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Resumen

En este trabajo utilizamos datos de más de 5,000 firmas chilenas para investigar si la participación en gremios empresariales aumenta la probabilidad de invertir en I&D. Al abordar la endogeneidad de la participación mediante un modelo Probit bivariado con una variable de exclusión que captura el entorno de confianza entre las empresas, encontramos que dicha probabilidad aumenta en un 27%. Este efecto es heterogéneo para el conjunto de firmas. Formar parte de una asociación gremial aumenta la probabilidad de invertir en I&D en un 30.8% para las PYMES y en un 43.9% para aquellas compañías que presentan restricciones financieras importantes. Nuestra evidencia es consistente con la idea de que la asociatividad puede ayudar a las PYMES a reducir la brecha en innovación y/o aliviar sus problemas financieros.

Abstract

In this paper, we use data for more than 5,000 Chilean companies to investigate whether participation in business association increases the probability of R&D investment. Dealing with the endogeneity of participation through a bivariate Probit model with an exclusion variable that captures the trust environment among firms, we find that this probability increases by about 27%. This effect is heterogeneous across firms. Participation increases the probability of R&D investment by 30.8% for SMEs and by 43.9% for those companies with severe financial constraints. Our evidence is consistent with the idea that associativity may help SMEs to close the innovation gap and/or to alleviate financial problems.

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1. Introduction

The debate surrounding the role of business associations in a nation's economic development is a topic that remains unsettled. On one hand, authors have highlighted the negative effects, especially for those associations involving large and established companies because it favors market concentration and prioritizes the particular interests of their members (Smith, 1776; Olson, 1982; Schmiteer and Streeck, 1999). On the other hand, positive results have also been observed, as business associations have made it possible to jointly solve market failures in developing economies (Doner and Schneider, 2000) or enhancing the flow of spillovers within industrial districts (Molina-Morales and Martínez-Fernández, 2010).

A related underexplored research question is whether this type of association enhances or not the innovative performance of the member firms. A negative relationship is expected whether business associations are used to maximize non-productive rents due to the ease they provide for collusion and coordinated lobbying to protect their interests. Following Arrow (1962), this would impede innovation due to the lower market competition. A positive view for participation is based on evidence that the generation of networks among companies facilitates cooperation, access to new knowledge, improves the use of already-acquired knowledge, and allows access to new sources of financing (Kogut and Zander, 1992; Lane & Lubatkin, 1998;Trigilia, 2001; Tsai, 2000; Pittaway et al, 2004). Doner and Schneider (2000) suggest that joint work between firms can help to address market failures. The interaction with other companies is considered a strategic resource that directly influences the firm´s capabilities and present and future performance (Andersson et al, 2002; Molina-Morales and Martínez-Fernández, 2010). Consistent with these ideas, Dakhli and De Clercq (2004), using country-level data, find a positive relationship between overall

associativity and innovation. Thus, there are several reasons why participation in business associations could improve innovation performance.

In this paper, we employ data for more than 5,000 Chilean companies looking at the impact of participation in business association on the probability of investing in R&D. To deal with the endogeneity of participation, we estimate a bivariate Probit using the incidence of unfair competition as an exclusion restriction. We argue that unfair competition negatively affects the propensity to belong to a business association, as it reflects a lower level of trust among firms that discourages collective action. Our estimations indicate that participation increases the probability of R&D investment by about 27 percent. This effect is heterogeneous across firms. It is significant for Small and Medium-Sized Enterprises (SMEs), and estimated in 30.8%, but not for large firms. This would be consistent with the idea that small firms would benefit more from association due to, for example, the high cost of innovation and general lack of knowledge. Ther are also heterogeneous effects associated with the existence of financial constraints. Our results indicate that for companies with severe financial constraints, participation in business associations increases the probability of investing in R&D by 43.9%.

This research aims to contribute to the literature on determinants of innovation by providing novel evidence whether participation in business associations affects the likelihood of engaging in R&D. This has been a topic under researched. Another contribution is the consideration of the heterogeneous effects of participation for studying the potential mechanisms. We find that SMEs and financially constrained firms are most likely to invest in R&D due to their participation in business associations, suggesting that closing technology gaps and reducing financial constraints could explain the positive impact of participation on R&D investment.

