

RELATIONSHIP BETWEEN THE POLICY OF STRENGTHENING THE FINANCIAL SYSTEM AND GUARANTEE POLICY

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Abstract

One of the most important obstacles that Small and Medium Enterprises (SMEs) face when addressing their growth is access to finance. The asymmetry of information, the lack of guarantees and the difficulty in establishing effective legal rights explain these difficulties in access to finance. The solution of these obstacles has led to the implementation of policies seeking to address these challenges. The paper explains the relationship of these policies for the period 2004-2016 in 39 countries that belong to the group of developing and developed countries.

Our results show that guarantee policies and the improvement of information quality are complementary. Moreover, the implementation of guarantee policies takes place in environments with weak judicial institutions. This result emphasizes the substitutable nature between guarantee systems and the legal reform of the credit rights' protections. The implications of our findings are relevant for policy makers to implement or strengthen the guarantee systems.

Keywords: guarantee schemes, SME finance, public policy, information quality, legal system.

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1. Introduction

The development of the business environment is one of the levers that promote economic development. Among the obstacles identified by the economic literature, Ayyagari *et al.* (2008) observed that difficulties in access to finance, the containment of crime and political stability influence economic growth; access to finance is the obstacle that is the most robust in the various tests computed by authors, which underlines that improving it should be a priority.

Small and medium-sized enterprises face major difficulties in access to credit because of their dimension. The reasons that explain this vulnerability are, on the one hand, the availability of quality information about these entities and, on the other hand, the lack of sufficient guarantees to deal with the negative evolution of projects with respect to finance.

The literature on information economics advises that the asymmetry of information between economic operators produces inefficiencies in their relations and results in two types of problems: adverse selection and moral hazard. These inefficiencies determine that finally there is credit rationing in segments of clients with higher levels of asymmetry and, on the credit market, the smaller business units are those that have a higher incidence (Jenkins and Hossain, 2017). Credit rationing leads to a limitation in access to credit, or to the possibility of financing operations of a greater volume or on longer term. This restriction limits the access to financing for capital investments or investments with higher levels of risk with respect to internationalization (Aristei and Franco, 2014), the development of intangibles (Mancusi and Vezulli, 2014), innovation (Álvarez and Crespi, 2015) or start-up funding (World Bank, 2014; Kraemer-Eis *et al.*, 2017). On the other hand, credit rationing can determine an increase in the costs of financing by making projects that, in the case of having the guarantees, would generate economic value in projects that would not allow the investors to be compensated.

Nations try to alleviate these restrictions through the strengthening of the legal and financial institutions of the country; however, the problem is the long time required for the development of these institutions. On the other hand, innovation in financial instruments (factoring or leasing) or methodologies, such as credit scores, can show their effects in the short term (Beck and Demirgüç-Künt, 2006).

Credit guarantee institutions are instruments of long-term policy and increase their effectiveness as they gain experience and volume (Pombo *et al.*, 2008; 2013). OECD (2016) pointed out that policy interventions for easing SME finance have been based on Credit Guarantee Schemes (CGS from here on), evolving into structural elements of financial systems; in recent years, they have become the most popular tool to facilitate access to credit for SMEs (World Bank, 2015; OECD, 2017). Granting guarantees contributes to answer several financial development objectives such as overcoming market failures, increasing credit availability to SMEs, and promoting growth and employment opportunities. Recently, they have been also used as a countercyclical policy tool mobilizing large amount of credit (OECD, 2016). Despite the aforementioned benefits there are also disadvantages as this policy does not promote

the desired policy goal of promoting alternative sources of finance to SME. Additionally, they could support 'zombies' companies. Important initiatives have been put into place for promoting the measurement of CGS impact for balancing costs and benefits from a public policy view (OECD, 2017; World Bank, 2018).

The development of a policy to support the access of SMEs to finance has to assume the different models of financing of SMEs on the basis of the institutional and financial development of the economy (Beck *et al.*, 2008a). In particular, these authors note that the greater protection of the property rights positively affects access to external finance (banking, leasing or capital) and enlarges its extent in SMEs relative to large enterprises.

