CORPORATE VENTURE CAPITAL FOR ESTABLISHING LINKS BETWEEN LARGE AND TRADITIONAL INDUSTRIAL COMPANIES AND STARTUP FIRMS: A REGIONAL INNOVATION SYSTEM SURVEY

CORPORATE VENTURE CAPITAL COMO ELO ENTRE INDÚSTRIAS TRADICIONAIS DE GRANDE PORTE E STARTUPS: UM LEVANTAMENTO NO SISTEMA REGIONAL DE INOVAÇÃO

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ABSTRACT

This research aims to evaluate the actual level of understanding and application of Corporate Venture Capital (CVC) in the Regional Innovation System (RIS) present in the Metropolitan Region of Curitiba (MRC). The survey focuses the large and traditional industrial companies (LTIC) which have tremendous importance to State of Paraná, due to taxes and formal jobs generation. While the LTIC needs to innovate, creating or recovering competitive advantage, the startup firm seeks for partnerships or private equity. In this context, there is an opportunity of establishing linkages between different actors through the CVC. The article presents the results of a survey consisting of an online questionnaire and a focal group, where the data was analyzed through a qualitative approach. The research demonstrated a minor part of the survey respondents practicing CVC, although an expressive number of companies intends to invest in startups. It was also possible to observe that the risk aversion, anxiety for financial payback and different vocabulary between startup and LTIC are still barriers to an effective adhesion to CVC in this regional context. This work contributes to scientific literature when highlight the importance of understanding and properly narrowing large companies of startups. However, the asymmetries between parts and the maturity for dealing and absorbing knowledge from startups is an issue that the RIS organizations could be involved.

Keywords: Regional Innovation System; Corporate Venture Capital; Entrepreneurship; Startup; Traditional Business.

RESUMO

A presente pesquisa teve como objetivo avaliar o nível atual de entendimento e uso do Corporate Venture Capital (CVC) no contexto do Sistema Regional de Inovação (SRI) da Região Metropolitana de Curitiba. O levantamento de dados se deu por meio de um grupo focal e um formulário online, e a análise foi desenvolvida por meio de uma abordagem qualitativa. O objeto de análise foram as grandes indústrias tradicionais da região, importantes geradoras de empregos e contribuintes de impostos para o Estado do Paraná. Enquanto estas precisam inovar ou recuperar vantagens competitivas, uma empresa em fase de *startup* busca parcerias ou investidores. No contexto do SRI, há a oportunidade para estabelecer elos entre diferentes atores por meio do CVC. A pesquisa demonstrou que a minoria das empresas consultadas pratica CVC, embora um número expressivo pretenda investir em *startups* no futuro. Foi possível observar que a aversão ao risco, a ansiedade para retorno de investimentos e a diferença de vocabulário ainda são barreiras para uma adesão efetiva ao CVC no contexto regional. Este trabalho contribui para a literatura científica destacando a importância do entendimento e aproximação adequada entre *startups* e grandes indústrias tradicionais, desde que assimetrias entre as partes bem como a questão da maturidade para negociação e absorção de conhecimento sejam endereçadas por organizações presentes no SRI.

Palavras-chave: Sistema Regional de Inovação; Corporate Venture Capital; Empreendedorismo; *Startup;* Negócios tradicionais.

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1. INTRODUCTION

This research has the main objective of evaluate the actual level of understanding and application of Corporate Venture Capital (CVC) in the Regional Innovation System (RIS) present in the Metropolitan Region of Curitiba (MRC), focusing on the venturing relationship between LTIC and startup firms. For that, it proposes an approximation of two theoretical corpus: the CVC — as a tool for private equity participation in startups where traditional companies attempt to innovate (Wadhwa, Phelps & Kotha, 2016) — and the RIS — a phenomenon explained by the flows of collaboration and knowledge, where multiple actors play different roles to achieve regional competitiveness (Cooke, 2008; Doloreux & Parto, 2005).

The probability of a company accelerating its growth is directly linked to the efforts it undertakes to innovate. The combination of technological innovation with non-technological innovations increases the probability of new employee hiring (Steinhorst, Mello & Rossoni; 2016). The strong correlation between systematic investment in R&D and the increase in the industry's net income is proven. Such activities allow the construction of knowledge and the consequent availability of benefits for the market and society (Barbosa, Fernandes Junior, Bouzada & Oliveira, 2022).

