ECONSTOR
Make Your Publications Visible.

A Service of
ZBW
Leibniz-Informationszentrum Wirtschaft
Leibniz Information Centre for Economics

Belitski, Maksim; Korosteleva, Julia

Working Paper

Entrepreneurship and Cities: Evidence from the Post-communist World

WIFO Working Papers, No. 397

Provided in Cooperation with:
Austrian Institute of Economic Research (WIFO), Vienna

Suggested Citation: Belitski, Maksim; Korosteleva, Julia (2011) : Entrepreneurship and Cities: Evidence from the Post-communist World, WIFO Working Papers, No. 397, Austrian Institute of Economic Research (WIFO), Vienna

This Version is available at:
https://hdl.handle.net/10419/128932

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

WWW.ECONSTOR.EU

Mitglied der Leibniz-Gemeinschaft

WIFO
ÖSTERREICHISCHES INSTITUT
FÜR WIRTSCHAFTSFORSCHUNG

WORKING PAPERS

Entrepreneurship and Cities: Evidence from the Post-communist World

Maksim Belitski (Brunel University),
Julia Korosteleva (UCL)

397/2011

Entrepreneurship and Cities: Evidence from the Post-communist World

Maksim Belitski (Brunel University), Julia Korosteleva (UCL)

WIFO Working Papers, No. 397
June 2011

E-mail address: j.korosteleva@ucl.ac.uk
2011/165/W/0

© 2011 Österreichisches Institut für Wirtschaftsforschung
Medieninhaber (Verleger), Hersteller: Österreichisches Institut für Wirtschaftsforschung • 1030 Wien, Arsenal, Objekt 20 • Tel. (43 1) 798 26 01-0 • Fax (43 1) 798 93 86 • http://www.wifo.ac.at/ • Verlags- und Herstellungsort: Wien
Die Working Papers geben nicht notwendigerweise die Meinung des WIFO wieder
Kostenloser Download: http://www.wifo.ac.at/wwa/pubid/42072

ENTREPRENEURSHIP AND CITIES: EVIDENCE FROM THE POST-COMMUNIST WORLD

Maksim Belitski, Brunel University, UK
Julia Korosteleva, University College London, UK

ABSTRACT

This study investigates variation in entrepreneurship across cities of Commonwealth of Independent States during 1995-2008, utilizing a unique dataset and employing the System Generalised Method of Moments technique. Our findings suggest that banking reform facilitates entrepreneurship, whereas the size of the state discourages it. Our results confirm a U-shaped relationship between per capita income and entrepreneurship. We also find that cities with higher concentration of universities are likely to have higher entrepreneurial entry that provides some evidence for the importance of agglomeration economies in terms of higher concentration of knowledge which may lead to intensified exchange of ideas driving knowledge-based entrepreneurship in the region.

Keywords: Entrepreneurship, small business, urbanisation, transition, CIS Urban Audit.

JEL Codes: L26 R10 R30 O31 P25

Contact: Julia Korosteleva; j.korosteleva@ucl.ac.uk; (T): +442076797590; (F): +442076798777; University College London, 16 Taviton Street, London WC1H 0BW.

ACKNOWLEDGEMENTS

The authors acknowledge the financial support of the Global Development Network jointly with its regional partners in the Commonwealth of Independent States and Central Eastern Europe, including The Economics Education and Research Consortium (EERC), Kyiv School of Economics (KSE) and CERGE-EI University as part of a larger project called “Cities: An Analysis of the Post-Communist Experience”, grant number R09-9031. The authors are thankful to Tomasz Mickiewicz, Randall K. Filer, and Tom Coupe for their useful feedback and advice.

INTRODUCTION

Over the past three decades small firms have been credited with playing a much more important role in the economy than had been previously assumed (Acs & Audretsch 1990; Acs et. al. 2008). First, small businesses have become a driving force behind the technological change and innovation (Schumpeter 1939; Audretsch and Thurik 2004). Through exploring new opportunities they are responsible for generating much of the market turbulence and creating the mechanism of regeneration (Marshall 1920). Second, small firms increase competition and provide diversity among firms through newly created niches (Brock & Evans 1986; Storey & Johnson 1987). Third, they emerge as an important engine behind job creation (Birch 1987; Acs and Armington 2004).

Acknowledging the positive relationship between entrepreneurship and economic development, a growing number of empirical studies have focused on explaining variation in entrepreneurial activity at various spatial levels with the majority of them taking either a cross-country perspective or looking at the inter-regional differences. More recent studies on entrepreneurship have shifted their focus to examining cross-city variation in entrepreneurship, attributing urban success to more abundant supply of entrepreneurship (Acs et al. 2008; Glaeser 2007; Glaeser et. al 2010; Glaeser and Kerr 2009; Bosma and Schutjens 2007, 2009; Belitski and Korosteleva 2011).

Acs et al. 2008 explore differences in entrepreneurial perceptions and entrepreneurial behaviour across 34 world cities using Global Entrepreneurship Monitor data. While their paper provides a rich comparison of the characteristics of new venture creation across world cities, it falls short of providing testable implications for variation in entrepreneurship across these cities. Bosma and Schutjens (2009) explore the determinants of entrepreneurial activity at a larger level of regional aggregation in Europe, distinguishing also between low- and high-ambition entrepreneurs. Belitski and Korosteleva (2011) explore how various demographic, socio-economic and geographical characteristics of European cities and institutional country-level settings affect entrepreneurship, proxied by the rate of self-employment, in 377 European cities during the period of 1989-2006. They find that in the context of European cities self-employment captures low-value-adding business activity at best or simply reflects the emergence of new types of subordinate employment which have little to do with opportunity-driven entrepreneurship. These results hold largely true for both East European cities and West European ones, although there is some weak evidence that knowledge-hub cities seem to exhibit positive relationship with self-employment in the latter.

Despite a growing number of spatial-oriented studies of entrepreneurial activity worldwide, to our best knowledge Belitski and Korosteleva (2011) are the first who attempted to explain variations of entrepreneurship across Western vs. East European cities by this providing some insights on whether cities of transition economies are any different from their Western counterparts in terms of factors driving their entrepreneurial activity. They find that the role of institutions, notably property rights protection, and the size of the financial sector, play less prominent role in Eastern Europe compared to its Western counterpart.

Estrin and Mickiewicz (2011) show that transition economies generally exhibit lower rates of entrepreneurship than observed in most developed and developing market economies. They argue that this difference is even more pronounced for the Commonwealth of Independent States (CIS) compared to Central and Eastern Europe (CEE). Despite the fact that small businesses have steadily become to play a more important role in urban economics of transition, there is still an obvious scarcity or virtually no existence of research in this field in the context of transition economies. The scarcity of cross-city research in the context of the region can be attributed to a number of reasons, including lack of data; prevailing thinking and planning at a larger level of space aggregation such as municipality (rayon) and beyond; existence of different approaches to measuring entrepreneurial activity across transition countries.

