

# **Institutions and entrepreneurship: The role of the rule of law**

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# INSTITUTIONS AND ENTREPRENEURSHIP: THE ROLE OF THE RULE OF LAW

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## **Abstract:**

This paper examines variations in entrepreneurship across twenty developed countries, using three measures of entrepreneurship which we broadly describe as pre-start, early-stage and established enterprises. It then links these measures to the economic institutional framework, holding constant a range of other factors. Two groups of conclusions emerge. The first is that the factors that influence pre-start, early-stage and established enterprises differ often quite sharply. Second, our results broadly confirm earlier work suggesting that social security entitlements, taxes, and employment protection legislation are negatively associated with (different forms of) entrepreneurial activity. However, our novel finding is that countries with a "better" rule of law have lower entrepreneurship. We explain this apparently counter-intuitive finding by arguing that in developed economies the benefits of the rule of law accrue primarily to large enterprises.

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## 1. Introduction

Entrepreneurship, in some form, has long been argued to be an ingredient for economic development. So, since governments increasingly see themselves as having a responsibility for enhancing the economic welfare of their citizens, virtually all developed countries now have a suite of policies in place that seek to promote/enhance/facilitate entrepreneurship (OECD, 2008).

In practice however, whilst the need for policies to enhance entrepreneurship is recognised, governments are understandably perplexed by the contradictory research evidence of the effectiveness of these policies. This means governments have to make choices over spending considerable sums of money, yet are often faced with highly imperfect evidence about policy effectiveness.

The context for this paper is these policy choices. The first policy choice is over precisely what constitutes entrepreneurship. Is it having taken some steps towards starting a business; is it having actually started a business or is it a measure of business ownership? Since these are by no means the same measures, the first choice is to decide which best captures the slippery concept of entrepreneurship.

Having made that choice governments then have to decide which policies are most likely to enhance their chosen measure of entrepreneurship. A key distinction is between micro and macro policies (Storey and Greene, 2010). Micro policies are those forms of government support where the specific target audience are SMEs or entrepreneurs. Such policies include provision of loans and grants to small firms, or the provision of information and advice, or enhancing the information network open to small firms. A useful "rule of thumb" is that micro policies are those formulated and delivered primarily by the government department which has explicit responsibilities for enterprise and entrepreneurship.

This contrasts with government macro policies which often have a major impact upon entrepreneurship and small firms, even though they are not the prime focus of policy. Within macro policies a distinction can be drawn between traditional macro economic targets such as lowering inflation, increasing GDP, lowering unemployment, etc., and institutional framework policies. By the latter, we mean primarily the legislative framework which influences entrepreneurs such as employment protection legislation, contract enforcement, competition policy and even immigration. Here it is clear that the prime 'target audience' is not SMEs or entrepreneurs, but wider sections of the electorate. Delivering these institutional policies requires striking a balance between the interests of citizens, workers and large and small enterprises.

This paper begins by contextualising our interest in linking both macro and micro policies to promote entrepreneurship and hence economic development. There are numerous studies which link individual instruments of micro-policy to enhanced entrepreneurship outcomes, but the outcome is a far from consistent picture.

However, our focus in this paper is on macro- or institutions policy and its impact upon entrepreneurship. Again the early evidence clearly pointed to policies in this area – most notably taxes, regulation and the rule of law having a major influence on the scale of entrepreneurship in a country. However more recently these certainties have been questioned and our role is to contribute to that debate.

The empirical contribution of this paper is to examine the impact that economic institutions have upon entrepreneurship. We particularly focus on the role of the rule of law. The unique contribution of the paper is to take these institutional concepts and ask whether the inconsistent results obtained reflect a lack of clarity in the definition of entrepreneurship used, not just in this paper, but more widely by policy makers. It specifically distinguishes between the role of economic institutions in influencing nascent entrepreneurship, young business entrepreneurship and business ownership. What is clear is that none of the institutional variables exerts a significant consistent influence across all three indicators of entrepreneurship. Of the five economic institution measures identified for example, only one has a significant influence on nascent entrepreneurship.

A second key contribution of the paper is its finding that countries where the rule of law is weak in fact demonstrate greater entrepreneurship, defined as business ownership, than where the rule of law is strong. This appears to contradict earlier work by Nyström (2008), and it also looks incompatible with the findings of Ardagna and Lusardi (2009), who are unambiguous in this matter saying 'all our estimates point to a negative effect of regulation'.

Our results, by contrast, point towards a more nuanced view of the impact of regulation and the rule of law on entrepreneurship, reflecting the earlier interpretation of Van Stel et al. (2007) and Capelleras et al. (2008). It is that government policies influence the balance of advantages and disadvantages of formal and informal entrepreneurship. They also influence the advantages and disadvantages of being a large or small firm. Our key result relating to the rule of law, is that it is large, rather than small, firms that are the prime beneficiaries. It clearly does not imply that small firms do not benefit from a modern and efficient legal system. What it does imply is that large firms are able to acquire more of these benefits, so explaining our findings.

## **2. Theory and Prior Work**

This paper takes as its key assumption that entrepreneurship is a choice and that the rationale underpinning that choice is that some individuals will shift from other "states" such as paid employment as an employee, unemployment or economic inactivity into entrepreneurship when they perceive that it becomes more attractive to them than their current "state" (Parker, 2004).

Given this choice-based framework we also assume that, because they believe that entrepreneurship enhances economic development, governments wish to make this option more attractive to individuals. To tilt the balance in favour of entrepreneurship governments can either make entrepreneurship more attractive, or make the other "states" less attractive.

