EconomiX

http://economix.fr

New firms' bankruptcy: does local banking market matter?

Document de Travail
Working Paper
2017-31

Giuseppe Arcuri
Nadine Levratto

UMR 7235

Université de Paris Ouest Nanterre La Défense
(bâtiment G)
200, Avenue de la République
92001 NANTERRE CEDEX

Tél et Fax : 33.(0)1.40.97.59.07
Email : nasam.zaroualete@u-paris10.fr

New firms' bankruptcy: does local banking market matter?

Giuseppe Arcuri*

Nadine Levratto**

Abstract

This paper investigates the role of local context, with regard to the effect of local financial development and banking concentration, on a new firm's probability of bankruptcy. Our empirical setting is based on the Logit Multilevel Model that better allows the treatment of data referring to different levels of aggregation (firm and local variables) applied to new firms located in Italian provinces. We find that a higher level of financial development in a province decreases the likelihood of a new firm's bankruptcy. This result is robust considering a 2SLS regression in which we use instruments for the local financial development and for the concentration of bank branches. In addition, our estimations suggest that the effect of local financial development and bank concentration is shaped by size. Local financial development is particularly significant for small start-ups, which traditionally suffer from great difficulty in accessing credit, whereas local banking concentration reduces the probability of bankruptcy for large, new firms.

Keywords:

Probability of bankruptcy, new firms, multilevel model, local banking structure

JEL codes: C26, C30, M13, R11

* Dipartimento di Scienze Aziendali e Giuridiche-Università della Calabria

** EconomiX, CNRS-université Paris Nanterre

Introduction

Since the work of Guiso et al. (2004), there has been a renewed interest in the differences at the local level of financial development affecting a firm's financial activities. While it appears well stated that local financial development and, in general, institutional features of the local context, shape the financial decisions of firms (Cariola et al 2010, Deloof and La Rocca 2014, Deloof et al. 2016), with particular regards to small and medium-sized enterprises (SMEs), it is a first-order problem to investigate how the differences in the local market can affect the SMEs' quality of life in the short-run and their capability to access growth opportunities and operate for long-term success. In particular, local financial development can provide valuable support at the time firms are more fragile, as in their early stages. New and young companies are the primary source of job creation in economies (Haltiwanger et al. 2013), contributing to economic dynamism by injecting competition into markets and spurring innovation (Wiens and Jackson 2015). At the same time, these firms are the most financially vulnerable in the market. This weakness leads to questioning the role played by the financial system and, more precisely, by banks, in the local economic activity and as a driver of the performance of local firms.

This research addresses this question focusing on new firms' survival, one among many proxies describing the robustness of the companies. The analysis is centred on the role of local financial markets as determinants of firm bankruptcy. Considering that small and young firms are mainly hit by strong difficulties in the take-off years, we consider that the post-creation period is the moment where the local financial context provides the more valuable support to new firms. As new firm, we mean a newly incorporated company, independent from any group, not related to any industrial spin-off, and operating in market sectors. The objective of this paper is thus to investigate whether the local financial market influences new firm bankruptcies to enhance our understanding of the drivers of this failure, to explore potential areas of interventions and to transform business failures into learning opportunities for future improvements in entrepreneurship.

The novelty of this paper results from several features: the emphasis put on the relationship between insolvency and the organization of the local credit market, the sample of companies considered in the empirical analysis based on new firms, and the estimation technique used. Examining the sources of the regional disparities in the probability of

corporate bankruptcy, it rapidly appears that the structure of the local debt market matters. A strand of the literature shows that credit rationing and institutional features vary across regions (Bonnet et al., 2005; Andriani 2013 and 2015), suggesting that the regional dimension is more important when companies are small (Bonnet and Le Pape 2012).

Our paper is in accordance with the strand of literature (Glauben et al. 2006; Fotopoulos and Louri 2000; Buehler et al. 2012) finding that a firm's bankruptcy is shaped by differences in the *local context* where the firms are based. The difference from the previous research originates from the restriction of the field of our analysis to *new firms*, which, according to many research studies on bankruptcy, are more likely to exit from the market than other firms (Kale and Arditi, 1998; Thornhill and Amit, 2003) and are very vulnerable to the macroeconomic environment (Petersen and Rajan 1995; Bonaccorsi di Patti and Gobbi 2001). Another novelty of this paper is due to the estimation technique used. Our empirical setting is based on the logit multilevel model, which has never been used in bankruptcy studies. This novelty allows us to consider the hierarchical structure of the data and to better consider the effect of local variables.

The analysis is based on a unique sample covering all firms incorporated in Italy between 2008 and 2012. Italy represents an interesting case for studying this question, since it is characterized by cross-regional differences although all the regions are subject to the same formal institutions such as rules of law, constitution, civil, and criminal codes (Andriani, 2015; Guiso et al. 2004). The results suggest that a higher level of local financial development decreases new firms' bankruptcy likelihood, particularly in the case of small firms, whereas concentration in the local banking market reduces the probability of bankruptcy of large, new firms.

The remainder of the paper is organized as follows. First, the literary review about firm bankruptcy, local financial development and bank concentration is presented. This presentation is followed by a description of the model, the sample, the variables employed, and their descriptive statistics. Next, the empirical results are reported. Finally, the main findings are synthesized, and considerations for future research are offered.

1 Literary review and hypotheses

Financial distress, bankruptcy and general firm exits from the market have been the theme of several research studies in recent years. Beginning with the pioneering work of

Altman (1968), a large body of literature has investigated corporate bankruptcy with a focus on firm-specific features, searching to predict insolvency through the application of several statistical methods on economic and accounting data. The focus of this area of the accounting and finance literature has typically considered only the internal features of a company (financial and non-financial information) to assess its likelihood of failure. Only very recently, a small number of studies analysed the influence of institutional features of the *local context* to understand the exit behaviour across geographical regions (Fotopoulos and Louri 2000, Glauben et al. 2006, Buehler et al. 2010). These papers suggest that there is a link between a firm's bankruptcy risk and its geographic location. Our contribution differs from previous studies, because it focuses on the role of the local banking market in determining the access to credit and its consequence on new firms' survival.

The idea that the financial sector has the potential to influence patterns of innovation and growth dates to Schumpeter (1961), who argued that the services provided by financial intermediaries are essential for technological innovation and economic development. In the 1990s, beginning with the studies by King and Levine (1993a, 1993b, 1993c), a new body of literature has provided empirical evidence about a positive relation between the level of development achieved by the banking system and the growth rates of real variables (per-capita GDP, per-capita productivity, value added of individual industrial sectors, and sales by individual firms).

Considering the effect of financial development at the micro level, and the local dimension of the bank credit market, another part of the literature, however, documents that distance matters in the provisions of funds, particularly for small firms (Petersen and Rajan 2002). Guiso et al. (2004) emphasize the importance of finance at the local level, defining local financial development as the "ease with which subjects in need of external funds can access them and the premium they have to pay for these funds" and "enables a more efficient allocation of capital reducing borrowing and financing constraints". A well-developed financial system at the local level can thus facilitate the ability of a company to gain access to external financing, providing cheaper financing to worthy companies (Guiso et al., 2004).

