TRANSFORMATION, INTEGRATION and GLOBALIZATION ECONOMIC RESEARCH
CENTRUM BADAWCZE TRANSFORMACJI, INTEGRACJI I GLOBALIZACJI

TIGER Working Paper Series

No. 103

Entrepreneurship, Institutions and the Level of Development

Ruta Aidis, Saul Estrin, Tomasz Mickiewicz

Warsaw, July 2007

Entrepreneurship, Institutions and the Level of Development

Ruta Aidis[a], Saul Estrin[b], Tomasz Mickiewicz[c]

3 November 2006

Keywords: entrepreneurship, property rights, access to finance

JEL classification codes: L26, P14, P51, P37

[a] University College London
[b] London School of Economics
[c] Corresponding author: Social Science Department, SSEES, University College London
Gower Street, London WC1E 6BT, U.K. E-Mail: t.mickiewicz@ucl.ac.uk. Phone: 44-20-7679 8757.
Fax: 44-20-7679 8755.

1. Introduction

Existing studies indicate that the entry of new firms can be linked to employment creation and more equitable income distributions. New firm entry provides a churning effect to the economy, fosters development, innovation and economic change (Hirschman 1958; Baumol 1990; McMillan and Woodruff, 2002; Mickiewicz *et al.* 2005; Berkovitz and Jackson, 2006; Klapper *et al*. 2006). However, where institutions are weak entrepreneurs either do not undertake new projects or restrict their activities to unproductive ones, with a resulting loss of efficiency (Glaeser *et al.*, 2003; Johnson *et al.*, 1997; Baumol 1990). Unfortunately, institutions are difficult to measure and unbundle. They also correlate with the level of development leading to serious specification dilemmas. As a result, the challenge of exploring the link between institutions, the level of development and entrepreneurship has rarely been analysed well in empirical literature. We attempt to address this knowledge gap in this paper.

One of the major reasons limiting the existing empirical literature is the lack of appropriate comparative data. Most existing studies on entrepreneurship focus on small enterprises, taking them as a proxy for entrepreneurial activity. Yet, to study the issue of entry one has to have data on the whole universe of potential entrepreneurs, not just of the existing business owners. We base our understanding of entrepreneurship on the work of Lumpkin and Dess who state that 'the essential act of entrepreneurship is new entry' (1996: 136). Moreover, we differentiate between different types of entrepreneurship in terms of the entrepreneur's motivation being driven by entrepreneurial opportunity or necessity.

This unique opportunity is offered by data collected through the Global Enterprise Monitor (GEM) surveys, an international project co-ordinated jointly by Babson College, USA and London Business School, UK. An important advantage of the GEM dataset is that one can safely use the institutional country-level variables (proxies) as explanatory factors, without being concerned with simultaneity bias (as the individual decision of a potential entrepreneur does not affect country-level institutions). As argued by Schaffer *et al.* (2006), business barriers (in our case: obstacles to entry of new firms) can be best tested using cross-country variation and this is made possible through the GEM dataset. We use the rich data available in the GEM 2001-2005 surveys to analyse the institutional barriers to entrepreneurship. Much analysis have already been undertaken using GEM data at a country level and some limited studies have compared countries but we are not aware of any study, which has investigated

the impact of institutions on entrepreneurship, based on the full heterogeneity of the GEM dataset.

While this is not the first study utilising the GEM data set, it is novel it its institutional approach. Based on North's (1990) pioneering work on the influence on institutions for economic development, we apply an institutional framework in order to analyse the effects of the institutional environment on entrepreneurship development in 31 different countries. While, researchers such as Desai *et al. (*2003) and Klapper et al. (2006) have used other datasets while Wennekers et al. (2005) have used country level means from the GEM dataset to analyse similar issues, we would argue that our work presents a more comprehensive study both in terms of scope and scale and therefore offers more robust results.

Our four key findings indicate that (a) institutional obstacles to entrepreneurship have a more significant negative impact in rich countries than in poor countries, (b) that institutional obstacles have a far stronger impact on 'opportunity entrepreneurship' than on 'necessity entrepreneurship'; (c) specifically, two institutional indicators: property right protection and access to finance appear to have a dominant impact on entrepreneurship, (d) institutions have a long term impact: more than ten years after the Soviet system imploded in Central and Eastern Europe, these countries still experience significantly lower levels of entrepreneurship than economies coming from different legal traditions.

This paper is structured as follows. In section two we provide a brief theoretical overview of the institutional approach, present measures used to quantify the institutional environment and discuss the main empirical studies analysing entrepreneurship development and institutions. Section 3 presents our institutional framework and develops the four hypotheses to be tested. Section 4 provides a description of the data used, the variables chosen for our analysis as well as an overview of the estimation techniques employed. Section 5 presents our results and the paper concludes in section 6.

2. Unbundling Institutions and Entrepreneurship: Theory and Empirics

This section provides an introduction into both the theory and empirics of analysing institutions and entrepreneurship. It begins by introducing institutional theory and how it influences entrepreneurship development. This is followed by an introduction to the Heritage

Foundation's index that presents means to measure institutional effects. This section ends with a review of the most relevant empirical literature on institutions and entrepreneurship development.

2.1 Institutional theory

It is the pioneering work of Douglass North that has been most influential and illuminating in its identification of different institutional influences on economic development (1990, 1997a). North defines institutions as any form of constraint that human beings devise to shape human interaction and makes a clear distinction between formal and informal institutions. Put simply, formal institutions are the visible 'rules of the game' such as constitutional law, property rights, regulations for business activities, etc. which if needed, can be altered quickly to adapt to changing economic circumstances. Formal rules tend to be enforced by governments. In contrast, informal institutions are the invisible 'rules of the game' made up of norms, values, acceptable behaviours and codes of conduct (i.e. culture). Informal rules are generally not legally enforced. Change to informal rules occurs more indirectly and usually as a result of accidents, learning, natural selection and in the passage of time (North 1990:88). Informal rules most often evolve to complement formal rules. However North notes that there is a tendency for informal institutions to change more slowly and at times they can exhibit a counterproductive force to the more rapid formal changes in an economic system. North has identified the often-conflictual role between formal and informal institutions in both the historical perspective (1990) and more recently in transition economies (1997).

According to North, entrepreneurs are the main agents of change (1997a). Organisations such as firms set up by entrepreneurs will adapt their activities and strategies moulded to fit the opportunities and limitations provided through the formal and informal institutional framework. Though ideally, formal rules are designed to facilitate exchange reducing transaction costs, they are also likely to affect individuals or groups in different ways. Since formal rules and institutions are created by individuals who often have their own private interests at heart, they are not necessarily being created in the interest of social well-being (North 1994).

Formal and informal rules can also be maintained even if they are inefficient (DiMaggio & Powell 1983; North 1990). There are several reasons for inefficient institutional outcomes. First of all, even when they clash with new formal rules, informal rules have tenacious survival ability because they have become part of habitual behaviour (i.e. culture) and

informal institutions provide a sense of stability. Second, informal institutions may change more slowly due to the influence of path dependence. This occurs because institutional change is usually incremental and is seldom discontinuous[1] (North 1990:10). Thirdly, lock-in can occur as a result of a symbiotic relationship between existing institutions and the organizations that have evolved as a result of the incentive structure provided by those institutions[2] (ibid. 1990:7). Even when the formal rules change, organizations which benefited from the outdated informal rules and which would lose their benefits if they adopted new informal practices complementary to formal rule changes will continue to participate in detrimental informal rule practices in order to retain their position of power. North's analysis of institutions provides us with insights important for developing our paper's empirical analysis. The possibility of clash between formal and informal institutions indicates that it is important to explore not only the effects of formal rules on entrepreneurship development but also the effects of informal rules.

2.2. Institutional Indicators

A single universally accepted set of institutional indicators does not exist. In our search for the widest coverage of institutional indicators the Heritage Foundation was found to have the largest number of indicators for the largest number of country and years. The Heritage Foundation indicators seem to provide good institutional measures albeit they should be interpreted with care.

In order to measure economic freedom, the Heritage Foundation use fifty independent indicators analysed under ten broad institutional categories: (1) Trade policy; (2) Fiscal burden; (3) Government intervention in the economy; (4) Monetary policy; (5) Capital flows and foreign investment; (6) Banking and finance; (7) Wages and prices; (8) Property rights; (9) Regulation (which include entry barriers); and (10) Informal market activity (for a complete description of all fifty variables, see: Beach and Miles (2006)). These ten categories are intended to outline the institutional factors that taken together determine the degree to which economic actors are free to respond to changing world market conditions (Beach and Miles 2006:56). We will offer a more detailed discussion of theses indices in the context of our empirical design in Section 4.4.

[1] Though there can also be revolutionary change (North 1997b).

[2] Individuals make their decisions within an institutional framework, which implies amongst other things, that learning and innovation take place within this framework. In this way, existing institutions will be strengthened, regardless of their efficiency.

2.3 Empirical results on factors affecting entry

The four most relevant studies for our analysis are Desai *et al.* (2003), Klapper *et al*. (2006), Demirguc-Kunt *et al.* (2006) and Wennekers *et al.* (2005).

Klapper *et al.* (2006) analyse the effect of entry regulation (in terms of entry costs) on the creation of new firms. The study focuses on incorporated companies by measuring the effects of entry costs in terms of complying with bureaucratic requirements for incorporation. Klapper *et al*. (2006) build on the Djankov *et al*. (2002) study by measuring the direct impact of entry costs. They use data from the Amadeus data set (compiled by the firm Van Dijk) to compare the entry of incorporated firms in 34 Western and East European countries. Their results indicate that the rate of new corporation creation in industries that tend to be high-entry are relatively lower in countries with higher entry costs. Most importantly, higher entry costs seem to matter most in richer countries[3] or countries that are not corrupt. They also test for the influence of legal origin as classified by La Porta et al. (1999). Similar to the results of Djankov *et al.* (2002) they find that entry costs tend to be the lowest in countries with English or Scandinavian legal origins and highest in countries with French legal origin. According to their estimations, the legal origin variables explain 59 percent of the variation in the entry costs variable (Klapper et *al*. 2006:21). In terms of institutional variables, Klapper *et al.* (2006) take into account the entry cost, property rights protection and employment rights in their analysis. In addition they include a measure related to both financial and fiscal aspects of the institutional and economic-policy environment. They measure the development of the financial system directly by the ratio of credit provided to the private sector to GDP (taken from IMF statistics) and indirectly through the cost of bankruptcy (where the latter measure is taken from Djankov *et al* (2003b). In addition, they introduce the 'tax disadvantage' measure, which relates to the difference between top corporate and top personal income rates (taken from Pricewaterhouse Coopers?), which may make entrepreneurs less inclined to incorporate their companies. They enter the institutional indicators separately, alternating specifications. Taking US industry rates as a benchmark, they interact the institutional indicators with the US industry-specific entry rates.

The Desai *et al.* (2003) study draws on the same dataset, but is wider in scope. In addition to entry they consider industry exit rates, firm size distributions and vintage (size weighted measure of age). Again, they aggregate company level data to produce industry level

[3] For their sample, entry regulation was not found to be strongly correlated with economic development (as measured by per capita GDP), therefore multicolinearity is not a serious problem (Klapper *et al*. 2006:21).

indicators, which are treated as the units of analysis. Their key result on entry is that the Central and East European transition (post-Soviet) economies are consistently characterised by lower level of entry. Desai *et al.* (2003) focus on the following institutional indicators that may affect entry: measure of start-up procedures (from Djankov *et al.* 2002), a corruption indicator (from Transparency International), an index of labour regulations (from Botero *et al.* 2004), an index of independence of courts (World Bank), a formalism index of the court system (from Djankov *et al.* 2003a) and a measure of property rights protection (from World Economic Forum). The last three dimensions are strongly correlated, as property rights protection is weak if the courts are not independent and efficient, for which reason they are often merged together under property rights indicators (example: Heritage Foundation index, see Section 3). Desai *et al.* (2003) solution to address the issue of multicollinearity is to enter each institutional indicator into a separate regression.

