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THE WEALTH OF REGIONS:

Government Quality and Entrepreneurship in Europe

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ABSTRACT

This paper argues that government quality – operationalized as the ability of government to treat all their citizens in an impartial way – levels the 'playing field' for economic agents with and without connections to politicians and administrators in government, therefore encouraging entrepreneurial minded individuals to start or develop their business. Based on a unique data set on the quality of government in 172 regions of 18 European countries, the paper shows that regions with more impartial governments have significantly more small and medium-sized firms. It is also shown that quality of government is a determinant of the spatial distribution of entrepreneurship within countries. Under partial governments entrepreneurs face incentives to create and maintain special relations with power holders and therefore to be closer to the source of privileges and locate their activities around the national capitals, where the most relevant political connections rest.

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A recent analysis of one the most exhaustive data sets about regions in Europe, collected for the European Commission, reveals "striking regional disparities from differences in productivity, to infant mortality rates and vulnerability to climate change" (EU 2010: XII). Although this regional gap has been the subject of recent comparative studies (Charron and Lapuente 2012; Tabellini 2010), most of the political economy research on the determinants of economic development has neglected these sub-national differences, focusing instead on factors at the national level, which has lead political economist to concentrate on the puzzle of the 'wealth of nations'. There is an intuitive logic behind that preference for national units in comparative research: the national constitutional framework, the political system, the legal tradition, and the predominance of some religious or cultural beliefs are all factors expected to exert a uniform effect on what happens within the borders of a country.

In contrast to these studies, this paper addresses the following question: why do some regions that have so many common characteristics – e.g. regions within Italy, Spain, Belgium or Romania – exhibit such differences in economic outcomes? For instance, data on unemployment across EU regions reveals that while Italy has the European region with the lowest unemployment rate in 2010 – Bolzano, with a mere 2,7 percent – it also has three regions with rates over 14 percent. Even more markedly, the difference in unemployment rates between Pais Vasco (10,5) and other Spanish regions – such as Andalucia (28) or Canarias (28,7) is close to 20 percent points.[1] Given the large number of plausible factors affecting economic growth (and/or employment rates) and their measurement problems, a comprehensive answer to the question of what determines the 'wealth of regions' is obviously out of the reach of this paper.[2] Instead, we narrow our focus to what has been identified by many as a key condition or the 'engine' for growth: the level of entrepreneurship.[3] More specifically, and following the mainstream literature on entrepreneurship, we focus on the relative size of the corps of small and medium-sized enterprises (SMEs).

The paper presents two hypotheses. Firstly, we argue that an impartial government that treats entrepreneurs in a non-discriminatory fashion facilitates the calculus on the expected return on investment made by acting and would-be entrepreneurs and encourages them to exercise

[1] Eurostat. Released on November 24th, 2011. Available at http://epp.eurostat.ec.europa.eu/cache/ITY_PUBLIC/1-24112011-AP/EN/1-24112011-AP-EN.PDF

[2] In that sense, we take seriously the criticism that many scholars, since Levine and Renelt's (1992) pioneering paper, have made to the endogeneity problems of any study attempting to explain the determinants of growth.

[3] The importance of entrepreneurship for economic growth is underlined by numerous academic studies – that will be reviewed below – as well as by policy-makers and influential voices in the public debate. An example would be *The Economist*'s straightforward conclusion that "Europe not only has a euro crisis, it also has a growth crisis. That is because of its chronic failure to encourage ambitious entrepreneurs" (*The Economist* 28-7-2012)

a 'positive economic activity': to specialize, to take risks, to make costly asset-specific investments and to undertake complex transactions. That is, ceteris paribus, territories with impartial governments should exhibit higher rates of entrepreneurship. Our second prediction is that government impartiality also affects the territorial distribution of firms within countries. The lower the country's level of impartiality, the more political contacts are needed to 'enter and play the game', and thus entrepreneurship will tend to flourish in the national capital (at the expense of other regions), since it is in the capitals where the most relevant political connections rest. The absence of this national capital's premium in countries with impartial governments leads to a more even geographical distribution of businesses. That is, an impartial government leads to both *more entrepreneurship in individual regions* and a *more equal territorial distribution of entrepreneurship within a country*.

Additionally, this study contributes to the 'surprisingly limited' empirical research on entrepreneurship (Djankov et al. 2005) by providing a pioneering large-N test at regional level with data for 172 regions from 18 EU countries. To the best of our knowledge, this is the first empirical study looking at entrepreneurship simultaneously at national and sub-national levels. The paper proceeds as follows. The next section, after briefly reviewing the literature, develops the two testable propositions. Subsequently, we describe the research design, sample, data and method employed in the empirical analysis. A results section presents the main findings, and the conclusions discuss potential – yet tentative, given the pioneering nature of study – policy implications.

Theory: Institutions, Entrepreneurship and Growth

The recognition that government plays an important role in creating conditions for the wealth of nations (economic development) is a leading paradigm of the post-neoclassical political economy (Acemoglu and Robinson 2012; North 1990; Stiglitz 1989; Wade 1990). Neo-institutionalists underscore the importance of the state in setting up rules that foster exchange and lower transaction costs for economic growth (North 1990, Williamson 1985, 1999). A critical issue, according to the neo-institutional account, is the ability of those who control the power of the state – politicians and bureaucrats – to manipulate economic rules to their own advantage and the advantage of their associates (Falachetti and Miller 2001; Johnson and Kwak 2010; Miller 1989, 2000; North 1981; North and Weingast 1989; Rothstein and Teorell 2008; Rothstein 2010). Yet, as appealing as this argument is, the literature has shown less ability to develop testable propositions from it. Even

arguably the most influential study – North and Weingast (1989) – has been extensively criticized (Clark 1995; Stasavage 2002) because of the difficulties to convincingly attribute the impact of institutional changes on their proxy for economic development – the historical evolution of interest rates. During the last two decades scholars have devoted considerable efforts to measure the ability of governments to play by the rules – instead of bending them to their personal and their clique's benefit – most notably through the 'rule of law' variable. Available in multitude of cross-national indicators from different sorts of organizations, it is argued that the rule of law has "become the motherhood and apple pie of development economics" (*The Economist*, 13-03-2008). The World Bank economists Kaufmann, Kraay and Mastruzzi consider that one-standard deviation improvement in rule of law "would raise per capita incomes in the long run by a factor of two to three" (2005, 1). That is, rule of law is associated with a 300 percent development dividend.

Nevertheless, the more scholars research on the rule of law, "the more desirable it seems—and the more problematic as a universal economic guide" (*The Economist*, 13-03-2008), given the difficulties to identify the particular mechanisms linking it to economic development.[4] This paper proposes a specific mechanism, which has recently been highlighted by political scientists – the concept of quality of government understood as 'impartiality' in the implementation of public policies (Rothstein and Teorell 2008) –, as well as a novel empirical operationalization of that mechanism.

We would also like to highlight another shortcoming of the existing political economy literature on the importance of 'rule of law': from both a theoretical and an empirical point of view it has only been used to explain variation in development at the national level. The focus on national differences follows a straightforward institutionalist logic. As laws and the institutions enforcing them normally have a national coverage, one may expect a relatively uniform impact of the rule of law over the national territory. Yet, oftentimes quite the opposite is observed within countries: despite having the same legal institutions across regions within the same country there seems to be remarkable levels of regional inequalities in both economic outcomes as well as in how institutions *de facto* work in each region (Heidenreich and Wunder 2008; Tabellini 2010). We believe

[4] Some economists, like Dani Rodrik, have recently noted their discomfort with the concept: "am I the only economist guilty of using the term [rule of law] without having a good fix on what it really means? (…) Well, maybe the first one to confess to it." (*The Economist*, 13-05-08)

our institutional variable – the perceptions of quality of government measured at sub-national level – allows us to understand better these within-country regional differences.

We focus our analysis on the impact of quality of government over a particular (not the only one) micro-foundation of economic growth: the decisions by the individuals within a given polity on whether to start a business or not. Generally speaking, "entrepreneurship" has been argued both theoretically (Schumpeter 1934) and empirically (Stel, Carree and Thurik 2005) as one of the most important engines of economic development. Yet, at the same time, the concept of entrepreneurship is complex and therefore open to different interpretations and measurements. For the purpose of our study, and following previous research on this field, we examine the current rates of the entrepreneurship in a given region, measured as the total number of operating firms rather than the number of newly incorporated firms or the number of self-employed. In addition, and also following the literature on entrepreneurship, we concentrate on a subset of all firms – small and medium-sized enterprises (SMEs) – because they make up a lion share of all businesses and contribute considerably to employment and GDP (Berkowitz and DeJong 2005; Thorsten, Demirguc-Kunt and Levine 2005; Wennekers and Thurik 1999).

As mentioned above, by quality of government (QoG) we understand one particular institutional characteristic (impartiality), following the definition by Rothstein and Teorell (2008). Quality of government refers to the ability of a government to treat all individuals within its jurisdiction in an impartial way irrespective of their social, economic, political, cultural or ethnic position. What follows from this definition is that actions of an impartial government are free from political partisanship, clientelism and corruption. When impartiality is not the modus operandi of government, some individuals have advantages in their dealings with the government over other individuals. The enabling conditions include – but are not limited to – political connections, family or social ties and money. Therefore, under a partial government it may be rational for 'unconnected' individuals – those whose influence over relevant post holders does not transcend the official rules – to limit their contacts with the government.

