

Local banking market structure, external financial dependence and economic activity: A new assessment of the benefits of relationship banking

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Abstract

This paper provides new evidence on the benefits of relationship banking. Using a unique bank branch-level dataset covering 96 French counties (departments) from 2005 to 2013, we show that higher market share of regional banks and a stronger presence of geographically-focused banks significantly impact local employment, foster firm creation and stimulate SMEs performance, event after controlling for times, county level and industry level effects. Further exploring the link between local banking market structure and real economic activity, we find that these benefits are altered by differences in sectors' external financial dependence. Stronger presence of regional banks or of geographically-focused banks positively impact SMEs performance in sectors which are highly-dependent on external finance.

Key words: relationship banking, local banks, economic activity, SMEs performance, external financial dependence

JEL codes: G21, G28

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1. Introduction

Following the seminal works of King and Levine (1993a,b) and Guiso et al. (2004), a large body of evidence has shown the importance of financial development on economic growth (see Hakenes et al. 2014 and Hasan et al. 2017 for recent surveys).

According to this extant literature, higher presence of small or cooperative banks in local community contributes to a rapid pace of new firm formation (Rogers, 2012; Hasan et al., 2017), small business development (Hasan et al., 2015), and local economic growth (Hakenes et al., 2014; Caporale et al., 2016) in both developed and developing countries. In addition, geographic restrictions on bank activity ties the fortunes of banks to specific locations which would increase their commitment to sustain local economic prosperity (Collender and Shaffer, 2003). Moreover, small-to-medium sized bank concentration (Francis et al., 2008) are found to have a positive effect on new firm formation, indicating that banks' incentive to invest in information acquisition technologies to build lending relationships and the quality of screening process are higher in less competitive markets (Petersen and Rajan, 1995; Ratti et al., 2008; Fungáčová et al., 2014). However, Black and Strahan (2002) found the increase in the formation of new incorporations is combined with the decrease in the market share of small banks, and Amore et al. (2013) found geographic expansion of banks stimulates innovation activities, suggesting that benefits of diversification sometimes outweigh those of relationship lending. While a lot of papers have documented the reduced influence of relationship lending caused by the development of information technologies or of financial innovation during the first part of the 2000s (see Berger et al. 2014 for a recent survey on this issue), recent evidence has highlighted the role of relationship banks during the global financial crisis (Bolton et al., 2016).

The widespread bailout of large, internationally-diversified banks during the 2007-2009 financial crisis and the subsequent great recession in both developed and developing countries has renewed the debate on the potential benefits of small/local banks on economic activity. In this troubled period, during which the use of hard information usually loses some relevance (IIF, 2013; Beck et al. 2017) and risk assessment becomes vulnerable (Hasan et al, 2017), the role played by relationship banking in promoting economic growth has been emphasized. Presbitero et al. (2014), Gilje (2014), Hakenes et al. (2014) and Hasan et al. (2017) have demonstrated that small business lending remains local, stressing

the relevance to investigate the role of local banking market structure on small business lending. Moreover, Berger et al. (2017) suggested that the comparative advantage of small banks in supporting small businesses is stronger when local economic conditions are worse, and they found although both small and large banks curtailed lending during the recent financial crisis, small banks provided more support to small businesses likely through providing liquidity insurance to relationship borrowers. On the contrary, Berger et al. (2014) find evidence that benefits of greater presence of small or cooperative banks weakened or disappeared in crisis, the possible reason lies in these banks are less diversified and benefit less from government guarantees.

In this paper, we investigate whether a strong presence of regional banks (Hasan et al., 2017), geographically-focused banks (Hakenes et al., 2014) or banking market concentration (Francis et al., 2008; Rogers, 2012) would stimulate local economic activities, during both normal and crisis times. Considering risk assessment remote from the local context usually suffers from knowledge shortfall, we also investigate the impacts of bank's functional- distance (Presbitero et al., 2014).

We further explore the mechanism linking banking market structure and real economic activity and provide a new assessment of the benefits of relationship banking. In line with Rajan and Zingales (1998) contribution, we analyze whether the heterogeneity in the dependence of external finance would affect the benefits of relationship lending among sectors. Considering that large firms have easier access to alternative external funding, we focus in this paper on small firms for which banks is the main source of external funding. Moreover, relationship lending might be more relevant for those firms. We hence hypothesize that a stronger presence of local and geographically-focused banks disproportionately benefits to small firms belonging to sectors which are most dependent on bank funding.

Our econometric analysis relies on a sample covering 117,977 existing firms' financial information over the 2005-2013 period and around 124,874 new firm registration information per year in 96 French counties (departments). France is an excellent laboratory for our analysis for at least three reasons. First, France is a bank-based economy where firms, especially informationally opaque small firms, have few opportunities to find alternative sources of external funds. Moreover, the density of French banking system is

among the highest in Europe, with a strong presence of regional (mutual and cooperative) banks in local markets (Lepetit et al., 2016). During the financial crisis, higher market share and lower geographic diversification of these regional banks are associated with a weaker reduction of credit to firms (Meslier et al. 2016). Second, our unique dataset allows us to compute indicators of local banking market structure at various dimensions. Our indicators are built with detailed information of bank activity (credit granted) at county-level (French department-level), and we complement this dataset with other bank characteristics (type, location of headquarter, distance between branches and headquarter) manually. Third, France experienced a steep drop in new firm registration and a sharp rise in corporate failures during the global financial crisis (Fougere et al., 2014; Klapper et al., 2015), and our data displays a great heterogeneity in the effects of the global financial crisis on new firm registration among counties where some counties kept a steady new firm registration rate while others experienced a sharp decline during this crisis. This heterogeneity is valuable for us to conduct empirical research about how does relationship lending affect the formation of new firms in crises. Besides, our banking market structure indicators exhibit a large variety across counties, so we are confident to provide economically significant empirical results.

Our results reveal that relationship lending is beneficial to local economic activity in both normal and crisis times, even after controlling for times, county level and industry characteristics. Stronger presence of regional banks or of geographically-focused banks have a positive impact on employment rate, foster firm formation rate and promote SMEs performance in both normal and crisis periods. Moreover, local economic activity is also stronger in more concentrated local banking market but only during crisis time. A relatively shorter distance to banks' headquarters results in a higher employment rate and firm formation rate in both normal time and crisis periods, whereas it would also result in a lower added value by existing firms.

We also find a significant heterogeneity in the growth effects of banking market structure among industrial sectors based on their dependence on external finance. This heterogeneity is statistically and economically significant, and it still exists or even be strengthened in both crises. Our results suggest that in sectors that are more in need of external finance, the growth effects of relationship lending are much stronger than sectors that are less in need

of external finance. A higher presence of regional banks or geographically-focused banks in local market would significantly enhance the total added value by the highest external financial dependent sectors, while we don't find statistically significant growth of added value by the lowest external financial dependent sectors.

This paper contributes to extant empirical research of relationship lending, local banking market structure and economic growth. First, thanks to our detailed banking market data including credit granted information at county-level, we measure local banking market structure at various dimensions. Second, we investigate how does relationship lending affect local economic performance at three aspects – the employment, the formation of new firms, and industry activity. Third, we test the heterogeneity in effects of relationship lending among industrial sectors to investigate whether relationship lending is more relevant for sectors that are highly dependent on external finance.

The rest of the paper is organized as follows. Section 2 describes sample and variables, section 3 presents empirical methodology, section 4 presents the results of local banking market structure on economic activity, section 5 discusses the impacts of external financial dependence, section 6 displays robustness tests and section 7 concludes.

2. Data Collection and Variable Construction

2.1 Measures of Local Economic Activity

2.1.1 Employment

The massive job destruction and the following jobless recovery following the recent global financial crisis have highlighted the importance of employment, as increased output might not necessarily translate into higher employment (Boustanifar, 2014). As we don't have GDP information at county-level in France, we use local employment activities to proxy local macroeconomic activity. We measure local employment rate by taking the ratio of total number of employees over the labor force in each county:

$$Employment_{d,t} = \frac{TotalEmployment_{d,t}}{LaborForce_{d,t}} * 100$$

where $TotalEmployment_{d,t}$ indicates the total number of employees in county (department) d , at time t , and $LaborForce_{d,t}$ indicates population aged 20 to 59 living in this county.

We get employment and population information at county (department) level from INSEE (*Institut national de la statistique et des études économiques*).

2.1.2 Firm Creation

The second indicator used to measure local economic activity is the rate of firm creation at the county level. As highlighted in the literature, the formation of new businesses is essential to the continued dynamism of the modern economy by fostering competition and innovation (Francis et al., 2008; Klapper and Love, 2011). We count the number of new firms in each sector registered per 1000 member of the labor force in each county to proxy the formation of new firms:

$$FirmCreation_{i,d,t} = \frac{NewFirmRegistration_{i,d,t}}{LaborForce_{d,t}} * 1000$$

where $NewFirmRegistration_{i,d,t}$ indicates the total number of new firms belonging to industrial sector i , located in county d , registered at time t . Following Klapper and Love (2011), we use the population aged 20 to 59 as the denominator to make the formation rate of new firms in different counties comparable.