In this context, the issue of deindustrialization is a concern. The concept that became known from the 1970s onwards with liberalizing policies and trials for globalization would reach Latin America in the 1990s and significantly reduce the participation of industry in the national GDP. This complex economic phenomenon involves the appreciation of the exchange rate and the primarization of exports (Oreiro & Feijó, 2010).

The Brazilian market opening to the global economy in the 1990s also allowed Brazil to see the rising of firms acting in networks and industrial clusters in specific geographical territories (Corseuil & Kume, 2003; Edquist, 2001). Some industrial districts evolved to Regional Innovation Systems (RIS) so that some regions could face international competitors, thus mitigating social inequities (Cooke, 2008; Vertova, 2014).

Although the National Innovation System theory evokes policies and institutions in the macroeconomic level, it also allows the derivation of tools and initiatives in the regional level (Edquist, 2001; Vertova, 2014). RIS can foster integration of industry, academy and government institutions (Etzkowitz & Zhou, 2017), in order to enable education, financial capital, public policies and other specific regional characteristics, so innovation process can find ideal conditions. This logic stimulates enterprises' collaboration with each other (Coenen; Moodysson & Asheim, 2004; Organization for Economic Cooperation and Development, 2011).

The startup — a novice and high-risk business — takes place as an opportunity for traditional business to recover competitive advantage or acquire a new knowledge base (Arruda Filho, 2020; Fulghieri & Sevilir, 2009). Actors such as incubators, venture capitalists and universities play an important role to the innovation process (Chang et al., 2012; Risola, 2012; Labiak Junior, 2016). These actors can reduce asymmetries existing between large and traditional companies that demand new knowledge and small, new and technologic based business (Doloreux & Parto, 2005).

ISSN: 2319-0639 – DOI: 10.18226/23190639.v10n2.06

Since the 1950s the corporate venturing brings together big companies and startups projects with the aim of innovate, but in the 1990s, the Corporate Venture Capital (CVC) has become a tool for investor companies to diversify product portfolio, incorporate technology improvements or rearrange the market share in the competitive environment (Michalski, 2003).

During the 2010s, CVC has globally increased its role of accelerating startup businesses (Wadhwa et al., 2016; CB-Insights, 2019) due to its dual nature of involving financial and strategic efforts in the relationship (Scholtz, 2009). Bringing this context to Brazil, such role expansion means a window of opportunity to foster RIS collaboration flows, considering the scarcity of innovation and risky projects funding for small businesses (Confederação Nacional da Indústria, 2019; Inventta & Inseed, 2014).

CVC also can be a tool for research and development (R&D) enhancement (Fulghieri & Sevilir, 2009; Michalski, 2003). Brazil saw their effort in R&D investments grow up 18,58% between the years 2010 and 2015, achieving 1,34% from the gross domestic product (GDP), the biggest mark since the year 2000. In 2018, the percentage of investments decrease to 1,14% from GDP, where 46% of investments was made from private companies and 54% through public funds and public policies (Ministério da Ciência, Tecnologia e Inovações, 2021).

So far, the scientific literature disposes from a rich armory of evidences about RIS and CVC, but still without enough linkages between them. The literature indicates the importance of RIS as a path for social and economic development. As well, the CVC is conspicuously a tool for knowledge creation and sharing.

This work explores a context where large and traditional factories are questioned about presence of CVC in their RIS. The implication expected with the outcomes is adding another kind of strategic partnership for innovation and specific governance aspects for stimulating new technological based businesses. Specific motivations for exploring RIS and CVC LTIC's perception are: a) local large industrial companies' importance in generating expressive amount of jobs and of tax revenues; b) the necessity of private investments in R&D in Brazil, where more than the half of this effort is made by the government; and c) a gap in the literature about SRI and CVC intersection, according to our previous bibliometric research.

On the basis of the above overview, within the MRC regional innovation system, what is the level of usage and knowledge about CVC in the LTIC context?