The policies available to government can be grouped into micro and macro instruments (Storey and Greene, 2010). Micro policies are those that focus on entrepreneurs, potential entrepreneurs and small businesses. These policies are the prime responsibility of the department of government responsible for SMEs or enterprise. Examples of micro-policies include loans and grants, information and advice, management training, awareness raising etc. There is an extensive literature that describes these policies, but a more modest literature that carefully assesses their impact. At the risk of over-simplification, the view that emerges from the assess-

ment literature is one of a mixed picture but where the clearer positive impacts seems to be where less sophisticated evaluation methods have been employed.<sup>1</sup>

However our purpose here is to focus upon macro, rather than micro, policies. The unifying characteristic of such policies, it will be recalled, is that they impact upon entrepreneurship without having the entrepreneur as their prime target. Indeed in some cases the entrepreneur is hardly even considered when such policies are formulated or discussed. Key examples include policies on the rule of law, on regulation, immigration, competition, taxation, social security entitlement as well as traditional macro-economic policies to control inflation and aggregate demand.

### *2.1 Four macro policies*

This paper examines four macro policies where the link with entrepreneurship has been examined in prior work. These are taxes, regulation, the rule of law and social security entitlement. We now briefly review prior work on each policy area and, on the basis of this set out our expectation of the link between the four policy areas and entrepreneurship. Underpinning our expectations are two assumptions. The first is that policies can make entrepreneurship more attractive either directly or by making other options less attractive (Parker, 2004). So, policies that make **both** entrepreneurship **and** other options more attractive are likely to have ambiguous outcomes. Our second assumption is that policies can influence the distribution of entrepreneurship between formal and informal, and productive and unproductive activities, without necessarily influencing the quantity of entrepreneurship (Baumol, 1990).

- Taxes

In matters relating to taxation on income, employees and the self-employed differ in three important respects. First, whilst employees have their tax removed "at source" by their employer, the self-employed declare their income to the tax authorities. Second, the employee pays their tax immediately, whereas the self-employed pay in arrears, normally at the end of a financial year. Thirdly, the self-employed are able to claim expenses against their income on a scale not normally available to the employee. These three differences offer potential financial benefits to the self-employed that are not available to the employee and might therefore influence an individual's choice in favour of self-employment.

Given that most individuals would choose not to pay taxes, it is expected that lowering tax rates for the self-employed or raising taxes on employees leads individuals to shift to self-employment. Schuetze (2000) supports this by showing that increases in average income tax rates have large and positive effects on self-employment in Canada, 1983-94. For Sweden, Fölster (2002) finds that reducing the tax burden by 10% (of GDP) would increase the share of the self-employed in employment by about 3%.

<sup>1</sup> For example in the US the Small Business Development Corporations SBDCs are reviewed by Chrisman and Macmullan (2004); the SBIR programme is reviewed by Wallsten (2000); in the UK the advice service Shell LiveWire is reviewed by Greene and Storey (2007); in Canada the small firm loan guarantee programme is reviewed by Riding and Haines (2001) and Riding et al (2007); in Belgium the advisory services are reviewed by Lambrecht and Pirnay (2005); in Japan the Science Park programmes is reviewed by Fukugawa (2006).

In contrast, Robson and Wren (1999) and Bruce (2000) draw an important distinction between changes in the average, and changes in marginal, rates of taxation. They find that lowering marginal rates of tax increases effort, since individuals "keep" more of the income they generate. Since the self-employed have more opportunity to vary their input than employees it means they are prepared to work more hours. However, the lowering of average rates reduces the potential gains to the self-employed from evasion and so reduces the differential between paid and self-employment. It is because of the offsetting influences of these two factors that more recent empirical evidence of changes in income taxes upon self-employment is more mixed.

Schuetze and Bruce (2004) provide a helpful review of several recent studies on this topic. They conclude that the "evidence" of the impact of taxation on self-employment is now less clear. They conclude:

"The fact that self-employment appears to increase with income tax rates calls into question the common view that high taxes hamper self-employment." p. 259.

The discussion above has focussed exclusively on the impact of income taxes, but governments also impose business, sales and inheritance taxes, all three of which may influence the behaviour of small businesses and their owners. For example, Michaelas et al. (1999) showed that taxes which were levied on small company profits were likely to lead to lower growth rates, since the retained profits were the prime source of funding for small company investment.

The above suggests that a simple relationship between low rates of taxation and an entrepreneurial economy does not exist. Instead, the nature of taxation influences the behaviour of individuals both in their choice of employee or self-employment status, and in their choices as business owners. It also influences their effort as a self-employed person.

- Regulation

There is now an extensive and authoritative literature linking regulation, in one form or another, to entrepreneurship. The pioneering study by Djankov et al. (2002) pointed to considerable variations between countries in both the time and cost of business creation. For example, at that time, it took 82 days to start a business in Spain compared with less than three in countries such as Canada, the US and New Zealand. It was argued that these regulations, although they may have been justified on the grounds of providing protection for customers and creditors, had a direct effect on lowering business start-up rates. Second, it was argued that employment protection legislation and regulation in the product market served to raise the operating costs of a small business and so make entrepreneurship relatively less attractive. Finally it was argued that high regulation also "tilted the balance" away from small firms and towards large firms since the latter were able to more easily respond to, and perhaps even manipulate it in their favour.

The empirical work seemed to point, without ambiguity, to regulation suffocating entrepreneurship. Ardagna and Lusardi (2009) reflect that certainty when they say:

"All our estimates point to a negative effect of regulation"

In response to this evidence policy makers then engaged in a competitive game to seek to lower regulation, reflected for example in terms of numbers of days to start a business. To illustrate, between 1999 and 2004 France reduced the number of days from 53 to 8; Spain from 82 to 47 and Italy from 62 to 13.

However, drawing upon the work of Baumol (1990) there is now less unanimity amongst researchers. Capelleras et al. (2008) compare highly regulated Spain with low regulation Britain. They find some evidence that fewer new firms are started in Spain, implying support for the thesis that regulation depresses entrepreneurship. However this is only if official data for new firms are used. Instead, when both official and unofficial firms are included these differences disappear. Their view is that, compatible with Baumol and Van Stel et al. (2007), regulation serves to influence the distribution of entrepreneurship between different activities but hardly affects the total quantity.