In general, it is suggested that banks operating locally have more knowledge and control over local firms and entrepreneurs (Alessandrini and Zazzaro, 1999). Consequently, local small businesses are very sensitive to the behaviour of local banks or branches.

The previous empirical findings demonstrate that local financial development is positively related to growth (Guiso et al. 2004; Gagliardi 2009), enhances the probability of individuals starting their own businesses, favours the entry of new firms (Guiso et al. 2004) and affects firm's financial activities in different fields. It is suggested that, in more financially developed areas inside a country, firms use more debt (Cariola et al. 2010) and more trade credit (Deloof and La Rocca 2014). These features strongly affect the financial decisions of new firms (Deloof et al. 2016). A greater availability of bank credit with a higher level of post-entry growth for new firms should thus result in a lower risk of bankruptcy. In contrast, financial constraints are likely to be more severe in the presence of a poorly developed financial system.

Consistent with these considerations, we formulate our first hypothesis:

H1a: a higher level of local financial development reduces new firm's probability of bankruptcy.

The availability and cost of bank loans is crucial for many small businesses because they often do not have other possibilities for external funding (Berger and Udell, 1998; Miller and al., 2016). The evidence provided by Titman and Wessels (1988) indicates that small firms tend to use significantly more short-term financing than large firms. This difference in financing practices may reflect the high transaction costs that small firms confront when they issue long-term debt or equity.

If small firms find it more difficult to access financial services due to greater information and transaction costs, the financial development that ameliorates these frictions will exert a particularly positive impact on small firms (Cestone and White 2003, Guiso et al 2004). Finally, bank debt represents a critical source of external financing for new firms (e.g., Bates, 1997; Cassar, 2004; Robb and Robinson, 2014; Hanssens et al. 2015). The results of these empirical findings could suggest that local financial development may influence the extensive margin by allowing new small firms to access financial services and thus reduce their risk of bankruptcy.

Consistent with these considerations, we formulate the following hypothesis.

H1b: the effect of local financial development on new firms' probability of bankruptcy is stronger for small firms.

In addition to the relationship between the local financial development and the risk of insolvency, the literature also considers how banking concentration affects businesses. Several scholars emphasize the need to disentangle the relationship between concentration and credit market functioning.

According to Petersen and Rajan (1995), two opposite perspectives are available. The Structure-Conduct-Performance paradigm states a positive relationship between the level of concentration and the interest rates. A higher concentration deters firm creation, limits economic growth, and causes a higher rate of unemployment (Black and Strahan, 2002, Cetorelli and Strahan 2006). All these factors could lead to a higher risk of failure. An alternative perspective is supported by the information approach. This perspective argues that a higher concentration deters banks from developing information systems, leads them to prefer long-term customer relationships that grant them an advantage originating from the accumulation of private information about potential borrowers who, in turn, have better access to credit (Dell'Ariccia, and Marquez, 2006).

The favourable effects of concentration on the survival of firms are more evident when firms are very young. In fact, considering the case of young firms, Petersen and Rajan (1995) note that, when a firm is young, the potential for future cash flows may be high, while current cash flows are low. A monopolistic lender may be willing to subsidize such firms with cheap loans because the lender can extract rents later when the firms' cash flows become high. This finding means that a monopolistic bank may financially support firms with the objective of exploiting rents from eventually successful borrowers. When a bank adopts this kind of strategy, it has the objective of maintaining the lending relationships in the future, certain that the firm will not be attracted by rival banks. In contrast, in a competitive credit market, banks cannot expect to share the future firm's surplus and may be forced to charge a premium to cover the riskiness of young or distressed firms.

However, this effect is strictly linked to this specific context; therefore, our second hypothesis is inspired by research showing the advantages resulting from a more intense concentration in the local banking market.

H2a: a higher local banking concentration reduces bankruptcy probability for new firms.

However, it is important to note that firm size can shape the previous relationship. Indeed, two major papers by Beck et al. (2004) and Bonaccorsi di Patti and Gobbi (2001) find that competition in the bank market has a different effect on the credit volume of small and medium size enterprises that traditionally suffer from greater difficulty in accessing credit, compared to the impact on large firms. More recently, the stronger effect of competition on smaller companies is documented by Sääskilahti (2016) who proposes an empirical analysis of the relationship between the competitive environment and changes in lending during the crisis, comparing Lerner and Herfindahl indices. He concludes there is superior sensitivity of smaller companies.

This finding leads us to hypothesize:

H2b: The influence of concentration on the probability of new firms' bankruptcy is higher for smaller companies.

2 Method

2.1 Sample and data

Our dataset is derived from various sources. Data on the local banking market are from the Bank of Italy; data on economic development, population, and crime rates in the 103 Italian provinces are provided by the Italian National Institute of Statistics (ISTAT). Firms' data are extracted from the Orbis database, compiled by Bureau Van Dijk (BvD), which is a great resource for company data. The database contains the financial statements of privately held and publicly traded global firms, including more than 1 million Italian firms.

Firms needed to satisfy different requirements to be part of our sample. First, we included all firms that were legally incorporated in Italy in the years from 2008 to 2012, to avoid certain events in a specific year of incorporation driving our estimations. Second, with the objective of only considering real new firms not born from industrial spinoffs, we only consider stand-alone companies with at least 1 employee and fewer than 50 employees. We also exclude firms having a previous company name. We use these criteria with the objective of excluding *ghost* firms (that often exist only for fiscal reasons) and companies that are unlikely to be new firms. Third, we excluded public-owned firms because these firms' policies may be influenced by regulatory issues; we also excluded firms operating in different sectors (agriculture, financial and insurance activities, real estate activities, public

administration, education, social services and human health services) because they may be subjected to particular failure regimes. Fourth, we excluded observations for which the total assets are less than 2,500 euros, which is the minimum equity requirement to found a firm in Italy. Fifth, we excluded from the dataset all firms whose status was unknown, inactive or dissolved and did not request official bankruptcy procedures. Finally, we only selected firms for which all information needed to calculate our variables is available. The final sample includes 94,418 firms.

2.2 Model and Variables

Since our dependent variable is a firm's probability of bankruptcy and our data refer to various levels of aggregation, we study the different sources of variability by means of the Logit Multilevel Model.

Companies operate in a socio-economic context, which significantly affects the performance of business processes (Audretsch and Dohse 2007, Garsaa and Levratto 2016). This finding is highlighted, as apparently weak ties between the organization and external parties can have a relevant impact on competitiveness and business performance but also on institutional structures and entrepreneurial purposes. In other words, firms located in the same territory share the same external environment; consequently, they are likely to be more similar to each other than firms operating in other geographical areas. From an econometric perspective, the most important effect of this similarity is that the assumption of independence of standard error is violated. This problem is resolved by the multilevel approach, which provides efficient estimates of coefficients since it controls for spatial dependence and correct standard errors of variables. Specifically, whereas standard logit regression has an overall mean coefficient, the logit multilevel model considers, in addition, group-level variance explicitly through the incorporation of random coefficients.