We argue that specific implications of living under partial government for entrepreneurs are twofold. Firstly, it creates incentives for 'unconnected' economic agents to converge on the zero-effort Nash-equilibrium: not to initiate a business venture (for would-be entrepreneurs) and not to advance the existing business (for active economic agents). Secondly, under a partial

government it is rational for economic agents to seek the 'connected' status by investing in special, i.e. beyond official rules, relations with the holders of political and administrative offices.

An example of the dissuasive effects of government partiality over entrepreneurship is provided by the extensive documentation collected during the judicial inquiry of the *Operación Guateque* case in Spain. The investigation unveiled a network of sixteen officials from the Madrid local government that demanded bribes from the city restaurateurs to keep their business in operation (*Público*, 14-11-2007a). One of the businessmen, Alvaro Gallardo, recalled how his café was closed because there was "a missing paper. But I never got to find out what it was. ... I guess the paper is a purple one, with a five and two zeros [i.e. a 500 euro note]" (*Público*, 14-11-2007b). Mr Gallardo also failed to re-launch his café because he could not meet some requirements re-imposed by the officials. Interestingly, Mr Gallardo recalls that one of the later prosecuted officials advised him to invest in a personal relationship with the relevant official by saying "if you knew who to give the money, you would not have been in this situation" (ibid.). Taking into consideration findings from recent research that emphasizes the importance of social environment and embeddedness in influencing individuals' decisions about their entrepreneurial future (Mueller 2006), it is difficult to downplay the discouraging impact of such behavior by governmental officials on the city's business community and on would-be entrepreneurs in particular.

Previous research has shown that the negative impact of partial government on entrepreneurship goes through a number of interconnected channels, including awarding state subsidies, procurement contracts, tax breaks and other forms of preferential treatment to the cronies of the governmental officials (Slinko, Yakovlev and Zhuravskaya 2005). It can also be through an excessive and intricate regulation of business (Djankov et al. 2002) and a patronage-based bureaucracy. The former provides an opportunity structure to office-holders to extract rents: the more lengthy and cumbersome the 'doing business' procedures, the more politicians and bureaucrats have to offer to entrepreneurs in terms of shortcuts and other advantages vis-à-vis their competitors. Indeed, following the example mentioned above, the Madrid bar association explicitly stated that because it may take years to gather all necessary licenses to open a pub in the city, entrepreneurs face incentives to speed up the process through bribery (*Público*, 14-11-2007a). In turn, a public bureaucracy where most of the positions are filled with patronage-based candidates, be it political or social patronage (e.g. nepotism), provides an opportunity structure for individuals with

suitable political and social endowments to influence decisions of government to their advantage.[5]

Through cumbersome regulation, political favoritism and clientelism, partial government (i.e. *low QoG*) creates an uneven 'playing field' and impedes access for those lacking the 'connected' status. These not only raise the cost of entry, but also create uncertainty regarding the running of the business in the future, which is detrimental to the calculus on expected return for both incumbent and would-be entrepreneurs. Moreover, as previous research has shown, this is particularly harmful for small and medium-sized enterprises as large business is not only better equipped to deal with the externalities of poor government such as uncertainty and corruption (Arauzo-Carod and Segarra-Blasco 2005; Thorsten, Demirguc-Kunt and Levine 2005; Miller 1989), but it may even benefit from it by colluding with authorities (Slinko, Yakovlev and Zhuravskaya 2005; Sonin 2003).

Following this discussion we argue that an impartial government (i.e. *high QoG*) that treats entrepreneurs in a non-discriminatory fashion facilitates the calculus on the expected return on investment made by acting and would-be entrepreneurs and encourages them to exercise a 'positive economic activity': to specialize, to make costly asset specific investments and to undertake complex transactions. A non-discriminatory government levels the playing field for economic agents with and without political connections and other means of influence over government office-holders, therefore encouraging more individuals to initiate or maintain a legitimate business venture instead of abstaining from entrepreneurship altogether and operating in 'black' or 'grey' markets.[6]

We would like to underline that we do not assume would-be entrepreneurs to individually prefer QoG. Quite the opposite, as profit-maximization is inherent in business activity, it is plausible to assume that any entrepreneur prefers, as her first-best option, a government that largely favors her business needs, i.e. a partial government. At the same time, the entrepreneur would certainly prefer to be not discriminated by the government against her competitors in the marketplace.

[5] There is a growing body of literature that shows that meritocratic bureaucracy, the opposite of a patronage-based bureaucracy, exerts a positive effect on such important social phenomena as economic growth (Evans and Rauch 1999; Feiock, Jeong and Kim 2003; Nistotskaya 2009; Rauch 1995), small business growth (Nistotskaya 2009), reduces poverty (Henderson et al. 2007), increases scientific productivity (Lapuente and Fernandez-Carro 2008) and the general performance of public agencies (Lewis 2008) while preventing corruption (Dahlstrom, Lapuente and Theorell 2011, Rauch and Evans 2000).

[6] Thus, for instance, in Eastern Europe and the former Soviet Union in the 1990s instead of abstaining from economic activity altogether, many entrepreneurs chose to operate in the unofficial economy (Fry and Zhuravskaya 2000; Johnson, Kaufman and Zaido-Labaton 1998).

Therefore, as a 'second best option' to all economic agents in the marketplace, an impartial government is a stable equilibrium, which should eventually lead to higher levels of entrepreneurship than in a situation where there is a limited number of 'connected' economic agents. This argument is important to understand our second hypothesis.

For this paper also argues that impartiality or QoG not only affects the *number of enterprises* (hypothesis 1) but also their *spatial distribution* within a polity (hypothesis 2). In short, hypothesis 2 argues that while countries with higher QoG enjoy a more equal geographical distribution of entrepreneurship across their territories, in countries with low QoG, business density will be significantly higher in the geographic centres of political power relative to peripheral regions, with the highest concentration of development being in the national capital regions. This concentration of business happens through the following two mechanisms. First, when association with power-holders beyond the formal rules helps to advance business, individuals (acting and would-be entrepreneurs) face incentives to achieve the 'connected' status. This requires that entrepreneurs not only establish informal relations with office-holders but that these connections are maintained continuously, as administrators and politicians often do not 'stay bought' (Mayton 1980, Miller 1989). Therefore, it is rational for economic agents to be physically closer to the source of privileges and locate their activities in the country's centers of political power. Secondly, the concentration of business is highest in the national capitals because the achievement of special relations with top officials in the central government offers prospects of 'premium' business pay-offs, ranging from enacting preferential regulations (e.g. state subsidies and tax breaks) to selective implementation of the existing regulation. In contrast, entrepreneurs in peripheral regions who stay in their regions may enjoy less privileged access to the appropriate connections that can ease their business.

In sum, this paper puts forward two interrelated hypotheses. First, all other things being equal, *polities with higher quality of government experience higher rates of entrepreneurial activity (i.e. small and medium sized business)* than polities with lower quality of government [hypothesis 1]. Second, *in countries with poorer quality of government, entrepreneurial activity (i.e. small and medium sized business) tends to concentrate around the centers of political power*, most notable in national capitals, as compared to countries with better quality of government [hypothesis 2].

Structure of Comparison, Models and Data

Unlike most of the comparative studies that have almost exclusively analyzed cross-country variation, we focus on the quality of sub-national governments to test our first hypothesis. This allows us, first, to examine a larger sample than if we restricted our analysis to national differences; second, to control for omitted (specially social and cultural) factors difficult to measure and that may vary from country to country; and, third, to put into question explanations based on 'national characteristics'. Indeed, a number of studies on European regions (Charron and Lapuente 2012; Putman 1993; Tabellini 2010), despite acknowledging the existence of numerous cultural and linguistic similarities across the different territories that form a European country, have nevertheless elucidated notable within-country differences in governance: for instance, the well-known gap between Northern and Southern Italy, but also less known – and yet remarkable – differences within Belgium, Spain or Romania. In some cases these within-country differences may be wider than cross-country ones. Following this strand of research, we explore the effects of the regional variation in QoG on the entrepreneurship rates across 172 regions from 18 EU countries (Appendix A). Data for the same 18 countries, yet at the national level, is employed for the empirical test of the second hypothesis.