This paper investigates variation in entrepreneurial activity, proxied by the logarithm of small businesses, across 98 cities located in seven CIS countries, namely Russia, Ukraine, Belarus, Moldova, Georgia, Armenia and Azerbaijan, during the period of 1995-2008. By using cities as a unit of analysis the aim of this study is two-fold: to bridge the city-level gap in empirical research on entrepreneurship in the CIS; to focus on urban heterogeneity in entrepreneurship unlike the regional one. Regional level studies deal both with urban and rural areas, and in this setting entrepreneurial activity has different characteristics. Furthermore, in accordance with urban incubator hypothesis the incidence of entrepreneurship is higher in urban agglomerations (Tödtling and Wanzenböck 2003). Small firms benefit the most from positive spatial, agglomeration and knowledge spillover effects (Saxenian 1994). As evidence shows areas with a larger number of small- and medium-sized firms have always tended to do better. Some examples include Detroit, Boston and Silicon Valley businesses, and a recently emerged hub of high-tech start-ups in the New York City, which according to a study by market research firm CB Insights placed New York second to Silicon Valley in high-tech innovations[1]. This list also includes London with a 'Tech City' in its East part, dubbed Silicon Roundabout, which emerged in 2008 as a cluster of internet start-ups and which is expected to stretch from Shoreditch to the 2012 Olympic games site farther

east, and which is expected to strongly contribute to city success and social cohesion (The Economist 2010). Unsurprisingly, while looking for ways to boost employment and growth of their cities, local authorities among others focus on boosting private sector developments, and even more so entrepreneurship. A better understanding of the determinants of entrepreneurship in the context of cities can help guide a more efficient policy-making.

To investigate variation of entrepreneurship across CIS cities we utilise 1995-2008 dataset collected during 2009-2010 from the Offices of National Statistics in the aforementioned countries. We employ an advanced econometric technique, the System Generalised Method of Moments (SYSGMM) technique, to estimate our model. This allows to address a number of econometric problems, including potential endogeneity of some of our regressors; the presence of predetermined variables; and the presence of fixed effects which may be correlated with the regressors.

Our findings suggest that heterogeneity in entrepreneurial activity across CIS cities is largely explained by a U-shaped per resident income, advocating the prevalence of both necessity- and opportunity-driven entrepreneurship in the region as opposed to widely perceived belief of the predominance of the "necessity-push at start-up" phenomenon (for overview of the literature see Welter and Smallbone 2011). Our results also show the importance of concentration of higher-education institutions in cities which may provide some indirect evidence for the importance of agglomeration economies in terms of higher concentration of knowledge which may lead to intensified exchange of ideas driving opportunity-based entrepreneurship. Finally, we find some marginal support for larger size of local authorities disincentivising entrepreneurial entry, and for progress in banking reform enhancing it.

The paper proceeds as follows. The next section discusses the specifics of entrepreneurship development in transition economies. The following section focuses on the determinants of entrepreneurial activity and formulates hypotheses. The two subsequent sections discuss data and methodology, and empirical results, whereas the last section concludes.

ENTREPRENEURSHIP DEVELOPMENTS IN TRANSITION ECONOMIES

The fall of the Berlin Wall in late 1989 marked the beginning of transition of socialist countries to a market economy. The near simultaneity of regime changes often contributed to the perception that the former Soviet republics and the countries of Central and Eastern Europe by and large fit a common model of post-socialist transition, in which differences mainly lie in the degree or sequencing of market-oriented reforms. Stabilisation and

liberalization programmes accompanied by structural reforms appeared to shape transition of CEE and CIS countries from a planned economy to a market economy. The reality of transition has proven more complex than it was viewed at the beginning, revealing some differences in initial conditions and institutional developments that played substantial role in defining the success or failure of transition.

One of the issues facing transition countries at the early start was the need to develop a private business sector, which occurred through small-scale privatisation and the creation of new businesses from scratch (de novo firms). Despite a number of hardships, including economic instability, institutional deficiencies, lack of public support and hostile social attitudes towards entrepreneurship, de novo firms experienced exponential growth in the early 1990s, driven by abundant market opportunities which were suppressed under the communist system, and the lack of governmental regulations. Along with this the transition experience offered some unique institutional opportunities for entrepreneurship to develop.

Institutions, viewed as norms and rules both formal and informal, may simultaneously enhance entrepreneurial activity and constrain it (North 1990). The institutional context will also affect allocation of individual efforts between various types of entrepreneurial activities whether these are productive, unproductive or destructive (Baumol 1990). While regulation may hinder prospects of one entrepreneur, it can open opportunity for another. In the early years of transition weak institutional environment benefited various organised criminal groups that following Baumol's typology (1991) could be regarded as destructive entrepreneurs. However, institutional loopholes have created opportunities not only for destructive or unproductive entrepreneurship to flourish, but they have also led to a surge in productive entrepreneurship, for example, formally registered business consultancy firms rendering some advice in acquisition of permits and licenses. Following Welter and Smallbone (2011) "the consultancy firms that developed to fill institutional gaps were not gray sector enterprises but some of the most innovative and successful firms in the business services sector".

One of the peculiar features of transition economies in terms of private sector development is that entrepreneurship there has predominantly been viewed as necessity-driven at start with a large proportion of small business traders being seen as proprietors opting for satisfying their direct consumption needs rather than opportunity-based entrepreneurs oriented towards business growth (Scase 2003). Glinkina (2003) advocates that since the primary function of a proprietor is survival, proprietorship as unlikely to initiate dynamic growth in transition countries. At the same time Scase (2003) acknowledges that both proprietorship and entrepreneurship are dynamic categories and not rigidly defined, implying that it is possible for proprietors to turn into entrepreneurs and vice versa. Aidis et

al. (2004) advocates a more dynamic view to be adopted which emphasizes the learning capacity of individuals over time, in particular where high levels of human capital are involved, as well as improvements in business environment as the two factors likely to enable changes in the aspirations of individuals and their ability to spot and exploit new entrepreneurial opportunities.

By the mid-late 1990s, after tremendous initial explosion in new business formation, the majority of transition economies experienced a declining trend (Kontorovich 1999; Radaev 2003) that was largely explained by more rigid regulatory environment, increasing levels of competition, scarcity of financial resources and weak institutional environment (Radaev 2003; Aidis 2005). According to Geroski (1995) this trend is consistent with stylised facts on firms' entry, where the entry rate peaks early in the life of a market, but declines later with the survival rate of most entrants being low. Furthermore, this can be explained by the natural cause of economic development where entrepreneurship declines with increase in the level of income reflecting the emergence of economies of scale with individuals preferring income stability, while being employed by larger firms, over risky business initiatives (Wennekers et al. 2005). It picks up again as the income level passes a certain threshold with the trend being normally driven by accumulation of financial resources which can be directed towards launching a business, and improvements in business environment, offering new opportunities for entrepreneurial development (ibid.).

