

The birth of new enterprises, tax evasion and usury: evidence for Italy¹

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Abstract

The study of the factors that affect new firm birth is a topic of interest to many parties, both scholars and policy makers.

Literature has investigated regional variation in firms birth rate focusing on demographic factors (population growth), entrepreneurial environment characteristics (industrial specialization, industrial intensity, R&D), financial and economic development of the area (credit market, income growth rate, unemployment), socio-economic characteristics (immigration, social capital, human capital) physical and social infrastructure (regional diversity and creativity). In this paper, we investigate whether the criminal shape of a territory can affect new firms formation. Precisely, we focus the attention of two specific criminal behaviors, both of them influencing the capability of a firm to raise money to set up a firm. First, usury crimes, that are an alternative channel to legal credit market in providing capital to new firms. Second, tax evasion that has a contrasting effect on the ability of a territory to generate new firms. On the one hand, tax compliant firms in a territory where tax evasion is widespread afford unfair competition; in this sense, "honest" entrepreneurs should be discouraged from setting up new business. On the other hand, since tax evasion can be chosen as a source of self-financing to firms, "less honest" entrepreneurs might have a higher

¹ A previous version of this paper has been presented at XIII EBES Conference (Istanbul, 5-7 June 2014)

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incentive to start their business in areas characterized by high tax evasion. As we will see, our results suggest that this latter effect prevails.

JEL classifications: C33, H26, K42, M13

Key words: new firm birth; tax evasion; usury

Introduction

The study of the factors that affect new firm birth is a topic of interest to many parties, both scholars and policy makers. Economic development cannot proceed without a lively entrepreneurial sector, and the role of entrepreneurship as a driver of economic progress has been investigated since the seminal analysis of Schumpeter (1911).

It is well known that a well working financial system is a necessary ingredient for economic growth, since it allows to rise both the quality and the quantity of investment. In a different perspective, there is a large literature investigating how the financial markets conditions affect the real variables during the business cycle, through the credit channel and/or the balance sheet effects.

In this paper, we aim to investigate the factors that affect the decision to set up a new business, in order to explain the variation of new firms' birth rate across Italian provinces.

Literature has investigated regional variation in firms birth rate focusing on demographic factors (population growth), entrepreneurial environment characteristics (industrial specialization, industrial intensity, R&D), financial and economic development of the area (credit market, income growth rate, unemployment), socio-economic characteristics (immigration, social capital, human capital) physical and social infrastructure (regional diversity and creativity). The problem that we are going to address to deepen the existing knowledge concerns the relationship between new business creation, tax evasion and access to legal and illegal credit. This relationship is justified for the European countries of the Mediterranean area and for many transition economies because they are characterized by a considerable underground production, a production structure almost completely unbalanced on the small firm size and high barriers to access to credit in a purely bank-centered financial system.² The typical features of small businesses (diminutive size, little

² In Italy about 96% of all firms employ 1-9 employees (4,379,107 of 4,581,545 firms), of which about 16% are individual firms.

commitment of shareholder capital, lack of transparency) make it nearly impracticable for them to access to bond and equity markets directly. For that matter, a large part of their debt is bank debt therefore they are most severely affected by the tightening credit supply, and they may be pushed to alternative and not legal channel providing funding, namely the illegal credit market (usury market) and/or tax evasion.

According to the ECB Survey on SME (small-medium entrepreneur) access to finance (a demand-side survey, see ECB, 2013) and the OECD Scoreboard (a supply-side survey, see OECD, 2013), following the aftermath of 2007 financial crisis, conditions to access to finance remained tight for SMEs and entrepreneurs in the Euro area economies. Since 2009, the first year of the ECB survey, Euro area SMEs reported a continuous decline in profits, to which SMEs in Italy and Spain contributed strongly. In these latter countries, a very large percentage of firms (50%) reported, still in 2013, that access to finance is a very pressing problem, with a peak recorded in Greece (61%), whereas the corresponding percentage shrinks to 30% in Germany and Belgium. This suggest that credit market conditions are very diverse across countries, with financial strains in vulnerable Euro countries (“PIGS”).³

Literature review and motivation

The topic of this paper aims to set a bridge between two main branches of literature. First, regional variation in new firm formation, with a special attention to the role of the financial markets.

