

Do banking architecture and EU regional policy matter for SME growth?

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ABSTRACT

Following the 2007-2009 global financial crisis (GFC), all major jurisdictions in Europe have tightened regulations on capital and liquidity of banks, based on the Basel III global standards (2010). The new Basel IV standards will take this further. While these new regulations may reduce the risk of bank bankruptcies, (and can lead to more capital and liquidity-efficient business models and products), they are also likely to harm smaller banks and make the banking system less diverse. But what are the consequences for small and innovate firms? Do small firms need small banks? Why is it important to have a diverse financial ecosystem for Small Medium-sized Enterprises (SMEs)? Can European regional policies represent a valid alternative for SMEs to the local financial systems, especially in peripheral regions? Under which circumstances? This

book discusses all these issues and addresses these questions by collecting several data, through new analysis, but also reviewing the relevant literature on the topic. Particularly, after discussing the importance of the financial system for economic growth, it discusses how and to what extent the structure and the geography of the banking system affects the access to credit of small and innovative firms. Moreover, by using a detailed dataset on the Italian manufacturing and banking sector over the period 2007-2013, it provides an empirical investigation on the impact of European regional policies on SMEs' growth within different institutional and banking contexts. Finally, it discusses policy implications and avenues for future research.

by

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Introduction

The 2007-2009 global financial crisis (GFC) has highlighted the fragility of the current banking system and has shifted the debate among policy makers towards the role of traditional and local banking for economic growth, and the access to credit of Small Medium-sized Enterprises (SMEs¹). Banking-related discussions with a focus on SMEs are particularly timely as SMEs have had trouble in recovering from the GFC, and are strongly dependent on bank financing. Moreover, in response to the recent Banking Recovery and Resolution Directive, some governments (for example in Italy and Netherlands) have advocated the aggregation of cooperative banks in large groups.

Overall, the persistent lack of profitability in the banking system has facilitated a consolidation process through merger and acquisition operations. As consequences of all these regulatory and industrial changes, the architecture of the banking system is changing as well. This raises concerns for not only local development but also for SMEs' access to credit. In turn, this can further weaken regional development and inequalities as SMEs represent the engine of European industrial sector. Overall, SMEs account for almost all EU-28 non-financial business sector enterprises (almost 98 %), two-thirds of total EU-28 employment (67 %) and generate 57 % of value added in the EU-28 non-financial business sector.²

In light of these considerations, this book aims to revise the existing literature on the relationship between banking development and economic growth, and intends to analyse how the structure of the banking system determines the productivity and profitability of SMEs. Drawing on this literature, this book discusses possible implications of such changes for SME's viability.

¹ Based on the definition provided by the European Commission (see <https://ec.europa.eu/eurostat/web/structural-business-statistics/structural-business-statistics/sme>), SMEs are defined as enterprises having: 1) less than 250 persons employed; 2) an annual turnover of up to EUR 50 million, or a balance sheet total of no more than EUR 43 million (Commission Recommendation of 6 May 2003).

² Data retrieved from https://www.smeacademy.eu/uploads/5/2/4/2/52422965/171217_annual_report_-_eu_smes_2016-2017.pdf, accessed on 11/03/2019.

In particular, this book bridges the literature on the importance of bank-firm relationship and the effect of the economic geography and evolution of the whole banking sector on the access to credit of SMEs. The *research questions* can be summarised as follows: (i) Does the banking development enhance local economic growth and reduce regional inequalities? (ii) How do small and innovative firms have access to lending? (iii) How and to what extent does the structure of the banking system facilitate the access to credit of SMEs? (iv) How and to what extent does the geography of banks affect the productivity of SMEs and consequently their distribution and growth? (v) Do SMEs need small banks? (vi) Are there any alternative to the traditional banking channel at the local level? (vii) Do EU regional policies reduce economic dissimilarities? (viii) Do they exert a positive effect on SMEs? (ix) Are EU regional policy interventions complementary to the local banking system?

The first Chapter of this manuscript discusses the main regulatory changes in the European banking system. Then it revises the main literature on the importance of the financial and banking development for the local economic growth, regional inequalities and competitiveness. Specifically, this Chapter addresses the first research question.

The Second Chapter goes more in deep in the implications and importance of having an heterogeneous banking system for lending for SMEs. In particular, this Chapter investigates the research questions (ii)-(vi). First, it discusses the structural changes and challenges to the European Banking system. Next, it revises the literature on the importance of the relationship lending for small business for access to finance. On this regard, there is consistent evidence that small banks can meet the credit needs of small businesses more effectively than large banks due to their access to better credit information, and their ability to better manage ‘soft information’ (collected via personal interaction and difficult to codify). Based on this view, the presence of local small banks plays a pivotal role to support local business and economies. Instead, scholars and policy makers are more concerned on the role of large banks for local economies. The reason is that highly hierarchically organised banks tend to experience more organisational friction in lending to opaque borrowers, and small and innovative firms are

typically this type of borrower (Berger et al., 2005; Berger and Black, 2011). The gathering of soft information is in fact a costly and unobservable investment for local officers and generates agency and incentive problems throughout a banking organisation, especially in the case of several managerial layers (Alessandrini et al., 2008). As a counterargument, some scholars (Berger and Udell, 2006) maintain that a strong presence of small institutions may not be needed for general credit availability of SMEs: large banks can, in fact, lend to opaque SMEs via different transaction technologies due to “hard” collateral-based information (e.g., collateral guarantees). Chapter 2 examines all these issues and it further discusses the effect of banking competition on SMEs, the effect of financial turmoil for access to finance of SMEs and the role of other players such as mutual guarantee schemes and developing banks for SMEs. In particular, it addresses the research questions (ii)-(vi).

Chapter 3 discusses the importance of both government and European regional policies for the support of local economies and SMEs. These funds and policies represent a concrete alternative to support and spur the local economies, and especially SMEs, compared to the traditional banking sector. They may represent either a complementary or a supplementary source to the traditional capital market. This Chapter focuses specifically on the research questions (vii-viii).

Chapter 4 aims to investigate how and to what extent European regional policy complements the banking system in supporting SMEs. In doing so, it deals with the last research question (ix).

as a unique characteristic of this book is to empirically assess whether the structure of the banking system at the NUTS3 level can affect the productivity and performance of SMEs in *Chapter 4*. In particular, this Chapter verifies the impact of the EU funds on SMEs’ performance and productivity. Finally, it assesses whether the effectiveness of EU funds depends on the banking structure and geography.

Finally, the conclusive remarks pointed out the future and ongoing challenges for the European banking system and SMEs.

I do believe that this book provides a useful first, in depth investigation of the relationship between banking structure, EU

funds and SMEs' performance and productivity. It also offers insight on the implication of regulatory reforms and changes to the banking structure on SMEs.

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1. Banking Development and Economic Growth

1.1 Introduction

This Chapter provides an overview of the importance of the banking development for the economic growth with a focus on the SMEs' growth. It first discusses the main regulatory changes in the European banking system and their implications for the banking structure and development and recent trends. Then, it revises the literature on the financial development and economic growth, income inequality and innovation. Finally, it offers some suggestions for further research development.

This Chapter addresses the following questions: Does the banking development enhance local economic growth and reduce regional inequalities? Specifically, this Chapter investigates how and to what extent banking development and, more in general, financial development matters for the economic growth. The next sections of this Chapter provides more insight on these issues. In particular, *Section 1.2* offers an overview of the liberalization process, structural changes and competitive dynamics in the European banking system. *Section 1.3* briefly discusses how and to what extent financial development increases economic growth. Then, it shifts the focus on the financial development-income inequality nexus. On this regards, it is still debated which part of the population, the poor and/or the wealthy one, benefits more from financial development. If financial development widens inequalities and creates benefit only for the rich part of the population, poor people are refrained from investing. This could have implications for the SMEs that consist for the majority of sole proprietorship firms. *Section 1.4* focuses on these issues and revises the literature on financial development and income inequalities. *Section 1.5* provides more insights on the impact of banking development on SME's growth and productivity, but also innovation. This latter part is justified by the fact that SMEs play a critical role in innovation. They tend to generate disruptive and break-through innovation, because they do not have specific ties with existing technologies

(Baumol, 2002, Arestis et al., 2001). Finally, *Section 1.6* summaries and discusses limitations and further expansions of these streams of research.

1.2 An overview of the liberalization process and competitive dynamics in the European banking system

During the last decades, the European banking industry has experienced continuous transformations due to regulatory changes, technological advancements, the globalization of the economy, and economic integration. All these changes have affected the level of financial development in Europe. Furthermore, the financial sector has widely been limited both geographically and in scope by heavy regulations and controls.

With the liberalization process in the late 80s the European banking system have changed profoundly. The liberalisation process has significantly affected the banking system by facilitating consolidation process and diversification strategies to exploit economies of scale and scope.

Since the introduction of the First Banking Co-ordination Directive in 1977, and because of the deregulation process, the EU has advanced several key policy initiatives in order to foster a Single European Market in banking and financial services (Degl'Innocenti et al., 2017b, Casu and Girardone, 2010). The scope was to improve the allocation of financial resources and to promoting a more competitive and efficient financial system in Europe (Casu and Girardone, 2010). The banking landscape has further changed as the result of the enactment of the Second Banking Directive, which has allowed several financial firms to enter new markets, by either merging with /taking over existing banks or non-bank financial institutions, or as new players (Degl'Innocenti et al., 2014). Furthermore, with the liberalization of legal barriers to bank branching in 1990 and the elimination of geographic constraints on banking organizations, medium to large size banks expanded their branching networks to new markets in order to exploit economies of scale and consolidate their local market share (Degl'Innocenti et al., 2017a). From one hand, banks increase their market power by

being more close to borrowing firms. This have allowed them to reduce asymmetry of information with borrowers. On the other hand, the increase of branches' number have also increased organizational costs and put pressure on the banks to improve their cost and profit efficiency (Berger and DeYoung, 2006). In general, there is a trade-off in the benefits of the proximity between firms and banks, versus the risks and costs that come with opening multiple branches in order to attain this proximity (Degl'Innocenti et al., 2017a).

Next, the Second Banking Co-ordination Directive (2BCD) aimed at enhancing the competition level by recognizing EU-wide recognition of single banking licences. After that, the 1992 Maastricht Treaty led to the creation of the European Union and the establishment of the euro. Both the Single Market and the Economic and Monetary Union (EMU) in 1999 have contributed to a further liberalization of the European financial market (Casu et al., 2015). Overall, during the 1990s policy makers have promoted the integration of banking and financial systems in order to enhance the competition, productivity, and efficiency of the financial sector throughout Europe (Casu et al., 2004).

But how does the European banking look like? Did the level of competition and the traditional banking activities either increase or decrease over the last decade in Europe?

The extraordinary policy interventions in terms of the range, speed, and scale of the measures adopted during the recent GFC have emphasized the debate on the role of traditional and local banking for economic growth. In response to excessive risk-taking by banks and the lack of effective resolution mechanisms³, post-crisis reforms have tightened regulations on capital and liquidity in all major jurisdictions. The scope was to identify effective mechanisms of control and intervention to make the banking system more stable and sound. In particular, European policy makers have established a strong approach to bank resolution to better align

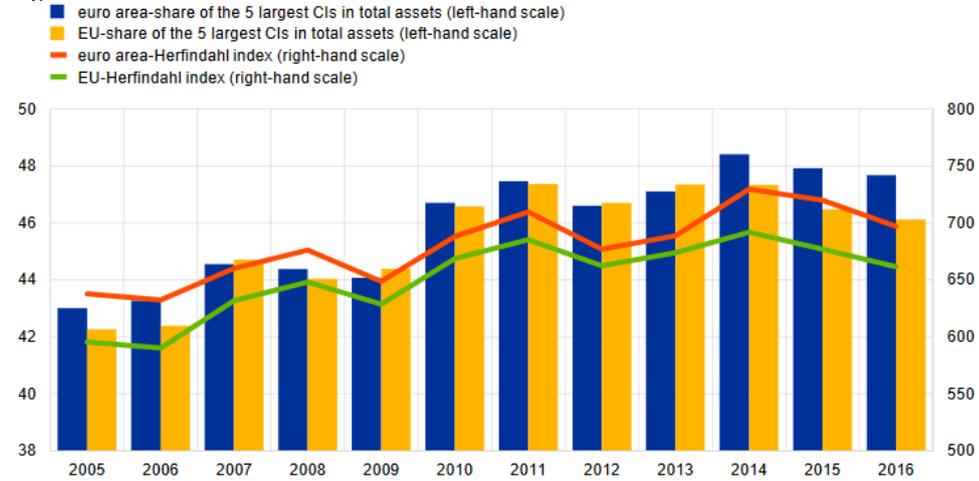
³ “The implications of bail-in rules for bank activity and stability”. Opening speech by Benoît Cœuré, Member of the Executive Board of the ECB at Conference on “Financing the recovery after the crisis- the roles of bank profitability, stability and regulation”, Bocconi University, Milan, 30 September. Available at <https://www.ecb.europa.eu/press/key/date/2013/html/sp130930.en.html>.

incentives towards risk. This is a consequence of the fact that the pre-crisis resolution mechanisms have encouraged both moral hazard and risk-taking behaviour of the too-big-to-fail institutions. Starting from the onset of the financial crisis, US and EU regulatory authorities or governments have in fact bailed-out several financial institutions with the scope to reduce the fragility of the banking system and to promptly restore confidence in the financial markets (Calabrese et al., 2017). However, these interventions are not free from criticism, as they are complex and highly costly for taxpayers.

In Europe, the Bank Recovery and Resolution Directive (BRRD) and the Single Resolution Mechanism (SRM) Regulation, operational from 1 January 2016, have established new rules to rescue financial institutions through the bail-in tool. Bail-in enables the resolution authority to write down and/or convert into equity the claims of a broad range of creditors, according to a predefined creditor hierarchy. Furthermore, in response to these directives, some governments (Italy, for example) has advocated the aggregation of cooperative banks in a few groups or even a unique group under the control of a holding entity. The reasons behind the reform of cooperative banks are several: among them, the high amount of non-performing loans in the sector, the lack of an effective internal governance to promptly respond to crisis periods through recapitalization, and the limited possibility to diversify the source of risk. Cooperative banks are traditionally small and poorly diversified. This makes them vulnerable to shocks and crisis events. Because of their small size and business volume, it can be hard to justify the use of funds to bail out these types of banks. Despite the fact that the aggregation of cooperative banks can be beneficial for the stability of the system, their increase in size and aggregation in a unique group can however, harm their local dimension activities and consequently local small businesses.

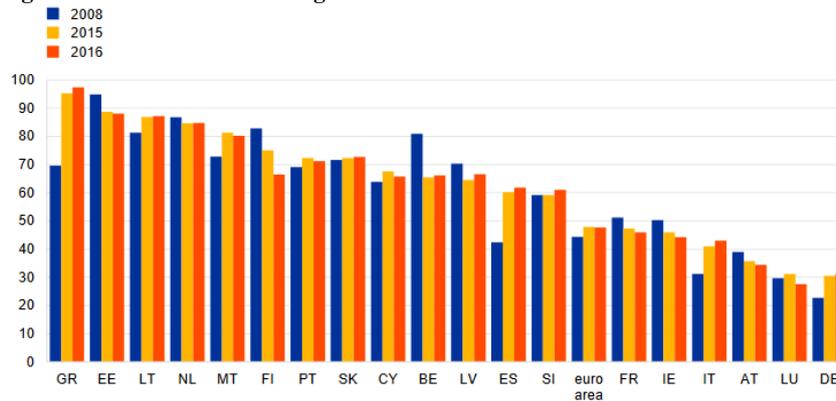
More in general, the European banking industry is moving towards higher levels of market concentration (Figure 1.1 and Figure 1.2). In particular, Figure 1.1 shows that the level of the concentration of banking markets, as measured by the share of total assets held by the five largest credit institutions or by the Herfindahl index (HHI), exhibits an increasing trend till the 2014. Then the concentration index dropped down from 48.4% to 47.7%.

Figure 1.1 Market concentration



Source: ECB (SFI and MFI BSI statistics) and ECB calculations. Figure retrieved from *ECB Report on financial structures, October 2017*, available at <https://www.ecb.europa.eu/pub/pdf/other/reportonfinancialstructures201710.en.pdf>

Figure 1.2 Share of the five largest credit institutions in total assets



Source: ECB (SFI statistics) and ECB calculations. Figure retrieved from *ECB Report on financial structures, October 2017*, available at <https://www.ecb.europa.eu/pub/pdf/other/reportonfinancialstructures201710.en.pdf>.

The Figure indicates the share of total assets held by the five largest credit institutions in each Country.

⁴ Abbreviations Countries:

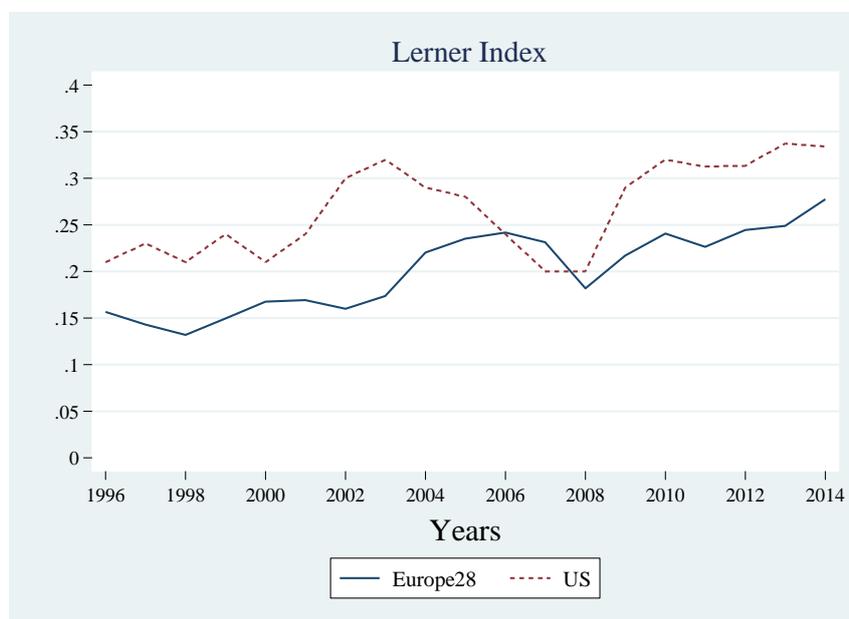
BE (Belgium), DE (Germany), EE (Estonia), ES (Spain), IE (Ireland), GR (Greece), ES (Spain), FI (Finland), FR (France), IT (Italy), CY (Cyprus), LV (Latvia), LT (Lithuania), LU (Luxembourg), MT (Malta), NL (Netherlands), AT (Austria), PL (Poland), PT (Portugal), SI (Slovenia), SK (Slovakia), FI (Finland), MT (Malta).

Figure 1.2 shows that the level of banking concentration per country. In general, small countries exhibit the highest level of market concentration, while large countries are characterized by a banking system that is more fragmented and populated by savings and cooperative banks, such Germany and Italy.

Figure 1.3 compares the level of banking competition for the 28 European Union Membership States. Specifically, Figure 1.3 reports the trend for the Lerner Index, a measure of competition largely used in the banking literature (Forssbäck and Shehzad, 2014, Koetter et al., 2012). The Lerner Index measures the extent to which a bank is able to set a price above its marginal cost. An increase in the Lerner index indicates a deterioration of competition among financial intermediaries. Particularly, the Lerner index (LER) measures the firm ability to charge prices above its marginal production cost ($LER = (P_{it} - MC_{it})/P_{it}$), where P is the average selling price and MC is the marginal cost of production.