Our data source of the formation of new firms is SIRENE which provides detailed firm registration information including name, size, industrial sector, registration date, location etc. in France. We start with an initial sample of around 385,676 firms registered per year in France. We only keep firms belonging to size category “PME: small and medium-sized enterprise”¹. SIRENE also provides sector classification information according to the Statistical Classification of Economic Activities in the European Community (NACE), Rev. 2. We exclude certain industries. We drop several primary industries (Agriculture, forestry and fishing; Mining and quarrying) where the activities are county-specific²; we drop the financial service sector (Financial and insurance activities) sectors highly interacted with financial service sector (Real estate activities) since our aim is to investigate the impacts of financial sector on other industries; we drop other professional or service sectors (Professional, scientific and technical activities; Administrative and support service activities; Arts, entertainment and recreation; Other service activities) because these sectors

¹ SIRENE classifies firm size into Grande (large), ETI(intermediate) and PME (small and medium-sized).

² See in Klapper et al. (2006), for example, not all counties have uranium mines.

are relatively less dependent on external finance; and we drop the government/public sectors (Public administration and defense, compulsory social security; Education; Human health and social work activities) considering funding for these sectors are mainly from government. We finally keep 48 sectors based on NACE Rev. 2 Level 2 sector classification (88 sectors identified by two-digit numerical codes) with an average of 124,874 firms registered per year.

2.1.3 Industry-level activity

We finally use an industry-level indicator to capture local economic activity and proxy economic activity using value-added. Our indicator is computed by summing for each sector in each county firms' value added and take the logarithm of this value:

$$IndustryPerformance_{i,d,t} = \ln(AddedValue_{i,d,t})$$

where $AddedValue_{i,d,t}$ indicates the total added value contributed by sector i , in county d , at time t .

Our data source is Amadeus-Bureau van Dijk which provides detailed financial information of non-financial firms and covers a large fraction of small businesses across all industries in Europe (Klapper et al., 2006). We start by a sample of 301,186 firms operating in France during our sample period. As explained in section 2.1.2, we only keep small firms with total asset less than 43 million Euros and annual turnover less than 50 million Euros during the whole sample period based on the European Union definition, and we only keep 48 sectors as defined above. We keep firms with financial records at the beginning of our sample period (2005) to avoid repetitive computation of new firms, and we drop firms with discontinuous financial recordings during our sample period to avoid excessive and inaccurate fluctuations in industry performance. We end up with 117,977 firms. We adjust firm's added value in the extreme percentiles (1% and 99%) of the distribution by time and sector to avoid recording errors or extreme value driving results, then we sum up firm's added value at sector-county level. According to our data source, firm's added value sums up its profit, depreciation, taxation, interests paid for shares and loans and cost of employees per fiscal year.

2.2 Measure of External Financial Dependence

Our measure of the external financial dependence at sector level relies on the premise that the differences in the dependence on external finance mainly depend on technology-specific factors (Rajan and Zingales, 1998). Instead of computing external financial dependence of U.S. listed firms and applying it to other countries as did in research on the topic, we measure external financial dependence using French firm data considering that detailed industry classification is different in these two countries and the technology factors of specific sectors might be different.

Taking account that small firms constitute the major part of businesses in France¹, and for most small businesses, banks are the only external funding source, we measure firm's external financial dependence by firm's total financial liabilities divided by its total assets (Inklaar and Koetter, 2008; Mocking et al., 2016). For each firm in each industry, we take the pre-crisis (2005-2006) value of external finance dependence to avoid possible endogeneity. Hence, we compute the external financial dependence for each sector as the median value of firm's external financial dependence in this sector:

$$FD_i = \text{Median}\left(\frac{FinDebt_{f,i,pre-crisis}}{TotalAsset_{f,i,pre-crisis}}\right)$$

where $FinDebt_{f,i,pre-crisis}$ indicates the mean value of all financial debts including loans, credits, bonds, etc. of firm f , belonging to sector i , in pre-crisis period, and $TotalAsset_{f,i,pre-crisis}$ measures this firm's average total assets in that time. We take the median value of firm's external financial dependence to proxy the external financial dependence of sector i .

We get firm's financial information from Amadeus-Bureau van Dijk. Following previous steps, we only keep small firms in 48 sectors. According to our data, the relatively lowest external financial dependent sector is "Electricity, gas, steam and air conditioning supply" which the mean value is only 0.9%; the relatively highest external financial dependent sector is "Accommodation and food service activities" which is the mean value is about 19%; the value in the 25th percentile, median and 75th percentile of distribution is 3.4%, 6.0% and 8.6%, respectively.

¹ According to Amadeus, the number of small businesses takes up 95.6% of all businesses in France.

2.3 Measures of Local Banking Market Structure

In order to build our local banking market structure indicators, we rely on and match two different sources of information. First, we adopt an original dataset provided by the Banque de France, *Centralisations Financières Territoriales*, which collects monthly information on 8 different types of credits granted to 6 different kinds of customers for each individual bank in each county over 96 French counties (departments). We start with an initial sample of 340 banks and 164,865 observations. We only keep banks which provide information at county level. This cleaning process leaves us a sample of 158 banks and 109,017 observations, representing 77.7% of the total amount of credits granted in France (and 92.0% if we exclude Paris and Hauts-de-Seine¹). We complement this dataset with hand-collected data on bank type (national or local) and functional-distance. In France, all national banks² operate in all counties and their administrative headquarters are all in Paris. Regional banks operate in delimited geographic area, although some of these regional banks belong to a national group (either privately-owned or cooperative), they have regional administrative head offices and they are fully-fledged banks. Moreover, regional banks have a substantial autonomy in their banking activities. Our second source of information is Bankscope-Bureau van Dijk dataset which provides annual financial information of banks. We match these two datasets by total credits granted by each bank at national-level.

To capture the various dimensions of local banking markets, we construct a broad set of county-level banking market indicators.

First, we measure regional banks' presence in local community, $RegionalBank_{d,t}$, by taking the ratio of total amount of loans granted by regional banks in each county over the total amount of loans granted in that county. Regional banks are considered to have a comparative advantage in accessing and utilizing local and soft information due to technology differences among banks (Berger et al., 1999), so we expect a positive relation between the market share of regional banks and local economic performance considering regional banks would stimulate local economic growth by supporting informationally-opaque firms.

Second, we construct a variable indicating banks' geographic scope, $GeoScope_{d,t}$, which

¹Most local headquarters of foreign banks are in these two counties.

²Banks belong to banking groups: *BNP PARIBAS*, *Société Générale*, *La Banque Postale*, *LCL* or *Crédit Coopératif*.

measures for each county the average degree of bank's geographic diversification. For each bank operated in each county, we count the number of counties where the bank is operating and we compute for each county the weighted average number of counties where banks located in this county are operating. We use bank's credit market share as the weight. Higher value of this variable indicates that county is populated by more geographically-diversified banks. According to Collender and Shaffer (2003), geographic restriction ties the fortunes of banks to specific locations and increases banks' commitments to sustain local economic prosperity, so we expect a negative correlation between $GeoScope_{d,t}$, and local economic performance.

Third, to measure the intensity of local banking market concentration, we compute Herfindhal-Hirschmann Index ($HHI_{d,t}$) by using credit market share of each bank in a given county, we also construct a more consistent non-structural approach – Lerner Index ($Lerner_{d,t}$) since Herfindhal-Hirschmann Index is easily subject to consistency and robustness problems. We build Lerner Index for each bank following Ryan et al. (2014) by using $[(price - marginal\ cost)/price]$. Marginal cost of each bank is estimated through a translog cost function with three cost inputs: (1) cost of capital, (2) cost of labor inputs and (3) cost of physical assets¹. Price is computed by bank's interest income divided by its total earning assets². Similar with $GeoScope_{d,t}$, we use credit market share as the weight to compute the market Lerner Index. In line with the *Information hypothesis* (Petersen and Rajan, 1995; Ratti et al., 2008; Fungáčová et al., 2014) suggests that banks' incentive to invest in information acquisition technologies to build lending relationships and the quality of screening are higher in less competitive markets, we expect a positive relation between banking market concentration and local economic activities.

Last, we measure bank's organizational structure by the logarithmic distance (in kilometers) between the main city of the county where the bank is operating and bank's decisional center (Alessandrini et al., 2009; Presbitero et al., 2014). Considering that headquarters of national banks are all in Paris, we measure the functional-distance of national banks by taking the mean value of distance from Paris to each county (352.4 km)

¹More details can be found in Appendix A.3 of Ryan et al. (2014).

²Lerner Index with price computed by total revenue divide by total assets following most research provide similar estimation results, while this indicator highly correlates with our other banking market indicators.

for all counties¹. For regional banks, we compute for each county the distance between the main city of the county and the main city of the county where the regional administrative office is located. Using these measures, we compute for each county the weighted average distance between local branches and loan decision centers of all banks operating in this county, $Distance_{d,t}$, employing each bank's credit market share as a weight. The higher this indicator, the more functionally-distant the local market. While the correlation between banks' functional-distance and local economic performance is ambiguous. On the one hand, functionally-close banks are considered to have advantages in collecting soft information and reducing information transmission cost (Degryse and Ongena, 2005; Agarwal and Hauswald, 2010; Knyazeva et al., 2012) to support informationally-opaque firms; on the other hand, far away from headquarter makes local branch managers more autonomous in loan deciding which could also support informationally-opaque firms.

