

Carbonara, Emanuela; Santarelli, Enrico

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## De Jure Determinants of New Firm Formation: How the Pillars of Constitutions Influence Entrepreneurship

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***De Jure* Determinants of New Firm  
Formation: How the Pillars of  
Constitutions Influence Entrepreneurship**

Emanuela Carbonara  
Enrico Santarelli

*Quaderni - Working Paper DSE N°991*



# ***De Jure* Determinants of New Firm Formation: How the Pillars of Constitutions Influence Entrepreneurship\***

by

Emanuela Carbonara

*University of Bologna – Department of Economics, Piazza Scaravilli, 2 – 40126 Bologna, Italy*  
e-mail: [emanuela.carbonara@unibo.it](mailto:emanuela.carbonara@unibo.it)

Enrico Santarelli

*University of Bologna – Department of Economics, Piazza Scaravilli, 2 – 40126 Bologna, Italy*  
e-mail: [enrico.santarelli@unibo.it](mailto:enrico.santarelli@unibo.it)

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## **Abstract**

This paper provides empirical evidence supporting the view that constitutions may influence the organization of economic activities. Dealing with the issue of the institutional determinants of entrepreneurship, it shows that some of the provisions contained in national constitutions are positively and significantly associated to a standard measure of entrepreneurial dynamics, namely the rate of new business density. Using a novel dataset containing the characteristics of the constitutions enacted in the world and a sample of 115 countries, the paper finds that provisions about the right to conduct/establish a business, the right to strike, consumer protection, protection of trademarks, and education promote higher rates of new firm formation.

**Keywords:** Constitutional Rules, Entrepreneurship, New Firm Formation, Economic Effects of Constitutions

**JEL Codes:** D72, K10, H10, L26, M13, O50, P48

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## 1. Introduction

Historically some countries are characterized by a greater endowment of entrepreneurship capital that results in persistently high rates of new firm formation. This characteristic of a country might be linked to the widespread presence of individuals who come up with new ideas and put them into practice (Baumol, 2010), to the specialization in industries where the minimum efficient scale level of output is smaller (Acs and Audretsch, 1993), or to the availability of opportunities (Kirzner, 1973) and knowledge spillovers (Acs *et al.*, 2009). But there is also the possibility that the pillars of the legal and institutional systems designed in a country's constitution create a setting more or less favorable to the undertaking of entrepreneurial ventures. For example, the principles introduced by America's Founders at the Constitutional Convention sessions in 1787 to protect property rights and free markets clearly contributed to promote the conditions for the entrepreneurial dynamism lately witnessed by de Tocqueville in *On Democracy in America* (Chapter XIX): "What astonishes me in the United States is not so much the marvelous grandeur of some undertakings as the innumerable multitude of small ones".<sup>1</sup>

This paper studies the effect of a number of institutional principles - ranging from provisions for a counter corruption commission to the enforcement of economic rights, from the adoption of economic plans to the protection of the environment, from the national integration of ethnic communities to education - stated in the constitutional texts of 115 countries on the rate of entrepreneurship over the 2004-2013 period (the list of countries is reported in Appendix 1). Some of these principles are among those most commonly associated to a higher propensity by individuals to start up a firm. Besides considering the characteristics of constitutions, we also take into account some additional country-specific factors, which are likely to influence firm demographics, our aim being to compare the impact, exerted on the rate of entrepreneurship by *de jure* (constitutions variables) and *de facto* (control variables) characteristics of the countries considered. Constitutions typically represent the highest, direct source of law. They regulate the relationship between government agencies and bodies and the citizenry. They also state the fundamentals rights a polity is willing to protect. The rules and the principles stated in a constitution are stable and the protection granted to rights strong. Requirements to amend a constitution are generally strict (supermajorities, special legal procedures), which reduces legislative discretion and makes change very onerous. That is why it is particularly interesting to study the impact of constitutional rules on the economic system. Knowing which principles foster development and growth can help countries to avoid mistakes that might be very costly.

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<sup>1</sup> Cf. Larson and Winship (2005).

Secondly, because of the particular strength of the rights included in a constitution, the impact on economic variables is likely to be remarkable and it is important to identify in a precise and complete manner.

Main findings show that provisions dealing with the right to conduct/establish a business, the right to strike, consumer protection, protection of trademarks, and education promote higher rates of new firm formation, while provision about economic planning and protection of the environment constrain new firm formation. Problems of serial correlation and endogeneity are treated using a GMM model and adopting an instrumental variable estimation.

The paper is organized as follows. Section 2 surveys the relevant literature, with special reference to the contributions dealing with the impact of constitutions on national economies. Section 3 presents main research hypotheses and theoretical explanations. Section 4 describes the dataset and the empirical strategy. Section 5 discusses the main findings. Section 6 concludes with some suggestions for possible revisions/design of new of constitutional texts.

## 2. Literature Survey

According to Melton *et al.* (2013), the design features of constitutions, from their level of specificity to the number of rights enumerated and the clarity of their text, *do* matter in shaping the patterns of institutional development exhibited by different countries at different times.

In-depth analysis of the link between economic performance and constitutions dates back to the public choice literature analyzing the impact of different constitutional settings on the size of government, welfare expenditure and generally on the composition of public expenditure (see Buchanan and Tullock, 1962, Brennan and Buchanan, 1980, and, for a general overview, Mueller, 2003 and Voigt, 1999).

The work of the aforementioned scholars is however theoretical in nature. Until the early 2000s, very little work had been done, discovering the causal links between the constitutional characteristics of a country and its economic performance. This gap in the literature was filled by Persson and Tabellini (2003). In their book, they analyze the impact that the form of government (defined as presidential system as opposed to a parliamentary system) and the electoral rule (majoritarian versus proportional) have on several economic variables dealing with fiscal policy, rent extraction by the government (perceived corruption and grafts) and economic productivity of the country (measured by labor and total factor productivity).

Their results are interesting. Their main finding is that both presidential systems and majoritarian electoral rules result in much lower government expenditure than parliamentary and proportional systems. These results are strengthened further if government systems and

electoral rules are considered together. Namely, public expenditure is definitely lower for presidential majoritarian systems than for parliamentary proportional ones.

Persson and Tabellini (2006) extend their previous analysis to account for the effect of constitutions on economic growth. They find democratization promotes growth, however there seems to be complementarity between the extension of political rights and economic liberalization. Moreover, they find that democratization into a presidential system has a bigger impact on growth than democratization into a parliamentary system.

Blume *et al.* (2009a) have reproduced Persson and Tabellini's study, extending it to a larger number of countries and using a novel dataset. These authors partially confirm Persson and Tabellini's results. However, the impact of presidential systems on economic and fiscal indicators is definitely weaker, whereas electoral rules generally maintain their effect. Particularly, results concerning government efficiency are less clear-cut.

Blume *et al.* (2009b) extend Persson and Tabellini's analysis to direct democracies. They generally confirm previous results. Particularly, they show that direct democratic institutions influence fiscal policy and government efficiency, whereas the link with productivity is not statistically significant. Moreover, they find that the type of direct intervention matters (mandatory referendums seem to constrain spending, whereas public initiative increases it).

Knutsen (2009) further investigates this line of analysis. He re-estimates the effect of constitutional variables on economic growth using a data set that, for some countries, dates back to 1820. He finds no significant, positive impact of presidentialism on economic growth, whereas proportional electoral rules have a strong positive influence.

Parker (2007) provides a very interesting discussion of the relationship between entrepreneurship and the law. He argues that the law influences organizational forms in entrepreneurship. For instance, high legal costs might foster entrepreneurship in the form of self-employment. Legal constraints like non-distribution of surplus, often matched to tax breaks favor social enterprises. Regulations, labor law and also deregulation have also an important influence. Institutions and market structures play an important role also in Guiso *et al.* (2004). Using individual level data, these authors study the effect of differences in the ease with which external funds are obtained by households across Italian regions on entrepreneurship and economic growth. They find that financial development enhances the probability individuals become entrepreneurs, favors entry by new firms, and exerts a positive effect on the number of firms per inhabitant.