³ The other-way interaction between underground economy/tax evasion and credit market is well documented as well. Recent analysis of Italian financial markets (Cannari and Gobbi, 2010) suggests that the considerable incidence of the underground economy is among the causes that explain the gap in financial development in southern compared to northern regions. Other studies have demonstrated that the presence of illegal activities in the southern regions significantly increases the interest rates (Bonaccorsi di Patti, 2009), while underground economy (namely illicit work) has a significant and negative effect of the credit to GDP ratio (Gobbi and Zizza, 2007).

Secondly, our analysis is related to the literature examining the nexus between financial markets and underground activities. Given that credit is a crucial variable allowing the birth of a new firm, the "bridge" is in the role of illegal credit, either in the form of usury credit market and in the form of tax evasion.

With regard to the determinants of regional variation in new firm formation, cross countries studies (Klapper et al. 2010) envisage in quality of the regulatory and legal environment, access to finance, and business environment the key explanatory variables for firm birth rate. Similarly, studies investigating new firm formation within a single country (Bartik, 1989, Armington and Acs, 2002; Lee et al. 2004; Rocha and Sternberg, 2005) find as significant explanatory variables tax variables, industrial density, population and income growth, selected public services (fire protection, welfare), financial market variables, human capital, social infrastructures such as creativity and diversity, measures of geographical proximity.

With regard to the literature investigating the nexus between informal economy/tax evasion and financial markets, the cost of accessing credit is ultimately the opportunity cost of operating formally (Dabla-Norris & Feltenstein 2005; Straub 2005; Antunes & Cavalcanti 2007, Argentiero et al. 2015). This also explains why smaller firms which are by their nature characterized by a higher degree of informational opacity face higher cost of access to credit (Berger and Udell, 1998) and, in turn, why a larger share of firms that go underground are small/medium size firms. Since access to credit is vital not only form for firms' investment and growth (firms' growth), but at first for firms' birth, informational frictions, the choice to be underground and the new business creation are all strictly interconnected.

Although taxation is seen as one of the most important determinants in affecting the decision to start a new firm, none of the studies has so far investigated the role of tax evasion on entrepreneurship. This is an a relevant issue since beyond the commonly envisaged implication that tax evasion ingenerates unfair competitiveness, a more subtle analysis reveals that it can also operate as an additional source of funding, especially valuable in presence of credit constraints. A similar effect is

played by illegal sources of credit, namely the usury market. We are aware the resorting to illegal channel for providing funding to an entrepreneurial activity has very different effects in the short and in the long run. In other words, this decision could turn out to be short sighted. However, the present article builds on this line of thinking since in presence of credit rationing, many small and medium sized firm might be compelled to adopt such approach.

The data set

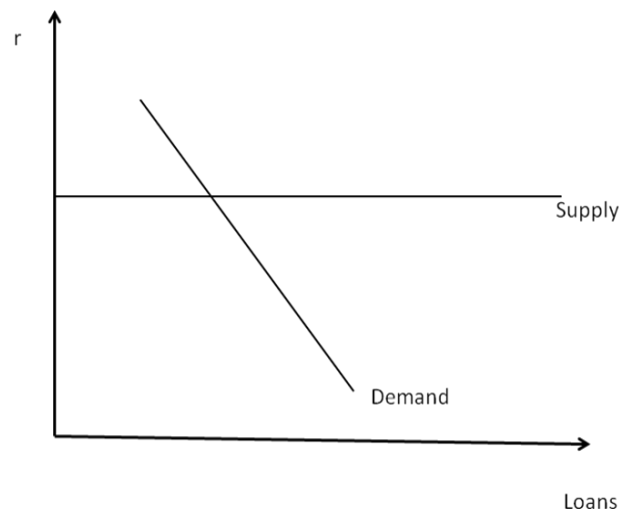
The panel dataset contains annual observations from 101 Italian provinces over the period 2006 to 2010.

