

Competencies, Requirements of Internationalization and Use of Non-Financial Public Supports

Miguel M. Torres, Celeste A. Varum, and Mariasole Bannò

Abstract—Particularly in times of budget constraints, governments must evaluate carefully the public resources they allocate to support private investments by enterprises. With an Heckman selection model applied on data collected in Portugal, this paper tests which variables affect awareness and use by firms of four non-financial types of internationalization support measures. The results suggest that firms' competencies positively affect awareness and negatively affect the use of public support. Otherwise, the requirements of the internationalization projects positively affect both the awareness and the use of public support.

Index Terms—Internationalization requirements, public supports, Heckman selection model.

I. INTRODUCTION

In spite of the recognized importance of internationalizing their activities, many companies, small and medium enterprises (SMEs) in particular, are still focused on their domestic market. Indeed, internationalization is a complex process, demanding from firms substantial resources to deal with the several barriers, uncertainties, and complexities.

During the last decades, many countries launched programs to support the international growth of their firms. The internationalization of domestic companies is understood as a determinant of competitiveness of developed and developing countries, stimulates foreign exchange revenues, employment, innovatory capacity and the economic development of home economies [1, 2]. Moreover the existence of some market failures (e.g., information asymmetries) justify the emergence of firms' difficulties that governmental support aims to cover [3]. The promotion of internationalization specifically through non-financial measures seeks to alleviate any shortfalls in competencies when a company embraces internationalization, entering environments that are often quite distant in geographical, cultural and institutional terms [4].

Information provision, consulting and technical assistance, and measures to support personnel exchange and firms participation in trade fairs and state missions encompass the main types of measures used to promote or otherwise affect exports and foreign direct investment (FDI), these measures hereafter are considered as non-financial public support [5, 6, 7].

Considering their wide range and the scale of the resources

involved, it urges to evaluate the use and efficiency of such measures. Indeed, many firms still remain focused on their domestic markets and, as such, do not need to use existing public support for internationalization. Beyond the ineligibility issue, which may exclude firms without internationalization activities, the participation on public support depends on "awareness" and on firms wish to participate and to use it.

Following this line of thought, the present study tests with a Heckman selection model a general framework to explain the awareness and use of non-financial public support to internationalization. The next section discusses the determinants of awareness and use of non-financial public support for internationalization activities. Sections 3 and 4 describe the methodology and results. The conclusions are presented in section 5.

II. THE USE OF NON-FINANCIAL PUBLIC SUPPORT IN ACTIVITIES OF INTERNATIONALIZATION

A. Awareness: A Necessary Condition of Use

The more skilled firms (in terms of international experience, managerial capabilities, and human capital) as well as firms that embrace in more demanding projects of internationalization, for example, involving higher number of export markets or of FDI locations, have higher probability of being aware of non-financial public support for internationalization.

The awareness about the existence of available non-financial public support for internationalization depends to a large extent on the firm's access to external information. The later arrives to the firm either in documentation, for example, through mailing lists of governmental agencies or of business associations, through seminars and training, media or through employees personal contacts. Bigger and older firms, as well as firms with higher experience with international markets may have a wider network of relevant established links, and, consequently register an intense inflow of information and knowledge related to public support to internationalization. Doing so, larger and older firms have more interfaces with the external environment, they have more resources to deal with the complexity of promotion programs, and size confers information advantages that arise from the epidemiological characteristics of information transmission. Additionally, bigger firms may have a greater number of professional managers and relationships with professional networks, which can produce fewer difficulties regarding access (indirectly) by governmental agencies. Hence, bigger and older firms have higher probability of being aware of existing non-financial public support.

Firms with more skilled human capital may be more aware

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about existing public support. Skilled human resources are likely to be connected to relevant networks, more open to the external environment, and more able to understand and treat the information available externally. Thus, firms with more skilled human capital are expected to be more aware about the existing non-financial public support. According to these lines of reasoning, we formulate the following hypothesis:

Hypothesis 1A: Awareness about non-financial public support to internationalization is more noticeable in firms with high competencies.

Along the same line of reasoning, firms embracing more demanding internationalization processes search more intensively for external support, which increases firm awareness about the existence of non-financial public support for internationalization.

Hypothesis 1B: Awareness about existing non-financial public support to internationalization is more noticeable in firms embracing more demanding internationalization processes.

In addition to the above-mentioned issues, other may affect the degree to which firms are aware about existing non-financial public support. Innovative intensity, ownership and location are just some of these matter.