In this paper we deal with the impact of constitutions on entrepreneurship and, particularly, on the rate of new business formation.<sup>2</sup> The closest previous study is Zhang (2012), who analyzes empirically the link between institutional characteristics of a country, rent seeking and entrepreneurship. The story he has in mind basically implies that institutional (and constitutional) features impact on rent-seeking (unproductive behavior). The higher the incentive to engage in rent-seeking, the lower the share of individuals entering productive entrepreneurship, and therefore the lower the number and the quality of entrepreneurs. His study, however, differs from ours in many respects. First of all, following Persson and Tabellini (2003) and later contributions, he focuses mainly on what he calls “the constitutional environment”, that is the form of government, electoral rules and the degree of federalism. Secondly, he does not perform a full-fledged analysis, encompassing all aspects at once, but he studies the impact of the various institutional aspects separately. So we have an OLS regression analyzing the impact of federalism, a different one analyzing forms of government, etc., which limits the relevance of his, results substantially. Finally, he uses a different definition of entrepreneurship from ours. Particularly, he defines entrepreneurship as the rate of self-employed workers on the total employed population. Such measure is unable to capture the overall process of new firm formation and industry dynamics but simply measures the degree of (very) small firm presence.

However, there is a growing literature on the effects of institutions on entrepreneurship that has identified a link between entrepreneurship and the development of the justice system, with the quality of the latter seen as a crucial determinant of the possibility to successfully start a new venture (cf., among others, Quentin, 2008; Visaria, 2009).

Pioneering contributions include Johnson *et al.* (2000); Frye and Zhuravskaya (2000); Djankov *et al.* (2006). These are empirical studies and mainly deal with the incentives to hide economic activities and with the influence that institutional characteristics (especially efficiency and consequent faith in the judiciary, tax rates, bureaucratic corruption) exert on such incentives. Chemin (2009) deals with the impact of judicial efficiency specifically on entrepreneurship, defined as entry rates by new firms as obtained from the World Bank Group Entrepreneurship database. One of the main problems presented by the literature on the impact of the judiciary (and of institutions more generally) on economic activity is causality, given that institutions are very likely to be endogenous. Chemin (2009) is able to identify the direction of causality since he collects data before and after a major reform of the judiciary that took place

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<sup>2</sup> The ratio of new business formation is just one of the possible variables that can be employed to measure entrepreneurship. For an explanation of the trade-off between alternative measures and for the reason why we chose to employ this particular measure in this paper, see Section 3.1 below.

in Pakistan in 2002, so that he can estimate the impact of the reform. We too face the issue of endogeneity in our study and we control for it using a GMM model opportunely instrumented. Chemin (2009) finds that the reform had a strong and statistically significant impact on the entry rate of new firms, which resulted in an increase in Pakistan's GDP by 0.5%. Garcia-Posada and Mora-Sanguinetti (2014) study the case of Spain, showing that higher judicial efficacy (measured with the congestion rate of courts) has a positive impact on the entry of new firms, while it leaves the exit rate unaltered. Interestingly, the positive effect is found for new entrepreneurial firms (and self-employed entrepreneurs) but not for limited liability corporations. The authors explain their finding hypothesizing that judicial inefficiency can be regarded as a fixed cost and is therefore less important the larger the firm. By securing property rights and enforcing contracts, the justice system is a commitment device that guarantees the return to entrepreneurial activities and creates the conditions for the development of viable credit markets. Lichand and Soares (2014) consider the link between an increased access to justice and entrepreneurship (defined as occupation as employer or self-employer) in Brazil in the 1990s. They find that better access to justice affects entrepreneurship positively among individuals with higher level of education but not among those with lower educational levels. Since education is a proxy of wealth, the result seems to indicate that judicial change in Brazil pushed towards entrepreneurial activities wealthier individuals.

The studies presented so far are relative to specific countries. General empirical studies on entrepreneurship and institutions are, among others Desai *et al.* (2005), Scarpetta *et al.* (2002), Stephen *et al.* (2009) and Van Stel *et al.* (2007). Desai *et al.* (2005) consider the link between institutions and entrepreneurial activity across Europe. They show that all institutional factors that affect credit markets have a significant impact on entrepreneurship in the emerging markets but not in the mature countries of Europe. Moreover, the same political and institutional factors affect firms' entry and growth, particularly of those subject to capital constraints and operating in less developed markets.<sup>3</sup> Scarpetta *et al.* (2002) show that product market regulations, hiring and firing costs, heavy regulations on entrepreneurial activity have a significant, negative impact on the entry of new small firms and, more generally, on firms' productivity. Stephen *et al.* (2009) look, more specifically, at the effect of working time regulations on entrepreneurship. Finally, Van Stel *et al.* (2007) look at the relationship between regulation and entrepreneurship.

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<sup>3</sup> On the important relation between access to credit, liquidity constraints and entrepreneurship, see Evans and Jovanovic (1989).



Corruption and a low endowment of moral awareness do not necessarily affect the rate of new firm formation, but rather shape the way entrepreneurial activities are carried out. This finding is obtained looking at the impact of the control of corruption on entrepreneurial activity (Anokhin and Schulze, 2009), at the moral awareness of entrepreneurs (Bryant, 2009), and at the influence exerted by the lower efficiency of financial and legal institutions and the lack of their enforcement<sup>4</sup> on the likelihood of entrepreneurs to engage in corruption (Tonoyan *et al.*, 2010).

Literature has also studied the link between entrepreneurship and bankruptcy law (Armour and Cumming, 2008; Lee *et al.*, 2007 and 2011; Peng *et al.*, 2010). Unsurprisingly, this literature shows that bankruptcy laws that facilitate entrepreneurial exit positively impact entrepreneurship in a country.

### **3. The Theoretical Underpinnings of the Effects of Constitutions on Entrepreneurship**

Several factors affect the dynamics of entrepreneurship according to the literature. We have chosen aspects of constitutions that directly affect the main variables the literature on entrepreneurship has indicated as highly significant for the development of entrepreneurial firms in an economy.

We test the impact of a set of institutional variables that define the economic environment of a country. Particularly, we consider the protection of economic rights, the protection of the environment, the consideration and protection of ethnic diversity, and provisions regarding education.

The relationship between education and entrepreneurship has been studied in the literature, with special attention to the link between human capital and individual entrepreneurs' earnings. This literature is somehow linked to the endogenous growth literature, stressing how investments in human capital, innovation and, more generally, knowledge, foster economic growth.<sup>5</sup> Several studies estimate the rate of return for entrepreneurs of an extra year of education but the conclusions of these studies often diverge. There is a general, anecdotal belief that too much education jeopardizes entrepreneurial creativity. Very successful entrepreneurs often dropped out of college or even of high school (Parker, 2009). Signaling theory provides yet another explanation why entrepreneurs might get less education than employees. In a world of asymmetric information where abilities are private information, prospective employees try to

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<sup>4</sup> In this connection, it is likely that in most countries excessive time for interpreting regulations for business increases an entrepreneur's likelihood of becoming involved in corruption

<sup>5</sup> For a general and complete overview of endogenous growth theories see Aghion and Howitt (1997).

signal their quality in the job market by acquiring more education (Spence, 1973). Since entrepreneurs do not need signaling since they do not seek a potential employer but are self-employed, they have little incentives to invest in the formation of their human capital (Riley, 1979). These theories however explain why prospective entrepreneurs tend to invest little in education; they do not explain why education might have a low impact on entrepreneurs' earnings. Orzach and Tauman (2005) elaborate on signaling theories, presenting a model in which individual ability is two-dimensional: there is human capital derived from education and entrepreneurial talent. While the former is publicly observable, the latter is private information. People highly gifted in entrepreneurial talent signal such characteristic by investing little in education, thus somehow "committing" themselves not to look for a job as employees. This would be a losing strategy for untalented individuals. Therefore it represents a good signal to lenders. By gaining a preferential lane in the credit market, given their talent, these entrepreneurs have high chances of success and therefore high earnings.

According to these theories, we should expect that public investment in education has little if no impact on entrepreneurship. In any case, such impact should be negative. If a constitution contains provisions about education, the sign and size of their impact on entrepreneurship should be consistent to that just said. Particularly, in an occupational choice model, if education has low returns to entrepreneurship, we should find that education and *de jure* and *de facto* provisions about it impact negatively the rate of new business formation.

Is previous empirical analysis validating these theories? Apparently not, since, in general there seems to be a positive relationship between education and earnings from entrepreneurship, particularly when the endogeneity of educational choice is taken into account and an instrumental variables approach is taken. The impact of education is higher in developed countries than in developing ones. Moreover, on average, there seems to be the same return to education for the self-employed and for employees (see Parker 2009 and other studies reported therein).

Other theories have been proposed to assess the link between education and entrepreneurial earnings and they suggest a relationship that has the opposite sign compared to the theories presented above. These latter studies are therefore more in line with the empirical evidence just presented. Some studies argue that entrepreneurs too are screened by lenders, customers, etc. Therefore, in an adverse selection environment, they have possibly as much incentive to invest in education as employees (Parker and van Praag, 2006). Moreover, formal education might enhance the productivity of the self-employed, as well as that of employees (van Praag, 2005).