The paper is organized as follows. The next section introduces the data. Section 3 presents our empirical strategy. In section 4, we discuss the results obtained. The conclusions and some implications are discussed in section 5.

2. Data

In this paper we use firm-level data for 2017 from the Fifth Longitudinal Business Survey (ELE-5) developed jointly by the National Statistics Institute and the Studies Unit of the Ministry of Economy of Chile. The total sample consists of 5,437 private firms and is representative by company size, covering micro all the way to large firms, and by economic sector.

While the survey is not oriented towards characterizing the innovative performance in depth, there are basic questions on R&D investment. The Innovation Survey, which is similar to the Community Innovation Survey, characterizes the R&D process in more detail, but lacks information about participation in business associations. For this reason, we use ELE-5 instead of the Innovation Survey.

From ELE-5 we use the question on R&D activities as our innovation measure. We acknowledge that R&D is an input for innovation, not necessarily an outcome. However, this assumption has been extensively used in the literature and several papers have found that R&D investment affects innovation (Crépon et al 1998). We define a binary variable that takes the value of 1 if the firm answer they have carried out basic research, applied research, or experimental development activities in the past two years, and 0 if not. Similarly, for participation in business associations, we use the following responses from the question on association: reporting participation in industrial associations, federations, confederations, and/or chambers of commerce gets the value of 1 and 0 otherwise.

In Table 1, we show descriptive statistics for the whole sample and for members of business associations. There is a positive correlation between participation and R&D; those in business associations have a higher propensity to engage in R&D activities (32%) compared to the total sample (22%). It is important to note that participating firms are older, have a larger number of employees, face a higher number of competitors, are more export oriented, and have more foreign capital.

Figure 1 shows the positive relationship between participation and R&D across all firm sizes. For every segment, we find that participating firms are more likely to invest in R&D. In the case of large firms, almost 40% of the participating firms invest in R&D. In contrast, less than 30% of non-participating firms invest in R&D. In the case of micro enterprises, the percentage of participating firms investing in R&D is almost 20%, compared to 10% in non-participating firms. Note that participation in business associations also increases with firm size.

In Figure 2 we provide evidence of the positive relationship between associativity and innovation. Firms are asked in the survey about their reasons for joining business associations. We calculate the incidence of the positive answers to the following two reasons: “for developing new products” and “for developing or purchasing new technologies. For both variables, we find that participating firms are more likely to declare that developing innovations is a relevant reason for joining business associations, which gives some support to our hypothesis that associativity can have a positive impact on R&D decisions. In the next section, we detail the methodology for empirically analyzing the impact of participation on R&D investment.

3. Empirical Strategy

To study the effect of participating in business associations on the likelihood of conducting R&D activities, we employ a probit model with the following equation:

$$\boldsymbol{Pr(RD_i = 1) = \Phi(\alpha Ba_i + \beta X_i + u_i)}$$

The probability of investing in RD_i depends on Ba_i , i.e., whether or not the firm participates in business associations. X_i is a vector of control variables and u_i an error term. The expected sign for the parameter α may be positive or negative, because participation in business participation could have an ambiguous impact on innovation. In the case that participation was aimed at sharing knowledge, cooperating in joint projects, and/or relaxing financial constraints, the impact would be positive. In the case that business associations favor rent seeking behavior, incumbent protection, and reduced competition, we would expect a negative impact on innovation.

We must deal with endogeneity issues. Both investment in R&D and participation are endogenous. In fact, when a company engages in R&D, it may also affect its propension for participating in business associations, as decision-makers may be interested in addressing the challenges posed by innovation through experience and cooperation with other firms. If the problem of endogeneity is not addressed, the parameter for participation in the probit estimation will be inconsistent and biased.

