
The role of social capital in the growth of innovative nascent firms: the moderating effect of incubators

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Abstract: The concept of social capital is increasingly used in entrepreneurship studies to explain the growth of innovative nascent firms. However, empirical findings about the role of social capital (SC) in the growth of young firms have been contradictory to date. We focused on the relational dimension of social capital and differentiated between internal social capital (ISC) and external social capital (ESC). We analysed the perceived utility – which is rarely used in SC studies – of resources received from the networks of innovative nascent firms in their first six years of existence. We implemented the two-stage least squares (2SLS) analysis to avoid the endogeneity bias. The results indicated that during the early years, nascent firms' external social capital is a decisive resource for growth. This was not the case for internal social capital. We observed that joining an incubator appears to have no impact on either growth or the relationship under study.

Keywords: social capital; innovative nascent firm; incubator; growth.

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1 Introduction

When they first begin, innovative firms are faced with several specific challenges (Stam et al., 2014). Some of these challenges are a turbulent technological environment, long and cumbersome development and commercialisation processes, building up a new market, national and international competition instead of local competition, the need to identify partners (i.e., suppliers, customers) and the need to recruit highly qualified staff. Consequently, a key factor in managing these challenges lies in the capacity to acquire, exchange and exploit external information and knowledge (Patton, 2013) and thus to develop social capital (SC) via the firm's relational network (Debrulle et al., 2014). The concept of SC, widely acknowledged as the present and potential value that ensues from the social relationships of individuals and social entities (Nahapiet and Ghoshal, 1998), is increasingly used in entrepreneurship studies to explain the growth of innovative young firms (Anderson et al., 2007; Maurer and Ebers, 2006; Stam et al., 2014).

However, empirical findings concerning the role of SC in the growth and performance of nascent firms differ and are even contradictory for many reasons (Stam et al., 2014). First, in previous studies, organisations have been too different to make consistent conclusions about a notion that is 'extremely difficult' to evaluate (Gedajlovic et al., 2013). Secondly, SC is generally represented in an atemporal way, although several studies have shown that its nature and role evolve in line with the development process (Partanen et al., 2008). Third, many studies fail to differentiate between the nature of the relationship that resulted in the resource, and the resource itself (Gedajlovic et al., 2013). Finally, contextual variables are rarely taken into account in the many studies on SC (Martinez and Aldrich, 2011; Stam et al., 2014).

The aim of the present study is to examine the role of SC on growth by incorporating the preceding limitations mentioned. To this end, we analysed the perceived utility of resources received from the networks of innovative nascent firms in the first six years of their existence. The firms under study also received some form of business support from public or semi-public structures in the Nord-Pas-de-Calais Region (France). The goal of our hypotheses is to extend the entrepreneurial debate by providing some useful insights into the role of SC on the growth of innovative young firms. Our study takes certain precautions in order to avoid the issues identified in previous studies. First, our study will look at the relational dimension of SC, which deals with how the nature of the ties conditions the project's development. Second, we will differentiate between internal social capital (ISC) and external social capital (ESC) (Adler and Kwon, 2002), which is better adapted for a study in innovative nascent firms (Cao et al., 2012; Cuevas-Rodriguez et al., 2014; Davidsson and Honig, 2003; Debrulle et al., 2014; Yli-Renko et al., 2002). Third, our study will adopt a contextual perspective of SC by questioning the role of incubation among other business support measures. Fourth, the methodology will describe the specificity of the sample as well as the construct measurement. Consistent with Gedajlovic et al. (2013), we will implement the two-stage least squares (2SLS) analysis to avoid an endogeneity bias in our estimation of the correlation between ESC and growth.

The theoretical background will begin by defining the notion of SC, more specifically, internal and ESC. We will then present the institutional context. Next, we will describe the research method used and the results obtained. Finally, we will present and discuss our findings. This will give rise to recommendations and potential avenues for future research.

2 Theoretical background

2.1 The role of SC in the entrepreneurial process

Many studies have shown that the entrepreneurial process is closely linked to the entrepreneurs' or the nascent firms' relational networks. These networks help them to obtain resources that are useful to the growth or performance of the business, and whose acquisition would not have been possible otherwise, or not without great difficulty (Brush et al., 2008). However, many studies fail to differentiate between the nature of the relationship that resulted in the resource, and the resource itself (Gedajlovic et al., 2013). This absence of distinction between the source and resource partially explains the absence of consistent findings about the impact of SC on business performance. In addition, contextual variables are rarely taken into account in the many studies on SC (Stam et al., 2014). Like Nahapiet and Ghoshal (1998), we consider that SC is a dynamic notion insofar as it is the network relationships (source) that generate the value (resource) which can potentially drive growth. This dynamic is therefore something which needs to be observed. The value created is appreciated by the entrepreneur who considers the support, received from his or her stakeholders (social network), as a resource. In addition, as Martinez and Aldrich (2011) suggested, we give prominence to the context in which the link between the SC and the growth of the business unfurls. In effect, the context of the firms studied is specific as it involves innovative nascent businesses from a French

region that have all benefited from support structures and, in some cases, an initial period in an incubator.

2.2 *The nature and strength of relationships: weak ties/strong ties*

SC comprises different facets (Putnam, 1995) or dimensions (Nahapiet and Ghoshal, 1998) resulting indifferent areas of study and levels of analysis. In the entrepreneurial context, these dimensions correspond to two streams of research (Lamine et al., 2015). The first one deals with how structural networks evolve with the evolution of the entrepreneurial project [in line with Burt's (1997) conception]. The second one deals with how the nature of the ties conditions the project's development (Anderson et al., 2010; Hite and Hesterly, 2001). This second stream is in line with our research. The nature and strength of the relationships that an organisation entertains with its immediate stakeholders are generally based on Granovetter's (1973) strong ties and weak ties approach. This approach is frequently adopted to distinguish between relationships involving the firm's internal stakeholders (ISC or 'bonding SC') and those involving external stakeholders (ESC or 'bridging SC') (Adler and Kwon, 2002; Davidsson and Honig, 2003).

ESC refers to the relational exchanges that an enterprise or an individual (Cao et al., 2012) forges with its external stakeholders (Cuevas-Rodriguez et al., 2014). The ESC of a young enterprise encompasses the (weak) external ties that it has and that it cultivates with external players (Cuevas-Rodriguez et al., 2014). The main contribution of ESC lies in the access it gives to information and knowledge. It provides rare, non-overlapping and new information (Burt, 2000; Kolstad and Wiig, 2013) that would have been difficult and costly to obtain otherwise (Davidsson and Honig, 2003). Debrulle et al. (2014) showed that there was a positive and significant link between this form of SC and the start-up's absorption capacity, helping it to identify business opportunities (Anderson et al., 2007), both in the form of access to new markets (Yli-Renko et al., 2002) and innovation (Cao et al., 2012). Yli-Renko et al. (2001) pointed out that young high-tech companies manage to survive, grow and prosper, despite their significant lack of specific resources, thanks to SC. In effect, in developing a suitable external network, the company creates a unique resource for acquiring and dealing with information and knowledge that gives it a real competitive edge. Davidsson and Honig (2003) explained that ESC is a major factor in determining which young entrepreneurs will achieve sales or profit, given that both factors are considered as critical for the success of a new enterprise. We thus posit our first hypothesis:

H1a ESC promotes the growth of a young innovative enterprise in its first years of development.