In this paper, we consider three characteristics of constitutions related to education. We consider whether the constitution has general provisions concerning education (which means whether there are provisions in the constitution mentioning education, independent of their content), whether the constitution guarantees equal access to higher education and, finally, to what level (or year of age) the constitution makes education compulsory.

Given the evidence presented above about the impact of education on entrepreneurship, we formulate the following hypothesis.

**H1: The presence of special provisions regarding equal access, compulsory education and, more generally, rights to education in a country's constitution exerts a positive impact on the rate of new business formation.**

The presence of ethnic minorities in a country and immigration has been a highly debated issue in the literature on entrepreneurship. A first, important question is whether the presence of various ethnicities has a positive impact on entrepreneurship. Literature has pointed out positive and negative effects of the coexistence of different ethnicities on entrepreneurship (See Parker, 2009). Generally, there is evidence that members of ethnic minority groups are subject to discrimination in paid employment, in the market for capital and in the product market. The first and the last types of discrimination would typically encourage entrepreneurship, whereas the last would impede it. Empirical studies find mixed evidence about the sign of the impact of discrimination on ethnic entrepreneurship, possibly showing that all these factors are at play and counteract each other. Discrimination in paid employment increases the attractiveness of self-employment for members of the minority group. Similarly, the presence of discrimination in the product market may facilitate self-employment within minorities. Ethnic group may constitute enclaves in which individuals support each other economically. Within such enclaves, there might be protected niche markets catering for special needs like special clothing and food, religious goods and services. Entrepreneurs belonging to the specific ethnic group are likely to have better capacity to cater for such special needs. Clearly, discrimination in the capital market hits negatively on entrepreneurship (although it may favor the establishment of banks and other financial institutions founded by members of the discriminated group).

In theory, if the legal system of a country contains special provisions concerning the integration of ethnic minorities, such provisions would probably have the effect of reducing discrimination. As a result we could expect a positive impact on entrepreneurship if the negative effects of discrimination on entrepreneurship were predominant and a negative impact otherwise. As the negative elements seem to be predominant in importance and number (product market discrimination implies smaller markets for minority entrepreneurs and capital

market discrimination substantially reduce the opportunities to develop large firms) we formulate the following hypothesis.

**H2: The presence of constitutional provisions aiming at reducing ethnic fractionalization positively impacts on new business formation.**

We then study the impact of two institutional characteristics that are likely to heavily and negatively impact the rate of formation of new businesses.

We first consider whether the constitution mentions the adoption of national economic plans. In a planned economy, private initiative has very little space to develop, which is likely to jeopardize entrepreneurial spirit.

**H3: If a constitution mentions the adoption of national economic plans, the rate of new business formation is reduced.**

We then consider whether a constitution explicitly refers to the protection and preservation of the environment. This is likely to result in the adoption of regulations constraining the behavior of firms, specifically requiring them to adopt costly procedures to avoid pollution. Such procedures are generally characterized by economies of scale and therefore impact negatively on the profitability of small firms in particular.

**H4: If a constitution explicitly mentions environmental concerns, the rate of new business formation is reduced.**

Finally, we consider a group of variables classified in the dataset under the heading “Economic Rights”. In this group, we find variables of different nature. The characteristic they share is their direct relationship with institutional aspects that are intrinsically connected to specific economic rights.

We include variables related to property rights and their use. In this subgroup we find variables like the presence of constitutional provisions for the right to transfer property freely *inter vivos*, the right to transfer property freely *post mortem* and the right to inherit. To our knowledge, we are the first to study the relationship between these characteristics of property rights and entrepreneurship. Our interest in these variables can be motivated as follows.

The right to transfer property freely *inter vivos* is a proxy for the existence of a secondary market for enterprises. In this respect, the presence of such legal provision represents a form of insurance for prospective entrepreneurs willing to invest in a new business venture. It also represents an institutional setting in which the value of an entrepreneurial venture can be established. A very successful enterprise can be transferred to new owners for a high price with low transaction costs, whereas some value can be extracted from an unsuccessful one, be that

only the value of the assets sold separately. In either case, the existence of such right is deemed to have a positive effect on entrepreneurship.

Similarly, the right to transfer property freely *post mortem* formalizes the possibility to transfer the control of the business to people not belonging to the entrepreneur's family of origin. This should guarantee the best use of economic resources, enhancing the value of the firm, with consequent positive effects on the rate of return on the entrepreneur's investment and an increase in the rate of formation of new businesses.

Finally, the possibility to inherit is a right that complements the right to transfer property freely *post mortem* and is expected to have the same effects on entrepreneurship.

**H5: If a constitution establishes clear norms to transfer property *pre* and *post mortem*, the rate of formation of new businesses increases.**

The protection of intellectual property rights is another factor of utmost importance for the formation and development of new firms. Literature has particularly stressed the role played by patents. In this paper, we also include trademarks and copyright.

Patents play an ambiguous role on the development of entrepreneurship. On the one hand, they have a positive value, in that they guarantee the just remuneration of R&D investment. This fosters the establishment of new start-ups and of new small, highly technological firms. It is in fact widely recognized that many, radical innovations come from new start-ups (Zucker et al., 1998; Jorgenson, 2001). As a result, the rate of new firm formation should be positively impacted. On the other hand, however, a country with a strong protection of intellectual property is likely to be a mature country, relatively close to the technological frontier (Della Malva and Santarelli, 2014). The possibilities to innovate for new entrant firms are therefore limited, which implies a negative impact of patents on the rate of new firm formation (Acs et al., 2009).

It is interesting to consider copyright and its relationship with new firm formation. Traditionally, literature has disregarded it, since copyright typically protects literary, musical, artistic intellectual work. However, in most countries copyright protects computer software, and the software industry has been highly characterized by entry by start-ups (Zucker et al., 1998). Strong copyright protection has therefore encouraged on the one hand but limited on the other the development of new start-ups. The latter, negative effect is most likely to have bitten where small firms prospered by adapting existing software to the needs of other firms and private customers.

Trademark is a form of intellectual property protection that has received little attention in the literature on entrepreneurship. A trademark "is a word, symbol, or other signifier used to

distinguish a good or service produced by one firm from the goods or services of other firms” (Landes and Posner, 1987). Trademarks therefore help firms to differentiate their products, creating market niches and inducing customer loyalty. They also help reducing consumers search costs, by allowing firms to build a reputation for the quality of their goods and services. Clearly, such function requires the legal protection of trademarks. If competitors could freely use the word or symbol used to identify a firm’s product or service, they could free ride on a firm’s investment in reputation building (Landes and Posner, 1987). That just said implies that the impact of trademarks protection has a positive sign on entrepreneurship.

We consider three indicators, stating whether a country’s constitution contains provisions for the protection of intellectual property, in the form of patents, copyright and trademarks. We hypothesize that patent and copyright protection negatively impact entrepreneurship. Our sample in fact includes all new firms, operating in all sectors, highly innovative and not. As mentioned above, only highly innovative sectors tend to benefit from strong protection of intellectual property, as this allows full exploitation of investment in R&D. Other sectors are constrained by IPR’s, that prevent spillovers (Acs et al., 2009). Being non-innovative sectors the majority, we believe that in our sample negative effects prevail.<sup>6</sup> Conversely, we believe that the impact of trademarks on entrepreneurship is positive. Hence:

**H6: The protection of intellectual property rights in the constitution has a differential effect on the rate of new firm formation. Particularly, patents and copyright impact negatively, whereas trademarks exert a positive effect.**

Furthermore, we consider other institutional characteristics that might facilitate new firm formation. We analyze whether the explicit inclusion in the legal system of a provision protecting the right to a free and competitive market facilitates entrepreneurship. We consider whether the constitution mentions the right to establish and conduct a business. Both these rights should exert a positive impact on entrepreneurship.

**H7: The protection of market freedom and of the right to establish and conduct a business has a positive effect on entrepreneurship.**

Finally, we consider factors that should depress the rate of new firm formation. The right to strike should reduce productivity of firms, thus reducing entrepreneurship.

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<sup>6</sup> In order to analyze the impact of IPR’s on entrepreneurship, we could divide our sample per sectors, separating highly innovative sectors from other sectors. We should then observe a positive impact on the former sectors and a negative impact on the latter. This study is however beyond the scope of our paper and is left for future research.

The right to a fair remuneration of work should also depress entrepreneurship, since it increases labor costs (such right might be often linked to the presence of a minimum wage regulation in the labor market).

The explicit mention of consumer protection should again have a negative impact, since in practice is likely to force complex and costly warranty contracts and in general pushes firms to provide high quality.