Demirguc *et al.* (2006) focus on incorporation, but adopt a different methodology. Instead of looking at averages, they combine country level institutional explanatory variables with individual level data on existing firms. They apply discrete response models to investigate which factors are affecting the likelihood of companies taking incorporate form. Utilising World Business Environment Survey company level data and country level insititutional indicators they find that developed financial systems, efficient bankruptcy procedures, lower regulation of corporate entry, relatively lower corporate taxes in comparison with personal income taxes, and English, German and Scandinavian legal origin make incorporated form more likely.

Wennekers et al. (2005) utilise GEM data to test the relationship between entrepreneurship levels, economic development and institutional variables. They use 2002 data for nascent entrepreneurs from 36 countries (country level mean values).[4] They find that individuals seeking entrepreneurship in higher income countries are more likely to be exploiting an opportunity rather than driven to entrepreneurship out of necessity.[5] Their set of explanatory variables includes income per capita (purchasing power parity), variables measuring demographics (population growth and education), legal origin (former centralised command economy origins) and institutions (fiscal legislation, social security system and administrative requirements for starting a new business). Their results indicate there is a positive effect of

[4] Their results expand earlier research done on 23 OECD countries by Carree et al. (2002) and on 12 OECD countries by Acs et al. (1994).

[5] The rate of nascent entrepreneurship is defined as the number of people actively involved in attempting to start a new business expressed as a percentage of the adult population.

demographics in terms of population growth on entrepreneurship development. In terms of legal origin, countries from former centralised command economy origins significantly displayed lower levels of entrepreneurship development. Finally, in terms of individual institutional indicators, Wennekers et al. (2005) found a negative effect of social security on nascent entrepreneurship but a positive effect of tax revenues as a percentage of GDP on nascent entrepreneurship. They point out that the latter result may be consistent either with incentives for tax avoidance / evasion or with high-tax countries spending more on infrastructure providing better environment for new firms.

Table 1 summarises the four studies in terms of the data sets used, the dependent variables, main outcomes and estimation model limitations. In three of the studies, multicollinearity poses an important limitation.

Table 1: Summary of existing research on institutions and entrepreneurship development

	Klapper et al. (2006)	Desai et al. (2003)	Demirguc-Kunt et al. (2006)	Wennekers et al. (2005)
Data set used	Amadeus	Amadeus	WBES	GEM
Dependent variable	Industry-level rates of creation of incorporated firms	Industry level rates of creation of incorporated firms	Individual level indicator variable related to incorporated form	Country level rates of nascent entrepreneurship
Institutional variables included:	• Entry costs (incorporation procedures) • Property right protection • Employment rights • Financial system development • Tax disadvantage • Legal origin	• Entry costs (incorporation procedures) • Corruption • Labour regulations • Independence of banks • Court system • Property right protection • Legal origin	• Entry cost (incorporation procedures) • Financial system development • Tax disadvantage • Legal origin • Bankruptcy procedures • Legal protection in solving disputes • Share of unofficial economy • Protection of shareholders rights	• Entry costs (administrative requirements for starting a new business) • Fiscal legislation • Social security • Former communist country economic origin
Outcomes:	• New corporation creation in industries that tend to be high entry are relatively lower in countries with higher entry costs; • Entry costs have a greater effect in richer countries than in poorer countries • Entry costs tend to be lower in countries with English or Scandinavian legal origins.	• Communist legal origin has negative effect.	• Communist legal origin has negative effect • Financial sector development and bankruptcy procedures has positive effect • Tax disadvantage makes incorporation less likely • Entry costs have significant negative effect	• Higher social security expenditure has a negative effect; • Higher government tax revenues have a positive effect; • Communist legal origin has a negative effect.
Handling of multicollinearity in institutional indicators:	Entering each institutional indicator into a separate regression	Entering each institutional indicator into a separate regression.	• Factor analysis; using extracted factors instead of original variables	• General to specific: excluding insignificant variables.

In two of these studies, running separate regressions for each institutional indicator is used to deal with the problem of multicollinearity. This is a reliable exploratory methodology, which may help in rejecting irrelevant factors but does not help us much in deciding what is the comparative impact of each of the significant factors. This approach may lead to spurious results. Clearly, when we use one variable which is strongly correlated with an omitted variable, the resulting significance is questionable. Acemoglu (2005) criticises this type of approach, arguing that due to correlation in institutional variables, we should not trust the results on individual dimensions, because of the problem of correlation with omitted dimensions. To progress, we need to develop some intuitions on the structure of institutions and take the interactions between different institutional dimensions seriously. We discuss this further in the methodology section.

In sum, the existing studies provide an interesting starting point for developing the hypotheses for our paper. They have resulted in some important insights into the relationship between entrepreneurship and institutions. Technical problems (i.e. multicollinearity) or a limited number of variables controlling for institutional effects limit the depth of the analysis. We attempt to address this issue by including a broad range of institutional variables including formal and informal institutional indicators. But first, we turn to developing our hypotheses.

3. Hypotheses

Our hypotheses are derived from applying an institutional framework to the issue of entrepreneurship development in a cross-cultural context. Based on North's categorisation, we view institutions as being both formal and informal in character. We focus on their effect on entrepreneurship entry.

Based on our assessment of the institutional impact as discussed in section 2.1, we expect that when considering entry, potential entrepreneurs will take into account both direct entry barriers and constraints in the existing business environment. Therefore, our first hypothesis is:

H1: The level of entrepreneurial activity will be higher as the business environment (institutions) improves.

We also expect that certain institutional factors will have a greater impact on entrepreneurship. In addition and in line with the four studies discussed above, in a study based on entrepreneurship based on transition countries in Eastern Europe, Johnson et al (2002) find that the insecurity of property rights may be a key factor deterring entry in the small firm sector. North has argued that insecure property rights result in using technologies that employ little fixed capital and that firms will typically be small (North 1990:65). Grilo and Irigoyen (2006) report a negative effect of the perception of lack of finance on the probability of being self-employed using European data for 2000, though Grilo and Thurik (2005) are unable to identify an effect for 2004. As studies mentioned above indicate the protection of property rights and finance may present two crucial institutional characteristics affecting the entrepreneurship entry. We formulate our second hypothesis to read:

H2: Property rights and finance are the two institutional characteristics that have most significant effect on the level of entrepreneurial activity.

In line with the existing literature (such as Wennekers et al. 2005), we expect institutional legacies to persist. As a result, legal origin should matter. In particular, we expect that countries emerging from the Soviet system may still suffer from 'entrepreneurial deficit':

H3:Institutional legacies will affect entrepreneurial activity resulting in countries emerging from the Soviet system to suffer lower levels of entrepreneurial activity.

There is general agreement in the field of entrepreneurship that the whole notion of entrepreneurship hinges on the concept of opportunity recognition (Shane and Venkataraman 2002; McMullen and Sheperd 2006). Entrepreneurial behaviour as such is seen not as a stable characteristic that differentiates some people from others, but the tendency of some individuals to respond to the situation cues of opportunities (Shane and Venkataraman 2002: 219). Logically, subsequent to the discovery of an opportunity, a potential entrepreneur must decide to exploit the opportunity (*ibid.*). Individuals process the cues from the environment around them and set about constructing the perceived opportunity into a viable business proposition (Krueger *et al.* 2000). As Sarasvathy (2004:209) notes, most individuals will become entrepreneurs due to suitable conditions; a combination of opportunity and a conducive environment. We therefore would expect individuals who are reacting to entrepreneurial opportunities in the environment to be more sensitive to the overall institutional environment (which in turn affects the attractiveness of opportunity exploitation)

than individuals who become entrepreneurs purely out of necessity. Therefore hypothesis 4 has been formulated to read:

H4: The significance of institutions on the level of entrepreneurial activity will be greater for opportunity than necessity entrepreneurship.

4. Data and Methodology

This section provides further detail regarding the data used (collected by the Global Entrepreneurship Monitor (GEM)) as well as a presentation of the independent and dependent variables used for our analysis. In addition, it describes the estimation techniques used to test our hypotheses.

4.1 GEM Data

The dataset we utilise was generated by the GEM project. GEM is an ongoing multinational project created to investigate the incidence and causes of entrepreneurship both within and across countries. Data is generated by surveys, which rely on stratified samples of at least 2,000 individuals per country. The number of participating countries is expanding fast since 1999, when the first survey results were reported. The dataset includes a number of individual social and economic characteristics and perceptions. The key advantage of the GEM methodology relates to the fact, that the sample is drawn from the whole working age population in each country and therefore captures both entrepreneurs and non-entrepreneurs. While data on business ownership and individual business financing is included, entrepreneurial activity is primarily viewed as *new*, *nascent* start-up activity. More specifically, in terms of definitional issues, nascent entrepreneurs are those individuals between the ages of 18 – 64 years who have taken some action toward creating a new business in the past year. To qualify for this category, these individuals must also expect to own a share of the business they are starting and the business must not have paid any wages or salaries for more than three months (Minniti *et al.*, 2005b). Established entrepreneurs are defined as individuals who own or manage a company and have paid wages or salaries for more than 42 months (*ibid.*).

We utilise all available data from the 2001-2005 surveys. Our survey database includes the following individual country samples (all have at least 2,000 observations): Argentina, Belgium, Brazil, Canada, Denmark, Finland, France, Georgia, India, Ireland, Island, Italy,

Japan, Korea, Mexico, Netherlands, New Zealand, Norway, Portugal, South Africa, Sweden, United Kingdom, United States (all 2001), Slovenia (2001-2005), Hungary (2001, 2002, 2004, 2005), Poland (2001 and 2002), Spain (2001 and 2004), Australia (2001 and 2005), Russia (2002), Latvia (2005). Further details are reported in Table 4 below. 2001 survey results are publicly available and were accessed online; we merged these with those surveys results from 2002-2005**,** which were made available to us by the GEM team. We do not utilise 1999 and 2000 results, as these contain a smaller number of countries, which are all included in the 2001 round, so add little to the institutional variation we are interested in. In addition, they cover a smaller number of variables. All individual level control variables are taken directly from the GEM database.

In our measures for the institutional environment, for methodological reasons already discussed we depart from the practice of running separate models for each institutional dimension entered alone. Instead we follow two alternative methods. Firstly, we use a single aggregate institutional indicator. Secondly, we focus on a smaller number of indicators using the results of the exploratory factor analysis based on the Heritage Foundation's ten institutional indicators discussed above. We discuss the two methods in turn.

4.2 Institutional indicators: The Heritage Foundation

It is not only the direct barriers to start the business but also the barriers to develop it, which count for start-up decisions. Where the potential entrepreneurs perceive that they would not be able to expand their businesses to realise all potential gains, they may decide against starting it.[6] Thus, general conditions of economic freedom may count for entrepreneurial decisions. In this respect, the Heritage Foundation's aggregate index of economic freedom matches the type of measurements useful for the analysis of our hypotheses.[7]

Thus, in our analysis, we use the Heritage Foundation's aggregate Index of Economic Freedom (based on ten institutional indicators) as our first measure to illustrate the possible effects of barriers in the institutional environment on new firm entry.

[6] This is also the reason why the results on factors affecting incorporation (as discussed above) count. The forward-looking entrepreneur is likely to take opportunities for further business development in his/her decision to entry.

[7] The Heritage Foundation defines economic freedom as ' the absence of government coercion or constraint on the production, distribution, or consumption of goods and services beyond the extent necessary for citizens to protect and maintain liberty itself" (Beach and Miles 2006: 56).

Our second aggregate measure of the institutional environment is the Corruption Perception Index, published by Transparency International. While it is already included as one of the ten individual dimensions used by the Heritage Foundation, there is literature arguing that corruption may be seen as a general proxy for the quality of the institutional environment. Tanzi (1998) argues that corruption reflects the multidimentional impact of poor institutions and Djankov et al (2002) provides empirical evidence showing that corruption reflects an inefficient overregulated environment. Incidence of corruption may prevent business to grow above some threshold level, as in the latter case, the business owners may be expropriated by corrupt officials, especially the tax authority (Barkhatova, 2000; Aidis and Mickiewicz, 2006). Moreover, expectations of this kind may in turn discourage potential entrepreneurs from starting a business.