However, some studies have also identified negative effects linked to ESC. While establishing ties allows the entrepreneur to acquire resources at little cost at *moment t*, maintaining and developing them in the long term involves a major investment in terms of time and energy (McFadyen and Cannella, 2004). This time-consuming process is all the more challenging for start-ups since they are traditionally held back by their lack of resources (Semrau and Werner, 2012). In this respect, Cao et al. (2012) provided evidence of decreasing marginal rates of return from the degree of ESC and diversity on growth:

H1b There is an inverse U-shaped relationship between ESC and the growth of an innovative nascent enterprise.

ISC refers to relational exchanges developed within a homogeneous group (Eklinder-Frick et al., 2014). Thus, the ISC of a young business venture encompasses the (strong) internal links they have and that they cultivate with individuals or groups of individuals within their organisation (Cuevas-Rodriguez et al., 2014). It promotes the exchange of reliable resources, the transfer of tacit knowledge (Stam et al., 2014) and solidarity in the form of various kinds of support (Gedajlovic et al., 2013). The contribution of ISC is very important in the early stages of a new business venture (Davidsson and Honig, 2003). In effect, the moral and financial support and advice provided by friends and family are key success factors in a start-up process. Later on, the increase in ISC fosters cohesiveness and an organisation-wide vision conducive to exchange, creativity, problem-solving (Yli-Renko et al., 2002) and innovation (Nahapiet and Ghoshal, 1998; Sanchez-Famoso et al., 2014). In the same way, by developing intra-organisational social links, entrepreneurs forge a better understanding of the organisation's potential and can thus reallocate resources to foster exchanges (Cao et al., 2012). Yli-Renko et al. (2002) observed a significant link between ISC and the know-how of young high-tech start-ups. The calmer the social climate, the stronger the firm's performance (Shrestha, 2013). However, several studies have pointed to the limitations of ISC. First, the impact on developing young firms is more tenuous than during the emergence stage. Thus, Debrulle et al. (2014) found no significant link between a start-up's absorption capacity and its ISC, no matter what the environmental conditions of its activity. In line with the findings on ESC, Stam et al. (2014) concluded that the positive effects of ISC on performance are considerably more marked on older firms than on young ones. In short, while the findings from these different studies dispute the impact of ISC, the latter nonetheless appears to act as a positive innovation and growth lever. Given that our sample is made up of innovative young start-ups, we therefore expect to find a positive link between their ISC and growth:

H1c ISC promotes the growth of innovative young enterprises in their first years of development.

2.3 The institutional context

As young businesses can create jobs, local authorities tend to view them with a certain number of expectations in mind (Anyadike-Danes et al., 2015; Birch, 1979). Thus, public measures designed to support entrepreneurship locally are a key aspect of the institutional context that should be taken into account, especially in the case of policies designed to support business incubators. Incubators are generally considered an important resource in helping emerging firms overcome their inevitable difficulties (Hackett and Dilts, 2004). They were originally created by public authorities to provide some start-ups with the environment, support and resources needed to offset the difficulties often encountered in the early years (Schwartz, 2013). Thus, incubators play a key role in developing relational and business networks, and in strengthening the SC of incubated firms (Adlesic and Slavec, 2012; Patton, 2013). This reticular capacity is viewed as a strong factor of satisfaction for incubated firms in their evaluation of the support structure (Adlesic and Slavec, 2012; Totterman and Sten, 2005). Totterman and Sten (2005) suggested that one of the main reasons firms join an incubator was the desire to benefit from the internal

relational network of the incubated firms, so as to share information and to reduce their isolation. This also explains the need for ‘immersion’ in university incubators (Borges and Filion, 2013). In addition, incubators provide support, training, events, contacts, etc., which all help young firms to enhance their relationships and business communication. Ebbers (2014) also suggested that one aspect of the added value of incubators lies in their capacity to provide an internal incubator marketplace. Patton and Marlow (2011) highlighted the support role played by incubators, which allows young business ventures to grow their external networks, helping them to obtain the information and knowledge required for their development. Borges and Filion (2013), for instance, suggested that incubated firms can use the legitimacy and reputation of the support structure (especially when it has a good reputation) to develop market credibility and consequently develop business contacts with external stakeholders. While belonging to an incubator theoretically appears to provide greater access to SC, empirical findings are more nuanced (Amezcuca et al., 2011; Patton and Marlow, 2011; Totterman and Sten, 2005). Thus, Totterman and Sten (2005) argued that links and trust between incubated firms disappeared in the post-incubation stage. They suggested that while incubators provide useful general assistance to incubated firms, they find it harder to provide customised support. In line with these findings, Borges and Filion (2013) showed in particular that while university incubators offered significant support in developing financial, high-tech and support networks for incubated firms, they had far less success in the case of business networks which are nonetheless crucial for the success of a young venture.

As we can see, the literature is far from unanimous on the issue of whether a firm can build its SC by joining an incubator. However, one of their main functions is to promote the emergence of a relational network, and the very reason for their existence incites us to formulate the following hypothesis:

- H2a Joining an incubator has a mediating effect on the ESC of innovative nascent firms and their growth.
- H2b Joining an incubator has a moderating effect on the ESC of innovative nascent firms and their growth.

3 Methodology

3.1 Regional context and sample

Our study focuses on the development of innovative new ventures created between 2008 and 2013 (included), located in the Nord-Pas-de-Calais region of France. Nord-Pas-de-Calais is the 4th most economically significant region of the 22 French regions, with an average contribution of 5.12% to the national gross domestic product (Ile-de-France: 30.64%; Rhône-Alpes: 9.86%; Provence-Alpes-Côte d’Azur: 7.25%), but is ranked 14th regionally with regard to GDP per capita¹. Due to its deindustrialisation history, the region has the highest rate of unemployment in France (11.5%) and ranks 18th for new venture creation and 12th for innovation.