From Figure 1.3, it is clear that banks both in the US and Europe 28 have increased their monopoly market power from 1995 until the GFC. During the GFC, both the US and European banks have seen a consistent drop in their monopoly market power. Since 2010, both US and European banks have managed to increase their monopoly market power again. Only US banks exhibit a reverse trend in the years 2013-2015.

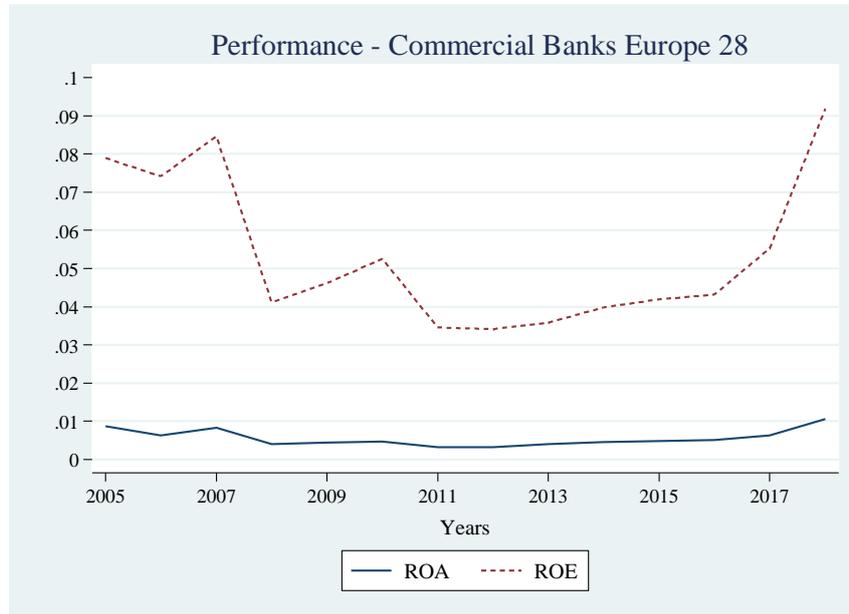
Figure 1.3 Lerner Index: Europe 28 vs the US



Source: Own elaboration on the World Bank's data (July 2018 global financial development database). *Notes:* A measure of market power in the banking market. It compares output pricing and marginal costs (that is, markup). Data is winsorized at 5%

The consolidation process in the European banking system is also motivated by a low profitability that characterized the European banking system during the period after the financial crisis till 2017. After 2017 the performance of European banks displayed a reverse trend coming back to the pre-crisis levels (*Figure 1.4*).

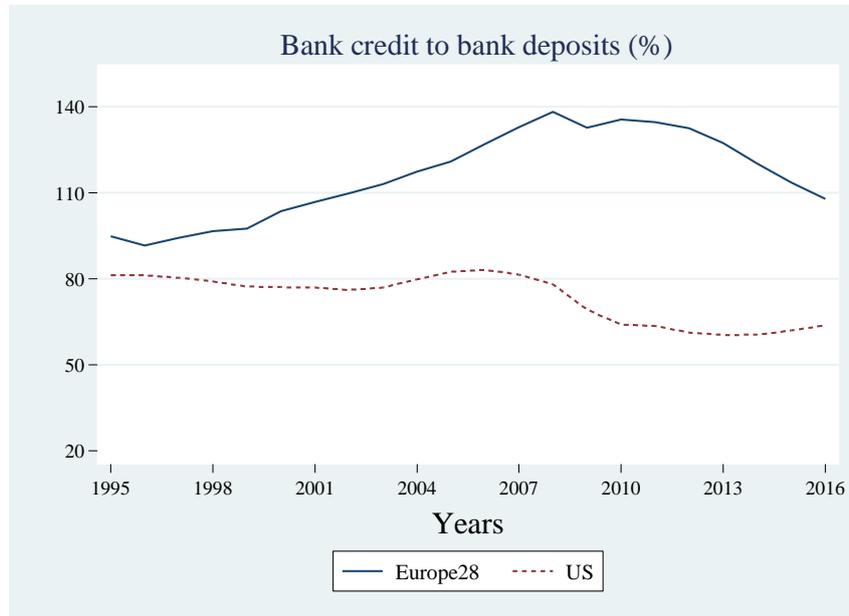
Figure 1.4 Commercial Banks Profitability in Europe



Source: My elaboration based on the data provided by *Bank Focus di Bureau van Dijk*. ROA is calculated as the average of Net Income/Total Assets, while ROE is calculated as the average of Net Income/Total Equity. Data is winsorized at 5%.

Another motivation for the consolidation process is the need to achieve cost containment, deleveraging, and restructuring. In addition, many European banks are still having issues with impaired assets, especially those that operate in the countries with deepest and longest recessions. Looking at this picture, it seems crucial for the European banking system to go through a restructuring period to preserve its own market share in the financial sector.

Figure 1.5 Bank Credit to Bank Deposits (%): Europe 28 vs US

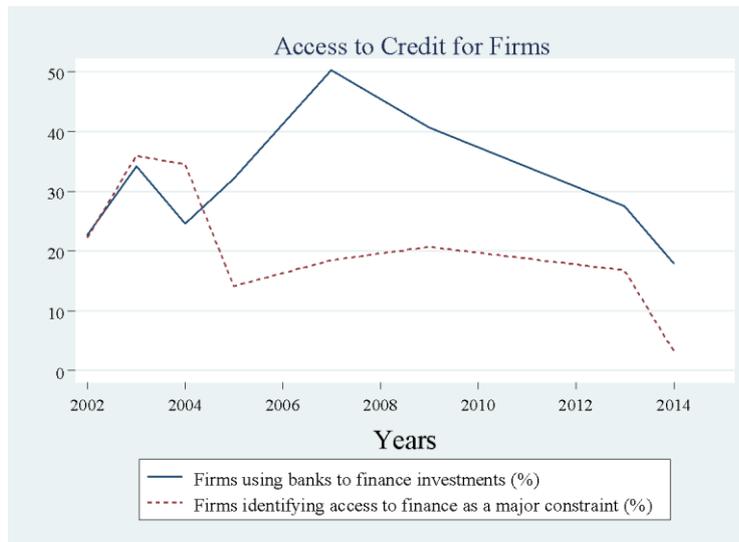


Source: Own elaboration on the World Bank's data (July 2018 global financial development database). *Notes:* The financial resources provided to the private sector by domestic money banks as a share of total deposits. Domestic money banks comprise commercial banks and other financial institutions that accept transferable deposits, such as demand deposits. Total deposits include demand, time, and saving deposits in deposit money banks.

Figure 1.5 shows the trend for Bank Credit to Bank Deposit. This represents a measure of the traditional banking activities. This ratio has sharply increased in the 1990s and 2000s especially in Europe 28. Since the onset of the GFC, there has been a decreasing trend and this does not show an inverse pattern, especially in the case of Europe 28. Consistently, there has been a drop in the percentage of firms using banks to finance purchases of fixed assets. This has prevented firms for improving their access to finance. So the number of firms identifying access/cost of finance as a major or very severe after the GFC has remained stable over time (Figure 1.6).

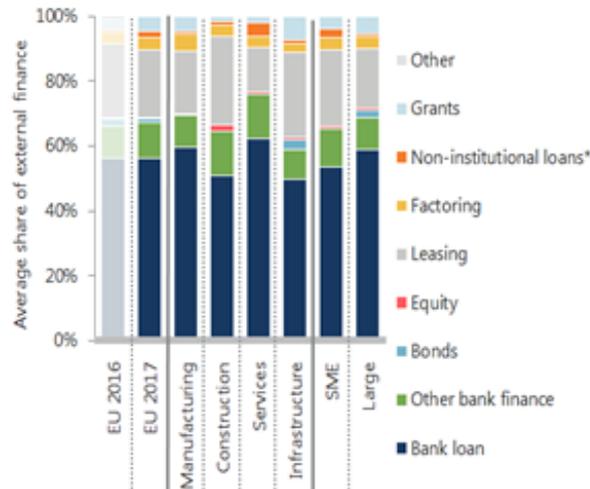
In this context, in terms of financial support, the bank loan still represents the main type of external finance for firms in Europe (Figure 1.7). This means that changes in the business model and structure of the banking sector are going to have an important impact on the industrial sector and more in general for the economic growth.

Figure 1.6 Access to Credit for Firms



Source: Own elaboration on the World Bank's data. **Notes:** Firms using banks to finance investments (%) is the percentage of firms using banks to finance purchases of fixed assets. Firms identifying access to finance as a major constraint (%) is the percentage of firms identifying access/cost of finance as a major or very severe obstacle.

Figure 1.7 Types of external funds used for investment activities



Source: EIBIS17 and EIBIS16.

Notes: Base: All firms who used external finance in the last financial year (excluding don't know/refused responses). Q. What proportion of your investment was financed by each of the following? *Loans from family, friends or business partners

Overall, the consolidation process in the banking sector and the increase of size of banks could have implications on their lending and support to SMEs. The existing literature discusses the peculiarities and concerns for SMEs lending. The focus is on the structure of the banking sector and characteristics of the lenders. Next Sections discuss all these issues by referring to the relevant empirical evidence in the field. Another important challenge for the banking industry is offered by technological innovations.

The transformation process of the banking system could start from the increase of investment in IT. Previous studies (Beccalli et al., 2006) have shown that investment in information technology (IT) – hardware, software and other IT services – positively influences the performance of banks. This area has room for improvement. Furthermore, the traditional banking system has shown to be more vulnerable to new players, such as fintech companies, in this area. With advanced technology, fintech

companies offer financial services that are more cost efficient, accessible to customers, and more transparent than the ones provided by the banking system.. Fintech is based on big data on individuals and firms, artificial intelligence, computing power, cryptography, internet (He, 2017). Both artificial intelligence and big data are contribution to change the financial landscape by introducing new opportunities but also challenge for consumers, financial players and policy makers as well. Technological advancement can help to better automate credit approvals, trading of financial asset advice, to detect fraud detection etc (He, 2017).

It is also plausible to observe in future that part or even the full range of services currently offered by banks or central banks could be undermined by automated processes and decentralized networks. Therefore, it is important for banks and more in general financial players to invest in IT and adopt new technologies to improve the efficiency of services and products, but also to reduce the costs. Fintech, artificial intelligence, cryptography are all areas in rapid advancement. This does not only require the traditional financial service to change, but also require the regulatory authorities to adopt efficient solutions to manage new risks (e.g. cyberattacks, money-laundering and terrorism financing) to the stability and integrity of financial system.

1.3 Empirical evidence of the impact of financial development on economic growth

This Section revises the existing relevant literature on the relationship between financial development and economic growth. Since the work of Goldsmith (1969), the relationship between financial development and economic growth has been the object of myriad research. In particular, Goldsmith (1969) has the merit to have examined the changes in the evolution of the structure of national financial systems - a mixture of financial intermediaries, markets, and instruments - for the effect of the development of economies. He has also investigated the reverse effect, which is the impact exerted by the overall financial system on the economic growth. He specifically shows the existence of a correlation

between the size of banks, relative to national output, and the development of countries. Furthermore, he provided evidence of a frequent relationship between the growth of nonbank-financial intermediaries and stock markets with respect to banks in size and economic growth of countries. However, his investigation presented some limitations in terms of cross-country evidence on the relationship between the mixture of financial markets and intermediaries in an economy and economic development. This was due in part because of a lack of data. In addition, he did not draw casual interpretations from the graphical representations. Later research (Arestis et al., 2001) has shown that both banks and financial markets contribute to promote economic growth. This would suggest that a mixture of financial systems can spur the economic growth.

Recent research has further expanded the Goldsmith's analysis by shedding new light on the connection mechanisms between financial development and economic growth. For example, building on La Porta et al. (1998), an increasing number of studies (Levine et al., 2000) have pointed out that cross-country difference in legal systems impact on financial development, which in turn affects economic growth. The institutional and regulatory environment in fact exerts a pervasive influence on the economy. They also influence the business objectives and conduct of firms, managers, investors and workers through an ensemble of formal regulations; legislation as well as informal societal norms (Gertler, 2004). Other papers have found that the impact of financial development on growth convergence varies with the stage of real development (Kim et al., 2010). Previous studies have also identified other channels and contexts affecting the finance-growth nexus such as: interactions among macroeconomic variables (saving, investment), impact of short/long term positive/negative shocks (financial crisis/liberalization and financial integration), development stages of countries, effect of non-financial factors (legal system, institutional structure, education and technological improvements), and country specific conditions. *“The theoretical literature suggests that financial development via enhancing asset size, depth, liquidity (in stock exchange), stability, variety of instruments, legal/regulatory background, competition, access to financial*

services, contract quality, number of participants, and effectiveness of intermediaries, etc. may lead to economic growth via mobilizing saving–investment, expand opportunities and providing risk sharing channels” (Seven and Coskun (2016), p. 37).

Overall, as pointed out by Levine (1997), a growing body of empirical analyses (firm/industry-level studies and individual/cross-country-studies) shows a strong positive influence of the financial system on long-term economic growth. This literature provides evidence that a financial system’s development and competitiveness can boost firm productivity, diffusion of innovation, and overall economic growth (Henderson et al., 2013). This view is also in line with Rajan and Zingales’s (1998) paper that shows that financial development can reduce the costs of external finance to firms.

Following the GFC, the role of the financial system for the economic growth has been the object of renewed interest from policy makers and scholars. Recent studies have tried to investigate which aspect of financial system matters more for the real sector outcome. Among them Beck et al. (2014) examine the effect of the different components of financial system on real sector outcome. Particularly, they have disentangled the financial system in two main components: size that encompasses intermediation activities and non- intermediation activities, and the traditional intermediation activities. By using, a sample of 77 countries over the period 1980-2007, they find that intermediation activities exert a positive and significant impact on GDP per capita growth and reduce growth volatility, especially in low-income countries, in the long run. Instead, they show that that the size of the financial sector does not matter for the growth in the long run, but only in a short horizon. As a counter effect the expansion of the financial sector appear however enhance growth volatility especially in high-income countries. More recently, Durusu-Ciftci et al. (2017) show that debt from the credit markets and equity from the stock markets are important driver of a long-term economic growth. The authors also point out that policies should aim to deepening the financial markets and strengthen the creditor and investor rights by improving the institutional and legal context. By analysing a sample of 69

countries – 33 high-income and 36 middle-and-low-income countries – over the period 1989–2011, Luintel et al. (2016) instead advocate that the financial structure is irrelevant for economic growth.

More in general, the integration of financial systems is also important to stimulate economic growth. Financial integration can in fact favour the supply of finance in less financially developed countries, thereby promoting financial development and improvement in the national regulation of the integrating area (Guiso et al., 2004). However, there are some limits regarding the financial development and economic growth nexus. Dell'Araccia et al. (2008) show that financial development does not always lead to economic growth in periods of financial turbulence. Kroszner et al. (2007) argue that those sectors that are highly dependent on external finance are more vulnerable to bank crises and experience a greater contraction in the valued added, especially in more developed financial systems. In addition, the development of financial centres can also harm economic growth during turbulent periods.

From a methodological viewpoint, there are two main econometrics approaches applied in this literature: cross sectional modelling approach, and time series modelling (Arestis and Demetriades, 1997)). Aside from the methodological techniques, this literature has largely acknowledged the existence of endogeneity among financial development and economic growth. The reason is that financial markets can capitalize the present value of growth opportunities, while financial institutions can provide more loans if they believe that sectors will grow (Rajah and Zingales, 1998). The endogeneity issues between financial development and economic growth represents a key aspect of this literature and have been analysed and addressed in several empirical studies (Calderón and Liu, 2003; Peia and Roszbach, 2015; Henderson et al., 2013).

1.4 Empirical evidence of the impact of the financial development on income inequalities

While an increasing number of papers have found that financial development exerts a positive effect on economic growth,

it is still debated whether this growth is reflected in income inequality and poverty. This issue has been researched for two decades, but the results are still trivial. Theory provides conflicting arguments about the effect of finance on income inequality and poverty reduction. Since the pioneering study of Kuznets (1955) on inequalities, increasing attention has been paid to the channels through which financial development can reduce income inequality⁵.

Chiu and Lee (2019) point out that the literature on financial development and income equality leads to four hypotheses:

- Inequality-widening hypothesis: financial development widens income inequality because it only generate benefits for rich people than for poor people.
- Inequality-narrowing hypothesis: financial development mitigates income inequality as financial development can help poor people get easier access to external finance;
- The financial Kuznets curve hypothesis: financial development exerts a U-shaped effect on income inequality.
- The fourth one is the U-shaped finance-inequality nexus: financial development can reduce income inequality at the early stage of financial development, while then it reverses its effect.

Other studies have focused on the channels through which financial development can reduce income inequalities. As pointed out by D'Onofrio et al. (2017) financial development can reduce income inequality and poverty by decreasing informational asymmetries and credit enforcement costs. These ones can be harsher especially for poor households and entrepreneurs that do not have own financial funds and access to collaterals. The theoretical models emphasize the existence of different channels through which financial development can reduce inequality. Financial development could for example allow low-income individuals to invest in education. In turn, this could mitigate inequality by

⁵ For an overview on these channels, please Aghion, P. and Bolton, P. 1997. A theory of trickle-down growth and development. *The Review of Economic Studies*, 64, 151-172.(1992).

allowing less well-off workers to be employed in jobs with better remuneration (Galor and Moav (2004), Aghion and Bolton (1997)). Furthermore, financial development could reduce financial constraints and the need for collaterals. This can be especially important to support the entrepreneur projects promoted by poor households that do not have personal financial resources and cannot effort to face the huge fixed costs that are associated with productive projects (Matsuyama, 2000). Financial development could also reduce income inequalities not only through the access to credit by the poor but also by stimulating labor demand by firms (Beck et al., 2010, Seven and Coskun, 2016). Differently from previous studies, D’Onofrio et al. (2017) show that socioeconomic mechanisms, such as urbanization and geographical mobility, material and immaterial infrastructures, also matter to explain the link between finance and inequality. However, some scholars have found that the relationship between financial development and economic growth is not linear as the growth could increase income inequalities at the early stages of development. This could happen because, for example, the rich can be the only ones to be able to pay the high fixed costs of productive projects. Instead, the poor can have access to the financial system at later stages when economies develop.

From an empirical viewpoint, Demirgüç-Kunt and Levine (2009) highlight that a large part of the empirical research show that improvements in financial contracts, markets, and intermediaries spur economic opportunities and at the same time contribute to reduce inequality. Recent studies confirm this positive relationship as well (Beck et al. (2010); D’Onofrio et al. (2017)). However, the majority of cross-country studies dealing with this matter suffer from an endogeneity issue that affects the relationship between financial development and income inequality. In order to address this endogeneity issue, some papers have make use of the change in banking regulation within a country to create a natural experiment setting. For example, Burgess and Pande (2005) use data on the Indian rural branch expansion program to demonstrate that the lack of access to finance prevents poor people from changing their economic and social status. Their focus is on the years between 1977 and 1990. The reason is that in that period the Indian Central Bank allowed a commercial bank to open a branch in a location with one

or more bank branches only if it opened four in locations with no bank branches. The authors make use of this natural experiment to examine whether and to what extent the impact of opening a rural bank could have affected poverty and output. Their results suggest that the Indian rural branch expansion program significantly reduced rural poverty, and enhanced non-agricultural output. Beck et al. (2010) examine the impact of bank deregulation on the distribution of income in the United States. In particular, they consider the intrastate branching deregulation that removed the restrictions to open branches in most states from the 1970s through the 1990s. The authors find that this deregulation process boosted incomes in the lower part of the income distribution and reduced income inequalities. By focusing on the 1936 Italian banking regulation and to the historical segmentation of the local NUTS3 regions, D'Onofrio et al. (2017) provide evidence that banking development can decrease inequality through geographical mobility and urbanization. The authors however, did not find any relevant impact of material infrastructures and human capital on the link between banking development and income inequality.