On average transition economies exhibit lower rates of entrepreneurial activities compared to other developed and developing economies which is even more true for the CIS compared to Central and Eastern Europe (Aidis et al. 2008). Estrin and Mickiewicz (2011) attribute this to the negative effect of the legacy of communist planning, which needs to be replaced with formal market-supporting institutions. They further argue that along with the establishment of formal institutions, it is necessary to develop new informal institutions, in particular to rebuild the generalised trust. Estrin and Mickiewicz (2011) see the longer prevalence of the communist rule, leading to a lack of institutional memory, as one of the reasons why entrepreneurship rates vary between CIS states and their CEE counterparts. Following, Schwartz and Bardi (1997) they posit that "time spent under communism is associated with the prevalence of a system of norms and values not conducive to generalized trust which is a prerequisite to entrepreneurship". The prevailing conditions of surveillance and detailed monitoring of citizens triggered distrust that was often in contradiction to the official ideology promoting cooperation and trust (ibid.). The authors conclude that given slow pace of change in informal institutional environment creation rebuilding generalised trust may be delayed until after full generational change.

In this paper we go on to explore variation in entrepreneurship across CIS cities looking at the role of various socio-economic and demographic characteristics of cities, and structural reforms aimed at establishing market-oriented institutions. Our overarching ambition is to offer a better understanding of the determinants of entrepreneurship in the context of cities that can help guide a more efficient policy-making. In the next section we discuss some literature pertaining to the determinants of entrepreneurial entry and postulate our main hypotheses.

ENTREPRENEURIAL ENTRY: THEORY, HYPOTHESES AND CONTROLS

Earlier empirical studies on urban economics and entrepreneurship show that a number of factors can be identified as to likely shape cross-city variation in entrepreneurial activity. These can be broadly grouped as follows: (1) socio-economic characteristics of cities; (2) institutional context; (3) availability of inputs including financial resources; (4) urbanisation economies; and (5) geographic characteristics (see Glaeser 2007; Glaeser and Kerr 2009).

In this section we first discuss the literature related to our key hypotheses and further proceed with the discussion of other factors (control variables) which are likely to affect entrepreneurial entry in the context of FSU cities, linking them to the groups of factors identified above.

City income level

Income level represents the first group of factors. A wealthier urban environment, associated with higher payoff and larger market potential, is expected to provide more incentives to entrepreneurs in pursuing market opportunities. In their theoretical extension of the New Economic Geography model Glaeser et al. (2010) propose that in an open city the level of (endogenous) entrepreneurship is increasing with demand. The higher levels of per capita income reflect a stronger customer base which in turn should be conducive to entrepreneurial entry.

At the macro level entrepreneurship literature suggests that entrepreneurial activity varies in countries at different stages of their economic development. Wennekers et al. (2005) find a U-shaped relationship between the two variables, suggesting that nascent entrepreneurship is high in low-income countries where entrepreneurship is often seen as an alternative for employment. As per capita GDP increases, the rate of entrepreneurial activity falls that may be explained by the emergence of economies of scale. Following the considerations of income stability that can be provided by large domestic firms, many individuals prefer

employment to business creation at this stage. However, entrepreneurial activity surges again after passing a certain threshold in high-income countries, indicating the accumulation of individual savings which can be used to start a business and economic environment favourable to exploitation of new opportunities.

Following our discussion in the previous section, in the aftermath of the collapse of the Soviet Union, start-ups in the region have been found to be predominantly necessity-driven that reflects the scarcity of income earning alternatives (Scase 2003; Glinkina 2003). More rigid regulations coupled with emergence of larger competitive firms have contributed to a decline in new business creation throughout the mid-end of 1990s. However, with market maturing and respective improvement in economic environment to the benefit of entrepreneurship development, new opportunities emerged incentifying individuals to launch growth-oriented businesses. So, unlike the conventional view of predominance of "necessity-push at start-up" (Welter and Smallbone 2011: 108) we expect to find the presence of both necessity-driven and opportunity-driven entrepreneurs across CIS, with the latter prevailing in wealthier cities. Therefore, our first hypothesis is formulated as follows.

Hypothesis 1: The level of income per capita has a U-shaped form with respect to entrepreneurial entry.

Institutional context

Drawing on the work of North (1990) and Baumol (1991, 1993, 2005) institutions, viewed as norms and rules both formal and informal, may simultaneously enhance entrepreneurial activity and constrain it. The former occurs via better functioning institutions reducing transaction costs such as, for example, linked to contract enforcement, and via reducing risk associated, for example, with expropriation of private assets either by the state or economic agents. Better functioning institutions consequently enable the economy to move from a 'relationship-based personalised transaction structure to a rule-based, impersonal exchange regime' (Peng 2003). On opposite deficient institutions characterised by weak rule of law, higher levels of corruption, a lack of property rights enforcement may constrain entrepreneurship, as has been shown in the context of transition economies, including Russia (Aidis et al. 2008; 2010). Furthermore, the quality of the institutional environment affects the allocation of entrepreneurial efforts among its various uses (Baumol 1990 as discussed earlier), and some specific entrepreneurial strategies (see Welter and Smallbone 2011 for further discussion).

In our analysis, we concentrate primarily on structural reforms enabling establishment of market-oriented institutions. For this we primarily use outcome measures of institutions as defined by Glaeser (2004). More specifically, we use EBRD transition indicators which measure the progress in transition. We look at the progress in banking reform and large-scale privatisation[3]. Along with progress in structural reforms we also look at size of the state; business regulation, and property rights protection.

The banking sector reform aimed to advance the financial development through the establishment of a two-tier banking system, liberalisation of interest rates and credit allocation, full convergence of banking laws and regulations with Bank of International Settlements standards, and provision of full set of competitive banking services (EBRD 2010). It is widely acknowledged that more developed financial markets are likely to alleviate borrowing constraints through the wider allocation of savings to potential investment projects and facilitation of the risk management in the presence of information asymmetries and transaction frictions (Levine 1997). With wider supply of finance and competition, the financial institutions are pushed to choose more challenging financial options including entrepreneurial finance. This is particular topical for transition economies for which scarcity of financial resources is more pronounced than for market economies (for the discussion of the relevant literature see Korosteleva and Rodionova 2011). Respectively, our next hypothesis postulates:

Hypothesis 2a: Progress in banking reform is positively associated with entrepreneurial entry.

The advancements in *large-scale privatisation* are expected to have an ambiguous effect on entrepreneurship. In many post-communist towns, dubbed “large enterprise-driven” there still prevails a vertically integrated industry which lacks independent suppliers. That makes it difficult for new businesses to sprout. The majority of the working-age population living in such towns are employed by such incumbents with only minimum share of city residents of a working age being engaged in services sector dominated by small firms. Such structural distortions are still typical of the majority of the CIS countries, but even more so for Belarus which is regarded as a laggard in transition. Thus, in Belarus industry, dominated by large-scale vertically integrated enterprises, remains the largest sector of the economy in terms of employment generation and the second largest (after services) in terms of contribution to GDP.