However, the socio-economic position of Nord-Pas-de-Calais is improving. The region jumped from the least dynamic region (ranked 22 of 22) regarding new venture creation in 2001 to 18th position in 2013, and obtained the European Entrepreneurial Region Award from the EU. In its Innovation Regional Strategy project for 2014–2020

(Stratégie Régionale d' Innovation 2014–2020²-SRI), the Nord-Pas-de-Calais Regional Council gave itself the target of catching up with the national average by doubling the number of innovative new ventures. According to the SRI (p.10), only 142 innovative new ventures created in 2008 were still operating in 2012. Thus, to achieve its target, the Nord France Innovation Développement (NFID) structure was founded in 2009 to implement the regional entrepreneurial policy, and its means and authority have been reinforced in recent years. One of the main goals of the NFID is to “enhance the coordination of entrepreneurs and the development of networks involving entrepreneurship and innovation stakeholders (SRI, p.54).” The development of innovative new ventures is thus one of the main drivers of the region’s economic policy and the development of entrepreneurial networks is considered as one of the main conditions for its success.

Our investigation concerned the regional population census provided by NFID. This census looks at 325 firms that received support from the region at the early stage of their development as a reward for their innovative business idea. The census contains two groups of firms. The first group encompasses 170 new ventures hosted by one of the seven regional incubators³ and created between 2008 and 2013. Among them, 25 went bankrupt during this period (and 23 between 2014 and 2016). The median age of the firms when the data was collected was 41 months with a standard deviation of 19.1. The age ranged between 6 and 78 months. The second group includes 155 businesses which were not incubated but which, because of their innovative character, benefited from resources and support from various structures⁴. On average, the firms in the second group were 49 months old and ranged between 6 and 77 months with a standard deviation of 18.9.

Based on this census, the sample was collected through a questionnaire administered to 104 founder-owners during the second semester of 2014 by phone (52), face to face (49) or by email (3). We collected 62 replies from the first group and 42 from the second group, corresponding to an average response rate of 32%. Our sample contained 62 firms hosted in a regional incubator. Among them, 6 distressed firms went bankrupt during the sample period and 4 firms disappeared between 2014 and 2016. The median age of the firms hosted in the incubator was 38 months, while the standard deviation was 19.35 months and ranged between 5 and 78 months. The average age of the firm in our sample was 36.59 months with a standard deviation of 18.74. The age ranged between 14 and 77 months.

3.2 Variables

Dependant variables: growth

Given the specific features of the innovative nascent firms and the regional context, we retained job creation as a growth variable. In effect, for a young firm, job creation suggests an increase in resources and offers a good indicator of the firm’s growth. With high-tech start-ups, it is possible for assets and employment to grow before any sales occur (Kogut and Zander, 1992). Furthermore, when a more macro-oriented interest in job creation is the rationale for the study, measuring growth in terms of jobs seems the natural choice (Schreyer, 2000). Moreover, Stam et al. (2014) suggested that non-financial indicators to measure growth are a better option when evaluating the link between SC and performance. Job creation is measured longitudinally in absolute value

(Davidsson and Wiklund, 2001), taking the firm's situation in terms of job creation (full-time jobs) into account at two given intervals: t_0 corresponds to the moment the firm is launched and t_1 corresponds to the time of the study. Growth is thus assessed over the whole duration of the firm's existence.

Independent variables

In line with Debrulle et al. (2014) and Cuevas-Rodriguez et al. (2014), we evaluated ESC and ISC on a Likert scale from 0 to 5 to assess the degree of utility of the support received by each category of stakeholder: 0 indicates absence of support, 1 equals unhelpful support and 5 very useful support. ESC refers to support from clients, suppliers, lawyers, accountants, entrepreneur clubs and support structures others than incubators and clusters. In the same way, we assess ISC through the support received from family members, friends, former colleagues and associates. We summarised the information content of the help received in ESC and ISC indices, using the first factor of principal component analyses (PCA). Figures 1 and 2 and Table 1 detail the underlying components of the ISC and ESC indices.

Figure 1 PCA variable correlations of ISC components

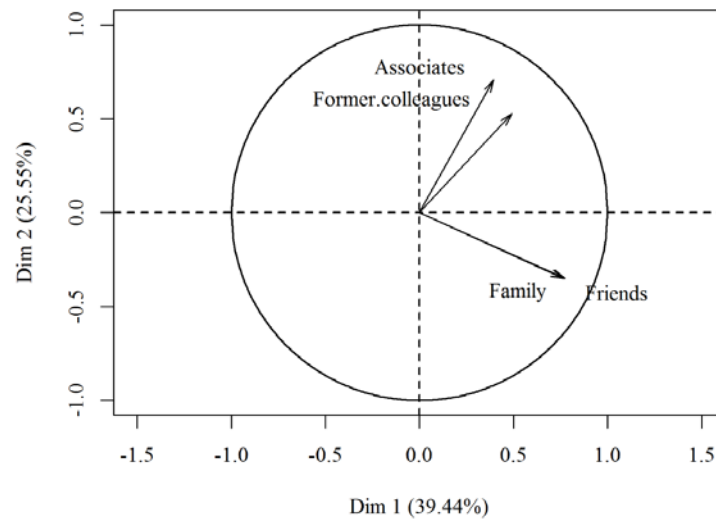


Figure 1 indicates that the first factor (Dim 1) employed as a measure of ISC represents 39.44% of the information contained in the marks. It is positively correlated with all the marks received, meaning that the higher a mark, the greater the ISC. The second factor (Dim 2) provides a distinction between the two groups: the help received from family and friends on the one hand, and from associates and former colleagues on the other. Given that the sample focuses on high-tech new ventures, the close ties between associates and former colleagues is to be expected since the skills required to run such businesses are more likely to be found in professional relationships rather than the personal links.

Figure 2 PCA variable correlations of ESC components

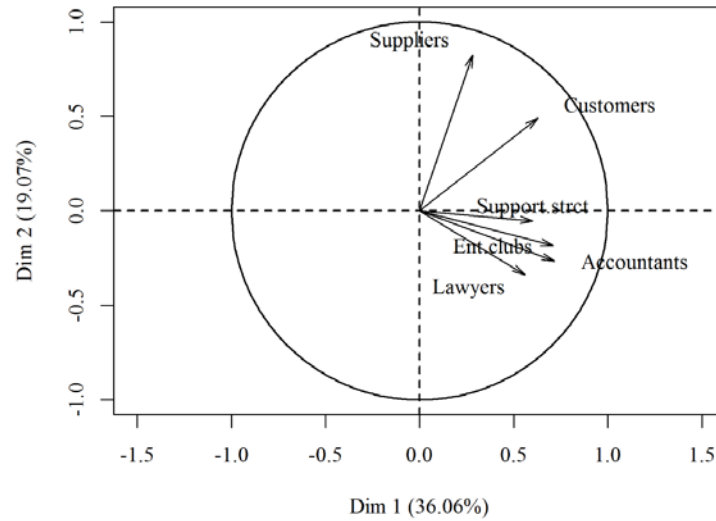


Figure 2 depicts the relationship between the marks that compose the ESC index. The first factor (Dim 1) accounts for 36.06% of information contained in the marks. Consistent with the PCA performed on ISC, this first factor is positively related to each mark, meaning that the higher the marks, the higher the ESC index. The second factor (Dim 2) represents 19.07% of total variance. It indicates the opposition between commercial partners, especially suppliers and customers, and consulting partners, especially lawyers, chartered accountants and entrepreneur clubs. In contrast, the help received from support structures is less discriminatory. 90.92% of the firms were found to have been supported and 86% provided a mark equal to or greater than 3/5.