- Rule of Law

It seems clear that for entrepreneurship to function effectively requires property rights to be clearly defined and enforced. There has to be a mechanism for contracts to be agreed and a legal system in place to enforce such contracts.

The evidence presented by Nyström (2008) clearly points to a powerful link between legal structure, the security of property rights on the one hand and entrepreneurship on the other.

However the alternative argument is twofold. The first is that whilst of course those entrepreneurs that operate their business using legal channels benefit from a cheap, transparent and fair legal system, many enterprising individuals will find alternative but possibly equally effective methods for contract enforcement which are independent of the legal system. Indeed they may view greater transparency as not working to their advantage. The second argument is that whilst most entrepreneurs do benefit from improvements in the rule of law, they may benefit less than large firms which are more able to exploit their market dominance. Some support for this is provided by Aidis et al. (2009). They find a positive effect of Rule of Law using a sample of both developing countries and middle-income economies. However, when a group of highly developed economies is included as well, the effect of Rule of Law disappears.

Our view is that the theory and the evidence on linking entrepreneurship with the rule of law are mixed.

- Social security entitlements

The final factor we include is social security entitlements. Here the logic is that the individual who is either unemployed or economically inactive is less likely to take the risk of shifting from those states and into entrepreneurship when social security income is high than when it is low or non-existent. It also seems clear that increases in social security entitlements will lower the attraction of entrepreneurship and vice versa (Hessels et al., 2007).



### 3. The Model

The prime purpose of the paper is to link entrepreneurship with institutions and regulation. To achieve this we first need to include four different groups of controls: Demography/Human Capital; Macro-economic conditions; Attitudes and culture; and Innovation.

However entrepreneurship is not a single event and we would not expect the same factors to influence for example, starting a business as remaining in business. We therefore now set out the influence of entrepreneurship as a process and then turn to examining the four groups of control variables.

#### 3.1 *Entrepreneurship as a process*

Several studies investigate the determinants of entrepreneurship, either at the micro-level or at the macro-level (for an overview, see Van der Zwan et al., 2009b). Various measures of entrepreneurship are used in the literature, varying from dynamic measures (referring to the extent of *new* entrepreneurship) such as nascent entrepreneurship, young business entrepreneurship or new-firm startup rates, to static measures (referring to the extent of *incumbent* entrepreneurship) such as the share of small businesses in production or business ownership rates. Cross-country correlations between new and incumbent entrepreneurship rates are not necessarily high (Van Stel, 2006, pp. 7-8). Hence, determinants of static and dynamic measures of entrepreneurship may also be different. Nevertheless, in most studies to date only a single measure of entrepreneurship is used (either static or dynamic) so that the picture of the determinants of entrepreneurship is incomplete.

At the micro level, there is a small literature which studies entrepreneurship as a process (Grilo and Thurik, 2008; Van der Zwan et al., 2009a, 2009b). In this literature individual level data from the European Commission (the so-called 'Flash Eurobarometer Surveys on Entrepreneurship') are analysed extensively. In particular, this data source asks respondents whether they "never thought about starting a business", "are thinking about starting a business", "are taking steps to start a business", "are running a business for less than three years", or "are running a business for more than three years" (Grilo and Thurik, 2008). These are ascending levels of engagement on the 'entrepreneurial ladder' (Van der Zwan et al., 2009a). Van der Zwan et al. (2009b) show that countries display different performance patterns regarding these entrepreneurial engagement levels. While some countries such as the United States score relatively high on "thinking about starting a business", other (European) countries score lower on "thinking" but higher on transitions from nascent activity to actual start-ups. The authors also show that various transitions between the different levels of entrepreneurial engagement have different (country-level) determinants. In sum, this emerging literature consistently shows that it is important to distinguish between various stages of entrepreneurial engagement. Similar to the above-mentioned studies using micro-level data, we will distinguish between various stages of entrepreneurial engagement using macro-level data.

#### 3.2 *Institutions and regulations*

As noted earlier our four measures of Institutions and regulations are: taxes, regulation, the rule of law and social security entitlements.

### *3.3 Explanatory control variables included in the present study*

We then incorporate potential determinants of entrepreneurship from four groups of variables: demography/human capital, macro-economic conditions, attitudes/culture and innovation.

- Demography/human capital

Examples of demography/human capital variables relevant to entrepreneurial activity are educational attainment and the age and gender composition of the population. It is argued that education enhances the entrepreneurial option and that a higher proportion of middle aged males has a similar effect. In particular, the prevalence rate of nascent entrepreneurs is often seen to be highest in the age group 25-34 years (Delmar and Davidsson, 2000; Verheul et al., 2002). We include four variables in this category: enrollment rates in secondary and tertiary education, population 25-39 year old as a share of population 25-64 years old, and the share of women in the labour force.

- Macro-economic conditions

Examples of macro-economic conditions which can influence the attractiveness of entrepreneurship are unemployment and per capita income. The impact of unemployment on entrepreneurship is indeterminate from theory, as both recession-push and prosperity-pull effects are at play (Storey, 1991). Moreover, there may also be reversed causality as entrepreneurial activity contributes to bringing down unemployment (Thurik et al., 2008). The sign of per capita income is also hard to predict. On the one hand, higher per capita income rates may increase demand for new products, creating more room for entrepreneurship. On the other hand, increasing per capita income may be accompanied with increasing exploitation of scale economies, consistent with a negative impact on entrepreneurship (Carree et al., 2002). Finally, we also include the share of services in the economy. As entry barriers are lower for services compared to, for instance, manufacturing, economies with a higher services share may be expected to have more entrepreneurs.