To address endogneity, we utilize a biprobit estimation, which was employed, among others, by Savignac (2008) to analyze the impact of financial restrictions on innovation. This methodology enables the estimation of equations where both dependent variables are dichotomous. The model specifically allows for the simultaneous estimation of two equations, assuming that the error terms are normally distributed for both.

A Wald test is performed for the hypothesis that the correlation between the errors of both equations is cero. If this hypothesis is not rejected, the equations can be estimated separately. On the other hand, if the correlation is different from zero, it can be concluded that the model with both equations should be estimated simultaneously.

However, a second element is needed for a proper estimation of the causal effect attributable to participation. To this end, the model requires an exclusion restriction, i.e., a variable affecting the participation in business association, but not the R&D decision. This is the Z variable in the second equation below.

$$\boldsymbol{Pr(RD_i = 1) = \Phi(\alpha BA_i + \beta X_i + u_i)}$$

$$\boldsymbol{Pr(BA_i = 1) = \Phi(\delta Z_i + \beta X_i + \varepsilon_i)}$$

To find this exclusion restriction, we look for some potential determinants of participation. We hypothesize that trust should affect participation and a proxy variable for that concept can be constructed using survey information. In particular, we use the response regarding “at what extent unfair competition affects the firm.” We hypothesize that the larger the perceived unfair competition, the lower trust and therefore participation.

The variable "Unfair Competition" takes the value of 1 when is considered as "very important," 2 when the problem is "important," and 3 when it is "not very important" or "not important at all." We multiply the variable by -1 and thus a higher value of this new variable means that unfairness is more relevant. We expect a negative relationship between unfair competition and participation in business associations. In Figure 3, we illustrate this inverse relationship between unfairness and participation. The average unfairness is lower for those participating than for non-participating firms, and the difference is statistically significant.

4. Results

Our main results are shown in Table 2. In the first column, we introduce commonly used variables for estimating the determinants of the probability of R&D investment and the results are in line with previous findings in this literature.[1] We find that younger, larger, and exporting firms are more likely to invest in R&D. In contrast, foreign ownership and the quantity of competitors do not seem to affect R&D decisions. In the second column, we include the participation variable, and we find a positive impact on R&D, as expected. Moreover, it can be observed that its inclusion does not alter the magnitude and direction of the other variables included in the model.

In column 3, we present the results of the bivariate Probit. In panel B, the findings for participation in business associations show a negative and highly significant impact of the unfair competition variable. Also, the correlation coefficient for the errors in both equations is significant, providing support to the bi-probit estimation. Other variables that positively affect participation are size, age, the number of competitors, foreign ownership and export status.

Regarding the relationship between participation in business associations and R&D, the results in panel A indicate that participation has a positive and significant impact on investment. Also, appreciated that the parameter is very large in magnitude compared to the previous finding in the probit estimation. Then, it can be inferred that not addressing endogeneity generates a large underestimation of the impact of participating in business association. Also, we find that the parameters for the control variables maintain their sign and statistical significance, with minor variations in their magnitude.

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1 These results are also consistent with previous findings for Chile provided by, among others, Crespi and Katz (1999), Benavente (2005), and Crespi and Zuñiga (2011).

Heterogeneous Effects and Potential Mechanisms

We explore some of the mechanisms behind our results. We consider two dimensions: size and financial constraints. Regarding firm size, we expect a positive and higher impact for SMEs. First, given the innovation and the productivity gaps in respect to large firms, we hypothesize that SMEs can obtain more benefits from associativity than large firms. Second, large companies may use business associations with reasons outside of enhancing innovation performance. Due to their size, they may be more interested in and more able to influence public policies and regulations to impede higher competition.

Another reason for expecting heterogenous results is related to financial constraints. In the case that the associativity contributes to improved credit access or the financing of joint projects, we should expect a higher participation impact on financially restricted companies. There is previous evidence for Chilean firms, following the work by Savignac (2008) for French firms, that difficulties in accessing credit inhibit innovation to a large magnitude (Álvarez and Crespi, 2015). The qualitative evidence is also consistent with this idea. According to the last Chilean Innovation Survey, the most important obstacles to innovating are: (1) innovation cost too high, (2) lack of internal financial resources, and (3) lack of external financing (Ministry of Science, Technology, Knowledge, and Innovation, 2022).