Details of the definition of each variable can be found in Appendix. Table 1 presents main descriptive statistics for our banking market structure variables. These statistics clearly highlight a strong heterogeneity in local banking market characteristics among French counties (departments) in terms of regional bank presence, geographic scope, banking market concentration and functional distance.

3 Methodology

We begin by investigating the impacts of local banking market structure on overall local economic activity. The baseline model of this paper is as follows:

$$LocalEconomicActivity_{d,t} = \beta_0 + \beta_1 LocalMarket_{d,t-1} + \beta_2 Crisis * LocalMarket_{d,t-1} + \beta_3 Crisis + Controls + \varepsilon_{d,t} \quad (1)$$

where $LocalEconomicActivity_{d,t}$ is an indicator of overall local economic performance in county d at time t. We use alternatively employment rate ($Employment_{d,t}$), firm creation rate ($FirmCreation_{i,d,t}$), and industry performance ($IndustryPerformance_{i,d,t}$) to measure local economic performance. $LocalMarket_{d,t-1}$ is a set of local banking

¹ Indeed, for national banks, loan decisions would not be made based on the distance between local branches to headquarter, which, if so, would lead to a result that firms located in northern cities would have better credit access compared with similar firms located in southern cities just because Paris is in the north.

market structure indicators measuring regional banks' presence ($RegionalBank_{d,t-1}$), banks' geographic scope ($GeoScope_{d,t-1}$), banking market concentration ($HHI_{d,t-1}$ or $Lerner_{d,t-1}$) and functional-distance ($Distance_{d,t-1}$) which would possibly offering relationship lending. $\varepsilon_{d,t}$ is the idiosyncratic term.

Through the sign of the coefficient of $LocalMarket_{d,t-1}$ in model (1), we can figure out whether and how local banking market structure influence local economic performance. We expect a statistically significant value for the coefficient β_1 to testify the impacts of local banking market structure on local economic activity.

We introduce an interaction term of a crisis variable (*Crisis*) and the local banking market indicators ($Crisis * LocalMarket_{d,t-1}$) into this model to distinguish effects brought by the different crisis episodes occurring since 2007 and to compare the impacts of local banking market on local economic performance between crisis periods and normal times. Consistent with our interest to the supply-side effects of the financial crisis, we define 2007-2008 as the global financial crisis period (Duchin et al., 2010)¹. We also consider the impact brought by the shock of the European sovereign debt crisis. Even if this crisis is not a banking crisis, European banks, and notably French banks, were strongly involved in the GIIPS countries (Lepetit et al., 2016). We define 2011-2012 as the period of the European sovereign debt crisis. We compute two dummy variables, *GlobalCrisis*, equals to one in 2007 and 2008 and zero otherwise, and *EUCrisis*, equals to one in 2011 and 2012 and zero otherwise. We pay attention to the coefficients of the interaction terms, $GlobalCrisis * LocalMarket_{d,t-1}$ and $EUCrisis * LocalMarket_{d,t-1}$, to find out whether the crises have strengthened or weakened the importance of relationship lending. We compute the overall effects of local banking market structure, $\beta_1 + \beta_2$, in these crises for each local banking market structure indicator and test its significance.

In a second step, we go further and test whether the impact of local banking market structure on economic activity may differ according to the dependence on external finance at the industry level. We introduce in equation (1) an interaction term of the dependence on external finance of industrial sectors and our local banking market indicators. We

¹ We use an alternative definition of the global financial crisis period in robustness tests.

hypothesize that the benefits of relationship banking are stronger for industrial sectors which are more in need of external finance. Considering that the external financial dependence of new firms is different from mature firms (Rajan and Zingales, 1998; Chava et al., 2013; Brown and Earke, 2017), we focus on existing firms and compute the measure of external financial dependence based on the financial information of existing firms:

$$\begin{aligned} IndustryPerformance_{i,d,t} = & \beta_0 + \beta_1 LocalMarket_{d,t-1} + \beta_2 FD_i * \\ & LocalMarket_{d,t-1} + \beta_3 Crisis * LocalMarket_{d,t-1} + \beta_4 FD_i * Crisis * \\ & LocalMarket_{d,t-1} + \beta_5 FD_i + \beta_6 Crisis + Controls + \varepsilon_{i,d,t} \quad (2) \end{aligned}$$

where the interaction terms $FD_i * LocalMarket_{d,t-1}$ and $FD_i * Crisis * LocalMarket_{d,t-1}$ indicate the heterogeneity of the impacts of local banking market structure among sectors based on their external financial dependence (FD_i). We compute the marginal effects of local banking market structure based on the distribution of external financial dependence at the 25th percentile, median and 75th percentile, respectively. We expect a statistically significant heterogeneity among sectors and stronger marginal effects of local banking market structure for sectors that are more in need of external finance.

As our local banking market indicators are time-varying in our sample period which might cause some endogeneity problems, to avoid possible endogeneity issues, we used one-year lagged value for all explanatory variables.

For each estimation model, we use a set of control variables to fully account for the observable and unobservable sector-level and county-level effects. We control for county fixed effects and sector fixed effects to account for all unobservable time invariant effects. We also control for the time varying county specific characteristics which might influence local economic performance. We control for each estimation the prospect of local economic development ($Prospect_{d,t}$) by the logarithm of business climate indicator, which is considered as a leading indicator forecasting the prospect of local economic activities at region level, we expect a positive sign for the coefficient of this variable. Again, to avoid possible endogeneity issues, we adopt one-year lagged value for these control variables. Besides, for estimations investigating the impacts of local banking market at sector-county level, we control for the industry structure ($Structure_{i,d,t-1}$) in a county by the ratio of total

sales of sector i over total sales of all sectors in county d , at time t . A high value of $Structure_{i,d,t-1}$ could indicate the development hierarchy effect that sector i which has dominated in county d caused by technology advantage or policy support would enjoy this high-speed development continuously; it could also indicate the convergence effect (Cetorelli and Gambera, 2011) that sector i which has grown substantially in the past would not continue its growth speed in the future, so the sign for the coefficient of this variable is undetermined. In addition, we add year dummies to control for time effects. Main descriptive statistics for our dependent variables and main control variables are also presented in Table 1. These statistics clearly highlight a strong heterogeneity in local economic performance among counties.

We conduct Wald Test and Hausman Test to choose estimation methods. The results of the Wald Test and Hausman Test conclude to the use of fixed effect estimation. We adopt robust estimation to control for heteroscedasticity, standard errors are clustered by county or county-sector.

Table 2 presents the correlation matrix. This table provides evidence of a strong positive correlation between the market share of regional banks ($RegionalBank_{d,t}$) and one of our indicator of banking market concentration ($HHI_{d,t}$). We check the evolution patterns of these variables and their correlation county by county, and we find that the correlation is higher in metropolitans where the banking market is more competitive (lower value of $HHI_{d,t}$) and the credit market share of regional banks is lower (lower value of $RegionalBank_{d,t}$). While within the county, the value of these variables and their correlation are stable, so we assume this correlation would not constitute to an endogeneity issue. We also find a negative correlation between banks' geographic scope ($GeoScope_{d,t}$) and this indicator of banking market concentration ($HHI_{d,t}$), again, the evolution patterns are stable within the county. Therefore, we keep this measure ($HHI_{d,t}$) but we do not combine it with our other local banking market indicators in estimations.

4. Local banking market structure and economic activity

4.1 Does relationship lending stimulate local employment and firm creation?

In Tables 3.1 to 3.3, we report estimation results of the baseline specification, using employment rate, firm creation and industry performance as the dependent variable, respectively. For the sake of brevity, we only report coefficients of control variables in the first table reporting baseline specifications results. We highlight a significant impact of banking market structure on local economic performance in both normal and crisis periods, and this effect is robust to various measures of local banking market structure.

Our results show a positive and significant impact of regional banks presence (*RegionalBank*) on both employment rate (Table 3.1, column (1)) and firm creation (Table 3.2, column (1)). Moreover, stronger presence of geographically-focused banks (lower value of *GeoScope*), or located closer to banks' headquarters (lower value of *Distance*) increase local employment rate (Table 3.1, columns (2) and (3)) and firm creation (Table 3.1, columns (2) and (3)).

When market share of regional banks (*RegionalBank*) increases from the 25th percentile to the 75th percentile, local employment rate is expected to increase by 1.28 percentage points; and if bank's geographic scope (*GeoScope*) increases from the 25th percentile to the 75th percentile, local employment rate is expected to decrease by 0.85 percentage points.

When computing the overall effect of local banking market structure during crisis times ($\beta_1 + \beta_2$) we also highlight a positive and significant effect for our three explanatory variables on both employment and firm creation during both crises. We also provide evidence of a positive impact of higher banking market power (*Lerner*) and higher concentration (*HHI*) on firm creation during the global financial crisis (Table 3.2, columns (4) and (5)). Combining all uncorrelated local banking market indicators (column (7)) leaves the main results unchanged.