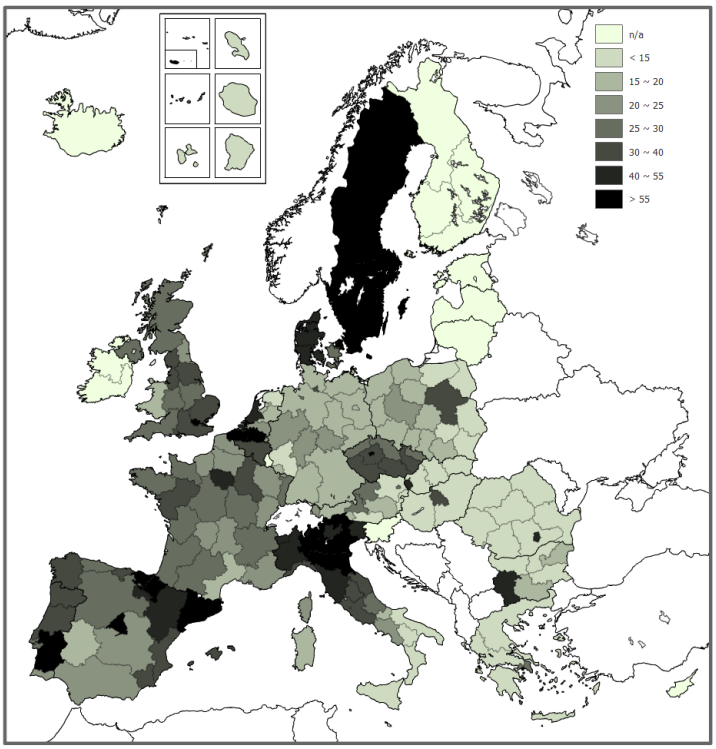
Quality of Government and Entrepreneurship Rates across European Regions (Model 1)

SMALL FIRMS is the dependent variable in Model 1, measured as the number of small and medium size enterprises (SMEs) operating in a region in a given year, which is calculated from *Amadeus* – a comprehensive database on active businesses in Europe.[7] The data suggests a substantial degree of variation in acting SMEs across countries, across European regions and at the sub-national level within countries (Figure 1). For example, Sweden on average has more than 95 of SMEs per 100,000 residents and Romania has less than 17. Inter-regional comparison across the EU reveals that Brussels, London, Östra Sverige (Stockholm region) and Prague all have more than 99 small firms, while Észak és Alföld (HU), Burgenland (AT) and Sud-Vest Oltenia (RO) all have less than 10 small firms per 100,000 residents. There is also a striking variation in the rates of entrepreneurship within several countries themselves. For example, in Romania, Bucharest region has approximately eight times the number of per capita small firms as Sud-Vest Oltenia (53.5 and 6.8

[7] We follow the EU definition of SME that is "enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million" (European Commission 2003).

firms per capita respectively). In Italy, Lombardia and Bolzano have 85.6 and 72.5 firms per 100,000 residents, while Calabria has just 10.5, and in Belgium, the Vlaams Gewest (Flanders) region has more than 2.5 times more per capita small firms than Wallonia (83.3 compared with 31.1). The data at the regional level is available only for three years, and thus due to this limitation we take the average so as to limit potentially misleading bias from any one given year.

FIGURE 1: NUMBER OF SMES IN EU REGIONS, PER 100,000 RESIDENTS, 2007-2009



Source: Authors constructed from Amadeus.

The explanatory variable of primary interest is the level of quality of government for the regions in the sample. As with any complex concept in the social sciences, QoG is a challenge to capture empirically. For this reason scholars have mostly relied on 'soft measures' of QoG, based primarily on opinion surveys of citizens, firms, risk-assessment groups and IGO's. We utilize new data collected in a European Commission-funded citizen-survey on QoG across 172 EU regions in 2009-2010 (see Appendix B more a more in depth description and data by region), whereby citizens rated based on their own personal experiences and perceptions the quality of three public institutions most often administered or politically run at the sub-national level (education, health care and

law enforcement). Sub-national assessments of QoG are very limited, in particular multi-country ones, and this represents a pioneering effort in measurement beyond the national level and an empirical contribution to the literature. The obtained measure – *EQI* – has been used in several recently published studies (Charron and Lapuente 2012, Charron, Dijkstra and Lapuente. 2012).

Potential entrepreneurs' decision-making process about whether to start a business or not they rely heavily on the clues provided by the social environment (Mueller 2006). As as Kaufman et al (2008:3) argue "perceptions matter because agents base their actions on their perceptions, impression, and views", thus we believe that for the purpose of this analysis the experience and perception of QoG by a random sample of citizens within each region is a suitable proxy. Therefore, if anything it is the individuals' *perception* of the extent of impartiality of the government that influences their calculations on expected long-term utility from entrepreneurship. We recognise that this indicator does not directly measure the aspects of the QoG pertaining to doing business, instead capturing a larger regional picture of QoG within the region. Thus we assume that when regional governments exhibit higher impartiality and lower corruption in carrying out their core public services, then their actions with respect to business registration, permits, licencing, certification and such like are more likely to be impartial.[8]

Following the literature, we control for two families of factors that proved to be robustly associated with the rates of entrepreneurship: psychological/cognitive (Baron 1998; Bygrave 1989) and sociological (Hoang and Antoncic 2002; Thornton 1999). The 'psychology of entrepreneurship' is captured by *ENTERPRENEURIAL INDEX*, based on four attitudinal questions from a 2009 Eurobarometer survey (Appendix C). A single question from the same survey, capturing one of the most studied psychological traits in entrepreneurship research – locus of control (Hansemark 2003; Mueller and Thomas 2001) – is employed as an alternative measure of the psychological/cognitive family of factors in robustness checks.

Regarding the 'sociology of entrepreneurship', we focus on two standard indicators from the relevant literature: social diversity (Basu and Altinay 2002; Carswell and Rolland 2004; Dodd and Gotsis 2007; Ensing and Robinson 2011; Hechavarria and Reynolds 2009; Katila and Wahlbeck 2011; Wang and Altinay 2010) and human capital (Audretsch and Lehmann 2005; Lee, Florida and Acs 2004). Although several indices of social diversity, such as 'ethno-linguistic frac-

8 For example, at the national level we find that citizen perceptions of the presence/absence of corruption in their countries correlates strongly with survey data asking international businesspeople whether or not they have paid bribes to enter the marketplace or do business in certain countries.

tionalization', are readily available at the national level, comparable sub-national data is not available. We thus take the share of non-EU residents in the total regional population – *DIVERSITY* – as a suitable proxy (Eurostat, year 2008). An obvious weakness of this measure is that it does not capture diversity when a region has a strong minority of residents from another EU country, as is the case with a region like Nord Vest in Romania, with approximately 20 percent ethnic Hungarians. However, it does give us some indication of the dynamics of the region's diversity in that it captures the relative size of the community of local residents that have arrived from outside the EU. Regarding human capital, in addition to the existing justifications of its impact on entrepreneurship, we reason that in advanced economies as the EU, business opportunities would lay in areas requiring relatively high skill and educational capacity. To capture the regional human capital, we employ a variable reflecting the aggregated level of education, which is a common proxy in this literature (Arenius and De Clercq 2005; Bates 1990; Davidsson and Honig 2003; Thompson, Dylan and Knowing 2010). *EDUCATION* is the percentage of the population with a post-secondary education or higher (Eurostat, years 2001-2006, averaged).

In addition several factors outside the core variables are considered. One important control variable is *TOURISM*, measured as the share of nights spent by non-residents in all collective tourism accommodation establishments for each region annually (Eurostat, years 2005-2009, averaged). Per capita tourism revenues would be a better measure of tourism, but unfortunately it is not available at the regional level. We however argue that *TOURISM* captures the 'demand' to visit a region by outsiders. As tourism stands as a salient feature of economic structure of many European countries and regions, it is reasonable to expect that regions that have certain geographic advantages (weather, beaches, mountains, etc.) have 'built in' incentives for entrepreneurship and thus higher influx of tourists would have a greater demand for hotels, restaurants and cafes, which are predominantly small and medium business. A measure of economic development – *GDP* (Euros, PPP per capita, logged) – is included to control for the notion that more developed regions have an advantage in attracting more firms (Wennekers et al. 2005). Also we control for recent past history in the region's economy, hypothesising that if the current vivacity of the SME community is influenced by current macro-economic trends, then regions with higher rates of recent growth (*GROWTH*) would parlay this into a greater number of SMEs. Although admittedly there are inherent problems with endogeneity in relations between *GDP*, *GROWTH* and *SMALL FIRMS*, we therefore attempt to remedy this by taking the economic development levels from the mid-1990's (averaged for 1995-1997) and *GROWTH* from a time point prior to the outcome variable (averaged

for 2000-2007) to account for both historical and recent advantages in relative regional development.

We also control for geographical factors: capital regions (expecting them to have a higher relative number of SMEs as compared with other regions in the country), interregional differences in population and area size. Whilst *CAPITAL* is a dummy variable, the population density measure is a continuous variable for each region (2007-2009, averaged, from Eurostat), whereby we believe that larger concentrations of residents provide more opportunities for SMEs on average. Finally, because our model may be overlooking several excluded country-level factors that may systematically affect levels of *SMALL FIRMS,* such as the legal and banking systems or taxation, country fixed effects are included in all models. Appendix D provides summary statistics and data sources for all variables.

Quality of Government and Interregional Inequalities in Entrepreneurship Rates within European Countries (Model 2)

In the second empirical test we look at the link between QoG and the spatial inequalities in entrepreneurship rates within 18 countries of the sample. There are many options available to scholars to capture special inequalities, including well-known indices, such as the Gini, Theil, Herfindahl or Coefficient of Variation (Shanker and Shah 2003). Even though we test several of these measures for robustness purposes, we construct our own index of regional inequality of small firms that attempts to best test our hypothesis of 'capital region bias'. Since we hypothesise that the lower the QoG in a country on whole, the higher the concentration of SMEs in the capital region, we designed the measure that specifically captures this dynamic:

$$CR_{countryX} = \frac{S.F.pc_{captialregZ}\left(\frac{Pz}{Px}\right)}{\sum_{i}^{n}\ (S.F.pc_{region\ i})\left(\frac{Pi}{Px}\right)} \Bigg/ 1 - \left(\frac{1}{n}\right) \qquad (1)$$

where capital ratio inequality in country 'x' ($CR_{countryX}$) is equal to the number of small firms per capita in the capital region 'z', multiplied by the proportion of the total population in capital region 'z' in country 'x' over the sum total of all other 'i' regions' per capital small firms multiplied by their

respective proportion in country 'x' $\left(\frac{Pi}{Px}\right)$. We find that this number is somewhat sensitive to the number of regions within each country, thus we adjust for this by dividing '$CR_{countryX}'$ by one minus the inverse number of total number of 'n' regions in country 'x'. Put simply, the greater the ratio of the per capita firms in the capital region is relative to all other regions – accounting for the population share – the greater the level of 'CR'.