Porter’s Five forces model (1979) suggests that among other things the degree of competition in the market depends on the threat of buyers or sellers to integrate backwards

and forward. The higher the degree of vertical integration, the more discretion businesses have over exercising their monopoly power. New firms are unlikely to enter the market when either a supplier or distribution network is largely controlled by few incumbents. Bolton and Whinston (1993) develop a model showing (among other things) that vertical integration increases supply assurance concerns for non-integrating downstream firms. Departing from Chinitz's (1961) study on large integrated firms depressing the external supplier development, Saxenian (1994) argues that the development of independent suppliers, while lowering the effective cost of entry, enhances entrepreneurship. Large-scale privatisation and enterprise restructuring may help facilitate the development of supplier linkages between large and small firms via large enterprises' downsizing and specialization, and so it is likely to enhance entry of new firms. At the same time, large-scale privatisation is expected to drive competition that may force entrepreneurs quit the market (Parker 2009). In this paper we indirectly test Chinitz's (1961) hypothesis.

Hypothesis 2b: Large-scale privatisation facilitates entrepreneurship to the extent of enhancing independent supplier development

The size of the state has been argued to adversely influence entrepreneurial entry (Aidis et al. 2010). Higher tax income associated with a larger size of the state and higher marginal tax rates for higher earners reduces the expected returns to entrepreneurs and discourages entrepreneurial entry (Parker 2009). Higher tax income can also be associated with a more generous welfare provision system, implying among other things higher unemployment benefits. These generous benefits are likely to increase opportunity cost of going into entrepreneurship (Estrin et al. 2011). Accordingly we hypothesize:

Hypothesis 2c: A greater size of the government will discourage entrepreneurial entry

As far as *property rights protection* is concerned strong property rights are important not only for high-tech entrepreneurship with a strong intellectual property position but also for other forms of entrepreneurship to the extent that in the first place property rights guarantee the status quo via providing crucial security of private property against an arbitrary action of the executive branch of the government (Estrin et. al. 2011). It has been shown that strong property rights have a fundamental positive effect on economic activity and entrepreneurship. Acemoglu and Johnson (2005) find that property rights institutions have pronounced effects on investment, financial development and long-run economic growth. Aidis's et al. (2008) empirical account reveals that among various institutional indicators, the property rights system plays the most pivotal role in determining entrepreneurial activity. Johnson et al.

(2002) provide evidence that weak property rights discourage entrepreneurs to reinvest their retained profits into business. Based on this we postulate our next hypothesis.

Hypothesis 2d: Strong property protection is associated with increase in small businesses

According to the public interest theory, a stricter *business regulation*, requiring a proper screening of new firms will allow for the entry of only those firms which meet minimum standards for providing a quality product or service that should benefit the society. On the other hand, the public choice theory views regulation as potentially inefficient with industry incumbents being likely to benefit the most. Once they are able to influence the regulation in their favour, incumbents increase their power to the extent that restraints entry of new firms and competition. In their study of the regulation of entry of start-ups in 85 countries Djankov et al. (2002) find that countries with overly regulated business environment have higher level of corruption and larger unofficial economies, providing some supporting evidence for the public choice theory argument. In their majority, empirical studies on business regulation conform to the proposition that overregulated environment inhibits entrepreneurial entry (Grilo and Thurik 2005; Vat Stel et al. 2007). Regulatory constraints are found to be of particular detriment to opportunity-driven entrepreneurship (Ardagna and Lusardi 2008). Vice-versa, lower entry barriers are positively associated with the rate of firm entry (Klapper et al. 2006; Demirguc-Kunt et al. 2006). Respectively, our next hypothesis is formulated as follows:

Hypothesis 2e: More flexible business regulations encourage entrepreneurship

Concentration of knowledge

Our next hypothesis is associated with urbanisation economies. Start-ups are inevitably about new ideas, and the ability of some agglomerated locations to foster new ideas is one potential reason why they become centres of entrepreneurship and self-employment. Ideas are often outcomes of ‘knowledge intensive environments’, i.e. groupings of large and small firms interacting with public research organisation and providers of knowledge intensive services. Spatial concentrations boost entrepreneurship by supporting the transfer of old ideas and the creation of new ones. Saxenian (1994) argues how the flow of ideas helped to create the entrepreneurial cluster of Silicon Valley. Cities with higher concentration of higher education establishments are more likely to be incubators of new ideas. Furthermore, as part of Europe’s agenda to promote sustainable growth via innovation and entrepreneurship, many EU neighbourhood countries, including the majority of the CIS states studied here, embark on promotion of clusters, enhancing also collaboration between small businesses and research institutions. Respectively, we hypothesize:

Hypothesis 3: Cities with higher concentration of higher education establishments are likely to have higher entrepreneurial entry.

Along with the key factors discussed above in this study we also control for other variables which are likely to affect entrepreneurial entry according to theoretical and empirical evidence.

Other controls

Along with the level of income we also consider unemployment as part of socio-economic characteristics of cities as a likely determinant of entrepreneurial entry. The effect of the rate of unemployment is ambiguous. On the one hand side, it may have a push effect with entrepreneurship being seen as the only available occupational alternative. In this case entrepreneurship is most likely to be necessity-driven and associated with basic low-scale business activities (Mandelman and Montes-Rojas 2009). It is important to note here that necessity-driven entrepreneurship is more likely to take a form of self-employment, implying that the unemployment effect may not necessarily show up or it may be inversely associated with entrepreneurship when proxied by small businesses. Furthermore, higher tax income can also be associated with a more generous welfare provision system, implying among other things higher unemployment benefits, which could reduce incentives to go into entrepreneurship. Furthermore, unemployment is a cyclical phenomenon and may simply mirror economic recession and demand deficiency, making entrepreneurial entry unlikely.

As part of 'inputs availability' group we control for capital investment ratio in cities. Although, generally expected to have a positive effect on entrepreneurial entry, the role of capital investment in the context of the FSU may be ambiguous, and the possibility of a crowding out effect as a result of public funds being channelled to support large-scale state-owned enterprises is not excluded.

Along with knowledge concentration we also control for other variables associated with urbanisation economies. Local interactions that give rise to agglomeration spillover for entrepreneurship are extensively discussed in Duranton & Puga (2004) and Rosenthal & Strange (2004). The proposition that agglomeration economies have a positive effect on productivity goes back to Marshall (1920). The scale of the urban environment may impact productivity through availability of a larger pool of workers and their skill diversity, co-location of firms across diverse industries, the proximity of customers and suppliers. In agglomeration economies a larger home market essentially increases the returns to business entry (Agrawal et al. 2008; Gerlach et al. 2009; Simonen & McCann 2008). So, the incidence of entrepreneurship is likely to be higher in urban agglomerations where entrepreneurs' payoffs

are governed by higher technology, knowledge and consumer demand. So, respectively urbanisation economies are expected to have a positive impact on entrepreneurial entry.

We also add city geographical controls, including location proxied by latitude and longitude, the size of the market, proxied by the natural logarithm of population density, and distance from Moscow. However, given dataset constraints we are unable to control for industry effects.

