

Working Paper No. 2514

Economics, Finance and Accounting Working Paper Series

Guglielmo Maria Caporale and Matteo Alessi

Local Banking and Prosperity: Some  
Empirical Evidence for Italy

June 2025

<https://www.brunel.ac.uk/economics-and-finance/research-and-phd-programmes/research-papers>

# **LOCAL BANKING AND PROSPERITY: SOME EMPIRICAL EVIDENCE FOR ITALY<sup>§</sup>**

**Guglielmo Maria Caporale\***  
**Brunel University of London**

**Matteo Alessi**  
**Federkasse, Rome**

**June 2025**

## **Abstract**

The aim of this paper is to investigate the relationship between local banking and prosperity at the municipal level in Italy from 2011 to 2021. The latter variable is measured using an index proposed by Sen (1976). The analysis is based on panel regressions including a measure of local banking and other control variables at the municipality level. The static results indicate a positive and significant association between the presence of local banking and prosperity. They are confirmed by the dynamic panel estimates, and are robust to using different proxies for local bank presence. Their implication is that cooperative banking plays a crucial role in promoting prosperity at the local level.

**JEL classification:** I31, G21

**Keywords:** Well-Being, Cooperative banking, static and dynamic panels, GMM

\*Corresponding author. Email: [Guglielmo-Maria.Caporale@brunel.ac.uk](mailto:Guglielmo-Maria.Caporale@brunel.ac.uk)

<sup>§</sup>The authors are grateful to Yiorgos Alexopoulos, Silvio Goglio Giovanni Ferri and Juan Sergio Lopez and other participants at the Euricse International Workshop on “Cooperative Finance and Sustainable Development” for their useful comments and suggestions. The views expressed are those of the authors and do not necessarily reflect those of Federkasse.

## 1. Introduction

In recent years, there has been an increasing interest in indicators of well-being other than GDP. In particular, the capability approach (pioneered by Sen, 1985, 1986) defines individual well-being as a function of a set of achievements (or 'functionings'), i.e. what one manages to do or be in various life domains, as well as the freedom one has in choosing among such achievements ('capabilities'). The aim of this paper is to contribute to this strand of research by investigating whether Cooperative Credit Banks (CCBs), as a result of their distinct characteristics and orientation, play a key role in promoting prosperity at the municipal level, where widespread prosperity is measured using an index, originally proposed by Sen (1976), in the case of Italian municipalities. More specifically, in the empirical investigation we examine data for Italian municipalities and on cooperatives banks during the period 2011 - 2021. These are taken from three main sources: (i) the Department of Finance of the Italian Ministry of Economy and Finance, from which income data are obtained; (ii) a private statistical database of Federcasse (the Italian Federation of Cooperative Banks), which provides municipal-level information on the distribution of cooperative bank branches, as well as loan and deposit data; (iii) the Italian National Statistics Office (ISTAT).

The static results indicate a positive and significant association between the presence of local banking and prosperity. They are confirmed by the dynamic panel estimates, and are robust to using different proxies for local banking. Their implication is that cooperative banking plays a crucial role in promoting prosperity, primarily through employment opportunities rather than the creation of value added.

The remainder of the paper is structured as follows: Section 2 reviews both the theoretical and empirical literature in this area. Section 3 describes the data and presents some preliminary statistics. Section 4 outlines the empirical methodology and discusses the estimation results. Section 5 offers some concluding remarks.

## 2. Literature Review

The present study is related to two strands of literature, the first analysing the determinants of various measures of well-being, the second focusing on the effects of Local Banking on the socio – economic performance of territories.

Regarding the former, numerous indices of well-being were originally proposed by Sen (1976) in a seminal analysis of real national income. A number of empirical studies then followed. For instance, Cannari and D'Alessio (2002) undertook an analysis of 16 Italian regions (the majority of

which corresponded to existing regions) during the period 1995-2000. In their paper the estimation of the Gini index of household disposable incomes is based on periodic surveys of household income and wealth conducted by the Bank of Italy. This index is then utilised to calculate the average income at the "regional" level. Ciani and Torrini (2019) employed the same database over the period from 2000 to 2016. Their findings point towards geographical disparities, since income inequality, as measured by the Gini index, is found to be persistently greater in Southern Italy than in the Centre-North area. However, the gap appears to be narrowing in recent years. Income distribution is also investigated by D'Urso et al. (2020), who focus on the measurement of well-being in Italian regions between 2010 and 2016; Murias et al. (2012), who analyse Italian and Spanish data for 2005; Bertin et al. (2018), who present selected opinions on 41 indicators of the Italian regions in 2012 (see also the related paper by Costa et al., 2023).