Table 1 Factors' loadings, support received and Cronbach's alpha

	<i>ISC</i>	<i>ESC</i>	<i>Frequency of supports</i>
Usefulness of help from associates	0.16		73.75%
Usefulness of help from friends	0.69		52.43%
Usefulness of help from family members	0.63		67.96%
Usefulness of help from former colleagues	0.235		41.75%
Usefulness of help from suppliers		0.165	45.63%
Usefulness of help from customers		0.47	52.43%
Usefulness of help from chartered accountants		0.63	69.90%
Usefulness of help from lawyers		0.45	59.22%
Usefulness of help from entrepreneurs' clubs		0.62	50.485%
Usefulness of help from support structures		0.48	90.92%
Cronbach's alpha	0.69	0.62	

Table 1 describes the components of ISC and ESC. The last column on the right-hand side of Table 1 reports the proportion of respondents who received help from each stakeholder, while the second and third columns of Table 1 report the loading factors of the ISC and ESC components respectively. Regarding the loadings, we observed that ISC is composed of personal relationships, that is to say the help received from friends and family. ESC is mainly made up of support from consulting partners, especially chartered accountants and entrepreneur clubs.

Control variables

The estimates incorporated three quantitative and two qualitative control variables. The quantitative variables were total funding, the age of the owner in years, and the age of the venture in months. Initial financial resources are closely linked to the firm's growth. The two qualitative control variables used were incubation and sector of activity. Based on the French industry classification (NAF code), we split the firms included in the study into five activity sectors:

- 1 industry
- 2 retail
- 3 information and communication
- 4 specialised scientific and technical activities
- 5 services.

4 Results

4.1 Description of data

Table 2 details the descriptive statistics of the sample. The median number of employees at launch is 1.81 and standard deviation is 1.35. Forty entrepreneurs launched their start-up with no employees, while 12 businesses launched with more than three employees. Between the launch date and the sample collection, average growth in terms of jobs was +2.70 for a standard deviation of 5.74 employees. Six companies eliminated 1 to 2 jobs, while 33 firms did not create any⁵. Only four of them created more than ten jobs. The average age of the businesses at the time of the data collection was three years and two months, ranging between five months and five years nine months. Twelve had total funding below or equal to 10,000 euros, with a minimum of 2,000 euros for 2 of them, while 11 enterprises had funding over or equal to 1 million euros. Average funding was 309,991.35 euros for a standard deviation of 577,864.16 euros. The companies were from five sectors: 14.44% from commerce, 22.115% from industry, 32.69% from IT and communications, 25.96% from science and technology and 4.81% from services. 59.61% of the companies included in the sample had been in an incubator. The ISC and ESC values correspond to the scaled and reduced coordinates provided by the PCAs.

Table 2 Descriptive statistics

	<i>Mean</i>	<i>Standard deviation</i>	<i>Min</i>	<i>Max</i>
Growth	2.70	5.74	-2	37
ISC	0.00	1.27	0	2.81
ESC	0.00	1.10	0	2.48
Total funding	309 991.35	577 864.16	1,000	4 106 000
Age of business	36.59	18.74	5	69

4.2 Estimation method

The likely, mutually reinforcing relationship between SC and growth raises the question of simultaneity bias in the estimates. Simultaneity bias is an inherent and major challenge in estimating the link between SC and performance (Carpenter et al., 2012; Gedajlovic et al., 2013). Econometrically, simultaneity bias corresponds to the occurrence of a correlation between the independent variable and the error term, which provides inconsistent estimates in ordinary least squares (OLS) (Stock and Watson, 2003). In order to control for this potential bias, we tested for the endogeneity of the ISC and ESC regressors using the Eicker-White test (Wooldridge, 2010). The results of these tests in Table 3 confirm that the ESC is significantly endogenous, but not the ISC.

Table 3 Wu-Hausman test

	<i>Df</i>	<i>Test</i>	<i>P-value</i>
ISC	1	3.345	0.17
ESC	1	5.22	0.025

Consistent with Gedajlovic et al. (2013) and Kreiser et al. (2013), we implemented the two-stage least squares (hereafter 2SLS) method to deal with this reciprocal relationship. The purpose of the 2SLS is to provide an estimation of the ESC in the first stage, purged from its correlation with the error term. The resulting reduced form of ESC obtained in the first estimation was used in the second stage to provide consistent estimates of the relationship between ESC and growth.

We show that the intensity of innovation satisfied the strong instrument conditions to produce a reliable estimation of ESC in the first stage. The intensity of innovation is a dummy variable which states whether the innovations are numerous in the sector of the firm. 52.43% of respondents considered that this was the case. According to Rowley et al. (2000), firms operating in a rapidly changing environment with a high rate of innovation gain an advantage of weak ties. It is a way for the nascent firm to have access to actors able to give novel information. As our ESC index is based on weak ties, we chose 'intensity of innovation' as our instrumental variable of the first stage of our model.

Statistically a strong instrument should be relevant and exogenous, that is to say it should significantly affect the ESC, but not be directly related to the dependent variable, respectively. However in social science, it is difficult to find strong instrumental variables because most of them affect both the independent and dependant variables (Kreiser et al., 2013). To address the relevancy of the intensity of innovation as an instrumental variable, we adopted the Stock-Yogo weak instrument test. The test indicated a value of $F=11.45$ ($P\text{-value}<0.004$), which exceeds the Stock-Yogo critical value ($F = 10$) based on 10%

instrumental bias. Furthermore, the absence of a relationship between the residual of the regression linking ESC and growth confirms the instruments' exogeneity.

4.3 Regression results

Table 4 sets out the correlation matrix to examine the presence of multicollinearity. Apart from the strong link observed between growth and total funding and ESC, there does not appear to be a strong or significant correlation between independent variables. Significant but relatively weak links can be observed between funding, the ESC and belonging to an incubator.