The model allows the simultaneous consideration of individual variables (X_{hij}, where h is the number of covariates and i is the firm located in the *j-th* province) and local variables that represent a 'higher level' (Z_{kj} where k is the number of local covariates and j the province). An econometric specification of the Logit Multilevel model can be written as the logistic function of the general model with a continuous dependent variable (Snijders and Bosker, 1999):

$$p_{ij} = \Pr(Y_{ij} = 1) = F[\alpha + \sum_{h=1}^{r} \beta_h X_{hij} + \sum_{k=1}^{s} \gamma_k Z_{kj} + (u_j + e_{ij})] \quad (1)$$

where *F(_)* is the logistic cumulative distribution function, u_j and e_{ij}, are the so called second and first level residuals, normally distributed with variance σ_u^2 and σ_e^2. In particular, u_j represents the difference between the j-province and the total average. Table 1 provides the definitions of the variables used to test our model.

Table 1- Variables' names and definition

Explained variable	Probability of bankruptcy up to 2 years after incorporation
Explanatory variables	
Local variables	
FinDev	Private Credit/Gross Domestic Production
HHI	$\sum_{i=1}^{n} \left(\frac{\text{number of branches of bank i}}{\text{number of total branches}}\right)^2$
Crime	Number of extortions / Thousands inhabitants
GdpPerCapita	Gross Domestic Production / Thousands inhabitants
Firm's variables	
Size	Logarithm of Total Assets
StdTa	Short term Debt / Total Assets
LtdTa	Long term Debt / Total Assets
Tangibility	Tangible Assets / Total Assets
Intangible	Intangible Assets/ Total Assets
ROA	Ebit / Total Assets
WCTA	Working Capital / Total Assets
Interestcov	Ebitda / Interest paid
DifferentTaxShield	(Ebitda-Ebit)/ Total Assets
Majority_sh	Dummy variable= 1 if there's a majority shareholder
Sole_propr	Dummy variable=1 if there's a unique shareholder

The dependent variable used in the empirical model is the *Probability of bankruptcy*, a dummy variable that takes value 1 if a new firm requested an official bankruptcy procedure and 0 if it is normally operating. We focus on companies that have undertaken an official juridical procedure because of permanent financial distress to a maximum of 2 years after incorporation, because new firms that survive over the second year after incorporation are more likely to generate revenue and remain on the market. To check the robustness of our results, we also consider the probability of bankruptcy for 1 and 3 years after incorporation. We exclude firms with temporary financial problems or companies that have voluntarily chosen liquidation for economic opportunity, mergers or acquisition. Firms whose status was

unknown or dissolved without precision were dropped from the sample. Table 2 provides a description for the bankruptcy ratio of new firms calculated in our sample.

As shown by Table 2, our sample is well-balanced, since the default ratios among firms born in the different years of the analysis, are similar.

Table 2. Description of the bankruptcy ratio for new firms

	(1) Number of new firms	(2) Bankrupted firms up to 1 year	(3) Bankrupted firms up to 2 years	(4) Bankrupted firms up to 3 years
Year of incorporation				
2008	22630	135	546	1150
		(0.60%)	(2.41%)	(5.08%)
2009	16984	126	508	1028
		(0.74%)	(2.99)	(6.05%)
2010	21637	44	443	1247
		(0.20%)	(2.05%)	(5.76%)
2011	14940	41	389	996
		(0.27%)	(2.60%)	(6.67%)
2012	17927	78	578	1175
		(0.44%)	(3.22)	(6.55%)
Total	94418			

Regarding the local variables, it is worth specifying that we consider the "local" unit, the province (NUT3 code), similar to what is done by the large majority of empirical works based on Italy (Guiso et al. 2004, Deloof and La Rocca 2014) and because, citing Guiso et al. (2004): "According to the Italian Antitrust authority the "relevant market" in banking for antitrust purposes is the province, a geographic entity very similar to a US county. This is also the definition the Central Bank used until 1990 to decide whether to authorize the opening of new branches."

Defining financial development is a challenging task (Giovannini et al. 2013). Among the diverse indicators in use, we measure local financial development (*FinDev*) by Private Credit/GDP. This measure captures the amount of credit channelled through financial intermediaries to the private sector, and it has been used in several cross-country and within country studies on financial development (Rajan and Zingales 1998; Kendall 2009). Levine, Loayza and Beck (2000) show that Private Credit/GDP is a suitable predictor of economic growth.

Figure 1 displays the magnitude of our variable FinDev across Italian provinces.

As shown in this figure, the distribution of financial development reflects the duality in the Italian economy. Higher levels of financial development characterize the Nord and Central provinces, whereas in the south of the country, it is relatively low (with the exceptions of Bari and Messina provinces).

Our measure of concentration in the local bank market is the Herfindahl-Hirschman on bank branches (*HHI*), a traditional and very used measure of bank concentration in the literature. Figure 2 displays the level of concentration across Italian provinces. According to the magnitude of this variable, the level of concentration is heterogeneously distributed. The highest values are recorded in the region of Sardinia with a peak in the province of Nuoro having a value of *HHI* equal to 0.52.

Moreover, considering that the local banking market is related to local crime (Bonaccorsi di Patti 2009), we included in the analysis a proxy of criminality. Financial contracts require trust, which is negatively affected by crime. However, the lending relationship between banks and the firm also requires trust (Fisman and Love 2003). The variable *Crime,* as a proxy of the business climate, is a measure that is based on the average number of extortion crimes reported by police to the judicial authority per 1000 inhabitants at the province level over the period considered. In addition, we include *GDPpercapita* as a measure of macroeconomic conditions in the different provinces defined as GDP per thousand inhabitants.

In accordance with the general literature on bankruptcy, the analysis includes the main firm's internal features at the first level of the model. Table 1 also displays our control variables at the first level. We include firm *Size* as proxy for firm creditworthiness. We do not add firm's age in our model because the sample only contains new companies, but we add year fixed effects dummy variables to control for specific events that could occur in the year of incorporation. The model considers the financial structure and debt maturity of the firm. The variables *LtdTa* and *StdTa* explain debt maturity. We also consider the value of tangible assets introducing a variable named *Tangibility,* which measures the capacity to provide collateral and, consequently, obtain financing to restructure the business. Similarly, it is essential to consider the role of the variable *Intangible* (i.e., intellectual resources: trademarks, patents and licenses) because these kinds of assets are more likely to form the

basis for competitive advantage and growth. We also consider the return on assets (*ROA*), a measure of firm's profitability, which allows us to understand how profitable a company's assets are in generating revenue. We also include the variable WCTA as a measure of a firm's internal financing. Another essential element to consider when assessing firms' creditworthiness is the vulnerability of such debt. In fact, certain companies may be characterized by similar levels of indebtedness while presenting different degrees of vulnerability. Hence, it is important to consider the ability to generate sufficient income to cover the cost of debt. Therefore, in our model, we add a debt sustainability variable, *Interestcov*. We include also the variable *DifferentTaxShield*, to understand the influence of different tax regimes and different amounts of amortization on the probability of bankruptcy. The model considers other explanatory variables to control for additional non-financial characteristics of the firms, expected to be relevant in determining their bankruptcy. In our study, we include information about ownership structure with two dummy variables: *Majority_sh* takes value 1 if there is a shareholder owning more than 50% of the firms and 0 otherwise, and *Sole_pr* that takes value 1 for firms owned and run by a unique shareholder and 0 otherwise. Industry dummies are included to capture industry-specific unobserved characteristics. Moreover, since the centre-north of Italy is more developed than the south and to explain the possibility that a firm's location influences its financial decisions, we include the dummies *North* and *South* to capture the location of a firm in a specific Italian macro-area.

