

# Influence of the triple helix model on high growth firms



## **INFLUENCE OF THE TRIPLE HELIX MODEL ON HIGH GROWTH FIRMS**

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### **ABSTRACT**

The aim of this paper is to analyse the impact on the development of high-growth firms of a Seed Capital Program (SCP) implemented by CORFO in Chile. The SCP not only provides financial aid to entrepreneurs but also technical and administrative assistance through the support of incubators hired by CORFO. There are two types of incubators: University Incubators (UI) and Non-University Incubators (NUI), which may differ in performance depending on the structure of their contract. In order to analyse the impact of the SCP in the development of business, a total of 238 new firms beneficiaries with the CORFO program were surveyed (84 supported by UI and 154 supported by NUI). Two logistic regression models were used, a first model to assess the probability that a new firm achieves positive sales, and a second model to assess the probability that the new firm reaches a high growth during the first five years from its inception. Overall, mixed results were found. SCP's beneficiaries supported by either UI and NUI have the same probability of having positive sales when starting their operations. However, five years after started their operations, businesses supported by UI have higher probabilities of achieving high growth than businesses supported by NUI. The results highlight a positive interaction between private entrepreneurs, public agencies and universities (triple helix model), allowing to improve the results of this public funded program oriented to the development of high-growth firms in developing economies.

**Keywords:** High-growth firms, Seed capital programs, Triple helix model.

## 1. INTRODUCTION

To foster the development of entrepreneurship, support of the public sector is essential to identify and leverage high impact results and reduce the impact of important issues affecting the entrepreneurial activity. One issue is the difficulty to obtain new financial resources to grow due to the asymmetries faced by private investors to judge the quality and estimate the value of the business ideas (Fairchild, 2011; Audretsch, 2012). Another important issue is the lack of administrative and managerial skills of entrepreneurs hindering the growth of their businesses (Cancino et al., 2015).

Responding to the challenges of project valuation and administration, and hence support a greater number of entrepreneurship, CORFO (Production Development Corporation) introduced in 2001 a Seed Capital Program (SCP) aiming to reduce funding problems, and to guide the entrepreneurs in the foundation and start up of high-growth potential businesses in Chile. According to Kantis and Díaz (2008), a high-growth entrepreneurship is defined as one that is born as a micro business, but grows rapidly into a Small and Medium Enterprise (SME) during its first five years of existence. CORFO's SCP selects business ideas with high growth potential, and supports the entrepreneurs with a non-reimbursable subsidy (from US\$13.000 to US\$86.000 per business idea), to provide not only cash flows, but also technical and administrative aid. The technical and administrative support is indirectly facilitated by CORFO through business incubators, which either reside in universities (University Incubators, UI), or are private companies assisting business incubation and startups (Non-Universities Incubators, NUI). Both, UI and NUI receive the funds from CORFO associated to the entrepreneurs benefited with the SCP and provide technical and administrative support, regardless of the entrepreneurs' results. It has been registered that incubators tend to submit projects to the SCP, not all of which are necessarily business ideas with high growth potential. The incentive scheme for the incubators that receive their own income based on the number of projects funded by CORFO may distort the results if their purpose is to maximize their own income, rather than the results of the entrepreneurship. Then our motivation is to test if differences to select projects to be funded by the SCP can be found between UI and NUI.

In order to contrast the outcomes of the implementation of SCP with the participation of UI and NUI, two models of logistic regression were applied. The analysis of the results for both models suggests interesting findings. The first model identified no differences regarding the support from UI versus NUI in terms of the probability of initiating sales by a new company. In other words, the triple helix model (Entrepreneurs-Public Programs-UI) is neither better nor worse at predicting the probability that a business supported by CORFO's SCP will start up. The second logistic model suggests interesting results ascribing the triple helix model, indicating that the entrepreneurs that received CORFO's SCP through UI presented a higher probability of growing rapidly, selling US\$100.000 or more annually before the fifth year since the company foundation. This could be interpreted in the way that UI would support or choose entrepreneurs better than NUI. The agency problems that CORFO has with incubators would be much more significant regarding NUI, compared to UI. The results from the logistic regression models may provide evidence in support of the triple helix thesis in which the collaboration of the three actors: university-government-industry creates a virtuous circle.