1.5 Empirical evidence of the impact of the banking competition on industrial innovation

It is widely known that a well-functioning financial system is crucial for promoting economic and technological progress (Schumpeter, 1911). Despite the increasing interest on this topic, a few number of empirical studies have examined the impact of banking development and competition on industrial innovation (Amore et al., 2013, Benfratello et al., 2008; Cornaggia et al. , 2015; Hsu et al., 2014). The majority of these studies have focused specifically on the US market and provide mixed results. For example, Chava et al. (2013) find that interstate banking deregulation increases innovation in the case of young and private firms, while intrastate branching deregulation decreases their propensity to innovate. Consistently with this view, Cornaggia et al. (2015) find that the deregulation of state-level branching laws decreases interstate-level innovation. In contrast, Amore et al. (2013) provide evidence that interstate banking deregulation in the US favours corporate innovation. The authors show that effect was

larger for firms operating in industries highly dependent upon external capital and that rely more on bank debt. Furthermore, they state that deregulated and more diversified banks are able to take on more risks by investing in innovative projects. The reason is that geographical diversification reduces the exposure to the background risks of a state's economy. Instead, there is more scarcity of studies focusing on the European context. Among them, Benfratello et al. (2008) have examined the effect of local banking development on firms' innovative activities, focusing on the Italian firms. They find that banking development increases the probability of process innovation, especially for firms operating in high-tech sector. Using a large data set with 32 developed and emerging countries, Hsu et al. (2014) focus on the economic mechanisms through which the development of equity markets and credit markets affects technological innovation. They show that industries relying more on external finance and more high-tech intensive, experience a higher innovation in countries with better developed equity markets. Instead, they find an opposite result in the case of highly developed credit markets.

A key point that emerges from the banking literature is that the relationship between banks and innovative firms is affected by the existence of asymmetric information and uncertainty concerning future rents. Investments in innovative projects are therefore riskier than investment in *routine* projects. The difficulties to forecast future rents can prevent financial intermediaries from providing credit to innovative firms. Banks see investments in intangible assets as hard to measure, costly to re-deploy, and characterised by uncertainty regarding their future cash-flows (Hall and Lerner, 2010). The high-risk profile of this type of investment represents an obstacle to get funds, especially for firms that depend more on external finance (Hsu et al., 2014) and that cannot count on alternative financial sources.

However, the credit market concentration can alleviate the intrinsic risk associated with innovation. On this matter, Petersen and Rajan (1995) maintain that financial intermediaries in concentrated markets apply lower interest rates to young and little-known firms and higher interest rates to older firms than would be the case in a more competitive environment. The reason is that

banks in a concentrated market expect to recover the initial subsidy by requiring higher interest rates in future. In line with this view, Bonaccorsi di Patti and Dell'Ariceia (2004), focusing on the Italian market, show that small firms receive more credit in markets that are more concentrated and have less entries. However, there are studies that provide contrasting results. For example, making use of a cross-country database,

No conclusive answer has yet emerged on the relationship between banking competition, concentration, and innovation. The reasons for these mixed results are various. One can attributed to the measurement of innovation. While the use of patent data instead of research and development expenditures appears to be relevant for studies on innovation, at the same time it can lead to analysis distortions. Lerner and Seru (2015) argue that researchers often omit to control for periods of patenting and citation practices, heterogeneity of the samples across periods, technology class, and the region of the inventor. The same issue emerges as concerns the way banking competition is measured. Previous papers (Benfratello et al., 2008; Cornaggia et al., 2015; Hsu et al., 2014) have mainly made use of structural indicators or have looked at the regulatory framework to measure banking development and competition. However, as highlighted by Carbó et al. (2009), the sole use of structural indicators does not allow us to measure the competitive environment in an effective way. In fact, even if a market is highly concentrated, banks can still compete to deter the entrance of competitors. Further research is needed to address all these measurement issues but also to focus on the mechanisms through which banking competition affects industrial innovation.

1.6 Concluding remarks

The review of the relevant literature on the relationship between financial development economic growth, and regional convergence reveals that there are still unexplored areas. More work is clearly needed to better identify the channels and mechanisms through which financial development exerts an impact on economic growth, and the reduction of regional inequalities. As suggested recently by D'Onofrio et al. (2017), further investigation could focus on the contribution of socioeconomic and structural factors to the finance-

growth-inequality link. Alternatively, further studies might explore the ways through which capital and human resources move between regions to better understand the factors underlying the regional economic dynamics. This will also suggest further interventions to alleviate poverty and unemployment levels between geographical areas. Furthermore, more attention could be devoted to the spatial structure and organization of capital markets. As pointed out by Klage and Martin (2005), the spatial structure of the financial system can lead to a geographical bias with regards to resource and investment allocation. Centralized financial systems can absorb investments and skilled labour from other regions. As a result, this can create inequalities between regions but also spatial bias in the flows of capital to industrial firms, particularly to SMEs.

2. Banking Architecture and Consolidation, Financial Innovation, and SMEs' Business Lending

2.1. Introduction

This Chapter provides more insight on the implications of banking market structure on lending to the industrial sector, with a particular attention to SMEs. The focus on SMEs is justified by the fact that these firms are more vulnerable than larger companies to banking changes, and more in general to shocks to the banking system, since they mainly rely on banking capital for their viability and growth (Berger and Udell, 1995).

While Chapter 1 has focused on the importance of financial and banking development for the economic growth, this Chapter looks more closely at the banking ecosystem and the role of small banks in supporting SMEs.

To this end, it points out how the aggregation phenomenon of specific type of banks, such as cooperative banks, is profoundly changing the banking landscape. Specifically, this Chapter intends to address the following questions raised in the Introduction: How do small and innovative firms have access to lending? How and to what extent does the structure of the banking system facilitate the access to credit of SMEs? How and to what extent does the geography of banks affect the productivity of SMEs and consequently their distribution and growth? Do SMEs need small banks? It further examines the role of other financial intermediaries, such as mutual guarantee institutions and development banks for supporting SMEs' lending. Therefore, it also deals with the following question: Are there any alternative to the traditional banking channel at the local level?

Section 2.2 revises the literature on the advantages and disadvantages of relationship lending. *Section 2.3* discusses the impact of bank size on SME business lending. *Section 2.4* discusses the impact of financial innovation and distance on SMEs; *Section 2.5* revises the literature on banking competition and spatial pricing; *Section 2.6* discusses the access to finance of SMEs during and after

the GFC; *Section 2.7* discusses other financial intermediaries to support SMEs' lending. Finally, *Section 2.8* concludes.

2.2 Relationship lending: advantages and costs for SMEs

It is widely recognised that SMEs are usually financially constrained and do not easily get access to credit. The issue of credit availability for small firms is of great concern to policy makers. Stiglitz and Weiss (1981) maintain that small firms are particularly vulnerable because they are often informationally opaque and difficult to be monitored. Furthermore, there are severe asymmetric information that can affect the credibility of SMEs' entrepreneur projects. For example, firms could avoid investing in positive net present value projects because: i) either the external financing cannot easily verify the quality of the project (adverse selection problem); ii) and/or the external financing cannot ensure that the funds will not be used for an alternative project (moral hazard problem) (Berger and Udell, 2002). Such information asymmetry is more severe for small firms.

Before providing more insight on the implications of different lending technologies for SMEs' access to credit, it is worth mentioning the distinction between hard and soft information provided by Petersen (2004). Despite the vast literature on lending strategies, Petersen (2004)'s paper is one of the few contributions that provides a clear definition of soft and hard information. In particular, according to Petersen, hard information is quantitative, easy to record and transmit in impersonal ways, comparable, and standardized. Instead, soft information is qualitative, collected in person, and not so easy to record. Furthermore, soft information is gathered personally and the decision maker is the same person as the information collector. The collection of soft information is related to relationship lending, which is the common lending technology used by a financial intermediary to provide credit to a SME. Instead, the collection of hard information refers to transaction lending technologies.

Recently, Duqi et al. (2018) have revised the existing literature on the advantages and disadvantages of relationship lending. The authors clearly explain and contrast the positive and negative sides

of relationship lending. They argue that both relationship lending and the length of the relationship allow banks to reduce information asymmetry. This can allow a firm to receive a higher amount of loans. Furthermore, small firms experience a lower amount of default rates if they experience a long-term relationship with a lender (Fiordelisi et al., 2014). As a counter effect, a close bank–firm relationship can generate soft budget constraints and the hold-up problem. As concerns the first issue, a bank can be more willing to offer additional credit to a client in a state of financial distress or with a risky project in order to avoid its bankruptcy. This creates incentives for a firm to misbehave and undertake more risk (Lehmann and Neuberger, 2001).

In addition, if a firm has an exclusive relationship with a bank it can also experience a hold-up problem. This means that the main bank can exert its power by charging higher interest rates or by applying a more conservative lending strategy (Ioannidou and Ongena, 2010). For example, Angelinia et al. (1998) find that banks other than cooperative banks, charge higher lending rates with the length of the relationship for all customers. Instead such behaviour is only for non-member customers in the case of local cooperative banks (CCBs). To limit the implications of a hold-up problem, a firm can engage in multiple relationships. However, the existence of a main-bank affiliation also has many benefits. For example, a firm that is able to preserve a relationship with a main bank can signal to the market the quality of its financial profile.

Typically, a firm that does not meet the financial requirements for getting credit from the main bank can try to engage in multiple banking relationships. This provides a low-quality signal to the credit market (Duqi et al., 2018). Overall, switching from a main bank to a number of new lenders is not an easy job for a firm. Other lenders do not easily get access to the past credit history of a firm that had an exclusive relationship with a unique bank. In other words, the borrower can use *informational capture* and can therefore suffer more from credit-rationing if it cannot easily share its financial information with new lenders (Bharath et al., 2011; Cenni et al. 2015). Empirical evidence shows in fact that the number of banking relationships can negatively affect firms' performance, especially in the case of SMEs (Castelli et al., 2012).

2.3 Bank size and lending to SMEs

This Section investigates whether banks exhibit advantages in lending to small business or dealing with certain lending techniques because of their size.

The gathering of soft information is a costly and unobservable investment. This can generate agency and incentive problems for a large bank, especially in the case of several managerial layers (Alessandrini et al., 2008). The problem of agency costs can be traced to the fact that an agent with a delegated decision-making authority can act in its self-interest, rather than the interest of the organization. This happens especially when information and communications are processed in decentralized systems rather than a centralized system level. As explained by Cerqueiro et al. (2009), a decentralized system can better allow loan officers to collect soft-information from a local community. As a counter effect, it can however lead to agency problems such as manipulation of soft information, deteriorating condition of a borrower, and excessive use of discretionary in setting loan terms (Berger and Udell, 2002; Cerqueiro et al., 2011; Ozbas, 2005). Therefore, a hierarchical complex organization has to efficiently align the incentives of the loan officer to those of the organization in order to reduce agency costs. Nevertheless, this can generate high monitoring costs for both the activities of loan officers and their loan portfolios. When the costs are too high, large institutions experience a disadvantage compared to smaller counterparts in small business lending. Instead, such problems are less pronounced in a centralized system. However, in this case loan officers do not have incentive to invest time and resources in collecting soft information. This is because it is difficult for a loan officer to report and collect the resources invested to acquiring soft information to pass on to their superiors (Stein, 2002).

More in general, highly hierarchically organised banks tend to experience organisational friction in lending to opaque borrowers. Small and innovative firms are typically this type of borrower (Berger et al., 2005). Compared to large firms, SMEs are in fact less informationally transparent (more opaque) and typically are not able to provide hard information. Small-business lending depends on the

production of soft information that is hardly to be collected and verifiable. For this reason, small banks have been recognized to have a comparative advantage in relationship lending, while large banks have the edge on transaction lending (Stein, 2002).

The empirical evidence on the relevance of relationship lending for SMEs' access to credit is mixed. For example, Petersen and Rajan (1994) find that a tight relationship with a bank increases the availability of financial sources while borrowing from multiple lenders increases the price and reduces the availability of credit. Berger and Udell (1995) find that borrowers pay lower interest rates and are less likely to pledge collateral when the relationship with the bank is longer. Using information from nearly 18,000 bank loans to small Belgian firms, Degryse and Van Cayseele (2000) find evidence that the loan rate increases with the duration of a bank–firm relationship. In contrast, they show that the scope of a relationship, defined as the purchase of other information-sensitive products from a bank, largely decreases the loan's interest rate. More recently, Berger and Udell (2006) show that small banks have a comparative advantage in relationship lending, but this appears to be strongest for lending to the largest firms.

As a counterargument, some scholars maintain that a strong presence of small institutions may not be needed for general credit availability of SMEs: large banks can, in fact, lend to opaque SMEs via different transaction technologies due to “hard” collateral-based information (e.g., collateral guarantees, small business credit scoring, asset-based lending, factoring, fixed-asset lending, and leasing) (Berger and Udell, 2006). This is because these technologies assess the quality of specific assets that are used as collateral rather than valuing the overall quality of the firms (Udell, 2009). Moreover, these assets can also be valued by making use of hard information (e.g., accounts receivable in the case of factoring, accounts receivable and inventory for asset-based lending, and equipment for equipment lending) (Udell, 2009). Recently, De la Torre et al. (2010) argue that all types of banks are dealing with SMEs. They also state that large, multiple-service banks have a comparative advantage in offering a wide range of products and services on a large scale, because of new technologies, business models, and risk management systems. Furthermore, recent papers

have shown that transaction lending technologies (mainly based on “hard” information such as balance sheets and/or collateral guarantees) and relationship lending technologies can coexist in an SME’s lending strategy. SMEs are less likely to be credit rationed i) if the primary technology adopted by the bank is relationship lending and ii) if the information characteristics of the firm and the lending technology of its bank are more aligned (Ferri and Murro, 2015).

Financial innovations have reduced the cost of these transactions-based technologies (such as cost of monitoring) and this could have also favoured a shift toward more transactions-based lending as banks would be able to lend at a longer distance. As concerns small business lending, the use of small business credit scoring has attracted a lot of scholars’ attention. The use of credit scoring appears to be associated with a decrease of underwriting costs and with the improvement in failure prediction power (DeYoung et al., 2004). Therefore, financial innovation appears to have favoured the increase in the average distance between small business borrowers and their banks. Consistently with this view, Petersen and Rajan (2002) find that the distance between small firms and their lender is increasing because of an improvement in lender productivity. However, Udell (2009) argues that such a phenomenon could be explained not only by the substitution of hard information with soft information, but also by the removal of the barrier to branch. Overall, large banks seem to have more advantages in processing hard information because of their economies of scale in collecting, processing and assessing it (Presbitero and Zazzaro, 2011).

2.4 Distance and financial innovation: implications for SMEs’ business lending

Does the distance between a bank’ headquarter and its branches matter for SMEs’ lending? What about the distance between bank and SMEs?

The existing literature has widely acknowledged that changes in bank organizational structure can have potential indirect consequences for the reduction in the availability of financial

services to small customers (Berger et al., 1999). Both the consolidation process of the banking industry and the geography of banks is of a great interest and concern for both policy makers and scholars. The reason is that with the increase of banking consolidation, the average size and complexity of banking institutions have increased as well. This could affect small business loans.

Over the last decades, there has been an increasing amount of literature focusing on the implications of bank geography on small business lending with a consequent impact on their growth and investment opportunities. Among them, Alessandrini et al. (2009)'s book offers a recent and in-depth literature review on this topic. Traditionally, the existing literature has recognized that geographical distance can generate transaction costs, namely transportation and information costs for both banks and customers. In particular, as explained by Brevoort and Wolken (2009) both financial institutions and customers can incur transportation costs. In the case of financial institutions, the screening and monitoring of loans can require multiple site visits by a loan officer. This would increase the travel costs for the lender. Consequently, unless these costs can be recovered by applying higher interest rates or fees, the lender would not have the incentive to provide credit to distant borrowers (Almazan, 2002). Furthermore, customers can also incur information costs related to acquiring information about alternative suppliers. Brevoort and Wolken (2009) argue that banks also face information costs especially related to the provision of credit. These costs vary with the increase of distance between lender and customer and are particularly high when banks need to collect soft information on small business borrowers.

With the advancement in information and communication technology and the consequent reduction of costs of communication and trading across space, the importance of distance in banking has been put to discussion. In particular, new technologies, such as online banking and automated teller machines (ATMs), have contributed to reduce transportation costs for the consumers. Other studies (e.g. Amel and Brevoort, 2005) have found that online banking services operate as a service enhancement, but not as a substitute of personal interaction. Overall, the prevailing view is that

technological and regulatory changes have reduced the proximity between borrower and lender. For example, the average distance between lenders and small businesses (that more than others benefit from the proximity) have increased over recent years (e.g. Petersen and Rajan, 2002). However, Wolken and Rohde (2002) and Brevoort (2006) also note that the upper tail of the distance distribution is changing over time. This would suggest that the effects on distance affect only a subset of lenders. The importance of geographic proximity can vary across institution and product types. This is what Brevoort and Wolken (2009) recently demonstrated using the Survey of Small Business Finances (SSBF). They have assessed how the distance between small businesses and lender have changed over the decade 1993–2003. The authors found that distance matters as local institutions within five miles of the firm’s headquarters provided most financial services to small businesses. Furthermore, despite technological advancements, such as credit scoring, lenders still provide services and funds by dealing with the client in person. Moreover, they found that asset services are provided locally more often than loans or financial management services, and that the distance between small firms and the depository institutions is smaller than those with non- depository institutions.

Recently, Zhao and Jones-Evans (2016) show that greater functional distance between bank headquarters and branches increase credit constraints of local SMEs in the aftermath of the global financial crisis, while they did not find any effect for the operation distance. As explained by the authors, closer physical proximity between bank branches and the headquarters of branches can impact positively on the level of shared value and relational capital, trust. Therefore, the quality of the communication of soft information between local branches and the bank’s headquarters increases as well. While on the one hand this can contribute to an easier review of loans, on the other hand, it also provides incentives for gathering and supplying soft information on SME lending (Canales and Nanda, 2012). In the conclusions, the authors pointed out the need to have a geographically decentralized financial system that is counterbalanced by a network of financial institutions and

services dedicated to the support and stimulation of the demand of local SMEs.

2.5 Banking competition and spatial pricing

This section explores whether the configuration of the local banking system can affect the cost of services and products offered by the banking system.

The existence of transaction costs also have important implications for banking competition and could push banks to engage in spatial pricing. This is driven by the fact that banks that are located closest to borrowing firms can exert a higher market power than banks that are at higher distance. As argued by Dell'Ariceia (2001), such an advantage is more prominent in the case of small business loans because transaction costs, such as transportation and information costs, are more likely to exist and are non-negligible. This is because distance in fact amplifies both transportation costs, but also information costs associated with screening and monitoring activities. However, the monopoly market power of a bank depends on the location of its competitors as well. Using information of 15,000 bank loans of a large Belgian bank, Degryse and Ongena (2005) find evidence of spatial price discrimination in bank lending. In particular, they show that loan rates decrease with the distance between the firm and the lending bank and increase with the distance between the firm and competing banks. The authors explain that price discrimination is more likely to occur because of transportation costs and not because of informational asymmetries.