Table 4 Simple correlation matrix

	<i>Growth</i>	<i>Funding</i>	<i>ISC</i>	<i>ESC</i>	<i>Sector</i>	<i>Incubation</i>
Growth	1					
Funding	0.49***	1				
ISC	0.07	0.03	1			
ESC	0.24***	0.30***	0.25**	1		
Sector	-0.05	-0.16	0.06	-0.04	1	
Incubation	0.11	0.26**	0.07	0.08	-0.01	1

Notes: †, *, **, *** indicate the level of significance at 0.1, 0.05, 0.01 and < 0.001

Analysis of the link between SC and growth by hierarchical regressions involves comparing different estimates based on a single sample. In each estimate, the variables of interest were added successively. Comparison of standardised coefficients within these estimates gives us the relative influence of the different variables on growth. Table 5 reports the 2SLS regression results and compares the results of six estimates. The first column indicates the first stage of the 2SLS by regressing the instrument innovation intensity and the exogenous variables against the ESC. Model (1) in the second column of Table 5 estimates the contribution of ISC with OLS in tandem with control variables to explain growth. The next four columns present the regression results of the second stage of the 2SLS. The contribution of the reduced form of ESC is introduced in Model (2). Model (3) in the fourth column tests the potential inverted U-shape relationship between ESC and growth, while Model (4) tests the interaction between incubation and ESC. Model (5a) tests the links between all the variables and growth. In the same way, Model (5b) in the final column of Table 5 tests the specification of Model (5a) within the OLS method for comparative purposes. Regarding the small sample size, we have implemented the bootstrap bias-corrected percentile method to assess the confidence intervals and the corrected p-value (Catanzaro et al., 2018). Bootstrapped 90% confidence intervals are indicated between brackets under the estimated coefficients.

The first stage indicates that the innovation intensity ($\beta = 0.43***$) and size of funding ($\beta = 0.66**$) are strong determinants of the ESC. By contrast, it seems that the role of incubators in the formation of ESC is not discriminatory; thus, hypothesis (H2a) cannot be confirmed. We noticed that the firms belonging to the IT and communications sector have less ESC than those affiliated to the industry sector.

Table 5 Regression results ($N = 99$)^a

Independent variables:	Dependent variables					
	Growth in employees scaled by age of the firm					
	1st stage		2nd stage		OLS	
ESC	(1)	(2)	(3)	(4)	(5a)	(5b)
Intercept	-0.1 (-0.37; 0.185)	-0.09 (-0.40; 0.26)	0.08 (-0.26; 0.45)	-0.12 (-0.47; 0.25)	0.02 (-0.32; 0.39)	0.01 (-0.29; 0.31)
Innov. intensity (ref: no)	0.43*** (0.23; 0.6)	0.53*** (0.40; 0.66)	0.65*** (0.5; 0.81)	0.48*** (0.345; 0.62)	0.59*** (0.43; 0.76)	0.44*** (0.32; 0.55)
Total funding	0.66** (0.36; 0.96)					
Sector (ref: indus)						
Retail	-0.09† (-0.4; 0.19)	-0.05 (-0.38; 0.48)	-0.00 (-0.46; 0.42)	0.20 (-0.26; 0.56)	0.01 (-0.39; 0.37)	0.00 (-0.37; 0.37)
IT and comm.	-0.38* (-0.69; -0.09)	0.93** (0.39; 1.47)	0.82* (-0.27; 1.38)	0.98** (0.44; 1.54)	0.88** (0.29; 1.45)	0.63** (0.26; 1.02)
Scientific act.	-0.11 (-0.42; 0.17)	-0.1 (-0.51; 0.33)	-0.19 (-0.64; 0.24)	0.06 (-0.39; 0.5)	-0.07 (-0.54; 0.38)	-0.22 (-0.57; 0.14)
Services	-0.01 (-0.5; 0.49)	0.28 (-0.36; 0.96)	0.155 (-0.48; 0.84)	0.43 (-0.26; 1.09)	0.275 (-0.41; 0.93)	0.12 (-0.49; 0.78)
Incubation (ref: non-incubated)	0.14 (-0.05; 0.35)	-0.33 (-0.66; -0.02)	-0.31 (-0.6; 0.03)	-0.36 (-0.69; -0.07)	-0.33 (-0.66; 0.02)	-0.21 (-0.45; 0.13)
ISC	0.34** (0.24; 0.45)	0.21 (0.09; 0.33)	-0.05 (-0.24; 0.16)	0.00 (-0.21; 0.19)	0.01 (-0.18; 0.22)	0.08 (-0.03; 0.21)
ESC		0.79*** (0.31; 1.29)	0.72* (0.2; 1.2)	0.63** (0.295; 0.93)	0.63** (0.33; 0.98)	0.79*** (0.54; 1.02)
ESC × ESC			-0.45* (-0.72; -0.16)		-0.34 (-0.65; -0.04)	-0.01 (-0.05; 0.03)
ESC × incubation				-0.84 (-1.4; -0.3)	-0.52 (-1.18; 0.11)	-0.56 (-0.84; -0.29)
R ²	0.35	0.21	0.33	0.32	0.32	0.40
Adjusted-R ²	0.29	0.15	0.26	0.25	0.24	0.33
Fisher	5.71***	4.05***	4.65***	4.64***	4.45***	5.71***

Notes: †, *, **, *** indicate the level of significance at 0.1, 0.05, 0.01 and <0.001.

^aBootstrapped 90% confidence intervals (bias-corrected percentile method) and corrected p-value.

Model (1) did not allow us to conclude that ISC impacts the growth of the innovative new venture. Hypothesis (H1c) was therefore rejected. In contrast, models (2) to (5b) validated hypothesis (H1a). They reported a strong and positive relationship between ESC and growth. The coefficients of ESC on growth ranged between $\beta = 0.79^{***}$ in OLS (Model 5b) and $\beta = 0.63^{***}$ in 2SLS (Model 5a). Comparison of the coefficients within 2SLS models suggested that ESC achieved the highest growth returns following affiliation with the IT sector. Total funding was also one of the main drivers of growth for a firm. Model (3) provided evidence that despite the positive effect of ESC on growth ($\beta = 0.72^*$), its impact decreased after a given intensity ($\beta = -0.45^*$) (H1b). However, the results of Models (4) to (5a and 5b) did not provide similar results.

Regarding the role of incubators in the growth of the new venture, affiliation to an incubator does not enhance growth and does not affect the role of ESC on growth (H2b). These results were confirmed by the OLS estimates in Model (5b).

5 Discussion

Our study offers tangible findings about the role of SC on the growth of innovative young firms.

First, we shifted the debate on the role of SC to a well-defined spatial-temporal environment. It limited the study to a specific period in the firm's existence, in other words, its early years. SC was thus examined with respect to its specific role at this particular moment in time. Moreover, the environment of the firms studied was characterised by a regional context strongly marked by industrial reconversion and economic difficulties. This situation incited the local authorities to offer various forms of support in a bid to promote the creation of business and innovation. Consequently, the firms under study are at the heart of the policies introduced by multiple public or semi-public structures, one goal of which is to develop a business network system. Since these actions cannot be ignored, we took them into consideration as an element of the specific context potentially impacting the role of SC on the growth of these young businesses.