Figure 1 - Level of Financial Development (Average Values 2008-2012)

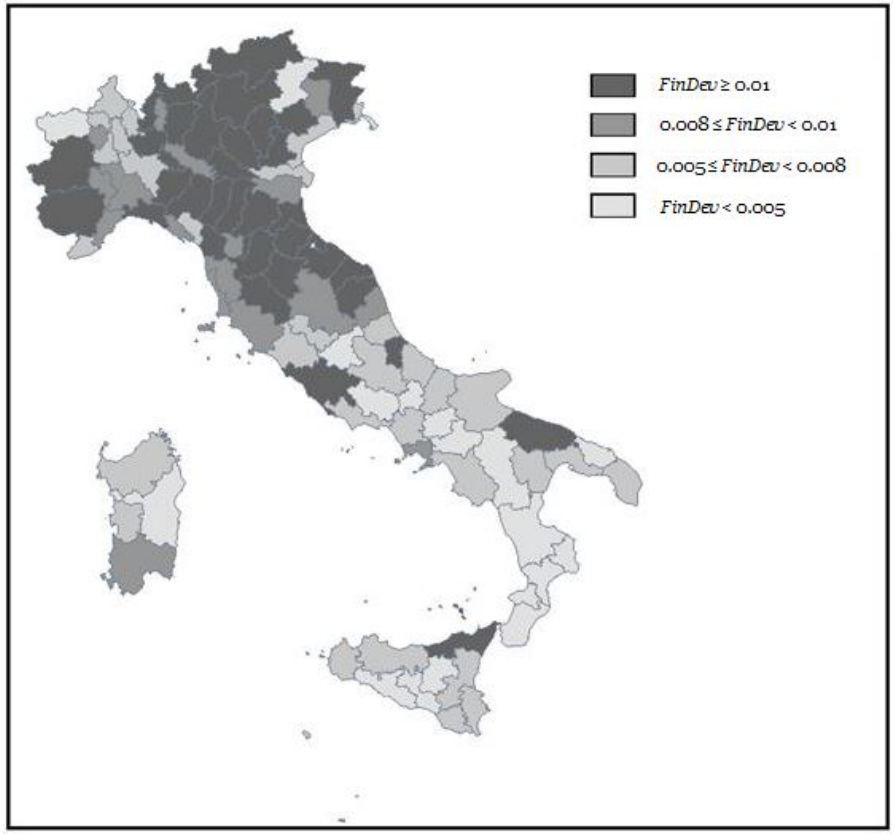
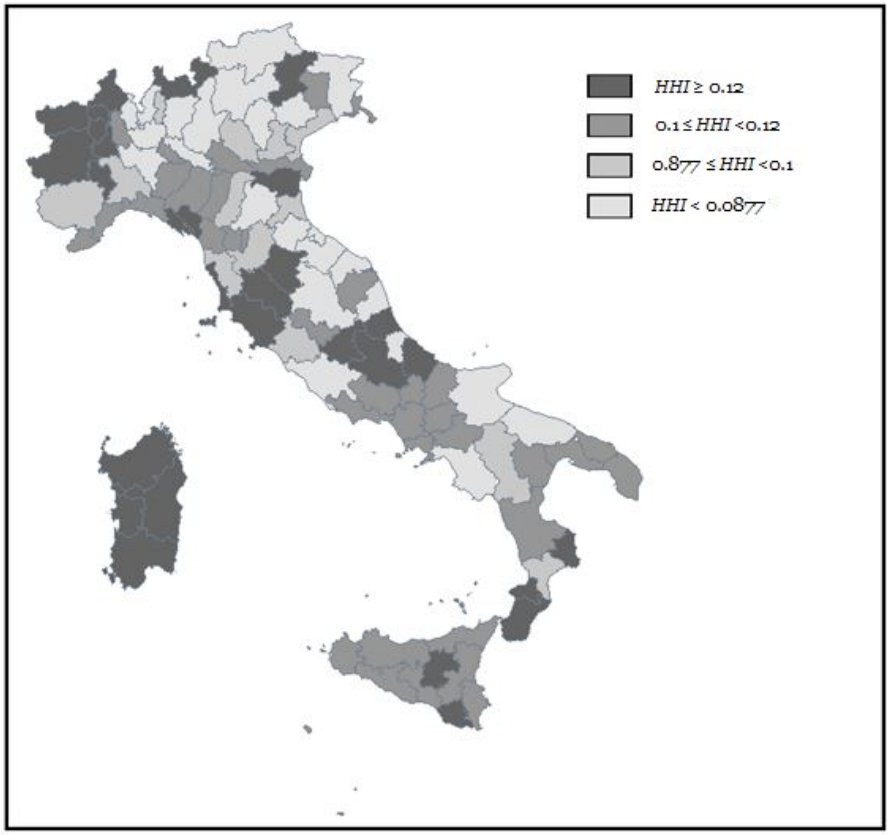


Figure 2- Level of Concentration in the banking market (Year 2009)



2.3 Descriptive statistics and Empirical Results

The descriptive statistics concerning local and companies' variables are presented in Table 3, separately for active and bankrupt firms. The t tests for mean comparison for each variable is also presented.

Table 3 - Descriptive statistics

	Active firms (n=91654)			Bankrupt firms (n=2464)			t-test Mean Comparison
Variable	Mean	Median	STD dev	Mean	Median	STD dev	
FinDev	0.034	0.113	0.034	0.026	0.114	0.037	8.061***
HHI	0.100	0.094	0.041	0.101	0.096	0.040	-1.182
Crime	10.338	9.725	4.152	10.332	9.575	4.321	0.073
GDPpercapita	22.617	21.966	9.822	22.575	21.966	9,530	0.208
Size	4.807	4.770	1.344	4.482	4.469	1.323	11.843***
Stdebt	0.053	0.000	0.131	0.061	0.000	0.150	-3.212 **
Ltdebt	0.038	0.000	0.129	0.030	0.000	0.115	3.124***
Tangibility	0.144	0.058	0.195	0.125	0.041	0.177	4.760***
Intangible	0.088	0.029	0.145	0.103	0.040	0.149	-4.829***
ROA	0.021	0.024	0.297	-0.119	-0.004	0.499	22.585***
WCTA	0.072	0.029	0.355	0.045	0.000	0.359	3.709***
Interestcov	512.50	12.932	11226	18.536	2.161	4905.2	2.179**
DifferentTaxShield	0.063	0.019	0.854	0.042	0.020	0.141	1.197
Majority_sh	0.404	0.000	0.491	0.48	0.000	0.480	4.324***
Sole_propr	0.188	0.000	0.391	0.401	0.000	0.401	-1.694*

The VIF test, reported in the appendix, suggests that there are no multicollinearity problems since all variables have a VIF value below 5.

