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# Does Financial Institution Proximity Affect the Development of Entrepreneurship?

*Francesco Fasano, Maurizio La Rocca, Tiziana La Rocca and Veronica Marozzo*

## Abstract

The present contribution joins the stream of research investigating the relationship between local financial development, economic growth, and entrepreneurship. Relevant contributions highlighted that the probability of an individual to start a new business is higher when he/she moves from the least financially developed region to the most financially developed one. Indeed, higher levels of local financial development allow for easier access to external funds, which are crucial for the growth of new businesses. In this entrepreneurial context, the need of financial resources is especially relevant for research spin-offs (ROSs), which require significant resources to transfer to the market their innovative technologies. This chapter deepens the role of local financial development on entrepreneurship and, in particular, on research spin-offs. Empirical evidence highlight that at the time of ROSs' incubation, local financial development does not affect the performance of spin-offs, as they mainly rely on Universities and public contributions. Vice versa, when the ROSs enter the market, they are more in need of funds from the financial system, for which local financial development interestingly becomes strongly relevant to them, affecting corporate performance. Consequently, despite the internationalization of financial markets, policymakers should carefully encourage entrepreneurship through the development of local financial systems.

**Keywords:** financial system, local financial development, local context, entrepreneurship, research spin-off

## 1. Introduction

The firm's success typically depends on a number of internal drivers and external opportunities that can be exploited. In particular, the potential use of external financial resources and the eventual difficulty to access to these resources represent the greatest challenges that a firm must overcome nowadays. Manzocchi et al. [1] state that "External drivers encompass various aspects of the environmental context in which a firm operates, such as the standard and efficiency of the public administration, national or regional credit conditions, physical infrastructures and intangible

capital. Most of these external factors may affect the productivity performance of rather similar firms if they are located in different areas of the same country”.

Therefore, the characteristics of the local environment in which firms operate are at the core of the potential success of a firm. Among the variety of features related to the environment, the role of the financial system is noteworthy in affecting the competitiveness of a firm. With this regard, a large empirical literature, which begins with the work of King and Levine [2], shows that the development of the financial system is important for the overall economic growth at the country level and also directly for firms’ performance [2–4]. As suggested by Guiso et al. [5], the local financial context is considered as a priority by small and medium-sized firms (SMEs), which means that the success of a firm depends on the possibility to exploit the opportunities provided by the external environment. The degree of development of the local financial system (i.e. a specific financial system in a definite geographic area, smaller than the national context) strongly shapes business activities [5] and is especially important for “financially constrained” firms. Such firms have difficult access to the financial market because they face asymmetric information problems [6]. In particular, the access to external financial resources, the amount of credit available and the conditions provided by the banks can differently affect firms’ startup, survivorship and corporate performance, according to the area where the firm is located. Local areas with higher levels of financial development can better support firms’ growth processes. Entrepreneurial venture and, in general, SMEs, that are typical informational opaque firms, are supposed to grow faster in economies characterized by relevant financial development. With this regard, local financial development has a key role on entrepreneurship. Noteworthy contributions argue that the opportunity to start-up a new entrepreneurial activity, where informational opacity is a very relevant driver, is higher in those contexts where the access to external financial market is higher [5], especially when bank competition is strong [7].

Accounting for these stylized facts, this chapter intends to examine the potential effect of local financial development on entrepreneurship, with a particular focus on new high-tech firms, such as research spin-off (RSOs). RSOs are very special start-up firms that are founded with the aim to exploit technological knowledge that originated within a University or a Research institute setting, in order to develop products or services. Considering that innovation is the root of the economic success and the development of a country, it is important an effective way to transfer technology from University and Research Center into the market, for which the role of RSOs is crucial. Thus, understanding how the local financial context affects the performance of RSOs is useful to provide practical implications to sustain corporate development and, in general, the economic growth of nations.

While some papers studying the impact of academic spin-offs at the local level did not take into account direct measure of local context [8], others investigating the factors that foster the creation of academic spin-off directly examined the role of the local context [9]. However, there is a gap in the literature due to the fact that until recently nobody scrutinized the role of the local financial context on RSOs. From one side, it could be argued that the degree of the development of the financial system does not affect RSOs business because this kind of firm works under the University arms’ length, which is a sort of protected environment where financial resources mainly come from public contributions and research projects. However, on the other side, this could be true in the early stage of the RSOs or until the time of entrance into the product market. At this time, for many reasons (the need to have a wider production plane to deal with commercialization, having the need to financially support the payments to suppliers and customers with different time horizon, etc.) the degree of financial development in the local area where a firm is

based on could become very relevant. In this context, in local settings with efficient financial markets, financial intermediaries should be able to provide better assess for the feasibility of RSOs' initiatives. Consequently, a key implication for managers is that RSOs should try to look for external financial resources in well-developed local financial areas. Indeed, in such contexts RSOs have fewer difficulties in obtaining outside funding and, as a result, they can easily finance their current activities and growth opportunities.