## 2. LITERATURE REVIEW AND HYPHOTESES

Over the last few decades an important transformation in the economic system has been shifting from the extractive or agricultural based economy to a knowledge or services based system. This change implied a renewal of social interactions along with the use of new technologies to catalyze the transformation of the social and economic growth of nations (Ezkowitz, 2007). The rapid changes make of innovation a key mechanism for effective knowledge production and transfer along with the technology and capabilities deployed by different actors.

According to Etzkowitz (2007), a model that could be effective in promoting the creation and dissemination of knowledge to promote the development and growth of new businesses is the triple helix model. The thesis of this model is that the potential for innovation and economic development in a Knowledge Society lies in a more prominent role for the university and in the hybridization of elements from university, industry and government to generate new institutional and social formats for the production, transfer and application of knowledge. This vision encompasses not only the creative destruction that appears as a natural innovation dynamics, but also the creative renewal that arises within each of the three institutional spheres of university, industry and government, as well as at their intersections (Ranga & Etzkowitz, 2013).

The recognition of universities as producers of knowledge and as a key factor in the innovation systems is addressed by many authors (Etzkowitz & Ranga, 2010; Rodrigues & Melo, 2012), posing a clear evolution in their role; firstly seen as an 'ivory tower', concentrating only on its traditional research and teaching tasks, apart from a rather social role or relevant participation in regional economy than an agent of change, generator of knowledge and engine for innovation systems, surpassing the industry as primary resource of economic and social development to the long term.

Despite most of the literature showing studies conducted in the behavior of innovation systems and triple helix applications and the role of university with an entrepreneurial focus in developed countries (Almeida, 2008; Guerrero et al., 2014; Etzkowitz et al., 2005; Rodrigues & Melo, 2012), there is a body of literature on applications of the triple helix model in developing countries. Authors like Charles (2003), Bernasconi (2005), Saad and Zawdie (2011) and Tiffin and Kunc (2011), address the relevance of the role of the university as a source of knowledge and driving innovative initiatives with potential towards economic growth and regional innovation systems in developing countries.

The national innovation systems phenomenon drives governments from developed countries and developing countries to create policies that encourage the development of alliances among three spheres. In Chile, with similar characteristics to those exposed by Almeida's research (2008) in Brazil, the development of a hybrid triple helix trying to encourage the development of new high-growth businesses is observed. The Chilean government, through the Seed Capital Program (SCP) of CORFO seeks to provide financial assistance to entrepreneurs with innovative ideas and want to grow, besides helping them with the delivery of technical and administrative assistance through business incubators, many of which are universities that support with knowledge and skills to new businesses.

CORFO's SCP was created in 2001 with the objective of promoting the appearance of new entrepreneurship through the allocation of funding for innovative business projects in Chile. Currently, the SCP has two lines of action: Line 1 and Line 2. Line 1, named Seed Capital for

pre-investment studies, is a subsidy to support definition and formulation of innovative business projects. Line 2, called Seed Capital supporting implementation, is a subsidy that allocates resources for launching of innovative projects with high growth expectations.

CORFO finances up to 90% of the amount required for the execution of a project in Line 2, with a maximum of US\$80.000.-, non-reimbursable. This subsidy also finances activities for: industrial and intellectual property protection; market analysis; business plan updates; specialized assistance in the fields of marketing and strategy; among others. In addition, it also funds changes of infrastructure, property leasing, commercial packaging of products including packaging design, manufacture of user's manuals, product certification, brand design, sample production, etc. In order to participate in SCP each entrepreneur must have a counterpart, which can be an intermediary, a business incubator, or any organization enrolled in CORFO and able to provide intellectual capital, i.e. technical and administrative support. Business incubators are typically universities (UI) or private consulting firms registered in CORFO (NUI). The SCP includes a mandatory fee that the entrepreneur must pay to the incubator equivalent to US\$1,000 per month, with a limit of US\$12,000 per year. The main objective of an incubator, both UI and NUI, is to support entrepreneurs during the creation, implementation and development of their firms, providing timely means to increase their chance of success.

The above situation, where entrepreneurs can be supported by both UI and by NUI, brings an interesting question, especially if we want to test the value of the triple helix model in a developing country. ¿Entrepreneurs assisted by UI can have better results than those supported by NUI? In order to try to answer this question, let us study the case of SCP of CORFO and its relationship with incubators through the agency theory. According to Jensen and Meckling (1976), an agency relationship is a contract under which one person (the principal) engages another person (the agent) to perform a service on their behalf which involves delegating some decision making authority to the agent. If both parties in the relationship are utility maximizers, there is good reason to believe that the agent will not always act in the best interests of the principal. Due to the non-existence of adequate control by the principal-agent over the agent, or establishing clear initiatives which ensure major congruence of objectives, naturally the agents want to maximize their own profits, over the principal-agents'.