In the robustness check we employ two alternative specifications of the dependent variables: a population weighted Gini index of spatial inequalities in entrepreneurship rates for each country year for 2007-2009 averaged and a modified Herfindahl Index ('MH')[9]. In line with studies that used several different specifications of inequality measure (Shaker and Shah 2003, Ezcurra and Pascual 2008), we find this study's measures are highly correlated within our sample (the MH and Gini at 0.92, the MH and CR at 0.80 and the Gini and CR at 0.82).

Regarding the main independent variable in question, we remain consistent with our notion of QoG as impartiality, and, in trying to capture the most appropriate measure for our concepts of political contacts and clientalism, we operationalize the country-level QoG using a leading measure of corruption – *Corruption Perceptions Index* (Transparency International, year 2009). To check for the robustness of CPI, we also use the World Bank's *Control of Corruption* (Kaufman, Kraay and Mastruzzi 2009).

As far as controls are concerned, we postulate that the level of trade openness may impact the spatial distribution of small business, as Krugman (1991) has shown that more open countries tend to have more spatially concentrated economic development, in particular when there is a large change in openness over a relatively short period of time. It is plausible to expect that for the post-Communist states the 'shock' of joining a common market – the EU – would produce uneven regional growth with much concentration in certain areas. *GLOBALIZATION* is the change in the country's trade openness taken from the KOF Globalization data from the years 1991-1993 (averaged) to 2008 (Drehler 2006). It is expected that the faster the pace of change is, the greater the intraregional unevenness in the vivacity of SMEs, *ceteris paribus*.

Also, as the literature on sub-national economic disparities underscores the impact of political decentralization on regional variation in social and economic outcomes (Rodriguez-Pose and Gill 2004), it is plausible to expect that greater political autonomy of regions from the center

[9] for a further discussion and specific construction formulas for these two alternative measures, see Appendix E

translates to greater intra-regional variation in the number of SMEs. We account for this in two ways: through simple dummy variables for federal, semi-federal and unitary states and with a continuous variable - the amount of 'self-rule' by sub-national actors in each country (Hoogue, Liesbet and Schakel 2010).[10]

In addition, we control for the overall level of household income inequality, using the standard Gini index measure from the UN's Development Indicators. We would expect that more unequal countries with respect to income will be more uneven in the distribution of SMEs as well. Following the modernization literature (Kuznets 1955, Williamson 1965), regional wealth inequalities can be seen as a byproduct of development from the period of national industrialization, therefore transitioning countries would have higher levels of regional inequality compared to developed countries. We therefore control for levels of GDP per capita to account for this. To best avoid issues of reverse-causality, we take the measures of income inequality and GDP per capita prior to the outcome variable (1990-1999, averaged). Finally, we include controls for population density (Eurostat, year 2009) and whether a country is a EU15 member or not. We anticipate that countries with greater levels of population density will most likely have more uneven regional distributions of SMEs and the EU-15 countries with have less regional variation. Appendix D provides summary statistics and data sources for all variables.

Results

Quality of Government and Entrepreneurship Rates across European Regions (H1)

Before proceeding with the empirical results, a note on the potential problems of endogeneity between SMEs and QoG due to the cross-sectional nature of the data is needed. First, there could be a problem of reverse causality as higher levels of entrepreneurship may create a demand for higher QoG. For this problem the use of time series data for both *EQI* and *SMALL FIRMS* would be the optimal solution. However, data availability for the sub-national level, even in an advanced industrial world area such as the EU, remains limited. In an attempt to remedy the problem of reverse causality we control for the levels of economic development (*GDP* and *GROWTH*) prior to the outcome variable. There could also be an issue of omitted factors that can explain both the QoG

[10] Federal states in the sample are Belgium, Austria and Germany. Spain and Italy are coded as semi federal and the rest are coded as unitary. 'Self rule' is taken from the 'regional authority index' (RAI)

evaluation by the citizens and industry structure in the region. Therefore we proceed with caution and 'tone down' claims of causality that imply that we provide empirical evidence that changes in *EQI* lead to changes in *SMALL FIRMS*. However, we would argue that providing strong correlation evidence is a first step in the right direction and that establishing empirical link constitutes a substantial contribution.

TABLE 1: QOG AND ENTREPRENEURSHIP RATES ACROSS EUROPEAN REGIONS: OLS ESTIMATES

Variable	1	2	3	4	5	6	7	8	9	10	11
EQI	4.5***	4.7***	10.2***	9.5***	9.2***	9.4***	9.5***	9.8***	3.9**	7.9***	4.4**
	-5	0	0	0	-0.001	0	0	0	-0.04	-0.002	-0.02
Population Denisty		1.8	5.53***	4.7**	6.4***	6.7***	6.9***	5.1***	2.7*	4.0**	2.2
		-0.39	-0.001	-0.02	0	0	0	-0.003	-0.06	-0.03	-0.16
Capital Region		27.3***	22.1***	17.9***	8.4	19.5***	15.7***	16.6***	11.8**	6.6	0.3
		0	0	0	-0.14	0	-0.002	-0.001	-0.02	-0.18	-0.95
Regional diversity				4.7**						4.8**	1.9
				-0.02						-0.02	-0.38
Education					8.1***					8.5***	6.2***
					0					0	-0.001
Entreprenuerial Index						6.1***				3.9**	0.01
						-0.003				-0.04	-0.96
GDP Growth (ave. 2007-07)							3.5***				2.5**
							-0.01				-0.02
Tourism								0.23***			0.12
								-0.01			-0.12
GDP (PPP p.c. log1995-97)									36.7***		26.3***
									0		0
Constant	30.1***	18.7*	10.9	10.3	0.7	8.5	-6.7	5.7	-319.3***	8.5	-237.9***
	0	-0.07	-0.19	-0.27	-0.93	-0.35	-0.47	-0.61	0	-0.29	0
Obs.	172	172	172	172	172	172	168	168	172	168	168
Rsq.	0.06	0.3	0.71	0.75	0.76	0.76	0.75	0.76	0.82	0.79	0.85

*Note: p-values from robust standard errors in parentheses. Dependent variable is the number of SMEs per 100,000 residents. All models but 1 and 2 include fixed country effects. Models where GROWTH, TOURISM or ENTERPRENEURIAL INDEX are used do not contain data for the four French overseas regions, thus the sample size is reduced by 4. ***p<0.01, **p<0.05, *p<0.10*

Table 1 reports the econometric results for hypothesis one. Overall it finds support in the data: irrespective of the model specification, *EQI* is positively and significantly associated with the vivacity of small business in European regions. Holding only geographical factors constant, the effect of *EQI* is stronger within countries than EU-wide (Models 2 and 3). The quantitative significance of *EQI* is also substantial: a one standard deviation increase in *EQI* is associated with approximately 10.2 more SMEs per capita (Model 3). In the context of the sample, this helps to explain why the French region of Bretagne (standardized *EQI* score of 1.03) has about 26 small firms per 100,000 residents and another French region Languedoc-Roussillon (*EQI*=0.51) has only 19; why two similar sized region in Italy – Friuli-Venezia Giulia (*EQI*=0.13) and Abruzzo (*EQI* = -0.99) – have a difference of roughly 18 per capita small firms. In the same model, we find that on average capital regions have about 23 more SMEs per 100,000 residents than non-capital regions, while more densely populous regions have more *SMALL FIRMS* per capita.

In models 4-6 we test each of the core explanatory factors for entrepreneurship – sociological and psychological/cognitive – individually controlling for fixed effects. We elect to standardize *EDUCATION*, *DIVERSITY* and *ENTREPRENURIAL INDEX* and also *EQI* for easier comparison of substantive effects. Results show that both indicators for the 'sociology of entrepreneurship' and the psychological/cognitive measure have a strong and positive impact on the dependent variable, among which *EDUCATION* having the largest substantive effect. At the same time, *EQI* is a more powerful predictor of the entrepreneurship rates than any of the core control variables taken individually. In models 7-9, macroeconomic indicators are controlled for, with each of these demonstrating a significant impact on the dependent variable. The results also show that the QoG measure is highly robust, even when controlling for the most demanding factor – past levels of GDP per capita (Model 9).

In Model 10 a 'horserace' between the core factors of entrepreneurship, controlling for the geographical factors and country fixed effects shows *EDUCATION* winning by a small margin: its effect on *SMALL FIRMS* is about 7.5 per cent larger than that of *EQI,* yet a post regression t-test shows this difference between these two coefficients to be insignificant (p-value = 0.28). Model 11 includes all explanatory variables, and while *EDUCATION* remains the most potent among the core factors, the *EQI* retains its relative strength and significance.

To check the robustness of the results a different specification of the dependent variable is employed, i.e. firms with annual turnover exceeding 50,000 Euros. It is found that the

difference between the new estimates and those reported in Table 1 is negligible. In addition Table 2 reports estimates from nine additional robustness check models. We use two alternative measures of the QoG disaggregating *EQI* into corruption and impartiality elements (Appendix B). Models 1 and 3 are basic models with country fixed effects and geographic controls; and models 2 and 4 include all other controls. We find that the disaggregated measures of the QoG are significant explanatory factors for *SMALL FIRMS* in each of the first four models, although similar to the results in Table 1, EDUCATION remains a slightly more powerful explanatory variable in comparison.