In our empirical setting, the two levels are as follows: firms and province.

The first empirical step when using the multilevel approach is running the empty model. This step allows us to compute the value of the likelihood ratio test (LR test), that compares the empty multilevel model to the standard logit regression: under the null hypothesis H_0 σ_u^2=0, this means that there is no random intercept in the model. If

the null hypothesis is true, the logistic regression can be used instead of a mixed model. In our results, the test has the value is 141.17 and it is significant at 1% level. This result supports the use of Logit Multilevel Model and consequently, the intercepts related to the different clusters should be treated as a group by group variant coefficients. Table 4 shows the results obtained when the Logit Multilevel Model is augmented through a set of province and individual variables. Province level regressors inserted in the model are *FinDev, HHI, Crime* and provincial *GDPpercapit*a. At the firm level we include *Size, Stdebt, Ltdebt, ROA, Tangibility, Intangible, DifferentTaxShield, WCTA, Interestcov, Majority_Sh, Sole_Propr*. They have already been presented.

Column 1 in Table 4 shows estimations obtained for our sample of new firms. Focusing on the specific objective of the paper it is worth discussing the empiric findings about how provincial features, and specifically local financial development and bank concentration (second level variables) affect new firms' bankruptcy.

The variable *FinDev* has a negative sign at the 1% level of statistical significance. Since the dependent variable is a dummy taking value 1 if the firm is in the default status and 0 otherwise, the negative sign of *FinDev* means that a firm incorporated in a province with a higher level of financial development has a lower probability to go bankrupt in the first years of its life. This empirical finding confirms our hypothesis H1a that a higher level of local financial development reduces new firms' probability of bankruptcy. This effect of local financial development on firm's probability of default is consistent with previous findings about local financial development in the literature. Local financial development is positively related to growth (Guiso et al. 2004; Gagliardi 2009) and affects firm's financial activities in different fields. In more financially developed areas inside a country, firms use more debt (Cariola et al. 2010), more trade credit (Deloof and La Rocca 2014) and these features strongly affect financial decisions of start-ups (Deloof et al. 2016). A greater availability of bank credit brings thus new firms to have a higher probability of survival and a greater potential to grow.

To test our hypothesis H1b concerning small firms, we divide our sample of firms into two groups depending on the size: small firms and large firms. To identify these groups, we split our population considering the distribution of the variable *Size* and composed two subsamples (above and below the median value). The results for Small

and Large new firms are displayed in column 2 and 3, respectively. It is worth noting that the magnitude of *FinDev* coefficient declines, in absolute value, as we move from small firms to large ones, moving from -6.578 to -3.646; it is statistically significant at 1% and 5% for the subsample of small and large start-ups, respectively. This empirical finding confirms our hypothesis H1b that the effect of local financial development on new firms' bankruptcy is stronger for small new firms[2]. This finding is consistent with previous findings on financial development and different firm's performance according to the size. If small firms find it more difficult to access financial services due to greater information and transaction costs, then financial development that ameliorates these frictions can exert a particularly positive impact on small firms (Cestone and White 2003, Guiso et al 2004) more strongly reducing their probability to exit from the market.

The variable describing concentration in the local banking market *HHI* is not significant in the estimations concerning our whole sample. This finding means that, considering the total sample of Italian new firms, our hypotheses H2a and H2b are not confirmed since HHI is significant only for the subsample of large firms. This result is consistent with the standard flight-to-quality of credit from smaller (and relatively opaquer) firms to larger (and relatively more transparent) ones because of negative shocks hitting the banking sector over the studied period. The economic turmoil that hit the Italian economy after Lehman's collapse induced a contraction of credit supply (Albertazzi and Marchetti, 2010; European Central Bank, 2014) that particularly concerned small and more opaque firms, for which a long-term relationship with their main bank has been the most effective means of overcoming financial constraints (Arnaudo et al., 2016). This bank-borrower relationship is more likely when the credit market is more concentrated so that, for smaller companies the flight to quality effect overpassed the advantages resulting from concentration. Consequently, our results exhibit no correlation between the rate of bankruptcy and the Herdindahl Hirschman index for this this size class, whereas larger companies continue to benefit from a strong customer relationship.

Table 4: Empirical results

	(1) Whole sample	(2) Small new firms sub-group sample	(3) Large new firms sub-group sample
Local Variables (2nd level)			
FinDev	-4.700***	-6.578***	-3.646**
	(1.436)	(1.610)	(1.433)
HHI	-1.241	-0.794	-2.592**
	(0.769)	(0.879)	(1.190)
GDPperCapita	-0.00221	-0.00414	-0.000946
	(0.00341)	(0.00424)	(0.00445)
Crime	0.00348	0.00558	-9.78e-05
	(0.0124)	(0.0142)	(0.0156)
Firm's variable (1st level)			
Size	-0.158***	-0.142***	-0.146***
	(0.0176)	(0.0380)	(0.0407)
Stdta	0.554***	0.669***	0.320
	(0.145)	(0.191)	(0.222)
Ltdta	-0.241	-0.177	-0.0970
	(0.188)	(0.281)	(0.253)
Tangibility	-0.730***	-0.290*	-1.273***
	(0.130)	(0.170)	(0.210)
Intangible	-0.0379	0.374**	-0.548**
	(0.148)	(0.189)	(0.248)
ROA	-0.556***	-0.432***	-1.978***
	(0.0430)	(0.0467)	(0.146)
WCTA	-0.118*	0.0909	-0.318***
	(0.0651)	(0.0852)	(0.101)
Interestcov	-3.34e-06	-1.65e-05**	1.76e-06
	(2.65e-06)	(7.78e-06)	(1.69e-06)
DifferentTaxShield	-0.510***	-0.496***	-2.017***
	(0.158)	(0.166)	(0.626)
Majority_sh	-0.146***	-0.263***	0.0345
	(0.0464)	(0.0596)	(0.0749)
Sole_pr	0.0446	-0.110	0.255***
	(0.0561)	(0.0763)	(0.0846)
Year of incorporation FE	YES	YES	YES
Sector FE	YES	YES	YES
North/South FE	YES	YES	YES
Constant	-2.479***	-2.524***	-2.420***
	(0.218)	(0.280)	(0.352)
Variance			
Firms	3.29	3.29	3.29
Province	0.051	0.055	0.037
LR test	58.70***	27.33***	8.73***
Log-likelihood	-11049.287	-6335.5944	-4632.3457
Observations	94,418	47,209	47,209
Number of groups	103	103	103

The negative and statistically significant sign associated with *HHI* for large firms, is consistent with our expectations; concentration in the bank market reduces the

probability of bankruptcy of new firms. In accordance with Petersen and Rajan (1995), a bank operating in a concentrated market may offer more credit and at lower rates to young firms than may a bank operating in a competitive market. The other local variables, *Crime* and *GDPpercapita,* show no statistical significance in the model.