DATA AND METHODOLOGY

Sample Description

To investigate variation of entrepreneurship across FSU cities we utilise the 1995-2008 data collected from the Offices of National Statistics in Russia, Ukraine, Belarus, Moldova, Georgia, Armenia and Azerbaijan as part of a larger project entitled "Cities: An Analysis of the Post-Communist Experience". Our dataset contains urban audit indicators across various domains specific to our study. These include economic and social characteristics of cities and other indicators used to test our main hypotheses pertaining to entrepreneurial entry at city level. We merge these statistics with institutional country-level data, derived from the Polity IV data[4] and Heritage Foundation[5], EBRD transition indicators (EBRD Transition Reports, various issues), and geographical characteristics of cities to shed some light on the effect of institutional settings and city spatial effects on entrepreneurial entry. More specifically, the dataset is represented by 98 cities[6] covering Russia (54 cities), Belarus (6 cities), Ukraine (26 cities), Moldova (1 city-capital), Georgia (5 cities), Armenia (5 cities), Azerbaijan (1 city-capital). These cities, though varying in size[7], are generally considered to be the most appropriate spatial units for modelling and analysis purposes.

Variable Definition

We use a number of small businesses taken in logarithms to measure entrepreneurship. According to national statistical offices small businesses are defined as firms with 50 employees or less (100 employees respectively in manufacturing sector). A number of small businesses as a measure of entrepreneurial activity have been widely used in a number of empirical studies (for discussion see Parker 2009). There is a huge variation in the number of small businesses across our sample. The number of registered small businesses is extremely low in Naryan-Mar, Russia, varying from 60 to 165 over the period of 1995-2008, and Nazran, Russia, varying from 128 to 1857 respectively. In 6 out of 98 cities the number of registered small businesses over the 1995-2008 is below a thousand. These cities include

Chernigov, Ternopil, Uzhgorod in Ukraine and Elista, Naryan-Mar and Nazran in Russia. At other extreme, Kiev, Moscow - capital cities ,- and Saint-Petersburg show high rates of entrepreneurial activity with the number of small businesses reaching more than 40,000 on average over the period of our analysis[8].

To test our *Hypothesis 1* we use city GDP[9] per resident in constant 2005 USD prices obtained from our CIS Urban Audit dataset. To measure the effect of banking reform and large-scale privatisation (*Hypotheses 2a and 2b* respectively) we employ EBRD transition indicators, scored from 1 denoting "little progress" to 4 - "significant progress". To measure the size of the local government we use a city-level indicator, defined as local government expenditure to GDP ratio (*Hypothesis 2c*). For the strength of property rights (*Hypothesis 2d*), we use the Polity IV measure of efficient constraints on the arbitrary power of the executive branch of the government, named "constrains on executive". It has been argued as the most appropriate measure for protection of citizens against expropriation by the government and powerful elites (Acemoglu and Johnson 2005). To test *Hypothesis 2e* we use the Heritage Foundation business freedom index (BFI) which measures the rigidity of business regulation. It reflects various barriers to start, operate and exit business, and it scores from 0 to 100 with 100 denoting the highest degree of business freedom (Beach and Kane 2008). Finally, we use the number of universities in the FSU obtained from the "Universities in CIS" and "Universities worldwide information resources" databases[10] to test our *Hypothesis 3.* Table 3 reports variable definitions and descriptive statistics, including our control variables. Table 4 shows the correlation matrix between variables used in this study.

Methodology

We use the following model to examine the determinants of entrepreneurial activity in a panel of 98 cities during 1995-2008.

$$S_{it} = \beta_1 S_{it-1} + \beta_2 X_{it} + \beta_3 Z_{it} + u_{it} \quad (1), \quad 1=1,..., N; t=1,...,T$$

$$u_{it} = v_i + e_{it} \quad (2)$$

where S_{it} is our natural logarithm of the number of small businesses and S_{it-1} is its lagged value (predetermined variable). X_{it} is a vector of our two potentially endogenous variables, namely GDP per resident, the rate of unemployment, and the ratio of capital expenditure to GDP . Z_{it} is a vector of strictly exogenous control variables listed in Table 1. The error term u_{it} consists of the unobserved city-specific effects, v_i and the observation-specific errors, e_{it}.

The dynamic structure of equation (1) makes both the OLS and fixed effects estimators upwards and downwards biased respectively, and inconsistent, since the predetermined variable and endogenous variables are correlated with the error term. Therefore, to estimate equation (1) we use the System Generalised Method of Moments (SYS GMM) estimator (Arellano and Bond 1991; Arellano and Bover 1995; Blundell and Bond 1998). The use of this estimator allows to address econometric problems which arise from estimating equation (1). These include (a) the problem of potential endogeneity of some of our regressors, notably GDP per resident, the rate of unemployment and the ratio of capital investment to GDP; (b) the presence of predetermined variables - the lagged dependent variable S_{it-1} that gives rise to measurement error as it is correlated with past errors; (c) the presence of fixed effects which may be correlated with the repressors; (d) our finite sample. SYS GMM allows the predetermined and endogenous variables in levels to be instrumented with suitable lags of their own differences (Roodman 2006).

Table 3 reports the results of SYS GMM, OLS and Panel Fixed effects estimators. Comparing the results of all three estimators used, one can see that the results obtained from the System GMM model are superior given that: (a) the autoregressive term is positive and significant, and its value lies between the respective terms obtained by fixed effects (which provides the lower bound) and OLS (which provides the upper bound); (b) there is gain in efficiency; (3) the instrument set is valid as evidenced from Hansen test of overidentified restrictions; (4) all variables of interest have expected signs.

EMPIRICAL RESULTS AND DISCUSSION

Table 3 reports estimation results based the three models used, notably pooled OLS estimation (column 1); panel fixed effects estimation (column 2) and System GMM (column 3). Neither the basic Hansen test of over-identifying restrictions nor the Difference Hansen test, which focus on the additional instruments validity, used by the System GMM estimator detect any problems with instrument validity, which allows us to consider that SYS GMM is the most efficient and robust estimation (Arellano and Bond 1991). Given superiority of SYS GMM model (as also discussed in the previous section) we proceed our further discussion primarily based on the results reported in column 3.

We find strong support for our *Hypothesis 1*, suggesting a U-shaped relationship between the logarithm of a number of small businesses and income level proxied by GDP per resident. These results suggest the prevalence of both necessity- and opportunity-driven entrepreneurship in the region unlike commonly believed predominance of “necessity-push at

start-up" (Welter and Smallbone 2011). These results are also consistent with Wennekers et al. (2005).

Our results also suggest that entrepreneurial entry is positively associated with the progress in banking reform (H2a). To the extent that the banking reform promotes financial development via elimination of financial market frictions, reduction in transaction costs and risks associated with financing start-ups, it eases borrowing constraints which can be particularly severe for small businesses. Developed financial institutions are found to be particularly beneficial for small firms compared to large ones (Beck *et al.* 2005). We also confirm our *Hypothesis 2c*, suggesting a disincentifying effect of a larger size of the state. These results are consistent with earlier empirical studies (Aidis et al. 2010; Estrin et al. 2011).