**H8: Explicit constitutional protection of rights to strike, fair remuneration and consumers rights negatively impact entrepreneurship.**

Another factor that is likely to have a negative impact on the rate of formation of new firms is corruption. In a very corrupt country it may be very costly to set up a new firm: bribes might be necessary to “oil the system”. Moreover, generally there is a positive correlation between the complexity of bureaucratic rules and the amount of red tape and corruption.<sup>7</sup> If a constitution contains provisions regarding corruption, special attention is possibly devoted to contain its effects and to enforce anti-corruption measures. However, the measures of corruption control we consider regard the existence and the functioning of a counter-corruption commission.<sup>8</sup> Such measures can therefore be considered as a regulatory burden imposed to firms in general and to new start-ups in particular. This is highly likely to reduce the rate of formation of new firms (Djankov et al., 2002). Particularly, it is likely to limit the entry of new firms in legal sectors. As pointed out by Baumol (1990), too heavy regulation increase barriers to entry but this, rather than discourage entrepreneurs, determine their decision to remain in the gray sector.

**H9: The anti-corruption provisions in a constitution decrease entrepreneurship.**

#### **4. Data Description and Empirical Strategy**

The source of information about the characteristics of constitutions, our *de jure* determinants of entrepreneurship, is represented by the *Comparative Constitutions Project: A Cross-National Historical Dataset of Written Constitutions* (henceforth CCP) (Elkins et al., 2009), a repository of valuable data on the formal characteristics of written constitutions for most independent states since 1789. Initially funded by the National Science Foundation and the Cline Center for Democracy at the University of Illinois, the CCP has subsequently (in 2013) developed into the *Constitute* project, a joint initiative with Google Ideas aimed at providing an indexed repository

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<sup>7</sup> See Mauro (1995) for the relationship between corruption and growth. Since entrepreneurship has been identified as one of the main engines of economic growth (see, among others, Baumol, 2010), a negative impact of corruption on entrepreneurship might be one of the channels explaining the negative impact of corruption on growth.

<sup>8</sup> Within constitutions, corruption is mentioned together with other regulatory provisions. Therefore, provisions regarding corruption deal with regulatory burdens imposed to control bribery, grafts and other behavior by bureaucrats.

of constitutional text for every constitution currently in force. The CCP contains data on both form and content of constitutions and tracks their main revisions over time. It is divided into 14 sections, each of which dealing with general and specific provisions contained in a national constitution. For our analysis we used information from Sections 9.5 (Corruption), 13.5 (Economic Rights), 14.1 (Environment), 14.5 (Economic Legislation), 14.6 (Race, Ethnicity, and Language), and 14.7 (Education).

In relation to the variables aimed at capturing the effect of cultural, economic, and technological characteristics of a country on the overall process of new firm formation, our *de facto* determinants of entrepreneurship, we relied upon the World Bank Development Indicators and the Transparency International Corruption Perception Index.

### *3.1 Dependent and independent variables*

Entrepreneurship capital involves a national milieu of agents who are willing to create new firms. Thus, a high entry rate of new firm formation may signal a greater endowment of entrepreneurship capital or a positive attitude towards self-employment. In the empirical literature on entrepreneurship, the rate of new firm formation and the endowment of entrepreneurship capital have been measured in different ways (for a survey, cf. Santarelli and Vivarelli, 2007). This literature has also shown that the employment of different measures of new firm formation may produce strikingly different results in empirical analyses. In particular, two alternative approaches can be adopted to compare start-up rates across different units of analysis (for a survey, see Santarelli *et al.*, 2009): the *ecological* and the *labor market* approach.

The *ecological* approach standardizes the number of entrants relative to that of active firms, the aim being to capture the magnitude of start-up activity in relation to the size of the existing population of businesses. Thus, this index can be viewed as the ratio between the founders of new firms and existing entrepreneurs. The *labor market* approach standardizes the number of new firms with respect to the size of the workforce or working age population. It implicitly assumes that all firms are the result of individual actions, since new entrepreneurs can be viewed as individuals previously either having or being potentially interested in having a dependent job, who exploit their knowledge of production processes and market features to switch to independent work (Santarelli and Sterlacchini, 1994). Accordingly, each individual in the labor pool is considered as a potential entrepreneur, with the potentiality to set up his own business (Audretsch and Fritsch, 1994). We believe that the labor market approach is the best way to study a country's attitude towards entrepreneurship. Accordingly, using data from the



World Bank Group Entrepreneurship Database<sup>9</sup>, the dependent variable is a standard measure of the total start-up activity in a country proxied by new business density (NBD), i.e. the number of new business registrations (private, formal sector companies with limited liability) in every year in each country per 1,000 residents aged 15-64. The independent variables are listed and described in Table 1. Thus our measure is different from that employed by Acs *et al.* (2009), who used self-employed as a percentage of the labor force in their study of the relationship between knowledge spillovers and entrepreneurship in OECD countries.

**Table 1 - List of independent variables**

<b>Variable description</b>	<b>Code</b>
<b>Corruption</b>	
Constitution contains provisions for a counter corruption commission	CC
<b>Economic legislation</b>	
Adoption of national economic plans	Econplan
<b>Economic rights</b>	
Right to transfer property freely	Transfer
Inheritance rights	Inherit
Right to free/competitive markets	Freecomp
Right to conduct/establish a business	Business
Right to strike	Strike
Consumer protection	Conright
Right to transfer property freely after death	Testate
Just remuneration for work mentioned	Remuner
Intellectual property rights – patents	Intprop_1
Intellectual property rights – copyright	Intprop_2
Intellectual property rights – trademark	Intprop_3
<b>Environment</b>	
Protection or preservation of the environment	Env
<b>Race, ethnicity, and language</b>	
Provisions for national integration of ethnic communities	Ethincl
<b>Education</b>	
Equal access to higher education	Achighed
To what level compulsory education	Edcompl
Constitution contains provisions concerning education	Educate
<b>Control variables</b>	
Corruption perception index	Cpi
Labor force participation rate (% of total population +15 years old)	Laborforce
Government size: the ratio of public expenditure over GDP	Govsize
Percentage of internet users (reflecting infrastructure)	Internetuser
GDP per capita	GDPcapita

They capture principles clearly stated in the constitutions, for each of which one or more proxies have been used. Since we only consider whether such principles are specifically introduced in the constitution, the corresponding variables are dummies attaining value 1 if the principle is mentioned in the constitution and zero otherwise. To control for country-specific characteristics that are likely to either stimulate or limit the endowment of entrepreneurship

<sup>9</sup> Since the US economy is not covered by the database, we decided to exclude this country from analysis rather than extracting the relevant data from alternative sources.

capital/new business density, we first consider for each country four aspects: the perceived level of corruption as reported by Transparency International (*Cpi*), as a measure of the potentially negative impact of the abuse of public or collective responsibility for private ends (Bardhan, 1997); the labor force participation (for population aged 15+) (*Laborforce*), under the assumption that since the largest fractions of new entrepreneurs is represented by individuals previously employed as wage workers higher levels of this variable should be associated to higher rates of new business density (Storey and Jones, 1987); the ratio of public expenditures over GDP (*Govsize*), as a proxy of total tax pressure and the extent of regulatory interventions in the economy (Acs *et al.*, 2009); a measure of the quality of the infrastructures represented by the percentage of internet users (*Internetuser*), to detect whether entrepreneurs do or do not start firms before a critical mass of a strategic infrastructure is accumulated. Besides, in order to shed light on the relationship between entrepreneurship and the business cycle, we estimate also a model in which the measure of GDP per capita (*GDPcapita*) is added as a control variable. The measure of GDP per capita - converted into current international US \$ using purchasing power parity rates - is drawn from the World Bank databases.

### 3.2 Model development and estimation method

Our baseline model includes both *de jure*, characteristics of the constitutions, and *de facto*, country-specific characteristics, factors that may stimulate firm entries:

$$(1) \quad \text{NBD}_{it} = \alpha_0 + \alpha_1 \text{CC}_{it} + \alpha_2 \text{ECONPLAN}_{it} + \alpha_3 \text{ECRIGHTS}_{it} + \alpha_4 \text{ENV}_{it} + \alpha_5 \text{RACE}_{it} + \alpha_6 \text{ETHINCL}_{it} + \text{EDU}_{it} + \text{Z}_{it} + \text{v}_{it} + \varepsilon_{it}$$

( $i = 1, 2, \dots, n$ ;  $t = 1, 2, \dots, T$ ).