The dependent variable concerning the new firm birth rate is taken from the Italian National Statistical Institute. Precisely, the birth rate is measured by standardizing the net number of new entrants relative to the number of firms already in existence (ecological approach in contrast with the labor force approach, Armington and Acs, 2002).

With regard to our measures of illegal credit, namely usury credit market size and tax evasion, the source of data are respectively the Italian National Statistical Institute (ISTAT, *Statistiche Giudiziarie e Penali*) and the Revenue Agency.

With regard to usury, our crime variable is the number of usury crimes reported to the judicial authorities, normalized per ten thousand inhabitants. The peculiar aspect of this crime leaves to foresight that the supply is infinitive elastic for the relevant demand size. Figure 1 (where on the axes are shown the illegal interest rate, r , and the usurer amount of loans) shows that the quantity exchanged can be predominantly attributed to the short side of the market (demand).

Figure 1: usury loans market equilibrium



In Italy this type of crime affects mainly small business owners, shopkeepers and professionals. It is important to stress that these economic categories, which constitute the main part of the Italian production system, are also heavily involved with tax evasion (see Relazione Corte dei Conti, 2014) and, at the same time, are themselves subject to the restrictions on credit exercised by the banking system. These small and micro firms determine the demand for usury.

Regarding tax evasion, we consider the propensity to evade given by the ratio between tax gap and tax compliance. This latter is measured by the spontaneous fiscal revenues in each province.

The remaining explanatory variables are derived by socioeconomic, socio-demographic and deterrence factors.

The socioeconomic variables includes the value added per capita, the growth rate of the value added, and a measure of fiscal pressure, given by the ratio of spontaneous fiscal revenues in each province to GDP. This later is only used in regression without tax evasion, in order to avoid collinearity.

The importance of the availability of credit is "captured" by using a measure of the Herfindhal Index (source, Bank of Italy).

As to socio demographic variables, we include the rate of growth of population, the regular component of immigration, normalized as share of population in the Italian provinces⁴ (Bianchi et al. 2012 and the literature quoted therein).

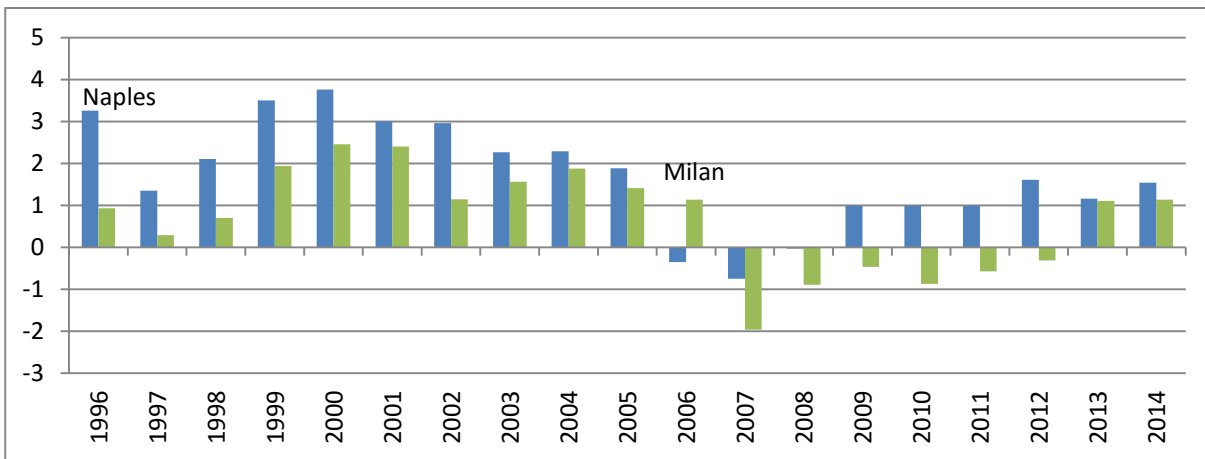
We also include in the analysis the education, defined as number of men aged 24-34, who have achieved at most a middle school diploma, for 100 men of the same age, and, as a policy variable, the expenditure for interventions and social services in the field of family and children, disabled, addictions, elderly, immigrants and nomads, homeless.