The other strand of this literature investigates the effects of local banking on the socio – economic performance of territories. For instance, Caporale et al. (2016) present evidence on the contribution of local banking to local economic growth at the county level (i.e. the Italian 'province') in Italy. Comprehensive data are used which include control variables for social and human capital, as well as indicators of the quality of local infrastructure and the production structure of the local economy. A linear within-estimator technique with fixed effects is applied to a modified version of the Barro regression to address the econometric issues of reverse causality and estimation bias resulting from unobserved, district-specific influences. The presence of local banks is found to have a non-linear effect on local economic growth. In counties with a high loan market share, the relationship is positive and statistically significant; in those with a low share, especially in north-east Italy, it is negative. Coccorese and Shaffer (2021) analyse the impact of cooperative banks on local economic development. Data from Italian municipalities suggest that, compared to conventional banks, cooperative banks are more closely associated with higher income, employment, and firms' growth rates. Other relevant studies have investigated the effect of CCBs on income distribution. Minetti et al. (2021) examine the impact of various credit institutions on income inequality. Specifically, they analyse Italian provincial credit markets between 2001 and 2011, and find that cooperative banks mitigate income inequality in local communities more effectively than commercial banks. Their results also suggest that it is the specific nature and orientation of cooperative banks, rather than their lending technologies, which improves income distribution. However, the impact of cooperative banking on inequality appears to be partly reduced by reduced dynamism in local economies, particularly lower migratory flows and business turnover. Peruzzi et al. (2023) investigate whether local cooperative banks played a role in mitigating income inequality within Italian municipalities in the wake of the major crises that have affected Europe from 2008 to 2015, namely

the financial and sovereign debt crises. Their empirical findings suggest that, despite an overall increase in income inequality during the post-crisis period, municipalities hosting at least one cooperative bank branch experienced comparatively smaller increases.

### 3. Data and Descriptive Analysis

#### 3.1 Data Sources and Definitions

As a measure of prosperity, we use the Index of Widespread Prosperity (IWP) originally proposed by Sen (1976), which is constructed as follows:

$$Y_{it} = y_{it}(1 - G_{it}) \quad (1)$$

where  $y_{it}$  is the average real household income in the  $i$ -th municipality at time  $t$ , and  $G_{it}$  is the Gini index value for the corresponding distribution.  $Y_{it}$  can be interpreted as a social welfare function, where the Gini index represents the proportional loss in social welfare due to income inequality. As municipal-level income distribution data are unavailable, we calculate them on the basis of income data. Specifically, we downloaded spreadsheets from the Department of Finance website which provide information on the distribution of taxable income for each of the 7,905 Italian municipalities between 2011 and 2021. For each municipality and year, we obtain the frequency and average income of five income classes. Using this information, we then compute the indicator  $G_{it}$  commonly used in literature on inequality. The variable  $y_{it}$  was deflated using the inflation rate.

As a measure of local banking, we use the variable  $LB_{it}$ , defined as the ratio of the number of branches of CCBs over the total number of branches in the  $i$ -th municipality at time  $t$ . This is a proxy for the presence of CCBs in the local community. We also include a set of control explanatory variables, such as the (Active) population  $POP_{it}$ , the number of productive units  $PROD_{it}$ , and the number of workers as a proxy of employment  $EMPL_{it}$ .

The data for the empirical analysis are taken from three main sources: (i) the Italian Ministry of Economy and Finance's Department of Finance (MEF); (ii) Federcasse's private statistical database (Federcasse is the Italian Federation of Cooperative Banks); and (iii) the Italian National Statistics Office (Istat). The sample period goes from 2011 to 2021. The full list of variables and their sources is reported in Table 1.