This contribution has also implications for policy makers by showing that despite the internalization of financial markets, the local financial context is still relevant for entrepreneurship. Indeed, the growth of RSOs depends on their ability to catch investment opportunities. The presence of developed financial systems increases the availability of funding in a specific geographic area and should be therefore encouraged. Moreover, policymakers could develop new instruments, such as online lending or the figure of financial promoters, which allow RSOs to access external debt. Such instruments could increase local financial development and help RSOs in their negotiations with banks or bring alternative sources of financing, especially in those provinces where the local banking system is poor.

The chapter is structured as follows. We describe the role of the financial system on economic growth in Paragraph 2. Paragraph 3 studies how local financial development could help corporate activities. Paragraph 4 moves one step further and investigates the role of the local financial development on entrepreneurship, while paragraph 5 specifically studies the impact of local financial development on research spin-offs. Finally, paragraph 6 provides some conclusions and implications.

## 2. Financial system and economic growth

The relationship between the financial system and economic development is based on the key role of the services that the financial system provides to the companies [2]. The presence of information asymmetries and significant transaction costs highlights the fundamental role of the financial systems [4]<sup>1</sup> as they guarantee<sup>2</sup>:

- efficient allocation of resources among alternative projects;
- intertemporal reallocation of consumption<sup>3</sup>;
- efficient risk-sharing in each period (risk-sharing in market-based systems and risk-taking in bank-based systems)<sup>4</sup>.

<sup>1</sup> Classical economic models, based on the concept of market equilibrium, Pareto efficiency and the application of theorems, such as Fisher's separation Theorem (1930), show that economic operators face little consistency with the economic reality. Only recently analyses are studying market frictions, such as the role of information asymmetries, agency and transaction costs. Particularly interesting also are the market microstructure studies that try to determine the weight of transaction costs on the markets and why the markets are more or less liquid.

<sup>2</sup> For a deep analysis on the functions of the financial system, see [10, 11].

<sup>3</sup> The concaveness of utility curves creates a mismatching between income and consumption flows. Economic agents prefer to have uniform consumption flows over time, while income streams have fluctuating patterns. The financial system allows to lend and borrow in such a way as to ensure uniform flows. This function is critical regardless of the presence of risk in the system.

<sup>4</sup> For example, if there was no stock market, all the risk would fall on the owner and few entrepreneurs would undertake innovative but very risky projects.

Studies on the relationship between the financial system and economic growth move from the work of Schumpeter [12], who highlighted the positive contribution of a developed financial system to the growth of the entire economy. According to his idea of “destructive creativity”, an efficient financial system would be able to sustain radical innovations in the product market. This sustain consists in supporting the creativity and innovation of new companies that are in need of external financial resources and that cannot provide collateral activities.

Although someone observed that the role of the financial system and institutions has been overestimated [13], in general, the extant literature seems to empirically reveal the importance of the relationship between the financial system and economic growth [4]. This is a line of research that subsequently extended the analysis to the relationship between the development of the financial system and the growth of specific industrial sectors and, later, it focused on the impact of the activities of individual companies [14–16]. In particular, the extant literature [15] showed that companies operating in sectors where the availability of high external financial resources is crucial grow faster in the presence of a developed financial system, both if it's a bank-based or a market-based context<sup>5</sup>. Some international analyses compared the relationship between the financial system and economic development in bank-based countries and market-based countries. The controversial empirical evidence could not attribute the preeminence of one over the other economy [17].

From another perspective, the financial system has its own identity, that is different although related to the legal and enforcement system. Such identity is able to offer a range of essential services in supporting firms' growth [17]. With this regard, the services offered by a financial system play a key influence on a country's industrial growth<sup>6</sup>.

Therefore, the literature suggests that the quality and efficiency of the financial system are fundamental to supporting both existing and new entrepreneurial activities.