Exploratory analysis

The dependent variable, the new firm's birth rate, varies considerably across Italian provinces. If we compare a province with high per capita income, Milan, and another one with low per capita income, Naples, we find quite surprisingly that the rate of new business creation is significantly higher in the poorer provinces. We would expect exactly an opposite evidence, since it is usually claimed that the variation of firm birth rates is related to existence of: regional externalities, also originating from a high concentration of firms and benefiting from high personal income growth; infrastructures of services; higher average level of education; entrepreneurial culture (Armington and Acs, 2002). Milan and Naples are very different not only for the above listed variables, that favour Milan, but also in terms of propensity to tax evasion, that is considerably higher in Naples.

⁴ In models with fixed effects, many authors include population to control for population density as a further determinant of criminal activity.

Figure 2: a comparison of new firm birth rate in two provinces, Naples and Milan, 1996-2014



Starting from this very intuitive and preliminary evidence, we further deep checking for more robust evidence of correlation among our dependent variable, the new firm birth rate, and the explanatory variable which we focus on. The scatter plot reported in Figures 3 and 4 suggest that our intuition might be worth to be further investigated.

As it is clear, there is evidence of significant and positive correlation between new firm formation and either tax evasion and usury. In other terms, in provinces where the share of tax receipts concealed to tax authorities is large and the resort to usury market is widespread, we also observe that the firms' birth rate is relatively higher.

Figure 3: Scatter plot new firm birth rate (vertical axis) and propensity to evade in the Italian provinces

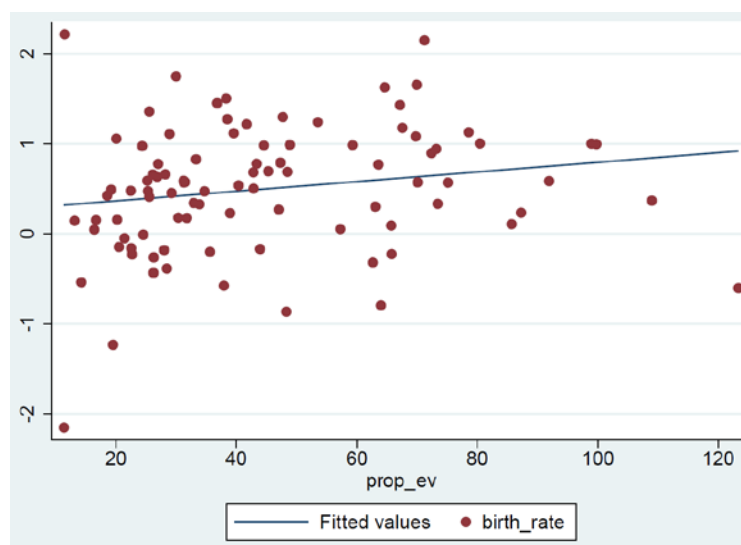
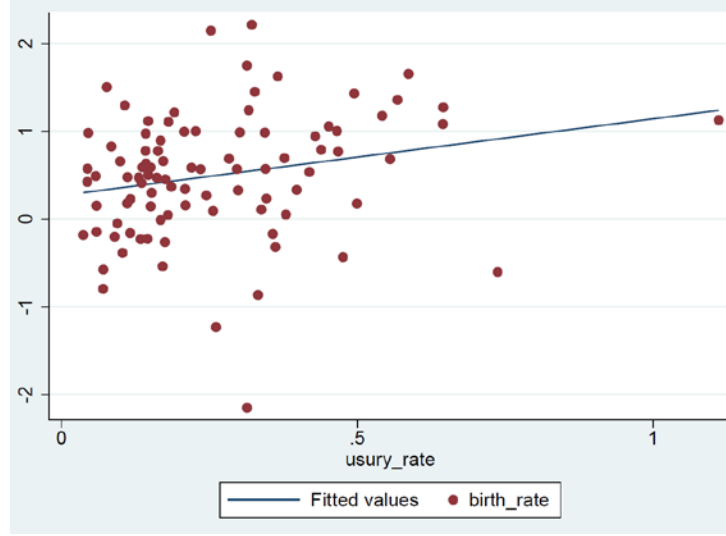


Figure 4: Scatter plot new firm birth rate (vertical axis) and usury rate in the Italian provinces



This is consistent with the statistically significant correlation found, in Italian provinces, between the time-averaged birth rate of new firms and the (time-averaged) tax evasion and usury, amounting to, respectively, 0.12 and 0.09. Similarly positive and significant are the geographically-averaged correlations between the listed variables.