Transparency International defines corruption as "the misuse of public power for private benefit, for example bribing of public officials, kickbacks in public procurement, or embezzlement of public funds" (Lambsdorff, 2005: 4). Transparency International index relies on methodology, which combines information from ten different surveys of corruption, where a score for any country is included only when there is an overlapping assessment of a country at least by three independent surveys. The respondents come from three different groups: residents of the developed countries, familiar with a given economy, non-residents from neighbouring countries, and own-residents. The correlation in assessment between these three groups is high. The scores from different surveys are combined by first matching percentiles between surveys, correcting resulting distributions with Beta transformation and finally estimating distributions of scores for each country using bootstrapping (see Lambsdorff, 2005, for details). The cross-sections results appear robust, but the user is warned about some potential error in time-series, resulting from the fact that the set of individual surveys has changed over time.

In addition, one should be aware of the fact that the sources of data used by Transparency International imply that the resulting indicator (Corruption Perception Index) mix together two different dimensions of corruption: "state capture" and "administrative corruption". It is the latter dimension, which is more relevant for direct business environment faced by the entrepreneur. As convincingly argued by Knack (2006) for the purpose of measuring the latter, a single sourced business perception measure may well be superior to the CPI index. Unfortunately the most popular cross-country Business Enterprise Environment Survey (World Bank and EBRD) does not cover most of our sample. The only consolation for us is

that the CPI index and direct measures of administrative corruption are correlated (again, see: Knack, 2006).

4.3 Multiple variable institutional analysis

As discussed, our starting point relate to the results of the exploratory factor analysis. The four dimensions we obtained relate to the protection of property rights, tax rates, the economic size of the government (labelled 'Government Intervention' by the Heritage Foundation), and - last but not list - inflation. Our strategy however, was to use the underlying economic indicators instead of the Heritage Foundation measures, where possible. We succeeded in three out of four cases. In particular, for inflation, we use standard deviation in inflation over last five years, as our proxy for unpredictability of the macroeconomic environment faced by the potential entrepreneur. Associated increase in entrepreneurial risk is equivalent to the more adverse business environment. For tax rates, we use the top marginal tax rates imposed on individuals. For the economic size of the government we have the ratio of government consumption to GDP. It is only with the property rights protection that we rely on the Heritage Foundation measure. On closer inspection, we can see that countries in our sample fall only into three categories out of five used by the Heritage Foundation, at one end of this measure (better protection). Another words, assessment of the property rights protection for our sample ranges from medium to very strong. Based on frequencies, it makes sense to mix good and medium categories into one group and contrast it with a category representing the strongest protection of property rights. We assign the value of one to the latter category, and zero to the former, producing a dummy variable.
In addition, even if the financial dimension correlates with property rights, based on literature, and the importance assigned to the financial sector development, we introduce a financial variable separately. Following Klapper *et al.* (2006) we use the ratio of credit to private sector to GDP as our proxy for the level of financial sophistication.

4.4 Unbundling the Heritage Foundation indicators

A closer look at the Heritage Foundation indicators reveals discrepancies between what they aim to measure and what in reality is captured by the measurement instruments. While the indicators measure heterogeneity in institutions (and are therefore useful for our purpose), one should not imply necessarily that they can all be ordered along the same underlying axis. As confirmed by our principal components analysis, the individual indicators cluster around more than one factor.

The first measure, restrictions in trade policy may be taken as the least controversial: there is a broad consensus amongst the economic profession implying that restriction to trade tends to decrease efficiency. However, when we move to the second dimension ("Fiscal burden"), the consensus vanishes. In particular, while high taxation may result in deadweight cost, there is also evidence that economic systems where extreme income and wealth inequality is not corrected by redistribution are also associated with inefficient outcomes.[8] A very similar argument relates to the "Government Intervention" dimension, which mixes the size of government ownership of productive assets with the scale of government consumption. While most empirical evidence points to the inefficiency of government ownership (in particular, see Megginson and Netter (2001)), there is less consensus regarding the share of government consumption of GDP. The structure of government consumption may be more important than the size.

The problem is slightly different with the "Monetary Policy" dimension. This measure is based on inflation and does not include governmental interference in the economy, but rather the efficiency of macroeconomic policy. These two dimensions may be correlated, but need not be. Similarly, with the protection of "Property Rights", the risk of expropriation by the government illustrates just one aspect, albeit a very critical one. Equally important however is the quality of law and the efficiency of the judicial system. This may be affected negatively as much by organised crime as by a dysfunctional government. As a result, the relevant spectrum for this indicator does not necessarily indicate the difference between a liberal and an interfering government, but between an efficient and inefficient government administration. Some of the developed economies (such as in Scandinavia), which are typically associated with large government, would also have the strongest system protecting their property rights. A similar argument relates to "Informal Market Activity", which incorporates the measure of corruption. Again, the critical difference illustrated by the indicator is between efficient and inefficient law and administrative practice and not between interfering and liberal government types as the Heritage Foundation asserts.

In our opinion, the Heritage Foundation indicators do not accurately measure economic freedom. Instead, they measure freedom from economic interference by the government as well as efficiency of economic policies, administration and institutions. It would be more appropriate to summarize the indicators under a heading such as the quality of business

[8] See for instance recent institutional analysis by Pryor (2006), who found that a combination of a relatively unrestricted business environment and equal distribution of assets is an institutional design strongly associated with macroeconomic growth performance in middle and low income countries, as exemplified primarily by South East Asian economies.

environment. In addition, both the 'Fiscal Burden' (tax rates) and 'Government Intervention' (government consumption) measures remain controversial. There is not clear-cut consensus amongst economists that the trade-off between the direct efficiency cost of taxes, and both the direct benefits related to public goods, and potential indirect benefits of more equal income and wealth structure.

Keeping these caveats in mind, we unbundle the ten indicators reported by Heritage Foundation using a simple principal components analysis. We utilise the available dataset (11 years from 1995-2005 including 164 countries and ten indicators) available on the Heritage Foundation's website[9]. If we take a cut-off point of eigenvalues for factors being greater than one (Kaiser's criterion), it results in data compression with just one factor "Property rights" playing the most dominant role. Once we apply another widely used and less restrictive criterion (Jolliffee's criterion: eigenvalues higher than 0.7), we produce four factors. Both simple correlations and the four factors extracted from the second exercise are reproduced in Tables 2 and 3 below.

The pivotal role of the property rights dimension is a striking result. Clearly, property rights are in the centre of nexus of connections with most of other institutional features. We are also able to confirm that both 'Fiscal Burden' and 'Monetary Policy' dimensions are disconnected from other institutional factors and should be best considered separately. In other words, strong property rights do not seem to be associated with either any particular tax regime, or with any particular inflation levels. The third factor is mostly driven by "Government Intervention" (which mix government consumption share with the scale of government ownership) and to lesser extent by labour market regulation. In this case, the economic size of the government and the scope of labour regulations seem to be associated.

[9] As accessed in September 2006.

Table 2. Heritage Foundation Indicators. Correlation Matrix

		banking	fiscal	for_inv	gov_int	infor_ma	monetary	pro_righ	regulat	Trade	wage_pri
	Banking	1.000	.267	.683	.441	.587	.398	.646	.618	.511	.682
	Fiscal sector	.267	1.000	.137	.108	.183	.133	.175	.241	.268	.218
	Foreign invest	.683	.137	1.000	.387	.523	.294	.637	.587	.502	.648
	Gov interven	.441	.108	.387	1.000	.296	.212	.304	.286	.340	.441
	Informal market	.587	.183	.523	.296	1.000	.507	.816	.703	.560	.543
	Monetary policy	.398	.133	.294	.212	.507	1.000	.439	.406	.275	.387
	Property rights	.646	.175	.637	.304	.816	.439	1.000	.789	.562	.582
	Regulation	.618	.241	.587	.286	.703	.406	.789	1.000	.499	.585
	Trade policy	.511	.268	.502	.340	.560	.275	.562	.499	1.000	.446
	Wages & prices	.682	.218	.648	.441	.543	.387	.582	.585	.446	1.000

Note: Determinant = .004. All correlations significant at .001 level.

Table 3. Heritage Foundation Indicators. Pattern Matrix

	Component			
	1	2	3	4
Property rights	.937			
Regulation	.868			
Informal markets	.812			
Foreign investment regulation	.768			
Trade policy	.699			
Banking and finance	.624			
Wages and prices	.537		-.408	
Fiscal sector		.989		
Government intervention			-.914	
Monetary policy				.927

Notes: Extraction Method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization.
Rotation converged in 6 iterations. Only absolute values above 0.4 are reported.

4.5 Legal Origin

Even if the Heritage Foundation measures are time-variant, they are closely correlated with another, time-invariant institutional measure, which plays a key role in the recent empirical economic studies on institutions. This related to the issue of legal origin, originally classified by La Porta *et al*. (1999) into five broad categories: English, French, German, Scandinavian and Socialist (Communist). According to La Porta *et al*. (1999) the legal origin can be viewed as a proxy for the government's proclivity to intervene in the economy and the stance of the law toward security of property rights in a country. In light of our discussion above, it is not surprising that the English origin dimension, here seen as a benchmark, correlates closely with the summary average 'Economic Freedom' indicator derived by the Heritage Foundation on the basis of the ten dimensions just discussed. This is also consistent with Djankov *et al*. (2002), who demonstrate that countries of French, German and Socialist legal origin have more entry regulations than English legal origin countries, while countries of Scandinavian legal origin have about the same. We use the legal origin categories as defined by La Porta et al. (1999) as independent variables in our analysis.

4.6 Control variables: Characteristics of entrepreneurs and economic development

There exists a vast literature on the importance of individual factor supply characteristics on entrepreneurship. Most research indicates that men have a higher probability of becoming entrepreneurs than women (Minniti *et al.* 2005a; Verheul *et al.* 2006). In an analysis based on data collected by GEM, men are about twice as likely to be involved in entrepreneurial activities than women (Reynolds *et al.* 2002). These results are enhanced by Minniti and Nardone (2005), who apply a matching procedure to demonstrate that the differences between men and women are neither explained by different socio-economic characteristics of both groups, nor by cross-country differences in environment but relate to perceptual factors, including fear of failing, belief in own skills and assessment of business opportunities. In another words, gender differences seem to be deeply routed in cultural patterns, which are slow to change.

The relationship between entrepreneurship and age is typically found as nonlinear, and hump-shaped, with a peak point for starting a business appearing relatively early (Levesque and Minniti, 2006).

In addition, the impact of human capital is an important area of research in terms of its relationship to entrepreneurship, though the empirical findings for developed economies regarding the impact of human capital measured in terms of education on entrepreneurship are mixed. Thus, Robinson and Sexton (1994) and Cooper and Dunkelberg (1987) find that the decision to become self-employed is influenced by education while the results of Delmar and Davidsson (2000) and Davidsson and Honig (2003) show a clear education effect for nascent entrepreneurs. However in a cross-country study, Uhlaner and Thurik (2005) find that a higher level of education is accompanied by lower rates of self-employment. Some country variations have also been noted. De Wit and van Winden (1989) and Blanchflower (2004) find that education is positively correlated with self-employment in the US but is negatively correlated in Europe. More recent evidence compiled by Parker (2005) suggests that on average, entrepreneurs tend to be more educated than non- entrepreneurs.

Wennekers et al. (2005) have also found a significant relationship between entrepreneurship role models and their effect on entrepreneurship start-ups. In their cross country study of nascent entrepreneurship rates in 36 countries, they found a significant and positive relationship between the number of incumbent business owners and entrepreneurial start-ups.

Research has also explored the relationship between previous employment and entrepreneurship. In a review of literature on the antecedents to business start-up and growth, Storey (1994) found reasonable evidence indicating a negative relationship between being unemployed before starting a business and the likelihood of actual start-up[10].
Perceptual factors may also be important. Role models may play a part, including providing information, which alleviates both uncertainty and the cost of starting the business (Minniti, 2005). In this context contacts with other business owners may be important at the time of the decision to start-up.