2 THEORETICAL FRAMEWORKS

2.1 REGIONAL INNOVATION SYSTEM

RIS is a collaborative and interactive network, characterized by knowledge flows, stablished between public and private institutions, with the aim of starting, importing, modifying, developing and defunding new technologies (Cooke, Uranga & Etxebarria, 1997; Edquist, 2001). The knowledge sharing and creation (Coenen et al., 2004; Trippl & Boschma, 2018) is an important asset to foster creativity and innovation, mainly presented through the universities' actions and portfolios (Niosi & Zhegu, 2010). Funding, public policies and government fostering tools can be defined as facilitators factors that create viability for the process of transformation of the knowledge basis in new technologies and products (Cooke, 2008; Zukauskaite, 2018).

ISSN: 2319-0639 – DOI: 10.18226/23190639.v10n2.06

In this context, it is the learning capacity of the territory that will enable the knowledge application and the concretization of changes which increases social and economic indicators (Cooke et al., 1997). Doloreux and Parto (2005) present us a synthetic interpretation of RIS, by putting this phenomenon as a result of three dimensions: the first one as the interaction of different actors in the innovation process; the second one as the formalization and mutual acceptance of the roles played by regional institutions, and the last one as the governance and strong presence of policies formulators in order to assure process contribution from each actor.

Labiak Junior (2016) enumerates six types of actors that participates in the non-linear and collaborative innovation process: the knowledge creators (e.g.: universities and R&D institutes), innovation *habitats* (e.g.: incubators and coworking spaces), funding (e.g.: venture capital, banks and public agencies), representative institutions (e.g.: labor unions, associations, etc.), public actors (e.g.: executive, legislative and judiciary in different levels, and other repartitions) and the private enterprises (including big companies and startups).

A systemic attribute present in the RIS is the ability of an actor serving as facilitator or intermediator to another one, which brings the confidence and the communication properties as two important assets (Doloreux & Parto, 2005; Zukauskaite, 2018). As an example, the incubators and science or technological parks play the role of a hub, where investors as well as large and traditional companies can follow the evolution of new business and participate in the process of maturation or acceleration of projects and its business dimensions (Phan, Siegel & Wright, 2005).

The RIS located in the MRC was recognized by the national government agency in 2003 (Centro de Gestão e Estudos Estrategicos, 2003), showing evidences that the main factors and dimensions studied in the scientific literature were present. This implies the configuration of a scenario where not just the triple helix (Etzkowitz & Zhou, 2017) works, but also other actors — as presented by Labiak Junior (2016) — are contributing. Together they work as an engine or an innovation infrastructure to generate new technological business, including high scalable billionaire startups (Arruda Filho, 2020; Prefeitura de Curitiba, 2019).

The anchor factories (LTIC) stimulate a whole value chain in the region, mainly in the automotive and oil and gas sectors (Centro de Gestão e Estudos Estrategicos, 2003). The direct and indirect formal jobs generated are meaningful to Curitiba's region which sustains high social and economic indicators (Instituto Paranaense de Desenvolvimento Econômico e Social, 2019; Revista Comec, 2017). Therefore, when a business with such importance goes bankrupt or simply move abroad, a high and negative impact will be very perceptive. Bosch dismissed 900 employees in 2009 and Renault-Nissan let go 747 in 2020, for example (Estigarribia, 2020; G1 Globo, 2009).

In this context, the CVC plays an important role in the RIS funding dimension and works as a tool for empowering links between RIS actors. This role allowed technology-based startups to evolve their business models without bank approvals and traditional actors or policies funding — placing the seed capital and the staged private equity investment as a more strategic and long-term flow for relationships as well as innovation and risky projects (Gjelsvik & Trippl, 2018; Lara, 2017).

2.2 CORPORATE VENTURE CAPITAL

Being inspired by and originated from the classical venture capital (Rin, Hellmann & Puri, 2013), the CVC can be understood as the minority participation of an existent business in

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a different external business, with the aim of leverage the learning capacity (Wadhwa et al, 2016). Additionally, CVC imbricates multidimensional management aspects and organizational culture factors (Abetti, 2003). It has become an important source to the entrepreneurship funding associated to high-risk innovation projects (Qiao & Chen, 2010).

The CVC has the predominant characteristic of an established firm investing in an emergent market through privately held companies (Rieche & Faria, 2014). It is also a relevant opportunity for the company to invest in new markets and generate new knowledge, integrating simultaneously the established operation with the aim of increase its efficiency, without exposing it to risk (Hill & Birkinshaw, 2014). This tool can be an answer to overcome R&D limitations and add value to the current product portfolio (Alvarez-Garrido & Dushnitsky, 2016; Sahut & Lantz, 2011).