- Attitudes/culture

It is often argued that individuals in different countries have a very different attitude to risk and hence to entrepreneurship. Such cultural differences may be related to structural differences in entrepreneurship rates across countries (Freytag and Thurik, 2007; Wennekers, 2006). It is therefore possible to link entrepreneurship rates to data on attitudes that are available from Hofstede (2001). Whilst it is not always clear that culture/attitudes are independent of those of the more economic variables identified above, their inclusion in these equations has merit.

- Innovation

It is recognised that there is, in the Schumpeterian framework, a clear link between innovation and entrepreneurship. Again there are problems about the extent to which innovation can be considered to be exogenous but data on R&D should be included as independent variable in equations explaining entrepreneurship. As formal R&D is often applied in large companies, the relation with entrepreneurship rates is expected to be negative.

## 4. Data and Methodology

We will estimate a SUR regression model using different measures of entrepreneurship (dependent variable) and using a large range of independent variables. We classify these variables into five groups of explanations. Below we describe the dependent variables and (groups of) independent variables used in our regression models. For each variable we identify for which countries and years it is available. In doing so, we use the data availability in EIM's Compendia data base (the source for our incumbent entrepreneurship measure) as a reference point. This comprises 23 OECD countries for the period 1972-2007 (Compendia version 2007.1).<sup>2</sup>

### 4.1 *Dependent variable: entrepreneurial activity*

We use three measures of entrepreneurship reflecting the sequential stages in the entrepreneurial process: nascent entrepreneurship, young business entrepreneurship and incumbent entrepreneurship. Nascent and young business entrepreneurship are taken from the Global Entrepreneurship Monitor (GEM) data base (Reynolds et al., 2005) while incumbent entrepreneurship is taken from EIM's Compendia data base (Van Stel, 2005).<sup>3</sup>

The nascent entrepreneurship rate defines entrepreneurship as the percentage of the adult population (18-64 years of age) that is actively involved in setting up a business. The young business entrepreneurship rate is defined as the percentage of adult population that currently owns and manages a young business that is less than 42 months old (Reynolds et al., 2005). These measures are available for the period 2002-2007. Incumbent entrepreneurship is operationalised as the business ownership rate (BOR), as measured in EIM's Compendia data base. The business ownership rate is defined as the total number of unincorporated and incorporated self-employed (excluding agriculture) as a share of the total labor force (Van Stel, 2005). An important difference with the previous measures is that the business ownership rate also includes entrepreneurs of older (incumbent) businesses. This measure is available from 1972-2007.

### 4.2 *Independent variables*

We use independent variables from five groups of explanations. The sources and definitions of the variables used in the analyses are listed below.

- *Demography/human capital:*

- Educational attainment

- Data on educational attainment are taken from the World Bank's data base EdStats.<sup>4</sup> We use gross enrollment rates for secondary and tertiary education. Both variables are available for 23 OECD countries covering the period 1972-2006. Germany is missing prior to 1990.

<sup>2</sup> The 23 countries are: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, The Netherlands, Portugal, Spain, Sweden, United Kingdom, Iceland, Norway, Switzerland, USA, Japan, Canada, Australia and New Zealand.

<sup>3</sup> COMPARative ENtrepreneurship Data for International Analysis (available at <http://www.entrepreneurship-sme.eu/>).

<sup>4</sup> <http://go.worldbank.org/ITABCOGIV1>, and <http://go.worldbank.org/47P3PLE940>.

- Age composition  
We used the OECD Demographic and Labour Force Databases, the U.S. Census Bureau International Database and United Nations Statistics (UN-Stats) to construct the variable age composition. This variable is defined as the population aged 25-39 years as a share of the population aged 25-64 years. It is available for all 23 OECD countries in the period 1972-2006.
- Female labour share (FLS)  
The female labour force as a share of the total labour force is taken from OECD Labour Force Statistics covering 23 OECD countries in the period 1972-2007. This variable is available via EIM's Compendia data base.
- *Macro Economic Conditions:*
  - Service share  
The service share refers to the share of the service sector<sup>5</sup> in total employment excluding agriculture, hunting, forestry and fishing. These data are taken from OECD Labour Force Statistics.<sup>6</sup> The service share is available for 23 OECD countries in the period 1972-2006.
  - Unemployment rate  
The standardised unemployment rate measures the number of unemployed as a percentage of the total labour force. It is taken from OECD Main Economic Indicators, and available for 23 OECD countries in the period 1972-2007. This variable is available via EIM's Compendia data base.
  - Per capita income  
Gross domestic product (GDP) per capita is expressed in (thousands of) purchasing power parities per US dollar at 1990 prices. These data are constructed from underlying series in OECD National Accounts and OECD Labour Force Statistics. It is available for 23 OECD countries in the period 1972-2007, via EIM's Compendia data base.
- *Institutions:*
  - Social Security Entitlements (SSE)  
Social security entitlements are operationalised as the unemployment gross replacement rate. Data are taken from the OECD Benefits and Wages Statistics<sup>7</sup>. The data are available on a bi-annual basis during 1961-2003. The even years are interpolated and data after 2003 are extrapolated. SSE is available for 23 OECD countries in the period 1972-2006.
  - Taxes  
Two tax variables are included in the models. *First*, total tax revenue as percentage of GDP is taken from the OECD Revenue Statistics<sup>8</sup> and available for 23 OECD countries in the period 1972-2006. *Second*, the rate of taxation of corporate and capital income is taken from the OECD Tax Database.<sup>9</sup> It refers to basic (non-targeted) corporate income tax rates for the total central and sub-central governments (combined). This variable is available for 23 OECD countries in the period 1981-2006 (Luxembourg

<sup>5</sup> The service sector includes Wholesale and retail trade, restaurants and hotels; Transport, storage and communication, Finance, insurance, real estate and business services; and Community, social and personal services.

<sup>6</sup> [www.sourceoecd.org](http://www.sourceoecd.org), National Accounts (detailed tables population and employment).