In line with Hakenes et al. (2014) and Hasan et al. (2017) recent findings, our results provide evidence of a significant impact of local banking market structure on local economic activity. Stronger presence of regional banks and of geographically-focused

banks promote local employment and foster firm creation during both normal and crisis times. Moreover, our results indicate that the benefits of relationship banking is economically significant.

4.2 Industry performance and local banking market structure

When turning to our industry-county-level indicators, our main results remain qualitatively unchanged. Table 3.3 reports estimation results for industry performance, measured by the value added of small industrial firms at the local level. Our results show a positive and significant impact of local bank presence on small firms' value added during both normal and crisis times. Moreover, stronger presence of geographically-focused banks and of more distant banks increases small firms' value added during normal times. While the effect of geographically-focused banks is also significant during both the global and the European sovereign crisis, the positive impact of having more distant banks is only significant during the second crisis.

Finally, we do not find any statistically significant effects of market competition (*Lerner*) or of market concentration (*HHI*).

Our findings clearly highlight that the presence of regional banks are beneficial to SMEs and stimulate their performance. In order to go deeper in the investigation and to further explore the link between local banking market structure and economic activity, in the next we focus solely on our industry-county level indicator of economic activity.

5. External financial dependence and industry performance: does relationship lending matter?

In this section, we investigate whether the heterogeneity in the dependence of external finance would alter the benefits of relationship banking on small firms' performance. In order to disentangle the impact of local banking market structure at different level of external financial dependence, we compute the marginal effects of local banking market indicators on small businesses' performance at low (25th percentile), median (50th percentile) and high (75th percentile) level of external financial dependence.

Table 4 reports estimation results of equation (2). We focus our comments on the

marginal effects during normal (Table 4.a) and crisis times (Tables 4.b and 4.c) for the three different level of external financial dependence (low, median and high). Our findings highlight significant differences in the benefits of relationship banking on small firms' performance according to their degree of dependence on external finance in both normal and crisis periods.

Our results suggest that, during both periods, the benefits of relationship banking for small firms is stronger in sectors that are more dependent of external finance.

During normal times, a stronger presence of local banks or a stronger presence of geographically-focused banks (lower value of *GeoScope*) or of functionally-close banks (lower value of *Distance*) have a positive impact of small firms' performance in sectors exhibiting a high dependence to external finance (75th percentile). For the variable *Distance*, the marginal effect is significant for the three level of financial dependence but the absolute value is increasing with the level of external financial dependence. We also find a positive and significant impact of stronger power market power (*Lerner*) but only for small firms belonging to sectors which are less in need of external finance. However, we do not find any statistically significant effects of market concentration. This might indicate that while small firms which are less in need of external finance would enjoy higher performance in more competitive banking market, stronger bank market power might alter bargaining power of firms belonging to more external financial sectors.

When turning to the impact of local banking market structure during crisis periods, we find that a stronger presence of local banks significantly impacts small firms' performance in highly-financial dependent sector during the European sovereign crisis. The effect is only significant at the 10% level during the global financial crisis. Moreover, a stronger presence of geographically-focused banks provides benefits in both crises to small firms belonging to highly-financial dependent sector. We also a positive impact of functionally-close banks but this effect is significant both in sectors with a low or a high dependence to external finance. Our results also indicate a positive impact of stronger bank market power, irrespective to firms' financial dependence.

Overall, our results suggest the benefits of relationship banking on small firms' performance are altered by their dependence to external finance. In line with our expectations, we find that the positive impact of local banks presence or of geographically-

focused and more-distant bank are stronger for small firms belonging to industrial sectors which are more dependent to external finance.

6 Robustness Tests

We run a large set of estimations to confirm the robustness of our empirical results.

Firstly, we exclude Paris and Hauts-de-Seine from our sample considering the specificities of these two departments might introduce some bias in the estimations. We suspect that part of the loans granted by national banks to large and very large firms are reported in their headquarters which are all located in these areas. Moreover, most local headquarters of foreign banks are also located in these areas. As these banks only provide centralized information at their headquarters level, we do not include credit granted by foreign banks when constructing local banking market indicators, although these banks might operate in several departments. Our local banking market indicators could be bias if the market share of foreign banks is high. The results of model (1) and model (2) including or excluding these two counties are similar.

Secondly, we construct another indicator -- temporary employment rate: the estimated number of temporary employees (supposing working hours equal to full-time jobs) divided by labor force -- to proxy local employment activity. Temporary employment is more sensitive to local economic conditions than overall employment and it is considered as a leading indicator. We present the results of our baseline model using temporary employment rate as dependent variable in Table 5. Although we don't find a statistically significant effect of the presence of regional banks on temporary employment over the whole sample period, we still find regional banks are important for temporary employment in both crises. We also find geographically-focused banks would promote temporary employment in both normal and crisis periods, and banking market concentration has similar effect but only in the global financial crisis.

Thirdly, to avoid possible biases in constructing external financial dependence indicator, we build two other indicators to proxy firm's external financial dependence. The one proxy we use firm's total financial debts divided by its total liabilities, the other proxy we use firm's tangibility (tangible assets divided by total assets). We run estimations using these

two indicators of model (2), the results are consistent with what we find about the financial dependence computed by firm's financial liabilities divided by total assets in Table 4. We present results of external financial dependence calculated by total financial debts divided by total liabilities in Table 6. For sectors that are more in need of external finance, the positive impacts of regional banks, geographically-focused banks and functionally-distant banks are larger and more significant, which indicates relationship lending are more relevant for these sectors.

Fourthly, we run estimations using the 2008-2009 period as the reference period for the global financial crisis period or over two sub-sample periods in order to estimate the two crisis episodes separately. These settings leave our main results unchanged.

Lastly, we include large firms in our sample to run estimations for model (2), the results are consistent with our main results. We also run estimations for model (2) only based on the formation of large firms and the activity of large firms, we don't find any statistically significant effects of our local banking market indicators. These findings support the view that relationship lending is more essential for small business than for large firms because large firms are more informationally transparent and have more external funding sources.

7. Conclusion

This paper examines the impact of local banking market structure on local economic activity. We find that relationship lending has a positive effect on local economic activity in both normal and crisis times. We also find a significant heterogeneity in these effects among industrial sectors based on their dependence on external finance.

Our results reveal that in counties with a stronger presence of regional banks or geographically-focused banks have a higher employment rate, a higher firm formation rate and a larger added value by industrial sectors in both normal and crisis periods. Moreover, local economic activity is also stronger in more concentrated local banking market but only during crisis time. A relatively shorter distance to banks' headquarters results in a higher employment rate and firm formation rate in both normal time and crisis periods, whereas it would also result in a lower added value by existing firms.

Our results also show a significant heterogeneity in the effects of relationship lending

among industrial sectors based on their dependence on external finance. This heterogeneity is statistically and economically significant, and it still exists or even be strengthened in both crises. Our results suggest that in sectors that are more in need of external finance, the effects of relationship lending are much stronger than sectors that are less in need of external finance. A higher presence of regional banks or geographically-focused banks in local market would significantly enhance the total added value by the highest external financial dependent sectors, while we don't find statistically significant growth of added value by the lowest external financial dependent sectors.

Our findings are consistent with the significant importance of relationship lending in the formation of new businesses and the continuous performance of small businesses. In contrast to some research that the benefits of diversification outweigh relationship lending especially in crises, our results demonstrate that in both the global financial crisis and the European sovereign debt crisis, relationship lending is still important for local economic activity.

Considering small businesses are an important source of employment and innovation, and the formation of new firms account for the bulk of net employment creation (Adelino et al., 2017), our results have important economic significance. In the context of an increasing intra and interregional concentration of banking markets, for policy-makers, we highlight the importance of guarantying the presence of relationship lending based banks. We emphasize that for sector that are highly in need of external finance, the presence of regional banks or geographically-focused banks is essential.