Innovative firms, which have probably been more in contact with other type of public support in the past, have higher probability of being aware about public support to private investment in the present and future.

Companies with internal financial constraints seek externally ways to overcome their financial limitations, and hence maybe more aware about existing public support [8].

In terms of ownership, foreign-owned firms (FFs) are more distant culturally and institutionally from national governmental agencies (which analyze the requests for support) than domestic firms (DFs) [9]. Such distance may result in lower awareness of non-financial public support in the home economy. Otherwise, family-owned firms are largely SMEs and size is expected to be negatively related to awareness. Firms located in central areas benefit from economies of agglomeration that may increase their awareness of non-financial public support for internationalization activities [10].

B. The Use of Non-financial Public Support

Taking into consideration all the hazards associated with international involvement, firms with lower internal competencies and involved in more demanding internationalization strategies are expected to depend on non-financial public support in a higher extant. Firms with higher managerial capabilities and firms with a higher level of qualifications of their human capital and firms with greater international experience are more likely to have the relevant competencies to follow international opportunities autonomously, and use less the external public support available.

Hypothesis 2A: Firms with less competencies tend to use more non-financial public support for internationalization.

Along the same line of reasoning, internationalization processes involving larger number of export markets and or FDI locations are more complex increasing the chance or using external support.

Hypothesis 2B: Firms with more demanding

internationalization processes use more non-financial public support for internationalization.

In addition, one must consider aspects related to firm ownership (the share of foreign and family capital) are bound to affect the use of non-financial public support. Family-owned firms pursue more independent strategies than more diversely held private firms [11].

Foreign-owned firms tend to be more distant culturally and institutionally from national governmental agencies than domestic-owned firms and, consequently, they suffer more than domestic-owned firms from the bureaucratic process of access to non-financial public support and benefit from the external knowledge and resources supplied by parent firms. Based on these issues, we assume that non-financial public support is less used by foreign-owned firms. In line with the difficulties involved in financing internationalization projects, firms with greater financial constraints may lack internal funds to create, develop or to acquire competencies. Hence, more indebted firms have a higher probability of searching for external support. Finally, it is expected that firms located in the periphery may use more non-financial public support than firms located in central areas.

III. DATA AND METHODOLOGY

Considering the hypotheses formulated above, this paper searches for the determinants of the awareness and use of a set of non-financial measures of public support for internationalization. We selected data from a small country during a specific period of time to get a pilot sample. Portugal is an interesting economy to analyze the issue for three main reasons. In the last two decades there have been increasing competitive pressures on Portuguese firms to internationalize. Apart from the efforts through export activities, the Portuguese outflows of FDI experienced outstanding values between the early 2000s and 2010.

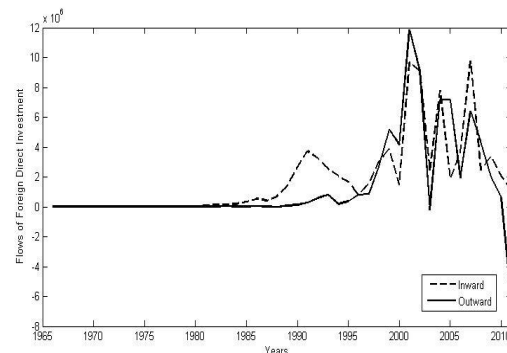


Fig. 1. Portuguese Inward and Outward Flows of FDI, 1965-2010 (Source: Bank of Portugal).

Firms searched mainly new markets. The host countries with larger number of Portuguese subsidiaries are Spain, Angola, Brazil, Romania and Poland. Despite the considerable adaptation capacity of Portuguese firms, they report some barriers related with the disagreements with partners of investment and linguistic differences in the Eastern European countries. Second, a number of measures to support internationalization have been in place at least since 1994. And, finally, evaluation of such measures are lacking, as far as to our knowledge. From a search through the law it was possible to identify a number of measures of

support. In this paper we focus the analysis regarding the awareness and use of four types of non-financial measures:

- 1) Public support for participation in trade fairs and state missions, identified in law 560/2004 and law decree 1463/2007;
- 2) Public support through training and consulting services, identified in law 560/2004;
- 3) Public support through informational services, identified in law 560/2004 and law decree 245/2007;
- 4) Public support through international exchange programs for human resources, identified in law 1103/2008;

Data was collected through a questionnaire. It covers issues related to the use and awareness of the measures as well as firm's competencies and requirements of internationalization. The questionnaire development follow three steps: first, the relevant literature was reviewed to identify measures of the constructs; second, to have content validity, two consultants and five managers read the questionnaire and provided inputs for revision; third, the questionnaire was pre-tested by personal interviews with ten firms. Between December 2009 and May 2010, we received 441 responses (10% of firms contacted).