In addition, price discrimination also depends on market configuration. For example, Park and Pennacchi (2008) demonstrate that the retail loan and deposit rates set by banks in a particular market reflect the market's distribution of multi-market banks and small banks alongside market concentration. In particular, they show that large multi-market banks are likely to promote competition in retail loans while they offer retail depositors lower deposit interest rates. In addition, Hannan and Prager (2009) find in rural banking markets that the prices offered by multi-market banks do not depend on the banking concentration, but they instead reflect

the conditions prevailing outside that particular local market. They also argue that small single-market banks do not tend to adjust their prices because of an increase in concentration. Finally, they show that the prices of small single-market banks are weakened by the presence of multi-market banks. Focusing on small local areas (municipalities) in the years 1988–2005, Coccoresse (2009) finds that market power of single-market banks is reduced by nearby competition, concentration, and an increase in the local presence of big banks.

Recently, Degl’Innocenti et al. (2017a) show that an increase of the presence of large and medium banks in concentrated markets does not affect the monopoly market power of single-market banks in the loan market, but it does decrease the monopoly market power of single-market bank in the deposit market. There are also some studies that have focused on the impact of the physical distance from the borrower to the lender on the likelihood that the loan is secured by collateral. The empirical results on this issue are mixed. While Petersen and Rajan (2002) and Berger et al. (2005) find that the distance from the lender increases the likelihood of collateralized loans, Cerqueiro et al. (2009) find an economically and statistically negligible effect of distance on collateral.

2.6 Lending cyclicality and cyclicality in access to finance for SMEs

During periods of financial distress or uncertainty, there is great concern that SMEs and innovative firms could face higher barriers to credit access than during normal periods, which can be even worse for innovative SMEs, who can then experience high credit rationing. Lending to small firms can decrease as the banking and financial system is particularly fragile and unstable. This is indeed what happened during the GFC.

Several studies have offered evidence that bank lending exhibits a cyclicality pattern. This is a great concern for policy makers as a drop in lending activities during recession period can lead to credit crunches phenomenon and more in general have a detrimental effect for real economy. Consequently, regulators have

advanced several initiatives to overcome such phenomenon. As explained by Behr et al. (2017), recent regulatory changes have put forwarded several regulatory interventions to address such issue (for example countercyclical capital buffers (Basel III Accord), loan-to-value caps (Japan), time-varying systemic liquidity surcharges, and stressed value-at-risk requirements)⁶.

During the GFC, firms, and especially SMEs have seen an increase of their financial constraints. By having more barriers to access to finance, SMEs, and especially innovative firms are refrained from bringing new products and services to the market. In turn, this could slow down the recovery process. Recently, Lee et al. (2015) find that access to finance for innovative SMEs has worsened overall during the GFC. In addition, they show that the relative gap between innovative and non-innovative firms appears closer than before as non-innovative firms have worsen more their general credit conditions. Instead, absolute credit rationing is still more severe for innovative firms. As conclusive remarks, the authors claim that the use of standard credit scores can discourage innovative firms from applying for financial funds. Lee et al. (2015) also find that innovative firms in peripheral regions are more likely to have their applications for finance rejected. Their results also suggest that firms in peripheral areas may suffer more from the financial constraints' issue. This can further enlarge regional disparities.

In general, during period of uncertainty firms experience a drop in their demand of products/services. This negatively affects the availability of internal finance and leads to an increase the need

⁶ Before, Basel II imposed risk-sensitive bank capital requirements that were anchored to business cycle fluctuations. Since the GFC, regulators have focused their attention on the search of solutions to reduce procyclical effects of bank capital requirements. Basel III substantially reaches this target. With Basel III, regulators have introduced counter cyclical bank capital buffers (e.g. procyclical capital requirements) with the scope of increasing equity in boom periods (Hakenes and Schnabel, 2011). This has helped banks to keep additional buffers in recession period to reduce credit crunches. Furthermore, the opportunity cost of keeping additional capital has also contributed to reduce credit -led booms. On this point, Jiménez et al. (2017) demonstrate that the bank buffers build-up in good times clearly helped to mitigate the credit crunch in bad times.

for external finance of firms. The paradox is that SMEs can see their applications for external finance rejected in a period of more financial need.

As small firms have seen an increase of rejection of their loan application, they have started to search for alternative source of debt finance, differently from the traditional bank channel. For example, by using a euro area firm-level data since the GFC, Casey and O'Toole (2014) show that bank lending-constrained SMEs are more likely to use or apply for alternative external finance such as trade credit, informal lending, loans from other companies, market financing (issued debt or equity), and state grants. They also find that credit-rationed firms are more likely to use, and apply for, trade credit. Using a sample of European manufacturing firms, Ferri et al. (2017) investigate how differences in main banks' lending technology and use of soft information affected firms' credit availability during the 2007-2009 crisis. The authors find that the probability of credit rationing was higher for firms matching with banks using transactional lending technologies. They also show that soft information benefits most SMEs and firms that have relationships with large banks. Overall, these studies have provide evidence of a cyclical effect of access to finance for SMEs. Particularly, innovative SMEs appear to face an increase of financial constraints in a recession period.

2.7 Other financial intermediaries to support SMEs' lending

2.7.1 The importance of mutual guarantee institutions for SMEs

Small firms have the possibility to improve their borrowing capacity by joining Mutual Guarantee Institutions (MGIs) (Gai, 2011; Gai et al., 2016; Ielasi and Gai, 2017). MGI provide loan guarantees for SMEs with good and sound projects, but that cannot offer sufficient bankable collateral. In 2017, the European Mutual Guarantee Association (AECM) generates a total guarantee volume in portfolio of 125.6 bn. EUR and issued a total volume of over 74.2 bn. EUR of new guarantees⁷. The mutual guarantee scheme works as follows: MGI members offer a contribution to a guarantee fund.

⁷ Data retrieved from <http://aecm.eu/>, accessed on 10/01/2018.

This fund is then used as collateral to back loans granted to the members themselves (Columba et al., 2010). The mutual guarantee scheme also reduces the existent information asymmetry between lender-borrower. This can be explained by the fact that MGIs are better informed than banks about other members' characteristics and behaviour (Columba et al., 2010).

In general, MGIs play a pivotal role in reducing the credit constraints of SMEs, especially during periods of financial distress. On this point, using a large database on Italian firms over the period 2007–2009, Bartoli et al. (2013) provide evidence that small firms supported by MGIs were less likely to experience financial tensions even during the peak of the financial stress. Second, they find that MGIs played a signalling role beyond the simple provision of collateral.

Overall, Mutual Guarantee Institutions play a pivotal role in reducing the financial constraints of SMEs. The role of these entities can be particularly crucial during periods of financial distress.

2.7.2 Developing Banks: an alternative for SMEs?

Development banks (DBs) are state-owned financial institutions whose aim is to support the economic growth by offering credit to households, SMEs but also large private corporations. Specifically, DBs usually offer subsidized, long-term financing for industrial development. Although DBs exert various policy mandates, DBs can be split into two groups: (1) DBs with a narrow and specific mandate (the focus is on a specific sector(s), type of customers); (2) institutions with a more broad mandates that are not specialized in any particular sector or activity.

A survey conducted in 2012 by the World Bank (De Luna-Martínez and Vicente, 2012) reveal that DBs offer especially long-term loans (90%), then working capital loans (85%), whereas syndicated loans consisted of 52% of all DBs. Most DBs offer subsidized interest rates to borrowers by using transfers from their respective governments. In terms of funding, they can collect sources through different channels, such as: “1) *savings and deposits from the public*, 2) *borrowing from other financial institutions*; 3) *raising money in the domestic or international*

capital markets, 4) using their own equity, and 5) receiving budget allocations from the government” (De Luna-Martínez, and Vicente, 2012). Although DBs make use of all these channels, however, they do not usually collect deposit to avoid competing with private banks but also to reduce potential exposure to losses.

DBs tend to have a countercyclical role as they offer credit when the traditional banking system shrinks its lending to the industrial sector in period of financial turmoil (World Bank, 2012). Thus, development banks may represent an alternative to private commercial banks or local capital markets for SMEs especially during financial turmoil. However, the effectiveness of DBs in supporting small firms and local economies is still debated.

From the one hand, the industrial policy view and the social view hold that development banks help to improve investment and performance of firms when they cannot get access to the capital markets (Lazzarini et al., 2015; Musacchio et al., 2017).

From the other hand, a large literature suggests that state-owned banks may allocate credit to firms based on political criteria rather than on the merit of the entrepreneur project (e.g., Dinc., 2005; Sapienza, 2004). Table 2.1 summarize the major theories on the role of development banks.

Table 2.1 Major theory on the roles of development banks

	Industrial Policy	Social	Political
Summary of Theory	Development banks are intended to finance entrepreneurship, industrialization, and the infrastructure necessary for the economy to efficiently adjust to industrialization and maximize productivity gains.	Development banks are intended to insure that social concerns are appropriately prioritized against profit maximization and that resources are allocated for projects addressing socio-environmental factors when unattractive for purely profit purposes.	Development banks are used by politicians primarily to achieve personal objectives and to advance political agendas.

Market Failures Addressed or Government Failures Created	<p>Reducing information asymmetry and credit rationing.</p> <p>Promoting latent capabilities and projects that can generate potential information externalities.</p> <p>Reducing coordination problems by promoting complementary investments with large spillover effects.</p> <p>Contributing with technical expertise to reduce discovery costs.</p> <p>Strategic trade: subsidizing firms in costly international markets.</p>	<p>Socio-environmental impact:</p> <p>Investment in regions or customer segments that are not profitable for the private sector.</p> <p>Supporting socially oriented initiatives (including high employment).</p> <p>Investment in environment-friendly projects.</p>	<p>Government failures:</p> <p>Misallocation of credit (e.g. subsidized capital to large firms that do not need support in the first place).</p> <p><u>Soft budget constraints</u>: supporting unproductive or failing firms.</p> <p><i>Rent-seeking</i>: provision of subsidies to firms that do not need subsidized capital.</p>
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Source: Musacchio et al. 2017.

The controversial role of development banks requires a further investigation to better clarify the role and the conditions under which DBs can better tackle the failures of the capital markets by providing alternative financial sources in support to entrepreneur projects. However, they could be a potential valid alternative to private commercial banks. In addition, they seem to reduce political risk associated with an investment (Broccolini et al., 2019; Hainz and Kleimer, 2013). This is because they can exert a high bargaining power on governmental decisions due to the large number of projects in which they are involved, their status, and their frequent interactions with governments.

2.8 Concluding remarks

Over the last years, several small banks and particularly cooperatives are merging with each other to increase their size. The reasons are manifold: chief among them the high amount of non-performing loans in the sector, the lack of effective internal governance to promptly respond to crisis periods through recapitalization, and the limited possibility to diversify the source of risk. This makes this type of banks vulnerable to shocks and crisis events. Because of their small size and business volume, it can be hard to justify the use of funds to bail out these types of banks. Despite the fact that the aggregation of small banks and cooperative banks can be beneficial for the stability of the system, their increase in size and aggregation in a unique group can however harm their local dimension activities and consequently local small businesses. Furthermore, new regulatory changes, such as Basel III, mainly promote the use of screening technologies based on hard information. This will push banks to substitute relationship-lending technologies with transaction lending technologies (Cosci et al., 2009). In addition, the Basel approach relies more on quantitative methods that tend to require the application of higher risk weight from SMEs. who are perceived as risky subjects (for example for a AAA rate firm the weight is 20% while for an unrated SME it is 75%-100% risk weight) (Beck, 2016).

Small banks typically deal with relationship lending techniques that are important drivers of lending for SMEs. Banks need to collect information about local economic conditions and customers in order to assess their credit profile. Banks' proximity to clients can be an important factor in overcoming asymmetric information problems. Saying that, recent technological innovations (such as e-banking and phone-banking) have facilitated the transmission of information across large distances, in this way altering the manner in which a bank enters a market and decreasing the proximity of banks relative to their clientele. Nowadays, banks can provide their customers with deposits without the cost of setting up "brick and mortar" branches. In contrast, there is a large body of literature suggesting that the distance between lender and borrower still matters. Overall, from this literature review emerges the view that

small banks can better deal with soft information than large banks. This can reduce information asymmetry between small banks and SMEs. Under these circumstances, SMEs are less likely to be credit rationed. Overall, it could be important to counterbalance the consolidation process of the banking system by having a network of actors such as venture capitalist, regional development entities, and MGIs that can support the local demand and reduce the credit constraints of SMEs. DBs can also cover a role in supporting local economies and socially oriented activities especially during the financial turmoil.

3. European Regional Policy for SMEs and drivers of regional convergence

3.1. Introduction

This Chapter focuses on the European regional funds that represent an alternative support for SMEs and regional economies to the local banking system. Specifically, this Chapter aims to address the following research hypotheses: Do EU regional policies reduce economic dissimilarities? Do they exert a positive effect on SMEs? To address the above research questions, this Chapter first investigates the scope and main trends of European regional policies. Next, it provides a short overview of regional growth theory to underpin the drivers of regional growth and convergence. All these aspects related to regional economic growth and convergence are important to better understand the economic environment and dynamics that can favour labour productivity and economic growth. Especially for SMEs, these aspects play a crucial role. SMEs can be seen as mere recipients of these external and internal shocks that affect the local economies where they mainly operate. Regional dynamics and regional policy interventions can contribute to create an economic and institutional environment more or less competitive for SMEs. All these aspects can therefore affect their viability aside from the issues related to credit constraints. Then, the *Chapter* discusses the effect of financial development more in general on the economic regional convergence. Specifically, it examines whether the allocation of financial resources in certain regions or geographical areas can be beneficial only for the firms located in the same areas or can generate spillovers to other regions. This last section is propaedeutic to the analysis conducted in Chapter 4.

Moving from these considerations, this Chapter offers an overview of the European regional policy: scope and main trends in *Section 3.2*. *Section 3.3* provides an overview of the existing literature on regional economic growth. *Section 3.4* discusses the consequences and implications of several key policy initiatives for economic regional convergence. *Section 3.5* then discusses the role

of financial development for the reduction of regional economic inequalities. Finally, *Section 3.6* concludes.

3.2 European regional policy: scope and main trends

This Section discusses the main recent interventions promoted by the European Commission to support the regional economies. More in general, the European Commission intends to promote social cohesion and regional convergence to spur the future development of the European economy by reducing regional disparities through several key policy initiatives, such as the single market, EU competitiveness, the Monetary Union, and, more recently, through regional policies. The scope of regional policies is to provide aid for job creation, business competitiveness, economic growth, sustainable development, and improve citizens' quality of life⁸.

During the 2000-2006 period, European Commission launched the European Regional Development Fund (ERDF) to provide regional investments for the creation or maintenance of jobs; infrastructure; local development initiatives, and the business activities of small and medium-sized enterprises. The regional policy support between 2000 and 2006 was divided based on objectives (Objective 1 for the development of the least favoured regions, while Objective 2 was for the conversion of regions facing difficulties); local destination (interregional cooperation or sustainable development of urban areas); and innovative actions (development of innovative strategies to make regions more competitive). The report shows that € 123 billion were invested through the ERDF between 2000 and 2006. This investment of resources appear to have generated important achievements for the regions across the EU. For example, the European Commission

⁸ Source: http://ec.europa.eu/regional_policy/en/policy/what/investment-policy/.

reports that 1.4 million jobs were created and about 800000 SMEs were supported.⁹

Next, The European Commission implemented the Cohesion Policy during the period 2007-2013. Specifically €346.5 billion invested in order to support economic growth but also job creation during the GFC. The European Commission claims that Cohesion Policy have contributed to create more than 1mln of jobs and estimated return nearly €1 trillion of additional GDP by 2023.¹⁰ As concerns the SMEs, the European Commission argues that 121400 and 400000 SMEs start-ups receive financial support. This provided them with an important additional source for their growth and survival, since during the financial crisis the traditional banking system reduced its lending activities.

For the period 2014-2020, the EU has made €645,3 bln available to its Member States and Interreg programmes under the European Structural and Investment Funds (ESIF). The EU budget is managed in partnership with national and regional authorities mainly through five big funds over this period. Among them the, two main funds are the European Regional Development Fund (ERDF) and the Cohesion Fund (CF). Below, all the five funds are described.

1. *European regional development fund (ERDF) – promotes balanced development in the different regions of the EU.*
2. *Cohesion fund (CF)– funds transport and environment projects in countries where the gross national income (GNI) per inhabitant is less than 90% of the EU average. In 2014-20, these are Bulgaria, Croatia, Cyprus, the Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia and Slovenia.*
3. *European social fund (ESF) - supports employment-related projects throughout Europe and invests in Europe's human*

⁹Source:

https://ec.europa.eu/regional_policy/sources/docgener/evaluation/expost_reaction_en.htm

¹⁰Source:https://ec.europa.eu/regional_policy/sources/docgener/evaluation/pdf/expost2013/wp1_synthesis_factsheet_en.pdf.

capital – its workers, its young people and all those seeking a job.

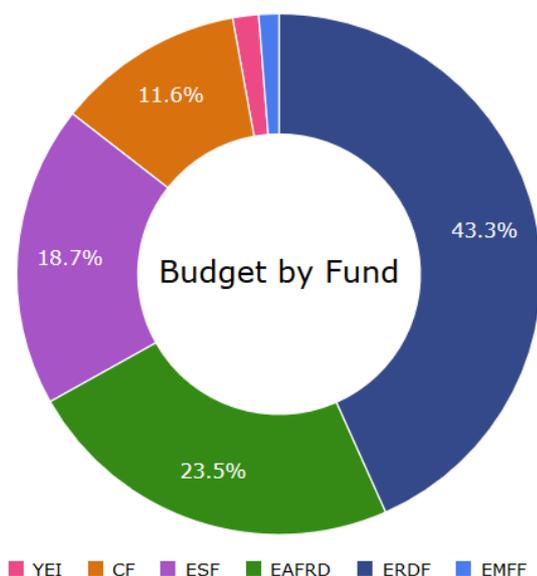
4. European agricultural fund for rural development (EAFRD) – focuses on resolving the particular challenges facing EU's rural areas.
5. European maritime and fisheries fund (EMFF) – helps fishermen to adopt sustainable fishing practices and coastal communities to diversify their economies, improving quality of life along European coasts.¹¹

Among these five funds, the ERDF covers 43% of the EU budget, while 21% and 18% of the resources are respectively for EAFRD and ESF (Figure 3.1). The remaining parts of the budget is the committed to the realization of the other regional policies. Table 3.1 shows the budget for European Structural and Investment Funds (ESI) allocated per country for the period 2014-2020.

As expected, the share of EU contributions in total funding exceeds 80 percent, particularly for transition economies that are in need of more support for SMEs compared to other countries. As explained by Degl'Innocenti et al. (2017c), following the 2008-09 crisis, among the CEE and SEE countries, EU regions have put forward a strong deleveraging process of the banks that has led to a decrease of credits granted to the industrial sector. Consequently, especially SMEs have been affected by the credit crunch in those regions.

¹¹ Text retrieved from https://ec.europa.eu/info/funding-tenders-0/european-structural-and-investment-funds_en on 01/02/2019.

Figure 3.1 EU Budget by Fund



Source: European Commission based on data on planned (planned) financing under the different ESI Funds (2014-2020). Data retrieved on 7/3/2019.