Our research question determines to what extent the level of development of the policy of guarantees has been used as a complementary or substitutive policy to strengthen the financial infrastructure. The observations correspond to a period of 12 years for 39 countries who have developed institutions of guarantees. Our work aims to explain the scope of the guarantee policy, as weighted by the weight of the economy, according to the development of other policies of reinforcement of the financial infrastructure. The mitigation of the asymmetry of information policies has a positive effect on the scope of the guarantee schemes. Conversely, improving the protection of the credit policy rights whose implementation requires greater effort can be replaced by the development of the policy of guarantees. The implications of our results offer the policy makers substitutive or complementary policies with which the reforms of the financial systems and its evolution after the implementation of the guarantees policies can be addressed.

The rest of this paper is organized as follows: section two is reserved for the literature review and the development of the hypothesis and in section three we explain the methodology and the data used. Section four includes the discussion of the results, and section five is the conclusions.

2. The literature review and hypothesis development

Lending to SMEs is facing the problem of opacity, which leads to asymmetric information and the derivative consequences, primarily due to its severity, the rationing of credit (Steijvers and Voordeckers, 2009), and the application of higher levels of guarantees (Berger *et al.*, 2001; Beck *et al.*, 2005).

The literature review of this phenomenon shows that the provision of collateral, personal or real, allows for the reduction of the effects of asymmetry. Under what Kislat *et al.* (2013) have called the ex-post theory of collateral, a large number of empirical studies have observed that SMEs and entrepreneurs with greater risks have offered higher levels of collateral in trying to discipline the moral hazard. However, Kislat *et al.* (2013) provide less evidence about the ex-ante theory of collateral, since according to them, employers with lower risks offer greater guarantees to designate their quality, thereby reducing the problem of adverse selection. They also note that there is empirical evidence that did not detect any relationship between the level of

collateral and the risk of the entrepreneur. Among the reasons given by them, they point out the need to expand the research model by incorporating other mechanisms that reduce the opacity of the banking relationship, the duration of the debt or the establishment of the covenants. When the protection of rights is weak, Menkhoff *et al.* (2012) observed that the lack of a real state guarantee for SME is replaced by third-party guarantees through strengthening the banking relationship and contractual conditions, such as the nominal amount of a loan.

The banking relationship is one of the mechanisms to overcome the opacity; the banking relationship gives an advantage to small financial institutions regarding being closer to larger employers, better understanding their needs and their solvency (Berger *et al.*, 2001; Berger and Udell, 2002; Berger and Udell, 2006; de Haas *et al.*, 2010), and even playing a substitutive effect for guarantees (Kislat *et al.*, 2013). Consequently, the more decentralized the banks are in their lending decisions, the greater the use of soft information on the borrower, who now pays amounts in excess of those paid by SMEs at less decentralized banks (Canales and Nanda, 2012). In brief, when decentralized or with smaller financial institutions, the bank structure would reduce the credit rationing on small companies due to lower quality information.

However, several papers are starting to show that this model of the banking relationship would not explain the growing interest of banks in developing countries in meeting the profitable market of the credit to SMEs (de la Torre *et al.*, 2010; Jenkins and Hossain, 2017). Among the targeted causes to explain this paradigm shift is the advance in credit rating systems of SMEs, which allowed banks to access this market niche (Berger and Udell, 2006; Berger *et al.*, 2013), the market circumstances with high growth rates of gross national product, the reduction of public debt and the increasing competition in the banking market (Jenkins and Hossain, 2017).

The financial infrastructure of a country influences the availability of the credit to SMEs and the economic growth, as companies are more dependent on external funding (Rajan and Zingales, 1998). Djanko *et al.* (2007) argue that information infrastructures and the protection of the rights of credit are associated with higher levels of credit to the private sector, which is the second most important factor in richer countries. In countries with lower levels of income, the protection of the rights of credit can be ineffective, and thus the strategy of reforms should focus on improving the information and tools that allow sharing of this information (for example, the development of public records). By contrast, in countries with higher levels of development, reforms may focus on the protection of the rights of credit (Beck *et al.*, 2009). Using data from 1980 to 2010 that was prepared by the World Bank, de la Torre *et al.* (2013) observed the positive effects of the protection of legal rights, the rate of bank credit to the private sector and access to financial information when the costs of establishing effective rights are higher than the bank credit decreases. In addition, these authors note how reforms in the protection of legal rights require more time than the improvements in the information environments.