Reference

- [1]. Adelino, Manuel, Song Ma, and David Robinson. "Firm age, investment opportunities, and job creation." *The Journal of Finance* (2017).
- [2]. Agarwal, Sumit, and Robert Hauswald. "Distance and private information in lending." *The Review of Financial Studies* 23.7 (2010): 2757-2788.
- [3]. Alessandrini, Pietro, Andrea F. Presbitero, and Alberto Zazzaro. "Banks, distances and firms' financing constraints." *Review of Finance* 13.2 (2009): 261-307.
- [4]. Amore, Mario Daniele, Cedric Schneider, and Alminas Žaldokas. "Credit supply and corporate innovation." *Journal of Financial Economics* 109.3 (2013): 835-855.
- [5]. Audretsch, David B. "The dynamic role of small firms: Evidence from the US." *Small Business Economics* 18.1 (2002): 13-40.
- [6]. Beck, Thorsten, A. S. L. I. Demirgüç - Kunt, and Vojislav Maksimovic. "Financial and legal

- constraints to growth: Does firm size matter?" *The Journal of Finance* 60.1 (2005): 137-177.
- [7]. Beck, Thorsten, Hans Degryse, and Christiane Kneer. "Is more finance better? Disentangling intermediation and size effects of financial systems." *Journal of Financial Stability* 10 (2014): 50-64.
- [8]. Beck, Thorsten, Hans Degryse, R. De Haas, N. Van Horen. "When Arm's Length is Too Far. Relationship Banking over the Credit Cycle." *Journal of Financial Economics* (2017).
- [9]. Beck, Thorsten, Ross Levine, and Norman Loayza. "Finance and the Sources of Growth." *Journal of Financial Economics* 58.1 (2000): 261-300.
- [10]. Berger, A. N., Miller, N. H., Petersen, M. A., Rajan, R. G., and Stein, J. C.. "Does function follow organizational form? Evidence from the lending practices of large and small banks." *Journal of Financial Economics* 76.2 (2005): 237-269.
- [11]. Berger, Allen N., Christa HS Bouwman, and Dasol Kim. "Small bank comparative advantages in alleviating financial constraints and providing liquidity insurance over time." *The Review of Financial Studies* (2017): hxx038.
- [12]. Berger, Allen N., Geraldo Cerqueiro, and Maria Fabiana Penas. "Market size structure and small business lending: Are crisis times different from normal times?" *Review of Finance* 19.5 (2014): 1965-1995.
- [13]. Berger, Allen N., Rebecca S. Demsetz, and Philip E. Strahan. "The consolidation of the financial services industry: Causes, consequences, and implications for the future." *Journal of Banking and Finance* 23.2 (1999): 135-194.
- [14]. Berger, Allen N., Richard J. Rosen, and Gregory F. Udell. "Does market size structure affect competition? The case of small business lending." *Journal of Banking and Finance* 31.1 (2007): 11-33.
- [15]. Black, Sandra E., and Philip E. Strahan. "Entrepreneurship and bank credit availability." *The Journal of Finance* 57.6 (2002): 2807-2833.
- [16]. Boot, Arnoud WA, and Anjan V. Thakor. "Can relationship banking survive competition?" *The Journal of Finance* 55.2 (2000): 679-713.
- [17]. Bolton, P., X. Freixas, L. Gambacorta. "Relationship and transaction lending in a crisis." *Review of Financial Studies* 29.10 (2016): 2643-2676
- [18]. Boustanifar, Hamid. "Finance and employment: Evidence from US banking reforms." *Journal of Banking and Finance* 46 (2014): 343-354.
- [19]. Brown, J. David, and John S. Earle. "Finance and growth at the firm level: evidence from SBA loans." *The Journal of Finance* (2017).
- [20]. Campello, Murillo, John R. Graham, and Campbell R. Harvey. "The real effects of financial constraints: Evidence from a financial crisis." *Journal of financial Economics* 97.3 (2010): 470-487.
- [21]. Canales, Rodrigo, and Ramana Nanda. "A darker side to decentralized banks: Market power and credit rationing in SME lending." *Journal of Financial Economics* 105.2 (2012): 353-366.
- [22]. Caporale, Guglielmo Maria, et al. "Local banking and local economic growth in Italy: some panel evidence." *Applied Economics* 48.28 (2016): 2665-2674.
- [23]. Carbo-Valverde, Santiago, Francisco Rodriguez-Fernandez, and Gregory F. Udell. "Bank Market Power and SME Financing Constraints*." *Review of Finance* 13.2 (2009): 309-340.
- [24]. Cenni, Stefano, et al. "Credit rationing and relationship lending. Does firm size matter?." *Journal of Banking and Finance* 53 (2015): 249-265.
- [25]. Cetorelli, Nicola, and Michele Gambera. "Banking market structure, financial dependence and growth: International evidence from industry data." *The Journal of Finance* 56.2 (2001): 617-648.
- [26]. Chava, Sudheer, Alexander Oettl, Ajay Subramanian, and Krishnamurthy V. Subramanian. "Banking deregulation and innovation." *Journal of Financial Economics* 109.3 (2013): 759-774.

- [27].Chava, Sudheer, and Amiyatosh Purnanandam. "The effect of banking crisis on bank-dependent borrowers." *Journal of Financial Economics* 99.1 (2011): 116-135.
- [28].Claessens, Stijn, and Luc Laeven. "Financial development, property rights, and growth." *The Journal of Finance* 58.6 (2003): 2401-2436.
- [29].Cole, Rebel A., John D. Wolken, and R. Louise Woodburn. "Bank and nonbank competition for small business credit: Evidence from the 1987 and 1993 National Surveys of Small Business Finances." *Fed. Res. Bull.* 82 (1996): 983.
- [30].Cole, Rebel A., Lawrence G. Goldberg, and Lawrence J. White. "Cookie cutter vs. character: The micro structure of small business lending by large and small banks." *Journal of Financial and Quantitative Analysis* 39.2 (2004): 227-251.
- [31].Collender, Robert N., and Sherrill Shaffer. "Local bank office ownership, deposit control, market structure, and economic growth." *Journal of Banking and Finance* 27.1 (2003): 27-57.
- [32].Degryse, Hans, and Steven Ongena. "Distance, lending relationships, and competition." *The Journal of Finance* 60, no. 1 (2005): 231-266.
- [33].Dell'Ariccia, Giovanni, Enrica Detragiache, and Raghuram Rajan. "The real effect of banking crises." *Journal of Financial Intermediation* 17.1 (2008): 89-112.
- [34].Diamond, Douglas W. "Financial intermediation and delegated monitoring." *The Review of Economic Studies* 51.3 (1984): 393-414.
- [35].Duchin, Ran, Oguzhan Ozbas, and Berk A. Sensoy. "Costly external finance, corporate investment, and the subprime mortgage credit crisis." *Journal of Financial Economics* 97.3 (2010): 418-435.
- [36].Fougere, Denis, et al. "What is the impact of the 2008 crisis on corporate failures?" *Economie and Statistique* (2014).
- [37].Francis, Bill, Iftexhar Hasan, and Haizhi Wang. "Bank consolidation and new business formation." *Journal of Banking and Finance* 32.8 (2008): 1598-1612.
- [38].Fungáčová, Zuzana, Laura Solanko, and Laurent Weill. "Does competition influence the bank lending channel in the euro area?." *Journal of Banking and Finance* 49 (2014): 356-366.
- [39].Goldsmith, Raymond William. *Financial structure and development*, New Haven, CT: Yale University Press, 1969.
- [40].Hakenes, H., Hasan, I., Molyneux, P., and Xie, R. "Small banks and local economic development." *Review of Finance* 19 (2014): 653-683.
- [41].Hasan, Iftexhar, et al. "Do local banking market structures matter for SME financing and performance? New evidence from an emerging economy." *Journal of Banking and Finance* 79 (2017): 142-158.
- [42].Hasan, Iftexhar, Nada Kobeissi, Haizhi Wang, and Mingming Zhou. "Banking structure, marketization, and small business development: Regional evidence from China." *Pacific Economic Review* 20.3 (2015): 487-510.
- [43].Haynes, George W., Charles Ou, and Robert Berney. "Small business borrowing from large and small banks." *Business Access to Capital and Credit: A Federal Reserve System Research Conference* (1999): 287-327.
- [44].Inklaar, Robert Christiaan, and Michael Koetter. "Financial dependence and industry growth in Europe: Better banks and higher productivity." *University of Groningen, Groningen Growth and Development Centre* (2008).
- [45].Ivashina, Victoria, and David Scharfstein. "Bank lending during the financial crisis of 2008." *Journal of Financial economics* 97.3 (2010): 319-338.
- [46].Jayaratne, Jith, and John Wolken. "How important are small banks to small business lending?: New evidence from a survey of small firms." *Journal of Banking and Finance* 23.2 (1999): 427-458.
- [47].Guiso, Luigi, Paola Sapienza and Luigi Zingales. "Does local financial development matter?" *Quarterly Journal of Economics* 119.3 (2004): 929-969.
- [48].Kahle, Kathleen M., and René M. Stulz. "Access to capital, investment, and the financial