Finally, due to informational asymmetries that are particularly severe for new start-ups, financing and capital constraints have been identified as a major issue for potential entrepreneurs. Evans and Jovanovic (1989) show that, due to capital constraints, there is a positive relationship between the probability of becoming self-employed and the assets of the entrepreneur. Similarly, Evans and Leighton (1989) show that the exploitation of

[10] A literature review regarding the relationship between business start-up and being unemployed is discussed in Chapter 3 of Storey (1994: 71 – 74).

entrepreneurial opportunities is more common when people have greater financial capital. Using US data, Hurt and Lusardi (2004) identify a non-linear relationship between household wealth and the propensity to start a business, with a positive relationship found only for the households in the top 5 percent of the wealth distribution. We capture some aspects of the individual specific financial constraints by using a dummy variable, which indicates if a potential entrepreneur was providing funds for business financing in the past.

As already discussed in section 2.3, a number of studies have indicated the relationship between economic development and entrepreneurship development (Wennekers et al. 2005; Carree et al. 2002; Acs et al. 1994). In our paper, we control for economic development by including both a measure of per capita GDP (purchasing power parity).

Definitions of all the variables and descriptive statistics are presented in Table 4:

Table 4: Explanatory variables

Variables	Definition	Mean	SD	Number of observations
Institutional variables				
her_econfree	Index of economic freedom (Heritage Foundation); a higher score represents *worse* institutions	2.42	.53	104,112
ti_cpi	Corruption perceptions index (Transparency International); higher score represents *less* corruption (i.e. *better* institutions)	6.43	1.97	104,112
pro_strong	1 = Heritage Foundation 'Property Rights' index has a value of one (strongest), zero otherwise	.41	.49	104,112
credit_pri	ratio of credit to the private sector to GDP (source: WB WDI)	82.74	47.13	104,112
inf_stdev	Standard deviation in inflation over last 5years (computed using WB WDI)	2.82	5.62	104,112
gov_cons	Ratio of government consumption to GDP (WB WDI)	17.66	4.04	104,112
tax_rate	Highest marginal tax rate imposed on individual incomes (WB WDI)	40.22	9.71	104,112
Legal Origin variables				
English*	1 = English legal origin, zero otherwise.	.29	.45	104,112
French*	1 = French legal origin, zero otherwise.	.25	.43	104,112
German*	1 = German legal origin, zero otherwise	.11	.31	104,112
Scandin*	1 = Scandinavian legal origin, zero otherwise	.07	.25	104,112
Socialist*	Socialist legal origin**, zero otherwise.	.29	.45	104,112
Control variables: Personal characteristics				
dgender	1= male, zero otherwise.	.48	.50	104,112
dumownmge	1= current owner/manger of business, zero otherwise.	.10	.30	104,112
dumbusang	1 = business angel in past three years, zero otherwise.	.02	.15	103,546
dumknowent	1 = personally knows entrepreneur(s) in past two years, zero otherwise.	.33	.47	97,443
dumgemwork	1 = respondent is either in full time or part time employment, zero otherwise.	.51	.50	98,685
ed_postsec_high	1 = respondent has a post secondary or higher educational attainment, zero otherwise.	.38	.48	98,906
ed_high	1 = respondent has a higher educational attainment	.14	.35	98,906
age	The exact age of the respondent at time of interview	42.83	16.35	100,110
age2	Age squared			100,110
Control variables: Measuring Economic Development				
gdp_pc_ppp	Measured as GDP per capita, purchasing power parity, constant at 2000 $ USD***. 2005 figures are estimates based on 2005 real GDP growth rates ♦ and 2005 population figures♠.	20,209	7892,0	104,112
gdppc_ecfree	An interactive term for gdp per capita and the Index of Economic Freedom			
ti_gdp	An interactive term for gdp per capita and the Corruption Perceptions Index			

* These dummy variables represent the legal origin concept based on La Porta *et al.* (1998, 1999).
** In our sample this overlaps with the EBRD definition of transition economies. See EBRD *Transition Reports* (1995-2006) for further information.
*** Source:World Bank:*World Development Indicators*, 2006 edition
♦ Source: IMF Financial Statistics series
♠ Source: CIA World Factbook (https://cia.gov/cia/publications/factbook/)

3.7 Dependent variables: Measuring types of entrepreneurship

In addition to identifying new firm entry in terms of nascent entrepreneurs, the GEM study has identified two main reasons motivating individuals to start a firm. They are either motivated by a perceived business opportunity (opportunity entrepreneurs) or individuals who are pushed into entrepreneurship because all other options for work are either absent or unsatisfactory (Minniti *et al.*, 2005b)[11]. According to the results of the GEM (Minniti et al., 2005; Acs *et al.*, 2004), the vast majority of early-stage entrepreneurs across the world claim that they are attempting to take advantage of a business opportunity. However some important variations are worth noting. The GEM study indicates that individuals living in countries with a diversified labour market and comprehensive unemployment care are more likely to be driven by opportunity vs. necessity motives than in countries where these institutions are weaker. Not surprisingly, the ratio of opportunity to necessity based motives for starting a business is more favourable in high-income countries rather than in middle or low income countries. Correspondingly, countries with relatively low income and low levels of social security such as China, Brazil or South Africa, tend to exhibit higher levels of necessity entrepreneurs. Since countries that primarily exhibit opportunity-driven entrepreneurship show a lower share of early-stage business failures, it seems to indicate that people starting necessity-driven businesses tend to do so due to lack of viable alternatives and under conditions that are not very favourable for business success (Minniti *et al*., 2005b). This latter observation leads us to notice that perceived opportunities are also related to the extent of barriers in institutional environment. Where potential entrepreneurs perceive that they may not be able to realise all the benefits from the newly created business they may decide against starting them. This should relate far more strongly to opportunity entrepreneurship than to necessity entrepreneurship.

Our two dependent variables are presented in Table 5.

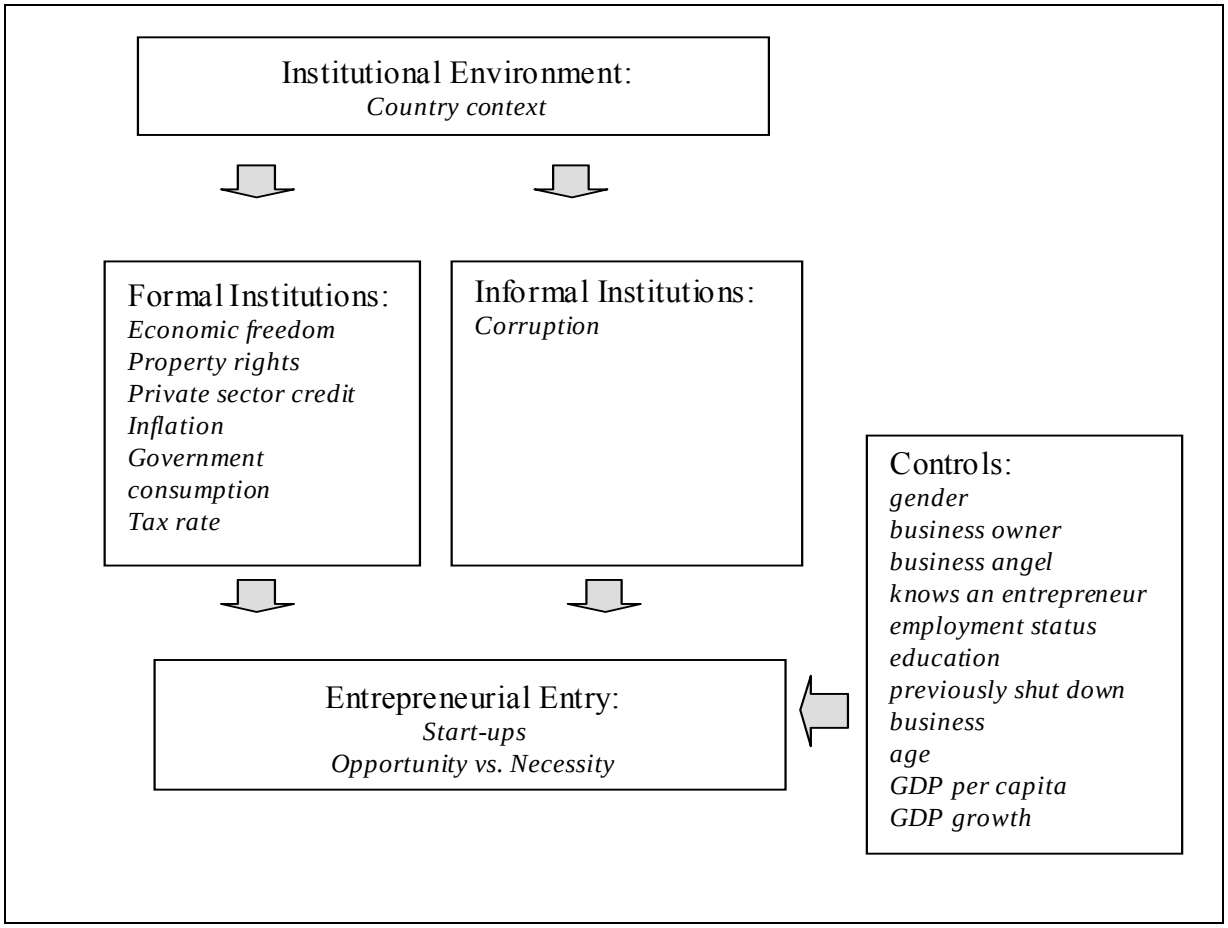
[11] Some authors have challenged the static distinction between opportunity and necessity entrepreneurs especially in certain socio-economic contexts (such as transition countries) since entrepreneurship by definition represents a dynamic process one in which individuals may change their motivation from necessity to opportunity and vice versa due to changes in personal as well as environmental circumstances (for further discussion see also Aidis *et al*. (2007).

Table 5: Dependent variables

Variables	Definition	Mean	SD	Number
Binary choice model				
start_up_2ca	1 = the respondent is engaged in start-up activity, zero otherwise.	.09	.33	102,997
Multiple choice models				
su_opp_nec	1= the respondent owns an active start-up; initiated due to opportunity; 2 = respondent owns an active start-up; initiated due to necessity; 0 = the respondent is not engaged in any start-up activity.	.06	.27	97,130

Filling in our proposed institutional framework with the independent and control variables as well as dependent variables results in the elaborated framework for analysis presented in Figure 1.

Figure 1: Our framework for analysis



4.8 Specifications and estimation technique

In our analysis, we use the following models. Each of them takes the same set of individual level variables, as given above. Model 1 corresponds to the binary choice between start-up and no entrepreneurial activity. No institutional variables are included, and instead we use a full set of dummies representing each country-year sample. In model 2, the country-year dummies are replaced by the country level variables, where the index of economic freedom is taken as an aggregate proxy for the institutional heterogeneity. In model 3 the index of economic freedom is replaced by the legal origin dummies, which are strongly correlated with the former (with the following ordering: "English" = most free, next "German", "Scandinavian" and "French" close to each other, and finally "Socialist"). In model 4, the corruption perception index is used as a proxy for institutional heterogeneity.

For both models 2 and 4, we present graphs, which show effects of change in institutional variables on probability of a start-up, at mean value of GDP per capita and at one standard deviation in each direction, keeping all other variables at their mean sample values.

Next, in models 5 and 6 we split the dependent into 'opportunity' and 'necessity' start-ups. For each of these cross-sections we use the same explanatory set of variables, as in models 2 and 3 (i.e. with alternative measures of institutions).

Based on these, we draw another graph, which demonstrates different impact of institutions on 'necessity' and 'opportunity' entrepreneurship.

In our second set of models we move from single aggregate indices of institutional heterogeneity to multiple indicators, as discussed above. Model 7-9 report three different specifications based on combinations of individual indices. In models 10-11, we add legal origin variables. In model 12-13, similar sets of variables are use, but we differentiate between 'opportunity' and 'necessity' startups. Finally, in model 14, we return to interactions between GDP per capita and institutions and run a specification, where the interaction relates to our proxy of the size of the financial sector.

We use logit and multiple logit as our estimators. Reported standard errors are robust (sandwich) standard errors. We allow for the possibility that the observations are ***not*** independent for each country-year sample in our dataset and this is reflected in the estimated

variance-covariance matrix and reported coefficients (apart from the specification where we apply the full set of sample country-year dummies instead).