### 3.2 Descriptive Statistics

Figure 1 shows a map of Italy with the IWP calculated for all municipalities for the year 2021. It is immediately apparent that there is significant disparity between the northern and southern regions of Italy. This discrepancy is further substantiated by the statistics presented in Table 2. The mean IWP for the southern region of Italy is approximately 30 percent lower than that of the north. This phenomenon can be attributed to two key factors. First, the South of Italy has consistently recorded a lower level of per capita real income. Second, this geographical area has also experienced a higher level of income inequality. As in Costa et al. (2023), the correlation between  $y_{it}$  and  $G_{it}$  is found to be negative. This justifies the analysis using the IWP index: if the correlation were positive, this indicator would simply have replicated those for income or income inequality.

Tables 3 contains the summary statistics for the main variables over the sample period 2010 – 2021. The mean for the IWP  $Y_{it}$  is 10271, with a high standard deviation. The share of CCB branches over total branches is on average 30 per cent and provides information about the local presence of this type of banks.

### 3.3 Cooperative Credit Banks in Italy

The Cooperative Credit Banks (Banche di Credito Cooperativo) have a long history in Italy. The Cooperative Credit Bank was established 140 years ago in Loreggia. At present, there are 222 CCBs operating within the Italian territory, comprising 4,089 branches (representing 20.4% of the total number of branches) distributed across 2,516 municipalities and 102 provinces. In 740 municipalities, CCBs are the sole provider of banking services. These institutions provide loans amounting to 138.9 billion euros, with an estimated funding capability of 195.2 billion euros. A salient feature of CCBs is their engagement in local and regional activities. More precisely, approximately 95% of their loans are granted within the same geographical area where savings are collected, with 71% of savings being reinvested into the local real economy. The longevity and consistency of this model are not accidental; rather, they are the result of specific factors that are essential components of the CCBs model (and of cooperative finance in general). This is evident from Article 2 of the CCBs Statute, which states: “The purpose of the institution is to prioritise the interests of its members and local communities within the scope of its operations and services.” This objective is pursued through the enhancement of their moral, cultural and economic environment, with a particular emphasis on the promotion of cooperation and educational initiatives in the domains of savings and welfare. Additionally, these institutions seek to foster social cohesion and encourage the responsible and sustainable growth of the geographical area within which they operate. In order to

pursue such challenging objectives, CCBs require governance instruments that provide strong incentives and direction. It can be argued that corporate governance based on cooperative principles is the most effective instrument for this purpose. The fundamental principles of a cooperative, encompassing those pertaining to capital voting, restrictions on capital holdings, limitations on proxies, and the selection of directors from among the members, have significant consequences in terms of promoting congruence between behaviour and objectives. The optimisation of benefits for members, customers and the community is not impeded by the need to maximise the return on investment (profit is a constraint rather than an objective; it is essential to increase capitalisation and the capacity to expand credit, rather than to remunerate the individual investor). Judicious risk-taking is an additional consequence, given the established positive correlation between risk and return on capital. The core objective of this solicitation is to enhance the services provided by the bank, with the CCB members expressing a preference for contributing to this enhancement rather than prioritising the financial return on their shares. The financial soundness of such institutions is ensured by the incorporation of the prevailing profits. Furthermore, their territorial rootedness is reinforced by cooperative governance. Unlike conventional banking institutions, cooperative banks do not have the ability to relocate. Moreover, it is important to note that any mergers or acquisitions by other banks (which can only occur within the same category) follow a different logic to that typically observed in the banking industry. Besides, the selection of directors from within the membership further strengthens the connection with the territory, thereby reflecting the corporate base. An additional crucial element is legislation, namely the set of regulatory and operational constraints that may either facilitate or impede the ability to operate within the selected vision and objective function.

## 4. Econometric Analysis

### 4.1 The Baseline Regression

The determinants of IWP for Italian municipalities are analysed following a similar approach to Costa et al. (2023). In the first step, we specify a baseline static model as follows:

$$\text{Log}(Y_{i,t}) = \alpha_0 + \beta_1 LB_{i,t} + \beta_2 \text{Log}(Pop_{i,t}) + \beta_3 \text{Log}(Prod_{i,t}) + \beta_4 \text{Log}(Empl_{i,t}) + \gamma_{i,t} + \varepsilon_{i,t} \quad (2)$$

where the dependent variable  $Y_{it}$  is regressed on  $LB_{i,t}$ ,  $Pop_{i,t}$ ,  $Prod_{i,t}$  and  $Empl_{i,t}$ , which are defined as before. Time and random effects<sup>1</sup> are included in the regression. The results are shown in Table 4. The coefficient associated with the Local Banking proxy is found to be positive and significant.