<sup>7</sup> [http://www.oecd.org/document/0/0,3343,en\\_2649\\_34637\\_34053248\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/0/0,3343,en_2649_34637_34053248_1_1_1_1,00.html).

<sup>8</sup> [www.sourceoecd.org](http://www.sourceoecd.org), Revenue (comparative tables).

<sup>9</sup> [http://www.oecd.org/document/60/0,3343,en\\_2649\\_34533\\_1942460\\_1\\_1\\_1\\_37427,00.html](http://www.oecd.org/document/60/0,3343,en_2649_34533_1942460_1_1_1_37427,00.html).

and Iceland are unavailable prior to 2000; Japan is unavailable prior to 1990).

– Employment Protection Legislation (EPL)

The strictness of employment protection legislation is taken from the CEP-OECD Institutions Data Set (1960-2004).<sup>10</sup> The original sources are described in a discussion paper by Nickell (2006). Higher values correspond to increasing strictness of employment protection. EPL is available for 20 OECD countries (Greece, Luxembourg and Iceland are missing) in the period 1975-2003. The series is extrapolated to 2006.

– Rule of Law

From the World Bank Worldwide Governance Indicators (WGI)<sup>11</sup> we have taken the variable Rule of Law. The Rule of Law index measures "perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence" (Kaufmann et al., 2009, p. 6). As described in the WGI data set, the value range of this indicator is from about -2.5 to 2.5, where higher values correspond to better governance outcomes. It holds that all governance indicators included in the World Bank's WGI data base "reflect the statistical compilation of responses on the quality of governance given by a large number of enterprise, citizen and expert survey respondents in industrial and developing countries, as reported by a number of survey institutes, think tanks, non-governmental organizations, and international organizations." The indicator is available from 1996 onwards.

• *Attitudes/Culture:*

– Hofstede's Cultural Dimensions

When accounting for a nation's culture, we draw on Geert Hofstede's Cultural Dimensions.<sup>12</sup> Hofstede (2001) distinguishes different types of cultural measures of which four are included in the models:

- Power Distance Index (PDI) refers to "the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally" (Hofstede, 2001, p. 98). "This represents inequality (more versus less), but defined from below, not from above. It suggests that a society's level of inequality is endorsed by the followers as much as by the leaders", Hofstede explains at his website.
- Individualism (IDV) as opposed to collectivism. "Individualism stands for a society in which the ties between individuals are loose: Everyone is expected to look after him/herself and her/his immediate family only. Collectivism stands for a society in which people from birth onwards are integrated into strong, cohesive in-groups, which throughout people's lifetime continue to protect them in exchange for unquestioning loyalty." (Hofstede, 2001, p. 225). In other words, individualism refers to the degree to which individuals are integrated into groups.
- Masculinity (MAS) as opposed to femininity. "Masculinity stands for a society in which social gender roles are clearly distinct: Men are sup-

<sup>10</sup> <http://cep.lse.ac.uk/pubs/download/data0730.zip>, and <http://cep.lse.ac.uk/pubs/download/dp0759.pdf>.

<sup>11</sup> <http://info.worldbank.org/governance/wgi/index.asp>.

<sup>12</sup> <http://www.geert-hofstede.com/>.

posed to be assertive, tough, and focused on material success; women are supposed to be more modest, tender, and concerned with the quality of life. Femininity stands for a society in which social gender roles overlap: Both men and women are supposed to be modest, tender, and concerned with the quality of life." (Hofstede, 2001, p. 297). At his website Hofstede explains that the assertive pole has been called 'masculine' and the modest, caring pole 'feminine'.

- Uncertainty Avoidance Index (UAI) refers to "the extent to which the members of a culture feel threatened by uncertain or unknown situations." (Hofstede, 2001, p. 161). As explained at Hofstede's website, uncertainty avoidance "deals with a society's tolerance for uncertainty and ambiguity; it ultimately refers to man's search for Truth. It indicates to what extent a culture programs its members to feel either uncomfortable or comfortable in unstructured situations. Uncertainty avoiding cultures try to minimize the possibility of such situations by strict laws and rules, safety and security measures, and on the philosophical and religious level by a belief in absolute Truth. [...] The opposite type, uncertainty accepting cultures, are more tolerant of opinions different from what they are used to; they try to have as few rules as possible, and on the philosophical and religious level they are relativist and allow many currents to flow side by side."

Hofstede's cultural dimensions concern a one-time measurement and are therefore included in the model as time-invariant variables. Data is available for 22 OECD countries (not for Iceland).

- ***Innovation:***

- Research & Development (R&D)

R&D as percentage of GDP is computed by dividing Research and Development expenditures in national currency from the OECD Science and Technology Database<sup>13</sup> by Gross Domestic Product (market prices, value) in national currency from the OECD Economic Outlook.<sup>14</sup> R&D as percentage of GDP is available for 23 OECD countries in the period 1981-2006 (Luxembourg is missing prior to 2000).

When including all variables in the model we end up with 20 countries (with respect to the 23 countries listed in Section 4, Greece, Iceland and Luxembourg are missing due to missing data for some variables). Furthermore, as we want to compare the effects of the explanatory variables on the three different entrepreneurship measures, we should use the same sample for each variable. This restricts our sample to the years 2002-2006. Finally, some countries participating in GEM do not participate each year. In sum, we have a sample of 88 observations, relating to 20 OECD countries over the period 2002-2006. Because for the business ownership rate we have data for a longer time period, we will apply a robustness test using a bigger sample.

The correlation matrix for the 88 observation sample is presented in Table 1. As can be seen, correlations between nascent and young business entrepreneurship on the one hand, and business ownership (incumbent entrepreneurship) on the other,

<sup>13</sup> [www.sourceoecd.org](http://www.sourceoecd.org), Science, Technology and R&D (table E1, Gross domestic Expenditure on R&D – GERD).