If the financial information system was weak, credit may not be based on the financial statements of the borrowers as credit scoring systems require that there is information on the credit history of the borrowers. On the other hand, we observe that the protection of the rights of creditors and of the application of the guarantees is necessary to develop a credit-backed asset that, in any case, favors the other models of credit. Conversely, if this weak protection of credit rights is attached to a high level of legal uncertainty, it restricts the granting of credit in general (Berger and Udell, 2006).

The offered products also depend on the characteristics of the legal environment. As observed by Beck and Demirgüç-Künt (2006), in environments with a weak financial infrastructure, the instruments that incorporate real guarantees, such as factoring and leasing, may have a wider development.

In addition to the reforms of the information systems or contractual frameworks, a policy that has been more successful in the last 25 years has been the promotion of organizations and programs that provide guarantees to SMEs.

2.1. The guarantee policy

The promotion of institutions dedicated to granting guarantees has been an initiative that, in the beginning, came from the private sector, such as mutual entities in France and Italy, in order to solve the credit market failure. Over time, the public sector used public resources or institutions with the support of the private sector to promote financial institutions and business associations (Pombo and Herrero, 2001; Pombo *et al.*, 2008; Pombo *et al.*, 2013). In Europe, Pombo *et al.* (2008) identified that guarantee schemes financed by public resources have been developed in Eastern Europe, and mixed schemes, with a significant private participation, have their origin in mutual benefit schemes. Several studies observed different typologies of CGS initiatives around the world (worldwide, Pombo and Herrero, 2011; Beck *et al.*, 2010; OECD, 2013; in Europe, Pombo *et al.*, 2008; in Latin America, Pombo *et al.*, 2013; and a general characterization in AECA, 2015). Beck *et al.* (2010) observed that the role of government was important on funding and management of CGS but it was less important on risk assessment and recovery or credit defaults that are carried out by private sector, and this could rise a moral hazard problem (Levitsky, 1997). AECA (2015) adds an institutional role to the state, such as developing a sound legal framework for these entities. Guarantee institutions vary from models where credit institutions play an important role in the distribution of the guarantee (the Socamas in France or NAFIN in Mexico model) to other models where this leadership belongs to business associations (for example, the Portuguese, Italian or Spanish models). OECD (2016) has reviewed a broad literature on impact assessment of guarantee systems. The cost-benefit analysis of CGS shows a positive balance for firm access to finance, which provides a higher volume of credits or lower financial costs (financial additionality) as well as economic additionality. CGS has contributed to higher levels of employment, whereas the impact on sales and productivity is mixed. As a non-desired outcome from the studies, OECD (2016) highlights that several studies reveal a negative impact of guarantees on the probability of default.

Support to SMEs through the guarantee policy aims to fundamentally create wealth and employment through the provision of credit to SMEs when the private resource allocation system works either inefficiently or imperfectly (Gittell and Kaen, 2003). These situations occur especially in periods of financial crises where the supply side is restructuring their balance sheets by restricting credit. The guarantee policy plays a counter-cyclical role in trying to maintain the flow of credit to SMEs in adverse economic conditions (World Bank, 2015).

The OECD (2017) attributed the gap in financing SMEs to the lack of security, the lack of credit history and the lower ability of these entities to produce financial statements; this situation is exacerbated in certain segments such as start-ups. On the other hand, the World Bank says that the role of guarantee schemes is especially prominent in countries with weak institutional systems where it improves the available information on SMEs in coordination with credit records (the reduction of information asymmetry) and the capacity building to enable lenders to assign credit and manage risk in the segment of SMEs (World Bank, 2015). The evaluation of the guarantee systems has shown that they have a positive role for SMEs to access financing because they increase the availability of credit and/or reduce the costs of loans (World Bank, 2015; OECD, 2016, 2017). The measurement of the activity of the guarantee schemes is based on three parameters: outreach, additional funds and financial sustainability (World Bank, 2015).