### **3. Which role for local financial development to sustain business activities?**

The integration and internationalization of the financial markets could limit the relevance of local financial development on firms' growth [5]. The consequence of such integration is that the financial markets tend to converge toward only one single great market. According to this perspective, companies with growth opportunities, a competitive advantage, and managerial capabilities should be able to overcome the obstacles associated with an inefficient local financial system by moving on the international market. On the contrary, the vast majority of small entrepreneurs could look for funds in the local financial system, as personal point of references at the first place, without a minimal idea about the chances to move in the international markets.

Relatively recent literature [5] suggests that the different levels of development and efficiency of the financial system within a single country make those geographical areas with a higher level of development and efficiency better able to assess the feasibility of new initiatives and, by funding them, support their growth.

<sup>5</sup> For a review see [17, 18].

<sup>6</sup> The literature documents the presence of a relevant cause-and-effect relationship between types and quality of services offered by the financial system and economic development, underlying the need for further empirical research on this issue [17].

In light of this, the level of development and efficiency of the local financial system influences the economic growth of companies.

With this regard, a growing literature found that the “proximity” between financial intermediaries and firms plays a significant role in lending decisions [5]. Banks lend to firms operating in the same area, as it is easier to control the reliability, profitability and future potential projects of their customers [19].

Moreover, local financial development is especially important for SMEs and the startup of new business initiatives, as large companies should be able to easily enter the financial market, overcoming the local difficulties of an under-developed and inefficient financial system.

Companies with profitable growth capabilities could overcome the obstacles associated with an inefficient local financial system by relying on the international market. For example, in some countries, the activation and maintenance of a national financial market could be considered not relevant given the possibility of companies to be listed in foreign markets (such as Nasdaq) [5]. However, this phenomenon presents distortions and inefficiencies. Indeed, large enterprises enter the international financial markets, overcoming the local difficulties of an undeveloped and inefficient financial system, while small and medium-sized enterprises are more in need of local financial support. The inability of the financial system to appreciate, at the local level, the quality of companies’ investment projects hampers development opportunities, limiting the growth of companies.

The different level of development of the financial system among local areas influences the intensity of business growth, limiting the economic convenience of venture capitals. This could limit corporate financial decisions, constraining firms and generating credit rationing problems. In other words, firms grow faster when they are located in regions where access to credit is easier, and financial intermediaries appreciate the quality of investment projects [5]. Besides, in such regions, there are more businesses per capita and the rate of new business creation is higher.

Main studies on this topic [5, 20] are based on the Italian context because it represents an ideal setting to study the role of local financial development on RSOs. In a country unified for almost 160 years where the same law applies there is a large persistence of differences in financial development across Italian provinces that make Italy a very suitable environment to investigate the effects of local financial development. A similar context can be found in Spain, a country that, likewise Italy, is bank-based and civil law. For these reasons, some other contributions investigate the effects of local financial development in Spain [21–23]. Empirical evidences also show that within the United States there is a relevant role on business activities among different development in local areas/States [24].

#### **4. Local financial development and entrepreneurship**

Recent literature suggests that entrepreneurship and, in general, the starting of new firms, is affected by the quality of the financial system. The improved access to external funds (credit availability) provided by financial development increases the opportunities to become an entrepreneur. Firm creation is higher in local markets with more bank competition [7] and is influenced by the development in the local financial market [5]. According to the work of Guiso et al. [5], the probability that a person becomes self-employed is indeed higher in more financially developed areas (5.6 percentage points). This result is consistent with the findings found based on US firms [25]. Similar results are obtained using as dependent variable the number of new firms in an area scaled by the total number of inhabitants. Moving from the least financially developed region to the most financially developed one, it is possible

to observe an increase of the ratio of new firms to the population by 25 percent, roughly one firm for every 400 inhabitants. Also, this latter result is consistent with the findings based on the US [26].

The results based on the Italian context are robust to many controls. First, the level of per capita GDP as a measure of economic development of the area. Moreover, the efficiency of the local courts to account for differences in the enforcement system at the local level. In addition, the local level of “social capital” à la Putnam. Finally, they use instrumental variables in order to avoid any possibility of endogeneity related to the connection between the measure of financial development with some unobserved determinants of entrepreneurship.

Additionally, better access to funds allows people to become entrepreneurs at a younger age (earlier, on average, five years). Hence, in more financially developed regions the average age of existing entrepreneurs should be lower.

Therefore, even in a world of international integration of financial markets, where funds can freely flow cross-country, the quality of the local financial system continues to matter even to promote firm creation and entrepreneurship.