Since it surges in the US in the 1960s, CVC has been evolving configuring a strategy for diversifying investments, through the capitalization of different firms (Rieche & Faria, 2014). The estimated global value for 2019 was US$ 57,1 billion (7,8% more than in 2018) of investments by 3.234 deals (an increase of 18% compared to 2018), This accounts as evolution of 53,8% in the absolute number of transactions since 2014 (CB-Insights, 2019).

In Brazil the venture capital practice only started in the 1990s with the economy opening in the globalization process, and de CVC practice is still evolving: in 2009, only 2 from 144 companies formally registered as venture capital fund, declared to practice CVC. However, informal scans could bring other cases, accusing the incipience and the lack of CVC data in the Brazilian market (Inventta & Inseed, 2014).

CVC has both financial and strategic goals (Alvarez-Garrido & Dushnitsky, 2016) where in a long-term the company investor establishes a relative autonomous relationship with the startup (Inventta & Inseed, 2014). The company investor can practice CVC through an investment fund partnership or by directly designing a specific business unit or team to operate (Sahut & Lantz, 2011; Scholtz, 2009).

The CVC journey starts with the startup scouting (Heinz et al., 2017), or the startup creation in an intrapreneurship program (Livieratos & Lepeniotis, 2017). Thereafter, the process goes through staged investments occurrences based on the startup maturity level and market growth (Lara, 2017), and can end in an exit of the investor, a merge and acquisition (M&A) transaction or a simply establishing of a sharing flow of assets between the company investor and the startup (Wadhwa et al., 2016). In the process, some firms can stablish an incubation or acceleration program, where startups can have access to infrastructure, clients, R&D collaboration, technology transfer, etc. (Lara, 2017).

3 METHODOLOGICAL PROCEDURES

This research is characterized as a descriptive and a sectional study, once we have collected and analyzed data in a specific moment of time to evidence how CVC dynamic is perceived by the RIS actors. The data was treated and interpreted through a qualitative method. The method was designed from literature review, constituting stages, tools and procedures as follows:

ISSN: 2319-0639 – DOI: 10.18226/23190639.v10n2.06

Table 1. Method framework and process.

Method stage	Procedures	Purpose	Reference
1. Bibliometric and literature review	1. Selection of scientific databases (Web of Science and Scopus); 2. Execution of a search through key-words; 3. Reading of titles, resumes and conclusions from main works; 4. Selection of final works and to do a deep reading through citation registration.	1. To define the frameworks' main concepts; 2. to select most relevant authors and works; 3. to establish literature premises and main questions.	Gil, 2008; Severino, 2007.
2. Online survey design and sending	1. Selection of an online platform of forms; 2. Composing of questions according to literature premises; 3. Prototyping online forms for adjustments; 4. Acquisition of LTIC database from Federation of Industries from Paraná; 5. Identification of person or department in charge of innovation; 5. E-mail sending.	1. To formulate assertive questions and consolidate an effective instrument of gathering; 2. To obtain validation and data for questions.	Cozby, 2003.
3. Presential focal group design and execution	1. Planning of meet schedule; 2. Sending online invitations; 3. Invitations of two specialists for introductory lectures; 4. Preparation of a key questions canvas; 5. Stimulation of a debate and dialogue among participants; 6. Elaboration of interviewing protocol and anonymous consent for data using; 6. Audio recording.	1. To enlighten and explain key concepts from scientific literature, navigating through main aspects of RIS and CVC; 2. To obtain qualitative and deep insights and content from collaborative and divergent session; 3. To stimulate free speech and opinion writing.	Cozby, 2003; Elsbach & Stigliani, 2018.
4. Data consolidation	1. Focal group's audio transcription; 2. Digitalization and organization of stick notes; 3. Online survey data consolidation through spreadsheet software;	1. To reunite and systematically analyze the data.	Bardin, 2011; Bauer & Gaskel, 2002.
5. Data analysis	1. Content analysis through thematic categorization (tagging); 2. Theoretical recovering and crossing;	1. To define thematic and register units; 2. To cluster, interpretate and infer.	Bardin, 2011; Bauer & Gaskel, 2002.