TABLE 2: QOG AND ENTREPRENEURSHIP RATES ACROSS EUROPEAN REGIONS: ROBUSTNESS CHECK

Variable	All Regions				Politically Relevant Regions Only				
	1	2	3	4	5	6	7	8	9
EQI									
					14.1***	11.9***	5.9***		
EQI (corruption)					0	0	-0.01		
	10.1***	3.7*						5.8***	
EQI (Impartiality)	0	-0.08						-0.01	
			8.7***	4.7***					6.2***
Pop. Density (log)			-0.001	-0.008					-0.003
	5.6***	2.2	5.2***	2.1	4.1**	2.1	-0.27	-0.3	-0.23
Capital Region	-0.001	-0.16	(0.0029	-0.16	-0.02	-0.25	-0.86	-0.83	-0.87
	21.8***	0.5	21.9***	0.02	16.6***	3.9	1.1	0.77	1.2
Reg. Diversity	0	-0.96	0	-0.98	-0.01	-0.57	-0.87	-0.89	-0.86
		1.6		2.1		6.5***	1.5	1.4	1.5
Education		-0.46		-0.34		-0.001	-0.39	-0.46	-0.39
		6.4***		6.2***		6.4***	5.1***	5.5***	5.2***
Entreprenuerial Index		-0.01		-0.001		-0.002	-0.01	-0.002	-0.003
		-0.03		-0.2		1.5	-1.6	-1.7	-1.6
Growth (ave. 2000-07)		-0.98		-0.98		-0.34	-0.29	-0.28	-0.29
		2.8***		2.6**			2.2**	2.1**	2.0*
Tourism		-0.01		-0.03			-0.04	(0.05	-0.08
		0.12		0.11			0.07	0.07	0.06
GDP (PPP p.c. log1995-97)		-0.11		-0.14			-0.38	-0.37	-0.47
		26.8***		27.5***			33.6***	33.7***	35.1***
Constant		0		0			0	0	0

	10.5	-243.5***	13.9*	-247.0***	16.9**	16.6**	-291.6***	-292.6***	-304.4***
Obs.	-0.21	-0.007	-0.09	0	-0.04	-0.03	0	0	0
Rsq.	172	168	172	168	117	112	112	112	112
	0.73	0.84	0.72	0.84	0.68	0.74	0.82	0.83	0.82

*Note: p values from robust standard errors in parentheses. Dependent variable is SMEs per 100,000 residents. All models include fixed country effects. Models where GROWTH, TOURISM or the ENTERPRENEURIAL INDEX are used do not contain data for the four French overseas regions, thus the sample size is reduced by 4. Politically relevant regions are discussed in footnote 8. ***p<0.01, **p<0.05, *p<0.10*

In models 5-9 we replicate the analysis on a sample of only 'politically relevant regions'.[11] It is found that the effects of *EQI* are stronger, compared to the full sample. In fact, in the horserace between *EQI* and the psychological and sociological factors (Models 6-7), we find that *EQI* has the largest substantive impact on *SMALL FIRMS*. Thus, a one standard deviation increase in *EQI* equates to about 12 additional SMEs per capita, compared with 6.5 or less based on a similar increase in *DIVERSITY*, *EDUCATION* or *ENTREPRENURIAL INDEX*. Moreover, we find that *EQI Corruption* and *EQI Impartiality* in fully specified models 8 and 9 produce very similar estimates to those in model 7 with the original *EQI* scores as the dependent variable. This suggests that the quality of government may have a stronger relationship with entrepreneurship when the elected regional officials have a policy control over some important policy areas, as those covered in *EQI*.

It is worth noting important effects exerted by several control variables. First, pre-existing levels of economic development, captured by GDP per capita in the mid-1990s, is in fact the strongest determinant of the magnitude of contemporary SMEs rates. A similar effect applies to more recent macro-economic trends: one per cent increase in growth in 2000-2007 is associated with about three more SMEs per capita, *ceteris paribus*. Second, whilst significant in model 8 in Table 1, *TOURISM* is not robust to the inclusion of the other two macroeconomic variables. Finally, in most models, we find that capitals and more densely populated regions have greater levels of *SMALL FIRMS* on average.

Overall, the proposition that impartial governments foster small business growth finds its support in the data. Our analysis showed that regions in which governments are perceived

[11] We consider a region 'politically relevant' if it has a directly elected legislature which is politically (or at least administratively) responsible for one of the three policy areas on which citizen opinions of quality services are based from *EQI* – education, health care or law enforcement. All regions from Germany, Austria, Spain, Italy, Belgium, France, Poland and Denmark along with Scotland, Wales and Northern Ireland from the UK are included according to these criteria.

by their residents as more impartial enjoy on average higher rates of small business than regions in which governments are perceived as more partial and corrupt. The effect of *EQI* is robust to different modelling choices, although it is not always the most powerful predictor.

Quality of Government and Interregional Inequality of Entrepreneurship Rates within European Regions (H2)

Figure 2 shows the simple bivariate relationship between the Capital Ratio (*CR*) measure of spatial inequality of entrepreneurship rates and the *Corruption Perception Index* (*CPI*). The two are highly correlated (-0.68), providing strong initial support for the claim that more corrupt countries have greater regional inequalities with respect to SMEs per capita. Moreover, *CPI* alone explains over 45 per cent of the variation in *CR* across the 18 countries in the sample.

FIGURE 2: QOG AND INTRA-REGIONAL INEQUALITIES OF ENTREPRENEURSHIP RATES WITHIN EUROPEAN COUNTRIES

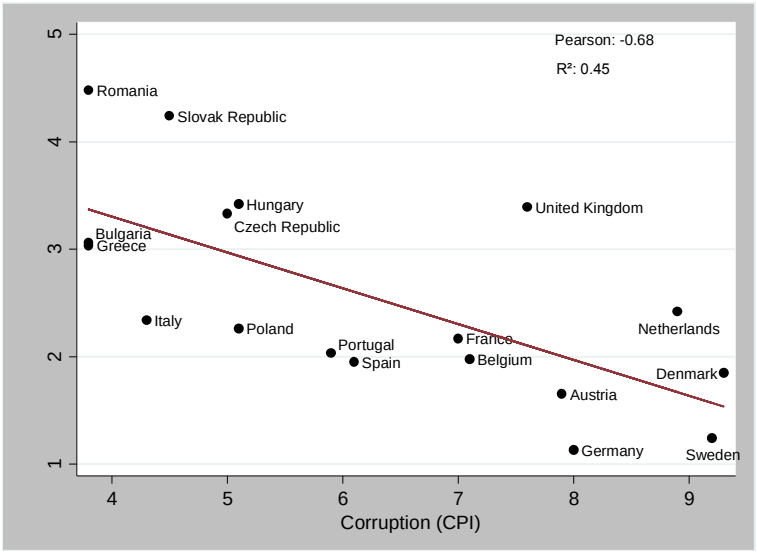


Table 3 reports the econometric results for H2. We find that across all model specifications *CPI* exhibits a highly robust effect on the spatial spread of SMEs in countries under con-

sideration. *CPI*'s effect remains significant at the 90% level of confidence or greater in all models. As hypothesized, more corrupt countries tend to have higher concentration of SMEs in the capital regions. The quantitative significance of the QoG factor is also substantial: in all multivariate models, a one-unit increase in the *CPI* score results in a decrease in capital ratio concentration by about one-fourth of a standard deviation of *CR*. We replicate the analysis using the World Bank *Control of Corruption* as a measure of the dependent variable and find the results to be substantially similar to those reported in Table 3.

TABLE 3. QOG AND INTRA-REGIONAL INEQUALITIES OF ENTREPRENEURSHIP RATES WITHIN EUROPEAN COUNTRIES: OLS ESTIMATES

Model	1	**2**	**3**	**4**	**5**	**6**	**7**
Corruption	-0.33***	-0.22***	-0.22***	-0.21**	-0.23*	-0.26***	-0.24***
	(0.002)	-0.008	-0.01	-0.03	-0.08	-0.001	-0.001
Pop. Denisty		0.002**	0.002*	0.002*	0.002**	0.002**	0.003***
		-0.05	-0.06	-0.06	-0.05	-0.02	-0.006
EU15 (0/1)		-0.94**	-0.93**	-0.85	-0.88	-0.57	-0.61
		-0.03	-0.04	-0.14	-0.19	-0.21	-0.23
Δglobalization			0.03				
			-0.43				
GDP p.c. (log)				-0.13			
				-0.84			
Income Inequality					0.01		
					-0.91		
Federalism (0/1)						-0.77**	
						-0.04	
Semi-federal (0/1)						-0.67**	
						-0.04	
Decentralization (RAI index)							-0.04*
							-0.1
Obs		18	18	18	18	18	18
Rsq.		0.61	0.64	0.61	0.62	0.71	0.68

Note: OLS estimates with robust standard errors and p-values in parentheses. Dependent variable is the Capital Ratio in all models. Omitted group in Federal model is unitary states in model 6.
****p<0.01, **p<0.05, *p<0.10*