To look at the impact by size, the sample was divided between those companies that have sales over 100,000, i.e. *Unidades de Fomento* (UF), which in Chile are classified as large enterprises. The rest were grouped as SMEs.[2] The model was estimated separately for both groups

[2] The *Unidad de Fomento* or UF is a unit of account used in Chile that is adjusted daily for observed inflation. The definition of size based on sales used in this work is based on the definition adopted by the Ministry of Economy of Chile (2019).

of firms. The results of the Bi-Probit are presented in columns 4 and 5 for large firms and SMEs, respectively.

The results show that for the sample of large firms, the impact of participation in business associations is not significant. In contrast, belonging to a business association stimulates SME's investment in R&D. For the rest of the variables included in the estimation, their impact is not significant for large firms. In contrast, for SMEs, we find that younger, larger and exporter firms are more likely to invest in R&D.

Regarding the relationship between unfair competition and participation, the results are similar for both firm segments. The findings indicate that a higher perception of unfairness limits associativity among firms, and the effect seems to be larger for SMEs. There are also some differences in the impact of other variables for both groups. For the SMEs, we find that age and foreign ownership do not affect participation as they do for large firms.

For looking at the impact based on the severity of financial constraints, we estimate the model for three groups of firms. We divide the total sample into categories based on whether lack of funding is a "very important," "important," or "not at all important." Table 3 shows the three Probit regressions corresponding to the three groups of the firms. For each estimation, the results indicate that the existence of unfair competition has a negative and significant effect on participation. Looking at the R&D equation, our findings indicate a positive effect of participation on R&D investment for all three groups, but the impact is larger and significant for firms with the highest financial constraints. For the other two groups, we also reject the hypothesis that errors are correlated between both equations. Thus, our results dealing with endogeneity of participation, are more appropriate for the most financially constrained firms.

Given that formal participation in a business association is found to increase the likelihood of R&D activities, the next step is to quantify the effect. We calculate the average treatment effect at the population level (ATE). We follow the methodology proposed by Wooldridge (2017), which involves obtaining the average treatment effect and calculating the standard error through bootstrapping.

As presented in Table 4, the participation of firms in business associations boosts the probability of engaging in R&D by 27% when considering the total sample. The magnitude of the impact is comparable to the results for Chile of Álvarez and Crespi (2015), where the absence of financial restrictions increases the likelihood of innovation by 32%. For SMEs that are members of business associations, participation increases the likelihood of R&D activities by approximately 31%. The quantification of the effect of association membership on firms with severe financial constraints shows that these participating firms are 44% more likely to engage in innovative activities. Then, we can conclude that the effect os participation is not only significant but also large.

As a robustness check, we use another dependent variable for looking at how participation in business associations affects firms' decisions, specifically the hiring of high-skilled workers. We use a dummy variable taking the value of 1 in the case that the firm hires workers with master or doctoral degrees. The economic rationality behind this estimation is that innovation requires skilled workers. Then, incorporation into a business association enhances innovation and this higher innovation requires hiring highly qualified workers. The results are shown in Table 5 and they are consistent with the idea that participation increases the probability of hiring highly educated workers. In Table 6, we present the marginal impact of participation on the probability of hiring

highly skilled workers. We find that participation increases this probability by 32.2% for the total sample, 42.4% for SMEs, and 44.4% for more financially constrained firms.

5. Conclusions

This work is aimed towards understanding the impact that participating in business associations has on the propensity of Chilean firms to engage in R&D projects. Since there are some negative views about the role of business associations in the economy, due mainly to their political power, we think that it is important to provide empirical evidence about concrete economic effects of them. In particular, if they can contribute or not to the promotion and development of innovative activities in their members.

This study contributes to the literature of determinants of innovation by providing novel empirical evidence on the positive role that formal business associations can play in the innovation system, particularly when they contribute by providing knowledge networks and creating opportunities for financing or even promoting collaboration between members. Additionally, this is the first study to link these types of business institutions to R&D investment in Chile.