Our research seeks to explain the relationship between guarantee policies and measures to strengthen the system of information of the countries, the effectiveness of the legal rights and guarantee policies. This relationship is, to the best of our knowledge, a gap in the research that may have interesting implications for policy makers.

2.2. The guarantee policy regarding the quality of financial information

The financial information infrastructure affects the availability of credit for SMEs (Beck *et al.*, 2006). The application of guarantees is the answer to the asymmetry of information (Berger and Udell, 2006). The quality of the financial information reduces the asymmetry of information, thus causing a reduction in the costs of financing (Cassar *et al.*, 2015; Shujun *et al.*, 2016). However, in the literature, the studies have contradictory conclusions on the decisions to grant or to deny credit, as some studies have revealed a higher level of financial indebtedness of SMEs when the information provided is of higher quality and quantity (Van Caneghem and Van Campenhout, 2012; Shujun *et al.*, 2016), while the relationship was not found in other studies (Cassar *et al.*, 2015). In this line, some works have since revealed that the external audit of the information positively affects the level of confidence in bank financing (Love and Mylenko, 2003) or the confidence of lenders to determine the rate of interest (Minnis, 2011).

The adaptation to the international accounting regulations reduces the influence of financial stability, political stability and the criminal environment in business growth (Ayyagari *et al.*, 2008).

As such, our first hypothesis (H1) is that: the development in guarantee policies is greater in environments in which the financial information of SMEs is of higher quality.

2.3. Records of financial and credit information

The existence of information regarding the credit quality of companies reduces the asymmetric information since the credit history of the borrower is accessible to the lender (Miller, 2000; World Bank, 2011). The general principles issued by the World Bank (2011) emphasize that the existence of the information about the participants in the credit market is a fundamental characteristic of the financial infrastructure of a country. There is empirical evidence that demonstrates the relationship between the growth of credit granted to the private sector and this pillar of the financial infrastructure of an economy (Trivelli, *et al.*, 1999; Galindo and Miller, 2001; Jappelli and Pagano, 2005).

Private credit bureaus and public credit registries are a basic part of a country's financial infrastructure. Pagano and Jappelli (1993) observed that the lenders' information is shared to a greater extent when there is a high turnover of borrowers, they are heterogeneous, the credit market is large and the costs of sharing the information are low.

Love and Mylenko (2003) observed that the existence of private agencies is associated with a major bank for SMEs' financing and a lower perception of credit restrictions. However, public agencies do not seem to have a moderating effect on the credit limitation. On the other hand, a strong legal system is associated with more effective private records.

The existence of quality credit ratings reduces the rejection rate in credit-granting decisions. However, this evidence is not obtained when comparing accrual (more sophisticated) or cash (simpler) accounting systems (Cassar *et al.*, 2015).

The development of shared information systems is easier to carry out than to reform the legal framework when establishing greater guarantees for the protection of creditors. However, when they are demanding collateral to solve the problems of asymmetry, financial information or the information about credit quality has less influence in the decision to grant credit (Cassar *et al.*, 2015).

Our second hypothesis (H2) is that: the development of the guarantee policy is higher in environments in which a shared information infrastructure has been developed previously.

2.4. Protection of legal rights and access to credit

The development of financial markets is greater in more robust legal systems (La Porta *et al.*, 1998; Demirgüç-Künt and Maksimovic, 1998; Rajan and Zingales, 1998; Beck *et al.*, 2006; Jenkins and Hossain, 2017). Legal rights protections enhance the positive effects of the mechanisms for the reinforcement of information (the accounting and historic credit shared system), and the absence of protection delays the devel-

opment of business credit above the guarantee of assets (Berger and Udell, 2006; De Haas *et al.*, 2010). In analyzing the objectives of public policy, Claessens (2006) argues that the improvement in the protection of contractual rights benefits the access to credit of small companies rather than those of the largest dimension. However, Beck *et al.* (2008b) do not observe a significant relationship between the protection of the rights of creditors, the mechanisms of effective force and the existence of access barriers to credit.