It would be possible to think that the NUI, being also private, seek to maximize their own objectives rather than those who want to maximize CORFO, so instead of working hard to find, select and empower entrepreneurs with the best business ideas, try maximize the number of entrepreneurs who support, earning a fixed salary for each assisted entrepreneur, rather than promote only the best ideas. Meanwhile, the UI, which do not necessarily seek more financial income from CORFO, but gaining prestige and developing good business case to improve its competitive position as a university, might be more aligned to meet the objectives of CORFO' SCP, showing fewer problems agency. One could expect based on the triple helix and agency problems literature that the relationship between CORFO (government), the entrepreneur (private) and UI (university) would be richer than the relationship between CORFO, an entrepreneur and a NUI. So our hypotheses are:

*H1: Participation of UI in CORFO's SCP, instead of NUI, increases the probability that entrepreneurs generate sales.*

*H2: Participation of university incubators in SCP, instead of NUI, increases the probability of high growth entrepreneurship.*

### 3. DATA AND RESEARCH METHOD

The data from this study is drawn from a CORFO database of the SCP Line 1 and Line 2. The dataset includes a sample of 238 firms beneficiaries of CORFO's SCP between 2001 and 2007. The dataset provides contact information for these firms, which were contacted by phone, e-mail or in person to fill out a survey (see appendix 1). Out of the 238 firms who received the SCP subsidy, only 136 remain in place today, with permanent sales and good financial results, even though there is a wide variability in terms of growth level. From the remaining 102 benefited firms commercial operations or tax payments are unknown, and it is clear that sales were never accomplished.

Using this data, the research method considers two logistic regression models to test the defined hypotheses and to study the factors associated with the success of an entrepreneur. In the first logistic regression model we studied the distinction between those who generate some volume on sales, i.e. achieve success in the industry and survive, from those who do not generate an adequate volume of sales to survive. While in the second logistic regression model we assess the probability that a beneficiary of CORFO's CSP becomes a high growth entrepreneur according to the influence of a number of variables including the advice of an incubator.

The logit model that we will further develop takes its name from the logistic distribution function. Its concrete form is as follows:

$$F_i = F(X_i, b) = \frac{1}{1 + e^{-X_i b}} = \frac{e^{X_i b}}{1 + e^{X_i b}}$$

where  $X$  is the matrix that contains the independent variables and  $b$  is the parameter vector to be estimates. We will use the maximum likelihood method for estimation, as is typical in these cases (Davidson and Mackinon, 1992). The likelihood function to be maximized is given by:

$$L(y(X, b)) = \prod_{i=1}^n (y_i \times \ln F_i + (1 - y_i) \times \ln(1 - F_i))$$

where  $y_i = X_i b$  is the realization of the binary dependent variable. In our case, this binary variable equals 1 when the firm is a *born global* and 0 when the company internationalizes gradually.

A summary of the key variables is presented in Table 1.

**Table 1. Key Variables**

Variable	Type	Description
Success	Dummy variable takes a value of 0 for no and 1 for yes.	Has survived the organization?
Gazelle	Dummy variable takes a value of 0 for no and 1 for yes	Is the organization a dynamic entrepreneurship?
Workers	Continuous variable ranging from 0 to 40	Total number of workers
Exports	Dummy variable takes a value of 0 for no and 1 for yes	Is the organization exporting?
Sector	Categorical variable takes value of 1 for food, 2 for biotechnology, energy, and environmental, 3	Industrial sector

	for education, 4 for manufacturing, 5 for mining and infrastructure, 6 for multisectorial, 7 for health, 8 for TIC, 9 for trade, and 10 for tourism.	
Technology	Dummy variable takes a value of 0 for low technology and 1 for high tech	Level of technology in the sector
Gender	Dummy variable takes a value of 0 for female and 1 for male	Gender
Education	Categorical variable takes value of 1 for compulsory education, 2 for higher education, and 3 for postgraduate education	Educational level
Work_exp	Continuous variable ranging from 0 to 44	Years of work experience
Entrepreneurship	Dummy variable takes a value of 0 for no and 1 for yes	Previous entrepreneurship efforts
Region	Dummy variable takes a value of 0 for no and 1 for yes	Located in the metropolitan region
Incubator	Dummy variable takes a value of 0 for no and 1 for yes	University incubator?
Capital_assigned	Continuous variable ranging from 6,250,000 to 277,000,000	Subsidy provided by CORFO

Source: Own elaboration.