Source: Authors (2019).

3.1 METHOD SPECIFIC CRITERIA

From the main motivations – which is the expressive importance of LTIC to MRC territory both social and economic development and the innovation potential contained in a startup firm – we could establish the criteria to obtain the right research object to validate the research problem. Since we have delineated the theoretical corpus of CVC and RIS, through scientific literature review, it was possible to discover and design five groups (necessary to organize the online survey) and eight sub-groups (used to create a collaborative canvas to be used in the focal group) of premise testing: 1) Usage level of CVC; 2) CVC as a RIS linkage opportunity; 2.1) Possible RIS partners; 3) Maturity to implement or conduct CVC; 3.1)

ISSN: 2319-0639 – DOI: 10.18226/23190639.v10n2.06

Leadership and culture; 3.2) Organization and structure needed; 3.3) Essential resources and competences; 4) Motives that can lead the company to practice CVC; 4.1) Motives to establish CVC; 4.2) Deliverables; 5) Barriers that prevent the company to practice CVC; 5.1) Offerings to startups; 5.2) Risks.

The online survey was sent to 80 companies located in 29 cities of the MRC, containing 22 binary questions and 04 of multiple choice. The data collection occurred between January 2019 and March 2019. Twenty-nine companies agreed to participate in the research, and responded to the request. These 80 companies were mapped from a private register of Federation of Industries from State of Paraná. To locate these firms, two requirements were applied in the filtering process: 1) the firm should have more than 500 employees (large company in terms of Brazilian Government), and 2) the firm should have more than 05 years old.

Furthermore, it was intentional to build a method where it was possible to explore closed questions before running the focal group where topics were more open and generic, in this way, one instrument complements the other. The focal group occurred in March 15 2019 and took a total of five hours to be completed. Eight LTIC firms attended to our request. During the event, two specialists delivered lectures about the essential conceptual of RIS and CVC, followed by questions and discussions. Thereafter, the guests were requested to fill a canvas, using stick notes, specially designed with prior premises sub-groups, where free speech and collaborative dialogue was stimulated.

With the purpose to achieve the results, the online survey answers were extracted from online tool and summarized in a spreadsheet software. The content originated from the focal group was analyzed and synthesized through a quotes' thematic categorization (Bardin, 2011; Bauer & Gaskel, 2002), in a qualitative approach of content analysis, based on the literature review.

4 RESULTS

4.1 EVIDENCES FROM THE ONLINE SURVEY

The survey demonstrated that a minor part from the group practices CVC as a strategy to innovate. From the twenty-nine companies participating in the survey, only three of them was investing in startups at the data collection moment, as show in Table 1. Nonetheless, 10 participating companies intend to start investing in startups in the future, which can be inferred that CVC has a space in the LTIC business strategies. Table 2 complements this data, showing that the major part of consulted companies has low engagement with startups.

Table 1. Has the company invested in an external startup?

Investing	Already invested, not now	Never before, intending	Never before, does not intend
3	2	10	14

Source: Primary data survey (2019).

ISSN: 2319-0639 – DOI: 10.18226/23190639.v10n2.06

Table 2. CVC usage level.

	Yes	No	Intending to
Has the company fully acquired a startup?	2	27	0
Does the company maintain a relationship with an investment fund?	2	27	0
Has the company created a startup internally?	5	20	4

Source: Primary data survey (2019).

The online survey revealed a conservative behavior regarding the CVC and startup investments, after confirmed in the focal group. Numbers indicate that visited companies do not have internal proper team, capabilities, or infrastructure to support CVC yet. Moreover, having big factories that demand technology services in the RIS, does not mean that they are innovation driven and does not mean that they will naturally see startups as an opportunity in their network.

Table 3 demonstrates that in the moment we consulted the group, although major part of companies agrees that innovation can be developed through social connections, accessing startups knowledge, CVC remains as a phenomenon to be explored, still unknown. All the items in the maturity dimension, pointed major part of the group has no proper structure.

Table 3. Yes or No questionnaire for scientific literature review premises testing.