The empirical analysis follows a two-step process. The first step deals with the firms' awareness of public support directed to FDI activities; the estimated probability of awareness is used in the second step as a regressor to analyse the likelihood of using public support for FDI activities. We apply the Heckman selection model (HSM), a two-stage procedure that corrects for sample selection bias in regression analysis. This model estimates all parameters in two steps: the selection equation and the outcome equation. The selection equation predicts the likelihood of each independent variable's affecting awareness, and the output equation predicts the use of public support considering the selection equation [12].

Following the discussion in Section 2, the independent variables included in the model are into two main groups: firm competencies and requirements of internationalization. In addition we considered the potentially relevant control variables.

We considered the following proxies of firm competencies: export experience, measured by the number of years of export activity and firm FDI experience; size measured through the natural logarithm of the number of employees of each firm in 2009; age measured in years; human capital measured by the ratio of the number of employees with bachelor's degree to total of employees in the year 2009.

The export diversification was measured by the number of markets to where the company exported in 2009; the number of FDI locations was measured by the number of markets where the firm is present in 2009. These last two measures are intended to capture the requirements of the internationalization process of the firm.

Along with the variables considered above, we included in the model the following controls: innovative intensity measured by the weight ratio of research and development expenditures to the total sales in the year 2009; family ownership (a binary variable, 0 if not family-owned and 1 if family-owned); foreign ownership (a binary variable, 0 if not foreign-owned and 1 if foreign-owned); financial constraints

measured by the weight ratio of liabilities to assets in the year 2009; and the location (a binary variable, 0 if located in a central region and 1 if located in a peripheral region).

Table I shows that firms included in the sample have on average 12 years of export experience, 2 years of FDI experience, and 24 years of existence. Firms have on average 528 employees. On average, 24% of human resources of the replying firms have a bachelor's degree and the innovative intensity is of about 4%. The number of export destinations markets is around 10 and of 1 for FDI locations. Regarding the control variables, 28% of the firms are family-owned, 10% are foreign-owned, the ratio of indebtedness is on average of 43%, and 76% of the firms are located in peripheral regions.

TABLE I: SUMMARY STATISTICS

Variables	Number	Variables	%
Years of export experience	12	Human capital	23.1
Years of FDI experience	2	Innovative intensity	4.3
Size (number of employees)	528	Family ownership	27.7
Age (n. of years)	24	Foreign ownership	9.8
N. of export markets	10	Financial constraints	43.1
N. of FDI locations	1	Peripheral location	76.1

IV. RESULTS

Overall, the measures under focus are to a large extent known by the respondents. Taking in consideration that measures are widely known, we verify that, except public support through informational services, very few firms used these measures.

TABLE II: THE USE AND AWARENESS OF NON-FINANCIAL PUBLIC SUPPORT

Measure	Use %	Awareness %
Public Support for Trade Fairs and State Missions	32.4	85.5
Public Support Through Training and Consulting Services	34.2	84.1
Public Support Through Informational Services	61.2	88.0
Public Support For Exchange Human Resources	22.2	73.0

In terms of support to participate in trade fairs and state missions, we found that firms' competencies, in particular their export experience and size, are negatively associated with the use of this measure. Firms' competencies seem to be positively related to awareness. Firms with a high level of export and FDI experience present a high probability of being aware of this support. Additionally, foreign-owned firms have a lower probability of using public support than domestic-owned firms.

Firms' competencies, in particular the export experience is negatively associated with the use of public support through training and consulting services. The model also shows that FFs have a lower probability of using public support than DFs. Otherwise, firms' competencies in terms of size and human capital seems to be positively related to awareness. Larger firms and those with a higher human capital present a high probability of being aware of this support.

Firms' competencies, in particular their export experience, are negatively associated with the use of public support through informational services. Otherwise, the model shows a positive relation between the number of FDI locations, which proxy for the internationalization requirements, and the use of public support through informational services.

Additionally, foreign-owned firms have a lower probability of using public support than domestic-owned firms. Firms with more competencies (larger and with more international experience), and domestic firms, have higher probability of knowing about the existence of this measure.

Firms with higher competencies, in particular those with higher export experience, seems to have benefits less from existing programs for exchanging human resources. However, for this measure, the qualification of human resources seems to be related to their use. Competencies also increase awareness about the measure.