*CC* is a dummy variable coded 1 if the constitutions contain provisions for a counter corruption commission, *ECONPLAN* a dummy variable coded 1 if the constitutions recommend adoption of national economic plans, *ECRIGHTS* is a set of 11 dummy variables coded 1 if the constitutions explicitly mention the protection of certain economic rights, *ENV* is a dummy variable coded 1 if the constitutions mention the adoption of measures for protection or preservation of the environment, *ETHINCL* is a dummy variable coded 1 if the constitutions contain provisions for national integration of ethnic communities, *EDU* is a set of 2 dummy variables coded 1 if the constitutions contains certain provisions in relation to education and a

variable (*Edcompl*) indicating to what level education is made compulsory in the constitution<sup>10</sup>,  $Z$  is a set of 4 controls for country-specific characteristics,  $\nu$  is a unobserved country-specific time-invariant effect that allows for heterogeneity in the means of the  $NBD_{ti}$  series across countries, and  $\varepsilon$  is a disturbance term.

In the Appendix, Tables A.2 and A.3 report respectively the correlation matrix and the descriptive statistics. The dependent variable exhibits a correlation above 0.40 only with *Cpi* and *Internetuser*. Correlation among the explanatory variables is a source of little concern, although there are some correlations above 0.4: *Conright* with *Freecomp*, *Strike* with *Remuner*, *Env* with *Remuner*, *Cpi* with *Internetuser*, *Intprop\_1* with *Intprop\_2*, and *Intprop\_1* with *Intprop\_3*. However, since the last three pairs of variables display correlations above 0.5, they have been inserted separately in the estimations.

Before estimating the Pooled OLS regression, the Breusch-Pagan's test is employed to check for the presence of heteroskedasticity ( $\chi^2(1) = 641.85$ ; Prob >  $\chi^2 = 0.0000$ ). Thus, since the test confirms heteroskedasticity, the alternative estimation technique capable of correcting for heteroskedastic errors is "Robust" Pooled OLS regression method with standard errors corrected for heteroskedasticity by White's method. The results are presented in Table 2.

We conduct serial correlation and endogeneity tests to check for the presence of autocorrelation and endogenous variables, which would yield biased estimations for a panel data structure. The Wooldridge test for autocorrelation in panel data indicates the presence of serial correlation in our dataset<sup>11</sup>. Although endogeneity bias usually arises in cross-sectional studies, it is rarely considered as a factor hindering economic analysis in the case of panel data estimations like ours, since fixed effects estimation will eliminate most forms of unobserved heterogeneity. In any case, the Sargan test has been used to check whether endogeneity is likely to bias our estimation. In fact, the Sargan test indicates the presence of endogeneity of the *Strike*, *Econplan*, *Env*, *Business*, *Intprop\_1*<sup>12</sup>, *Intprop\_2*, and *Intprop\_3* variables. In case of endogeneity problems, instrumental variable (IV) estimation is often adopted.

Since both serial correlation and endogeneity problems are present in our data, even Robust Pooled OLS estimation fails to give unbiased and efficient estimators. Thus, to get more reliable results we apply the Arellano-Bover/Blundell-Bond linear dynamic panel-data estimation using the conventionally derived variance estimator for generalized method of

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<sup>10</sup> This variable takes therefore value 0 when no provision about compulsory education is contained in the constitution, 1 when education is compulsory up to the basic/elementary/primary level, 2 when it is compulsory up to the secondary/intermediate level.

<sup>11</sup>  $F(1, 113) = 22.689$ ;  $p\text{-value} = 0.000$

<sup>12</sup>  $\chi^2(1) = 4.384$ ;  $p\text{-value} = 0.036$

moments (GMM) technique (Baum and Schaffer, 2003; Blundell and Bond, 1998)<sup>13</sup>. The IV-GMM treatment requires the availability and validity of exogenous instruments that are correlated with the independent variables for which endogeneity has been detected, but that are uncorrelated with the measure of new business density (*NBD*). We estimate a model where the lagged values of the endogenous variables are used as IVs<sup>14</sup> and the lagged value of the dependent variable is also included to isolate the effect of potential performance shock that may impede or stimulate new entries:

$$(2) \quad NBD_{it} = \alpha_0 NBD_{it-1} + \alpha_1 CC_{it} + \alpha_2 ECONPLAN_{it} + \alpha_3 ECRIGHTS_{it} + \alpha_4 ENV_{it} + \alpha_5 ETHINCL_{it} + \alpha_6 EDU_{it} + Z_{it} + v_{it} + \varepsilon_{it}$$

( $i = 1, 2, \dots, n; t = 1, 2, \dots, T$ ).

Where  $NBD_{it-1}$  is the one-year lagged value of  $NBD_{it}$  of country  $i$  in year  $t$ .

The results from IV-GMM estimation are presented in Table 3. Those from the Pooled OLS and the IV-GMM incorporating also the *GDPcapita* variable can be found in Table A.4 in the Appendix.

## 5. Empirical Results

The findings from the Robust Pooled OLS regressions show that provisions for a counter corruption commission (*CC*), those in favor of the right to transfer property freely (*Transfer*), constitutional protection of the right to strike (*Strike*), right to free/competitive markets (*Freecomp*), and higher levels of compulsory education (*Edcompl*) are all factors enhancing the propensity to start up new businesses. Conversely, recommendations for the adoption of national economic plans (*Econplan*), the right to transfer property freely after death (*Testate*), provisions about protection or preservation of the environment (*Env*), generic provisions concerning education (*Educate*), are associated to lower levels of new business density.

Less straightforward results are found for provisions concerning protection of intellectual property rights (*Intprop\_1*, *Intprop\_2*, and *Intprop\_3*) and just remuneration of work (*Remuner*). For the former, only when all the variables are included in the model a positive and

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<sup>13</sup> We did check the robustness of our adopted model by re-run all regressions with the GMM model for the static treatment (ivreg2). However, the significant lagged value of the dependent variable in our dynamic treatment indicates the presence of strong relationship between new entries over years: new entry this year is strongly determined by new entry last year. Thus, the dynamic treatment is preferable.

<sup>14</sup> In fact, our constitution dummy variables present little variation over time, since during the relevant period several national constitutions have modified at least in part some of the provisions taken into account in the present study.

statistically significant coefficient is found for the provisions regarding patents alone (*Intprop\_1*). For the latter, only when provisions concerning copyright (*Intprop\_2*) and trademarks (*Intprop\_3*) are excluded for the collinearity problems discussed above, does a positive and statistically significant coefficient of the *Remuner* variable turn out. As far as the control variables are concerned, once the problem of collinearity is duly treated they are all found to be positively and statistically significantly associated to new business density.

However, since serial correlation and endogeneity have been seen to be a problem, our most interesting findings are those found from application of the dynamic IV-GMM method that in fact changes the picture with respect to the Pooled OLS (Table 3). Although the coefficients of the *CC* and the *Freecomp* variables are no longer significant, the sign and the statistical significance of most of the other estimated parameters are consistent with the hypotheses, and the positive and statistically significant coefficient of the lagged dependent variable  $NBD_{t-1}$  supports our choice of the GMM treatment of the model. Starting with the estimate including all variables (first column of Table 3), we discuss the hypotheses we outlined in Section 3, checking whether our empirical analysis validates or negates them.

We look first at the group of variables dealing with education. Hypothesis H1 posits that provisions regarding education have a positive impact on the rate of new business formation.

Interestingly, we find that general constitutional provisions concerning education (*Educate*) have a positive impact on our measure of entrepreneurship, whereas provisions on equal access to higher education (*Achighed*) influence negatively the dependent variable. Finally, the degree to which the constitution prescribes education to be compulsory (*Edcompl*) has not a statistically significant impact on the rate of formation of new businesses. All three findings provide support to the theories presented in Section 3. Particularly, education has a positive impact on the choice to become entrepreneurs, which confirms the results in van Praag (2005). This is also in line with the empirical literature on the returns to education for entrepreneurs: more education translates into higher earnings for entrepreneurs, which, in a model of occupational choice, might lead more individuals with relatively high entrepreneurial skills to choose self-employment. Equal access to higher education hinders entrepreneurship. This finding is apparently confirmed by anecdotal evidence, telling the stories of very talented entrepreneurs who dropped out of college or even of high school. The more you study, the argument goes, the more you learn rigid mental schemes and rational arguments that suffocate your creative skill (Parker, 2009). This seems to be especially true for higher education. Finally, compulsory schooling has a positive but not statistically significant impact on entrepreneurship (it has a positive and significant impact in our OLS model but not in our

GMM). The positive sign is again in line with the positive effect of general education on entrepreneurship. Since most countries make education compulsory up to secondary/intermediate level, we are dealing with a level of compulsory education that certainly impacts positively on individual skills and has little if no signaling/screening power. The lack of statistical significance in the GMM simply indicates that such a level of compulsory education cannot impact entrepreneurship in a differential measure compared to paid employment.