In countries with the worse protection of legal rights, lenders prefer to grant credit for specific purposes, smaller amounts and shorter terms, and at higher interest rates (Bae and Goyal, 2009). The role of the guarantee offered by a third party (guarantee schemes) has also been the main mechanism to reduce the lack of collateral of the borrower in environments with a weak system of legal rights (Menkhoff *et al.*, 2012).

The literature shows us the positive effect of the protection of the legal rights in the credit activity. One of the causes of the asymmetry of information market failure is the lack of trust that generates a weak protection of the rights of the credit system. In this environment, the guarantee policy has a mission to carry out.

Our third hypothesis (H3) is that: the development of the guarantee policy is greater as the protection of the legal rights is reduced.

Finally, it is necessary to recognize the influence of other variables that influence the development of the guarantee policy. Thus, the banking increase in a territory facilitates the distribution of the guarantees and the further development of the schemes of this type.

The spread of the interest rates has been observed to increase in situations with higher levels of information asymmetry (Dell' Ariccia and Márquez, 2004) or if there are increased costs in establishing effective rights (de la Torre *et al.*, 2013). Thus, interest rates should be higher with lower levels of competition or higher levels of perceived risk. On the other hand, guarantee schemes reduce the costs of financing and are more necessary as the active and passive interest rate differential is greater. Empirical evidence has shown that the requirement of collateral is higher in environments with high interest rates (Ayyagari *et al.*, 2008). Moreover, the markets with higher levels of efficiency should encourage the development of the activity of guarantees.

Finally, guarantee schemes are policies that seek to develop the economy and, consequently, are implemented to improve the standards of economic development. Empirical evidence is contradictory on this point. Beck *et al.* (2010) showed that less developed economies have an outreach weighted by GDP higher than that in more developed countries. In contrast, Calice (2016) observes, for a sample of 60 systems in the world, that the volume of guarantees, as weighted by GDP, is higher in developed countries than in others.

3. Data and methodology

The data used in this study is obtained from performance information published by the regional systems of guarantee associations, including the AECM for Europe (European Association of Guarantees Institutions), REGAR for Latin America (Guar-

antees Network of Latin American Institutions), and the indicators developed and published by the World Bank. The guarantees for each country's data are obtained by the aggregation of the various institutions operating in the country that are granting guarantees to SMEs and micro-enterprises. The pool of data that constructs the sample corresponds to observations of 39 countries from Europe and Latin America for the fiscal years from 2004 to 2016.

The model that we have developed corresponds to the following specification:

$$\text{GUARGDP} = \beta_0 + \beta_1 \text{PUBREG} + \beta_2 \text{PRIBUR} + \beta_3 \text{TRENF} + \beta_4 \text{DISC} + \beta_5 \text{Variables of Control}_i + \varepsilon \quad (1)$$

The dependent variable used is the volume of guarantees of the exercise weighted by GDP, which reflects the size of the economy; in addition, to replicate our results, with the dependent variable, tests are initiated by dividing the observations into four quartiles. The independent variables are as follows:

- PUBREG: Proportion of individuals or existing companies in a public register of the credit information of the adult population.
- PRIBUR: Proportion of individuals or existing companies in a private agency that registers the credit information of the adult population.
- TRENF: Days needed to enforce a contract.
- DISC: Index of government entities and financial information disclosures (values between 1, less, and 10, more)
- Control variables: BANKOF (referring to bank offices per 100,000 inhabitants); PIBCAP (referring to GDP per capita) and IRS (referring to the differential between interest rates of loans and interest rates paid on deposits).

The descriptive values are presented in Table 1.

Table 1: Descriptive values

	N	Minimum	Maximum	Average	Standard deviation
GUARGDP	390	0.00	0.01678405	0.00270144	0.00318936
PUBREG	480	0.00	100.00	17.51	24.10
PRIBUR	480	0.00	100.00	48.62	37.01
TRENF	480	210	1.580	619	265
DISCL	444	1.00	10.00	5.40	2.67
BANKOF	483	4.26	257.70	28.94	26.59
IRS	195	-1.11	39.65	8.21	8.05
GDPCAP	505	978.33	60,283.25	19,035.31	15,291.87

Dependent variable GUARGDP: guarantees/GDP. PUBREG: Proportion of individuals or existing companies in a public register of the credit information of the adult population; PRIBUR: Proportion of individuals or existing companies in a private agency that registers the credit information of the adult population; TRENF: Days needed to enforce a contract; DISC: Index of government entities and financial information disclosure (values between 1, less, and 10, more); BANKOF: Bank offices per 100,000 inhabitants; GDPCAP: GDP per capita; and IRS: the differential between interest rates of loans and interest rates paid on deposits.