Hence, and overall, returning to our main hypotheses, the results obtained show that competencies increase awareness about the measures, which is a necessary condition of use. However, higher competencies reduce firms' use of non-financial public support. The evidence, in what concerns firm competencies, support Hypothesis 1A and 2A. Firms' competencies seem to be positively related to awareness. Firms with a higher level of export and FDI experience show higher probability of being aware of the public support. Tables III and VI also show that firms' competencies, in particular their export experience and size, are negatively associated with the use of public support. Additionally, foreign-owned firms have a lower probability of using non-financial public support than domestic-owned firms.

As far as the hypotheses 1B and 2B, no robust findings can be derived regarding the requirements of the internationalization process for awareness. However, the number of investment markets appears significantly fostering the use of public informational services and of programs that promote international exchanges of personnel (support 2B).

TABLE III: PUBLIC SUPPORT FOR PARTICIPATION IN TRADE FAIRS AND STATE MISSIONS

Variable	Coefficient	(Std. Err.)
Outcome equation (U_ISM1)		
Firm export experience	-0.009***	(0.003)
Firm FDI experience	0.007	(0.006)
Firm age	-0.002	(0.002)
Number of employees	-0.000***	(0.000)
Financial constraints	0.212	(0.145)
Qualification of human resources	0.142	(0.101)
Export Diversification	-0.002	(0.002)
FDI Diversification	0.001	(0.020)
Family ownership	0.007	(0.072)
Foreign ownership	-0.164***	(0.077)
Peripheral location	-0.068	(0.166)
Intercept	0.689***	(0.125)
Selection equation (A_ISM1)		
Firm export experience	0.021***	(0.007)
Firm FDI experience	0.137*	(0.082)
Firm age	0.006	(0.005)
Number of employees	0.000	(0.000)
Financial constraints	-0.342	(0.402)
Qualification of human resources	0.022	(0.264)
Export Diversification	-0.001	(0.004)
FDI Diversification	0.141	(0.118)
Family ownership	-0.183	(0.193)
Foreign ownership	0.009	(0.209)
Peripheral location	0.303	(0.191)
Intercept	0.511	(0.315)
The inverse Mills ratio		
Estimated selection coefficient (λ)	-0.564	(0.171)
Correlation coefficient (ρ)	-1.000	
Adjusted standard error (σ)	0.564	
Average Mills value (τ)	0.354	
Average truncation effect (ζ)	-0.200	
N		
	419	
$\chi^2_{(11)}$		
	37.79	
Significance levels : * : 10% ** : 5% *** : 1%		

TABLE IV: PUBLIC SUPPORT THROUGH TRAINING AND CONSULTING SERVICES

Variable	Coefficient	(Std. Err.)
Outcome equation (U_ISM2)		
Firm export experience	-0.006***	(0.002)
Firm FDI experience	0.005	(0.005)
Firm age	-0.002	(0.002)
Number of employees	0.000***	(0.000)
Financial constraints	-0.033	(0.129)
Qualification of human resources	0.016	(0.090)
Number of export markets	0.001	(0.001)
Number of investment markets	0.015	(0.017)
Family ownership	-0.043	(0.062)
Foreign ownership	-0.275***	(0.067)
Peripheral location	0.080	(0.064)
Intercept	0.452***	(0.127)
Selection equation (A_ISM2)		
Firm export experience	-0.003	(0.005)
Firm FDI experience	0.042	(0.047)
Firm age	0.003	(0.005)
Number of employees	0.001***	(0.000)
Financial constraints	-0.488	(0.393)
Qualification of human resources	0.448*	(0.266)
Number of export markets	-0.014	(0.005)
Number of investment markets	0.078	(0.098)
Family ownership	0.256	(0.190)
Foreign ownership	-0.081	(0.209)
Peripheral location	0.194	(0.196)
Intercept	0.566*	(0.309)
The inverse Mills ratio		
Estimated selection coefficient (λ)	0.213	(0.213)
Correlation coefficient (ρ)	0.453	
Adjusted standard error (σ)	0.471	
Average Mills value (τ)	0.472	
Average truncation effect (ζ)	0.101	
N		
	419	
$\chi^2_{(11)}$		
	46.15	
Significance levels : * : 10% ** : 5% *** : 1%		