---

<sup>1</sup> The choice of random effects was motivated by the results of the Hausmann test.

Municipalities with a higher presence of CCBs tend to have a higher level of prosperity. From a theoretical point of view, CCBs have some potential advantages in terms of their objectives and attributes. Their small size and local orientation are expected to mitigate information asymmetries between lenders and borrowers. Credit institutions that are actively engaged in community life can establish connections enabling them to gather information that would be prohibitively costly for external parties. Such information can be used to increase lending activities, thus promoting greater access to credit and ultimately reducing income inequality. The presence of CCBs thus affects both components of prosperity, namely there are potential income as well as distributional effects. The coefficients on the control variables are statistically significant. The sign for population is negative, namely municipalities with higher population sizes appear to be characterised by lower prosperity. This is consistent with the results on income inequality reported by Peruzzi et al. (2023). The positive coefficient on the employment proxy confirms our prior that higher employment has a positive impact both on real disposable income and on income inequality. Finally, there is no obvious interpretation for the negative sign of the coefficient on production units.

#### 4.2 Dynamic Regressions

In the second step we estimate a dynamic model specified as follows:

$$\text{Log}(Y_{i,t}) = \alpha_0 + \beta_1 \text{Log}(Y_{i,t-1}) + \beta_2 LB_{i,t} + \beta_3 \text{Log}(Pop_{i,t}) + \beta_4 \text{Log}(Prod_{i,t}) + \beta_5 \text{Log}(Empl_{i,t}) + \gamma_{i,t} + \varepsilon_{i,t} \quad (3)$$

The estimation method is the generalized method of moments (GMM) with regressions in first differences (see Arellano and Bond, 1991), which is based on a two-step estimator robust to heteroscedasticity. Fixed effects are included in the specification. The GMM instruments are only used for the lagged dependent variable ( $LLP_{i,t-1}$ ), whilst the other variables are treated as strictly exogenous. A robust AR(2) test for the absence of second-order serial correlation in the first-difference residuals is carried out. This method can not only deal with the dynamic panel bias but also alleviate possible endogeneity problems caused by reverse causality.

The results are shown in Table 5. The coefficient associated with the lagged value of  $Y_{it}$  is positive and significant, implying that dynamics play an important role for the IWP. The coefficient on the local banking proxy remains positive and significant, confirming the results obtained in the static regressions, namely the presence of CCBs appears to play a crucial role in promoting municipal prosperity also in a dynamic context. The signs and significance levels of the coefficients on the control variables are consistent with those from the static regressions.

#### 4.3 Robustness tests



Next, in order to check for robustness, we use alternative proxies for local banking, more precisely the ratio of CCB's loans to Total Loans in the municipality (LB\_2), and the ratio of CCB's deposit to Total Deposits in the municipality (LB\_3). The estimation results for both static and dynamic regressions are reported in Table 6–9. The coefficients on the alternative measures of local banking are positive and significant, and thus confirm the baseline estimation results, as do those on the control variables, both in terms of their signs and significance levels. Thus the analysis as a whole provides clear evidence that Cooperative Credit Banks exert a positive influence on municipal prosperity.

## 5. Conclusions

This paper investigates the relationship between prosperity and local banking at the municipal level in Italy from 2011 to 2021. To measure prosperity, we use an index proposed by Sen (1976). In the first step we specify a baseline static model and run panel regressions with random effects, whilst in the second we analyse the dynamic features of the panel. The estimation method is the generalized method of moments (GMM) with regressions in first differences (see Arellano and Bond, 1991), which uses a two-step estimator robust to heteroscedasticity. Finally, we conduct robustness tests using alternative proxies for local banking. The static results suggest a positive and significant impact of local banking on prosperity, and are confirmed by the dynamic panel estimates and the use of different measures for local banking.