Our results show a positive and significant impact of participation in business associations on the likelihood of engaging in R&D. Moreover, when dealing with endogeneity, the effect becomes larger and shows that formal association increases the probability of investment by 27%. When analyzing the effect by firm size, the positive impact is only for SMEs and is around 31%. We find that participation does not affect the probability of investing in R&D for large firms.

Considering the discussion on the role that formal business associations could play in promoting innovation in developing countries, it is important to consider certain factors. Firstly, the impact seems to be of great magnitude. If participation greatly increased, this could, naturally, have

general equilibrium effects that may reduce the aggregate impact. However, our findings indicate that associativity seems to be a relevant mechanism for increasing R&D investments at the current levels.

Secondly, the results by size suggest that the greatest benefits are experienced by SMEs. This can generate important opportunities for public policy. Since the processes of investment in innovation are long-lasting, human resource demanding, and involve a high degree of uncertainty regarding the outcomes that can be obtained, it can be a bigger risk for SMEs. If formal associations can help small businesses to alleviate these problems, there is value in promoting and supporting the formalization of these institutions through public policies.

Finally, the outcomes obtained by dividing the sample based on the level of financial constraints shed light on the fact that participation in business associations allows for constrained firms to continue to innovate. This implies that business associations can provide support in solving market failures in developing economies.

Our finding of some novel results about participation in business associations suggests that additional work needs to be done in order to better understand the mechanisms behind this positive relationship. One possible reason could be a signaling effect for financial institutions or government entities. Innovation financing is lower than the optimum because of the information asymmetries between firms and financiers, so participating formally in an association could be useful for signaling firm quality and commitment. This is one potential explanation for our findings but other mechanisms such as access to knowledge and networks could also be possible, and all deserve future research.

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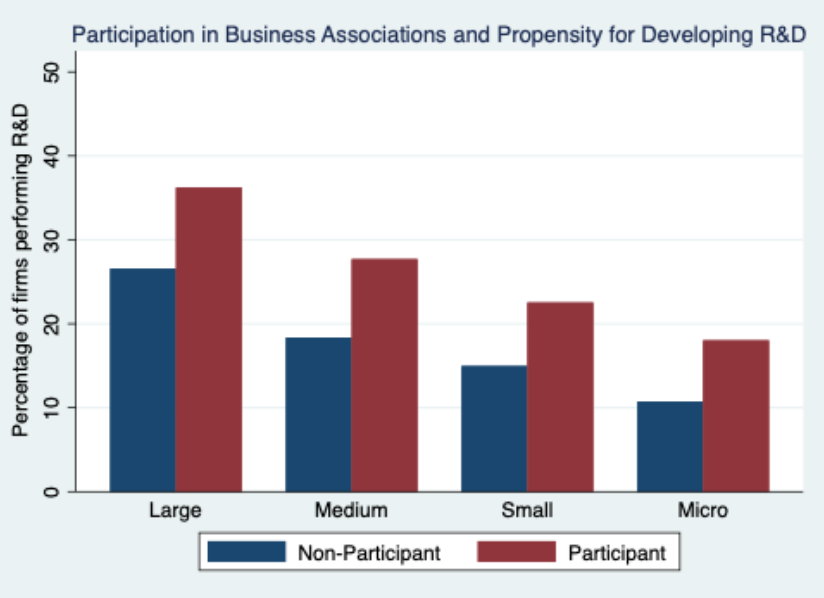
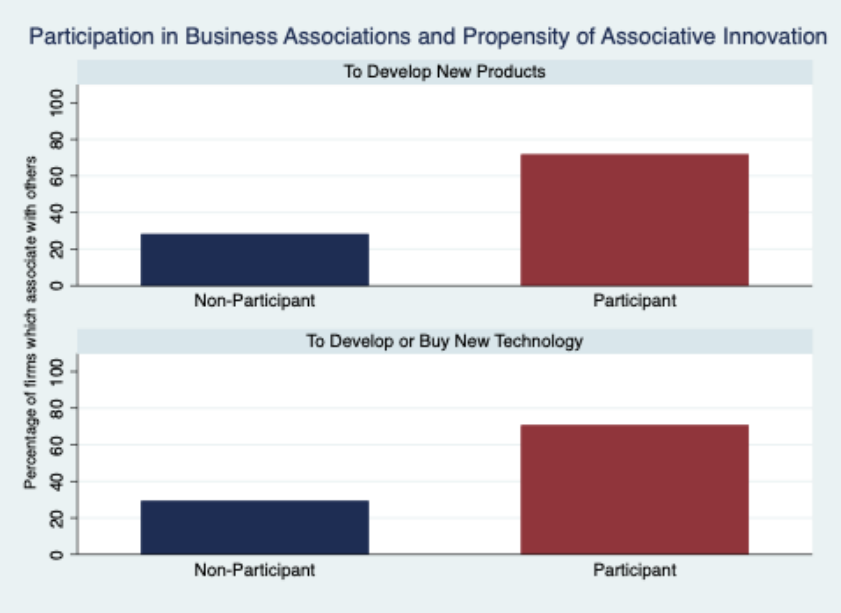
Figure1: Participation in business associations and engaging in R&D