Table 3.1 ESIF 2014-2020 finances planned details

Country	EU Amount	National Amount	Total Amount	EU co-financing
Austria	4,922.87	5,727.01	10,649.88	0.494
Belgium	2,741.71	3,347.10	6,088.81	0.481
Bulgaria	9,877.57	1,856.45	11,734.02	0.846
Croatia	10,727.45	1,926.24	12,653.69	0.848
Cyprus	917.31	252.29	1,169.60	0.660
Czech Republic	23,865.02	8,514.52	32,379.54	0.673
Denmark	1,546.80	717.99	2,264.78	0.669
Estonia	4,423.51	1,542.64	5,966.16	0.829
Finland	3,765.04	4,670.12	8,435.16	0.439
France	26,898.57	18,790.15	45,688.72	0.644
Germany	27,934.98	16,819.45	44,754.43	0.667
Greece	21,401.98	5,286.12	26,688.09	0.741
Hungary	25,013.87	4,635.78	29,649.65	0.808

Ireland	3,361.63	2,778.02	6,139.65	0.539
Italy	44,472.10	31,362.73	75,834.83	0.503
Latvia	5,633.67	1,274.37	6,908.04	0.752
Lithuania	8,385.92	1,561.26	9,947.18	0.827
Luxembourg	140.13	316.29	456.42	0.375
Malta	827.94	195.96	1,023.90	0.770
Netherlands	1,887.37	1,857.75	3,745.13	0.531
Poland	86,111.62	18,809.77	104,921.39	0.831
Portugal	25,856.08	6,889.65	32,745.72	0.823
Romania	30,882.65	6,681.61	37,564.26	0.833
Slovakia	15,287.32	4,271.90	19,559.22	0.733
Slovenia	3,930.58	1,027.39	4,957.98	0.786
Spain	39,834.77	16,335.59	56,170.36	0.674
Sweden	3,626.74	4,311.90	7,938.64	0.467
Territorial co-operation	9,715.88	3,261.75	12,977.62	0.770
United Kingdom	16,470.84	10,328.30	26,799.14	0.649
Grand Total	460,461.92	185,350.08	645,812.00	0.658

Source: Data ESIF 2014-2020 Finances Planned details.

Note: Data is reported in mln of euros. Data updated at the 26/1/2018. EU Amount is the EU decided amount (allocation) in euro; National Amount is the national decided co-financing (allocation) in euro; Total amount is the total decided amount (allocation) in euro; EU co-financing is the share of EU contribution in total funding.

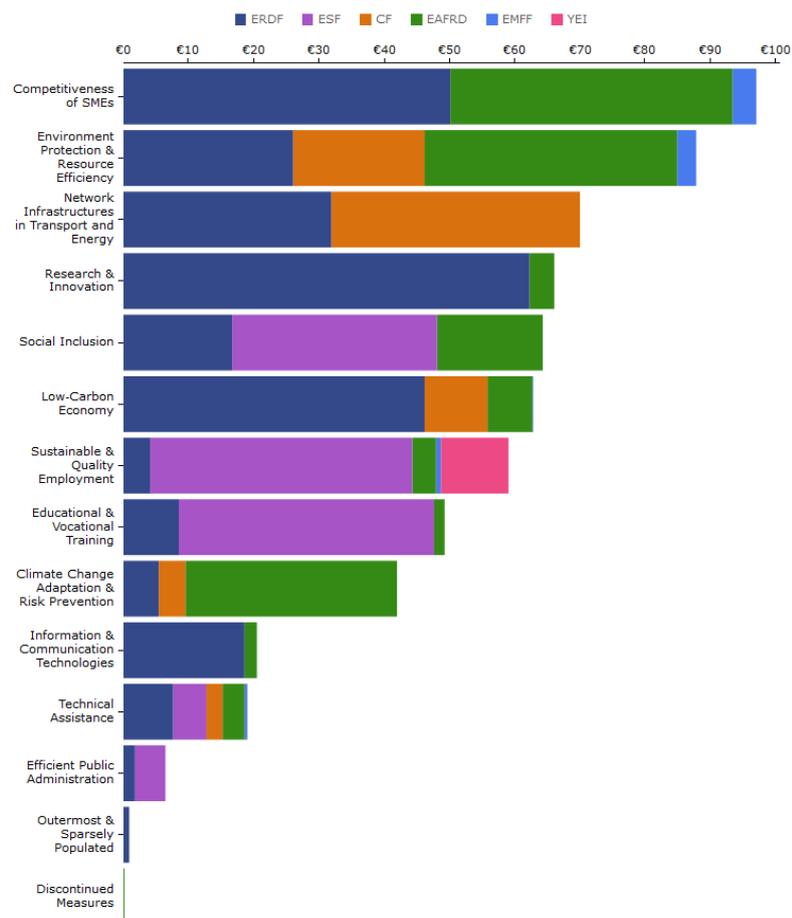
Among these five funds, the ERDF in particular provides support for innovation and SMEs as shown in Figure 2. In particular, the ERDF includes investments in specific priority areas such as:

1. innovation and research;
2. the digital agenda;
3. support for small and medium-sized enterprises (SMEs);
4. the low-carbon economy.

Regions are eligible for receiving the ERDF if they meet some specific requirements. Such requirements depend on the degree of development of the regions. In particular, more developed regions can receive at least 80 % of funds if they focus on at least two of the above priority areas. In the case of transition regions, this target is for 60 % of the funds, while it can be 50% in the case of less developed regions. Furthermore, as a last strict requirement, ERDF resources are required to be invested in low-carbon economy

projects with different percentage depending, again, on the development level of the regions: 20% for more developed regions; 15% for transition regions: and 12% for less developed regions¹².

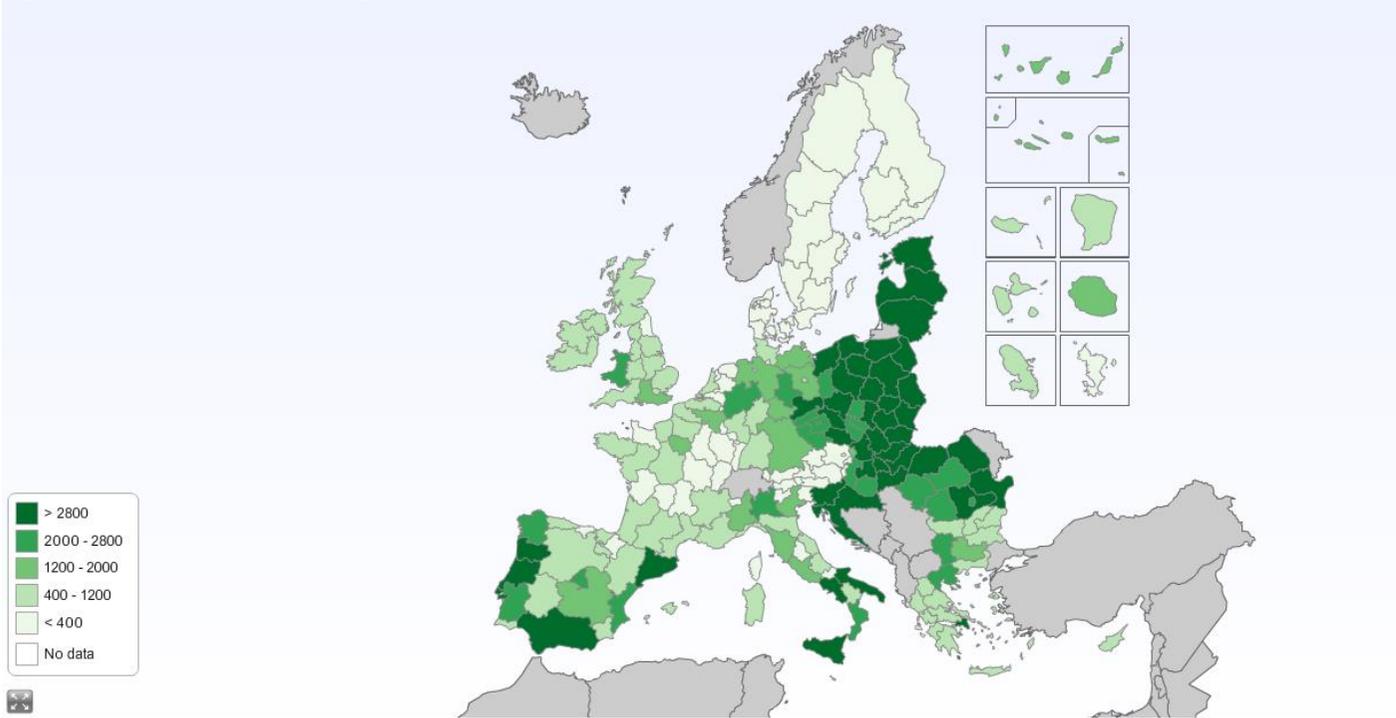
Figure 3.2 Total Budget for the object of the interventions promoted by each Fund, EUR Billion



Source: European Commission based on data on planned (planned) financing under the different ESIF Funds (2014-2020). Data retrieved from <https://cohesiondata.ec.europa.eu/overview#> on 08/03/2019.

¹² All the information and data are provided by the European Commission.

Figure 3: planned investments using European Structural and Investment Funds



Note: Map retrieved from the European Commission website. The map reports the European Structural and Investment Funds (ESIF) data at the regional level for a total amount of euros 347,737 millions.

3.3 Regional economic convergence in Europe

3.3.1 A short overview of regional growth theory

This subsection provides a short overview of the regional growth theory in order to understand whether regional dissimilarities can decrease over time. The issue of the convergence of economic regions and the growth patterns of European countries are of great interest to economists and geographers (Alexiadis, 2012; Becker et al., 2012; Corrado et al., 2005; Degl'Innocenti et al., 2018; Ezcurra et al., 2006; Petrakos et al., 2005). The high variability of economic resources within European countries has been the object of several empirical studies in order to understand to what extent regional dissimilarities are intrinsically structural or rather cyclical.

There are a few contrasting theoretical approaches that focus on the regional growth. As explained by Alexiadis (2012), the first approach is related to the standard neoclassical model of economic growth formulated by the pioneering work of Solow (1956). The neoclassical economic models argue that, in the long-run, regional economies move towards a unique level of output per-worker if the growth rate of technology, rate of investment, and rate of growth of the labour force are identical across regions. In particular, as explained by Petrakos et al. (2011), three main mechanisms can contribute to reduce inequalities between regions. First, economies converge towards their steady states at a declining growth rate because the marginal productivity of capital declines as well. In other words, the more a region is below its “steady-state”, the more this region should grow. This would favour the catch-up process of poorer regions with respect to richer regions as the first ones tend to grow faster than the latter ones. Petrakos et al. (2011) explain that a second drive of convergence is due to trade integration. Trade integration tends to favour the convergence of product and capital and labour prices. Finally, the third mechanisms of convergence refers to the movement of capital and labour. The idea is that additional capital investments tend to be less profitable because of the decreasing marginal productivity of capital. Therefore, capital will flow from rich to poor economies. Instead, labour force moves in the opposite direction: from poor to rich economies.

In contrast to the neoclassical theory, there is another prominent theory, the post-Keynesian approach whose leading economist is Nicholas Kaldor (1908 - 1986). Particularly, Kaldor (1970) has the merit to have explained the speed at which a region's per-capita output grows based on the capabilities of regions to take advantage of internal scale economies and gain benefits from greater specialisation. The post-Keynesian approach maintains that disparities in per-capita incomes across regions are permanent and thus divergence in per-capita incomes is mostly likely to occur.

Since the 1980s, a new growth theory, notably Endogenous Growth, has advanced the earlier neoclassical and Post-Keynesian models augmented. The basic idea of endogenous growth models is that technology is no longer an exogenous variable. Instead, technology is explained within the new growth models. This means that growth is positively affected by the conscious production of knowledge and technology and to external effects arising from broad capital formation (Alexiadis, 2012).

Among the endogenous growth models, the New Economic Geography explicitly incorporates the spatial distribution of economic activities and localised dynamic externalities in the study of regional dynamics and growth. The New Economic Geography (NEG) framework, introduced by Krugman (1981), formalises the cumulative causation mechanisms that lead regions with similar underlying structure to differentiate between rich and poor regions. In particular, the NEG suggests that the combination of agglomeration forces, increasing returns to scale (IRS), and market size creates the conditions for forging leader regions over other regions and predicts the process of geographical agglomeration of production, high quality resources, and services in specific locations. The rationale is that agglomeration economies on the local allocation of resources favour the polarisation of regions into different clubs: poor peripheral regions and rich central-core regions. Leading regions are then in a privileged position to better benefit from the economic boom, in this way enlarging the existing spatial disparities with respect to less advanced economies in period of economic.

The NEG has been subject to criticisms because of a lack of realism in underpinning agglomeration mechanisms more

thoroughly (Boschma and Frenken, 2006). One of the main critiques is that economic geography has diverted attention away from patterns of dispersal forces in terms of analysing institutional settings and change. As extensively discussed by institutionalist economic thinking, institutions instead exert a pervasive influence on the economy (Rodríguez-Pose, 2013). They, in fact, guide the economic behaviour of firms, managers, investors, workers through an ensemble of formal regulations; legislation as well as informal societal norms (Gertler, 2004). Therefore, based on this view, the institutional environment should be taken into account in studies of regional growth and convergence.

3.3.2 Empirical evidence on economic convergence

Empirical literature on regional convergence is extensive. There is an increasing body of studies that focus on EU regions (recently Alexiadis (2012), Petrakos and Artelaris (2009); Petrakos et al. (2011)). Contemporary research frequently argues that the fundamental factors that have an impact on the economic divergence (convergence) include financial constraints (Aghion et al., 2005), labour mobility, distribution of income and unemployment, wage, education, technology and innovation, and agglomeration of industries, which is associated specifically with knowledge spillovers (Bottazzi and Peri, 2003). There have been also a large number of studies that have focused on the effects of European regional policy on European regional convergence (e.g. Becker et al., 2012). Recently, Degl'Innocenti et al. (2018) have highlighted the importance of financial centres in explaining the regional economic convergence dynamics at the European level.

Overall, a large part of EU-wide studies of regional economic convergence use the most common measures of convergence, namely σ -convergence and β -convergence. Particularly, the concept of σ -convergence refers to the cross-sectional dispersion in per-capita income through time and it is measured by through either a coefficient of variation or the standard deviation of per-capita income or output (Alexiadis, 2012). Regional economies display σ -convergence if the dispersion of income per-capita shows a decreasing pattern. Studies of regions of either multi-countries or individual countries using the coefficient of variation provide mixed

results. Alexiadis (2012) explains that the reason of a mixed picture can be because this measure is very sensitive to the impact of random shocks and external disturbances. Another measure of convergence is the absolute β -convergence developed by Baumol (1986) and Barro and Sala-i-Martin (1992). This refers to the neoclassical arguments of economic convergence and measures the inverse relationship between the growth rate during a given time period and the initial level of per-capita income (Alexiadis, 2012). The majority of the EU-focus studies found a slow convergence rate estimated with the absolute β -convergence (for example Alexiadis, 2012; Dall'Erba and Le Gallo, 2008). This suggest the existence of a converging pattern between European regions. However, the achievement of a common level of productivity appears to require a very long time and not always lead to convergence (Canova, 2004).

Since the work of Martin and Sunley (1998), there has been an increasing attention to the role of spatial characteristics of regions and their role in affecting any convergence mechanisms. Based on this view, regional economies are part of an inter-dependent system. Particularly, the spatial analysis considers that spatial proximity can favour mechanisms such as factor mobility, knowledge or technology spillovers. This phenomenon contributes to create a link between regions so that their growth does not only depend on the initial endowments but also on spatial links. Several studies have employed the spatial econometric analysis to examine the spatial inter-dependence between regions and the convergence dynamics for European regions (e.g. Basile, 2008; Mohl and Hangen, 2010).

Finally, the club convergence approach proposed by Chatterji (1992) examines the differences in levels, or gaps, with respect to a leading economy. This approach allows for the determining of different convergence clubs through the identification of multiple equilibria. Recently, Degl'Innocenti et al. (2018) has used this approach to assess the role of financial centres in the creation of the opposite convergence dynamics that appear to prevail for national and regional economies in Europe. They found that the convergence of financial centres' competitiveness reduces the economic inequalities of the regions where they are located. However, they also found that the reduction of the gaps of financial centres'

competitiveness sharpens the inequalities between the regions of financial centres and other regions within the same country.

Overall, as pointed out by Degl'Innocenti et al. (2018), opposite dynamics prevail for national and regional economies in Europe, namely a converging trend at the national level and a diverging trend at the regional level. Some authors (Longhi and Musolesi, 2007; Petrakos et al., 2011), explain this paradox in terms of the development of metropolitan areas. Nowadays, metropolitan areas represent important strategic nodes of the modern economy. They tend to attract an increasing number of firms and absorb resources from the surrounding and more peripheral areas. This phenomenon goes towards explaining the paradox we observe in Europe.

3.4. The impact and effectiveness of European regional policies

It is widely discussed whether the EU transfer can effectively increase the efficiency and productivity of the receiving regions. The reason is that EU transfer can increase inefficiency of recipient regions because of a lack of adequate administrative capacity and corruption (Becker et al., 2012). Furthermore, it is not entirely sure that economic integration will produce uniform benefits across space. For example, Petrakos et al. (2011) provide an overview of both positive and negative sides of the integration process. For example, they argue that economic integration is a long-term process that can contribute to reduce the inequalities thanks to the expansion of trade relations, greater mobility of production factors, and the improvement and share of technology. Based on neoclassical-view, all the changes generated by economic integration can improve the least developed regions. Consequently, there would be a greater cohesion. However, there are also opposite arguments that highlight the existence of costs associated to the integration process. The reason is that more advanced regions can benefit more from the economic integration process in this way keeping on enlarging the existing gaps with less advanced regions. Mohl and Hagen (2010) clearly explain the link between the regional growth theories and the empirical results of studies on the structural funds on economic growth. As explained by Mohl and Hagen (2010), according to neoclassical theory the economy will

converge faster towards its steady state if capital-scarce regions will receive finance capital and there is no barrier to technological access. Instead, the new economic geography (Krugman, 1981) suggests that economic integration can lead to a diverging process as it will reinforce the difference between core and periphery regions. The reason is that the reduction of transportation costs could favour a spatial concentration of increasing returns to scale industries in the core regions, while the concentration of constant returns to scale industries takes place in the periphery. In this case, regional policies should target the reduction of barriers and transport costs between core and peripheral regions to be effective. This has been done in part by structural funds in the period 2000–2006. About 41% of Objective 1 funds were in fact devoted to the improvement of public infrastructure (European Commission (EC), 2004).

Instead, under the new (endogenous) growth theory, regional policies can generate a long-term impact if they support investment for the improvement of R&D or human capital resources. These types of investments are typically included in Objective 3 but also, but also more marginally in Objective 2 in the period 2000–2006. For the new growth theory (Barro, 1990) public infrastructure should also be considered as an important input in the production process to spur growth. Finally, Mohl and Hagen (2010) explain that the regional policy should promote interventions aimed at reinforcing the regional specialization to meet the classical trade theory of comparative advantages.

Table 3.2 Main results of previous literature on structural funds on economic growth
(Source: Mohl and Hagen (2010, p. 355))

Main results of the previous literature on the impact of structural funds (SF) on economic growth.