Turning to our hypothesis H2, we find that constitutional provisions regarding ethnic integration (*Ethincl*) have a negative but not statistically significant impact on the rate of new business formation. This result could be explained by a series of factors. First of all, in Section 3 we mentioned several positive and negative effects of discrimination on entrepreneurship. Our results seemingly indicate that positive effects are small and possibly overcome by negative ones. Moreover, the impact of the negative effects of discrimination might be small. For instance, the evidence about the difficulties that ethnic minorities encounter when they try to borrow in the US is mixed (Blanchard et al., 2008). Studies about the UK find no significant discrimination in the loan market (Fraser, 2007).

Turning to economic legislation, countries which are forced by their constitutions to adopt national economic plans (*Econplan*) are the least entrepreneurially active, confirming our hypothesis H3 and that centrally planned economies are less able to provide incentives to business founders and are in general characterized by slower entrepreneurial dynamics than it is the case in free market economies. Consistently with the large and positive coefficient of the *Business* variable and the positive (albeit not significant) impact of the *Freecomp* variable – showing that pro-market institutional arrangements promote entrepreneurship and discussed below - the negative and statistically significant (at the 1 percent level) coefficient of *Econplan* confirms that when institutions do not support economic freedom entrepreneurship is severely impeded (Bell et al., 2008; Parker, 2009, Ch. 15).

Provisions about protection or preservation of the environment do not facilitate entrepreneurship (confirming our Hypothesis H4): the negative and statistically significant coefficient of the *Env* variable suggests that new firms are less likely to be able to face the increased costs brought about by severe environmental regulation.

We then turn to the variables defining economic rights in our dataset. Variables proxying provisions about right to transfer property freely (*Transfer*), right to transfer property freely after death (*Testate*), and inheritance rights in general (*Inherit*) never get a statistically significant coefficient, with the only partial exception of *Inherit* (although only at a 90%

confidence level) in the estimate from which *Intprop\_2*, *Intprop\_3*, and *Internetuser* are dropped. Then our hypothesis H5 is generally negated, given that only *Transfer* tends to have a positive coefficient, whereas *Testate* and *Inherit* have a negative impact. Our findings indirectly support the view that the transition problem often facing entrepreneurial/family firms cannot be overcome by simply regulating transfers of property, since it is also linked to cultural (e.g. business founders reluctance to hand over control of their firm to an outsider) and structural (e.g. inefficiency of financial markets) factors (Burkart *et al.*, 2003).

When turning to intellectual property rights, results confirm our hypothesis H6. Particularly, copyright has a strong negative impact, whereas trademarks have a strong positive effect on the rate of new business formation. Both effects are statistically significant at a 99% confidence interval. The impact of patents is instead negative, again as expected, but only at a 90% confidence interval. This might be due to the fact that the majority of the newly formed firms in our sample operate in sectors hardly influenced by patents and knowledge spillovers, like retail and direct customer services.

*Intprop\_3*, denotes provisions about trademarks, which may imply that registrations of new brand names (new varieties of a product) are the preferred instrument for the protection of intellectual property rights by new firms outside the high-tech industries. In the law and economics literature, trademarks have been shown to be a “signal” which facilitates and enhances consumers’ decisions and creates incentives for firms to produce goods of desirable qualities (Landes and Posner, 1987; Economides, 1998). Trademarks are also a standard measure of the innovative performance of firms in traditional and intermediate industries, i.e. in industries in which the rate of new firm formation tends to be higher (cf. Mendonça *et al.*, 2004).

Opposite to results from OLS estimations, but not surprisingly, patents and copyrights (*Intprop\_1* and *Intprop\_2*) get negative and statistically significant coefficients. These variables capture the (potential) effect of technological development on new firm formation; however, since most of the technological activities that are likely to lead agents to apply for either patent or copyright protection are undertaken by a limited number of large firms in specific industries, *Intprop\_1* and *Intprop\_2* may not adequately reflect technological opportunities available to (very) small new firms (Santarelli *et al.*, 2009). In fact, as a comment to their finding that patent activity is negatively associated to new firm formation in the USA Choi and Phan (2006) argue that patents are an indicator of venture success rather than a cause of firm formation. However, within a law and economics framework, trademarks are even more important than patents and copyright. The positive and statistically significant coefficient of the *Intprop\_3*

variable confirms that this mechanisms of Intellectual Property Rights protection, by averting the market failure brought about by adverse selection and providing information for assisting exchanges indirectly facilitates the overall process of new firm formation.

*Business* has a positive and strongly significant coefficient, showing that provisions dealing with the right to conduct/establish a business lead to higher rates of entrepreneurship, since they protect the right to be an entrepreneur. The provisions denoted by the *Business* variable are typical of institutional settings aimed at protecting entrepreneurs from the risk of appropriation, which confirms our hypothesis H7. The variable *Freecomp*, however, is never statistically significant, even if it has a positive coefficient.

*Strike* and *Conright*, denoting that right to strike (*Strike*) and consumer protection (*Conright*) are positively and significantly associated with new business density. Our results surprisingly contradict hypothesis H8. *Strike* has a remarkably strong and positive effect, highly significant. This might be due to the fact that strikes tend to occur in large companies more than in small ones, where industrial relations are based on personal and close interaction and family bonds and friendship often tie workers and ownership. Moreover, the fact that a constitution mentions the right to strike implies that ordinary laws will probably clearly regulate strikes, which renders industrial relations generally more transparent and less costly to manage.

*Conright* is highly positive and strongly statistically significant. The main explanation for this finding might be that an economy with strong consumer protection is also characterized by high consumer trust and little incidence of lemons problems (Akerlof, 1970; Landes and Posner, 1985). Therefore, consumers are willing to buy from relatively young firms, which had little time to build a reputation for quality. This certainly facilitates the survival of new firms and therefore makes entry and entrepreneurship in general more attractive. Being the pillars of transparent and well regulated labor and product markets, these characteristics of constitutions promote higher rates of new firm formation. In particular, provisions about the right to strike are indication of an institutional setting able to promote a favorable climate in industrial relations.

Since higher wages may result in a lower incentive either to switch from salary job to employment or to start-up a new firm, one might expect that the extension of constitutional guarantees to the just remuneration of work might result on lower rates of new firm formation. However, this hypothesis is not fully confirmed by our analysis. In fact, the *Remuner* variable denoting mention in the constitution of the right of just remuneration for work is negative and (barely) statistically significant only in the estimate from which *Intprop\_1* and *Cpi* are excluded. This result possibly has the same explanation provided for the variable *Strike*.



**Table 2: Characteristics of the Constitutions and Entrepreneurship (Pooled OLS with Robust Standard Errors)**

Variables	Coefficient	Robust S.E.	Coefficient	Robust SE	Coefficient	Robust SE	Coefficient	Robust SE	Coefficient	Robust SE
<b>Dep. Var.: new business density</b>										
<b>Corruption</b>										
Cc	.4203	.2128**	.5337	.1911***	.5523	.1895***	.3899	.2171*	.3564	.2166*
<b>Economic legislation</b>										
Econplan	-1.3397	.1842***	-1.2903	.1914***	-1.2847	.1924***	-1.3732	.1720***	-1.3628	.1743***
<b>Economic rights</b>										
Transfer	.8389	.3882***	.7625	.3904**	.7457	.3999**	.7899	.3856***	.7301	.3941**
Inherit	.0537	.2009	-.2174	.2061	-.2338	.2031	.0811	.1957	.0135	.1924
Freecomp	.4120	.2190**	.3261	.2201	.3356	.2207	.4533	.2055***	.4919	.2077***
Business	.2157	.3698	.3148	.3714	.3182	.3716	.2225	.3612	.2390	.3602
Strike	1.9386	.3148***	1.4938	.2880***	1.5281	.3009***	1.9576	.2906***	1.9987	.3035***
Conright	-.0963	.2188	-.0870	.2264	-0.7887	.2288	-.0511	.2118	-.0181	.2154
Testate	-1.0986	.4207***	-.8971	.4239***	-.8862	.4082***	-1.1944	.4333***	-1.1784	.4188***
Remuner	-1050	.2191	.0820	.1986	.1112	.2092	.0875	.2059	.1605	.2138
Intprop_1	.6326	.3340**	.2848	.2748			.5486	.2652***		
Intprop_2	-.1693	.2532			.1184	.2154			.1432	.2111
Intprop_3	.0886	.4673			.3543	.4717			.2997	.4542
<b>Environment</b>										
Env	-3.6118	.4131***	-3.9503	.4331***	-3.9852	.4182***	-3.6251	.4191***	-3.7022	.4014***
<b>Race, ethn. &amp; lang.</b>										
Ethincl	.3951	.1769***	.2064	.1761	.2019	.1759	.5325	.1793***	.4425	.1794***
<b>Education</b>										
Achighed	-.4311	.3198	-.4844	.3394	-.5280	.3271*	-.4109	.3199	-.4682	.3099
Edcompl	.6286	.1509***	.6615	.1562	.6542	.1577***	.5992	.1480***	.5909	.1492***
Educate	-2.2326	.4998***	-2.1996	.5289***	-2.2017	.5327***	-2.2579	.4870***	-2.2161	.4902***
<b>Control variables</b>										
Cpi	.7060	.0857***					.7820	.0487***	.7770	.0497***
Laborforce	.0274	.0083***	.0449	.0087***	.0456	.0086***	.0259	.0083**	.0269	.0081***
Govsize	.0562	.0095***	.0669	.0123***	.0670	.0128***	.0558	.0098***	.0543	.0101***
Internetuser	.0077	.0063	.0495	.0037***	.0496	.0037***				
Intercept	.1949	.7129	1.3073	.7532*	1.2678	.7535*	.2287	.7162	.2443	.7185
F	(22, 97)= 31.20		(19, 1100)=34.86		(20,199)=32.48		(19,1106)=34.90		(20,1105)=32.53	
R <sup>2</sup>	.4067		.3710		.3713		.4062		.4050	
Root MSE	3.2635		3.3556		3.3562		3.2536		3.2586	
N	1120		1120		1120		1126		1126	