At the same time we fail to find any support for our property rights hypothesis (H2d). This, perhaps, can be explained by the fact that entrepreneurs choose to respond to institutional deficiencies, in our instance weak property rights protection, via employing various adaptive strategies such as, for example, a strategy of diversification: they choose to invest in unrelated businesses instead of growing their core businesses before "beginning to attract too much attention of the wrong sort" (Welter and Smallbone 2011). Such strategies impose growth constraints on existing businesses, preventing many of them to exploit economies of scale. We also do not confirm our *Hypotheses 2b,* related to the effect of large-scale privatisation, and *Hypothesis 2e*, related to the rigidity of business regulations. In fact, Aidis et al. (2008) also failed to find any significant effects of start-up entry barriers on entrepreneurial entry.

We also find that heterogeneity in entrepreneurial activity across CIS cities is largely explained by higher concentration of higher education establishments (*Hypothesis 3*) that we interpret as some evidence of the importance of agglomeration economies in terms of higher concentration of knowledge which may lead to intensified exchange of ideas via collaboration between small businesses and research institutions. This as an important advancement given some centralisation of research and development activities in the past. Even nowadays the research and development system in some CIS countries (e.g. Belarus) still largely reflects the Soviet legacy with extra-mural R&D organizations not business enterprises remaining the main and often only source of R&D (UNECE 2010). These results also reinforce our findings related to a U-shaped relationship between income level and entrepreneurial entry, altogether suggesting that CIS cities have become more opportunity oriented.

Among our control variables we fail to find some evidence of the significance of market size, proxied by the logarithm of population density, although it fails fairly narrowly to pass the 10%-significance level and it is positively related to entrepreneurial entry. For robustness check we also experimented with the level of GDP at constant prices as a proxy for market size (while excluding per resident income from this specification). Similarly, with per resident income we introduced a squared term of GDP to capture likely U-shaped relationship between the market size and the logarithm of small businesses. We obtained broadly similar results with all our key hypotheses being confirmed (these results are available from authors upon request). We find a significant and positive effect of air pollution, used as another proxy for agglomeration economies. We fail though to find any significant effect of capital investment, distance from Moscow, geographical controls and capital city. Finally, a negative and significant effect of the rate of unemployment is likely to be explained by unemployment mirroring adverse economic conditions or unemployment pushing individuals more into self-employment rather than in business registration, given a burdensome regulation and relatively higher cost of the latter.

CONCLUSIONS

Our key findings suggest that heterogeneity in entrepreneurial activity across FSU cities is largely explained by a U-shaped per resident income, with cities exhibiting higher rates of entrepreneurial activity when income level is low, advocating therefore the prevalence of necessity-driven entrepreneurship. However, as city income increases, the rate of entrepreneurial activity falls suggesting the likely emergence of economies of scale and larger firms providing better returns and income stability. Finally, entrepreneurial activity surges again after passing a certain threshold, being largely associated with the accumulation of individual savings that can be used for launching new businesses and economic environment favouring exploitation of new opportunities. Our results also show the importance of concentration of higher-education institutions in cities which may provide some indirect evidence for the importance of agglomeration economies in terms of higher concentration of knowledge which may lead to intensified exchange of knowledge and ideas driving knowledge-based entrepreneurship. Finally, we find some marginal support for a larger size of local government disincentivising entrepreneurial entry, and a banking reform, on the contrary, enhancing it. Our findings have important policy implications. Apart from emphasizing the importance of further advancements in a banking reform crucial for promoting financial development and reduction in borrowing constraints for small businesses, the authorities should also adopt a complex approach in further reforming a taxation system

(as part of addressing the larger state size problem) where reduction in tax rates should be coupled with minimising tax inspections and corruptive practices embedded in the "grabbing hand" model of government intervention (Shleifer and Vishny 1999), which are found to forcing entrepreneurs to adopt strategies constraining business growth of their core businesses. Finally, to promote knowledge-based entrepreneurship the local authorities should concentrate on encouragement of cluster development between universities and local businesses.

NOTES:

1. Financial Times, Life & Arts, 2010. Lighting in a bottle. October 30/Sunday October 31 2010.

2. To illustrate this Welter and Smallbone (2010:111) discuss a case study the owner of a successful business involved in managing and letting advertising hoarding space in Minsk, Belarus, who was considering opening a coffee shop rather than expanding her key business. She explained this referring to business expansion strategy of 'being too risky because her successful enterprise was beginning to attract too much attention of the wrong sort".

3. While small-scale privatisation can be more relevant for small business creation, we fail to find any significant effect of it, given that our dataset starts only from 1995 whereas small-scale privatisation has been largely completed in the majority of transition economies by that time. Given nearly 90% correlation between small and large-scale privatisation we had to drop small-scale privatisation from our model. We also tested the significance of competition policy; enterprise restructuring and securities market establishment, failing to find any significant results. In the case of enterprise restructuring the sign of the coefficient with respect to entrepreneurial entry is positive (unlike in the case of large-scale privatisation) that would have provided some support for hypothesis 2.b if this effect had been found significant. Given its high correlation with large-scale privatisation we tested its effect separately with the results available from the authors upon request.

4. See M. Marshall and K. Jaggers, 2009. Polity IV Project: Political Regime Characteristics and Transitions, 1800-2008, Dataset Users' Manual, available from http://www.systemicpeace.org/polity/polity4.htm.

5. For discussion see Beach, W., & Kane, T. 2008. Methodology: measuring the 10 economic freedoms. In K. Holmes, Feulner, E., & O'Grady, M. (Eds.), *2008 Index of Economic Freedom*: 39-55. The Heritage Foundation: Washington.

6. We use NUTS3 city level data.

7. In our sample city size varies from less than 50,000 such as Gori in Georgia, Naryan-Mar and Nazran in Russia to 10,500,000 residents in Moscow, Russia.

8. The table showing distribution of the number of small businesses by cities is available from authors upon request.

9. City GDP is calculated using the proportionate distribution of city population in respective years and applying these as weights to obtain relevant city GDP. To minimise a measurement error, the start and end points of the series have been taken as the means for the first and last 3 years following Cheshire and Magrini's approach (2009).

10. For more detailed information please see http://univer.in and http://univ.cc.

REFERENCES

Acemoglu, D.,& Johnson, S. 2005. Unbundling institutions. *Journal of Political Economy*, 113: 943-995.

Acs, Z. J., Audretsch, B. D., 1990. Innovation and small firms, Cambridge, MA: MIT press.

Acs, Z., N. Bosma, and R. Sternberg, 2008. The Entrepreneurial Advantage of World Cities: Evidence from Global Entrepreneurship Monitor Data, SCALES Research Report H200810, available from http://www.entrepreneurship-sme.eu/pdf-ez/H200810.pdf [accessed 27 September 2010].

Acs, Z. J., and Armington, C., 2004. Employment Growth and Entrepreneurial Activity in Cities", *Regional Studies,* 38(8), 911–927.

Agrawal, A., Kapur, D., McHale, J., 2008. How do spatial and social proximity influence knowledge flows? Evidence from patent data. Journal of Urban Economics, 64.

Aidis, R., 2004. Laws and Customs: Entrepreneurship, Institutions and Gender during Transition, SSEES Occasional Papers, University College London.