- crisis." *Journal of Financial Economics* 110.2 (2013): 280-299.
- [49].King, Robert G., and Ross Levine. "Finance and growth: Schumpeter might be right." *The Quarterly Journal of Economics* 108.3 (1993b): 717-737.
- [50].King, Robert G., and Ross Levine. "Finance, entrepreneurship and growth." *Journal of Monetary Economics* 32.3 (1993a): 513-542.
- [51].Klapper, L. and I. Love. "The Impact of the Financial Crisis on New Firm Registration." *Economics Letters* 113.1 (2011): 1-4.
- [52].Klapper, Leora, Inessa Love, and Douglas Randall. "New firm registration and the business cycle." *International Entrepreneurship and Management Journal* 11.2 (2015): 287-306.
- [53].Klapper, Leora, Luc Laeven, and Raghuram Rajan. "Entry regulation as a barrier to entrepreneurship." *Journal of Financial Economics* 82.3 (2006): 591-629.
- [54].Knyazeva, Anzhela, and Diana Knyazeva. "Does being your bank's neighbor matter?." *Journal of Banking and Finance* 36.4 (2012): 1194-1209.
- [55].Krishnan, Karthik, Debarshi K. Nandy, and Manju Puri. "Does financing spur small business productivity? Evidence from a natural experiment." *The Review of Financial Studies* 28.6 (2014): 1768-1809.
- [56].Kroszner, Randall S., and Philip E. Strahan. "Regulation and deregulation of the US banking industry: causes, consequences, and implications for the future." *Economic Regulation and Its Reform: What Have We Learned?* University of Chicago Press (2014): 485-543.
- [57].Kroszner, Randall S., Luc Laeven, and Daniela Klingebiel. "Banking crises, financial dependence, and growth." *Journal of Financial Economics* 84.1 (2007): 187-228.
- [58].Lepetit, L., Meslier, C., and Tarazi, A. "Banking in France". *The Palgrave Handbook of European Banking* (2016).
- [59].Levine, Ross. "Finance and growth: theory and evidence." *Handbook of Economic Growth* 12 (2005): 865-934.
- [60].Meslier, C., Rous, P., Sauviat, A., and Torre, P. "Structure bancaire locale et évolution du crédit à l'échelle des départements français: l'expérience de la crise financière de 2007-2008". *Revue Economique* 67.2 (2016): 279-314.
- [61].Mocking, Remco, Jan Möhlmann, and Ali Palali. "Dependence on External Finance and SME Survival." *CPB Netherlands Bureau for Economic Policy Analysis Background Document* (2016).
- [62].Petersen, Mitchell A., and Raghuram G. Rajan. "The effect of credit market competition on lending relationships." *The Quarterly Journal of Economics* 110.2 (1995): 407-443.
- [63].Petersen, Mitchell A., and Raghuram G. Rajan. "Does distance still matter? The information revolution in small business lending." *The Journal of Finance* 57 (2002): 2533-2570.
- [64].Presbitero, Andrea F., Gregory F. Udell, and Alberto Zazzaro. "The home bias and the credit crunch: A regional perspective." *Journal of Money, Credit and Banking* 46. s1 (2014): 53-85.
- [65].Rajan, Raghuram G., and Luigi Zingales. "Financial Dependence and Growth." *American Economic Review* (1998): 559-586.
- [66].Ratti, Ronald A., Sunglyong Lee, and Youn Seol. "Bank concentration and financial constraints on firm-level investment in Europe." *Journal of Banking and Finance* 32.12 (2008): 2684-2694.
- [67].Rogers, Tammy M. "Bank market structure and entrepreneurship." *Small Business Economics* 39.4 (2012): 909-920.
- [68].Ryan, Robert M., Conor M. O'Toole, and Fergal McCann. "Does bank market power affect SME financing constraints?." *Journal of Banking and Finance* 49 (2014): 495-505.
- [69].Stein, Jeremy C. "Information production and capital allocation: Decentralized versus hierarchical firms." *The Journal of Finance* 57.5 (2002): 1891-1921.

Table 1: Summary Statistics of Main Variables

	RegionalBank	GeoScope*	Distance*	Lerner	HHI	Employment	Firm Creation	Industry Performance*	Prospect*	Structure
min	0.101	10.959	40.831	-0.08	0.018	61.622	0.000	4	75.438	0.000
p25	0.715	20.86	112.31	-0.005	0.150	71.735	0.010	3619	92.967	0.001
mean	0.753	26.793	135.971	0.023	0.204	76.752	0.118	36044	98.031	0.016
p50	0.794	25.072	136.309	0.022	0.202	76.403	0.032	12114	98.941	0.005
p75	0.846	31.691	158.506	0.049	0.245	79.785	0.120	34509	103.849	0.012
max	0.924	55.548	272.963	0.132	0.487	143.296	4.742	1511151	115.911	0.383
sd	0.15	9.131	35.685	0.034	0.078	9.982	0.238	80875	8.498	0.034

Note: we use the logarithm of variables with * in estimations.

Table 2: Correlation Matrix

	RegionalBank	GeoScope	Distance	Lerner	HHI	Prospect	Structure
RegionalBank	1						
GeoScope	-0.2659	1					
Distance	0.2423	0.2149	1				
Lerner	0.1717	0.0401	0.0315	1			
HHI	0.7487	-0.404	0.3392	0.0779	1		
Prospect	-0.0692	-0.0577	-0.0118	-0.3305	0.0001	1	
Structure	0.056	-0.0127	0.0721	0.0034	0.0811	0.0025	1

Table 3.1: Effects of Local Banking Market Structure on Employment Rate

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
RegionalBank	9.776** (3.997)						8.758** (4.058)
GlobalCrisis*RegionalBank	-0.634 (0.457)						
EUCrisis*RegionalBank	-1.366*** (0.353)						
GeoScope		-2.043** (0.791)					-1.829** (0.859)
GlobalCrisis*GeoScope		0.160 (0.242)					
EUCrisis*GeoScope		-0.0677 (0.174)					
Distance			-0.498** (0.198)				-0.225 (0.208)
GlobalCrisis*Distance			-0.0330 (0.0629)				
EUCrisis*Distance			-0.150*** (0.0518)				
Lerner				5.079 (3.524)			3.025 (3.244)
GlobalCrisis*Lerner				6.827 (4.738)			
EUCrisis*Lerner				-4.735* (2.579)			
HHI					10.01 (8.610)		
GlobalCrisis*HHI					-2.663*** (0.802)		
EUCrisis*HHI					-1.183 (0.857)		
Size						0.00106 (0.0241)	-0.00337 (0.0204)
GlobalCrisis*Size						0.0104 (0.0201)	
EUCrisis*Size						0.0299 (0.0334)	
Prospect	2.295** (1.090)	1.832* (1.039)	1.883* (1.126)	1.625 (1.180)	2.071* (1.091)	2.081* (1.142)	1.921* (1.049)
Effects in GlobalCrisis	9.142** (4.096)	-1.883** (0.855)	-0.531** (0.209)	11.91** (5.562)	7.346 (8.565)	0.0114 (0.0275)	
Effects in EUCrisis	8.410** (3.901)	-2.111*** (0.786)	-0.648*** (0.198)	0.344 (4.153)	8.826 (8.541)	0.0309 (0.0337)	
County FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	768	768	768	768	768	768	768
Groups	96	96	96	96	96	96	96
R² within	0.482	0.489	0.479	0.474	0.477	0.466	0.501

Note: This table presents results of model (1). The dependent variable is employment rate. Standard errors are clustered at county level and displayed in brackets. Significance are reported at 10% (*), 5%(**) and 1%(***).

Table 3.2: Effects of Local Banking Market Structure on Firm Creation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
RegionalBank	0.0963*** (0.0359)						0.0761** (0.0354)
GlobalCrisis*RegionalBank	0.0344 (0.0211)						
EUCrisis*RegionalBank	-0.0218** (0.0085)						
GeoScope		-0.0316*** (0.0083)					-0.0252*** (0.0071)
GlobalCrisis*GeoScope		-0.0129** (0.0050)					
EUCrisis*GeoScope		0.0069** (0.0031)					
Distance			-0.0077** (0.0031)				-0.0052 (0.0034)
GlobalCrisis*Distance			-0.0050* (0.0029)				
EUCrisis*Distance			-0.0001 (0.0009)				
Lerner				-0.0256 (0.0711)			0.0215 (0.0552)
GlobalCrisis*Lerner				0.3982*** (0.1462)			
EUCrisis*Lerner				-0.0031 (0.0618)			
HHI					0.2446** (0.1042)		
GlobalCrisis*HHI					0.0051 (0.0421)		
EUCrisis*HHI					-0.0305 (0.0235)		
Size						0.0000 (0.0002)	0.0002 (0.0003)
GlobalCrisis*Size						0.0008 (0.0005)	
EUCrisis*Size						0.0002 (0.0003)	
Structure	1.3718 (2.4656)	1.3668 (2.4676)	1.3669 (2.4737)	1.3673 (2.4651)	1.3639 (2.4683)	1.3673 (2.4719)	1.3693 (2.4695)
Effects in GlobalCrisis	0.1307*** (0.0426)	-0.0445*** (0.0122)	-0.0128** (0.0057)	0.3726** (0.1421)	0.2497** (0.1141)	0.0008 (0.0006)	
Effects in EUCrisis	0.0744** (0.0359)	-0.0246*** (0.0067)	-0.0079*** (0.0028)	-0.0288 (0.0330)	0.2141** (0.1024)	0.0002 (0.0002)	
County Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	28480	28480	28480	28480	28480	28480	28480
Groups	3941	3941	3941	3941	3941	3941	3941
R² within	0.1703	0.1703	0.1700	0.1700	0.1696	0.1692	0.1698

Note: This table presents results of model (1). The dependent variable is firm creation rate. Standard errors are clustered at county-sector level and displayed in brackets. Significance are reported at 10% (*), 5%(**) and 1%(***)