With respect to control variables, geographical factors, present in all multivariate models, demonstrate the hypothesized effect. Thus more populated countries have significantly

lower concentration of SMEs in their capitals compared to the less populated ones. The effect of the *POPULATION DENSITY* is robust across all model specifications. The older members of the European Union seem to have small business more evenly distributed on their territories than new member states. However in models 4-7 *EU15* falls below the standard acceptable levels of statistical significance. Due to a relatively small sample in the national level analysis and thus low number of degrees of freedom, we test all control variables, but geographical factors, separately. For this reason the regression results for *GDP*, *INEQUALITY, GLOBALIZATION* and different types of power-sharing arrangements between the central and sub-national governments should be interpreted with caution.[12]

TABLE 4. QOG AND INTRA-REGIONAL INEQUALITIES OF ENTREPRENEURSHIP RATES WITHIN EUROPEAN COUNTRIES: ROBUSTNESS CHECK

			Gini Index					**Mod. Herfindahl**				
Model	1	2	3	4	5	6	7	8	9	10	11	12
Corruption												
	-0.32***	-0.33***	-0.31***	-0.28***	-0.28***	-0.33***	-0.53***	-0.54***	-0.48***	-0.48**	-0.54***	-0.56***
Pop. Denisty	-0.007	0	-0.001	-0.004	-0.002	0	-0.002	-0.003	-0.008	-0.03	-0.001	0
	0.003**	0.003**	0.003**	0.003**	0.003***	0.004***	0.003*	0.004*	0.004*	0.003*	0.004**	0.005**
EU15 (0/1)	-0.02	-0.02	-0.04	-0.02	-0.01	-0.003	-0.09	-0.08	-0.09	-0.09	-0.03	-0.03
	-0.08	-0.09	-0.05	-0.27	-0.04	-0.15	-0.57	-0.2	-0.22	-0.87	-0.23	-0.03
Δglobalization	-0.81	-0.76	-0.91	-0.63	-0.1	-0.74	-0.45	-0.85	-0.86	-0.53	-0.79	-0.97
		-0.005						0.04				
GDP p.c. (log)		-0.89						-0.63				
			-0.04						-0.47			
Income Inequality			-0.94						-0.62			
				0.03						0.04		
Federalism (0/1)				-0.58						-0.71		
					-0.64						-1.03	
Semi-federal (0/1)					-0.22						-0.25	
					0.08						-0.53	
Decentralization (RAI index)					-0.71						-0.16	

[12] The number of degrees of freedom in the regression results is admittedly rather small. The best solution would be to add observations: either years or countries. However, these alternatives are not available due to a data limitation for the dependent variable.

						-0.03						-0.07*
Obs						-0.33						-0.08
Rsq.	18	18	18	18	18	18	18	18	18	18	18	18
	0.58	0.59	0.59	0.6	0.67	0.63	0.55	0.57	0.56	0.57	0.61	0.64

*note: OLS estimates with robust standard errors and p-values in parentheses. Dependent variable is the population weighted Gini index in models 1-6 and the modified Herfindahl index in 7-12. Omitted group in Federal model is unitary states in models 5 and 11. ***p<0.01, **p<0.05, *p<0.10*

We re-run all models using the Gini Index (Table 4, models 1-6) and the modified Herfindahl Index as the dependent variable (Table 4, models 7-12). The impact of *CORRUPTION* on intra-regional inequality of SMEs remains highly robust, as in each of the 12 robustness check regressions *CORRUPTION* is significant at the 95% level of confidence or greater, and its quantitative significance is substantial.

Overall, the proposition that QoG has an effect on the spatial distribution of enterprises within that polity finds its support in the data. Although wider implications from this analysis are somewhat limited due to a small number of observations, as far as the key independent variable is concerned there is evidence of a strong robust impact of corruption on the distribution of small business intra-regionally. Namely, more corrupt countries exhibit higher concentration of SMEs in their capital regions compared to less corrupt countries.

Conclusion

This paper has investigated both theoretically and empirically a novel factor that may be, albeit partially, responsible for the persistent differences in the socio-economic development of the European regions and countries: the quality of their governments, understood as the extent to which government officials treat their citizens in an impartial way. As we have defined it, QoG refers not to the properties of formal rules but to the qualities of the day-to-day functioning of the governments. We have argued that the perceived quality of government is critically linked to the individuals' calculus of the expected return on investment, and hence the comparative rates of entrepreneurship. This argument finds its support in the data: on average the EU regions with higher quality of government are associated with higher rates of entrepreneurship as compared to those regions in which government institutions are seen as less impartial.

A less intuitive and novel second finding of this study pertains to the spatial distribution of entrepreneurship within countries. Driven by their dominant strategy to seek preferential treatment, entrepreneurs face incentives to create and maintain special relations with power holders and therefore to be closer to the source of privileges and locate their activities in the country's centers of political power. As data has shown, the inequality of intra-regional (within countries) rates of entrepreneurship increases when governments are perceived as highly corrupt. More specifically, in countries with higher levels of perceived corruption, entrepreneurship tends to be overwhelmingly concentrated in the capital region.

Currently, the 'place' effect, that is the impact of the economics of agglomeration, and the 'people' effect, that is the characteristics of individuals in 'places', are the two dominant ways of explaining why geographic inequalities emerge. This paper provides some evidence that the 'government quality' may be an additional factor contributing to territorial inequalities. This paper's tentative policy message would thus be that, in order to stimulate entrepreneurial activity (and, as a result, economic growth), current governmental policies, such as macroeconomic stabilization and cohesion, should be accompanied with concurrent measures to strengthen the impartiality of governmental organizations. As there has long been concern about the ability of governments of all levels to reduce inequalities in European regions (Farole, Rodriguez-Pose and Storper 2011), it may be particularly important to address the problem of the lack of government impartiality in addition to (or alternatively to) spend money on 'people' and 'places'.

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Appendix A. List of Regions with NUTS Codes[13] and Values for Key Variables

nuts	name	eqi	smfirmspc	Ent.Percp Index
AT	Austria	1.02981	20.8434	
AT11	Burgenland	1.31559	9.23771	2.44
AT12	Niederöstrerreich	1.03166	11.4375	2.51
AT13	Wien	1.05394	29.8235	2.47
AT21	Kärnten	1.19978	14.4615	2.61
AT22	Steiermark	0.886381	16.1667	2.53
AT31	Oberösterreich	0.945855	26.1429	2.41
AT32	Salzburg	0.917915	29.0008	2.73
AT33	Tirol	1.17862	19.9769	2.56
AT34	Voralberg	1.1091	20.2239	2.78
BE	Belgium	0.458369	71.8727	
BE1	Brussels	-0.42523	114.818	2.27
BE2	Vlaams Gewest	0.895579	82.9839	2.31
BE3	Wallonie	-0.06083	31.2083	2.16
BG	Bulgaria	-1.71501	21.8947	
BG31	Severozapaden	-2.55583	10.6467	1.96
BG32	Severen Tsentralen	-2.04673	12.4398	2.09
BG33	Severoiztochen	-0.89242	15.4177	1.98
BG34	Yugoiztochen	-2.12712	14.4545	2.07
BG41	Yugozapaden	-1.81411	42.7143	1.98
BG42	Yuzhen Tsentralen	-1.06624	15.9333	2.08
CZ	Czech Rep.	-0.47085	40.4	
CZ01	Praha	-0.95185	103	2.42
CZ02	Stredni Cechy	-0.26818	33.5	2.43
CZ03	Jihozapad	-0.05153	30.75	2.26
CZ04	Severozapad	-0.95795	25.6364	2.31
CZ05	Severovychod	-0.15274	26.6667	2.28
CZ06	Jihovychod	-0.48636	36.9412	2.32
CZ07	Stedni Morava	-0.58057	31.5833	2.29
CZ08	Moravskoslezsko	-0.4062	28.5833	2.23
DK	Denmark	1.50488	53.9636	
DK01	Hovedstaden	1.36661	82.3125	2.52

[13] NUTS stands for the 'Nomenclature of Territorial Units for Statistics'. Countries with data at the NUTS 1 level are Germany, UK, Netherlands, Sweden, Greece, Belgium and Hungary. Countries with data at the NUTS 2 level are Italy, France, Spain, Czech Rep., Slovakia, Poland, Bulgaria, Romania, Denmark, Portugal and Austria.