Paper by	Central results: impact of SF on economic growth	Operationalisation of structural funds	Time period	Units	Econometric methods used
Becker et al. (2008)	Positive and significant growth effect of Obj. 1 regions	Dummy variable = 1 for regions receiving Obj. 1 funding, 0 else [exogenous]	1989–1993, 1994–1999, 2000–2006	up to 3301 NUTS-3 regions (EU-12,25)	Panel: Regression discontinuity analysis
Dall'erba and Le Gallo (2008)	SF have no statistically significant impact on regional convergence	SF payments and remaining commitments from 1994–1999 (as % of GDP) [endogenous]	1989–1999	145 NUTS-2 regions (EU-12)	Cross-section: Spatial lag model with IV
Espositi and Bussoletti (2008)	Limited impact of SF on regional growth	Obj. 1 payments per capita (in PPS) [exogenous]	1989–1999	206 NUTS-2 regions (EU-15)	Panel: FD-GMM, SYS-GMM
Falk and Sinabell (2008)	SF have a marginal positive and significant growth impact	Dummy variable = 1 for regions receiving Obj. 1 funding, 0 else [exogenous]	1995–2004	1084 NUTS-3 regions (EU-15)	Panel: Pooled OLS, median regression approach, weighted least squares
Hagen and Mohl (2008)	SF have a positive, but not statistically significant impact on regional growth	Obj. 1 + 2 + 3 payments and remaining commitments from 1994–99 (as % of GDP) [exogenous]	1995–2005	122 NUTS-1/2 regions (EU-15)	Panel: Generalised propensity score approach
Ramajo et al. (2008)	Faster cond. convergence of relative income levels of regions belonging to Cohesion countries than in non-Cohesion regions	Separate regressions for regions belonging to Cohesion countries vs. non-Cohesion countries	1981–1996	163 NUTS-2 regions (EU-12)	Cross-section: Robust OLS, spatial lag model
Puigcerver-Peñalver (2007)	Positive effect of SF on growth rates of Obj. 1 regions in 1989–1993, but not in 1994–1999	Total SF (as % of GDP p.c.); total SF of region / over total SF received by all regions [exogenous]	1989–1999, 1989–1993	41 NUTS-2 regions (EU-10)	Panel: Pooled OLS, FE
Eggert et al. (2007)	SF accelerate a region's convergence, but reduce the average growth rate	SF payments (as % of GDP) [exogenous]	1989–1993, 1994–1999	16 NUTS-1 regions (Germany)	Cross-section: Pooled OLS, Regress average growth of 1994–99 (2000–04) on average SF of 1989–93 (1993–99)
Soukiazis and Antunes (2006)	SF promote convergence; small positive impact on growth; more effective in coastal than in interior regions	ERDF per capita [exogenous]	1991–1999	30 NUTS-3 regions (Portugal)	Panel: Pooled OLS, FE, random effects
Bouvet (2005)	SF have a modest positive impact on regional growth rates	ERDF payments per capita [endogenous]	1975–1999	111 NUTS-1/2 regions (EU-8)	Panel: Pooled OLS, FE, IV
Dall'erba (2005)	Positive relationship between SF and regional growth	SF payments and remaining commitments from 1994–1999 (as % of GDP) [exogenous]	1989–1999	145 NUTS-2 regions (EU-12)	Cross-section: Exploratory spatial data analysis
Percoco (2005)	SF induce a high level of volatility in the level of growth rates	Obj. 1 payments (as % of GDP) [endogenous]	1994–1999	6 NUTS-2 regions (Italy)	Panel: GMM-IV
Rodriguez-Pose and Fratesi (2004)	Limited impact of SF on growth; only SF funding on education and human capital have positive effects	Obj. 1 commitments (as % of GDP) [exogenous]	1989–1999	152 NUTS-2 regions (EU-8)	Cross-section and Panel: OLS, pooled GLS FE
de Freitas et al. (2003)	Obj. 1 regions do not show faster convergence than non-Obj. 1 regions	Dummy variable = 1 for regions receiving Obj. 1 funding, 0 else [exogenous]	1990–2001	196 NUTS-2 regions (EU-15)	Panel: Cross-section: OLS
Ederveen et al. (2002)	Results depend on the assumptions underlying the convergence model	SF + Cohesion Fund (as % of GDP) [exogenous]	1981–1996	183 NUTS-2 regions (EU-13)	Panel: Pooled OLS
García-Milà and McGuire (2001)	Grants are not effective in stimulating private investment or improving the overall economies of the poorer regions	Dummy var. = 1 for regions receives above-average grants, 0 else [exogenous]	1977–1981, 1989–1992	17 NUTS-2 regions (Spain)	Panel: OLS and difference-in-difference approach

Notes: OLS = ordinary least squares, FE = fixed effects model, IV = instrumental variable, FD-GMM = first difference generalised method of moments estimator (Arellano and Bond, 1991), SYS-GMM = system generalised method of moments estimator (Blundell and Bond, 1998).

Note: Beck et al. (2008) is Beck et al. (2010) in the reference list.

The empirical results on this topic are mixed. I reported in Table 3.2 the studies analysed by Mohl and Hagen (2010)'s paper on page 355. I have added additional studies in Table 3.3. From Table 3.2 and 3.3, it emerges that structural funds are not always fully effective in promoting economic growth. This suggest a lack in the efficient use of these funds. For example, by using data at the NUTS3 level for the EU budgetary periods (1994–1999 and 2000–2006), Becker et al. (2012) find that EU transfers allow the recipient regions to grow faster. However, they also show that 36% of the recipient regions receive an amount of funds that exceed the aggregate efficiency maximizing level. Furthermore, they find that a reduction of transfer for 18% of the regions will not affect their growth. All this evidence suggest that funds can be allocated differently to regions in such way as to stimulate a higher aggregate

growth in the EU. The overall results would be a faster converging dynamics between regions.

Mohl and Hagen (2010) claim that most of the studies have focused on the neoclassical growth model. However, a large part of structural funds finances transportation infrastructure. This means that regional policies give importance to spatial spillovers effects and dynamics of spatial concentration.

Recently, Becker et al. (2018) show that the regions acquiring the treatment status for Structural and Cohesion Funds grow more than the regions excluded by the programmes. They also find that being excluded by those programmes impacts negatively on growth.

The prevailing view is that European regional policies can reduce regional inequalities and support the local industrial sector and innovation. However, there are still some opposite findings. Overall, it is possible that part of the diverging results is due to the lack of coherency in the econometric and theoretical approach followed by the studies.

Table 3.3 Some recent results of previous literature on structural funds and cohesion funds on economic growth

Paper by	Central results	Operationalisation of funds	Time period	Units	Econometric methods used
Mohl and Hagen (2010)	Objective 1 promotes regional economic growth, whereas the total amount of Objectives 1, 2, and 3 have no statistical significant on EU regions' growth rates	Payments for all the Objectives	2000-2006	126 NUTS-1/NUTS-2 regions	System GMM estimator and spatial panel econometric estimator
Kyriacou and Roca-Sagalés (2012)	Structural funds have reduced regional disparities	European Regional Development Fund, the European Agricultural Guidance and Guarantee Fund, and the Financial Instrument for Fisheries Guidance plus the Cohesion Fund On GDP	1995- 200	Fourteen EU countries	Seemingly unrelated regression weights that correct for both period heteroskedasticity and serial correlation within a given cross-section
Becker et al. (2013)	About 30 percent and 21 percent of the regions—those with sufficient human	Dummy variable=1 for regions receiving Objective 1	1989–1993, 1994–1999, and 2000–2006	NUTS2 regions (number between 186 and 251 per period)	Regression discontinuity design with systematically varying heterogeneous treatment effects

	capital and good-enough institutions—are able to turn transfers into faster per capita income growth and per capita investment				
Crescenzi and Giua (2016)	Cohesion Policy has a positive influence on economic growth in all regions, especially if complemented by Rural Development and Common Agricultural Policy funds	Expenditure in each region for the EU budget programming periods	1994–1999; 2000–2006 and 2007–2013	NUTS-1 and NUTS-2	Panel Model fixed Effects, Spatial Econometric analysis, quantile regression.
Becker et al. (2018)	The effect of gaining an Objective 1 status exerts a positive effect on growth though not very long-lived; the effects of losing Objective 1 status decreases economic growth.	Structural and Cohesion Funds.	U Regional Policy during four programming periods: 1989-1993, 1994-1999, 2000-2006, 2007-2013.	NUTS-2: 187 EU12 NUTS2 regions in 1989-1993; 209 EU15 NUTS2 regions in 1994-1999; 253 EU25 NUTS2 regions in 2000-2006 and 2007-2013.	Regression-discontinuity design (RDD).

3.5 Financial development, financial centres and economic regional convergence

The previous section has revised the literature on European regional policies in order to understand whether these interventions are beneficial in reducing regional economic disparities in Europe. Instead, this section focuses on the effect of financial development or agglomeration of financial intermediaries and services on certain geographical areas on regional economic convergence pattern. This will help to shed further light on the need of having regional interventions that can contrast the enlargement of regional economic inequalities. This Section intends to understand whether the geography of financial markets can have an impact on regional economic aspects and local industrial sector.

This question is motivated by the fact that the importance of geographical location has been challenged, especially for financial services where transactions take place in virtual space by the rapid improvements in information and communication technology and the consequent reduction of costs of communication. The widespread introduction of ICT has led some scholars to announce the *end of geography* since technology supposedly favoured a decentralisation process. However, tight spatial proximity to financial institutions appears to still facilitate the process of knowledge creation and dispersion (e.g. Faulconbridge et al., 2007). This is crucial for conducting profitable trade despite the advancement in ICT and the consequent reduction of the costs of communication and trading across space. As a result of all these interventions, the economic convergence and integration of European regions have been object of several investigations, for example, Alexiadis (2012) Becker et al. (2012), Corrado et al. (2005), Degl'Innocenti et al. (2018), Ezcurra et al. (2006), and Petrakos et al. (2005) among others. The main research questions are aimed at understanding regional growth patterns and convergence trends. This is an important question because the catch-up process has not always been deemed effective or fast enough despite the European policy initiatives. The common message of those studies is that the EU faces not only significant

and persistent regional disparities, but that also the convergence process is questionable.

In this context, financial constraints cover a primary role in preventing poor countries from taking full advantage of technology transfer and this is what causes some of them to diverge from the growth rate (Aghion et al., 2005). A substantial part of the literature offers evidence that the financial development and the spatial structure of the financial system can boost firm productivity, diffusion of innovation, and overall economic growth (Levine et al., 2000; Klagge and Martin, 2005). Financial integration can indeed increase the supply of finance in less financially developed countries, thereby promoting financial development and improvement in the national regulation of the integrating area (Guiso et al. 2004). Financial systems in fact play a pivotal role in an economic system by facilitating the trading, hedging, diversifying, and pooling of risk, by monitoring managers and exerting corporate control, and by facilitate the exchange of goods and services (Levine, 1997).

Recently, Degl'Innocenti et al. (2018) have contributed to explain how and to what extent the convergence of competitiveness of financial centres explains the two opposite dynamics (regional economic convergence and divergence) at the European level. The authors have pointed out that the headquarters of the majority of financial firms and services are located in metropolitan areas where there are international financial centres. Degl'Innocenti et al. (2018) have also shown that the convergence of financial centres' competitiveness reduces the economic inequalities of the regions where they are located. In contrast, they find that the reduction of gaps of financial centres' competitiveness reduces the inequalities between the regions of financial centres and other regions within the same country. The authors have explained that these findings are in line with the view of Klagge and Martin (2005). Particularly, Klagge and Martin (2005) argue that the relationship between finance and the real economy is non-neutral as the spatial structure of the financial system can generate geographical bias for resource and investment allocation. This can happen because financial centres have a greater capacity to attract businesses and human resources, while peripheral regions do not exert the same appeal.

Degl'Innocenti et al. (2018) have also shown that the drivers of financial centres' competitiveness such as market efficiency, market size, education and innovation contribute to decrease the economic gaps between regions where financial centres are located. In contrast, they show that technological readiness, the efficiency of institutions, business sophistication, and infrastructure contribute to the convergence process between the regions of financial centres and the other regions. In their conclusions, the authors highlight the need to counterbalance the aggregation of financial services in a specific location with a network of financial institutions and services dedicated to the support and stimulation of the local regional demand and economies. In this context, regional development policies, as well as European regional funds can play a pivotal role in supporting a more decentralized financial system. As suggested by Klagge and Martin (2005), this can be achieved through the development of local capital markets in terms of institutions, networks, and agents. This view is also consistent with that of Zhao and Jones-Evans (2016), who pointed out the need to have a geographically decentralized financial system should be counterbalanced with a network of financial institutions and services dedicated to the support and stimulation of the demand of local SMEs.

3.6 Concluding remarks

There are several studies focusing on the impact of EU regional policy on economic growth. A large part of these studies adopted a neoclassical approach to examine the impacts of funds on economic growth. Consistent with the new economic geography, there is also an increasing number of studies that deals with spatial spillover and the improvement of transportation infrastructures as key aspects to spur economic convergence in the EU. Previous studies offer mixed results as concerns the economic converging process of EU regions. There is also a large amount of studies focusing on the impact of structural funds on regional economic growth and convergence. Overall, it appears that they contribute to the regional economic growth and a converging process between regions. However, it also emerges that funds could be allocated in a more efficient way to be

fully effective. Overall, studies on this topic make use of heterogeneous theoretical and empirical frameworks, although this does not help with the comparisons of results.

In terms of policy implications, the need also emerges to homogenize the EU regulatory system that nowadays is rather fragmented and nationally oriented. In fact, even though the European Commission has tried to stimulate the integration of financial systems in order to reduce regional dissimilarities by proposing several legislative and non-legislative measures, formal and informal norms and infrastructure still present consistent discrepancies. In addition, some studies suggest the need to rethink the role of regional development policies that could better support a more decentralized financial system. As suggested by Klagge and Martin (2005), there is a need of local capital markets in terms of institutions, networks, and agents that can support the local economies. This could be vital for SMEs, especially now that local banks are going to be incorporated in large groups. The decrease of the number of local financial players and a more centralized financial system can particularly damage the peripheries. Consequently, we could observe a decrease of SMEs in those regions and an enlargement of the existing regional gaps between the leaders and laggards. In this context, regional policies, both EU and national policies, can play a pivotal role in supporting local economies and reducing the gap between regions. They in fact both improve local infrastructure and transportations (according to the New Economic Geography) but also provide support for labour and capital (more in line with the neoclassical approach). Therefore regional policies could be developed to be either a complementary resource to local economies or to the financial and banking system. Finally, regional convergence dynamics can also be promoted through national-level interventions aimed at enhancing the quality of infrastructure, the skills and knowledge of human resources, market access, efficiency of business environment, and overall competitiveness.

The existing literature can be further extended in several directions. An additional extension of the existing literature might be to take in account the role of economic actors (e.g. firms, individuals), in order to better embed the institutional analysis

within economic geography and the agglomeration of economic activities. These elements can potentially increase disparities within EU regions. Furthermore, more attention could be devoted directly to the mechanisms that spur the growth of SMEs and welfare more in general.

4. Banking structure and EU regional policy support and SMEs' growth: the Italian Case

4.1 Introduction

Despite the high numbers of studies on SMEs and European regional policies, there is no research that has been conducted so far on the impact of European regional policies and structure of the banking system at the NUTS3 level on SMEs' performance. This Chapter covers this gap. Particularly, it offers an investigation on whether the EU regional policy in support of SMEs effectively increased the labour productivity and sales of SMEs at the NUTS3 level. It further investigates whether the effectiveness of EU regional policy depends on the competitive dynamics in the banking sector at the NUTS3 level. In other words, this analysis intends to examine whether EU regional policies are more effective in either a more or less competitive banking system. This Chapter addresses the last question of this Book that is: Are EU regional policy interventions complementary to the local banking system?

To address these questions the focus is on the Italian NUTS3 regions for the period 2007–2013. The Italian banking market represents an ideal natural laboratory for the specific concerns of this Chapter for more than one reason. The first is that after the removal of legal restrictions to the opening of branches in 1990, the number of branches increased substantially from 17,721 to 34,146 in 2008. Instead, it decreased slightly to 32,881 in 2012 and 32,106 in 2013, in line with other European market trends¹. This means that there have been consistent changes in the geography of the Italian banking system at the NUTS3 level during the period under investigation. Furthermore, Italy is divided into 20 NUTS2 and 110 NUTS3 regions that are characterized by different levels of productivity (the northern part of Italy is typically more developed than the other geographical areas). Therefore, we are able to examine the changes of the local banking structure in NUTS3 regions with different local

economies and subject to different EU transfer. Finally, the Italian banking system consists of a combination of local and large/interregional banks, as is also the case in other European countries (e.g. Germany) (Degl'Innocenti et al., 2017a).² This allows us to investigate the effect of the structure of banking system at the NUTS3 level on SMEs' productivity and sales.

Lastly, Italy is one of the countries that has received more support for SMEs, innovation and more in general for the industrial sector in Europe. Table 4.1 shows that 10% of the EU resources for the ERDF programme over the period 2007-2013 for a total of 2844.06mln EUR have been given to Italy (IT). Particularly, these resources have been used to fund the following priorities:

- *Assistance to SMEs for the promotion of environmentally-friendly products and production processes;*
- *Investment in firms directly linked to research and innovation;*
- *Other investment in firms;*
- *Other measures to stimulate research and innovation and entrepreneurship in SMEs;*
- *R&TD infrastructure and centres of competence in a specific technology.*

Only Greece (GR), Spain (ES) and Poland have benefited from a similar amount of resources for SMEs, Innovation, and the industrial sector more in general based on the above category of interventions.

Table 4.1 The 2007-2013_ERDF for SMEs, firms and innovation by category and EU Country

Country	Assistance to SMEs for the promotion of environmentally-friendly products and production processes	Investment in firms directly linked to research and innovation	Other investment in firms	Other measures to stimulate research and innovation and entrepreneurship in SMEs	R&TD infrastructure and centres of competence in a specific technology	Total	%
AT	12.25	83.69	182.24	11.6	13.12	302.9	1%
BE	2.3	0.3	102.09	24.04	96.49	225.22	1%
BG	1.14	30.61	228.49	9.47	26.91	296.62	1%
CY			68.47	3.26	15.66	87.39	0%
CZ	158.21	553.34	449.18	79.71	1211.86	2452.3	9%
DE	26.57	110.86	985.22	212.26	1245.55	2580.46	9%
DK	12.09	0.54	7.02	10.89	1.12	31.66	0%
EE	0.56		58.19	92.4	291.89	443.04	2%
ES	17.24	126.32	1240.17	463.78	895.94	2743.45	10%
ETC	48.95	13.01	16.9	329.56	76.88	485.3	2%
FI	19.59	9.53	121.2	63.06	57.94	271.32	1%
FR	77.85	80.57	261.01	183.09	593.97	1196.49	4%
GR	33.17	171.59	1442.66	1295.42	71.79	3014.63	11%
HR	5.33		18.91	29.92	34.27	88.43	0%
HU	10.28	2.83	1041.87	214.55		1269.53	5%

IE			4.45		24.45	28.9	0%
IT	340.87	930.29	397.55	576.25	599.1	2844.06	10%
LT		61.14	131.28	49.54	302.51	544.47	2%
LU	0	0		0.1	6.16	6.26	0%
LV		251.12	104.3	97.14		452.56	2%
MT	1.37	3.27		4.93	40.77	50.34	0%
NL	15.32	40.76	16.57	73.65	50.72	197.02	1%
PL	27.74	335.72	1155.29	329.01	1189.46	3037.22	11%
PT	6.54	4.49	700.81	42.76	177.7	932.3	3%
RO	540.97	148.3	515.06	157.52	644.73	2006.58	7%
SE	19.55	2.68	24.83	137.78	17.87	202.71	1%
SI	48.7	25.4	53.82	34.83	62.69	225.44	1%
SK	17.47	25.95	275.47	59.54	380.1	758.53	3%
UK	189.43	26.68	284.51	319.85	251.2	1071.67	4%
Total	1633.49	3038.99	9887.56	4905.91	8380.85	27846.8	100%

Note: EU_Amount_EUR_million. The author has selected the ERFD funds for the period 2007-2013 in support of SMEs, Industrial Production and Innovation. Source: European Commission.