Empirical framework

The following models study the impact of tax evasion and usury on new firm birth rates in a panel dataset of 101 provinces for 6 years (2006-2010):

$$Birth_{it} = \beta_1 Birth_{it-1} + \beta_2 Taxevasion + \beta_3 X_{it} + \eta_t + c_i + u_{it} \quad t = 1, \dots, T$$

$$Birth_{it} = \alpha_1 Birth_{it-1} + \alpha_2 Usury + \alpha_3 X_{it} + \eta_t + c_i + u_{it} \quad t = 1, \dots, T \quad (1)$$

Equation (1) and Equation (2) are the basic function of new firm formation estimated by the literature, where η_t is a separate time period intercept, X_{it} is a $1 \times K$ vector of explanatory variables defined in the previous section, c_i is the time-constant unobserved fixed effect and u_{it} are idiosyncratic errors. We do not estimate a single equation putting together usury and tax evasion

since elsewhere (Argentiero et al. 2015) it has been demonstrated that a causal relation going from tax evasion to usury is statistically significant.

With regard to the dynamic features of the model, we are assuming that there exists a significant relationship between firm's natality rates in t and $t-1$; hence the empirical models includes the lagged dependent variable.

These estimates involve some statistical problems. Firstly, time invariant territorial characteristics (fixed effects) may be correlated with the explanatory variables. Secondly, since for several variables included in the vector K causality may run in both directions with firm's birth rate, these regressors may be correlated with the error term and endogeneity may arise. Thirdly, the presence of the lagged dependent variable produces autocorrelation. These panel data require an instrumental variable procedure able to take into account the model dynamics such as the GMM estimator suggested by Arellano and Bond (1991) and Arellano and Bover (1995). As well known, this instrumental variables estimator allows the use of multiple instruments to control for the endogeneity and the absence of orthogonality between the residuals and the regressors. Furthermore, the persistence of the dependent variable for one lag is able to eliminate the first order autocorrelation problem. Finally, the use of robust standard errors takes into account the presence of heteroskedastic errors.

Empirical results

Table 5 shows the GMM-system estimations for new firms' birth rate in the Italian provinces, controlling alternatively either for usury or for tax evasion. This estimator allows us to control for unobserved provincial-specific effects that are potentially correlated with our determinants of new firms' entry in the market and to take into account dynamic and endogeneity aspects.

In the estimation of the new firm formation, reported in Table 5, all the variables are treated as endogenous.

Table 1 The determinants of new firm formation in Italian provinces (GMM-system)

New firm birth rate (B_t)	Propensity to evade		Usury
B_{t-1}	0.051(0.063)		0.23 (0.11)**
<i>Propensity to evade</i>	0.011(0.004)***		-
<i>Usury</i>	-		3.43 (1.03)***
<i>Value added growth rate</i>	2.56(1.85)		6.97 (3.99)*
<i>Bank loan concentration (Herfindhal Index)</i>	-3.52(1.73)**		-8.05(3.69)**
<i>Tax compliance</i>	-		-0.00(0.000006)*
<i>Foreign immigrants</i>	3.26(2.29)		13.77(5.7)**
Hansen Test (p-values)	0.117		0.126
AR(1) (p-values)	0.001		0.002
AR(2) (p-values)	0.384		0.827
N. observations	364		364
N. instruments	67		29
Lags	L(0/5)		L(3/5)
<i>Robust standard errors in parenthesis. ***, ** and * indicate coefficient significant at the 1%, 5% and 10% levels, respectively.</i>			
<i>Propensity to evade (instruments): population growth; social capital; value of loans for each bank branch; per capita bank deposits; Gini index; number of police forces per ten thousand inhabitants; employment rate in the services' sector</i>			
<i>GMM-type instruments: new firm birth rate; propensity to evade; value added growth rate; bank loan</i>			

concentration
<i>Usury</i> (instruments): social expenditure; bet rate; population growth; social capital; schooling; default rate on bank loans; per capita bank deposits
GMM-type instruments: new firm birth rate; usury; value added growth rate; bank loan concentration; tax compliance