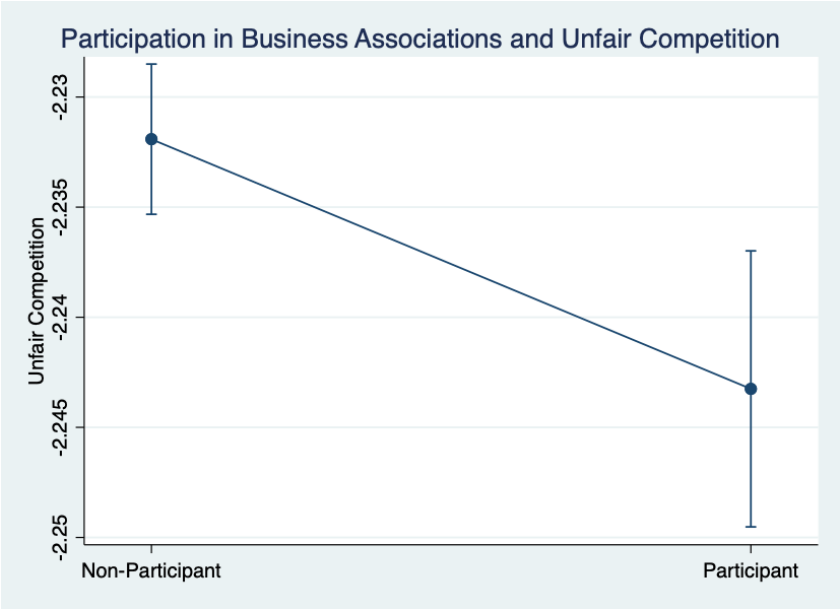
Source: Own elaboration based on the Fifth Longitudinal Business Survey

Figure 2: Participation in business associations and propensity to associativity for innovation



Source: Own elaboration based on the Fifth Longitudinal Business Survey

Figure 3: Participation in business associations and Unfair Competition



Source: Own elaboration based on the Fifth Longitudinal Business Survey

Table 1: Descriptive Statistics

Variable	N	Mean	SD	Min	Max
Complete Sample					
R&D	5,437	0.22	0.41	0	1
BA	5,437	0.23	0.42	0	1
Age	5,437	17.86	12.63	1	190
Number of Employees	5,437	5.53	1.98	0	13.39
Number of Competitors	5,437	3.75	1.28	1	5
Foreign Capital	5,437	0.09	0.29	0	1
Exporter	5,437	0.13	0.34	0	1
Unfair Competition	5,437	-2.24	0.11	-2.70	-2.03
Business Associations Participants					
R&D	1,242	0.32	0.47	0	1
Age	1,242	21.78	16.01	1	190
Number of Employees	1,242	6.65	1.95	0	12.63
Number of Competitors	1,242	3.92	1.22	1	5
Foreign Capital	1,242	0.18	0.38	0	1
Exporter	1,242	0.24	0.43	0	1
Unfair Competition	1,242	-2.24	0.12	-2.70	-2.03