In our graphs, probability of start-up is calculated according to the following formula for the logit model:
P (Y=1 | X) = exp(**xβ**) / (1 + exp(**xβ**)), where values in vector **x** are taken at sample means, except for institutional indicators and GDP per capita, which we vary to produce requested contrasts.
For the multinominal logit model, the corresponding formula reads:

$$P(Y=j \mid X) = \exp(\beta_j x_i) / (1 + \sum_{k=1}^{J} \exp(\beta_k x_i)).$$

Please also note that we use aggregate composite institutional indices. In particular, "economic freedom index" is an average of individual dimensions. We believe this is superior to use of individual dimensions.

5. Discussion of results

Generally , the results are consistent with our priors. We discuss the details below.

5.1 Results for country level aggregate institutional variables

Starting with legal origin dummies, we find that entrepreneurship is strongest in English origin countries, followed by German, French and Scandinavian origin (between which there are no significant differences) and finally weakest in the Socialist legal origin countries, confirming our hypothesis 3.

Replacing the legal origin dummies with closely correlated index of economic freedom we confirm our hypothesis 1: better institutions affect entrepreneurship positively. However, we obtain one additional interesting result: 'economic freedom' has stronger impact on entrepreneurship in middle income and rich countries, but less so in poor countries (Figure 2). This is consistent with Klapper *et al.* (2006) findings for newly incorporated firms-. High income countries are characterised by more complex technological and economic structures of production, where interdependence between the economic agents matters even more than in poor countries. This could explain the increasing significance of institutions in rich countries.The interactive term between the GDP per capita and institutional quality is

strongly significant (and more significant than the individual terms): low institutional quality in more developed countries has particularly negative effect on entrepreneurship. It is difficult to work out this joint impact of the three variables (GDP per capita, an institutional indicator and an interactive term), just from looking at coefficients. Here, the graphs help shed some more insights on this relationship (based on models 2 and 3). We can see that at mean level of other variables, improved level of institutional quality results in more entrepreneurship. Interestingly, the effect becomes even stronger for developed countries. For poor countries, the institutions seem to matter less for entrepreneurship.

Corruption proves to be a more problematic indicator, mainly because it is strongly correlated with GDP per capita (R^2=0.85) as compared with the index of economic freedom (R^2=-0.76) and therefore – as we control for GDP per capita - significant effects are more difficult to estimate. As a mean effect we find nevertheless that lower corruption is associated with more entrepreneurship (Figure 3). For the corruption index, in the case of less developed countries, the corresponding impact of institutions becomes marginally negative. One should not read too much from this however. Joint impact of GDP per capita and institutions is only marginally significant (p=.0966%), while it is much more robust for the economic freedom measure (p=0037%). Thus, the latter should be trusted more in this context.

An interesting novel result is that 'economic freedom' affect 'opportunity' entrepreneurship more than 'necessity' entrepreneurship (Figure 4). This provides support for hypothesis 4. Our interpretation of that link is the following. Opportunity entrepreneurship is by definition associated with more significant gains from entry. Those gains imply incentives to develop and expand the new businesses. And it is where institutions may matter most. Potential entrepreneurs that expect their future expansion hampered by poor institutional environment may decide against entry, unlike in case of "necessity entrepreneurship".

Our key institutional results based on aggregate institutional indicators may be summarized as follow. 'Economic freedom' (a measure closely correlated with the concept of English legal origin) is clearly associated with more entrepreneurship, and the effect is strongest is developed countries. This is consistent with popular perceptions and consistent with Djankov *et al.* (2002), who found that the English legal origin is strongly associated with lowest barriers to entry.

Entrepreneurship seems to play an important role in development. In this narrow sense therefore, we could conclude that the English legal origin setting is 'superior'. However, there are clearly other institutional aspects that affect economic performance in different way. Japan, Germany, France, Scandinavian countries and other represent different legal traditions yet were equally successful in the long-term process of the economic development. Clearly, in this wider perspective, their deficiency with respect to entrepreneurship must be counter-balanced by some other institutional advantages. Which is an issue going far beyond the scope of this paper.

5.2 Multiple institutional indicators.

Two institutional indicators emerge as robust from various specifications based on the combinations of five institutional indices discussed above; these are: strong protection of property rights and the size of the private sector financing. This result provides support for hypothesis 2. Both come with positive sign, and clearly affect the scope of entrepreneurship significantly. Next, inflation and the economic size of the government come with expected (negative) signs but are insignificant in multivariate specifications, and their effects remain dominated by the first two dimensions. Finally, marginal tax rates remain consistently insignificant (and come with unexpected positive signs).

Given the significance of the scope of finance, we also explore the results of interaction of this variable with the level of GDP per capita. Interestingly, the pattern of impact of finance on entrepreneurship remains similar for different level of development (see Figure 5). This is in contrast to the economic freedom indicator, which has far stronger impact for rich countries.

Finally, comparisons of corresponding signs and magnitudes of GDP per capita in specifications 12 and 13 reveal that the composition of entrepreneurship changes with the level of development. The proportions shift from necessity to opportunity entrepreneurship[12]

5.3 Control level variables

While the literature focuses on 'discrimination against smaller, entrepreneurial firms' (Glaeser *et al.*, 2003), we introduce an important distinction between 'entrepreneurial

[12] In addition, we looked at the difference between 'on-the-job' start-ups and independent start-ups (results not reported, but available on request). On-the-job start-ups are more typical for reach countries.

incumbents' and 'entrepreneurial new-comers'. We notice a universal pattern, where new firms are launched predominantly by those who had already built financial, social and human capital in the business sector. That creates a bias in new entry towards the "entrepreneurial insiders". As a result the distribution of entry does not equate the distribution of entrepreneurial talent, as entrepreneurial new-comers may find it difficult to enter.

Our results indicate that those entrepreneurs who are employed are associated with 'opportunity' start-ups while those without work with 'necessity' start-ups.

Age profile for necessity and opportunity start-ups differ. In general age profiles for entrepreneurship follow an inverted U-curve. This is in line with the findings of Levesque and Minniti (2006).

More generally, for three different dependent variables based on the binary choice model (necessity versus opportunity start-ups):
- men more likely to start businesses, in line with the results from existing literature (Minniti et al. 2005; Verheul et al. 2006)
- current owners are more likely to start new business,
- those who provided finance as business angels in the past more likely to start new business,
- those, who know other entrepreneurs are more likely to start a new business, consistent with the results of Wennekers et al. (2005).

Education, post-secondary and higher education taken jointly has significant positive impact, but incremental impact of higher education is insignificant.

6. Conclusions

Strong protection of property rights plays a pivotal role in the institutional environment. This is a single dimension, which dominates all other institutional variables when we compress the data into a smaller number of dimensions using factor analysis. We confirm that strong protection of property rights affects entrepreneurial entry positively. The second important institutional factor relates to the extent of the financial sector, in line with the existing literature. Moreover, we find that the impact of institutions varies at different levels of economic development. Enterpreneurial entry in a sophisticated, high income economy is more dependent on quality institutions than in a poor country.

Table 6.

Determinants of nascent entrepreneurship (*startup*). Logistic regression. Model 1

dgender	.3561051***(.0281806)
dumownmge	1.136261***(.0347967)
dumbusang	1.113837***(.0557049)
dumknowent	.9210071***(.0287091)
dumgemwork	.3762421***(.0374596)
ed_postsec~h	.1379197***(.0336563)
ed_high	-.0416379 (.0560297)
age	.0273415***(.0060006)
age2	-.0005037***(.000071)
sa01	.2706106***(.0773625)
ne01	-1.290091***(.1291393)
be01	-1.004743***(.1175861)
fr01	-2.288946***(.2343965)
sp01	-1.138884***(.1309903)
hu01	-.743777***(.1036837)
it01	-.8427666***(.1105332)
uk01	-.6918948***(.0789308)
de01	-.915281***(.1106594)
sw01	-1.749204***(.1334577)
no01	-.7127815***(.0990956)
pl01	-.914398***(.1156998)
ge01	-.4970595***(.0714938)
me01	.8400181***(.093271)
ar01	-.3389387***(.0982061)
br01	-.0515185 (.0918321)
au01	-.5744254* (.2748239)
nz01	.2833319***(.0876142)
si01	-.9664654***(.1129906)
ja01	-1.829514***(.1643002)
ko01	-.8327158***(.1012729)
in01	-.304969** (.0973477)
ca01	-.5136263***(.0975335)
pr01	-1.409024***(.1291658)
ir01	-.3489886***(.0912827)
fi01	-1.764875***(.1425298)
is01	-.6242234***(.0993738)
pl02	-1.465932***(.143665)
la05	-.8889828***(.1223356)
au05	-.4678312***(.10059)
ru02	-1.835004***(.1571008)
sp04	-1.440564***(.1274993)
hu02	-1.495558***(.1303015)
hu04	-1.411008***(.1336272)
hu05	-2.133703***(.1704055)
sn02	-1.120729***(.1149157)
sn03	-.930509***(.1233881)
sn04	-1.106824***(.1391287)
sn05	-.9289385***(.1081861)
_cons	-3.096194***(.1255839)

Number of observations	87929
Wald chi2	7252.46***
Log pseudolikelihood =	-20625.792
Pseudo R2 =	0.1621

Notes:

(i) Robust standard errors in parentheses

(ii) Significant at: *.05, **.01, ***.001

(iii)US 2001 sample indicator is the omitted dummy

Table 7.
Determinants of nascent entrepreneurship (startup). Logistic regression.
Models 2-4.

	Model 2	Model 3	Model 4
dgender	.3172028***(.0580828)	.2956413***(.0607846)	.3094242***(.0568299)
dumownmge	1.155405***(.1122458)	1.140025***(.1120468)	1.143134***(.1091666)
dumbusang	1.131161***(.0706906)	1.127622***(.0781145)	1.127274***(.0682069)
dumknowent	.9146587***(.0570344)	.9565957***(.0601423)	.8896061***(.0545767)
dumgemwork	.294622* (.1441498)	.3979407** (.1464262)	.4082031** (.1535122)
ed_postsec~h	.1795921** (.0589747)	.1314365* (.0559946)	.163913** (.058184)
ed_high	.5521395* (.2162424)	.4012504† (.2321459)	.5874213** (.2092064)
age	.0141278 (.0225841)	.0169267 (.0213429)	.0063843 (.0231017)
age2	-.0003404 (.0003098)	-.0003645 (.0002872)	-.0002476 (.0003146)
gdp_pc_ppp	.0001002** (.0000381)	-.0000246* (.0000114)	-.0000776* (.000034)
her_econfree	.5634733† (.3429719)		
gdppc_ecfree	-.0000511***(.0000146)		
socialist		-1.016692***(.1726442)	
german		-.3633346 (.2299266)	
french		-.4832588* (.2344425)	
scandin		-.4912102 (.3641724)	
ti_cpi			-.2026048 (.1773928)
ti_gdp			.0000109 (5.01e-06)
_cons	-4.637061***(1.175709)	-2.750808***(.3565045)	-2.166797 (.6791472)
Number of obs	87929	87929	87929
Wald chi2	1388.86***	1394.29***	1689.27***
Log pseudolikelihood	-21461.663	-21261.638	-21556.905
Pseudo R2	0.1281	0.1363	0.1243

Notes:
(i) Robust standard errors in parentheses
(ii) Significant at: †.10, *.05, **.01, ***.001
(iii)Std. Err. adjusted for 40 clusters in country_year

Table 8.
Determinants of nascent entrepreneurship (*su_opp_nec*). Multinominal Logistic regression. Models 5-6.