The first column provides the best results for the new firm birth rate when controlling for tax evasion, the second column reports the estimated coefficient when the relevant explanatory variables is usury. With L(0/5) we have instructed Stata to use only the five lags of the endogenous variables as instruments, whereas with L(3/5) the lag used with the instruments goes from the third to the fifth. Three tests are reported: the Hansen test of overidentifying restrictions (we use robust variance matrix estimator, see Roodman 2009), distributed as chi-square under the null hypothesis of validity of instrument, and the first and second order serial correlation test. The estimates are performed using GMM-system procedure combining transformed and level instruments. Variables instrumented are propensity to evade, value added growth rate, bank loan concentration, usury and tax compliance.

The instruments used are the share of non-performing loans on performing loans, social expenditure, the bet rate (number of reported crimes for illegal betting in each province per ten thousand inhabitants), population growth, social capital, schooling, per capita bank deposits, value of loans for each bank branch, Gini index, number of police forces per ten thousand inhabitants, employment rate in the services' sector.

The Hansen test does not reject the null hypothesis for the validity of the instrument set and the serial correlation tests indicate that there is no evidence for first order serial correlation, while there is evidence of second-order serial correlation.

As it is clear from Table 1, the two explanatory variable of interest, tax evasion and usury, are both statistically significant and positively affect the formation of new enterprises. This result is consistent with the descriptive evidence commented above, and it supports the intuition that the provision of funds to firms through illegal channels, either lending at usury rates or tax evasion, is a

strategic resource for new entrants in the market production. This is certainly due to the crucial role that financial markets play in allowing successful entrepreneurship. As shown in Table 1, the degree of bank concentration, as measured by the Herfindhal index, is statistically significant and negatively influences the birth of new enterprises, thus suggesting that in the considered sample there is some risk of credit rationing.

With regard to the remaining explanatory variables, when significant their sign is consistent with the existing literature.

Conclusions

In this paper, we investigate the impact illegal funding, namely tax evasion and lending at usury rate, on new firm formation in Italian provinces during the period 2006-2010.

After controlling for determinants commonly accepted in literature on regional variation of new firms' birth rate, we have seen that this latter is influenced by either the working of the legal market of credit and by illegal sources of funding. In a country like Italy, characterized by a large share of underground economy and tax evasion, and a very large share of small and micro firms, credit rationing can easily arise. Therefore, usury and tax evasion may well represent an alternative source of financing with respect to bank credit.

These results pose serious problems of policy. The malfunctioning of the circuit of credit, rationing borrowers considered most unreliable is the main phenomenon triggering the problematic evidence here depicted. Credit rationing, beyond reducing the firms 'birth rate, facilitates usury. On the other hand, the presence of a high proportion of businesses that operate wholly or partly in the informal sector means that credit restrictions are strengthened. In this perspective, the presence of tax evasion is an additional risk for banks that provide loans in the territory, and determines favorable conditions for further credit restrictions. This line of reasoning shows a first causal link running from tax evasion to credit rationing, however, the opposite causal channel may well be working.

Actually, credit rationing is itself an incentive to operate in the informal sector: tax evasion can be an alternative source of funding than bank credit. Therefore, in the presence of a banking system rationing credit to small firms, they may use evasion as an alternative source of financing. In this case, therefore, the causal link runs from the credit constraints to the choice of working in the informal economy.

It 'clear that in examining the links between the credit market and the weight of undeclared businesses there is the risk of vicious circle: greater restrictions generate greater tax evasion, which in turn generates further restrictions in the channels of the bank loans.