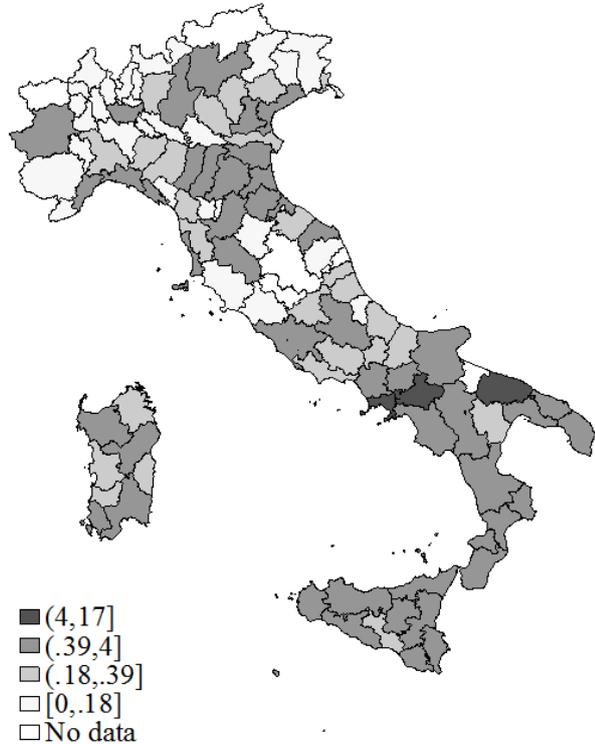
4.2 Dataset source and main trend

The dataset I built is drawn from different sources. The firm-data comes from Amadeus. Particularly, I collected accounting data for all the manufacturing firms included in the Amadeus for the years 2007-2013. I only considered small businesses that have 50 employees or less. Financial firms were dropped from the sample. The final datasets comprises 81,546 manufacturing firms and 352,116 observations.

The data on the Italian banking system has been retrieved from the Bank of Italy, while data at the NUTS3 level was collected from the Italian National Institute of Statistics (ISTAT). Information on bank's branches in 1936 was obtained from the Bank of Italy. Finally, the European Commission freely provides the data relative to the ERDF programme over the period 2007-2013. I selected the following interventions among all the interventions available under the ERDF programme: assistance to SMEs for the promotion of environmentally-friendly products and production processes; investment in firms directly linked to research and innovation; other investment in firms; other measures to stimulate research and innovation and entrepreneurship in SMEs; R&TD infrastructure and centres of competence in a specific technology. These interventions directly aim at helping SMEs and or more in general the industrial sector as a whole. Other typologies of interventions can still indirectly support the industrial sector by improving the social and economic conditions where the firms operate. However, I expect for these latter interventions a lower effect compared to the interventions that I selected. The data relative to the banking market structure and ERDF is available at the NUTS3 level

Figure 4.1 shows the amount of funds received for the period 2007-2013 by each NUTS3 regions. I split the observations based on the quartiles. It is clearly visible that the regions in the South of Italy have received the majority of the interventions. Typically, these regions exhibit a low economic growth. We also notice that a large amount of EU funds have been also allocated to the regions in the North-East area of Italy.

Figure 4.1: ERDF for SMEs, firms and innovation at the NUTS3 level



Note: The Figure shows the amount of ERDF fund' resources provided to SMEs at the NUTS3 level. The unit of analysis is Amount_EUR_million.

Figure 4.2 shows the concentration of branches over the Italian territory. The concentration ratio is calculated using the Herfindahl–Hirschman Index as explained in the next Section. It emerges that the two Islands, some regions in the North-West and in the centre of Italy have the highest HHI. Finally, Figure 4.3 shows the cost of lending at the NUTS3 level. In particular, Figure 4.3 displays the average lending actual rate on term loans (stock) at the NUTS3 level for the years 2008-2013. The data is retrieved from the statistics of the Bank of Italy in table TRI30910. The NUTS3 regions in the South of Italy display the highest interest rate. In these regions, the interest rates applied on loans are higher, which could prohibits mall firms from getting access to bank credit.

Figure 4.2: Average HHI at the NUTS3 level for the years 2007-2013

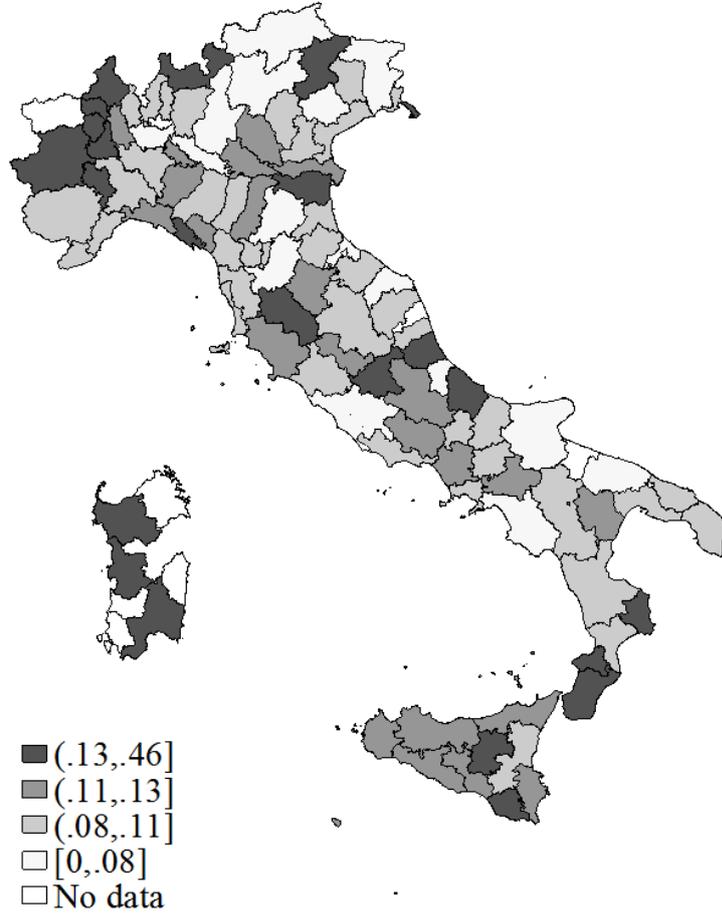
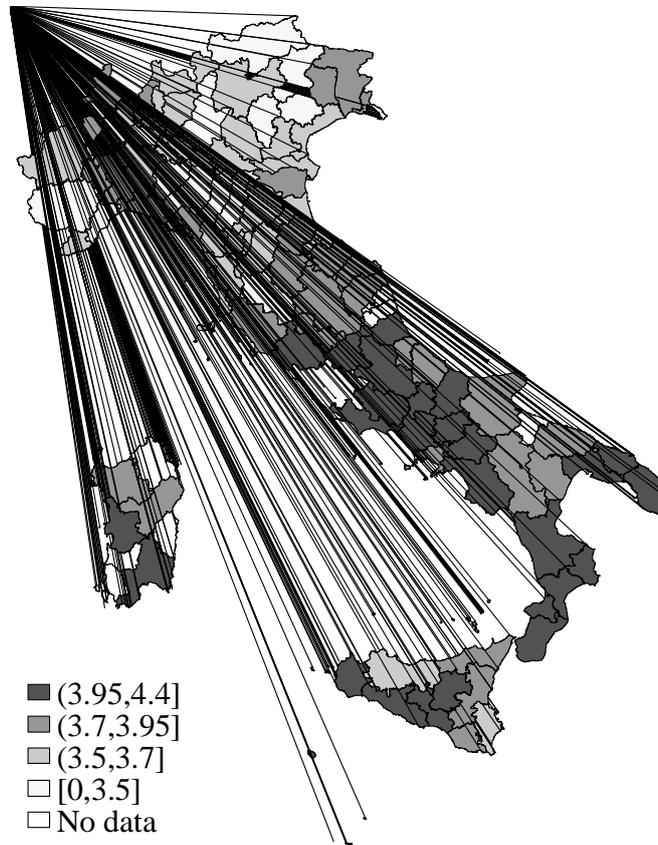


Figure 4.3: Average lending actual rate on term loans at the NUTS3 level for the years 2008-2013



4.3 Main model and variables

The model includes two main dependent variables. The first one is a measure of labour productivity calculated as the ratio between the total value added and the number of employees. The second one is the ratio between total sales over total assets. Both these two measures refer to the capabilities of a firm to expand its business by either improving its labour productivity or sales. The following equation describes the model:

$$\begin{aligned}
 Y_{it} = & \beta_0 + \beta_1 EUFUNDS_r + \beta_2 LTDEBT_{it} + \beta_3 ETA_{it} \\
 & + \beta_4 SIZE_{it} + \beta_5 MS_MINORBANKS_{rt} + \beta_6 NPL_{rt} + \beta_7 POP / KM^2_{rt} \\
 & + \beta_8 GDP_{rt} + \alpha_t + \lambda_i + \varepsilon_{it}
 \end{aligned}
 \tag{1}$$

Where i is the firm and r is the region at the NUTS3 level. I then consider the amount of EU FUNDS in support of the industrial sector and in particular to SMEs and innovation. I normalized this variable for the GDP at the NUTS3 level. In addition, I included a few variables to measure the local banking system. First, I control for the market share of minor banks, $MS_MINORBANKS$, at the NUTS3 level. The reason is that SMEs are usually financially constrained and they are more likely to get funds from small businesses than large banks (Berger and Black, 2011). This is because small banks can meet the credit needs of small businesses more effectively due to their access to better credit information, and their ability to better manage soft information (collected via personal interaction and difficult to codify). In contrast, large banks mainly rely on hard information when they assess the credit worthiness of a firm.

Furthermore, I consider the default rate for loan facilities level at the NUTS3 level, NPL ¹³. This a measure of the risk incurred by the banks in a particular NUTS3 region. Moreover, I include variables to control for firm characteristics, such as $SIZE$, measured as the logarithm of total assets, ETA , the ratio between equity and total assets; and long-term loans, $LTDEBT$, measured as long-term debt divided by total assets. Finally, I take into consideration control variables at the NUTS3 level, such as a measure of population density at the NUTS3 level and the amount of GDP at the NUTS3 level. Finally, I include firm (α) and time dummies (λ) to control for unobservable firm and time-effect.

In the second model (see equation 2), I analyse the join effect of EU FUNDS and long-terms debt. Particularly, I expect to see an increase of the impact of EU FUNDS for firms with higher long-term debt, $LTDEBT$. These are potentially firms that have a credit profile higher than the other firms as they were able to get higher amount of debts. The model is reported below:

¹³ The data on the regional banking system is retrieved from TDB30516, retrieved from Statistics/Databases of Bank of Italy, available at <https://www.bancaditalia.it/statistiche/index.html>. Particularly, the default rate for loan facilities level is included in TDB30516. Instead, the data relative to the number of banks and branches comes from DB10212.

$$\begin{aligned}
Y_{it} = & \beta_0 + \beta_1 EUFUNDS_r + \beta_2 LTDEBT_{it} + \\
& \beta_3 EUFUNDS * LTDEBT_{it} + \beta_4 ETA_{it} + \beta_5 SIZE_{it} \\
& + \beta_6 MS_MINORBANKS_{rt} + \beta_7 NPL_{rt} + \beta_8 POP / KM^2_{rt} \\
& + \beta_9 GDP_{rt} + \alpha_t + \lambda_i + \varepsilon_{it}
\end{aligned} \tag{2}$$

Finally, I have calculated the concentration of branches at the NUTS3 level with the Herfindahl–Hirschman Index (HHI). Particularly, the HHI is calculated for each NUTS3 region as follows:

$$HHI_r = \sum_{j=1}^k \frac{\left(\frac{Bank\ Branches_{Rj}}{Total\ system\ branches_{Rj}} \right)^2}{K}$$

(3)

where the ratio between the j-th number of bank branches in the r-th province over the region's total branches determines the bank's market share. I have then split the sample in two groups: the regions that have the HHI above the median value and the ones that have a HHI below the median value. I then rerun model 1 and I have compared the results for the above two groups.

Table 4.2 reports the descriptive statistics for all the variables. The description of the variables and the source is reported in Appendix A.

Table 4.2 Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
Labour Productivity	3.769	0.696	0.000	12.047
Sales/Total Assets	1.178	0.758	0.000	61.545
EU FUNDS	0.053	0.099	0.000	0.515
LT DEBTS	0.063	0.106	0.000	0.497
ETA	0.055	0.067	0.002	0.382
SIZE	7.184	1.277	4.199	10.097
MS MINOR BANKS	0.699	0.215	0.000	1.000

NPL	1.247	0.391	0.239	3.053
POP/ KM^2	5.774	0.918	3.434	7.875
GDP	9.995	0.958	6.765	11.974
HHI	0.097	0.031	0.060	0.230
QoI	1.399	0.547	0.000	2.933

Note: See Appendix A for a detail explanation of the variables included in the analysis.

4.3.1 Controlling for endogeneity

The bank-firm relationship typically suffers from endogeneity bias. This may arise when the competition variable is likely correlated with the industry's internal characteristics. In our case, a bank could decide to extend its competitive advantage to new markets or to consolidate its position in the markets where it is already present depending on firms' performance. Alternatively, in the case of a weak firm performance, a bank could expand its branch network to seek out new profit opportunities in other regions. A bank can for example decide to expand geographically because of high profit opportunities within target local markets (Magri et al., 2005), rather than being driven by its performance. However, the competitive characteristics of the local markets where a bank operates/enters can in turn affect the future performance of a bank. It is therefore important to control for endogeneity issues related to the competitive structure of the local banking markets. For this scope, I employ the IV/GMM estimation of the fixed-effects panel data models with robust standard errors. In particular, I considered MS_MinorBanks as an endogenous variable¹⁴.

I checked for the validity of instrumental variables, the Hansen test statistics of overidentifying restrictions (also known as Hansen's J) should exhibit a p-value >0.05. Furthermore, I reported the Kleibergen–Paap rk LM statistic, testing the null hypothesis that the excluded instruments that are not correlated with the endogenous regressors; and the the Kleibergen–Paap rk Wald F-statistic testing for weak identification (Baum et al., 2015).

¹⁴ I considered as excluded instruments: D.MS_MINORBANKS D2. MS_MINORBANKS. I used the xtivreg2 code available in stata.

4.3.2 *Quality of Institutions*

I also control for the level of corruption, quality, and accountability of government services and impartiality of government services at the NUTS2 level. The level of local corruption can affect the economic growth but also the efficient use of the EU funds. Particularly, I use the following indexes provided by the European Commission:

1. *Corruption: the indicator measures the perception on corruption in government services.*
2. *Quality and accountability of government services*
3. *Impartiality of government services*

Then, I have built a unique index, QoI, by averaging the above indexes and then by rescaling so that the minimum value is equal to zero. The increase of the Index indicates a higher quality of institutions. All these indicators are computed on the basis of the QoG Quality sub-index by the University of Gothenburg, 2013 edition, and the national Worldwide Governance Indicators. Data is standardized as z-scores (DG Regio computations). This index is available for 2013. Therefore, I rerun my main analysis by splitting the sample based on the median value of this Index.

4.4 Empirical results

Results are reported in Tables 4.3 to 4.6. Specifically, Table 4.3 presents two specifications: the first one has the labour productivity as dependent variable, while the second one considers the ratio between sales and total assets. My results provide confirmation that the EU FUNDS positively affect both variables of firms' productivity. This finding confirms that EU funds are important for stimulating the performance of firms in a certain region. This would suggest that EU FUNDS can generate positive effects for the firms located in the same regions of the firms that directly benefit from such a transfer of funds. I also noticed that there is a joint effect between EU FUNDS and SME leverage. As explained by Mc Namara et al. (2017), long-term debt is synonymous with efficient bankruptcy environments. This is because in a more efficient bankruptcy regime, creditors have more

power. In this context, firms are more likely to be able to receive credit (Succurro, 2012).

Surprisingly, we find that a high presence of minor banks does not affect the labour productivity and sales of SMEs. I state again here that I do not control for the specific relationship lending between firms and banks. So I am not able to assess that aspect in this analysis. Instead, I am able to provide a picture of the impact of the geographical composition of the Italian banking market on SMEs' outcomes. A possible explanation for this result is that small banks can exert local monopoly market power when they enjoy a large share of the market. Thus, they could fix high interest rates and be more selective in providing support to SMEs. Table 4.3 also shows that an increase of the default rate for loan facilities level at the NUTS3 level significantly reduces firms' outputs. This is reasonable as an increase of NPL indicates a riskier environment where it can be difficult for firms to enhance their performance or receive loans from banks. Finally, as expected, GDP at the NUTS3 level is positively and significantly related to firms' outputs. Instead, I found that the population density can decrease firms' output.

Table 4.3 Labour productivity, sales, EU funds, Long-Term Debt over the period 2007-2013

VARIABLES	(1) Labour Productivity	(2) Sales/Total Assets	(3) Labour Productivity	(4) Sales/Total Assets
EU FUNDS	2.157*** [0.617]	1.613*** [0.605]	2.135*** [0.617]	1.587*** [0.607]
LT DEBTS	-0.226*** [0.016]	-0.558*** [0.015]	-0.256*** [0.018]	-0.594*** [0.015]
LT DEBTS*EU FUNDS			0.517*** [0.179]	0.607*** [0.190]
ETA	-0.939*** [0.064]	1.800*** [0.118]	-0.938*** [0.064]	1.801*** [0.118]
SIZE	0.353*** [0.006]		0.354*** [0.006]	
MS_MINOR BANKS	0.030 [0.021]	0.034 [0.028]	0.031 [0.021]	0.035 [0.028]
NPL	-0.008* [0.004]	-0.013*** [0.004]	-0.008* [0.004]	-0.013*** [0.004]
POP/ KM ²	-0.066 [0.067]	-0.223*** [0.066]	-0.064 [0.067]	-0.221*** [0.066]
GDP	0.133*** [0.040]	0.263*** [0.036]	0.134*** [0.040]	0.264*** [0.036]
Constant	0.355 [0.565]	-0.183 [0.557]	0.334 [0.565]	-0.207 [0.556]
Observations	325,003	325,003	325,003	325,003
Number of ID	76,439	76,439	76,439	76,439
FIRM FIXED EFFECTS	YES	YES	YES	YES
YEAR FIXED EFFECTS	YES	YES	YES	YES

*Note: Standard Errors clustered by FIRM ID. ** $p < .05$, *** $p < .01$.*

In table 4.4, I controlled for the potential endogeneity issue between firms' outcome and market share of small and minor banks by employing a IV/GMM estimation of the fixed-effects panel data. The results confirm the relevance of EU FUNDS for both labour productivity and sales over total assets. All the other results hold, apart from MS_MINORBANKS that now exert a significant impact on labour productivity and sales over total assets. Particularly, it appears to impact negatively on labour productivity and positively on sales over total assets.

Table 4.4 IV/GMM estimation of the fixed-effects panel data

VARIABLES	(1)	(2)
	Labour Productivity	Sales/Total Assets
EU FUNDS	2.209** [1.035]	3.776*** [1.013]
LTDEBT	-0.248*** [0.026]	-0.386*** [0.030]
ETA	-0.756*** [0.109]	0.433** [0.184]
SIZE	0.343*** [0.010]	-0.417*** [0.016]
MS_MINOR BANKS	-0.153*** [0.042]	0.175*** [0.033]
NPL	-0.051*** [0.005]	-0.020*** [0.004]
POP/ KM ²	-0.024 [0.078]	0.119* [0.064]
GDP	0.177*** [0.064]	1.166*** [0.059]
F-test	0.000	0.000
Overidentification	0.643	0.143
Underidentification	0.000	0.000
F-statistic (weak inst.)	5926	5926
Observations	112,728	112,728
Number of ID	30,496	30,496
TIME DUMMY	YES	YES

Note: Standard Errors clustered by FIRM ID. ** $p < .05$, *** $p < .01$.