Source: ELE-5 (Ministry of Economy, 2019)

Table 2: Main Results

	Complete Sample			Size	
Research & Development	Probit	Probit	Biprobit	Large	SMEs
BA		0.176*	0.837***	0.865	0.945***
		(0.0948)	(0.279)	(1.026)	(0.338)
Age	-0.0193***	-0.0196***	-0.0202***	-0.000320	-0.0234***
	(0.00376)	(0.00378)	(0.00372)	(0.00518)	(0.00438)
Number of Employees	0.143***	0.136***	0.107***	0.0631	0.0994***
	(0.0239)	(0.0247)	(0.0294)	(0.0652)	(0.0350)
Number of Competitors	0.0363	0.0330	0.0233	-0.0147	0.0233
	(0.0299)	(0.0301)	(0.0300)	(0.0461)	(0.0318)
Foreign Capital	0.128	0.117	0.0640	0.0769	0.0401
	(0.181)	(0.174)	(0.172)	(0.139)	(0.250)
Exporter	0.486***	0.465***	0.391***	0.332	0.366***
	(0.121)	(0.120)	(0.117)	(0.243)	(0.142)
Constant	-1.589***	-1.560***	-1.439***	-1.325***	-1.375***
	(0.168)	(0.170)	(0.184)	(0.513)	(0.205)
Participation in Business Associations					
Unfair Competition			-1.813***	-0.766**	-2.017***
			(0.312)	(0.325)	(0.342)
Age			0.00673**	0.0119***	0.00508
			(0.00314)	(0.00268)	(0.00360)
Number of Employees			0.189***	0.116***	0.161***
			(0.0232)	(0.0249)	(0.0327)
Number of Competitors			0.111***	0.115***	0.111***
			(0.0295)	(0.0302)	(0.0317)
Foreign Capital			0.319**	0.218***	0.257
			(0.145)	(0.0908)	(0.238)
Exporter			0.426***	0.425***	0.369**
			(0.116)	(0.0821)	(0.154)
Constant			-6.718***	-3.736**	-7.041***
			(0.705)	(0.762)	(0.758)
Number of Observations	5,437	5,437	5,437	2,353	3,084
Rho			-0.359**	-0.487	-0.417**
Chi-square			345.8	268	201.7

Robust standard error in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

Table 3: Results by Importance of financial constraints

	Financial Constraints		
Research & Development	Very Important	Important	Not at all Important
BA	1.313***	0.171	0.755**
	(0.443)	(0.746)	(0.384)
Age	-0.0214***	-0.0227***	-0.0159**
	(0.00572)	(0.00697)	(0.00652)
Number of Employees	0.0472	0.119**	0.167***
	(0.0502)	(0.0540)	(0.0468)
Number of Competitors	0.0145	-0.00305	0.0437
	(0.0558)	(0.0655)	(0.0468)
Foreign Capital	-0.127	0.0549	0.126
	(0.369)	(0.346)	(0.216)
Exporter	0.369*	0.521**	0.175
	(0.223)	(0.211)	(0.160)
Constant	-1.075***	-1.252***	-1.946***
	(0.334)	(0.380)	(0.273)
Participation in Business Associations			
Unfair Competition	-1.581**	-1.860***	-1.798***
	(0.618)	(0.555)	(0.493)
Age	0.0134**	0.00758	0.00226
	(0.00553)	(0.00633)	(0.00489)
Number of Employees	0.165***	0.201***	0.202***
	(0.0456)	(0.0430)	(0.0337)
Number of Competitors	0.0409	0.211***	0.0927**
	(0.0610)	(0.0581)	(0.0420)
Foreign Capital	0.728**	0.223	0.348
	(0.294)	(0.221)	(0.223)
Exporter	0.650***	0.208	0.395**
	(0.247)	(0.183)	(0.169)
Constant	-5.913***	-7.245***	-6.623***
	(1.378)	(1.225)	(1.125)
Number of Observations	1,389	1,588	2,460
Rho	-0.601**	-0.124	-0.251
Chi-square	239.6	100.8	153.4