<sup>14</sup> [www.sourceoecd.org](http://www.sourceoecd.org), Economic Outlook No. 82: Annual and quarterly data.

are not strong (0.2) suggesting these forms of entrepreneurship are indeed different. On the other hand, the correlation between nascent and young business entrepreneurship is quite strong (0.8). To take account of the correlations between the entrepreneurship variables we will jointly estimate the effects of the explanatory variables on the three dependent variables using seemingly unrelated regression (SUR).

**Table 1. Correlation matrix of all dependent and independent variables (N = 88).**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
	Nascent rate	Young business rate	BOR	Secondary education	Tertiary education	Age composition	FLS	Service Share	Unemployment rate	Per capita income	SSE	Taxes as % GDP	Corporate tax rate	EPL	Rule of Law	PDI	IDV	MAS	UAI	R&D	
1	1																				
2	0.801	1																			
3	0.209	0.208	1																		
4	0.091	0.185	0.103	1																	
5	0.270	0.318	-0.114	0.182	1																
6	0.281	0.351	0.317	0.147	-0.276	1															
7	0.202	0.127	-0.604	0.097	0.521	-0.430	1														
8	0.602	0.550	0.395	0.057	-0.133	0.329	-0.154	1													
9	-0.276	-0.447	0.167	-0.027	-0.016	-0.040	-0.151	-0.520	1												
10	0.327	0.166	-0.294	-0.139	0.235	-0.144	0.338	0.420	-0.459	1											
11	-0.291	-0.251	-0.142	0.246	-0.062	0.106	-0.027	-0.534	0.151	-0.331	1										
12	-0.428	-0.374	-0.240	0.223	0.310	-0.357	0.392	-0.680	0.237	-0.171	0.591	1									
13	-0.021	-0.178	0.110	-0.081	0.008	-0.217	-0.059	-0.024	0.387	-0.215	-0.283	-0.095	1								
14	-0.556	-0.439	-0.112	0.087	-0.122	-0.111	-0.075	-0.590	0.270	-0.587	0.365	0.367	0.021	1							
15	0.252	0.338	-0.651	0.233	0.331	-0.242	0.724	0.035	-0.447	0.325	-0.023	0.089	-0.295	-0.091	1						
16	-0.328	-0.511	0.230	-0.044	-0.380	0.060	-0.391	-0.125	0.588	-0.273	0.046	-0.037	0.467	0.226	-0.672	1					
17	0.523	0.393	0.216	0.182	0.214	0.000	0.283	0.622	-0.291	0.506	-0.187	-0.056	0.032	-0.650	0.218	-0.272	1				
18	0.169	0.078	0.404	-0.298	-0.487	0.163	-0.555	0.444	0.026	-0.028	-0.525	-0.704	0.176	-0.404	-0.399	0.228	0.008	1			
19	-0.325	-0.445	0.236	-0.084	-0.393	0.011	-0.488	-0.271	0.563	-0.487	0.109	-0.092	0.463	0.369	-0.614	0.849	-0.535	0.345	1		
20	-0.287	-0.317	-0.614	-0.094	0.302	-0.595	0.497	-0.338	-0.012	0.275	-0.231	0.213	0.111	0.055	0.401	-0.167	-0.108	-0.184	-0.184	1	

Note: Significant at 10% level; Significant at 5% level; Significant at 1% level.



## 5. Estimation Results

We jointly estimate the impact of our explanatory variables on nascent entrepreneurship, young business entrepreneurship and incumbent entrepreneurship (business ownership) by means of seemingly unrelated regression (SUR). Regarding the dimensions of our panel, the number of countries (20) is much higher than the number of years (5), so that cross-country variations are likely to be bigger than variations over time. Even more importantly, the nature of three groups of independent variables (demography, institutions and culture) is such that variations across countries are much more pronounced than variations over time, as these variables typically change slowly over time. Therefore we do not include country dummies in our model allowing our (sometimes time-invariant) explanatory variables to explain structural differences across countries in entrepreneurship rates. On the other hand, we do include year dummies to account for worldwide shocks. Results are shown in Table 2.

Since the prime interest of the paper is in the economic institutional variables we shall first report our findings on their impact on entrepreneurship. We then report our findings on the role of the control variables.

### *5.1 The impact of economic institutional variables*

Four economic institution variables were identified. First, for social security entitlements, we find a non-significant impact on nascent entrepreneurship, but a negative impact on young business entrepreneurship and business ownership. These findings confirm our expectation that high unemployment benefits lower the incentives to become an entrepreneur. This disincentive applies not only to the unemployed themselves, but also to employees. Because in case of turning unemployed, employees are entitled to higher benefits than business owners, it lowers the willingness of a risk-averse individual to start a business.

Second, taxes have a consistently negative sign. While taxes in general seem to negatively influence early-stage entrepreneurship, business ownership is influenced by corporate tax rates.

Third, as expected, the sign of employment protection legislation is also consistently negative, consistent with earlier studies by Ardagna and Lusardi (2009) and Van Stel, Storey and Thurik (2007). However, the sign is only significant for young business entrepreneurship indicating its impact is less pervasive than implied by, for example, Ardagna and Lusardi.

For Rule of Law we find no significant relation with nascent and young business entrepreneurship, but a very strong negative relation with business ownership rates. Considering that our sample relates to developed countries only, the absence of a relation for nascent and young business entrepreneurship is consistent with the findings by Aidis et al. (2009). However, concerning the relation with business ownership, the findings are the reverse of Nyström (2008), who finds a positive relation with 'Legal structure and security of property rights'. Our view is that the difference is explained by the inclusion of country dummies in Nyström (2008).<sup>15</sup>

<sup>15</sup> Estimating our model including country dummies we found a significant positive sign for our Rule of Law variable. We also estimated our model with and without country dummies using Nyström's indicator. We again found the pattern of a positive sign including the country dummies and a negative sign excluding the country dummies.