Note: \*: significant at 90% level; \*\*: significant at 95% level; \*\*\*: significant at 99% level.

**Table 3: Characteristics of the Constitutions and Entrepreneurship (IV-GMM)**

Dep. Var.: new business density										
Variables	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.
NBD <sub>t-1</sub>	.7754	.0274***	.7991	.0249***	.7942	.0255***	.7817	.0267***	.7592	.0276***
<b>Corruption</b>										
Cc	-.1599	.5305	-.1780	.4749	-.1576	.5414	-.2009	.4690	-.3374	.5329
<b>Economic legislation</b>										
Econplan	-2.0564	.5671***	-2.1185	.5542***	-2.3248	.5603***	-1.8884	.5567***	-2.0023	.5613***
<b>Economic rights</b>										
Transfer	.2531	.5469	-.1285	.4885	.1238	.5072	.1119	.5059	.6156	.5260
Inherit	-.5555	.4761	-.7351	.4654	-.0905	.4568	-.7521	.4610*	.0916	.4542
Freecomp	.0562	.5106	.5454	.4926	-.1400	.5145	.5274	.4880	-.0105	.5116
Business	.9386	.3963***	1.3431	.4099***	1.1282	.4049***	1.2595	.4079***	1.0798	.3999***
Strike	1.4268	.5224***	1.4961	.5183***	1.2861	.5185***	1.4888	.5125***	1.3454	.5098***
Conright	1.1129	.4957***	1.1560	.4559***	1.3186	.5213***	1.0710	.4475***	1.3551	.5153***
Testate	-.0733	.6880	-.7761	.6318	-1.0285	.6927	-.6302	.6287	-1.1133	.6859*
Remuner	-.5452	.4751	-.7214	.4977	-.8226	.4839*	-.5897	.4876	-.7317	.4730
Intprop_1	-1.3872	.7757*	-2.5677	.7289			-2.5991	.7632***		
Intprop_2	-2.2759	.8735***			-3.4251	.8457***			-3.8304	.8412***
Intprop_3	1.999	1.9703**			1.7915	1.0681*			1.7578	1.0525*
<b>Environment</b>										
Env	-2.2639	.5778***	-2.3018	.5777	-2.2986	.5707***	-2.3542	.5732***	-.2509	.5636***
<b>Race, ethnicity and language</b>										
Ethincl	-.3094	.4838	-.9205	.4849	-.3263	.4433	-.7958	.4914	-.0511	.4478
<b>Education</b>										
Achighed	-1.5888	.5267***	-.8384	.5458	-1.0041	.5254**	-.9957	.5507*	-1.3390	.5298***
Edcompl	.4357	.3743	.3782	.3953	.1274	.3766	.4169	.3893	.1770	.5298
Educate	4.5748	1.3388***	4.8906	1.3692***	4.7631	1.3455***	4.9066	1.3509***	4.5710	1.3192***
<b>Control variables</b>										
Cpi	.3065	.1163***					.1603	.1069	.3387	.1076***
Laborforce	.0013	.0147	-.0037	.0150	.0163	.0154	-.0057	.0149	.0135	.0151
Govsize	-.0094	.0176	-.0104	.0121	-.0167	.0199	-.0119	.0120	-.0132	.0118
Internetuser	-.0023	.0045	.0002	.0041	.0044	.0042				
Intercept	-2.5131	1.5378*	-1.4876	.0041	-2.2368	1.5458	-2.1034	1.5448	-3.3679	1.5627
Wald chi2	3557.15		3329.60		3283.48		3405.80		3403.20	
Observations	1008		1008		1008		1014		1014	
Groups	113		113		113		114		114	

Note: \*: significant at 90% level; \*\*: significant at 95% level; \*\*\*: significant at 99% level.

Constitutional guarantees of equal access to higher education (*Achighed*) are found to impact negatively on the dependent variable. This finding provides indication of a potentially lower quality of education systems that do not give priority access to secondary and tertiary education to the most deserving individuals.

Provisions for a counter-corruption commission (*Cc*) now get a statistically non-significant, negative coefficient. This finding therefore supports (albeit only weakly) our hypothesis H9.

*Cpi* (the corruption perception index) is negatively correlated with *Cc* ( $r=0.156$ ), therefore it seems that countries with a constitutional requirement for a counter-corruption commission also have high-perceived corruption. This is in line with the argument by Djankov *et al.* (2002) presented in Section 4: since regulation increases barriers to entry, legal entrepreneurship is likely to decrease (negative impact of *Cc*), and corruption increases (high *Cpi*, due to an increase in bribery to overcome regulatory constraints).

Of the four control variables, only the corruption perception index (*Cpi*) gets a statistically significant and positive coefficient, although only in two of the three specifications in which it is included.

This is substantially consistent with some of the papers surveyed in Section 2 above, showing that lower levels of corruption do not necessarily result in higher rates of new firm formation but that the opposite might hold true, in particular in countries where social acceptance of entrepreneurial activities is particularly high (Anokhin and Schulze, 2009). Possibly, this might also imply a shift of investments from large firms to small ones.

Finally, we perform our regressions adding GDP per capita. The results are presented in Table A.4: while the *GDPcapita* variable gets a positive and statistically significant coefficient, it is not significant in the IV-GMM model. Consistent with the finding by Koellinger and Thurik (2012), this result confirms that on this aggregate level GDP cycles do not predict the entrepreneurial cycle.

## **6. Concluding remarks**

This paper has provided evidence supporting the view that constitutions may influence the behavior of economic agents. Dealing with the issue of the institutional determinants of entrepreneurship, it has shown *a*) that some of the provisions contained in national constitutions that create favorable conditions for entrepreneurship are positively and significantly associated to a standard measure of entrepreneurial dynamics such as the rate of new business density, and *b*) that other provisions which may be likely to impose a burden on or to just limit

entrepreneurial freedom are found to be negatively and statistically significantly associated to new business density.

In addition to a positive analysis, our findings may also have a normative function. We identified some of the principles that constitutions should include when fostering a high entrepreneurial dynamics is a priority. Particularly, provisions about the right to conduct/establish a business, the right to strike, consumer protection, protection of trademarks, and education promote higher rates of new firm formation and should therefore be given high stance.