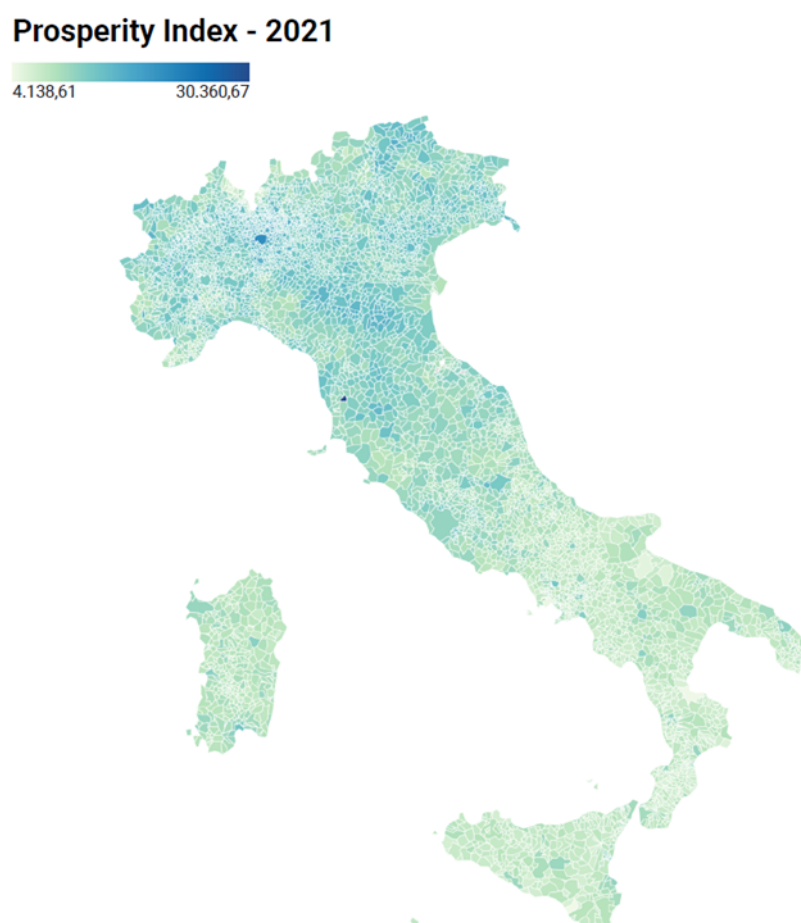
Our findings have important policy implications. Specifically, they suggest that it is crucial to preserve the fundamental principles of cooperative banking in order to maintain their effectiveness in promoting prosperity at the local level. Consequently, policy makers should encourage a diversified banking sector including local banks operating under cooperative governance, since this reduces income inequality and increases local prosperity. A positive impact on well-being occurs when the banking sector includes a sufficient number of banks such as CCBs that focus on relationship lending, with firms actively seeking long-term banking relationships.