Table 2 provides descriptive statistics for the variables selected from this survey.

*Table 2. Descriptive statistics*

<b>Descriptive statistics</b>					
Variable	Obs	Unique	Mean	Min	Max
Success	238	2	0.5798319	0	1
Gazelle	238	2	0.2142857	0	1
Workers	236	27	5.144.068	0	40
Exports	238	2	0.1260504	0	1
Sector	238	9	5.731.092	1	10
Technology	238	2	0.2605042	0	1
Gender	238	2	0.894958	0	1
Education	237	3	1.932.489	1	3
Work_Exp	225	32	1.113.778	0	44
Entrepreneurship	238	2	0.3739496	0	1
Region	238	2	0.5420168	0	1
Incubator	238	2	0.3529412	0	1
Capital_Assigned	233	222	6.67e+07	6250000	2.77e+08

Source: Own elaboration.

The first logistic regression model describes the beneficiaries who were successful in their business from those who were not. The success is measured through the level of sales and if they were able to survive. Therefore, the dependent variable for the model is a binary variable for sales (0= no success (do not show permanent sales), and 1= success (with permanent sales)). The dependent variable for the second model is another binary variable named Gazelle that assess the ability of a firm to be defined as a high-growth entrepreneurship, where 0 indicates non a high-growth entrepreneurship, and 1 represents a high-growth entrepreneurship. The explanatory variables for the models are: number of workers, exports, industrial sector, level of technology, gender, educational level, years of work experience, previous entrepreneurship efforts, region, UI and capital assigned.

#### 4. RESULTS

To assess the factors that are playing an important role in explaining the success of a firm financed by the SCP Line 1 and Line 2 a logistic regression model was estimated. The results are presented in Table 3.

*Table 3. First Logistic Regression Model*

<b>Model:</b>	<b>Coeff. Est.</b>	<b>95% CI</b>	<b>z</b>	<b>P-value</b>
Success				
Sector (base 1 = food)				
2 = biotechnology, energy, environmental	-13.092	(-1525.75 , 1499.56)	-0.02	0.986
3 = education	-0.009	(-2.69 , 2.67)	-0.01	0.994
4 = manufacturing	0.460	(-0.90 , 1.82)	0.66	0.508
6 = multisectorial	-0.686	(-1.78 , 0.41)	-1.22	0.222
7 = health	-1.565	(-3.68 , 0.55)	-1.44	0.148
8 = TIC	-13.869	(-1526.52 , 1498.78)	-0.02	0.986
9 = trade	-0.494	(-2.31 , 1.32)	-0.53	0.594
10 = tourism	-2.111	(-3.52 , -0.69)	-2.92	0.004***
Techonology (0 =low tech, 1=high tech)	13.405	(-1499.25 , 1526.06)	0.02	0.986
Gender (0 =female, 1=male)	-0.008	(-1.03 , 1.01)	-0.02	0.987
Education (base 1= compulsory education)				
2 = higher	0.671	(-.264 , 1.60)	1.41	0.160
3 = postgraduate	-0.586	(-1.97 , 0.79)	-0.83	0.407
Work_exp	0.036	(-0.01 , 0.08)	1.44	0.149
Entrepreneurship (0 = no, 1= yes)	2.612	(1.65 , 3.56)	5.37	0.000***
Region (0 = no, 1 = yes)	0.149	(-0.61 , 0.91)	0.38	0.701
Incubator (0 = no, 1 = yes)	-0.408	(-1.18 , 0.37)	-1.03	0.305
Capital_assigned	0.000	(2.7e-10 , 2.6e-08)	2.00	0.045**
Constant	-1.381	(-3.13 , 0.36)	-1.55	0.122
Pseudo R2	0.305			
Observations	220			

Z-score indicates significance level as follows: \*\*\*  $p \leq 0.01$ , \*\*  $0.01 < p \leq 0.05$ , \*  $0.05 < p \leq 0.10$

In the logistic regression model presented in Table 3, there are three variables that were statistically significant: the touristic sector, entrepreneurship, and the capital assigned. The results suggest that being in the touristic sector is negatively associated with the probability of being successful in the business. On the other hand, having previous entrepreneurship efforts increases the probability of success with their new business, and increases in the capital assigned also increases the probability of success. According to Table 3, the incubator variable was not statistically significant, indicating that there is not a difference in the success of an entrepreneur if receives advice from a NUI or an UI. Thus, we reject the first hypothesis that an UI may influence more in a project financed by the SCP.