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### **Appendix 1 – List of countries<sup>15</sup>**

Canada; Dominican Republic; Jamaica; Mexico; Belize; Guatemala; El Salvador; Costa Rica; Panama; Colombia; Peru; Brazil; Bolivia; Chile; Argentina; Uruguay; United Kingdom; Ireland; Netherlands; Belgium; Luxembourg; France; Switzerland; Spain; Portugal; Germany; Poland; Austria; Hungary; Czech Republic; Slovak Republic; Italy; Malta; Albania; Montenegro; Macedonia; Croatia; Bosnia and Herzegovina; Slovenia; Greece; Cyprus; Bulgaria; Moldova; Romania; Russia; Estonia; Latvia; Lithuania; Ukraine; Belarus; Armenia; Georgia; Azerbaijan; Finland; Sweden; Norway; Denmark; Iceland; Niger; Burkina Faso; Sierra Leone; Ghana; Togo; Nigeria; Gabon; Democratic Republic of the Congo; Uganda; Kenya; Rwanda; Ethiopia; Zambia; Malawi; South Africa; Namibia; Lesotho; Botswana; Madagascar; Mauritius; Morocco; Algeria; Tunisia; Turkey; Iraq; Egypt; Syria; Jordan; Israel; Qatar; United Arab Emirates; Oman; Tajikistan; Kyrgyz Republic; Kazakhstan; South Korea; Japan; India; Bhutan; Pakistan; Bangladesh; Sri Lanka; Maldives; Nepal; Thailand; Cambodia; Laos; Malaysia; Singapore; Brunei; Philippines; Indonesia; Timor; Australia; New Zealand; Vanuatu; Tonga.

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<sup>15</sup> The World Bank Group Entrepreneurship Database covers 132 countries, but for 17 of them information on either the constitution or the control variables was not available. They have therefore been dropped from analysis.



**Table A.2 – Pairwise correlation matrix**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	1.000																							
2	-0.085	1.000																						
3	-0.196	-0.035	1.000																					
4	-0.005	0.068	0.039	1.000																				
5	-0.069	-0.038	0.206	0.132	1.000																			
6	0.0002	-0.021	0.025	0.151	0.274	1.000																		
7	-0.081	-0.066	0.052	0.115	0.264	0.299	1.000																	
8	-0.078	-0.128	0.173	0.153	0.125	0.372	0.362	1.000																
9	-0.084	-0.030	0.252	0.134	0.146	0.430	0.214	0.394	1.000															
10	0.087	0.041	0.067	0.425	0.063	0.209	0.190	0.216	0.224	1.000														
11	0.381	-0.011	0.286	0.051	0.208	0.292	0.225	0.419	0.300	0.911	1.000													
12	-0.013	-0.119	0.112	-0.025	-0.031	0.150	0.112	0.110	0.248	0.028	0.203	1.000												
13	0.098	-0.141	0.042	0.073	0.067	0.249	0.161	0.166	0.269	0.154	0.157	0.718	1.000											
14	-0.025	-0.070	0.147	-0.021	-0.062	0.048	0.101	0.056	0.139	-0.083	0.140	0.538	0.391	1.000										
15	-0.389	0.053	0.126	0.092	0.165	0.234	0.329	0.381	0.274	0.130	0.439	0.086	0.155	0.061	1.000									
16	-0.063	0.047	-0.048	-0.069	0.121	0.242	0.205	0.107	0.166	0.017	0.171	0.095	0.083	0.083	0.203	1.000								
17	-0.085	-0.036	0.155	0.082	0.078	0.201	0.320	0.266	0.204	0.056	0.244	0.031	0.042	0.160	0.220	0.056	1.000							
18	-0.104	0.013	0.198	0.053	0.140	0.247	0.259	0.351	0.312	0.087	0.381	0.185	0.187	0.190	0.291	0.227	0.312	1.000						
19	-0.145	0.083	0.151	0.088	0.164	0.161	0.169	0.262	0.166	0.095	0.260	0.096	0.135	0.086	0.266	0.160	0.186	0.248	1.000					
20	0.465	-0.060	-0.156	-0.076	-0.062	-0.043	-0.173	-0.222	-0.134	-0.064	-0.276	-0.075	-0.004	-0.043	-0.322	-0.051	-0.036	-0.205	-0.211	1.000				
21	-0.006	0.090	0.062	0.114	-0.044	-0.022	-0.105	-0.002	-0.026	0.068	0.113	0.025	-0.039	-0.019	0.152	-0.004	-0.068	0.015	0.040	0.046	1.000			
22	0.166	-0.062	-0.041	0.109	-0.025	-0.013	-0.094	-0.057	-0.001	0.106	-0.114	-0.135	-0.050	-0.096	-0.046	-0.098	-0.015	-0.180	-0.068	0.217	-0.172	1.000		
23	0.434	-0.077	-0.192	-0.092	0.053	0.085	-0.073	-0.091	-0.011	-0.097	-0.190	0.025	0.077	-0.012	-0.202	0.046	0.007	-0.122	-0.136	0.816	-0.050	0.186	1.000	
24	-0.058	0.149	-0.012	-0.032	0.010	-0.039	-0.041	-0.057	-0.041	-0.023	-0.001	-0.036	-0.043	-0.022	0.043	-0.017	-0.047	0.119	0.024	-0.079	0.007	-0.044	-0.057	1.000

List of variables: 1) NBD; 2) Cc; 3) Econplan; 4) Transfer; 5) Inherit; 6) Freecomp; 7) Business; 8) Strike; 9) Conright; 10) Testate; 11) Remuner; 12) IntProp\_1; 13) IntProp\_2; 14) IntProp\_3; 15) Env; 16) Ethinc; 17) Achighed; 18) Edcompl; 19) Educate; 20) Cpi; 21) Laborforce; 22) Govsize; 23) Internetuser; 24) GDPcapita

**Table A.3 – Descriptive statistics**

<b>Variable</b>	<b>Mean</b>	<b>Std. dev.</b>	<b>Min</b>	<b>Max</b>
NBD	3.0591	4.9480	0	1
Cc	.0650	.2467	0	1
Econplan	.1878	.3907	0	1
Transfer	.1613	.3679	0	1
Inherit	.2976	.4573	0	1
Freecomp	.2086	.4064	0	1
Business	.3767	.4847	0	1
Strike	.4744	.4995	0	1
Conright	.2194	.4139	0	1
Testate	.0841	.2777	0	1
Remuner	.4750	.4995	0	1
Intprop_1	.1767	.3816	0	1
Intprop_2	.2446	.4299	0	1
Intprop_3	.0699	.2552	0	1
Env	.7544	.4305	0	1
Ethincl	.2083	.4062	0	1
Achighed	.2601	.4388	0	1
Edcompl	.4992	.6362	0	2
Educate	.9105	.2855	0	1
Cpi	4.1045	2.0811	1	9.7
Laborforce	62.2133	10.3816	30.5	89.6
Govsize	16.1048	7.6404	2.0471	104.9
Internetuser	28.9211	25.5237	.0243	96.21
GDPcapita	1.87e+08	2.46e+09	281.1	4.08e+10

**Table A.4 – Characteristics of the Constitutions and Entrepreneurship with control for GDP per capita included: (Pooled OLS with Robust Standard Errors, IV-GMM)**

Variable	OLS		IV-GMM	
	Coefficient	Robust S.E.	Coefficient	S.E.
NBD <sub>t-1</sub>			.7752	.0274***
Cc	.4265	0.2139***	-.1620	.5309
Econplan	-1.3374	.1841***	-2.0560	.5674***
Transfer	.8427	.3886***	.2482	.5477
Inherit	.0481	.2014	-.5524	.4765
Freecomp	.4181	.2193**	.0543	.5109
Business	.2158	.3698	.9442	.3973***
Strike	1.9491	.3168***	1.4266	.5226***
Conright	-.0988	.2189	1.1125	.4960***
Testate	.11001	.4208***	-.0796	.6889
Remuner	.0977	.2199	-.5383	.4766
Intprop_1	.6375	.3342**	-1.3824	.7762*
Intprop_2	-.1686	.2533	-2.2816	.8741***
Intprop_3	.0896	.4674	1.9996	1.0711**
Env	-3.6149	.4133***	-2.2691	.5785***
Ethincl	.3987	.1769***	-.3031	.4847
Achighed	-.4244	.3197	-1.5881	.5271***
Edcompl	.6241	.1506***	.4327	.3746
Educate	-2.2370	.4997***	4.5777	1.3396***
GDPcapita	0.0002	.0007***	-.0005	-.0002
Cpi	.7087	.0862***	.3074	.1164***
Laborforce	.0274	.0083***	.0013	.0148
Govsize	.0563	.0096***	-.0095	.0177
Internetuser	.0075	.0063	-.0023	.0045
Intercept	.1860	.7133	-2.5185	1.5387*
Wald Chi2			3382.44	
R <sup>2</sup>	.4068			
Root MSE	3.2646			
N	1120		1008	
Groups			113	

Note: \*: significant at 90% level; \*\*: significant at 95% level; \*\*\*: significant at 99% level.



Alma Mater Studiorum - Università di Bologna  
DEPARTMENT OF ECONOMICS

Strada Maggiore 45  
40125 Bologna - Italy  
Tel. +39 051 2092604  
Fax +39 051 2092664  
<http://www.dse.unibo.it>