Source: The authors

4. Results

4.1. Bivariate results

Table 2 shows the matrix of correlations between the variables that form our model. These bivariate results have shown that the dependent variable (GUARGDP) is related to the necessary number of days from the filing of a lawsuit in the courts until the collection (TRENF). That is, the guarantee policy acts as a substitute for a legal framework that is less efficient. Conversely, the disclosure of information (DISC) index is related to further guarantee policy developments, which reflects the complementary effect of the improvement of the financial information of companies and the developmental policies of the guarantee policy.

Table 2: Correlations between variables

	PUBREG	PRIBUR	TRENF	DISCL	BANKOF	IRS	GDPCAP
GUARGDP	0.004	-0.061	.195**	.182**	.221**	-.239**	-.142**
PUBREG		-.294**	-.113*	.205**	.106*	.250**	-0.036
PRIBUR			.239**	-0.080	-0.072	0.114	.122**
TRENF				-.117*	.308**	0.090	-.190**
DISCL					.231**	0.050	.194**
BANKOF						-0.098	-0.009
IRS							-.299**
GDPCAP							

** Correlation is significant at the 0.01 level (bilateral).

* Correlation is significant at the 0.05 level (bilateral).

Dependent variable GUARGDP: guarantees of exercise/GDP. PUBREG: Proportion of individuals or existing companies in a public register of the credit information of the adult population; PRIBUR: Proportion of individuals or existing companies in a private agency that registers the credit information of the adult population; TRENF: Days needed to enforce a contract; DISC: Index of government entities and financial information disclosure (values between 1, less, and 10, more); BANKOF: Bank offices per 100,000 inhabitants; GDPCAP: GDP per capita; and IRS: the differential between interest rates of loans and interest rates paid on deposits.

Source: The authors

Among control variables, we see that a more developed credit infrastructure (BANKOF) and a more efficient operation (IRS) are related to further developments of the guarantee policy; on the other hand, the guarantee policy has reached a greater relevance in economies with lower income per capita (GDPCAP).

These results also highlight the substitutive character of the private rating agencies or public records. In addition, the relationship between the time required to resolve legal issues (TRENF) and interest rate spreads (IRS) is positive.

As for information quality, there is a direct relationship between the quality of the financial information (DISC) and the weighted guarantees (GUARGDP), the number of individuals or existing companies registered in a public register (PUBREG), the number of Bank offices (BANKOF), and GDP per capita (GDPCAP). However, information quality is inversely related to the time required to enforce a contract (TRENF)

4.2. Multivariate results

Table 3 shows the results that we organized in several models to which we added the set of control variables. The models obtained are significant, and we have not seen multicollinearity problems among variables, as measured by the FIV.

Table 3: The GUARGDP relationship models

Variables	Expected sign	Model 1		Model 2		Model 3		Model 4	
		Std β	sig	Std β	sig	Std β	sig	Std β	sig
PUBREG	+	-0.045	n.s.	0.033	n.s.	-0.052	n.s.	0.048	n.s.
PRIBUR	+	-0.115	**	-0.057	n.s.	-0.091	n.s.	0.003	n.s.
TRENF	+	0.242	***	0.237	***	0.212	***	0.192	**
DISCL	+	0.210	***	0.195	**	0.237	***	0.247	***
BANKOF	+			0.069	n.s.			0.063	n.s.
IRS	?			-0.265	***			-0.351	***
GDPCAP	-					-0.138	**	-0.257	***
R ²		0.081		1.498		0.096		0.18	
F		8.691	***	4.965	***	8.388	***	5.962	***
N		347		158		347		158	