Concerning individual firm's feature at the first level, it is possible to argue that all variables have the intended sign in estimation.

Firm *Size* enters with a negative sign at the 1% level of significance; therefore, larger companies would encounter a lower probability of bankruptcy. This result confirms the previous empirical findings on size on firm performance (Hurst and Pugsley, 2011; Fort et al. 2013). Short-term debt is associated with a positive sign at the 1% level of significance. This finding confirms our expectations that new firms have limited cash flows and low profits and rely more heavily on short-term debt finance and therefore, are most likely to be subject to financial distress (Titman and Wessels, 1988) and financial restrictions (Fazzari and Petersen, 1993; Whited, 1992). *ROA* enters, as expected, with a negative sign at the 1% level of statistical significance, indicating that more profitable companies encounter a lower bankruptcy risk. The estimated coefficient of the variable *Tangibility* is negative at the 1% level of significance. The proportion of tangible fixed assets in the total of all assets is confirmed as a measure of the capacity to provide collateral and, consequently, obtain financing to restructure the business. *DifferentTaxShield* enters the regression with a negative sign at the 1% significance level, indicating that growing firms that are subject to higher levels of amortizations and taxes are less subject to financial distress and bankruptcy risk. The coefficient of (*WCTA*) has a negative sign in the estimation with a significance at 10%, indicating that a higher level of working capital helps the internal financing of a firm's activity, reducing its probability of exit from the market. The dummy variable *Majority_sh* enters with a negative sign at the 1% level, suggesting that, for firms with an alignment of interests in more concentrated ownership, the probability of financial instability and bankruptcy is reduced. The variables *Ltd, Intangible, Interestcov* and *Sole_propr* show no statistical significance, suggesting that long-term debt, the equipment of intangible assets, sustainability of debt and fully concentrated ownership do not appear to affect the probability of new firms' bankruptcy. The regressions are controlled for Italian

macro-area, year of incorporation and industry fixed effects to avoid that specific issues would drive our estimations.

2.4 Robustness checks

A potential problem with the previous findings is that the observed effect that local financial development and banking concentration have on a firm's bankruptcy may actually reflect omitted factors that affect both the local banking market and firms' performance, such as the local economic development. This finding means that estimations could suffer omitted variable bias. To ascertain the effect that the local banking market has on a firm's bankruptcy, we use exogenous determinants of the degree of banking development as instruments in 2SLS regressions. In accordance with Guiso et al. (2004) and Deloof and La Rocca (2014), we use measures of the local supply of credit in 1936 as determinants of the local banking development in the 2000s. While local banking structures in 1936 were largely determined by factors unrelated to local economic development, a new banking law in 1936 severely constrained the growth of the banking system. Since this law affected certain types of banks more than others and the type of banks in the system differed across regions, the law created significant local differences in banking development that may persist to the present day. Consistent with this argument, Guiso et al. (2004) find that local banking development in 1936 is strongly correlated with the current local banking market, but it is only weakly correlated with contemporary local economic development. First, we identify five measures of banking development in 1936 that significantly affect the current local banking development: the number of bank branches and banks in the province, the total number of mutual banks in the province, and the number of banks and bank branches over the population in the region in which a firm is located. The results of our robustness tests are displayed in Table 5.

The regression in column 1 of Table 5 is based on 2SLS estimation in which we use certain instrumental variables for *FinDev* and *HHI*. The results fully confirm our previous findings; a higher level of financial development at the province level reduces the probability of bankruptcy for new firms. The magnitude of the variable's coefficients is highly different, for multilevel logit, the coefficient of explanatory variables does not correspond to the marginal effect on the dependent variable but is the

effect on the Logit function. In contrast, in the 2SLS regression, the coefficient is the marginal effect on the dependent variable, because we run a regression with instruments without restrictions on the distribution of the dependent variable (linear probability model)[4]. Standard errors are clustered by province level.

Table 5: Robustness checks

	(1) 2sls	(2) Bankruptcy up to 1 year	(3) Bankruptcy up to 3 years
Local variables (2nd level)			
FinDev	-0.0904**	-3.563	-6.004***
	(0.0391)	(2.363)	(1.436)
HHI	-0.0132	0.347	-1.340**
	(0.0862)	(1.446)	(0.626)
GDPperCapita	-9.20e-05	0.000340	0.000415
	(6.82e-05)	(0.00654)	(0.00276)
Crime	0.000117	0.0336	0.00373
	(0.000286)	(0.0235)	(0.0109)
Firm's variables (1st level)			
Size	-0.00355***	-0.172***	-0.127***
	(0.000621)	(0.0425)	(0.0118)
Stdta	0.0119***	1.078***	0.480***
	(0.00404)	(0.307)	(0.100)
Ltdta	-0.00643*	-0.932*	-0.318**
	(0.00336)	(0.537)	(0.127)
Tangibility	-0.0188***	-0.510*	-0.753***
	(0.00369)	(0.293)	(0.0879)
Intangible	-0.00644*	-0.445	0.0741
	(0.00385)	(0.372)	(0.100)
ROA	-0.0364***	-0.506***	-0.607***
	(0.00468)	(0.0623)	(0.0363)
WCTA	-0.00104	-0.511***	-0.133***
	(0.00167)	(0.153)	(0.0441)
Interestcov	1.04e-08	-6.30e-06**	-3.02e-06
	(1.72e-08)	(2.61e-06)	(1.94e-06)
DifferentTaxShield	-0.00140*	-0.953	-0.442***
	(0.000749)	(0.589)	(0.0965)
Year of incorporation FE	YES	YES	YES
Sector FE	YES	YES	YES
North/South FE	YES	YES	YES
Constant	0.0523***	-4.309***	-1.912***
	(0.0103)	(0.439)	(0.179)
Variance			
Firm		3.29	3.29
Province		0.107	0.059
LR Test		15.55***	168.29***
Log-likelihood		-2575.936	-20531.5
Observations	94,418	94,418	94,418
R-squared	0.009		
Number of groups		103	103

Moreover, columns 2 and 3 of Table 5 show the estimations obtained when we modify our dependent variable that corresponds to the probability of bankruptcy over a period of 2 years after the year of incorporation. In particular, we want to investigate the effect of the local banking market (local financial development and local banking concentration) in influencing the probability of a firm's bankruptcy 1 and 3 year after incorporation. These regressions show that the effect of the local banking market is not relevant in the first year of a firm's life and that it does not appear to affect the probability of bankruptcy, since the coefficients of *FinDev* and *HHI* are not significant. Conversely, if we consider bankruptcy over a period of 3 years after incorporation, the effect of local financial development is stronger in reducing a new firm's bankruptcy, since the coefficient associated with the variable *FinDev* extends from -4.700 to -6.004. In the third year of life, the concentration in the local banking market also has a relevant role in reducing a new firm's bankruptcy, since the coefficient associated with *HHI* is negative and statistically significant. This finding means that the effect of the local banking market is relevant as the bank intends to be present in a firm's financial structure, and this effect is increasingly stronger over time.