Importantly, the results of this first model show that having experience in previous start-ups, and be able to raise capital through other funding sources, such as banks, private investors, among others, may be an important variable to increase the likelihood of having a successful business. The negative effect of the variable measuring the touristic Sector is interesting. The involvement of projects funded by CORFO's SCP in this sector decreases the probability of generating sustainable sales over time to succeed and stay in business. Table 4 presents the results of the second logistic regression model that assess the probability of being a high-growth entrepreneur.

**Table 4. Second Logistic Regression Model**

<b>Model:</b>	<b>Coeff. Est.</b>	<b>95% CI</b>	<b>z</b>	<b>P-value</b>
Gazelle				
Workers	0.150	(0.09 , 0.20)	5.22	0.000***
Exports	1.190	(0.04 , 2.33)	2.03	0.042**
Sector (base 1 = food)				
2 = biotechnology, energy, environmental	-11.342	(-2509.88 , 2487.20)	-0.01	0.993
3 = education	2.266	(-1.97 , 6.50)	1.05	0.295
4 = manufacturing	-0.568	(-2.43 , 1.30)	-0.60	0.551
6 = multisectorial	0.044	(-1.32 , 1.41)	0.06	0.949
7 = health	-1.555	(-4.72 , 1.61)	-0.96	0.337
8 = TIC	-10.139	(-2508.68 , 2488.40)	-0.01	0.994
9 = trade	-2.103	(-5.00 , 0.79)	-1.42	0.155
10 = tourism	-1.078	(-3.50 , 1.34)	-0.87	0.383
Techonology (0 =low tech, 1=high tech)	10.893	(-2487.65 , 2509.43)	0.01	0.993
Gender (0 =female, 1=male)	-1.672	(-3.11 , -0.23)	-2.28	0.023**
Education (base 1= compulsory educat.)				
2 = higher	-0.735	(-2.36 , 0.89)	-0.89	0.376
3 = postgraduate	-0.818	(-2.84 , 1.20)	-0.79	0.428
Work_exp	0.030	(-0.01 , 0.07)	1.29	0.196
Entrepreneurship (0 = no, 1= yes)	1.466	(0.42 , 2.50)	2.76	0.006***
Region (0 = no, 1 = yes)	0.237	(-0.66 , 1.13)	0.52	0.606
Incubator (0 = no, 1 = yes)	1.125	(0.23 , 2.01)	2.47	0.013**
Constant	-2.114	(-4.29 , 0.07)	-1.90	0.058
Pseudo R2	0.402			
Observations	220			

Z-score indicates significance level as follows: \*\*\*  $p \leq 0.01$ , \*\*  $0.01 < p \leq 0.05$ , \*  $0.05 < p \leq 0.1$

The results in Table 4 shown that there are five variables that were statistically significant: number of workers, exports level, gender, having previous entrepreneurship and type of incubator. The results from the logistic model suggest that increases in the number of workers increases the probability of having a high-growth entrepreneurship. At the same time, if the organization is exporting increases the probability of having a high-growth entrepreneur. Contrary, being a male decreases the probability of a high-growth entrepreneurship but having a previous start-up increases the probability of being a high-growth entrepreneur. Finally, the positive effect of being an UI implies a higher probability that an entrepreneur, transforms his/her business into a high-growth entrepreneurship.

In this second model we see a positive and statistically significant influence regarding the participation of an UI supporting businesses in order to become high-growth entrepreneurships. Therefore, there is no evidence to reject the second hypothesis about the benefits of having participation of UI in CORFO's SCP to increase the probability of the emergence of high-growth entrepreneurships, instead of NUI.

## **5. DISCUSSION OF RESULTS AND LIMITATIONS**

The size reached by projects financed by CORFO's SCP, through UI is much higher than the size of projects supported by NUI. This outcome allows us to infer that many NUI are focused on small projects which, in the data, do not exhibit a potential of scalability consistent with growth rates for high-growth firms, therefore, in the attribute "scalability of projects", UI show a better performance than NUI.