Although local financial development increases the entrepreneurship rate, there are still just a few papers investigating how local financial development affects business activities of new firms. For instance, a recent work studied the financial decisions of start-ups shaped by local financial development [27]. This contribution specifically investigates the effects of local banking development on the debt financing of new firms using a large sample of Italian firms [27]. Controlling for potential endogeneity issues, results show that new firms are more likely to use bank debt and have higher leverage in provinces with higher financial development. While traditional literature [28] suggests that new firms are mainly financed by equity capital, this study provides new and nuanced evidence on the role of local banking development for the debt financing of new firms.

## **5. Local financial development and research spin-off**

The importance of research spin-offs in supporting economic and technological growth is crucial, as they transfer technology and innovation to the market [29]. Considering their relevance, it is of great interest the way to boost RSOs creation, as a way to promote competitiveness among countries. In this interesting line of research, it is interesting to scrutinize the relationship between local financial development and RSOs. As reported in literature, the startup of a company by a research organization is an important way to commercialize the results of a public research [30], and contributes to economic and social welfare by influencing the entire regional development [31, 32]. In fact, the generation and application of new ideas, technologies and scientific knowledge are widely recognized as a prerequisite for economic development, job creation and the formation of a competitive industrial structure [33].

A spin-off is a new legal and economic entity, created through the “separation” of a resource from an existing entity (parent organization) to carry out a new task, or reorganizing a task previously carried out in the entity of origin. When it comes to RSOs, it can be referred to those entities created through the separation from a resource (typically a new technology derived from academic research result), transferred to a new company through a voluntary process supported by the University [34]. RSO is a new firm in which two elements can be found: 1) the initiative must involve people employed by Universities or Research Institutes (typically researchers); 2) the new entity must acquire a technology developed within the University itself and, after the phase of development, it transfers this technology to

the market [35]. Once defined the spinoffs and clarified their role, it is important to underlying that these legal entities are important because: 1) they contribute to the local economic development; 2) they make easier the commercialization of new technologies; 3) they provide support to main activities of research; 4) they have above-average performance; 5) they generate, if compared to licensing, more revenues for universities [36].

The literature about spinoffs is extensive. In particular, an interesting work [37] carried out a comparative investigation between 12 Italian and Swedish spin-offs, observing that an increase in productivity, in terms of public research results, due to the activity of spinoffs. More in general, the success of spin-offs depends from several factors [38]. Among those factors, many studies have highlighted the role played by the financial system. It is well known that the ability of companies to access external financial resources with positive effects is determined also by the presence of a well-developed financial system [39]. Access to external financial resources can be crucial for success in the long run of spin-offs as well as for other low-tech new firms [40, 41].

The extant literature found a positive relationship between the level of local financial development and the number of new spinoffs [42]. However, Agarwal and Bayus [43] showed, “it takes on average 14 years before a technology patented at a research institute reaches 2% of its peak sales at market maturity”. Typically research spinoffs face a long incubation period before the commercialization of the product. Although the different phases of spinoff’s life cycle vary a lot across the different industries, there is, in general, a considerable timescale between the first phase of their life cycle and the sales takeoff. Spinoff’s life cycle can be summed up as follows [44]. A research phase, from an idea into a prototype, a second phase characterized by an intense activity of fundraising, that can be called the opportunity framing phase [45], or alternatively the gestation [46] or pre-start-up phase. A third phase characterized by an intense activity for developing the prototype in order to understand if it can have an effective commercial use. Once the spinoff has productively commercialized its product, established contracts with customers and its sales take off, then it enters in a new phase which may be labeled the post-start-up [47] or maturity phase [46].

During the first three-phase spinoffs are usually located inside dedicated areas that Universities make available (also known as “incubators”), where spinoffs exploit all the academic assets (laboratories, staff, etcetera). In this phase, sales are mainly equal to zero.

There is a typical structure break at the type RSOs move from an incubator stage with no sales and only revenues in terms of government contributions and/or research projects, to a stage where the RSO is financially autonomous, taking off on the product market, commercializing its products/services and having selling revenues.

Considering this cycle in the RSO, La Rocca et al. [48] argue that spin-off works on the prototype, preparing the event of the product launch entering into the market and figuring out how to set up the equipment for a production under steady conditions. The incubation period can be assessed considering that spinoffs are fully dependent from Universities and public contributions. Financial resources availability from financial institutions or public markets play a subordinate role at this stage of the spinoff. Until this stage, the role of the external financial context is meaningless and negligible.