Conclusions

The empirical investigation undertaken in this research targets estimating the impact of local financial development and bank concentration on new firms' bankruptcy.

Local financial development appears to play a role in shaping bankruptcy risk, since it reduces the probability of bankruptcy of new firms. Local financial development is positively related to growth and affects firm's financial activities in different fields. In more financially developed areas inside a country, firms use more debt, and this feature strongly affects the financial decisions of new firms. A greater availability of bank credit provides new firms with more potential to grow and survive. This effect is stronger for small new firms. The reason underlying this topic is that, if small firms find it more difficult to access financial services due to greater information and transaction costs, financial development that ameliorates these frictions can exert a particularly positive impact on small firms.

Furthermore, our results suggest that local banking concentration reduces the probability of bankruptcy only for large, new firms. A bank operating in a more concentrated market may financially support new firms with the objective of exploiting rents from eventually successful borrowers. When a bank adopts this kind of strategy, it has the objective of maintaining lending relationships in the future, certain of the fact that the firm will not be attracted to rival banks.

In terms of policy, a first indication offered by the current research is that the regulation of the bank sector at the local level plays a key role in a firm's early stage life, and a more stable financing relationship could represent an advantage for newly established firms. Second, agencies supporting business creation should define specific criteria in the selection of investment projects and the subsequent attribution of credit to create a stable lending relationship.

A limit of our study is represented by the observation that we consider the probability of bankruptcy over the early years after start-ups. We found that the effect of local financial development and bank concentration is relevant as the bank pursues a presence in a firm's financial structure, and this effect is stronger over time; however, we cannot obtain further evidence about the direction of this relationship in future years. Furthermore, it would be interesting to investigate the relative importance of local features in a study that includes a sample of firms operating in different countries, to understand the level of heterogeneity in insolvency and its determinants across European countries and regions.

Notes

1. To measure the size of a firm, different variables could be used, such as the number of employees, total assets and turnover. However, the accounting data on "turnover" are more reliable than those on total number of employees reported in the balance sheets, and there are less missing data.
2. The different effect of *Financial Development* and *HHI* for small and medium new firms is confirmed by adding, for the whole sample, an interaction between

Financial Development/HHI and a dummy variable =1 if Size has a value below its median. The results are available upon request.

References

Albertazzi U, Marchetti DJ (2010) *Credit supply, flight to quality and evergreening: an analysis of bank-firm relationships after Lehman.* Working Paper Bank of Italy, Economic Research and International Relations, Serie Temi di discussione, n° 756.

Alessandrini P, Zazzaro A (1999) A ‘‘possibilist’’ approach to local financial systems and regional development: The Italian experience. R. Martin (Ed.), *Money and the space economy*: 71–92. New York: Wiley.

Allen N. Berger AN, Asli Demirgüç-Kunt A, Ross Levine R and Haubrich JG (2003), Bank Concentration and Competition: An Evolution in the Making. *Journal of Money, Credit and Banking*, 36 (3): 433-451.

Altman EI (1968) Financial ratios, discriminant analysis & the prediction of corporate bankruptcy. *The Journal of Finance*, 23(4): 589–609

Andriani L (2013) Is Acting Prosocially Beneficial for the Credit Market? *Review of Social Economy*, 72(3): 354-378.

Andriani L (2015) *Institutional Conformity and Regional Credit Market Failures: Evidence from the Italian Industrial Districts*. Working Papers in Management, Birkbeck, Department of Management, BWPMA 1503, November.

Arnaudo D, Micucci G, Rigon M and Rossi P (2016) *Should I stay or should I go? Firms' mobility across banks in the aftermath of financial turmoil*, Banca d'Italia Working Paper, n° 1086.

Audretsch DB, Dohse D (2007) Location: A Neglected Determinant of Firm Growth. *Review of World Economics*, 143(1): 79–107.

Bates T (1997) Financing small business creation: The case of Chinese and Korean immigrant entrepreneurs. *Journal of Business Venturing*, 12(2), 109-124.

Beck T, Demirguc-Kunt A, and Maksimovic V (2004) Financial and Legal Constraints to Firm Growth: Does Firm Size Matter? *Journal of finance*, 60(1): 137-177.

Berger AN, Udell GF (1998) The economics of small business finance: The roles of private equity and debt markets in the financial growth cycle. *Journal of Banking and Finance*, 22(6-8): 613-673.

Black SE, Strahan PE (2002) Entrepreneurship and Bank Credit Availability, *The Journal of Finance*, 57(6): 2807–2833

Bonaccorsi di Patti E (2009) Weak institutions and credit availability: The impact of crime on bank loans. *Banca d'Italia, Questioni di economia e finanza-Occasional Papers* 52

Bonaccorsi di Patti E, Gobbi G (2001) The changing structure of local credit markets: Are small businesses special? *Journal of Banking and Finance*, 25(12): 2209–2237

Bonnet J, Cieply S, and Dejardin M (2005) Financial Constraints on New Firms: Looking for Regional Disparities. *Brussels Economic Review*, 48(3): 217-245

Bonnet J, and Le Pape N (2012) Entrepreneurship motives, Entrepreneurial Orientation and Duration of New French Firms. *Current Topics in management, Social Intelligence, Leadership, and Problem Solving*, Vol.16, Transaction Publishers, 93-106.

Buehler S, Kaiser C, and Jaeger F (2012) The geographic determinants of bankruptcy: evidence from Switzerland. *Small Business Economics*, 39(1): 231–251

Cariola A, La Rocca M, and La Rocca T (2010) The Influence of Local Institutional Differences on the Capital Structure of SMEs: Evidence from Italy. *International Small Business Journal*, 28(3): 234-257.

Cassar, G. (2004). The financing of business start-ups. *Journal of Business Venturing*, 19: 261-283.

Cestone G, White L (2003) Anticompetitive Financial Contracting: The Design of Financial Claims. *The Journal of finance*, 58(5): 2109–2141.

Cetorelli N, Strahan PE, (2006) Finance as a Barrier to Entry: Bank Competition and Industry Structure in Local U.S. Markets. *Journal of Finance*, American Finance Association 61(1): 437-461.