It seems that the support and selection of institutions related to universities, which are bigger, more complex and prestigious than NUI, have a major capacity to attract high impact projects. This is probably linked to the reputation and visibility of these organizations, which gives greater public recognition and exposure, counting on a higher budget for advertising, more networks and better access to relevant experiences than a NUI. Also it can be argued that UI play a more social role than their private peers, supporting innovative projects with a high impact potential, due to their obligation to comply with an institutional mission for the creation of knowledge, and not only generate actions to develop good business, but particularly those able to generate a greater impact on our society.

From the agency theory point of view (Jensen & Meckling, 1976), and regarding the initial discussion of our work, we can analyse that the choice of beneficiaries from UI is more aligned with the objectives which CORFO's SPC seeks, than the choices its peers make, NUI, about the beneficiaries who apply to the program. Maybe, the fact that the incubators receive fixed payment, in any case, by the beneficiaries that are accepted by CORFO's SCP activates a control problem, where certain incubators could develop opportunistic behaviour, trying to maximize the number of projects they support, instead of efficiently strengthening the entrepreneurs who seek growth opportunities.

Changing the type of contract with the incubators, for instance, not making a fixed payment for each entrepreneur benefited by the program, but instead paying incubators according to the results they obtain (for example. according to the sales volume, personnel hired or capital raised), would allow supporting the alignment and congruence of the incubator objectives with the CORFO program mission and objective.

Why is it difficult to align CORFO and the incubators' interests with a fixed payment model? The conflict of interest between the principal-agent and the agent is clear in this case. In the case of the UI, the results of this study would show that their objectives are more aligned with CORFO's SCP. The above, most likely given by the higher reputational cost that UI have of being discovered maximizing their interests over the principal (considering the university brand). While the current approach of contracts between CORFO and its incubators is not adjusted or modified, the major reputational control put on incubators could strengthen the biggest congruence of objectives with CORFO, undermining the minor alignment of private incubators. In this logic, we identified the positive relation produced when University, Government and Entrepreneurs collaborate to obtain relevant outcomes by developing and promoting the birth and development of dynamic enterprises, with high impact and growth, which can be the path to maximize the economic growth and welfare in an economy. It is particularly important to highlight that public programs for productive support –which not only give economic resources to entrepreneurs, but also technical and administrative support- could work much better if universities were also considered in the model, particularly like centers for the creation and dissemination of knowledge and good practices. The above mentioned is another example of the positive effects of the triple helix model supporting the productive forces in each country.

## **6. CONCLUSIONS**

The aim of this paper was to explore the results from public support to privates through CORFO's SCP in Chile, comparing the results of new businesses advised by UI versus NUI. The central hypothesis of this study examines whether the CORFO's SCP has better results to follow a triple helix model versus one that does not include the work of universities. The results of the study provide valuable information so that policy makers can increase the number of programs that consider the participation of universities, as suggested by the triple helix model, complementing entrepreneurs' knowledge and experience, towards the development of a greater number of high-growth entrepreneurship in each economy. Through these results, public support could be more effective and less faced with poor results, where entrepreneurship with incremental innovations are mainly supported, that is, with a low impact, compared with radical innovations, which could show greater growth potential. Universities, in this sense, could be generating a better selection process, or at least a more critical one, by not withstanding any kind of project, except those with a greater growth potential. In the context of our work, when the government provides economic resources to private incubators, through CORFO's SCP, the results in terms of sales volume are much better, if those who select the projects to be presented to CORFO are UI instead of NUI, and thus, it is possible to define an example of value to the triple helix model, particularly in the context of developing countries. A second option for CORFO would be to change the type of contracts it has with incubators, making a lower monthly payment for each beneficiary of the program, plus a variable payment according to results that the new supported businesses obtain. This would also be a way of supporting the alignment and congruence of the incubator objectives according to CORFO's program mission and objective.