Table 3.3: Effects of Local Banking Market Structure on Industry Performance

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
RegionalBank	0.638** (0.262)						0.781*** (0.255)
GlobalCrisis*RegionalBank	-0.101*** (0.0247)						
EUCrisis*RegionalBank	0.0706** (0.0321)						
GeoScope		-0.0941** (0.0413)					-0.126*** (0.0452)
GlobalCrisis*GeoScope		0.00339 (0.0124)					
EUCrisis*GeoScope		0.0206 (0.0133)					
Distance			0.0266* (0.0140)				0.0454*** (0.0153)
GlobalCrisis*Distance			-0.0147*** (0.00359)				
EUCrisis*Distance			0.0122** (0.00474)				
Lerner				0.203 (0.213)			-0.0270 (0.194)
GlobalCrisis*Lerner				-0.251 (0.235)			
EUCrisis*Lerner				0.0644 (0.231)			
HHI					-0.258 (0.406)		
GlobalCrisis*HHI					-0.179*** (0.0442)		
EUCrisis*HHI					0.0719 (0.0641)		
Size						0.00482*** (0.00130)	0.00296*** (0.00110)
GlobalCrisis*Size						-0.00204* (0.00121)	
EUCrisis*Size						-0.00438* (0.00238)	
Structure	7.238*** (0.699)	7.238*** (0.697)	7.223*** (0.696)	7.234*** (0.695)	7.232*** (0.698)	7.250*** (0.694)	7.266*** (0.695)
Effects in GlobalCrisis	0.536** (0.269)	-0.0907** (0.0424)	0.0119 (0.0142)	-0.0488 (0.285)	-0.437 (0.413)	0.00278** (0.00134)	
Effects in EUCrisis	0.708*** (0.255)	-0.0735* (0.0409)	0.0388*** (0.0145)	0.267 (0.247)	-0.186 (0.410)	0.000435 (0.00239)	
County Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	26441	26441	26441	26441	26441	26441	26441
Groups	3375	3375	3375	3375	3375	3375	3375
R² within	0.0875	0.0862	0.0872	0.0857	0.0864	0.0866	0.0883

Note: This table presents results of model (1). The dependent variable is the total value added by firms at county-sector level. Standard errors are clustered at county-sector level and displayed in brackets. Significance are reported at 10% (*), 5%(**) and 1%(***)

Table 4: Financial Dependence: The Heterogeneous effects of Local Banking Market Structure

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
RegionalBank	0.510 (0.554)						0.454 (0.563)
FD*RegionalBank	0.371 (5.308)						1.371 (5.408)
GlobalCrisis*RegionalBank	-0.0732** (0.0312)						-0.0758 (0.0466)
GlobalCrisis*FD*RegionalBank	0.104 (0.120)						-0.00498 (0.417)
EUCrisis*RegionalBank	0.0604 (0.0380)						0.0968* (0.0556)
EUCrisis*FD*RegionalBank	-0.136 (0.132)						-0.408 (0.415)
GeoScope		0.0590 (0.0721)					0.0461 (0.0728)
FD*GeoScope		-1.778*** (0.632)					-1.781*** (0.637)
GlobalCrisis*GeoScope		0.00186 (0.0151)					-0.00905 (0.0197)
GlobalCrisis*FD*GeoScope		-0.0266 (0.0356)					-0.0191 (0.132)
EUCrisis*GeoScope		0.0117 (0.0145)					0.0134 (0.0190)
EUCrisis*FD*GeoScope		0.0220 (0.0387)					0.139 (0.123)
Distance			0.0421 (0.0290)				
FD*Distance			0.0188 (0.267)				
GlobalCrisis*Distance			-0.0149*** (0.00484)				
GlobalCrisis*FD*Distance			0.0143 (0.0250)				
EUCrisis*Distance			0.0167*** (0.00560)				
EUCrisis*FD*Distance			-0.0320 (0.0263)				
Lerner				0.759** (0.329)			
FD*Lerner				-5.436** (2.688)			
GlobalCrisis*Lerner				-0.535 (0.498)			

GlobalCrisis*FD*Lerner	4.924 (4.508)	
EUCrisis*Lerner	0.0722 (0.322)	
EUCrisis*FD*Lerner	1.974 (1.992)	
HHI	-1.588 (0.987)	
FD*HHI	16.41* (9.525)	
GlobalCrisis*HHI	-0.132** (0.0657)	
GlobalCrisis*FD*HHI	0.217 (0.395)	
EUCrisis*HHI	0.0897 (0.0839)	
EUCrisis*FD*HHI	-0.223 (0.469)	
Size		0.00302 (0.00255)
FD*Size		0.00530 (0.0217)
GlobalCrisis*Size		-0.00166 (0.00151)
GlobalCrisis*FD*Size		0.00288 (0.00655)
EUCrisis*Size		-0.000729 (0.00262)
EUCrisis*FD*Size		-0.00718 (0.00689)
County Effect	Yes	Yes
Sector Effect	Yes	Yes
Time Effect	Yes	Yes
Observations	26441	26441
Groups	3375	3375
R2 within	0.0781	0.0765

Note: This table presents results of model (2). The dependent variable is the total value added by firms at county-sector level. Standard errors are clustered at county-sector level and displayed in brackets. Significance are reported at 10% (*), 5%(**) and 1%(***).

Table 4a: Marginal Effects of Local Banking Market Structure among Sectors based on Financial Dependence

	RegionalBank	GeoScope	Distance	Lerner	HHI	Size
At P25	0.522 (0.371)	-0.0117 (0.0519)	0.0431** (0.0199)	0.488** (0.233)	-0.915 (0.654)	0.00260 (0.00170)
At P50	0.532* (0.285)	-0.0589 (0.0431)	0.0435*** (0.0156)	0.390* (0.211)	-0.480 (0.492)	0.00271** (0.00132)
At P75	0.539** (0.253)	-0.0965** (0.0398)	0.0438*** (0.0139)	0.311 (0.203)	-0.133 (0.431)	0.00280** (0.00114)

Note: This table presents marginal effects of local banking market structure based on the distribution of the external financial dependence of sectors at p25, p50 and p75 for the whole sample period. Significance are reported at 10% (*), 5%(**) and 1%(***).

Table 4b: Marginal Effects of Local Banking Market Structure in the Global Financial Crisis

	RegionalBank	GeoScope	Distance	Lerner	HHI	Size
At P25	0.470 (0.375)	-0.0112 (0.0536)	0.0324 (0.0204)	0.241 (0.368)	-1.007 (0.659)	0.00144 (0.00181)
At P50	0.482* (0.289)	-0.0589 (0.0448)	0.0330** (0.0160)	0.241 (0.305)	-0.567 (0.497)	0.00161 (0.00147)
At P75	0.491* (0.257)	-0.0969** (0.0415)	0.0336** (0.0142)	0.240 (0.275)	-0.217 (0.435)	0.00175 (0.00133)

Note: This table presents marginal effects of local banking market structure based on the distribution of the external financial dependence of sectors at p25, p50 and p75 in the global financial crisis. Significance are reported at 10% (*), 5%(**) and 1%(***)

Table 4c: Marginal Effects of Local Banking Market Structures in the European Sovereign Debt Crisis

	RegionalBank	GeoScope	Distance	Lerner	HHI	Size
At P25	0.563 (0.369)	-0.00224 (0.0519)	0.0546*** (0.0203)	0.604** (0.285)	-0.854 (0.658)	0.00182 (0.00279)
At P50	0.570** (0.281)	-0.0490 (0.0433)	0.0544*** (0.0161)	0.545** (0.265)	-0.424 (0.496)	0.00179 (0.00256)
At P75	0.576** (0.250)	-0.0862** (0.0402)	0.0542*** (0.0145)	0.498* (0.257)	-0.0805 (0.433)	0.00177 (0.00246)

Note: This table presents marginal effects of local banking market structure based on the distribution of the external financial dependence of sectors at p25, p50 and p75 in the European sovereign debt crisis. Significance are reported at 10% (*), 5%(**) and 1%(***)

Table 5: Robustness Test: Effects of Local Banking Market Structure on Temporary Employment

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
RegionalBank	7.347 (5.417)						9.045 (5.710)
GlobalCrisis*RegionalBank	2.388* (1.226)						
EUCrisis*RegionalBank	2.272*** (0.566)						
GeoScope		-2.311** (0.960)					-2.266** (1.001)
GlobalCrisis*GeoScope		0.289 (0.575)					
EUCrisis*GeoScope		0.00456 (0.348)					
Distance			-0.217 (0.383)				0.126 (0.403)
GlobalCrisis*Distance			-0.0691 (0.157)				
EUCrisis*Distance			-0.0291 (0.116)				
Lerner				1.673 (5.853)			3.313 (5.460)
GlobalCrisis*Lerner				19.84** (8.635)			
EUCrisis*Lerner				2.821 (5.488)			
HHI					2.666 (10.61)		
GlobalCrisis*HHI					-1.500 (2.272)		
EUCrisis*HHI					1.047 (1.554)		
Size						0.0163 (0.0356)	0.0293 (0.0300)
GlobalCrisis*Size						0.0928** (0.0422)	
EUCrisis*Size						-0.0585 (0.0521)	
Effects in GlobalCrisis	9.735* (5.705)	-2.023* (1.130)	-0.286 (0.419)	21.52** (9.089)	1.167 (10.95)	0.109** (0.0429)	
Effects in EUCrisis	9.619* (5.485)	-2.307** (0.949)	-0.246 (0.385)	4.494 (5.782)	3.713 (11.09)	-0.0422 (0.0424)	
County Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	768	768	768	768	768	768	768
Groups	96	96	96	96	96	96	96
R-sq: within	0.684	0.682	0.677	0.681	0.677	0.682	0.685

Note: This table presents results of model (1). The dependent variable is temporary employment rate. Standard errors are clustered at county level and displayed in brackets. Significance are reported at 10% (*), 5% (**) and 1% (***).