Nyström uses a longer time period (1972-2002), which makes her choice to explain over-time variations understandable. On the contrary, given the short time period of our panel (2002-2006), and the time-invariant nature of some of our regressors, in this paper we choose to focus on explaining cross-country variations. This is an important difference with the Nyström study.

What then might explain the negative relation between Rule of Law and business ownership? Our explanation is that Rule of Law not only facilitates entry (although we do not find a significant impact on early-stage entrepreneurship here) but also firm growth. Perhaps Rule of Law decreases the risk of investing so that firm growth is easier. This, in turn, may lead to more firms reaching higher firm sizes, in the long run leading to a higher average firm size and higher minimum efficient scale (MES) levels in the economy. Higher MES levels imply higher entry barriers so that, in the long run, entry is lower, average firm size is higher, and the number of incumbent entrepreneurs is lower (but on average bigger).

A second possible explanation along broadly the same lines is that, in developed countries where legal systems are generally well established this benefits small and large firms. However legal systems are complex as well as sophisticated and it is highly plausible that it is large rather than small firms that benefit. One example is the system of Employment Tribunals in the UK in which employees can bring a case of discrimination, unfair dismissal, breach of contract, etc., against their employer or former employer. Saridakis et al. (2008) show that, even after holding constant a range of factors small firms are more likely to lose cases that appear in court than are large firms. They attribute this to the greater formality and documentation of the employment relation in large firms compared to small firms. So, despite the sophistication of the legal system benefitting firms both large and small, the benefits appear to accrue disproportionately to the large.

## 5.2 *The "control" variables*

The table displays several interesting results. Education, as is often the case, exerts a complex influence on measures of entrepreneurship. We find secondary education positively influences entrepreneurship at the more mature stage (i.e. business ownership) while tertiary education positively influences pre-start and early-stage entrepreneurship. One possible explanation is that higher-educated individuals more often try to exploit new ideas by starting up new businesses. However, the non-significant impact of tertiary education on incumbent entrepreneurship may indicate that many of these businesses do not survive, consistent with the Schumpeterian concept of creative destruction. Instead, business ownership is positively influenced by secondary education, possibly indicating that business ownership includes many mom-and-pop businesses.

We find that countries with higher shares of 25-39 years old individuals and high female labour participation have more nascent entrepreneurs and young businesses but less incumbent entrepreneurs. Again, while many young people and many women may be involved in creative destruction battles for new consumer demand, business ownership includes many male entrepreneurs in the category 40-64 years old, where business survival rates are much higher (Cressy, 1996).

As regards macro-economic conditions, we find, as expected, a positive relation between services share and business ownership. The impact of unemployment var-

ies for the three forms of entrepreneurship, illustrating the complex relation between unemployment and entrepreneurship (Thurik et al., 2008). While per capita income does not influence the number of people preparing for entrepreneurship, it does –negatively– influence entrepreneurship at the more mature stages where actual businesses are involved. This may indicate that in higher developed countries, there are more safe wage jobs available for talented individuals (Lucas, 1978).

As regards the cultural variables, they are strongly related to several forms of entrepreneurship. First, the sign of Hofstede's power distance index is strongly negative, suggesting that it is unusual for people in a high-PDI country to be in charge of their own business. People in these countries are very much used to hierarchical relations where employees follow orders without asking questions. In such a culture it is unusual to be in charge of your own business where people do not follow orders but instead have to take responsibility for the success of the business.

As expected, individualism is positively associated with young business and incumbent entrepreneurship. Perplexingly, Masculinity is negatively associated with business ownership. Finally, we find a consistently positive sign for the uncertainty avoidance index (UAI). Although this result seems counterintuitive at first sight, this finding may be explained by a lack of room for intrapreneurship in high-UAI countries. In these countries ideas of employees in firms will more often be denied by their bosses as they are not willing to take risk by trying to exploit new ideas. The 'entrepreneurial employees' (intrapreneurs) in these firms get frustrated and start up their own firms in an attempt to commercialize their ideas. In low-UAI countries the ideas of intrapreneurs will more often be awarded by their bosses so that they do not need to start their own firms in order to exploit their ideas (Wennekers et al., 2007).

The final category of variables is innovation. For R&D we find a consistently negative effect, consistent with the notion that most (formal) R&D activity takes place in very large firms.

### *5.3 Robustness test*

We are aware that, compared to the number of observations in our sample, the number of variables in our model is relatively high. This is caused by the low number of years available in the Global Entrepreneurship Monitor. However, for the business ownership rate we have longer times series available. Therefore, we have performed a robustness check, to test how results change if the sample of observations is bigger. In Table 3 in the appendix we show the results of our equation for business ownership when we include 11 years in the sample instead of five (our period is restricted to 1996-2006 because our variable Rule of Law is not available prior to 1996). We see that, with a few exceptions, results are quite robust.

