There is lack of uniformity regarding the classification of SMEs in terms of size (the number of their employees), which makes a comparative analysis somehow troublesome. According to different sources, SMEs are firms with less than, i) 500 employees: *Bank of Spain (Central de Balances del Banco de España, CBBE)* and the *European Observatory for the SMEs*; ii) 250 employees: *European Union Aids Programs and Law 1/1994 (1st Article)* on Legal Regime of LGA (Loan Guarantee Association in Spain); and, finally, iii) 200 employees: *IV Community Directive*.
6. e.g. in the Commission communication of the financial problems experienced by small and medium-sized companies it is stated that *"the provision of national and local government guarantees for loans, or the underwriting of part of the obligations of organisations having the same function, has clearly proved its value . . . (and constitutes) . . . a very cost effective exercise . . . More should also be done to encourage the formation of more Mutual Guarantee Systems.*
7. Most of the data in this section is based on the European Association of Mutual Guarantees Report and on the draft presentation of J. L. Llorens (1995) 'Loan Guarantee Systems for SMEs in Europe' to the Interamerican Development Bank Roundtable on Credit Guarantee Systems: International Experiences and Lessons for Latin America and the Caribbean'. Washington D.C. (both unpublished).
8. This has been the main strategy applied by EU countries, but given the fact that the use of this policy is getting harder, the policies presently fall within the range of preferred lines of credit's concessions.
9. CERSA is a reinsurance company recently created with the participation of the central and regional governments. It functions as a guarantee of the LGA's operations.
10. There is no available data of previous years nor information about the 'age' of firm guarantee applicants.
11. The economic-financial structure analysis of Spanish SMEs is based on the CBBE's 1996 report (last available). This is the main database, even if it is a source of information biased towards large state-owned enterprises. In 1996, 73.6 per cent of the total were large firms, 19.2 per cent medium, and the remaining 7.2 per cent were small enterprises out of the 5.742 firms that responded to a voluntary survey.
12. If we consider average interest rates during the last eleven years, the spread was 2.5 per cent and 0.7 per cent respectively (see Table 2).
13. These calculations are based on Sesto-Pedreira (1994) who made his calculations using a loan redemption system with variable quotas to reach an average cost of 1.7 per cent for the average guarantee.
14. The current average exchange rate is US\$ 1 = 150 pesetas, then the 10 million pesetas will equal USA \$66.666.
15. If  $k$ =nominal interest rate;  $k'$ =real interest rate;  $f$ =inflation rate
 
$$(1+k)=(1+k')(1+f)$$
16. In the case of Italy, the guarantee's cost has not been calculated because the cost of the guarantee depends on the type of society that grants them, that is, whether the LGA covers industrial or commercial SMEs. Moreover, in both cases the loan guarantees are also accompanied by personal guarantees.

depending on each particular case and the contributions vary significantly. We have not information about Austria and Portugal contributions.

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