	Model 5	Model 6
opportunity		
dgender	.2840475***(.0700855)	.2781344*** (.0689442)
dumownmge	1.700255***(.1469366)	1.692395*** (.1448159)
dumbusang	.7347362***(.0829634)	.735934*** (.0807021)
dumknowent	1.021871***(.0827227)	1.011439*** (.0805721)
dumgemwork	.3021893* (.1342201)	.3799466*** (.1190094)
ed_postsec~h	.338687***(.07003)	.3246511*** (.0695999)
ed_high	.2385398 (.2246131)	.2732578 (.216598)
age	.0156724 (.0228043)	.01016 (.022748)
age2	-.0003751 (.0003141)	-.0003055 (.0003162)
gdp_pc_ppp	.0000347 (.0000312)	-.000041 (.0000423)
her_econfree	.2206071 (.2722559)	
gdppc_ecfree	-.0000236† (.0000129)	
ti_cpi		-.1565007 (.1421506)
ti_gdp		5.92e-06 (5.56e-06)
_cons	-4.86965***(.9941062)	-3.660824***(.6005988)
necessity		
dgender	.1926239* (.0934581)	.179261* (.0872078)
dumownmge	1.980846***(.2333506)	1.973154***(.2257826)
dumbusang	.6316041***(.1321288)	.6409641***(.1258039)
dumknowent	.5432838***(.0932984)	.5183936***(.0874818)
dumgemwork	-.2788515† (.1695566)	-.1636903 (.1526362)
ed_postsec~h	-.1649554 (.1406616)	-.200901 (.1318737)
ed_high	.2462227 (.4063499)	.3073186 (.3704536)
age	.0991158***(.0238508)	.0910327***(.0239118)
age2	-.0012998***(.0002873)	-.0011941***(.0002912)
gdp_pc_ppp	.00003 (.0000345)	-.0000881* (.0000402)
her_econfree	.2153285 (.2819092)	
gdppc_ecfree	-.0000526***(.0000127)	
ti_cpi		-.3159561† (.175278)
ti_gdp		8.91e-06 (6.16e-06)
_cons	-5.502364***(1.106687)	-4.114044 (.8280531)
Number of obs	85972	85972
Wald chi2	3247.90***	4146.80***
Log pseudolikelihood	-15996.141	-16014.112
Pseudo R2	0.1447	0.1437

Notes:
(i) Robust standard errors in parentheses
(ii) Significant at: †.10, *.05, **.01, ***.001
(iii)Std. Err. adjusted for 39 clusters in country_year
(iv) *su_opp_nec*==”no start-up” is the baseline outcome
(v) For Model 5: test that coefficients for *her_econfree* and *gdppc_ecfree* are the same for necessity and opportunity entrepreneurship: chi2(2) = 6.31*.
(vi) For Model 6: test that coefficients for *ti_cpi* and *ti_gdp* are the same for necessity and opportunity entrepreneurship: chi2(2) = 2.40

Table 9.
Determinants of nascent entrepreneurship (startup). Logistic regression.
Models 7-9.

	Model 7	Model 8	Model 9
dgender	.3020984***(.0578373)	.3035599***(.0587518)	.3028205***(.0603713)
dumownmge	1.144695***(.1156751)	1.142732***(.1182399)	1.145849***(.1175706)
dumbusang	1.143171***(.0757227)	1.139304***(.0754794)	1.142805***(.075477)
dumknowent	.921649***(.0660194)	.9233362***(.0649876)	.9216951***(.0660697)
dumgemwork	.3558131* (.139735)	.351477* (.1390191)	.3546259* (.1417887)
ed_postsec~h	.1921734***(.0552991)	.1965579***(.0605102)	.1917198***(.0561635)
ed_high	.4355459 (.2964675)	.4244129 (.2747867)	.4356755 (.2945504)
age	.014051 (.0219268)	.0133273 (.0219128)	.0141308 (.0219742)
age2	-.0003431 (.0002946)	-.0003337 (.0002948)	-.0003441 (.0002952)
pro_strong	.4646102* (.2309968)	.4174041† (.2393004)	.4623955* (.2295654)
credit_pri	.004713† (.0025415)	.0048423* (.0023658)	.0047753† (.0025713)
inf_stdev	-.0025859 (.0285762)		
gov_cons		-.0149038 (.021967)	
gdp_pc_ppp	-.0000503***(.0000152)	-.000046** (.0000165)	-.0000498***(.0000147)
_cons	-3.181825***(.4143525)	-2.990477***(.5393103)	-3.203237***(.4084735)
Number of obs	87929	87929	87929
Wald chi2	1287.68***	1203.75***	1196.84***
Log pseudolikelihood	-21400.061	-21391.285	-21400.314
Pseudo R2	0.1306	0.1310	0.1306

Notes:
(i) Robust standard errors in parentheses
(ii) Significant at: †.10, *.05, **.01, ***.001
(iii)Std. Err. adjusted for 40 clusters in country_year

Table 10.
Determinants of nascent entrepreneurship (startup). Logistic regression. Models 10-11.

	Model 10	Model 11
dgender	.3461182***(.0490859)	.3458909***(.0497633)
dumownmge	1.216552***(.1045704)	1.216124***(.1065005)
dumbusang	1.139026***(.0799245)	1.139183***(.080204)
dumknowent	.9800248***(.0618995)	.9801567***(.0623504)
ed_postsec~h	.1607613* (.0654606)	.1609283* (.0655598)
ed_high	.2997177 (.271791)	.2992528 (.2717964)
age	.0366943† (.0189739)	.0367386† (.0189397)
age2	-.0006042* (.0002603)	-.0006045* (.0002604)
pro_strong	.3009497 (.2629377)	.2800915 (.2187219)
credit_pri	.0009353 (.0028639)	.0008535 (.0029915)
socialist	-.8139598***(.2173161)	-.8287063***(.2285436)
french	-.3751649 (.228489)	
german	-.4172016 (.2683304)	
ger_fren		-.3947236* (.1727398)
scandin	-.4413019* (.200856)	-.4509945* (.2118936)
gdp_pc_ppp	-.0000369** (.0000136)	-.0000361**(.0000123)
_cons	-2.955347***(.399532)	-2.950691***(.4111192)
Number of obs	88213	88213
Wald chi2	1126.60***	1120.72***
Log pseudolikelihood	-21375.59	-21375.859
Pseudo R2	0.1341	0.1341

Notes:
(i) Robust standard errors in parentheses
(ii) Significant at: †.10, *.05, **.01, ***.001
(iii)Std. Err. adjusted for 40 clusters in country_year

Table 11.
Determinants of nascent entrepreneurship (*su_opp_nec*). Multinominal Logistic regression. Models 12-13.

	Model 12	Model 13
opportunity		
dgender	.3115676***(.063993)	.312247*** (.060786)
dumownmge	1.75949***(.1327627)	1.774297***(.1290102)
dumbusang	.7537802***(.0825659)	.7535271***(.082206)
dumknowent	1.044053***(.089399)	1.073538***(.0829625)
ed_postsec~h	.3585016***(.0743444)	.3049354***(.0655393)
ed_high	.0970287 (.3057438)	.0392678 (.2430841)
age	.0320365 (.021094)	.0358283† (.0204775)
age2	-.0005664† (.000297)	-.000605* (.0002884)
pro_strong	.0450673 (.2802435)	
credit_pri	.002114 (.0020701)	
socialist		-.5358425**(.173018)
german		-.3800978† (.1981045)
french		.0198172 (.2126881)
scandin		-.1814525 (.208579)
gdp_pc_ppp	-.0000249† (.000015)	-.0000216* (9.06e-06)
_cons	-4.549398***(.4254634)	-4.30945***(.3863732)
necessity		
dgender	.1484347† (.0812962)	.1364545† (.0791039)
dumownmge	1.901394***(.2043635)	1.923825***(.1937388)
dumbusang	.628528***(.1286093)	.6731555***(.1283954)
dumknowent	.5091333***(.0945279)	.5721698***(.0841159)
ed_postsec~h	-.180063 (.1438971)	-.2185897† (.1210412)
ed_high	.3054131 (.4078765)	.0421676 (.2997186)
age	.085056***(.0204478)	.0904812***(.0201979)
age2	-.0011322***(.0002355)	-.001179***(.0002346)
pro_strong	.561944 (.3423788)	
credit_pri	-.0000842 (.002859)	
socialist		-.7891936***(.2236671)
german		.1424239 (.2010011)
french		.2404273 (.2186723)
scandin		-1.116988***(.2881977)
gdp_pc_ppp	-.0000938***(.0000181)	-.0000761***(.0000101)
_cons	-4.946519***(.5167065)	-5.018683***(.420604)
Number of obs	86256	86256
Wald chi2	4324.19***	2941.09***
Log pseudolikelihood	-16094.976	-15978.998
Pseudo R2	0.1419	0.1481

Notes:
(i) Robust standard errors in parentheses
(ii) Significant at: †.10, *.05, **.01, ***.001
(iii)Std. Err. adjusted for 39 clusters in country_year
(iv) *su_opp_nec*=="no start-up" is the baseline outcome
(v) For Model 12: tests that coefficients are the same for necessity and opportunity entrepreneurship – *pro_strong* chi2 = 8.81**; *credit_pri* chi2 = 2.52; *gdp_pc_ppp* chi2 = 30.79***.
(vi) For Model 13: tests that coefficients are the same for necessity and opportunity entrepreneurship – *socialist* chi2 = 1.69; *german* chi2 = 10.37**; *french* chi2 = 2.86†; *scandin* chi2 = 17.34***; *gdp_pc_ppp* chi2 = 49.43***

Table 12.
Determinants of nascent entrepreneurship (startup). Logistic regression.
Model 14.

dgender	.3140608*** (.054574)
dumownmge	1.15264*** (.1141523)
dumbusang	1.136735*** (.0744926)
dumknowent	.9212349*** (.0641057)
dumgemwork	.3051742* (.1339519)
ed_postsec~h	.1932775*** (.0551694)
ed_high	.4637752† (.2720289)
age	.0159307 (.0220105)
age2	-.0003668 (.0002984)
pro_strong	.4717385* (.2146972)
credit_pri	-.0001997 (.0056696)
gdp_pc_ppp	-.0000687*** (.000019)
gdppc_cre	2.23e-07 (1.66e-07)
_cons	-2.854248*** (.5267464)
Number of obs	87929
Wald chi2(13)	1224.38***
Log pseudolikelihood	-21363.825
Pseudo R2	0.1321

Notes:
(i) Robust standard errors in parentheses
(ii) Significant at: †.10, *.05, **.01, ***.001
(iii)Std. Err. adjusted for 40 clusters in country_year
(iv) Test that coefficients for *credit_pri* and *gdppc_cre* are both zero: chi2 = 20.14***