Second, in this context, our findings confirmed that ESC is generally considered to have a positive role on the growth of nascent firms. This is in line with the more specific work by Stam et al. (2014), Debrulle et al. (2014), Anderson et al. (2007) and Yli-Renko et al. (2001). In effect, the risky and uncertain innovation process was dependent on the capacity of individuals to collect, produce and exchange knowledge with external stakeholders (Yli-Renko et al., 2001). In other words, innovative firms must be able to develop weak links with external sources of information and knowledge liable to promote business opportunities (Adler and Kwon, 2002). We may note that advisory services, which include business support structures, business owner clubs, lawyers and chartered accountants, represent the major part of the support in our ESC index, relative to customers and suppliers. While some of the studies mentioned highlighted the important role of customers and suppliers in obtaining information about potential business opportunities, the apparently more modest support received from customers and suppliers in our study may be explained in several ways. First, the development of weak links by young business ventures leaves them vulnerable to risks of opportunistic behaviour by their partners (Pirolo and Presutti, 2010), especially when the information and negotiating power asymmetry is reinforced via multinationals and long-established firms. Our results

confirmed that there is an inverse U-shaped relationship between ESC and the growth of an innovative nascent enterprise. After a certain amount of ESC, the effect of ESC on growth decrease, as shown in previous researches. Nascent firms need to concentrate on the value (or quality) delivered by ESC more than on its accumulation over time. However, more researches are requested to specify the level and the quality on which the usefulness of SC decreases. Second, the young age of the businesses in our study was a handicap (lack of legitimacy, experience...) (Stinchcombe, 1965), restricting the development of trust and consequently the exchange of information with this type of partner required for their growth.

Third, ISC is traditionally considered to have a positive impact on the emergence of new business ventures (Davidsson and Honig, 2003), but its impact wears off or is relatively obscure during the development stage (Debrulle et al., 2014). However, in the context of innovative young businesses, we might expect to see a positive effect insofar as the innovation process depends on the capacity of individuals to collect, produce and exchange knowledge within the company (Sanchez-Famoso et al., 2014), i.e., to develop strong internal links that are sources of cohesiveness, sharing and creativity. However, our findings show no significant link between ISC and the growth of innovative young businesses. The size of the organisations studied is potentially one of the reasons for this. In effect, the median number of employees at the launch was 1.06 and average job growth was +1.81. In other words, because of their age, these companies have very few employees, which limits the impact of cognitive and informational exchange. This suggests there is a threshold effect linked to the size of the firm in terms of number of employees, beyond which ISC impacts on innovation and ultimately on growth. This hypothesis is in line with the observations by Stam et al. (2014) which suggest that the positive effects of ISC on performance are considerably more marked for older firms than young ones. While the size of the firm (in terms of jobs) is one possible explanatory factor, the nature of the relationships may be another. Hite and Hesterly (2001) show that as strong ties (family, friends...) are not, by nature, economic ties, they are not necessarily linked to the growth of the firm. On the other hand, as weak links are far more market oriented, they tend to promote growth. ISC is thus less decisive once the company has been launched and before it has expanded with regard to jobs. In short, the role of ISC on innovative firms evolves as follows:

- 1 before the emergence of the firm, ISC plays a major role in the emergence of nascent firms
- 2 during the start-up phase, ISC does not have a significant impact on the growth of the business
- 3 its impact on growth develops when the company reaches a certain job creation threshold.

It would be interesting to determine the level of this threshold in a future study. Our study built on previous research in terms of the organisational and temporal context. Thus, for innovative young firms (under five years old), ESC oriented towards market ties is decisive for growth in the early years. ISC, on the other hand, does not impact a firm's growth during this period.

Fourth, our study shows that almost all (90.92%) of the firms obtained resources from business support structures. The role of business support structures is thus essential in the life of innovative young firms and in the development of their ESC. In view of the

reputation, purpose and role assigned to incubators by the authorities, it is interesting to explore the specific case of business ventures that have been taken under their wing. One of their key roles is considered to be that of networking. However, our findings did not support the notion that firms which have passed through an incubator have a greater level of ESC, subsequently ensuring better growth. Some studies have already expressed doubts as to the capacity of firms that have joined an incubator to develop or maintain a useful business network (Borges and Filion, 2013; Totterman and Sten, 2005). In addition, Amezcua et al. (2011) showed that young incubated businesses must find a compromise between the *modus operandi* and the expectations of the incubator and the market. After some years in the incubator, this leads to a delayed learning process and competitive selection. Our findings also suggest that firms which have been through an incubator do not grow more easily than others. In fact, leaving the incubator appears to be a difficult transition stage for the young company. In addition, incubators do not seem to do better than other forms of support at helping build ESC, or even in indicating how to use it better.

Fifth, our study gives more details on the qualitative dimension of SC. A structural weakness in the definitions frequently used for SC is due to the value assigned to it. Resources resulting from SC are defined as having intrinsic value (Adler and Kwon, 2002; Nahapiet and Ghoshal, 1998; Vila et al., 2013). Their quality is an implicit given: they are evaluated either with respect to the act of acquisition or retention by the SC player, or by the value of the ties through which the resource in question has been obtained. In this perspective, the more resources players obtain from their relational network, the more valuable their SC. There are two limitations to this idea. First, the value of a resource – especially if it concerns information, knowledge or support – is more to do with its (correct) usage than its accumulation. Second, the notion obscures the potential negative impacts of SC (Gedajlovic et al., 2013; Schulman and Anderson, 1999).

Moreover, in measuring the way in which an entrepreneur perceives the usefulness of the links it develops with a whole series of stakeholders, our study sharpened the pertinence of the SC indicator used.

Sixth, the research design based on 2SLS methodology avoids the simultaneity bias, an inherent and major challenge in estimating the link between SC and performance or growth (Carpenter et al., 2012; Gedajlovic et al., 2013). Simultaneity bias occurs when the dependent variable that we seek to predict is both the consequence and the cause of the independent variable. This difficulty is frequent, both because of the tools used to measure SC and the nature of the samples collected. In effect, longitudinal data available on innovative nascent firms is by nature limited, and the small number of individuals that make up the populations limits the potential for panel analysis, thereby implying lagged variables and isolating the temporal dynamic of SC. Thus, the 2SLS method helped us estimate the impact of SC on growth, purged of the impact of its antecedents, in other words, the factors that led to the development of relationships at the origin of SC (Gedajlovic et al., 2013). Nonetheless, we pointed out that finding an instrument that fulfils strength and exogeneity conditions required by the 2SLS remains difficult. This method did not completely overcome this pitfall.