Premises groups according to literature	Answers	
	No	Yes
Part I. CVC as a RIS linkage opportunity		
A startup company partnership could insert the company into a networking innovation	6	23
CVC allows company to pursue innovation in technological projects	22	7
A startup company is a new knowledge basis to be accessed	4	25
Creating new businesses in the company could improve social and economic indicators in the region	8	21
The communion or reception of innovation events or specific physical spaces could allow the company to establish new social connections and get noticed of new opportunities	10	19
Part II. Maturity to implement or conduct CVC incursions		
Company owns a process to prospect and evaluate startups	22	7
Company owns an intrapreneurship program in order to create new businesses	22	7
Company owns a specific team designed to manage new possible investments and relationships	22	7
Company has a formal account in the budget to innovation investments or venture capital	24	5
Part III. Motives that can lead the company to practice CVC		
Enlarge the market share	15	14
Threat from competitors	17	12
Insufficient internal R&D	16	13
High administration drivers	16	13
Threat of startups to the core business	24	5
Low productivity	23	6
Part IV. Barriers that prevent the company to practice CVC		
Legal or judicial questions	7	22
Difficulty in mapping or prospect startups	9	20
Company's culture	10	19
Knowledge about investing in startups	11	18
Knowledge to manipulate specific technology	11	18
Internal bureaucracy	11	18
Lack of internal team to absorb new knowledge	11	18

Source: Primary data survey (2019).

ISSN: 2319-0639 – DOI: 10.18226/23190639.v10n2.06

The scientific literature premises from our review, that indicates the main reasons that lead companies do adopt CVC, show not totally adhesion to those companies' reality, what opens an opportunity to further research problem. And the dimension that tests barriers that avoid companies from adopting CVC were all confirmed by the majority of companies.

This sectional survey presents results from M1 (moment one), that is, the first picture we took to compare the numbers in the coming future (M2). In order to bring complementary data, the survey ran a focal group.

4.2 EVIDENCES FROM THE FOCAL GROUP

The focal group started with two speakers, who shared important theoretical and practical points about CVC and RIS. After their lines, the eight guests shared a brief about how innovation happens in their companies and how they were interacting with the other actors from the RIS. Next, they were invited to freely discuss topics presented by the scientific literature. They were motivated by questions and used postits to express their ideas about the topics. The group also could build a vision of how their companies could improve the interaction with startup firms.

There was a significant of participants' concern in talking about the risk and error aversion and the fast payback requested by the board in their companies. They concluded that the startup companies could bring a new culture of embracing error as a natural phase in innovation experiments. They agreed that a formalization of a stipulated budget could support this new approach of partnership. Another question present in the initial discussion is the lack of communication inside the company in order to foster intrapreneurship.

But what people talked about in the experiment? Well, it's possible to observe in the Table 4, the synthesis of main topics discussed and the volume of content, or the percentage of mentions to the respective theme during the focal group discussion.

The less the percentage, the more objective and consensual was the group sharing. The importance of other RIS actors acting to facilitate the relationship and the communication between big company and the startup became a very important question to the group. Furthermore, a transformation in the company's culture was put as fundamental thing before starting any CVC or intrapreneurship program. The capacity of absorbing new knowledge was also pointed as critical, avoiding the risk of frustration or financial loss.

Table 4. Synthesis extracted from the focal group textual content analysis.

Topic	Main topics discussion	Time expended and volume of content
Leadership and culture	More investments in the learning culture, engaging the high-level sponsors. Understanding that innovation does not happen from one night to the day. It is necessary to connect the culture to the company's strategy and put communication as priority.	36%
Organization and structure	Creation of an interface that speaks both industry and startup language. Engagement of a group of people from different areas in the company. Processes simplification allowing organization to evaluate and absorb new technologies, startups teams and innovative business models.	24%

ISSN: 2319-0639 – DOI: 10.18226/23190639.v10n2.06

Table 4. Synthesis extracted from the focal group textual content analysis.