Aidis, R. 2005. Entrepreneurship in Transition Countries: A Review, CCE Working Paper No. 61, University College London.

Aidis, R., Estrin, S., & Mickiewicz, T. 2008. Institutions and entrepreneurship development in Russia: a comparative perspective. *Journal of Business Venturing*, 23: 656-672.

Aidis, R., Estrin, S., Mickiewicz, T.M., 2010. Size matters: entrepreneurial entry and government. *Small Business Economics* , 1–21.

Ardagna, S. and A. Lusardi (2008) "Explaining International Differences in Entrepreneurship: the Role of Individual Characteristics and Regulatory Constraints", NBER Working Paper, No. 14012.

Arellano, M., and Bond, S., 1991. Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. Review of Economic Studies, 58, 277–297.

Arellano, M., and Bover, O., 1995. Another look at the instrumental variables estimation of error components models. Journal of Econometrics, 68, 29–51.

Audretsch, D. and R., Thurik (2004) "A Model of the Entrepreneurial Economy", *International Journal of Entrepreneurship Education,* 2(2), pp. 143-66.

Baumol, W. 1990. Entrepreneurship: productive, unproductive, and destructive. *Journal of Political Economy,* 98 (5, Part I), October: 893-921.

Beach, W. and T. Kane, 2008. Methodology: Measuring the 10 Economic Freedoms. In Holmes, K., E., Feulner, and M. O'Grady, eds., 2008 Index of Economic Freedom. The Heritage Foundation: Washington, D.C., 2008:39-55.

Beck, T., A., Demirgüç-Kunt and V. Maksimovic, 2005. Financial and Legal Constraints to Growth: Does the Firm Size Matter? *The Journal of Finance*, Vol. LX (1).

Belitski, M. and Korosteleva, J., 2011. Entrepreneurial activity across European cities, *mimeo*.

Birch, D., 1987. Job generation in America*,* The Free Press: New York.

Blundell, R., and Bond, S., 1998. Initial conditions and moment restrictions in dynamic panel data models. Journal of Econometrics, 87, 11–143.

Bolton, P. and Whinston, M., 1993. Incomplete Contracts, Vertical Integration, and Supply Assurance. *The Review of Economic Studies*, 60(1): 121-148.

Bosma, N., Schutjens, V., 2007. Patterns of promising entrepreneurial activity in European regions. Tijdschrift voor Economische en Sociale Geografie, 98 (5), 675–686.

Bosma, N., Schutjens, V., 2009 Mapping entrepreneurial activity and entrepreneurial attitudes in European regions. International Journal of Entrepreneurship and Small Business 7 (2), 191-213.

Brock, W. A. and Evans S. D. 1986. The Economics of Small Business. New York: Holmes & Meier.

Cheshire, P. and Magrini, S., 2009. Urban growth drivers in a Europe of sticky people and implicit boundaries, *Journal of Economic Geography*, 9: 85–115.

Chinitz, B.J., 1961. Contrasts in agglomeration: New York and Pittsburgh". American Economic Review 51, 279–289.

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

Djankov, S., La Porta, R., Lopez-De-Silanes, F., & Shleifer, A. 2002. The regulation of entry, *Quarterly Journal of Economics,* CXVII (1): 1-36.

Duranton, G., Puga, D., 2004. Micro-foundations of urban agglomeration economies. In: Henderson, J.V., Thisse, J.-F. (Eds.), Handbook of Urban and Regional Economics, 4, Elsevier, Amsterdam, 2063–2118.

Grilo, I., and R., Thurik (2005) "Latent and Actual Entrepreneurship in Europe and the US: Some Recent Developments", *International Entrepreneurship and Management Journal*, 1(4), pp. 441-459.

EBRD, 2010. Transition report 2010: Recovery and reform, available from http://www.ebrd.com/pages/research/publications/flagships/transition.shtml.

Estrin, S., & Mickiewicz, T. 2011. Entrepreneurship in transition economies; the role of institutions and generational change. In M.Minniti (Ed.), *The Dynamics of Entrepreneurship*. Oxford: Oxford University Press, Chapter 8: 293-338.

Estrin, S., J. Korostelva and T Mickiewicz, 2011. Which Institutions Encourage Entrepreneurs to Create Larger Firms? CEPR Discussion Paper 8247.

Geroski, P., 1995. What Do We Know About Entry? *International Journal of Industrial Organisation*, 13: 421 – 440.

Gerlach, H., Ronde, T., Stahl, K., 2009. Labor pooling in R&D intensive industries. Journal of Urban Economics, 65, 99–111.

Glaeser, E.L., La Porta, R., Lopez-de-Silanes, F., and Shleifer, A. 2004. Do institutions cause growth? *NBER Working Paper Series,* 10568.

Glaeser, E.L., 2007. Entrepreneurship and the City. National Bureau of Economic Research. Working Paper 13551.

Glaeser, E.L., Rosenthal S.S., Strange W.C., 2010. Urban economics and entrepreneurship. *Journal of Urban Economics*, 67(1), 1–14.

Glaeser, E.L., Kerr, W.R., 2009. Local industrial conditions and entrepreneurship: how much of the spatial distribution can we explain? *Journal of Economics and Management Strategy,* 18(3).

Glinkina, S., 2003. Small Business, Survival Strategies and the Shadow Economy, in R. McIntyre and B. Dallago (eds.) *Small and Medium Enterprises in Transitional Economies*, Hampshire, UK: Palgrave, 51 - 63.

Johnson, S., J., McMillan and C. Woodruff, 2002. Property Rights and Finance, *The American Economic Review,* 92(5): 1335-1356.

Klapper, L., L., Laeven, and R., Rajan, 2006. Entry Regulation as a Barrier to Entrepreneurship, *Journal of Financial Economics,* 82, pp. 591-629.

Kontorovich, V., 1999. Has New Business Creation in Russia come to a halt? *Journal of Business Venturing* 14: 451-60.

Korosteleva, J. and Y. Rodionova, 2011. The Effect of the Crisis on Firm Financing in Transition Economies: Whether Size Matters? Mimeo.

Levine, R., 1997. Financial development and economic growth: views and agenda. *Journal of Economic Literature,* 35 (June)**:** 688-726.

Mandelman, F. and G.V. Montes-Rojas, 2009. Is Self-employment and Micro-entrepreneurship a Desired Outcome?, *World Development, 37 (12), pp. 1914-1925.*

Parker, S. C., 2009. *The economics of entrepreneurship.* Cambridge, UK, Cambridge University Press.

Peng, M., 2003. Institutional transitions and strategic choices, *Academy of Management Review,* 28(2): 275-286.

Porter, M.E., 1979. How competitive forces shape strategy. Harvard Business Review, March/April.

Radaev, V., 2003. The Development of Small Entrepreneurship in Russia, in McIntyre, Robert and Bruno Dallago (eds.) *Small and Medium Enterprises in Transitional Economies*. Hampshire, UK: Palgrave, pp. 114 - 133.