6 Conclusions

Our study aimed to provide elements of responses to the entrepreneurial debate on the role of SC in the growth of innovative nascent firms. Although findings to date are contradictory, our study illustrated the conditions underpinning this type of relationship. First, we focused on the relational dimension of SC, analysed through the lens of the way entrepreneurs perceive its usefulness with respect to their stakeholders. Our study also contributed an original take to the topic of SC as it is not necessarily considered a positive resource. The link has to be considered as useful by the entrepreneur for SC to ensue. We show that during the early years, the ESC of nascent firms appears to be a decisive resource for growth, which is not the case for ISC. Third, our study included the context in which the firms under study develop, such as joining an incubator. According to our observations, joining an incubator appeared to have no impact on either growth or the relationship under study. Fourth, our research extended the research agenda of Gedajlovic et al. (2013) by improving the clarification of the link between SC and growth. The 2SLS methodology was of great interest in strengthening the validity of our results. Moreover, our sample had a clear interest concerning the characteristics of the firms included in the study. It focused on firms that are highly valued by the authorities as they are expected to rejuvenate and regenerate the local business network. The study clearly showed that a firm's ESC has an impact on growth in terms of jobs, which is extremely interesting for areas with high rates of unemployment. As the support structures are designed to provide optimum conditions for the creation and mobilisation of this SC, they have a key role to play. However, while our study indicates that all of the structures and types of assistance are useful, it does not show that joining an incubation structure plays a key role in the growth of innovative nascent firms, thereby calling into question the many local economic policies that have placed incubators at the heart of their approach. Finally, despite the undeniable interest of our sample, it nonetheless remains relatively limited, restricting generalisation of the results.

References

- Adler, P.S. and Kwon, S-W. (2002) 'Social capital: prospects for a new concept', *Academy of Management Review*, Vol. 27, No. 1, pp.17–40.
- Adlesic, R.V. and Slavec, A. (2012) 'Social capital and business incubators performance: testing the structural model', *Economic and Business Review*, Vol. 14, No. 3, pp.201–222.
- Amezcuca, A., Bradley, S.W. and Wiklund, J. (2011) 'Cutting the apron strings of business incubation firms: is the ability of newness ... a liability?', *Academy of Management Proceedings*, pp.1–7.
- Anderson, A., Park, J. and Jack, S. (2007) 'Entrepreneurial social capital conceptualizing social capital in new high-tech firms', *International Small Business Journal*, Vol. 25, No. 3, pp.245–272, Sage Publications.
- Anderson, A.R., Dodd, S.D. and Jack, S. (2010) 'Network practices and entrepreneurial growth', *Scandinavian Journal of Management*, Vol. 26, No. 2, pp.121–133, Elsevier.
- Anyadike-Danes, M., Hart, M. and Du, J. (2015) 'Firm dynamics and job creation in the United Kingdom: 1998–2013', *International Small Business Journal*, Vol. 33, No. 1, pp.12–27, Sage Publications.
- Birch, D.G.W. (1979) *The Job Generation Process*, MIT Program on Neighborhood and Regional Change, Cambridge, Mass.

- Borges, C. and Filion, L.J. (2013) 'Spin-off process and the development of academic entrepreneur's social capital', *Journal of Technology Management & Innovation*, Vol. 8, No. 1, pp.21–34, SciELO Chile.
- Burt, R.S. (1997) 'The contingent value of social capital', *Administrative Science Quarterly*, Vol. 42, No. 2, pp.339–365.
- Burt, R.S. (2000) 'The network structure of social capital', in Staw, B.M., Sutton, R.I. and Sutton, R.L. (Ed.): *Research in Organizational Behavior*, Vol. 22, pp.345–423, Elsevier, Greenwich Ct.
- Brush, C.G., Manolova, T.S. and Edelman, L.F. (2008) 'Properties of emerging organisations: an empirical test', *Journal of Business Venturing*, Vol. 23, No. 5, pp.547–566.
- Cao, Q., Simsek, Z. and Jansen, J.J. (2012) 'CEO social capital and entrepreneurial orientation of the firm bonding and bridging effects', *Journal of Management*, Vol. 41, No. 7, pp.1–26, SAGE Publications.
- Carpenter, M.A., Li, M. and Jiang, H. (2012) 'Social network research in organizational contexts a systematic review of methodological issues and choices', *Journal of Management*, Vol. 38, No. 4, pp.1328–1361, SAGE Publications.
- Catanzaro, A., Messeghem, K. and Sammut, S. (2018) 'Effectiveness of export support programs: impact on the relational capital and international performance of early internationalizing small businesses', *Journal of Small Business Management*, pp.1–26, DOI: 10.1111/jsbm.12489.
- Cuevas-Rodriguez, G., Cabello-Medina, C. and Carmona-Lavado, A. (2014) 'Internal and external social capital for radical product innovation: do they always work well together?', *British Journal of Management*, Vol. 25, No. 2, pp.266–284, Wiley Online Library.
- Davidsson, P. and Honig, B. (2003) 'The role of social and human capital among nascent entrepreneurs', *Journal of Business Venturing*, Vol. 18, No. 3, pp.301–331.
- Davidsson, P. and Wiklund, J. (2001) 'Levels of analysis in entrepreneurship research: current research practice and suggestions for the future', *Entrepreneurship: Theory & Practice*, Vol. 25, No. 4, pp.81–100.
- Debrulle, J., Maes, J. and Sels, L. (2014) 'Start-up absorptive capacity: does the owner's human and social capital matter?', *International Small Business Journal*, Vol. 32, No. 7, pp.777–801, SAGE Publications.
- Ebbens, J.J. (2014) 'Networking behavior and contracting relationships among entrepreneurs in business incubators', *Entrepreneurship: Theory & Practice*, Vol. 38, No. 5, pp.1159–1181.
- Eklinder-Frick, J., Eriksson, L.T. and Hallén, L. (2014) 'Multidimensional social capital as a boost or a bar to innovativeness', *Industrial Marketing Management*, Vol. 43, No. 3, pp.460–472, Elsevier.
- Gedajlovic, E., Honig, B., Moore, C. et al. (2013) 'Social capital and entrepreneurship: a schema and research agenda', *Entrepreneurship: Theory & Practice*, Vol. 37, No. 3, pp.455–478.
- Granovetter MS (1973) 'The strength of weak ties', *American Journal of Sociology*, Vol. 78, No. 6, pp.1360–1380.
- Hackett, S.M. and Dilts, D.M. (2004) 'A systematic review of business incubation research', *The Journal of Technology Transfer*, Vol. 29, No. 1, pp.55–82, Springer.
- Hite, J.M. and Hesterly, W.S. (2001) 'The evolution of firm networks: from emergence to early growth of the firm', *Strategic Management Journal*, Vol. 22, No. 3, pp.275–286, Wiley Online Library.
- Kogut, B. and Zander, U. (1992) 'Knowledge of the firm, combinative capabilities, and the replication of technology', *Organization Science*, Vol. 3, No. 3, pp.383–397.
- Kolstad, I. and Wiig, A. (2013) 'Is it both what you know and who you know? Human capital, social capital and entrepreneurial success', *Journal of International Development*, Vol. 25, No. 5, pp.626–639, Wiley Online Library.
- Kreiser, P., Patel, P. and Fiet, J. (2013) 'The influence of changes in social capital on firm-founding activities', *Entrepreneurship: Theory & Practice*, Vol. 37, No. 3, pp.539–568.