Models 1 to 4: Dependent variable GUARGDP. PUBREG: Proportion of individuals or existing companies in a public register of the credit information of the adult population; PRIBUR: Proportion of individuals or existing companies in a private agency that register the credit information of the adult population; TRENF: Days needed to enforce a contract; DISC: Index of government entities and financial information disclosure (values between 1, less, and 10, more); BANKOF: Bank offices per 100,000 inhabitants; GDPCAP: GDP per capita; and IRS: the differential between interest rates of loans and interest rates paid on deposits.

n.s. not significant; *Significant at the 0.10 level; **Significant at the 0.05 level; and ***Significant at the 0.01 level

Source: The authors

The level of disclosure of financial information (DISC) appears as a complementary policy to the development of a system of guarantees that positively influences its development. This result confirms our H1 and is consistent with previous research that showed that credit development was related to the quality of the information in the macroeconomic environment (Love and Mylenko, 2003; Van Caneghem and Van Campenhout, 2012; Cassar *et al.*, 2015, Suhun *et al.*, 2016). The system of guarantees requires a financial infrastructure that is similar to requiring credit institutions to make lending decisions. Thus, when the levels for granting credit are more opaque, which makes it more difficult to evaluate the loans, the evolution of the activity of the guarantee systems is slower because it requires greater assets due to the risk of default. In the context of a limited budgeted guarantee system, a deficient financial reporting framework blocks the effective deployment of the system.

The shared information infrastructure is not related to consistently guaranteeing policy development. The presence of public records (PUBREG) or private bureaus (PRIBUR) is not related to the importance of policy guarantees by a country. This re-

sult does not confirm our H2, thus implying that they are not a determining factor in the development of such policies.

However, the models show how guarantee policies have achieved greater development in legal environments where the legal protection of credit rights is less due to the slowness in the achievement of court judgments (TRENF), as we anticipated in our H3. This effect displays a substitutable use of the development of the national system of guarantees against the development of a more effective justice system. The literature suggests that the reforms of the judicial system are slower than other reforms related to the information environment (Beck *et al.*, 2009; de la Torre *et al.*, 2013). Therefore, the substitutive character of guarantees against the level of protection of the legal rights allows governments to combine both reforms for better improvements.

Our results also show how the development of guarantee systems was better in countries with lower levels of income per capita (GDPCAP). This evidence was also supported by Beck *et al.* (2010), in that the policy has been used as a mechanism to facilitate the development of society through the development of its SMEs. On the other hand, in countries with higher levels of interest rate spreads (IRS), we observed a lower development of the system of guarantees. Therefore, as the information system becomes more efficient, with minor differences (IRS), the extension of guarantees is superior.

5. Conclusions

Guarantee schemes are a set of measures to address the credit restrictions to SMEs; among this set of measures, we studied the complementary effect of the policy of guarantees against other methods of strengthening the financial system. Our results highlight the complementary effect of those measures that seek to mitigate the asymmetric information. The development of the activity of guarantees requires managing the asymmetric information, such as credit institutions, and dealing with the requirement of sustainability. For this reason, in systems with higher levels of information and more efficiency, the development of guarantee schemes can be more expansive.

The outcomes also reveal a substitutive effect of measures to improve the protection of credit rights. In particular, this refers to the efficiency of the judicial system to resolve disputes in relation to the recovery of claims. Thus, in most inefficient systems, guarantee policy development has been greater and vice versa.

These results are important for policy makers because they show how the promotion of guarantee schemes must be consistent with the development of other measures of strengthening the financial infrastructure. Moreover, the introduction or reinforcement of a system of guarantees must be accompanied by the reform of the system of information and the institutions that share the information of borrowers. The deployment of the guarantee policy has been used as an alternative to the reform of the framework of legal rights through an improvement in the judicial response. Therefore, they are substitute measures among themselves, and a system of guaran-

tees can be a measure that provides enough time while the coordination of the judicial system is improved.

Among the limitations of our study, we underline the partial character of the outreach in the evaluation of the guarantee policy. There is a fairly broad multilateral consensus (World Bank, 2015; OECD, 2017, among others) that the measurement must include other metrics, such as financial additionality – how much credit would not be mobilized if had not been granted by the guarantee. However, the lack of measurements of this parameter limited our evaluation exclusively to the outreach of the system.

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