Hence, the bulk of the story our data tell is that to help territories in promoting new business formation, the working of the credit markets is the crucial issue. In terms of policy, an effort by the Government to remove the barriers of access to the credit market in particular for micro and small business, might have important by sides effects in terms of lower criminal activities. In fact, the use of tax evasion as a self-financing device would be discouraged and the need to resort to illegal credit market too.

References

- Antunes, A., Cavalcanti, T. (2007). Start up costs, limited enforcement, and the hidden economy. *European Economic Review* 51 (1), 203–224.
- Arellano M. and Bond S. (1991). Some tests of specification for panel data: Monte Carlo evidence and application to employment equation, *Review of Economic Studies*, 58, 277-97.
- Arellano, M. and Bover, O. (1995). Another look at the instrumental-variable estimation of error components models, *Journal of Econometrics*, 68, 29-52.
- Argentiero, A., Chiarini, B., Marzano, E. (2015). Tax Evasion and Economic Crime. Empirical Evidence for Italy, CESifo Working Paper Series 5497, CESifo Group Munich.
- Armington, C. and Acs, Z. (2002). The Determinants of Regional Variation in New Firm Formation, *Regional Studies*, 36 (1) 33-45.
- Bartik, T.J. (1989). Small Business Start-Ups in the United States: Estimates of the Effects of Characteristics of States. *Southern Economic Journal*, 55(4), 1004-1018.
- Beck, Thorsten, Klapper, Leora F., Mendoza, J. C. (2010). The typology of partial credit guarantee funds around the world, *Journal of Financial Stability*, 6 (1), 10-25, April.
- Berger, N. A. and Udell, F.G. (1998). The economics of small business finance: The roles of private equity and debt markets in the financial growth cycle, *Journal of Banking & Finance*, 22 (6-8), 613-673.
- Bianchi M., Buonanno P. and Pinotti P. (2012). Do immigrants cause crime?, *Journal of the European Economic Association*, 10, 1318-47.
- Bonaccorsi Di Patti, E. (2009). Legalità e Credito: l’impatto della criminalità sui prestiti alle imprese, in Cannari L. (ed.) *Mezzogiorno e politiche regionali*, Banca d’Italia, Eurosystem, Seminari e convegni, n.2, novembre 2009, Roma, 165-189.

- Cannari, L. and Gobbi, G. (2010). Il sistema finanziario, in Cannari, L. and Franco, D. (eds) *Il Mezzogiorno e la politica economica dell'Italia, Seminari e Convegni*, n.4, giugno 2010, 51-59.
- Corte dei Conti (2014). Indagine sugli effetti dell'azione di controllo fiscale in termini di stabilizzazione della maggiore tax compliance
- Dabla-Norris, E. and Feltenstein, A. (2005). The underground economy and its macroeconomic consequences, *Journal of Economic Policy Reform*, 8(2), 153-174.
- ECB (2013). Survey on the access to finance of small and medium-sized enterprises in the Euro Area.
- Gobbi, G. and Zizza, R. (2007). Does the Underground Economy Hold Back Financial Deepening? Evidence from the Italian Credit Market, CEP Discussion Papers dp0789, Centre for Economic Performance, LSE
- Lee S. Y., F. R. and Acs Z. J. (2004). Creativity and entrepreneurship: a regional analysis of new firm formation, *Regional Studies* 38, 879-891.
- OECD (2013). OECD Science, Technology and Industry Scoreboard.
- Rocha, H.O. and Sternberg, R. (2005). Entrepreneurship: The Role of Clusters Theoretical Perspectives and Empirical Evidence from Germany. *Small Business Economics*, 24 (3), 267-292.
- Roodman D. (2009), How to do xtabond2: An introduction to difference and system GMM, *Stata Journal* 9 (1), 86-136.
- Schumpeter, J.A. (1911). *The Theory of Economic Development: An inquiry into profits, capital, credit, interest and the business cycle*. 1934 Translation, Cambridge, Mass: Harvard University Press.
- Straub, S. (2005). Informal sector: The credit market channel, *Journal of Development Economics*, 78(2), 299-321.