TABLE V: PUBLIC SUPPORT THROUGH INFORMATIONAL SERVICES

Variable	Coefficient	(Std. Err.)
Outcome equation (U_ISM3)		
Firm export experience	-0.010***	(0.002)
Firm FDI experience	0.000	(0.004)
Firm age	-0.001	(0.001)
Number of employees	0.000	(0.000)
Financial constraints	0.001	(0.113)
Qualification of human resources	0.079	(0.079)
Number of export markets	-0.001	(0.001)
Number of investment markets	0.035**	(0.014)
Family ownership	-0.065	(0.056)
Foreign ownership	-0.123**	(0.066)
Peripheral location	0.033	(0.057)
Intercept	0.800***	(0.097)
Selection equation (A_ISM3)		
Firm export experience	0.018**	(0.008)
Firm FDI experience	5.098	(0.000)
Firm age	0.000	(0.006)
Number of employees	0.003***	(0.001)
Financial constraints	-0.398	(0.443)
Qualification of human resources	0.210	(0.296)
Number of export markets	-0.006	(0.006)
Number of investment markets	0.025	(0.129)
Research and development intensity	-0.448	(1.139)
Family ownership	-0.220	(0.217)
Foreign ownership	-0.520**	(0.259)
Peripheral location	0.221	(0.225)
Intercept	0.713**	(0.364)
The inverse Mills ratio		
Estimated selection coefficient (λ)	0.158	(0.147)
Correlation coefficient (ρ)	0.369	
Adjusted standard error (σ)	0.429	
Average Mills value (τ)	0.222	
Average truncation effect (ζ)	0.035	
N		
	419	
$\chi^2_{(11)}$		
	65.16	
Significance levels : * : 10% ** : 5% *** : 1%		

V. CONCLUSION

The need for public policy evaluations is more than ever at the top of the governments' agenda. This paper has examined the role of firms' competencies and requirements of internationalization in the awareness and use of public support directed towards internationalization activities, which had not been covered previously.

The results suggested that in the specific case of Portugal, several actions put in place in the last years to promote internationalization are known by firms, but some measures

are scarcely used.

TABLE VI: PUBLIC PROGRAMS FOR EXCHANGING HUMAN RESOURCES

Variable	Coefficient	(Std. Err.)
Outcome equation (U_ISM4)		
Firm export experience	-0.005**	(0.002)
Firm FDI experience	0.001	(0.005)
Firm age	-0.002	(0.002)
Number of employees	0.000	(0.000)
Financial constraints	0.032	(0.137)
Qualification of human resources	0.269***	(0.102)
Number of export markets	0.000	(0.001)
Number of investment markets	0.033*	(0.018)
Family ownership	0.009	(0.066)
Foreign ownership	-0.137*	(0.081)
Peripheral location	0.151**	(0.071)
Intercept	0.071	(0.148)
Selection equation (A_ISM4)		
Firm export experience	-0.004	(0.005)
Firm FDI experience	0.039	(0.034)
Firm age	-0.002	(0.004)
Number of employees	0.000**	(0.000)
Financial constraints	-0.411	(0.350)
Qualification of human resources	0.686***	(0.247)
Number of export markets	0.005	(0.005)
Number of investment markets	0.133	(0.088)
Research and development intensity	1.967*	(1.176)
Family ownership	0.195	(0.170)
Foreign ownership	-0.258	(0.181)
Peripheral location	0.267	(0.173)
Intercept	0.194	(0.276)
The inverse Mills ratio		
Estimated selection coefficient (λ)	0.281	(0.188)
Correlation coefficient (ρ)	0.591	
Adjusted standard error (σ)	0.476	
Average Mills value (τ)	0.659	
Average truncation effect (ζ)	0.185	

N		419
$\chi^2_{(11)}$		24.28

Significance levels : * : 10% ** : 5% *** : 1%		

Hence, it urges to further explore and evaluate why is this so. Does it means that most firms believe to have the necessary competencies to deal with their internationalization investment projects and as such do not see much benefits in using public support? Or does it means that the existing support is not being sufficiently explored by private firms? We suggest that further efforts should be done in order to inform firms about the benefits of using the available support, and in parallel, to ensure that the measures in place are indeed aligned with firms' needs.

This study is just on first step to evaluate the actions of the government and further research can be done. First, other measures, for example financial ones, can be evaluated. It would be relevant to know if the results differ (or not). Another line of research would be to investigate if firms embracing more demanding forms of internationalization (e.g. FDI) indeed use more public support or not. Or, otherwise, if firms using support have indeed more probability of having outward FDI. In terms of evaluation, further research should be conducted in order to collect information of participants perceived importance about the measures. That is, if the support indeed made a difference for the firms opting to use it. These issues will be dealt elsewhere by the authors.

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