Figure 2. Impact of economic freedom on entrepreneurship

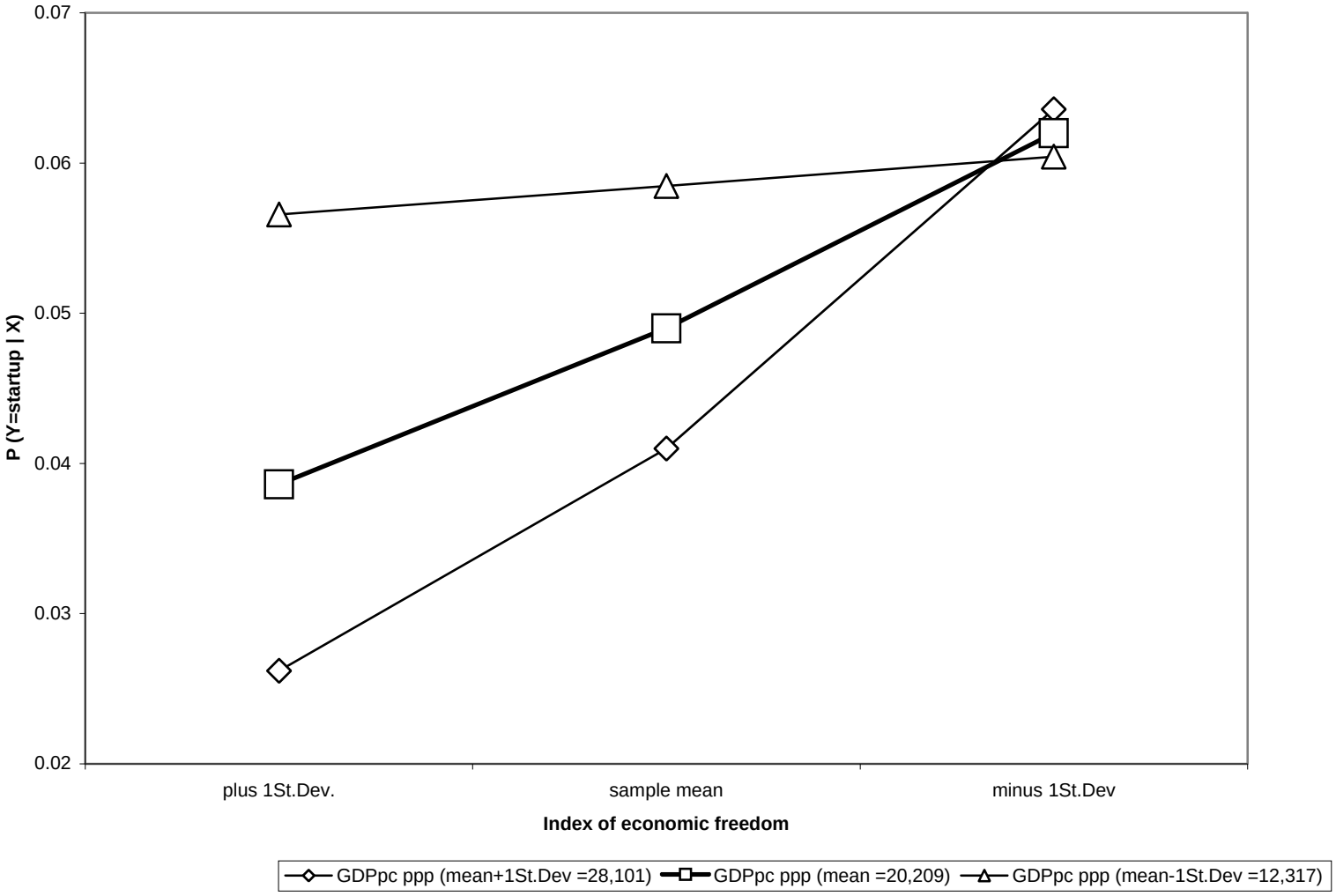


Figure 3. Impact of lower corruption on entrepreneurship

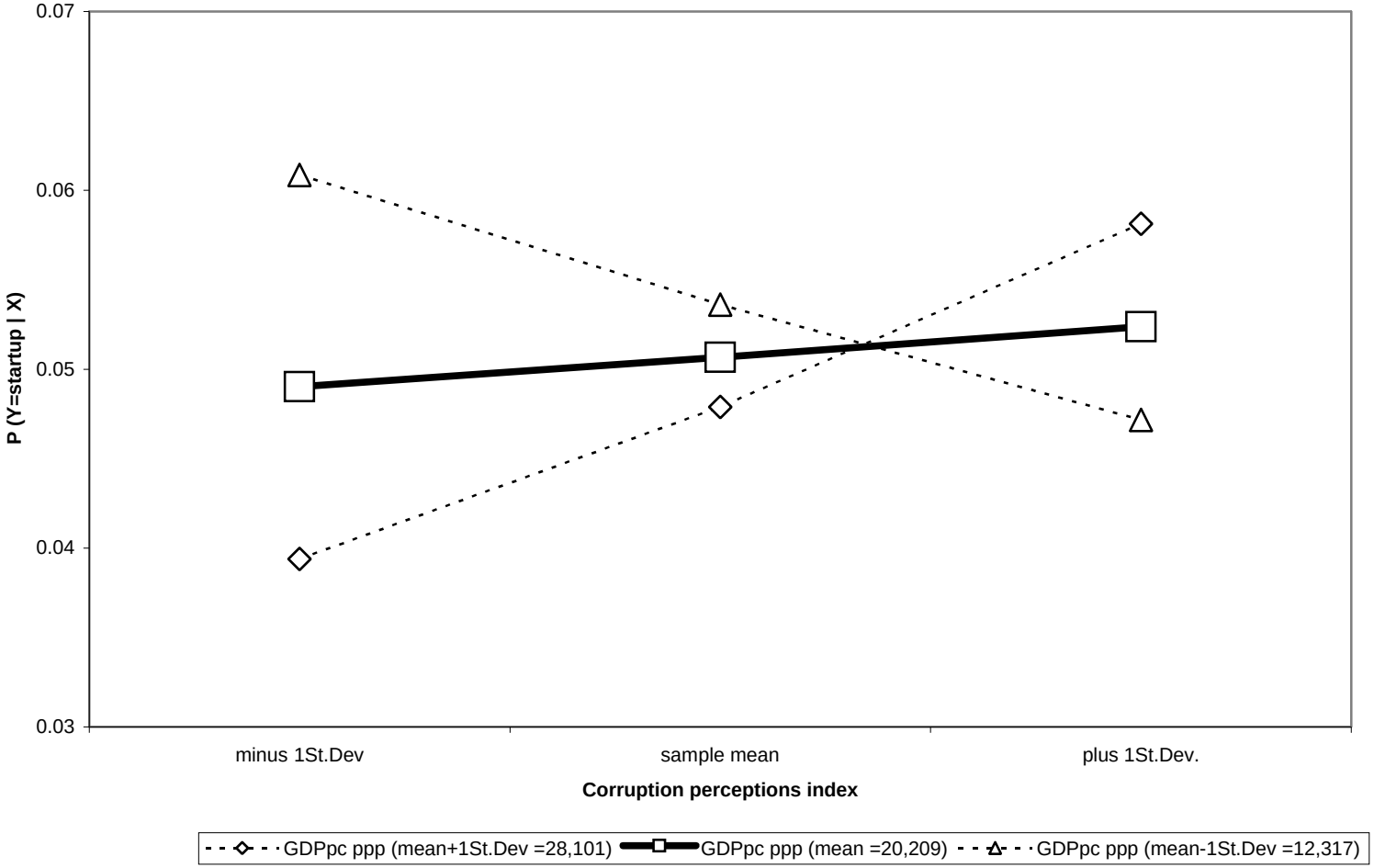


Figure 4. Impact of economic freedom on necessity versus opportunity start-ups

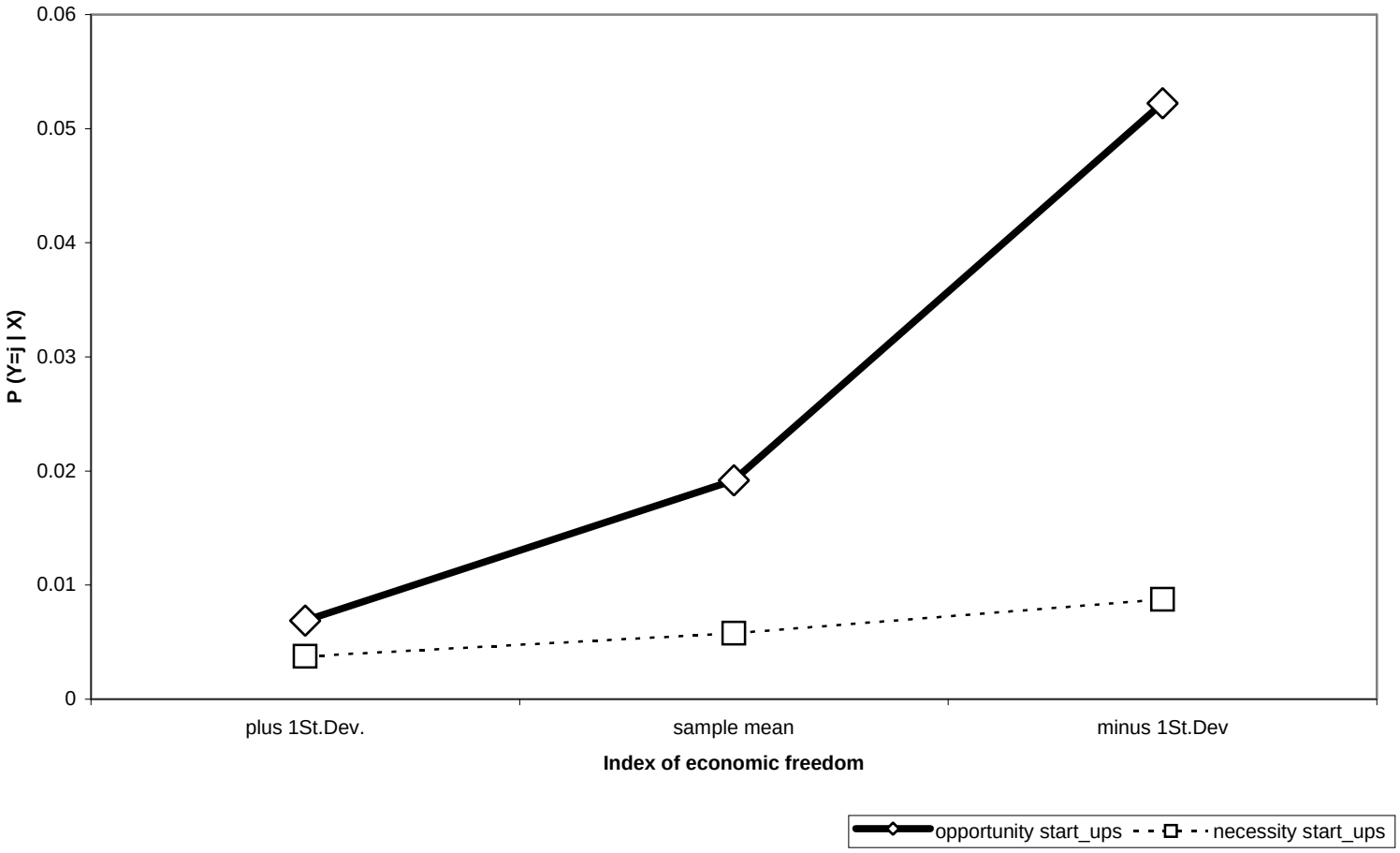
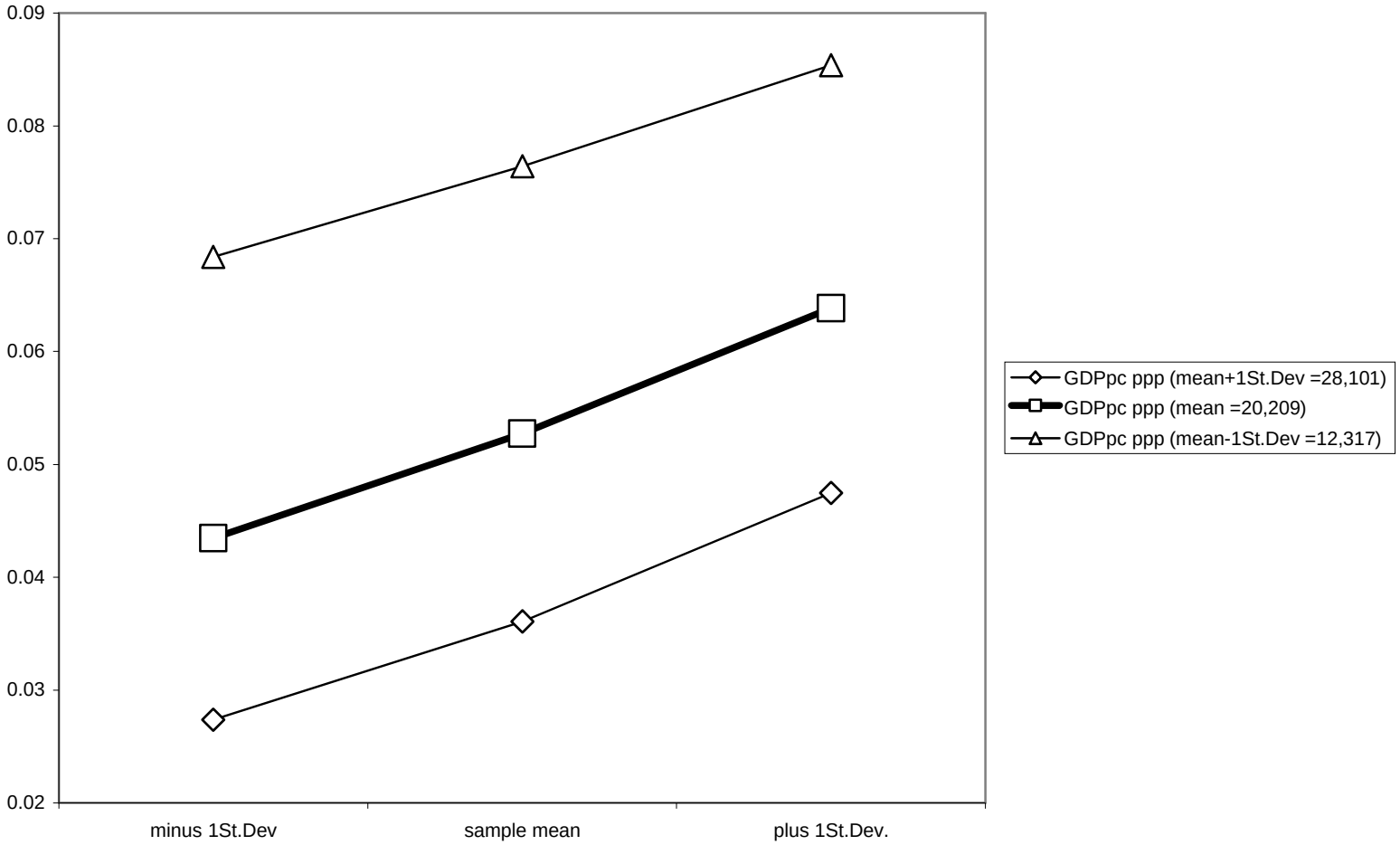


Figure 5. Impact of credit/GDP on entrepreneurship



Literature

Acemoglu, D. (2005), "Constitutions, Politics and Economics: A Review Essay on Persson and Tabellini's The Economic Effect of Constitutions", *Journal of Economic Literature*, **43**, 1025-1048.