As discussed by Park and Pennacchi (2008) retail loan and deposit rates set by banks in a particular market depend on the market's distribution of multi-market banks and small banks alongside market concentration. In particular, they argue that because of the access to low-cost wholesale funds, large multi-market banks can promote competition in retail loans, and as a result consumer loan rates decrease as the multi-market bank shares increase, while they offer retail depositors lower deposit interest rates. This can eventually be more important for firms that aim at improving the efficiency and productivity of their production process. Alessandrini et al. (2009) show for example that the market share of large banks is correlated to firms' propensity to introduce new products. However, they also find that such an effect is small. Table 4 reports the results by splitting the sample in the following groups:

- A) Firms that are located in NUTS3 regions with the HHI above its median value (0.09).
- B) Firms that are located in NUTS3 regions with the HHI below its median value (0.09).
- C) Firms that are located in NUTS3 regions with the QoI above its median value (1.513).
- D) Firms that are located in NUTS3 regions with the QoI below its median value (1.513).

Interestingly, EU FUNDS appear to be more effective in highly concentrated markets for labour productivity (Table 4.5). In this context, the cost of lending could be higher¹⁵ and the access to credit could be more prohibitive for more innovative SMEs. Therefore, EU FUNDS could be complementary to the banking system to support and spur the industrial sector, innovation, and especially SMEs. In contrast, EU FUNDS does not seem to impact on sales over total assets when we split the dataset in groups A and B. Instead, Table 4.5 shows that the market share of small and minor banks continues to play a crucial role in reducing sales over total assets of SMEs. Finally, as an additional test, I have collapsed the data by NUTS3 region. The results confirm that EU FUNDS is significantly and positively related to the average values of labour productivity and sales at the NUTS3 level¹⁶.

¹⁵ Average lending actual rate on term loans at the NUTS3 appears to be positively and significantly correlated to the HHI (at a p.value<0.001).

¹⁶ The coefficient and standard errors for EU FUNDS are respectively: 1.151* [0.594] for Labour Productivity and 2.379* [1.253] for Sales/Total Assets.

Table 4.5. Labour Productivity and the level of Banking Market Concentration and Quality of Infrastructure

VARIABLES	(1)	(2)	(1)	(2)
	Labour Productivity	Labour Productivity	Labour Productivity	Labour Productivity
	HHI>Median	HHI<Median	QoI>Median	QoI<Median
EU FUNDS	1.826** [0.830]	1.916 [1.328]	-0.489 [1.683]	2.532*** [0.802]
LTDEBT	-0.213*** [0.023]	-0.244*** [0.024]	-0.248*** [0.019]	-0.177*** [0.031]
ETA	-0.933*** [0.090]	-0.953*** [0.099]	-0.938*** [0.079]	-0.935*** [0.107]
SIZE	0.365*** [0.010]	0.340*** [0.009]	0.353*** [0.007]	0.352*** [0.012]
MS_SMALL BANKS	0.018 [0.027]	-0.014 [0.056]	0.037 [0.024]	0.043 [0.052]
NPL	-0.004 [0.006]	-0.019** [0.009]	-0.001 [0.005]	-0.011 [0.008]
POP/ KM ²	-0.345** [0.152]	0.039 [0.077]	0.083 [0.070]	-0.481** [0.208]
GDP	0.142** [0.064]	0.171*** [0.056]	0.073 [0.050]	0.252** [0.102]
Constant	1.733 [1.085]	-0.518 [0.774]	0.257 [0.673]	1.232 [1.662]
Observations	179,277	145,726	223,822	101,181
FIRM FIXED EFFECTS	YES	YES	YES	YES
YEAR FIXED EFFECTS	YES	YES	YES	YES

*Note: Standard Errors clustered by FIRM ID. ** p<.05, *** p<.01.*

Both Table 4.5 and Table 4.6 show that the quality of Infrastructure matters for SMEs' output. Particularly, EU FUNDS appear to be positively and significantly related to both labour productivity and sales over total assets only in the case of low QoI. This means that especially in NUTS2 regions with high corruption EU FUNDS can be beneficial for SMEs. A possible explanation for this can be that in the case of high corruption, resources can be allocated in a more efficient way. The EU FUNDS can therefore represent an important external factor to spur the local economies.

Table 4.6. Sales over Total Assets: Banking Market Concentration and Quality of Infrastructure

VARIABLES	(1)	(2)	(1)	(2)
	Labour Productivity	Labour Productivity	Labour Productivity	Labour Productivity
	HHI>Median	HHI<Median	QoI>Median	QoI<Median
EU FUNDS	1.264 [0.783]	1.297 [1.372]	0.098 [1.368]	1.315* [0.780]
LTDEBT	-0.517*** [0.023]	-0.566*** [0.019]	-0.598*** [0.016]	-0.466*** [0.033]
ETA	1.771*** [0.200]	1.931*** [0.147]	1.754*** [0.103]	1.885*** [0.256]
MS_MINOR BANKS	0.041* [0.022]	-0.224* [0.127]	0.055*** [0.021]	-0.097 [0.105]
NPL	-0.009* [0.005]	-0.023*** [0.008]	-0.003 [0.005]	-0.012* [0.007]
POP/ KM ²	-0.195 [0.165]	-0.121 [0.081]	-0.016 [0.067]	-0.927*** [0.207]
GDP	0.307*** [0.059]	0.353*** [0.062]	0.162*** [0.045]	0.340*** [0.092]
Constant	-0.741 [1.207]	-1.558* [0.871]	-0.221 [0.625]	2.904* [1.687]
Observations	179,277	145,726	223,822	101,181
FIRM FIXED EFFECTS	YES	YES	YES	YES
YEAR FIXED EFFECTS	YES	YES	YES	YES

*Note: Standard Errors clustered by FIRM ID. ** $p < .05$, *** $p < .01$.*

4.5 Concluding remarks

This Chapter has examined whether ERDF funds in support of SMEs and the industrial sector as a whole at the NUTS3 level have had an impact on the labour productivity and sales of firms located in the same receiving regions over the period 2007-2013. In the first analysis, I used a panel data fixed effects model with year dummies. I then assessed the joint effect of EU FUNDS and firms' long-term debt. Then, I controlled for possible endogeneity issues between banking market structure and SMEs' outcomes by employing the IV/GMM estimation of the fixed-effects panel data. I further split the firms included in the dataset based on the market concentration Index and the quality of infrastructure Index. The analysis confirms that EU FUNDS generate positive and significant externalities for the firms located in the same regions. Particularly, EU FUNDS

appear to matter especially in contexts with a low quality of infrastructure and high corruption.

The focus for this analysis is Italy. However, the results of this study can be extended to other European regions. Italy is divided into 20 NUTS2 regions and 110 NUTS3 regions that are characterized by different levels of productivity (the northern part of Italy is typically more developed than the other geographical areas). In addition, Italy has widely benefit from EU regional funds. Therefore the findings of this study can be extended to other European regions with a heterogeneous economic growth and access to regional funds. In addition, the Italian banking system is characterized by a combination of local and large/interregional banks, as is the case in other European countries (e.g. Germany).

While previous studies mainly focus on the effect of EU FUNDS on regional convergence and GDP growth, this chapter offers new insights on the mechanisms that can lead to regional economic growth. Particularly, EU funds appear to generate positive externalities for those SMEs that are located in the same regions where the funds are transferred. Therefore, interventions for regional development appear to play a pivotal role in supporting local economies. This can be important when there is a high concentration of banks in the market as such interventions can transfer additional funds to the industrial sector. Furthermore, interventions that improve the quality of infrastructure and reduce the level of corruption are also important in stimulating regional economic growth. In any case, this investigation can be further extended in several directions. One of these might be by focusing on possible spillover effects between regions. Alternatively, an additional extension of my study might be to explore the joint effect of relationship lending and EU FUNDS on SMEs productivity and performance.

APPENDIX A

Description and source of variables

Variable	Description	Source
Labour Productivity	Calculated as the logarithm of valued added divided by the number of employees	AMADEUS
Sales/Total Assets	Sales/Total assets	AMADEUS
EU FUNDS	The logarithm of the amount of interventions from ERDF programme/GDP at the NUTS3 level.	EUROPEAN COMMISSION
LT DEBTS	Long Term Debt/ Total Assets	AMADEUS
ETA	Equity/ Total Assets	AMADEUS
SIZE	Logarithm of Total Assets	AMADEUS
MS MINOR BANKS	Total number of minor banks divided by the total number of banks at the NUTS3 level	BANK OF ITALY
NPL	Default rate for loan facilities level at the NUTS3 level	ISTAT
POP/ KM ²	Data available at the NUTS3 level	EUROSTAT
GDP	Data available at the NUTS3 level	EUROSTAT
HHI	Concentration of branches at the NUTS3 level measured through the the Herfindahl–Hirschman Index (HHI). See equation 3. I have built a unique index, QoI, by averaging level of corruption, quality, and accountability of government services and impartiality of government services at the NUTS2 level. I have then rescaled the new Index so that the minimum value is	BANK OF ITALY
QoI	equal to zero	EUROPEAN COMMISSION

Appendix B. Correlation matrix

		1	2	3	4	5	6	7	8	9	10	11
<i>Labour</i>												
<i>Productivity</i>	1	1										
<i>Sales/Total</i>												
<i>Assets</i>	2	0.0229	1									
<i>EU FUNDS</i>	3	-0.1567	-0.0770	1								
<i>LTDEBT</i>	4	0.0181	-0.1959	0.0109	1							
<i>ETA</i>	5	-0.1504	0.0484	0.0518	-0.0440	1						
<i>SIZE</i>	6	0.5123	-0.2239	-0.0784	0.1458	-0.1906	1					
<i>MS_MINOR</i>												
<i>BANKS</i>	7	-0.1094	-0.0364	0.2331	0.0084	0.0167	-0.0560	1				
<i>NPL</i>	8	-0.1987	-0.0632	0.2340	-0.0009	0.0258	-0.1135	0.2409	1			
<i>POP/KM^2</i>	9	0.0807	0.0488	-0.1360	-0.0846	-0.0098	0.0059	-0.1591	-0.1535	1		
<i>GDP</i>	10	0.1102	0.0503	-0.2253	-0.0663	-0.0207	0.0247	-0.2603	-0.2703	0.7312	1	
<i>HHI</i>	11	-0.0593	-0.0582	0.0948	0.0256	0.0093	-0.0256	-0.1590	0.1008	-0.3383	-0.4130	1
<i>QoI</i>	12	0.1708	0.0843	-0.6019	0.0231	-0.0718	0.1148	-0.1670	-0.2922	-0.1269	0.0230	-0.1802

5. CONCLUSIONS

5.1. Contributions and main findings of the Book

This book revises the literature on banking development and economic growth, and analyses how the structure of the banking system and relationship lending affect SMEs. It also discusses the importance of EU regional policy for regional economic growth and convergence. Finally, using a large sample of Italian SMEs, it provides an empirical investigation on the impact of EU regional policy interventions on SMEs' labour productivity and sales.

The timing of banking-related research on SMEs is highly expedient, as SMEs are experiencing difficulties in the recovery process after the GFC, and are strongly dependent on bank financing. Furthermore, new regulatory changes (e.g. Basel III, Bank Recovery and Resolution Directive (BRRD) and the Single Resolution Mechanism (SRM) Regulation) and the lack of profitability of banks, is profoundly changing the banking market configuration. Since the onset of the GFC, regulators have put forward interventions aimed at increasing the stability of the banking system and the soundness of banks. However, less attention has been devoted to the consequences of such changes to the SMEs. For example, Basel III mainly promoted the use of screening technologies based on hard information, in this way penalizing financial intermediaries that deal more with relationship lending technologies. Banks, and especially small banks, deal with these type of technologies when they provide loans to SMEs. More in general, the European banking industry is moving towards higher levels of market concentration. This is because banks are experiencing a low performance, but also because small banks, such as cooperative banks, have seen to be more vulnerable to shocks and crisis events.

Drawing from all these considerations, I intend to underpin the implications of these changes for SMEs. In particular, this book has addressed the following questions: (i) Does the banking development enhance local economic growth and reduce regional inequalities? (ii) How do small and innovative firms have access to lending? (iii) How and to what extent does the structure of the

banking system facilitate the access to credit of SMEs? (iv) How and to what extent does the geography of banks affect the productivity of SMEs and consequently their distribution and growth? (v) Do SMEs need small banks? (vi) Are there any alternative to the traditional banking channel at the local level? (vii) Do EU regional policies reduce economic dissimilarities? (viii) Do they exert a positive effect on SMEs? (ix) Are EU regional policy interventions complementary to the local banking system?

First, Chapter 1 of the book revises the literature on the financial development, banking competition and economic growth after having examined the main structural changes and trend in the European banking system. Chapter discusses the literature on relationship lending, banks size, distance, and technological advancement to underpin the main issues to credit access for SMEs. It also discusses the lending issues for SMEs during the GFC and possible alternative financial players to the traditional banking system. Overall, despite the fact that financial innovation has reduced the distance between lender and borrower, it emerges that small banks are able to cope with SMEs, which are unlikely to produce hard information, better than large banks. However, having a long and exclusive relationship with a bank can also generate negative externalities if a firm is opaque and is not able to signal its quality to the market. For example, as explained by Duqi et al. (2018) a bank can gain rents from the SME if it has a monopoly position (hold-up problem).

Chapter 3 discusses the importance and implications of European regional policies for regional economic growth, convergence and more in general for the local industrial system. The reason is that these policies could provide additional support to SMEs in regions where the banking market is more concentrated or where SMEs experience more financial constraints.

Finally, in Chapter 4, I shortly investigated the impact of EU funds on SMEs' labour productivity and sales for a large sample of Italian SMEs. Particularly, EU funds appear to positively and significantly increase the labour productivity and sales of SMEs. Therefore, interventions for regional development appear to play a pivotal role in supporting local economies. This can be important when there is a high concentration of banks in the market as such

interventions can transfer additional funds to the industrial sector. Furthermore, interventions that improve the quality of infrastructure and reduce the level of corruption are also crucial in favouring regional economic growth.

Overall, consistent with the view of Klagge and Martin (2005), I claim that the development of local capital markets in terms of institutions, networks, and agents is important for regional economies. It also play an important role in maintaining an efficient regional financial ecosystem.

Finally, in closing, each chapter offers indications for possible future research directions and open debated in the banking and finance literature.

5.2. The future and challenge of the European banking system and SMEs

This book offers implications and policy recommendation for the future of banking structure and SME's credit access. Specifically, the book offers new insights on the importance of having heterogeneous banking for SMEs.

Having a heterogeneous banking and financial system can in fact contribute to make local economies more stable and satisfies a heterogeneous demand of funds. Instead, a centralized financial and banking system with a few players can create not only inequalities between regions but also spatial bias in the flows of capital to industrial firms, particularly to SMEs. The regulatory changes aimed at reshaping the banking system should account for the configuration of the industrial sector as well. The risk is to discourage SMEs from applying for financial sources, but also to marginalise firms that are located in peripheral regions. Those firms will have undoubtedly less chances of participation in the lending market. The co-presence of various financial players, such as mutual guarantee institutions can be crucial for small business finance.

It is clear that the ongoing consolidation process and at the same time the aggregation phenomenon of specific type of banks, such as cooperative banks, is profoundly changing the banking landscape. While the banking system is currently compounded by a heterogeneous ecosystem of banks different in both scale and scope,

the new regulatory framework is coming closer to imposing a unique business model. This can in turn generate negative externalities banks similar in size and scope are likely to be more interconnected. An excessive homogeneity within a financial system—all the banks doing the same thing—can lower risk for each individual bank, but at the same time this can maximize the probability of the entire system collapsing (Haldane and May, 2011). This means that a banking system that is less diversified might be more vulnerable to systemic risk than a healthy diversified ecosystem.

The current regulatory requirements might play a pivotal role for the financial and banking ecosystem. As long as the regulatory framework will be calibrated on the institution rather than the preservation of an healthy ecosystem, the tendency for a bank will be to become larger and more diversified. Furthermore, while the new regulation aims at improving the ability of banks to absorb shocks caused by financial and economic stress and to promote resilience in banking systems, the desirability of the Basel III regulations and implementation of the new binding liquidity and capital requirements raise some concerns. In fact, from one side the new requirements can lower the risk of bank bankruptcies, and can lead to more capital- and liquidity efficient business models and products. From another viewpoint, the implementation of a regime with tougher requirements can however further reduce profitability and lead to a squeeze on lending margins and the return on equity for banks. The paradox is that this phenomenon can be even harsher for banks dealing with traditional banking activities and especially with the SME segment. The reason is that these type of firms are typical more opaque than large counterparts are and struggle to offer risk mitigates (e.g. collateral or guarantees).

The introduction of stricter capital and liquidity rules can penalize small and local banks in particular, as they typically provide more loans to small businesses than large banks because of their ability to better manage ‘soft information’ (information collected via personal interaction and difficult to codify). Instead, for large banks the gathering of soft information is a costly and unobservable investment that can generate agency and incentive problems, especially in the case of several managerial layers

(Alessandrini et al., 2008). Furthermore, small institutions are also limited in scope as they have low access to the capital market.

In addition, the current regulation does not make a distinction between the different missions of credit institutions. For example, differently from commercial banks, cooperative and saving banks pursue wealth for a large number of stakeholders (clients, local businesses, etc) and not only owners. The complementarity of pursuing both higher-purpose projects and wealth can reduce their risk appetite and help these banks to reduce labour costs and increase capital investments. Furthermore, cooperative banks, which are typically very small and better capitalized than other banks, are less dependent on business cycles and can cope better with the effects of an economic downturn. Cooperative banks widely deal with the demand of credit from the SME segment.

Regulators could put forward additional interventions to reduce systemic risk in the banking system but at the same by offering a heterogeneous variety of products and services to accommodate a diversified demand. For example, a possibility could be offered by the implementation of more proportionality in regulation to avoid less burdensome compliance and disclosure requirements and to fully reflect the peculiarity of the business model of cooperative banks. There have been actions to reduce the capital requirements associated with the SME segment, such as the SME Supporting Factor (introduced by the Capital Requirements Directive (CRD) and Capital Requirements Regulation (CRR) to allow credit institutions to counterbalance the rise in capital requirements). However, so far they have not provided any significant additional stimulus for lending to SMEs compared the large corporates (EBA, 2016). Furthermore, actions in the CRR aimed at taking into account the peculiarity of the business model of both cooperative and mutual banks (such as the recognition of co-operative shares as CET1 instruments or the cooperative liquidity systems in the LCR) have been perceived by the sector to be lacking in scope, for example by the European Association of Cooperative Banks. Proportionality should fully reflect the scale, the complexity, and the business model of financial institutions. The increase in size of banks and merging activities involving cooperative banks might require counterbalancing the aggregation of banks with a network

of entities, such as regional development agencies, and must be dedicated to the support and stimulation (e.g. consultant activities) of the local regional demand and economies in a more decentralized financial system.

A further challenge for the banking system, and specifically small banks, is also represented by the need to further invest in technology in order to improve and automate financial services and products. The growing competitive pressure exerted by fintech can also represent an opportunity for the traditional financial services and intermediaries to improve the quality of their products and services and reduce costs. This may further enhance profitability and limit the concentration dynamics in the sector.

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