## References

- [1] ARELLANO M – BOND S.R. (1991), “Some tests of Specification for Panel Data: Monte Carlo Evidence on Employment equations”, *Review of Economic Studies*, vol. 58, pp 277 - 297
- [2] BERTIN, G., L. CARRINO AND S. GIOVE (2018), “The Italian Regional Well-Being in a Multi-expert Non-additive Perspective”, *Social Indicators Research*, 135, 15-51.
- [3] CANNARI, L. AND G. D’ALESSIO (2002), “La distribuzione del reddito e della ricchezza nelle regioni italiane”, *Rivista economica del Mezzogiorno*, 16, 809-47.
- [4] CAPOREALE, G. M., DI COLLI, S., DI SALVO, R., AND LOPEZ, J. S. (2016). Local banking and local economic growth in Italy: Some panel evidence. *Applied Economics*, 48(28), 2665–2674.
- [5] CIANI, E. AND R. TORRINI (2019), “The geography of Italian income inequality: recent trends and the role of employment”, *Bank of Italy Occasional Paper* 492.
- [6] COCCORESE, P., SHAFFER, S., 2021. Cooperative banks and local economic growth. *Regional Studies*. 55 (2), 307–321.
- [7] COSTA, M., DELBONO, F., AND LINGUITI, F. (2023). Cooperative movement and widespread prosperity across Italian regions. *Annals of Public and Cooperative Economics*, 94(2), 475–494.
- [8] DECANCO, K., M. FLEURBAEY AND E. SCHOKKAERT (2015), “Inequality, Income, and Well-Being”, in Atkinson, A. and F. Bourguignon (eds.), *Handbook of Income Distribution*, Volume 2A, Amsterdam, Elsevier, PP. 73-140.
- [9] DECANCO, K. AND E. SCHOKKAERT (2016), “Beyond GDP: Using Equivalent Incomes to Measure Well-Being in Europe”, *Social Indicators Research*, 126, 1-55.
- [10] D’URSO, P., L. ALAIMO, L. DE GIOVANNI AND R. MASSARI (2020), “Well-Being in the Italian Regions Over Time”, *Social Indicators Research*, doi.org/10.1007/s11205-020-02384-x.
- [11] EZCURRA, R. (2009), “Does Income Polarization Affect Economic Growth? The Case of the European Regions”, *Regional Studies*, 43, 267-85.
- [12] MINETTI, R., MURRO, P., PERUZZI, V., 2021. Not all banks are equal: Cooperative banking and income inequality. *Econ. Inq.* 59 (1), 420–440.
- [13] MURIAS, P., S. NOVELLO AND F. MARTINEZ (2012), “The Regions of Economic Well-being in Italy and Spain”, *Regional Studies*, 46, 793-816.
- [14] MUSSIDA, C. AND M. L. PARISI (2020), “Features of Personal Income Inequality Before and During the Crisis: An Analysis of Italian Regions”, *Regional Studies*, 54, 472-82.
- [15] PALOMINO, J. (2019), “Regional well-being in the OECD disparities and convergence profiles”, *Journal of Economic Inequality*, 17, 195-218.
- [16] PERUZZI, V. MURRO, P., AND DI COLLI, S., 2023. "The distributional impact of local banking. Evidence from the financial and sovereign-debt crises," *European Journal of Political Economy*, Elsevier, vol. 80(C).
- [17] PINAR, M. (2019), “Multidimensional Well-Being and Inequality Across the European Regions with Alternative Interactions Between the Well-Being Dimensions”, *Social Indicators Research*, 144, 31-72..
- [18] SEN, A. (1976), “Real National Income”, *Review of Economic Studies*, 43, 19-39.
- [19] SEN, A. (1985), *Commodities and Capabilities*, Amsterdam, North-Holland.
- [20] SEN, A. (1986), *The Standard of Living*, Cambridge, Cambridge University Press
- [21] VENERI, P. AND F. MURTI (2016), “Where is Inclusive Growth Happening? Mapping Multi-dimensional Living Standards in OECD Regions”, *OECD WP* 2016/1.

## List of Figures and Tables

*Figure 1. Prosperity Index - 2021*



*Note.* Index of Widespread Prosperity for the year 2021

*Source:* Authors' calculations using data from MEF

**Table 1. List of variables**

Variable	Definition	Source
$Y_{i,t}$	Index of Widespread Prosperity	MEF
$LB_{it}$	Share of CCB's branches on Total Branches	Federacasse
$POP_{it}$	Active Population <sub>t</sub>	Istat
$PROD_{it}$	Local productive units in the municipality	Istat
$EMPL_{it}$	Local workers in the municipality	Istat

**Table 2. Regional averages**

	$Y_{it}$	$y_{it}$	$G_{it}$
<i>North - West</i>	11805	19823	0.40387
<i>North - East</i>	11410	19352	0.41022
<i>Centre</i>	10031	17426	0.42356
<i>South</i>	7862	13952	0.43358
<i>Islands</i>	7889	13961	0.43227

**Table 3. Summary statistics for the main variables**

	Mean	St. Dev	Minimum	Maximum
$Y_{it}$	10271	2280	2477	30360
$LB_{it}$	0.234	0.324	0	1
$POP_{it}$	7669	42656	29	2873494
$PROD_{it}$	610	4368	0	285618
$EMPL_{it}$	2162	16819	0	1051072

*Note.* Mean, maximum, minimum and standard deviation are calculated over the sample period 2010 – 2021  
*Source:* MEF, Istat, and Federacasse