It is at the time of the entrance in the product market, facing directly costumers, competitors and different financial issues, that the way of doing business for RSOs is going to change. RSOs start to become independent from Universities and public contributions. At this time, local financial development positively influences RSO

performance [48]. The presence of a higher degree of local financial development and access to external sources of financing should better support spin-offs' funding decisions. In this context, financial institutions and public markets will be able to provide the financial support that best fit RSOs' financial needs. The potential support that the financial markets provide to spinoffs shows its benefits once the product is commercialized. Such support resulted evident both in the short-run, to deal with all the economic transactions raised into the market, and also in the long-run, providing the right financial tools to support the acquisition of an industrial building, machines and equipment. In this case, the degree of development of a financial system represents a resource that gives the possibility to spin-offs to commercialize innovations. It is worth noting that in a matching sample of high-tech startups (not-RSOs) the impact of local financial development is always positive, meaning that the nature of the RSOs significantly affects the role of external finance [48].

At the time a RSO is incubated inside the University or Research Institute and its survival is totally and uniquely dependent from non-operational earnings, the ROS is *de facto* a "proto-company" still *in nuce*, but not really operative at this stage. As long as the survival of RSOs depends on collecting money from public contributions and start-up competition awards more than on their own sales, the degree of financial system development does not influence the performance of spinoffs.

Therefore, the kind of revenues a RSO is based on the degree of financial independence from Universities and public contributions that specifies the stage in the life-cycle of academic spin-offs. At the time of RSO incubation, when sales are equal to zero, local financial development does not matter for spin-off performance. Vice versa, at the time the RSO has to take-off in the product market, finding financial resources outside can be hampered by the condition of opacity information caused by information asymmetries that typically affect RSO. Development of local financial market influences positively spinoffs, originally created within universities and Public Research institutes, at a greater extent when RSOs become fully independent and completely free from public contributions, namely, when the RSO takes-off in the product market and it is not anymore incubated inside the University sites.

This chapter also has limitations, as it does not discuss the operating nature of RSOs and, more in general, the qualitative aspects of RSOs that could explain the relationship between local financial development and corporate performance.

Moreover, the extant literature did not studied how local financial development could affect corporate performance. However, it could be interesting for future research to investigate how this institutional factor shapes the growth of the firm and its value.

## 6. Conclusion

Local financial development has a crucial role for the economic growth [2]. Such relevance is due to the fact that higher levels of local financial development ease access to external financial sources, spurring firms' investments and, consequently, business success. The extant literature interestingly demonstrated that easier access to financial markets encourages entrepreneurship, because it facilitates the startup of new businesses in search of external funding, which is important to catch growth opportunities. One of the most important entrepreneurial businesses is represented by RSOs. Such companies play a key role on the global economy, as they transfer technology and innovation from University and Research Center into the market. RSOs are always in need to catch investing opportunities, as innovation is expensive and requires efficient financial systems. Indeed, in the absence of funding, productivity is constrained and RSOs difficultly get growth opportunities. In this context,

some interesting contributions highlighted that in countries where there is greater financial development, companies are more likely to innovate [49] and innovation is higher in firms that have access to external resources [50]. Hence, well-developed financial systems have a positive effect on entrepreneurship, corporate growth and, as a result, the company's performance.

Considering the relevance of local financial development for RSOs, the present chapter deepens the relationships between local financial development and the performance of entrepreneurial firms, with a focus on RSOs. Due to the intrinsic nature of these firms, La Rocca et al. [48] show that RSOs need a long period (incubation period) during which their research requires to be refined and engineered before being commercialized. During this period the main revenues and financial sources of spinoffs are made up of public contributions and prizes obtained from participation in startup competitions. At this early stage, the use of debt or other financial resources is limited and the role of local financial development is absent. Differently, at the end of the incubation period, the impact of local financial development on spinoffs' performance interestingly turns from negative to positive.

In the light of the above, this chapter provides important implications for firms, which should carefully take into account the institutional setting in which they are embedded, and for policymakers, who should undertake important initiatives aimed at increasing local financial development. The key evidence of this chapter is that local financial development represents a strong tool in order to transfer new innovative technologies into the market.

## Author details

Francesco Fasano<sup>1\*</sup>, Maurizio La Rocca<sup>1</sup>, Tiziana La Rocca<sup>2</sup> and Veronica Marozzo<sup>2</sup>

<sup>1</sup> University of Calabria, Rende, Italy

<sup>2</sup> University of Messina, Messina, Italy

\*Address all correspondence to: [francesco.fasano@unical.it](mailto:francesco.fasano@unical.it)

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