Motives	Creation of new and different businesses, transposing legal and bureaucratic barriers, accelerating the achievement of results. Technological oxygenation, developing an innovation culture, reducing administrative and production costs. Pursuing higher gains in the operational efficiency, acquiring specialized knowledge in new technologies. Reinvention of the business and transformation of the firm's culture.	9%
Delivers and performance	Increasing of the number of proves of concepts, focusing present and future businesses. To make more explicit the financial return of R&D projects. Money saving in raw material, people, services, etc. Time saving in the R&D by accelerating projects. To measure the ROI of each project.	9%
Risks	Frustration to the company's team or startup's team immaturity. Financial loss or lack of commitment. Need of reflect on the startup autonomy dilemma to detriment of company investor management drivers.	9%
RIS Institutions	To establish partnership with funding agencies, public research foundations, universities, incubators and accelerators, angel investors and engineering and technological college courses.	4%
Resources and competences	Establishing a part in the budget for risky projects. Establishing a partnership with a venture capital fund. Adoption of agile management. More investments in marketing actions.	3%
Offerings to startups	Offering mentorship to improve business process and give access to a real ambient where ideas can be applied.	3%

Source: Focal group data (2019).

The focal group has delivered to this work's analysis a complementary view, helping to explain the numbers presented in the online survey. The motives dimension has been qualitative explained. It is overt that the stage in which those businesses are found reveals a beginning of a journey to understand different innovation strategies, where CVC model as presented in the scientific literature is not a certainty for them. The journey will bring to these big factories the challenge of transition from a departmental R&D culture to a more open or transversal innovation one.

5 CONCLUSIONS

Bringing CVC and RIS constructs together evidences the role of the startup firms funding in the empowering in the regional innovation phenomenon. The scientific literature observed investor companies with institutionalized CVC as a formal strategy, did that by creating a new business division or simply designing a new team or department. When RIS success cases are revisited, same thing happens in a regional level – the formalization of governance is important to assure that the actors can develop and play their roles as expected.

The first contribution of this work is addressed to the organizational and managerial field, once it clearly points to main topics for CVC governance arising from scientific literature

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review, as seen in the methodological procedures section. Since the LTIC embodies those topics, CVC becomes a new alternative for strategic partnership focusing on innovation, configuring a way out to face national and regional challenges as deindustrialization, massive layoffs, and revenue decrease. Secondly, by nearing CVC and RIS theorical fields, the academic field can explore specific phenomena in the social and economic sciences, for example actors' interaction, public policies for open innovation, and other critical subjects for developing countries.

Therefore, the conclusion at this point evidences that is possible to have a region with an established or strong RIS characteristics but with a simultaneous lack of startup firms' investments or partnership of any kind between LTIC and startup firms. This scenario could be changed with a facilitation process led by universities, incubators, investment funds or even government, with the purpose of improving communication or negotiation between LTIC and startup firms. The combined literature review of CVC and RIS allowed to classify CVC as a tool for establishing linkages with the RIS, in other words, traditional companies with linear and closed R&D processes could access new knowledge basis through startup firms' investments.

According to the focal group findings, the capacity of absorption of external knowledge is a problematic theme for multinational LTIC companies that have their headquarters or the R&D departments abroad. So, the group pointed to the fact that this capability should be previously built before a CVC program starts. The group converged that a startup interaction could be easier regarding to themes not directly related to product development or strategic core business guidelines.

The CVC usage level in the LTIC sampling is very low, once the sampling studied is highly representative for the territory and considering all the content analyzed from the focal group, we can infer that innovation process is still interpreted and understood as a linear process and dealing with inherent risks requires changes in the organizational structures, culture, and accountability. For that, the interaction of university, industry, and government as triple helix proposes, could attenuate risks, or propitiate professional processes that evaluates synergy between LTIC and startup firms.

Last, CVC is not a speculative financial instrument. It has a strategic dimension inseparable from the financial one. The original model of CVC implies in a private equity participation of the parent company in the startup. This work indicates that other formats of collaboration could be designed to adjust or adapt the regional culture or conditions. Again, the university and the government play an important role, by coding, decoding information or creating platforms or hubs to improve innovation relationships.

The next step for this study would be evaluate once more the very same group and verify changes in the companies' perception in the second moment. It would be interesting to explore in a vertical approach causes and particular situations, providing opportunities to elaborate and develop study cases, focusing on capabilities needed to stablish CVC within a RIS. It was very difficult to obtain online feedback for the survey, maybe the strategy for next incursion needs to be revised. Finally, it would be very interesting in the future, to propose a new model for bringing different RIS actors together in order to make fruitful a relationship between a startup and a LTIC.

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