**Table 2. Explaining entrepreneurial activity across countries**

Method: Seemingly Unrelated Regression (SUR)						
	I		II		III	
	Nascent entrepreneur- ship rate		Young business en- trepreneurship rate		Business ownership rate	
Constant	-28.122***	(-3.75)	-2.609	(-0.49)	44.796***	(6.55)
<b>Demography</b>						
Enrollment in secondary education	0.0050	(0.51)	0.0051	(0.73)	0.032***	(3.61)
Enrollment in tertiary education	0.041**	(2.20)	0.040***	(3.02)	0.011	(0.67)
Age composition	0.187**	(2.06)	0.244***	(3.82)	-0.204**	(-2.46)
Female labour share	0.461***	(4.32)	0.051	(0.68)	-0.247**	(-2.54)
<b>Macro-economic conditions</b>						
Service share	0.041	(1.32)	-0.019	(-0.88)	0.078***	(2.73)
Unemployment rate	0.157	(1.41)	-0.206***	(-2.62)	0.313***	(3.07)
Per capita income	0.066	(0.88)	-0.190***	(-3.59)	-0.390***	(-5.68)
<b>Institutions</b>						
Social security	0.020	(0.77)	-0.045**	(-2.44)	-0.119***	(-4.97)
Taxes as % GDP	-0.100**	(-2.34)	-0.070**	(-2.31)	-0.014	(-0.36)
Corporate tax rate	0.025	(0.79)	-0.014	(-0.65)	-0.187***	(-6.47)
Employment protection legislation	-0.325	(-0.96)	-0.722***	(-3.03)	-0.091	(-0.29)
Rule of Law	-0.549	(-0.65)	0.923	(1.54)	-8.162***	(-10.53)
<b>Attitudes/Culture</b>						
Power distance index	-0.087***	(-3.03)	-0.046**	(-2.30)	-0.184***	(-7.04)
Individualism	0.024	(0.79)	0.040*	(1.87)	0.144***	(5.28)
Masculinity	0.0048	(0.29)	-0.017	(-1.41)	-0.051***	(-3.33)
Uncertainty avoidance index	0.046**	(2.04)	0.032**	(2.05)	0.116***	(5.68)
<b>Innovation</b>						
R&D	-0.659**	(-2.34)	-0.473**	(-2.39)	-0.564**	(-2.20)
<hr/>						
<i>Log-likelihood</i>		-128.260		-97.426		-120.189
<i>R<sup>2</sup></i>		0.752		0.806		0.925
<i>Adjusted R<sup>2</sup></i>		0.674		0.744		0.901
<i>Periods included</i>		5 (2002-2006)		5 (2002-2006)		5 (2002-2006)
<i>Countries included</i>		20		20		20
<i>N</i>		88		88		88

Note: \* Significant at 10% level; \*\* Significant at 5% level; \*\*\* Significant at 1% level; t-values are between brackets; year dummies are included but not reported.

## 6. Conclusion

This paper has examined variations in entrepreneurship across twenty developed countries, using three measures of entrepreneurship which we broadly describe as pre-start, early-stage and established enterprises. It then links variations in these measures of entrepreneurship primarily to what we describe as the economic institutional framework, holding constant a range of other factors.

Two groups of conclusions emerge. The first is that the factors that seem to influence pre-start, early-stage and established enterprises differ often quite sharply. It is our view that this points to the need for more research that distinguishes carefully between these measures and implies that combining pre-start and early-stage enterprises into a single index such as GEM's TEA index is to be discouraged.

Our second key finding relates to the role of economic institutions. Here our results broadly confirm earlier work suggesting that social security entitlements, taxes, and employment protection legislation are negatively associated with (different forms of) entrepreneurial activity in a country. It confirms the predictions of the economic choice model that entrepreneurship can be influenced by changing incentive structures underlying occupational choice decisions of individuals.

However, our novel finding relates to the Rule of Law variable. We find a negative sign for this variable on incumbent entrepreneurship suggesting that a "better" Rule of Law depresses entrepreneurship. We explain this apparently counter-intuitive finding by arguing that in developed economies the benefits of the rule of law accrue primarily to large enterprises. To illustrate we point to the sophisticated legal procedure of Employment Tribunals in the UK. Here employees and former employees can bring cases against their employer but it is clear that, because success heavily depends on documentation, small firms are more likely to lose these cases than large enterprises.

Our overall conclusion therefore is that economic institutions play a powerful role in influencing entrepreneurship. For this reason those developing such institutions have to recognise that the decisions they make strongly influence the relative attractiveness of business ownership and other states – some times in ways that appear counter-intuitive.

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## Appendix

**Table 3. Explaining business ownership (BOR) for different samples**

	Method: Panel Least Squares			
	III BOR		III' BOR	
Constant	44.668***	(5.64)	42.316***	(8.69)
<b>Demography</b>				
Enrollment in secondary education	0.032***	(3.12)	0.026***	(3.36)
Enrollment in tertiary education	0.011	(0.58)	0.0078	(0.56)
Age composition	-0.204**	(-2.13)	-0.113**	(-2.07)
Female labour share	-0.247**	(-2.20)	-0.106	(-1.49)
<b>Macro-economic conditions</b>				
Service share	0.078**	(2.37)	0.034	(1.58)
Unemployment rate	0.313***	(2.66)	-0.049	(-0.76)
Per capita income	-0.390***	(-4.92)	-0.392***	(-6.48)
<b>Institutions</b>				
Social security	-0.119***	(-4.30)	-0.110***	(-5.72)
Taxes as % GDP	-0.014	(-0.32)	-0.074**	(-2.27)
Corporate tax rate	-0.187***	(-5.60)	-0.077***	(-3.71)
Employment protection legislation	-0.091	(-0.25)	-0.257	(-0.93)
Rule of Law	-8.162***	(-9.12)	-8.889***	(-12.19)
<b>Attitudes/Culture</b>				
Power distance index	-0.184***	(-6.10)	-0.136***	(-6.42)
Individualism	0.144***	(4.57)	0.127***	(6.10)
Masculinity	-0.051***	(-2.89)	-0.049***	(-3.81)
Uncertainty avoidance index	0.116***	(4.92)	0.092***	(5.68)
<b>Innovation</b>				
R&D	-0.564*	(-1.90)	-1.013***	(-4.48)
<hr/>				
<i>Log-likelihood</i>		-120.189		-373.038
<i>R<sup>2</sup></i>		0.925		0.855
<i>Adjusted R<sup>2</sup></i>		0.901		0.835
<i>Periods included</i>		<b>5</b> (2002-2006)		<b>11</b> (1996-2006)
<i>Countries included</i>		20		20
<i>N</i>		<b>88</b>		<b>220</b>

Note: \* Significant at 10% level; \*\* Significant at 5% level; \*\*\* Significant at 1% level; t-values are between brackets; year dummies are included but not reported.

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