Acs, Z., D. Audretsch and D. Evans (1994) 'Why does the self-employment rate vary across countries and over time? Discussion paper no. 871, CEPR, London.

Acs, Z., P. Arenius, M. Hay, M. Minniti (2004), *Global Entrepreneurship Monitor. 2004 Executive Report*, Babson College, MA, US and London Business School, UK, http://www.gemconsortium.org.

Aidis, R. and T. Mickiewicz (2006), 'Entrepreneurs, Expectations and Business Expansion: Lessons from Lithuania', *Europe Asia Studies*, **58** (6), 855-880.

Aidis, R., F, Welter, D. Smallbone, and N. Isakova (2007) 'Female Entrepreneurship in Transition Economies: The Case of Lithuania and Ukraine' *Feminist Economics*, forthcoming.

Barkhatova, N. (2000), 'Russian Small Business, Authorities and the State', *Europe-Asia Studies*, **52**, 657-676.

Baumol, W. (1990), "Entrepreneurship: productive, unproductive, and destructive", *Journal of Political Economy*, **98**, 893-921.

Beach, W. and M. Miles (2006) "Explaining the Factors of the Index of Economic Freedom", Chapter 5 in Heritage Foundation's Index of Economic Freedom 2006, http://www.heritagefoudation.org

Berkovitz, D. and J. Jackson (2006), "Entrepreneurship and the evolution of income distribution in Poland and Russia", *Journal of Comparative Economics*, **34**, 338-356.

Blanchflower, D. 2004. 'Self-employment: More may not be better' Working paper 10286, National Bureau of Economic Research (NBER), Cambridge, MA.

Botero, J., Djankov, S. La Porta, R., Lopez-de-Silvanes, F, Shleifer, A. (2004), "The Regulation of Labor", *Quarterly Journal of Economics*, 119, 1339-1382.

Carree, M., A. van Stel, R. Thurik and S. Wennekers. 2002.'Economic Development and Business Ownership: An analysis using data of 23 OECD countries in the period 1976 – 1996. Small Business Economics 19: 271 – 290.

Cooper and Dunkelberg (1987)

Davidsson, P. and B. Honig 2003. The Role of Social and Human Capital among Nascent Entrepreneurs. Journal of Business Venturing 13(3): 301-331.

Delmar, F. and P. Davidsson. 2000. 'Where do they come from? Prevalence and characteristics of nascent entrepreneurs' *Entrepreneurship and Regional Development* 12, 1 – 23.

Demirguv-Kunt, A., I. Love, V. Maksimovic (2006), "Business Environment and the Incorporation Decision", *Journal of Banking and Finance*, 30, 2967-2993.

Desai, M., P. Gompers, J. Lerner (2003), "Institutions, Capital Constraints and Entrepreneurial Firm Dynamics: Evidence from Europe", Harvard Negotiation, Organizations and Markets Research Papers, 03-59.

De Wit, G and van Winden, F.A.A.M., 'An Empirical Analysis of Self-Employment in the Netherlands', *Small Business Economics*, 1(4),263-272.

DiMaggio, P. & W. Powell. 1983. 'The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields.' *American Sociological Review* 47:147-160.

Djankov, S., R. La Porta, F. Lopez-de-Silanes, A. Shleifer (2002), "The Regulation of Entry", *Quarterly Journal of Economics*, **107**, 1, 1-37.

Djankov, S., R. La Porta, F. Lopez-de-Silvanes, A. Shleifer (2003a), "Courts", *Quarterly Journal of Economics*, 118, 453-517.

Djankov, S., S. Hart, O., Nenova, T., Shleifer, A. (2003b), "Efficiency in Bankruptcy", Harvard University, Department of Economics, mimeo.

EBRD (1995-2006), *Transition Reports* (London: European Bank for Reconstruction and Development).

Evans, D. and B. Jovanovic. 1989. 'An estimated model of entrepreneurial choice under liquidity constraints' *Journal of Political Economy* 97(4) 808 – 827.

Evans, D. and L. Leighton (1989) "Some empirical aspects of entrepreneurship" *American Economic Review*, 79: 519 – 535.

Glaeser, E., J. Scheinkman, A. Shleifer (2003), "Injustice of inequality", *Journal of Monetary Economics*, **50**, 1, 199-222.

Grilo, I. and J. Irigoyen. 2006. 'Entrepreneurship in the EU: to wish and not to be' *Small Business Economics* forthcoming

Grilo, I. and R. Thurik. 2005. 'Latent and actual entrepreneurship in Europe and the US, *International Entrepreneurship and Management Journal*, 1(4) 441 – 459.

Hirschman, A. (1958), *the Strategy of Economic Development* (New Haven: Yale University Press).

Hurt and Lusardi (2004)

Johnson, S., D. Kaufmann, A. Shleifer (1997), "Politics and Entrepreneurship in Transition Economies", Working Paper No 57, William Davidson Institute, University of Michigan.

Johnson, S., J. McMillan, C. Woodruff (2002), "Property Rights and Finance", *American Economic Review*, 95 (5), 1335-1356.

Klapper, L. , L. Laeven and R. Rajan (2006) "Entry regulation as a barrier to entrepreneurship", *Journal of Financial Economics*, forthcoming.

Knack, S. (2006) "Measuring Corruption in Eastern Europe and Central Asia: A Critique of the Cross-Country Indicators", Policy Research Working Paper 3968, World Bank.

Krueger, N., M. Reilly and A. Carsrud 2000. Competing Models of Entrepreneurial Intentions. Journal of Business Venturing 15: 411-432.

Kuznetsov, A. and Kuznetsova, O. (2003) , 'Institutions, Business and the State in Russia', *Europe-Asia Studies*, **55**, 907-922.

Lambsdorff, J. (2005) "Methodology of the 2005 Corruption Perceptions Index", Transparency International and University of Passau, mimeo.

La Porta R., F. Lopez-de-Silanes, A. Shleifer, R. Vishny (1998), "Law and Finance", *Journal of Political Economy*, **106**, 1113-1155.

La Porta R., F. Lopez-de-Silanes, A. Shleifer, R. Vishny (1999), "The Quality of Government", *Journal of Law, Economics and Organisation*, **15**, 1, 222-279.

Levesque, M. and M. Minniti (2006), ""The Effect of Aging on Entrepreneurial Behavior", *The Journal of Business Venturing*, **21**, 2, 177-194.

Lumpkin, G. and G. Dess (1996) "Clarifying the entrepreneurial orientation construct and linking it to performance" *Academy of Management Review* 21, 135 – 172.

McMillan, J. and C. Woodruff (2002), "The Central Role of Entrepreneurs in Transition Economies", *Journal of Economic Perspectives*, **16**, 3, 153-170.

McMullen, J. and D. Shepherd (2006) " Entrepreneurial action and the role of uncertainty in the theory of the entrepreneur" *Academy of Management Review*, 31(1), 132 – 152.

Megginson, W., Netter, J. (2001) "From State to Market: A Survey of Empirical Studies on Privatisation", *Journal of Economic Literature*, 39, 321-389.

Mickiewicz, T., C. Gerry, K. Bishop (2005), 'Privatisation, Corporate Control and Employment Growth: Evidence from a Panel of Large Polish Firms, 1996-2002', *Economic Systems*, 2005, **29**, 1, 98-119.

Minniti, M. (2005) "Entrepreneurship and Network Externalities", *Journal of Economic Behavior and Organization*, **57**, 1, 1-27.

Minniti, M., P. Arenius and N. Langowitz (2005a). *GEM 2004 Report on Women and Entrepreneurship*, http://www.gemconsortium.org

Minniti, M. with D. Bygrave and E. Autio (2005b). *Global Entrepreneurship Monitor. 2005 Executive Report*, Babson College, MA, US and London Business School, UK, http://www.gemconsortium.org.

Minniti, M. and C. Nardone (2005) "Being in Someone Else Shoes: The Role of Gender in Nascent Entrepreneurship", paper presented at the GEM Research Conference, Budapest, mimeo.

North, D. 1990. *Institutions, institutional change and economic performance*. New York: Cambridge University Press.

North, D. 1994. 'Economic performance over time.' *American Economic Review* 84:359 - 368.

North, D. 1997a. *The Contribution of the New Institutional Economics to an Understanding of the Transitional Problem*. Helsinki: Wider Annual Lectures, United Nationals University World Institute for Development Economics Research.

North, D. 1997b. 'Understanding economic change.' pp. 13 - 19 in *Transforming communist political economies*, edited by C. Tilly J. Nelson, & L. Walker. Washington DC: National Academy Press.

Parker, S. (2006) "New Agendas in the Economics of Entrepreneurship: Optimism, Education, Wealth and Entrepreneurship" Paper presented at the ASSA American Economic Association Annual Conference, Boston, USA.

Pryor, F. (2006) "Economic Systems of Developing Nations", *Comparative Economic Studies*, 48 (1), 77-99.

Reynolds, P., W. Bygrave, E. Autio, L. Cox and M. Hay. 2002. Global Entrepreneurship Monitor: 2002 Executive Report (http://www.gemconsortium.org).

Robinson, P.B. and E.A. Sexton 2002. The Effect of Education and Experience on Self-Employment Success. Journal of Business Venturing 9(2): 141-156.

Sarasvathy, S. (2004) 'The questions we ask and the questions we care about: reformulating some problems in entrepreneurship research' Journal of Business Venturing 19: 707 – 717.

Schaffer, M., W. Carlin and P. Seabright (2006), "Where are the real bottlenecks? A Lagrangian approach to identifying constraints on growth from subjective data', paper presented at the Centre for Economic Development and Institutions inaugural conference, University of Brunel, mimeo.

Storey, D. (1994), *Understanding the Small Business Sector*, London, International Thomson Business Press.

Tanzi, V. (1998), "Corruption Around the World", *IMF Staff Papers*, 45 (4), 559-594.

Uhlaner, L. and R. Thurik 2005. 'Post-Materialism: A cultural factor influencing total entrepreneurial activity across nations', Papers on Entrepreneurship, Growth and Public Policy no 20 – 2005, Max Planck Institute of Economics, Jena Germany.

Verheul, I., A. van Stel and R. Thurik. 2006. 'Explaining female and male entrepreneurship across 29 countries', *Entrepreneurship and Regional Development*, forthcoming.

Wennekers, S., A. van Stel, R. Thurik and P. Reynolds. 2005.'Nascent Entrepreneurship and the Level of Economic Development' *Small Business Economics* 24: 293 – 309.