- Lamine, W., Jack, S., Fayolle, A. et al. (2015) 'One step beyond? Towards a process view of social networks in entrepreneurship', *Entrepreneurship & Regional Development*, Vol. 28, Nos. 7/8, pp.413–429.
- Martinez, M.A. and Aldrich, H.E. (2011) 'Networking strategies for entrepreneurs: balancing cohesion and diversity', *International Journal of Entrepreneurial Behavior & Research*, Vol. 17, No. 1, pp.7–38.
- Maurer, I. and Ebers, M. (2006) 'Dynamics of social capital and their performance implications: lessons from biotechnology start-ups', *Administrative Science Quarterly*, Vol. 51, No. 2, pp.262–292, SAGE Publications.
- McFadyen, M.A. and Cannella, A.A. (2004) 'Social capital and knowledge creation: diminishing returns of the number and strength of exchange relationships', *Academy of Management Journal*, Vol. 47, No. 5, pp.735–746.
- Nahapiet, J. and Ghoshal, S. (1998) 'Social capital, intellectual capital, and the organizational advantage', *Academy of Management Review*, Vol. 23, No. 2, pp.242–266.
- Partanen, J., Moller, K., Westerlund, M. et al. (2008) 'Social capital in the growth of science-and-technology-based SMEs', *Industrial Marketing Management*, Vol. 37, No. 5, pp.513–522, Elsevier.
- Patton, D. (2013) 'Realising potential: The impact of business incubation on the absorptive capacity of new technology-based firms', *International Small Business Journal*, Vol. 32, No. 8, pp.897–917.
- Patton, D. and Marlow, S. (2011) 'University technology business incubators: helping new entrepreneurial firms to learn to grow', *Environment and Planning-Part C*, Vol. 29, No. 5, pp.911–926.
- Pirolò, L. and Presutti, M. (2010) 'The impact of social capital on the start-ups' performance growth', *Journal of Small Business Management*, Vol. 48, No. 2, pp.197–227, Wiley Online Library.
- Putnam, R.D. (1995) 'Bowling alone: America's declining social capital', *Journal of Democracy*, Vol. 6, No. 1, pp.65–78.
- Rowley, T., Behrens, D. and Krackhardt, D. (2000) 'Redundant governance structures: an analysis of structural and relational embeddedness in steel and semi-conductor industries', *Strategic Management Journal*, Vol. 21, No. 3, pp.369–386.
- Sanchez-Famoso, V., Maseda, A. and Iturralde, T. (2014) 'The role of internal social capital in organisational innovation. An empirical study of family firms', *European Management Journal*, Vol. 32, No. 6, pp.950–962, Elsevier.
- Schreyer, P. (2000) *High-Growth Firms and Employment*, OECD Publishing, OECD, Paris.
- Schulman, M.D. and Anderson, C. (1999) 'The dark side of the force: a case study of restructuring and social capital', *Rural Sociology*, Vol. 64, No. 3, pp.351–372, Wiley Online Library.
- Schwartz, M. (2013) 'A control group study of incubators' impact to promote firm survival', *The Journal of Technology Transfer*, Vol. 38, No. 3, pp.302–331, Springer.
- Semrau, T. and Werner, A. (2012) 'The two sides of the story: network investments and new venture creation', *Journal of Small Business Management*, Vol. 50, No. 1, pp.159–180, Wiley Online Library.
- Shrestha, M.K. (2013) 'Internal versus external social capital and the success of community initiatives: a case of self-organizing collaborative governance in Nepal', *Public Administration Review*, Vol. 73, No. 1, pp.154–164, Wiley Online Library.
- Stam, W., Arzlanian, S. and Elfring, T. (2014) 'Social capital of entrepreneurs and small firm performance: a meta-analysis of contextual and methodological moderators', *Journal of Business Venturing*, Vol. 29, No. 1, pp.152–173, Elsevier.
- Stinchcombe, A.L. (1965) 'Social structure and organizations', in *Handbook of Organizations*, pp.142–193, Emerald Group Publishing Limited, Bingley.
- Stock, J.H. and Watson, M.W. (2003) *Introduction to Econometrics*, Addison Wesley, Boston.

- Totterman, H. and Sten, J. (2005) 'Start-ups business incubation and social capital', *International Small Business Journal*, Vol. 23, No. 5, pp.487–511, SAGE Publications.
- Vila, J.E., Fornoni, M. and Palacios, D. (2013) 'Multidimensional social capital in new ventures', *The Service Industries Journal*, Vol. 33, Nos. 9–10, pp.820–832, Taylor & Francis.
- Wooldridge, J.M. (2010) *Econometric Analysis of Cross Section and Panel Data*, MIT Press.
- Yli-Renko, H., Autio, E. and Sapienza, H.J. (2001) 'Social capital, knowledge acquisition, and knowledge exploitation in young technology-based firms', *Strategic Management Journal*, Vol. 22, Nos. 6–7, pp.587–613, Wiley Online Library.
- Yli-Renko, H., Autio, E. and Tontti, V. (2002) 'Social capital, knowledge, and the international growth of technology-based new firms', *International Business Review*, Vol. 11, No. 3, pp.279–304, Elsevier.

Notes

- 1 For consistency with the sample period, these statistics refer to the administrative division prior to the reform of 2015. French National Institute for Statistical and Economic Studies (INSEE) available at <https://www.insee.fr/fr/statistiques/1893220>.
- 2 https://www.nordpasdecalais.fr/upload/docs/application/pdf/2014.../sri-si_cmv1.pdf.
- 3 Eurasanté (biology, health & nutrition; public research), Cré'Innov (all sectors), EuraTechnologies (digital & ICT), APUI (eco-technologies), Innorex (textiles), Tonic Incubation (all sectors) and MITI (all sectors; public research).
- 4 Such as the Boutiques deGestion which is a national support network for entrepreneurs with around 20 branches in the Nord-Pas-de-Calais. It offers monitoring, training and network support from an entrepreneurs' club, and RéseauEntreprendre, an international network for entrepreneurs. The organization offers free coaching from an entrepreneur, interest-free loans, and inclusion in a local, national and international network of entrepreneurs.
- 5 The data do not allow for a Heckman sample selection correction, which would provide an unsatisfactory partition of our sample. The proportion of firms with no growth may only induce under-estimations of the relationships and does not affect the sample's representativeness.