DK02	Sjaelland	1.50988	26.2537	2.54
DK03	Syddanmark	1.50124	48.6667	2.56
DK04	Midtylland	1.74988	48.1667	2.56
DK05	Nordjylland	1.3778	47.5141	2.56
DE	Germany	0.891681	19.3573	
DE1	Baden Wuttemberg	1.00631	17.9545	2.43
DE2	Bavaria	0.735553	18.3615	2.26
DE3	Berlin	1.00621	15.8529	2.16
DE4	Brandenburg	1.00428	16.84	2.41
DE5	Bremen	0.978363	27.452	2.13
DE6	Hamburg	0.98653	36.1667	2.34
DE7	Hessen	0.653386	23.3771	2.45
DE8	Mecklenburg-Vorpommen	0.974513	17.4706	2.20
DE9	Lower Saxony	0.962253	16.0875	2.34
DEA	North Rhine Westphalia	0.737961	21.1778	2.41
DEB	Rhineland-Palatinate	0.851008	13.7	2.38
DEC	Saarland	1.0776	18.4	2.33
DED	Saxony	1.1223	18.1429	2.24
DEE	Saxony-Anhalt	0.890451	18.4167	2.12
DEF	Schleswig-Holstein	1.3007	17.5714	2.43
DEG	Thuringia	1.3644	20.3913	1.96
FR	France	0.518532	30.6875	
FR10	Ile-de-France	0.523315	53.3583	2.41
FR21	Champagne-Ardenne	0.158887	32.3077	2.16
FR22	Picardie	0.446533	23.7368	2.16
FR23	Haute-Normandie	0.096569	23.8333	2.16
FR24	Centre	0.590367	27.88	2.16
FR25	Basse-Normandie	0.478219	25.2667	2.16
FR26	Bourgogne	0.460739	27	2.16
FR30	Nord - Pas-de-Calais	0.520476	24.5	2.18
FR41	Lorraine	0.217802	22.0435	2.26
FR42	Alsace	0.450548	27.0556	2.26
FR43	Franche-Comte	0.470469	24.4167	2.26
FR51	Pays de la Loire	0.331626	31.9143	2.31
FR52	Bretagne	1.02329	26.2903	2.31
FR53	Poitou-Charentes	0.746213	25.0556	2.31
FR61	Aquitaine	0.798136	26.75	2.37
FR62	Midi-Pyrenees	0.369551	26.3571	2.37
FR63	Limousin	0.704664	21.0715	2.37

FR71	Rhone-Alpes	0.777926	29.0656	2.36
FR72	Auvergne	0.539434	22.3846	2.36
FR81	Languedoc-Roussillon	0.512739	18.5	2.29
FR82	Provence-Alpes-Cote d'Azur	0.189111	24.7755	2.29
FR83	Corse	0.096337	22.4402	2.29
FR91	Guadeloupe	-0.62767	11.8507	
FR92	Martinique	-0.47706	13.0636	
FR93	Guyane	-0.58903	10.4856	
FR94	Reunion	-0.19462	9.16021	
GR	Greece	-0.90298	17.0818	
GR1	Voreia Ellada	-1.42846	10.3333	1.99
GR2	Kentriki Ellada	-1.1061	6.84	1.97
GR3	Attica	-0.29158	29.27	1.96
GR4	Nisia Aigaiou-Kriti	-0.94805	13.3636	2.06
HU	Hungary	-0.58583	18.59	
HU1	Közép-Magyarország	-1.0418	37.2069	2.28
HU2	Dunántúl	-0.3378	11.9355	2.27
HU3	Észak és Alföld	-0.45819	9.97561	2.17
IT	Italy	-1.06412	43.6833	
ITC1	Piemonte	-0.19134	43.3182	2.23
ITC2	Valle d'Acosta	0.628704	43.6674	2.23
ITC3	Ligura	-0.58301	31	2.23
ITC4	Lombardia	-0.71493	85.0729	2.23
ITD1	Bolzano	0.765892	72.9513	2.29
ITD2	Trento	0.469774	53.7597	2.29
ITD3	Veneto	-0.53822	66.0833	2.29
ITD4	Friuli-Venezia Giulia	0.12791	46.5833	2.29
ITD5	Emilia-Romagna	-0.41658	69.0233	2.29
ITE1	Toscana	-0.62714	44.8378	2.13
ITE2	Umbria	-0.26374	37.7879	2.13
ITE3	Marche	-0.53646	39.125	2.13
ITE4	Lazio	-1.34912	39.0357	2.13
ITF1	Abruzzo	-0.98791	27.6154	2.18
ITF2	Molise	-1.31774	18.4048	2.18
ITF3	Campania	-2.40817	20.431	2.18
ITF4	Puglia	-1.82057	14.9512	2.18
ITF5	Basilicata	-1.34076	13.3676	2.18
ITF6	Calabria	-2.27767	10.55	2.18
ITG1	Sicilia	-1.91426	13.52	2.12

ITG2	Sardegna	-0.9662	16.5882	2.12
NL	Netherlands	1.25873	30.575	
NL1	Noord-Nederland	1.63937	9.17647	2.26
NL2	Oost-Nederland	1.18969	18.4857	2.26
NL3	West-Nederland	1.28504	43.1558	2.22
NL4	Zuid-Nederland	1.08742	21.3056	2.26
PL	Poland	-0.93941	19.4684	
PL11	Lodzkie	-0.84682	16.0385	2.03
PL12	Mazowieckie	-0.99778	37.3269	2.03
PL21	Malopolskie	-0.87577	17.1515	2.09
PL22	Slaskie	-1.11766	17.5957	2.09
PL31	Lubelskie	-0.90548	9.81818	2.07
PL32	Podkarpackie	-0.85297	12.4762	2.07
PL33	Swietokrzyskie	-0.80495	13	2.07
PL34	Podlaskie	-0.96336	13.0833	2.07
PL41	Wielkopolskie	-1.00051	23.1471	2.12
PL42	Zachodniopomorskie	-0.86786	16.5882	2.12
PL43	Lubuskie	-0.93084	16.1	2.12
PL51	Dolnoslaskie	-1.11875	17.5517	2.13
PL52	Opolskie	-0.60951	15.8	2.13
PL61	Kujawsko-Pomorskie	-0.95097	16.6667	2.14
PL62	Warminsko-Mazurskie	-0.66755	12.2143	2.14
PL63	Pomorskie	-0.85844	19.3636	2.14
PT	Portugal	-0.02713	37.1636	
PT11	Norte	-0.34828	30.3243	2.22
PT15	Algarve	0.185643	30.986	2.23
PT16	Centro	-0.05323	27.9583	2.26
PT17	Lisboa	0.117834	61.5	2.26
PT18	Alentejo	0.719336	24.1863	2.20
PT20	Região Autónoma dos Açores	0.491498	27.8763	2.28
PT30	Região Autónoma da Madeira	0.257568	76.6573	2.21
RO	Romania	-1.7858	14.6273	
RO11	Nord-Vest	-1.03706	11.8518	2.15
RO12	Centru	-1.48652	13.8	2.11
RO21	Nord-Est	-1.92242	6.86486	2.08
RO22	Sud-Est	-1.94356	12.4286	1.98
RO31	Sud-Muntenia	-1.6813	10.1515	2.11
RO32	Bucuresti-Ilfov	-2.87937	53.5909	2.13
RO41	Sud-Vest Oltenia	-1.38268	6.82609	2.02

RO42	Vest	-2.16057	13.9474	2.22
SK	Slovakia	-0.77012	16.9444	
SK01	Bratislavský kraj	-0.56138	52.503	2.14
SK02	Západné Slovensko	-0.8555	14.0526	2.08
SK03	Stredné Slovensko	-0.75715	12.0714	1.98
SK04	Východné Slovensko	-0.76037	9.875	2.02
ES	Spain	0.004827	42.56	
ES11	Galicia	0.576937	35.8148	2.12
ES12	Principado de Asturias	0.513811	29.8182	2.12
ES13	Cantabria	0.142429	31.041	2.12
ES21	Pais Vasco	0.66838	56.4286	2.18
ES22	Comunidad Foral de Navarra	0.17228	58.7784	2.18
ES23	La Rioja	0.2429	51.4059	2.18
ES24	Aragón	0.320654	46.0769	2.18
ES30	Comunidad de Madrid	-0.10041	72.6774	2.18
ES41	Castilla y León	-0.05675	27.52	2.21
ES42	Castilla-La Mancha	0.207737	23.45	2.21
ES43	Extremadura	0.417045	18.2727	2.21
ES51	Cataluña	-0.46911	60.0972	2.20
ES52	Comunidad Valenciana	0.152923	38.2857	2.20
ES53	Illes Balears	0.107674	32.1	2.20
ES61	Andalucia	-0.20166	21.9375	2.23
ES62	Región de Murcia	0.284118	38	2.23
ES63	Ciudad Autónoma de Ceuta (ES)		24.9872	
ES64	Ciudad Autónoma de Melilla (ES)		11.5758	
ES70	Canarias (ES)	0.272443	33.95	2.09
SE	Sweden	1.39704	95.6413	
SE1	Östra Sverige	1.38552	108.229	2.43
SE2	Södra Sverige	1.46352	99.075	2.45
SE3	Norra Sverige	1.26877	61.6471	2.39
UK	United Kingdom	0.905569	38.3459	
UKC	Northeast England	0.9076	21.9615	2.26
UKD	Northwest England	1.02969	32.2609	2.41
UKE	Yorkshire-Humber	0.638634	32.4808	2.27
UKF	East Midland England	1.23637	28.1136	2.29
UKG	West Midland England	0.787377	29.9259	2.29
UKH	East of England	0.750919	32.9649	2.39
UKI	London	0.469364	99.1053	2.37
UKJ	South East England	1.07228	35.253	2.30

UKK	South West England	1.08075	25.4231	2.27
UKL	Wales	0.794087	19.1	2.27
UKM	Scotland	1.26864	26.1176	2.40
UKN	N. Ireland	0.922231	27.1111	2.18

Appendix B: Measuring the Quality of Government (*EQI*)

The measure of regional quality of government – the European Quality of Government Index (*EQI*) – is based on a survey of about 34,000 EU citizens (approximately 200 respondents per region) which was funded by the European Commission.[14] The respondents were asked to rate three core public services based on their own perceptions and experiences – education, health care and law enforcement – with respect to three related concepts of QoG – the *quality*, *impartiality* and the extent of *corruption* in their regions. The 16 QoG related questions – five pertaining to corruption perceptions and experiences, six to impartiality and five to the quality – were then aggregated into a single index for each region. In addition to this, the sub-national survey assessment was combined with a national assessment from the World Bank's 'World Governance Indicators' (WGI) (Kaufmann, Kraay and Mastruzzi 2009). This is done for two reasons. First, although the data capture regional differences with respect to the three public services mentioned above, there remains much unobserved 'national context' in the regional measure. It stands to reason that a region's QoG may be affected by such nation-wide factors (e.g. legal system) that need to be accounted for when assessing the overall QoG of any sub-national unit. The second reason is more of a practical character: 200 respondents per region is a relatively low number of observations. Thus to 'anchor' each estimate, the national level data provided by the World Bank allows us to include outside assessment of each country's QoG, and add the necessary national context unobserved in the regional measure alone. Essentially, the WGI data serve as each country's mean score and the regional survey data provides information on the variation of a region's QoG score relative to its country's mean.