Robust standard error in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

Table 4: Marginal Effects

		Size	**Financial Constraints**
Research & Development	Complete Sample	SMEs	Very Important
BA	0.268***	0.308***	0.439***
	(0.087)	(0.112)	(0.155)
Number of Observations	5,437	3,084	1,389

Robust standard error in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

Table 5: Robusteness Check

		Size		**Financial Constraints**		
Human Capital	Complete Sample	Large	SMEs	Very Important	Important	Not at all Important
BA	1.248***	0.0962	1.589***	1.600***	0.773*	1.409***
	(0.242)	(0.610)	(0.384)	(0.387)	(0.410)	(0.315)
Age	-0.0163***	0.00334	-0.0225***	-0.0223**	-0.0114	-0.0147***
	(0.00393)	(0.00338)	(0.00522)	(0.00875)	(0.00738)	(0.00490)
Number of Employees	0.220***	0.166***	0.184***	0.179***	0.282***	0.219***
	(0.0284)	(0.0332)	(0.0359)	(0.0506)	(0.0464)	(0.0415)
Number of Competitors	-0.0666**	0.0189	-0.0767**	-0.109	-0.0851	-0.0280
	(0.0327)	(0.0352)	(0.0356)	(0.0668)	(0.0709)	(0.0430)
Foreign Capital	0.303**	0.503***	0.0911	0.269	-0.0262	0.463**
	(0.130)	(0.0995)	(0.217)	(0.290)	(0.268)	(0.183)
Exporter	0.292**	0.286**	0.266	-0.121	0.722***	0.183
	(0.136)	(0.120)	(0.183)	(0.183)	(0.252)	(0.140)
Constant	-2.221***	-1.974***	-1.955***	-1.726***	-2.592***	-2.391***
	(0.207)	(0.226)	(0.231)	(0.384)	(0.415)	(0.268)
Participation in Business Associations						
Unfair Competition	-1.662***	-0.745*	-1.873***	-1.368**	-1.641***	-1.766***
	(0.324)	(0.393)	(0.350)	(0.648)	(0.625)	(0.461)
Age	0.00660**	0.0121***	0.00477	0.0127**	0.00742	0.000244
	(0.00316)	(0.00266)	(0.00365)	(0.00555)	(0.00643)	(0.00486)
Number of Employees	0.192***	0.120***	0.163***	0.162***	0.201***	0.206***
	(0.0224)	(0.0243)	(0.0307)	(0.0436)	(0.0411)	(0.0327)
Number of Competitors	0.112***	0.114***	0.110***	0.0396	0.212***	0.0924**
	(0.0293)	(0.0303)	(0.0314)	(0.0608)	(0.0589)	(0.0413)
Foreign Capital	0.340**	0.216**	0.288	0.739***	0.250	0.335
	(0.140)	(0.0902)	(0.227)	(0.278)	(0.221)	(0.217)
Exporter	0.394***	0.421***	0.325**	0.665***	0.146	0.404**
	(0.114)	(0.0829)	(0.148)	(0.229)	(0.183)	(0.167)
Constant	-6.380***	-3.708***	-6.707***	-5.399***	-6.742***	-6.556***
	(0.738)	(0.872)	(0.790)	(1.452)	(1.368)	(1.069)
Number of Observations	5,437	2,353	3,084	1,389	1,588	2,460
Rho	-0.524***	0.0770	-0.716***	-0.722***	-0.283	-0.596***
Chi-square	726.6	253.5	301.9	274	219.7	479.9

Robust standard error in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

Table 6: Marginal effects for hiring high-skilled workers

		Size	**Financial Constraints**	
Human Capital	Complete Sample	SMEs	Very Important	Not at all Important
BA	0.322***	0.424***	0.444***	0.379***
	(0.077)	(0.121)	(0.156)	(0.098)
Number of Observations	5,437	2,084	1,389	2,460

Robust standard error in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

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