Table 6: Robustness Test: An Alternative measure of External Financial Dependence

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
RegionalBank	0.631 (0.456)						0.637 (0.466)
FD*RegionalBank	0.285 (2.330)						0.397 (2.393)
GlobalCrisis*RegionalBank	-0.0762*** (0.0219)						-0.105*** (0.0329)
GlobalCrisis*FD*RegionalBank	-0.132*** (0.0465)						-0.00488 (0.151)
EUCrisis*RegionalBank	0.0915*** (0.0268)						0.153*** (0.0403)
EUCrisis*FD*RegionalBank	-0.0841 (0.0589)						-0.353* (0.186)
GeoScope		-0.0619 (0.0584)					-0.0814 (0.0594)
FD*GeoScope		-0.0674 (0.269)					-0.0620 (0.272)
GlobalCrisis*GeoScope		0.0107 (0.0106)					-0.00445 (0.0139)
GlobalCrisis*FD*GeoScope		-0.0502*** (0.0133)					-0.0443 (0.0479)
EUCrisis*GeoScope		0.0217* (0.0115)					0.0222 (0.0149)
EUCrisis*FD*GeoScope		-0.0123 (0.0170)					0.0872 (0.0539)
Distance			0.00575 (0.0241)				
FD*Distance			0.196 (0.120)				
GlobalCrisis*Distance			-0.00927** (0.00362)				
GlobalCrisis*FD*Distance			-0.0272*** (0.00982)				
EUCrisis*Distance			0.0149*** (0.00429)				
EUCrisis*FD*Distance			-0.0165 (0.0118)				
Lerner				-0.151 (0.273)			
FD*Lerner				1.120 (1.196)			
GlobalCrisis*Lerner				-0.254 (0.340)			
GlobalCrisis*FD*Lerner				0.678 (1.714)			
EUCrisis*Lerner				0.213 (0.243)			

EU Crisis*FD*Lerner						-0.676 (0.861)	
HHI						-0.392 (0.716)	
FD*HHI						-0.731 (3.854)	
Global Crisis*HHI						-0.103** (0.0473)	
Global Crisis*FD*HHI						-0.410*** (0.158)	
EU Crisis*HHI						0.169*** (0.0625)	
EU Crisis*FD*HHI						-0.362* (0.220)	
Size						0.00388* (0.00209)	
FD*Size						0.00191 (0.0100)	
Global Crisis*Size						-0.00106 (0.00116)	
Global Crisis*FD*Size						-0.00902*** (0.00260)	
EU Crisis*Size						-0.00361* (0.00203)	
EU Crisis*FD*Size						-0.00186 (0.00301)	
County Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	26441	26441	26441	26441	26441	26441	26441
Groups	3375	3375	3375	3375	3375	3375	3375
R2 within	0.0780	0.0764	0.0778	0.0759	0.0770	0.0767	0.0790

Note: This table presents results of model (2). The dependent variable is the total value added by firms at county-sector level. External financial dependence is computed by total financial debts divided by total liabilities. Standard errors are clustered at county-sector level and displayed in brackets. Significance are reported at 10% (*), 5%(**) and 1%(***).

Table 6A: Marginal Effects of Local Banking Market Structure among Sectors based on Financial Dependence

	RegionalBank	GeoScope	Distance	Lerner	HHI	Size
At P25	0.652** (0.305)	-0.0604 (0.0423)	0.0217 (0.0164)	-0.0739 (0.193)	-0.449 (0.472)	0.00265* (0.00139)
At P50	0.664*** (0.234)	-0.0646* (0.0355)	0.0312** (0.0128)	-0.0159 (0.173)	-0.497 (0.363)	0.00261** (0.00107)
At P75	0.674*** (0.213)	-0.0683** (0.0333)	0.0394*** (0.0117)	0.0337 (0.166)	-0.538 (0.342)	0.00257*** (0.000944)

Note: This table presents marginal effects of local banking market structure based on the distribution of the external financial dependence of sectors at p25, p50 and p75 for the whole sample period. Significance are reported at 10% (*), 5%(**) and 1%(***).

Table 6B: Marginal Effects of Local Banking Market Structure in the Global Financial Crisis

	RegionalBank	GeoScope	Distance	Lerner	HHI	Size
At P25	0.588* (0.308)	-0.0553 (0.0432)	0.0132 (0.0165)	-0.223 (0.275)	-0.550 (0.475)	0.00134 (0.00153)
At P50	0.595** (0.238)	-0.0615* (0.0364)	0.0217* (0.0130)	-0.140 (0.239)	-0.613* (0.367)	0.000946 (0.00123)
At P75	0.600*** (0.217)	-0.0668* (0.0341)	0.0289** (0.0119)	-0.0676 (0.226)	-0.668* (0.346)	0.000612 (0.00111)

Note: This table presents marginal effects of local banking market structure based on the distribution of the external financial dependence of sectors at p25, p50 and p75 in the global financial crisis. Significance are reported at 10% (*), 5%(**) and 1%(***)

Table 6C: Marginal Effects of Local Banking Market Structures in the European Sovereign Debt Crisis

	RegionalBank	GeoScope	Distance	Lerner	HHI	Size
At P25	0.716** (0.303)	-0.0447 (0.0418)	0.0319* (0.0167)	0.0461 (0.230)	-0.344 (0.478)	-0.000174 (0.00219)
At P50	0.725*** (0.231)	-0.0495 (0.0352)	0.0408*** (0.0133)	0.0779 (0.213)	-0.406 (0.368)	-0.000290 (0.00198)
At P75	0.732*** (0.209)	-0.0536 (0.0332)	0.0484*** (0.0121)	0.105 (0.207)	-0.458 (0.345)	-0.000389 (0.00191)

Note: This table presents marginal effects of local banking market structure based on the distribution of the external financial dependence of sectors at p25, p50 and p75 in the European sovereign debt crisis. Significance are reported at 10% (*), 5%(**) and 1%(***)

APPENDIX: Definition of Variables

Variable	Definition
Dependent Variable	
<i>Employment_{d,t}</i>	Employment rate at county (department) level, computed by the ratio of total number of employees over the labor force.
<i>FirmCreation_{i,d,t}</i>	The formation rate of new firms at county-sector level, computed by the number of new firms registered per 1000 member of the labor force.
<i>IndustryPerformance_{i,d,t}</i>	The total value added by firms at county-sector level.
Local Banking Market Characteristics (<i>LocalMarket_{d,t-1}</i>)	
<i>RegionalBank_{d,t-1}</i>	Total credit market share of regional banks in county d.
<i>Distance_{d,t-1}</i>	Weighted average distance (kilometers, logarithm) between the main city of county d and banks' headquarters. For national banks ¹ , we take the mean value of distance from Paris to county d.
<i>GeoScope_{d,t-1}</i>	Weighted average number of departments (logarithm) where banks located in county d are operating.
<i>Lerner_{d,t-1}</i>	Weighted average bank's Lerner Index of county d. Lerner Index is computed by $(price - marginal\ cost)/price$, price is proxied by total interest income divide by total earning assets, marginal cost is computed through a translog cost function with three cost inputs: (1) cost of capital, (2) cost of labor inputs and (3) cost of physical assets.
<i>HHI_{d,t-1}</i>	Herfindhal-Hirschmann Index of county d, computed by summing the square of credit market share of banks in county d.
<i>Size_{d,t-1}</i>	Weighted average size of regional banks operating in county d, size proxied by logarithm of total assets.
Controls	
Local economy control	
<i>Prospect_{d,t-1}</i>	The prospect of local economic development in county d, proxied by the logarithm of business climate indicator
Sector control	
<i>FD_i</i>	The external financial dependence of sector i, computed by the median value of firm's financial debts divided by its total assets within sector i in pre-crisis period.
<i>Structure_{i,d,t-1}</i>	Industry structure in county d. Computed by the ratio of total sales of sector i over total sales of all sectors in county d.
Time control	
<i>Year</i>	Dummies indicating each year.
Crisis control	
<i>Crisis</i>	Dummy variable indicating crisis period, equals to one in 2007-2008 or 2011-2012, otherwise zero.
<i>GlobalCrisis</i>	Dummy variable indicating global financial crisis period, equals to one in 2007-2008, otherwise zero.
<i>EUCrisis</i>	Dummy variable indicating European sovereign debt crisis period, equals to one in 2011-2012, otherwise zero.

¹ Banks belong to bank group *BNP PARIBAS, Société Générale, La Banque Postale, Crédit Lyonnais* or *Crédit Coopératif*.