Construction of the EQI:

The index is built first by calculating a national average for each EU-27 country. For this the country average from the WGI data for four indicators: 'control of corruption', 'government effectiveness', 'rule of law' and 'voice and accountability' and combine the four into one composite index

[14] Research report prepared for the European Commission is available online at http://ec.europa.eu/regional_policy/sources/docgener/studies/study_en.htm. The questionnaire can also be found in Charron, Dykstra and Lapuente (2012).

(equal weighting)[15]. Then, the combined WGI data is standardized for the EU sample. This figure is used as country's mean score in the EQI for all 27 countries.

The regional data itself combines 16 survey questions about the QoG in the region. Three public services in question are public education, public health care and law enforcement. The questions are centred on three QoG concepts: 'quality', 'impartiality' and 'corruption'. In building the regional index, we aggregated these 16 indicators to three pillars based on factor analysis, labelled 'quality', 'impartiality' and 'corruption'. Then these three pillars were averaged together to form the final index score for each region. After each stage of aggregation, the data are standardized. For the nine countries outside of the regional survey, there is nothing to add to the WGI Country score, thus the WGI data is used as the QoG estimate alone, and regional variation is unobserved. With respect to countries with the regional data, we set the national average using the WGI and explain the within country variance using the regional level data. Simply speaking, we aggregate the regional QoG score for each of the 18 countries in the survey, weighting each region's score by their share of the national population. We then subtract this mean score from each region's individual QoG score from the regional study, which shows if the region is above or below its national average and by how much. This figure is then added to the national level, WGI data, so each region has an adjusted score, centered on the WGI. The formula employed is the following:

$$\mathrm{EQI}_{\mathrm{regionX\ in\ countryY}} = \mathrm{WGI}_{\mathrm{countryY}} + \left(\mathrm{Rqog}_{\mathrm{regionX\ in\ countryY}} - \mathrm{CRqog}_{\mathrm{countryY}}\right)$$

where 'EQI' is the final score from each region or country in the EQI, 'WGI' is the World Bank's national average for each country, 'Rqog' is each region's score from the regional survey and 'CRqog' is the country average (weighted by regional population) of all regions within the country from the regional survey. The EQI is standardized so that the mean is '0' with a standard deviation of '1'. Extensive sensitivity testing has been done for both the WGI national level data as well as the regional data within the index to show that the data is robust to several specification alterations in weighting scheme, aggregation and individual indicators among other changes (Charon 2010). A more detailed version of this description can be found in Charron, Dykstra and Lapuente (2012).

[15] In addition, we underwent extensive sensitivity testing of each of these 4 pillars of QoG from the World Bank and found the data to be highly robust (Charron 2010)

Appendix C: Constructing Entrepreneurial Index

Question 7 of the Flush Eurobarometer survey's 'Entrepreneurship in the EU and Beyond' (EC 2010) contains four statements:

- "Entrepreneurs create new products and services and benefit us all" (entbenefits)
- "Entrepreneurs think only about their own wallet" (entgreedy)
- "Entrepreneurs are job creators" (entjobcreaters)
- "Entrepreneurs exploit other people's work" (entexploit)

Each of the statements could be rated from 'Strongly agree' (1) to 'Strongly disagree' (4). 'Don't know' was also an option, and during the aggregation this response was dropped.

First, we created an index that captures perceptions of entrepreneurship in general. The individual responses were aggregated by NUTS region to correspond with the EQI and SMALL FIRMS variables and adjusted in such a way that higher values equate to more positive views of entrepreneurship. Then we performed a principle component factor analysis to assess internal validity of the index and to obtain relative weights when combining them into a single index. We found that the four variables loaded well together and according to the Keiser criterion, they load onto a single factor. The results showed that only one factor had an Eigenvalue above '1' and that factor explains 64% of the variation in the variables. It should be noted that the Spearman Rank coefficient is 0.98 when comparing the factor weighted index to an index of the four variables with equal weighting. The index can plausibly range from one to four, yet in the sample it ranges from 1.95 to 2.79 with a standard deviation of 0.15.

obs: 168, retained factors: 2				
Factor	**Variance**	**Difference**	**proportion**	**Cumlative**
Factor 1	**1.6**	**0.83**	**0.79**	**0.79**
Factor 2	0.74	-	0.37	1.17
	Variable	**Factor 1 loadings**	**Final index Weights**	
	entbenefits	0.204	0.090	
	entgreedy	0.387	0.172	
	entjobcreaters	0.839	0.372	
	entexploit	0.826	0.366	
	TOTAL	2.256	1.000	

Appendix D. Summary Statistics of Variables and Data Sources

	Obs	Mean	St. Dev.	Min	Max	Source
I. Regional Level Data						
SME's (per 100K residents)	172	29.9	20.7	6.8	114.8	Author created, raw data from Amadeus
EQI (ST)	172	-0.0007	1	-2.88	1.75	Charron, Dykstra and Lapuente 2012
EQI (corruption, ST)	172	-0.0009	1	-2.78	1.86	Charron, Dykstra and Lapuente 2012
EQI (Impartiality, ST)	172	-0.0005	1.01	-2.65	1.87	Charron, Dykstra and Lapuente 2012
Pop. Density (log)	172	5.01	1.14	0.98	8.79	Eurostat
Capital Region	172	0.103	0.31	0	1	Eurostat
Pct. Non-EU born pop. (ST)	172	-0.0009	1	-1.02	4.31	Eurostat
Pct. Tertiary Education (ST)	172	-0.001	1.001	-1.86	2.59	Eurostat
Entreprenuerial Index (ST)	168	-0.00007	1	-1.87	3.62	Eurobarometer Flush 283
GDP Growth (ave. 2000-07)	168	2.89	1.54	0.5	8.7	Eurostat
Tourism	168	32.05	21.53	3.3	91.1	Eurostat
GDP (PPP p.c. log1995-97)	172	9.22	0.94	6.8	10.7	Eurostat
II. National Level Data						
Capital Ratio (CR)	18	2.55	0.95	1.13	4.48	Author created, raw data from Amadeus
Gini Index (x10)	18	2.37	0.78	0.82	3.46	Author created, raw data from Amadeus
Mod. Herfindahl Index (MH x10)	18	4.36	1.52	1.32	6.82	Author created, raw data from Amadeus
Corruption (CPI)	18	6.24	1.93	3.8	9.3	Transparency International
Corruption (World Bank)	18	1.05	0.85	-1.7	2.32	Kaufman, Kraay and Mastruzzi 2009
EU 15	18	0.67	0.48	0	1	Author constructed
Pop. Density (ave. 2007-09)	18	155.9	113.4	22.5	487.4	Eurostat
GDP (PPP p.c. log 1990-99)	18	9.81	0.55	8.7	10.3	Eurostat
Gini Index household Inequality (ave. 1990-99)	18	29.8	3.7	23.3	36.2	UN Development Indicators
Δglobalization	18	13.3	9.3	3.7	33.1	Dhreler 2006
Federal	18	0.167	0.38	0	1	Author Created
Semi-federal	18	0.11	0.32	0	1	Author Created
Unitary	18	0.72	0.46	0	1	Author Created
Decentralization (RAI)	18	13.1	8.1	1	29.3	Hooghe, Marks and Schakel 2010

Note: ST indicates that the variable has been standardized.

Appendix E. Alternative Measures of the Spatial Inequalities of Entrepreneurship

Using the formula from Shanker and Shah (2003) for the Gini index, we take the sum of the absolute difference of the population weighted *SMALL FIRMS* per capita for $region_i$ and $region_j$, multiplied by the inverse of maximum value for $country_a$ ($2Y_a$).

$$G_w = \left(\frac{1}{2Y_a}\right)\sum_i^n \sum_j^n \left|y_i - y_j\right| \frac{p_i p_j}{P^2} \tag{1}$$

The Gini index ranges from '0' (perfect equality, whereby each region has an equal amount of per capita SMEs) to $1-(p_i - P_a)$ for $country_a$.

Building on the work of Ellison and Glaeser (1997) the modified Herfindahl Index (MH) is calculated using the following formula:

$$MH_x = \frac{\sum_{i=1}^{N} |y_i - P_i|}{1-\left(\frac{1}{n}\right)} \tag{2}$$

Where MH in country 'x' equals the sum absolute difference of each region's per capita small firms as a proportion of the total country's small firms minus (y_i) minus the proportion of country 'x's population in that region (P_i). Similar to our first measure of inequality, this measure was found to be sensitive to the number of 'n' regions in each country, thus we adjust MH by one minus the inverse of the total number of regions. Thus in a country where each region has the same proportion of SME's as its population relative to the SME's and population of the country on whole, MH would equal '0', or zero inequality.

Each measure of inequality is calculated at the NUTS 2 level except for Germany, UK and Belgium, which are NUTS 1.