Dell'Ariccia G, Marquez R (2006) Lending Booms and Lending Standards, *Journal of Finance*, 61(5): 2511-2546

Deloof M, La Rocca M (2014) Local Financial Development and the Trade Credit Policy of Italian SMEs. *Small Business Economics*, 44(4): 905-924

Deloof M, La Rocca M, and Vanacker T (2016) *Local banking development and the use of debt financing by start-up firms*. Working Paper University of Antwerp. Available at https://www.world-finance-conference.com/papers_wfc2/624.pdf

Fazzari SM and Petersen BC (1993) Working Capital and Fixed Investment: New Evidence on Financing Constraints *The RAND Journal of Economics* 24(3): 328-342

Fisman R, Love I (2003) Trade credit, financial intermediary development, and industry growth. *Journal of Finance* 58(1): 353–374.

Fotopoulos G, Louri H (2000) Location and survival of new entry. *Small Business Economics* 14(4): 311–321.

Fort TC, Haltiwanger JC , Jarmin RS and J. Miranda (2013) How Firms Respond to Business Cycles: The Role of Firm Age and Firm Size. *IMF Economic Review* 61 :520-559

Gagliardi F (2009) "Financial development and the growth of cooperative firms, *Small Business Economics*, 32(4): 439-464.

Garsaa A, Levratto N (2016) Does the employment growth rate depend on the local context? An analysis of French establishments over the 2004-2010 period. *Revue d'Economie Industrielle*, 153(1): 47-89.

Giovannini A, Iacopetta M, Minetti R (2013) Financial Markets, Banks, and Growth: Disentangling the links. *Revue de l'OFCE*, 5(131): 105-147.

Glauben T, Tietje H, and Weiss C (2006) Agriculture on the move: Exploring regional differences in farm exit rates in Western Germany. *Review of Regional Research* 26(1): 103–118.

Guiso L, Sapienza P, Zingales L (2004) Does local financial development matter? *Quarterly Journal of Economics* 119(3): 929–969.

Haltiwanger J, Jarmin RS, Miranda J (2013) Who Creates Jobs? Small versus Large versus Young. *Review of Economics and Statistics,* 95(2), 347-361.

Hanssens J, Deloof M, Vanacker T (2015). Underexplored issues in entrepreneurial finance. In D.B. Audretch, C.S. Hayter, A.N. Link (Eds.), *Concise Guide to Entrepreneurship, Technology, and Innovation*, Edward Elgar Publishing: 219-223

Hurst E and Benjamin Pugsley BW (2011) What Do Small Businesses Do? *Brookings Papers on Economic Activity* 2011 (2):73–118

Kale S, Arditi D (1998) Business failures: liabilities of newness, adolescence, and smallness. *Journal of Construction Engineering and Management,* 124(6) 458-464.

Keeley MC (1990) Deposit insurance, risk, and market power in banking. *American Economic Review*, 80(5): 1183–1200.

Kendall J. (2012) Local financial development and growth. *Journal of Banking and Finance*, 36(5): 1548-1562.

King RG, Levine R (1993a) *Financial Intermediation and Economic Development*. In: Financial Intermediation in the Construction of Europe" Eds: C. Mayer and X. Vives, London. Centre for Economic Policy Research: 156-189.

King RG, Levine R (1993b) Finance, Entrepreneurship and Growth: Theory and Evidence, *Journal of Monetary Economics,* 32: 513-542.

King RG, Levine R(1993c) Finance and Growth: Schumpeter Might Be Right, *The Quarterly Journal of Economics*, 108(3): 717-737.

Levine R, Loayza N, Beck T (2000) Financial intermediation and growth: Causality and causes. *Journal of Monetary Economics*, 46 (2000) 31-77.

Miller SM, Hoffer A, Wille D (2016) *Small-Business Financing after the Financial Crisis: Lessons from the Literature*. Mercatus Working Paper, Mercatus Center at George Mason University, Arlington.

Petersen MA, Rajan RG (1995) The effect of credit market competition on lending relationships. *Quarterly Journal of Economics*, 110(2): 407–443

Petersen MA, Rajan RG (2002) Does Distance Still Matter? The Information Revolution in Small Business Lending. *The Journal of Finance*, 57(6): 2533–2570

Rajan R. G. and L. Zingales (1998) Financial Dependence and Growth. *American Economic Review*, 88(3): 559-586.

Robb AM, Robinson DT (2014). The capital structure decisions of new firms. *Review of Financial Studies*, 27(1): 153-179.

Sääskilahti J (2016) Local bank competition and small business lending after the onset of the financial crisis. *Journal of Banking & Finance*, 69(1): 37–51.

Schumpeter JA (1961) *The Theory of Economic Development. An Inquiry into Profits, Capital Credit, Interest, and the Business Cycle*. New York : Oxford University Press.

Snijders, TAB., Bosker, RJ (1999) *Multilevel Analysis*. Sage, London.

Thornhill S, Amit R (2003) *Comprendre l'échec: mortalité organisationnelle et approche fondée sur les ressources*. Document de recherche. Direction des études analytiques, Statistique Canada 11F0019-202.

Titman S, Wessels R (1988) The determinants of capital structure choice. *Journal of Finance* 43(14): 1-19.

Wiens J, Jackson C (2015) *The Importance of Young Firms for Economic Growth*, 13th of September, The Kauffman Foundation.

Whited T (1992) Debt, Liquidity Constraints, and Corporate Investment: Evidence from Panel Data, *The journal of finance* 47(2): 1425-1460

Appendix : Correlation matrix

	VIF	FinDev	HHI	Crime	GDPper capita	Size	Stdebt	Ltdebt	ROA	Tangibility	Intangible	DifferentTax Shield	WCTA	Interest cov	Majority sh	Sole propr
FinDev	1.38	1														
HHI	1.15	-0.313	1													
Crime	2.67	-0.071	0.020	1												
GDPpercapita	1.39	-0.061	-0.014	-0.420	1											
Size	1.20	0.001	-0.034	-0.084	0.069	1										
Stdebt	1.07	-0.015	-0.019	-0.114	0.082	0.149	1									
Ltdebt	1.10	-0.017	-0.004	-0.074	0.053	0.167	0.031	1								
Tangibility	1.24	-0.066	0.029	-0.002	0.008	0.113	0.037	0.206	1							
Intangible	1.19	0.066	-0.027	-0.027	0.002	-0.140	0.007	0.071	-0.008	1						
ROA	1.11	-0.002	0.003	-0.002	0.003	0.105	-0.080	-0.046	-0.091	-0.182	1					
WCTA	1.22	-0.011	-0.007	-0.066	0.040	0.104	0.131	0.027	-0.273	-0.179	0.151	1				
Interestcov	1.01	-0.001	-0.003	-0.004	0.002	0.037	-0.017	-0.013	-0.014	-0.023	0.100	0.007	1			
DifferentTaxShield	1.01	-0.004	0.008	0.007	-0.010	-0.079	-0.011	-0.009	-0.007	0.048	-0.018	-0.019	0.004	1		
Majority_sh	1.19	0.030	-0.014	0.003	-0.006	-0.021	-0.010	-0.030	-0.012	-0.017	0.022	-0.016	0.006	-0.0001	1	
Sole_propr	1.20	-0.018	-0.002	-0.015	0.025	0.075	-0.004	-0.013	0.011	-0.032	0.007	0.020	0.003	-0.004	-0.395	1