**Table 4. Results: baseline static regression**

Dependent variable: <i>LOG(Y)</i>		
<i>Regressors</i>		
<i>LB</i>	0,011408	** *
<i>Log(Pop)</i>	-	**
	0,015233	*
<i>Log(Prod)</i>	-	**
	0,026330	*
<i>Log(Empl)</i>	0,046266	** *
<i>Observations</i>	58577	
<i>Random Effects</i>	Yes	
<i>Time Effects</i>	Yes	
<i>R<sup>2</sup></i>	0,179600	

Note: Random-effects GLS regression. \*, \*\* and \*\*\* indicate statistically significance respectively at 10%, at 5% and at 1%.

Source: Authors' calculations using data from MEF, Federcasse and Istat

**Table 5. Results: dynamic regression**

Dependent variable: <i>LOG(Y)</i>		
<i>Regressors</i>		
<i>Log(Y)(-1)</i>	0,303522	***
<i>LB</i>	0,111930	***
<i>Log(Pop)</i>	-0,570797	***
<i>Log(Prod)</i>	-0,133386	***
<i>Log(Empl)</i>	0,021133	***
<i>Observations</i>	46952	
<i>AR(2) test (p-value)</i>	0,5675	

Note: Arellano - Bond two-step estimation. \*, \*\* and \*\*\* indicate statistically significance respectively at 10%, at 5% and at 1%.

Source: Authors' calculations using data from MEF, Federcasse and Istat

**Table 6. Robustness test: static regression for LB\_2**

Dependent variable: <i>LOG(Y)</i>	
<i>Regressors</i>	
<i>LB_2</i>	0,003896 **
<i>Log(Pop)</i>	- **
<i>Log(Prod)</i>	0,015141 *
<i>Log(Empl)</i>	- **
	0,026393 *
	0,046292 **
	*
<i>Observations</i>	58564
<i>Random Effects</i>	Yes
<i>Time Effects</i>	Yes
<i>R<sup>2</sup></i>	0,179800

*Note:* Random-effects GLS regression. \*, \*\* and \*\*\* indicate statistically significance respectively at 10%, at 5% and at 1%.  
*Source:* Authors' calculations using data from MEF, Federcasse and Istat

**Table 7. Robustness test: dynamic regression for LB\_2**

Dependent variable: <i>LOG(Y)</i>	
<i>Regressors</i>	
<i>Log(Y)(-1)</i>	0,331367 ***
<i>LB_2</i>	0,007961 ***
<i>Log(Pop)</i>	-0,591711 ***
<i>Log(Prod)</i>	-0,137750 ***
<i>Log(Empl)</i>	0,021524 ***
<i>Observations</i>	46930
<i>AR(2) test (p-value)</i>	0,6732

*Note:* Arellano - Bond two-step estimation \*, \*\* and \*\*\* indicate statistically significance respectively at 10%, at 5% and at 1%.  
*Source:* Authors' calculations using data from MEF, Federcasse and Istat

**Table 8. Robustness test: static regression for LB\_3**

Dependent variable: LOG(Y)	
Regressors	
LB_3	0,005122 **
Log(Pop)	- **
Log(Prod)	0,015029 *
Log(Empl)	- **
	0,026452 *
	0,046260 **
Observations	58564
Random Effects	Yes
Time Effects	Yes
R <sup>2</sup>	0,179100

Note: Random-effects GLS regression. \*, \*\* and \*\*\* indicate statistical significance respectively at 10%, at 5% and at 1%.

Source: Authors' calculations using data from MEF, Federcasse and Istat

**Table 9. Robustness test: dynamic regression for LB\_3**

Dependent variable: LOG(Y)	
Regressors	
Log(Y)(-1)	0,325866 ***
LB_3	0,021309 ***
Log(Pop)	-0,594213 ***
Log(Prod)	-0,136720 ***
Log(Empl)	0,021434 ***
Observations	46930
AR(2) test (p-value)	0,6835

Note: Arellano - Bond two-step estimation. \*, \*\* and \*\*\* indicate statistical significance respectively at 10%, at 5% and at 1%.

Source: Authors' calculations using data from MEF, Federcasse and Istat