## REFERENCES

- Almeida M. (2008). Innovation and entrepreneurship in Brazilian universities. *International Journal of Technology Management and Sustainable Development*, 7(1), 39-58.
- Audretsch, D. (2012). Determinants of High-Growth Entrepreneurship. OECD International Workshop on High-growth firms: local policies and local determinants, Copenhagen.
- Bernasconi, A. (2005). University entrepreneurship in a developing country: The case of the P. Universidad Católica de Chile, 1985-2000. *Springer, Higher Education* 50: 247-274.
- Cancino, C. & Coronado F. (2013). Reporte no Financiero a la Gestión Empresarial: Casos del Global Reporting Initiative en Chile. *Revista de Ciencia y Tecnología de América, INTERCIENCIA*, 38(4), 1-8.
- Cancino, C. & Coronado, F. (2014). Exploring the determinants of born-global firms in Chile. *Academia Revista Latinoamericana de Administración*, 27(3), 386-401.
- Cancino, C. & La Paz A. (2010). International New Ventures: Tres Casos Chilenos Exitosos. *Revista Latinoamericana de Administración, Academia*, 45, 140-162.
- Cancino, C., Bonilla, C. & Vergara, M. (2015). The impact of government support programs for the development of businesses in Chile. *Management Decision*, 53(8), 1736-1754.
- Cancino, C., Coronado F. & Farías A. (2012). Antecedentes y Resultados de Emprendimientos Dinámicos en Chile. *Journal of Administrative and Social Sciences, INNOVAR*, 22(43), 19-32.
- Cancino, C., Merigó, J.M. & Coronado, F. (2017). Big names in innovation research: A bibliometric overview. *Current Science*, 13(8).
- Cancino, C., Merigó, J.M., Coronado, F., Dessouky, Y. & Dessouky, M. (2017). Forty years of Computers & Industrial Engineering: A bibliometric analysis. *Computers & Industrial Engineering*, 113(11), 614-629.
- Charles D. (2003). Universities and Territorial Development: Reshaping the Regional Role of UK Universities. *Local Economy*, 18(1), 7-20.
- Coronado, F. & Cancino, C. (2016). Choosing Performance Measure for Incentives Compensation: Experimental Evidence. *Personnel Review*, 45(5), 850-870.
- Etzkowitz H. & Ranga M. (2010). A Triple Helix System for Knowledge-based Regional Development: From Spheres to Spaces. VIII Triple Helix Conference, Madrid.
- Etzkowitz H., Mello J.M. & Almeida M. (2005). Towards “meta-innovation” in Brazil: The evolution of the incubator and the emergence of triple helix. *Research Policy*, 34, 411-424.
- Etzkowitz, H. (2007). University-Industry-Government: The Triple Helix Model of Innovation. *EOQ Congresses Proceedings, 51st European Organization for Quality Congress, Prague, Czech Republic*.
- Fairchild, R. (2011). An Entrepreneur’s Choice of Venture Capitalist or Angel financing: A Behavioral Game-theoretic Approach. *Journal of Business Venturing*, 26, 259-374.
- Guerrero M., Urbano D., Cunningham J. & Organ D. (2014). Entrepreneurial universities in two

- European regions: a comparison. *Journal of Technology Transfer*, 39, 415-434.
- Jensen, M. & Meckling, W.H. (1976). Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure. *Journal of Financial Economics*, 3(4), 305-360.
- Kantis, H. & Díaz. S. (2008). Innovación y emprendimiento en Chile: una radiografía de los emprendedores dinámicos. Documento de Trabajo Endeavor. Santiago.
- La Paz, A., Laengle S. & Cancino C. (2010). The Core Skills of the CIO we need. *Dyna Journal*, 163(77), 172-180.
- Merigó, J.M., Cancino, C., Coronado, F. & Urbano, D. (2016). Academic research in innovation: a country analysis. *Scientometrics*, 108(2), 559-593.
- Ranga M. & Etzkowitz H. (2013). Triple Helix systems: an analytical framework for innovation policy and practice in the Knowledge Society. *Industry & Higher Education*, 27(3), 237–262.
- Rodrigues C. & Melo A. (2012). The Triple Helix Model as an Instrument of Local Response to the Economic Crisis. *European Planning Studies*, 20(9), 1483-1496.
- Saad M. & Zawdie G. (2011). Introduction to special issue: The emerging role of universities in socio-economic development through knowledge networking. *Science and Public Policy*, 38(1), 3-6.
- Tiffin S. & Kunc M. (2011). Measuring the roles universities play in regional innovation systems: a comparative study between Chilean and Canadian natural resource-based regions. *Science and Public Policy*, 38(1), 55-66.



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