Roodman, D., 2006. How to Do xtabond2: An Introduction to “Difference” and “System” GMM in Stata. Centre for global development. Working Paper, 103.

Rosenthal, S.S., Strange, W.C., 2004. Evidence on the nature and sources of agglomeration economies. In: Henderson, J.V., Thisse, J.-F. (Eds.), Handbook of Urban and Regional Economics, vol. 4. Elsevier, Amsterdam, pp. 2119–2172.

Marshall, A., 1920. Principles of Economics. MacMillan, London.

North, D., 1990. Institutions, Institutional Change and Economic Performance, Cambridge University Press: Cambridge.

Saxenian, A., 1994. Regional Advantage: Culture and Competition in Silicon Valley and Route 128. Harvard University, Cambridge, MA.

Scase, R., 2003. Entrepreneurship and Proprietorship in Transition: Policy Implications for the SME sector, in R. McIntyre and B. Dallago (eds.) *Small and Medium Enterprises in Transitional Economies*, Hampshire, UK: Palgrave, 64-77.

Shleifer and Vishny, 1999 A. Shleifer and R.W. Vishny, *The Grabbing Hand: Government Pathologies and Their Cures*, Harvard University Press, Cambridge, MA.

Schumpeter, J.A., 1939. Business Cycles. McGraw-Hill, New York

Schwartz, S. and A. Bardi, 1997. Influences of Adaptation to Communist Rule on Value Priorities in Eastern Europe. *Political Psychology*, 18 (2): 385-410.

Simonen, J., McCann, P., 2008. Firm innovation: the influence of R&D cooperation and the geography of human capital inputs. Journal of Urban Economics 64, 146–154.

Storey, D. J., Johnson, S., 1987. Job Generation and Labour market Changes, London, Macmillan.

Todtling, F., Wanzenbock, H., 2003. Regional differences in structural characteristics of start-ups. Entrepreneurship and Regional Development, 15 (4), 351-370.

The Economist 2010. Silicon Roundabout, November 27th.

UNECE 2010. Innovation Performance Review of Belarus report, presented in Geneva, December, 1 2010.

Van Stel, A., D., Storey and R., Thurik (2007) “The Effect of Business Regulations on Nascent and Young Business Entrepreneurship”, *Small Business Economics,* 28, pp. 171-186.

Wennekers, A., Van Stel, A., Thurik, A., & Reynolds, P. 2005. Nascent entrepreneurship and economic development. *Small Business Economics*, 24:293-309.

Welter, F. and D. Smallbone, 2011. Institutional Perspective on Entrepreneurial Behaviour in Challenging Environments. *Journal of Small Business Management,* 49(1): 107-125.

Table 1: Descriptive statistics and definitions of the variables

Variable	Definition	Obs.	Mean	St. dev.	Min	Max
Dependent variable						
LnSME	Number of small businesses registered, logarithm	1160	8.46	1.05	4.09	12.35
Explanatory variables relevant to hypotheses tested						
university	Number of universities in a city	1372	7.33	13.26	1.00	103.00
gdppr_city	City GDP per resident squared, constant 2005 USD	1157	2852.04	5023.64	245.75	93703.88
gdppr_city^2	City GDP per resident, constant 2005 USD	1157	$3.33x10^7$	$3.84x10^7$	60392.64	$8.78x10^9$
expenditure_ gdp	Ratio of expenditure to GDP	1077	0.59	0.47	0.06	5.73
banking	Banking reform and interest rate liberalisation from 4- to 4+	1372	2.17	0.41	1.00	3.00
large_pri	Large -scale privatisation; from minus 4 to 3+	1372	2.92	0.60	1.00	4.00
exconsrt	Polity project. 'Executive constraints' '1=unlimited authority to 7=executive parity'	1372	4.37	1.11	2.00	7.00
Explanatory variables: controls						
airpolution_res	Air pollution, 1000 tons per resident	1148	0.29	0.55	0.00	5.46
lnpopdensity	Population density in the city per sq. km, logarithm	1307	7.75	0.58	5.82	9.18
capital_ invest_gdp	Ratio of capital investment to GDP	987	0.24	0.17	0.01	1.51
capitalcity	1= capital-city, 0 otherwise	1372	0.07	0.26	0.00	1.00
unemploym	Unemployment rate, %	1040	3.45	4.08	0.10	30.20
latitude	Latitude	1372	50.70	6.20	40.10	68.58
longitude	Longitude	1372	38.12	8.34	20.31	56.19
distance	Distance from Moscow, km	1358	1059.7	514.06	167.00	2230.00

Source: CIS Urban Audit 1995-2008.

Table 2: Correlation matrix for CIS urban audit variables

	LnSME	expenditure_gdp	capital_invest_gdp	university	lnpopdensity	airpolution_res	unemploym	latitude	distance	longitude	gdppr_city	gdppr_city^2	capitalcity	banking	large_pri	exconsrt	hfbusfree
LnSME	1.00																
expenditure_gdp	-0.30*	1.00															
capital_invest_gdp	0.03	0.21*	1.00														
university	0.64*	-0.19*	0.00	1.00													
lnpopdensity	0.19*	-0.35*	-0.09*	0.28*	1.00												
airpolution_res	-0.09*	-0.07*	-0.09*	-0.11*	-0.12*	1.00											
unemploym	-0.08*	-0.10*	-0.06*	-0.15*	0.10*	-0.09*	1.00										
latitude	0.04	-0.18*	-0.19*	0.11*	0.04	0.38*	-0.39*	1.00									
distance	-0.16*	0.27*	0.18*	-0.15*	-0.38*	0.12*	0.37*	-0.49*	1.00								
longitude	0.14*	0.13*	-0.03	-0.09*	-0.42*	0.16*	0.20*	-0.04	0.32*	1.00							
gdp_city	-0.07*	-0.13*	0.14*	0.13*	-0.10*	0.50*	-0.15*	0.30*	0.09*	0.08*	1.00						
gdp_city^2	-0.17*	-0.06*	0.14*	0.01	-0.13*	0.44*	-0.05*	0.15*	0.12*	0.09*	0.89*	1.00					
capitalcity	0.42*	-	0.05*	0.55*	0.19*	-	0.17*	-	0.12*	-0.02	0.05	0.00	1.00				

		0.18*				0.11*		0.14*									
banking	0.05	-0.04	0.10*	-0.01	-0.03	0.00	0.13*	-0.21*	0.11*	0.04	0.17*	0.06*	0.02	1.00			
large_pri	0.11*	0.01	-0.31*	-0.04	-0.26*	0.04	0.17*	-0.02	0.12*	0.44*	-0.06*	-0.01	-0.13*	0.35*	1.00		
exconsrt	-0.04	-0.11*	-0.04	0.00	0.05*	-0.02	0.04	-0.22*	0.06*	-0.10*	-0.03	0.00	-0.02	0.45*	0.38*	1.00	
hfbusfree	0.04	0.02	-0.09*	-0.04	-0.07*	0.02	0.30*	-0.05*	0.12*	0.24*	0.00	0.01	0.07*	-0.04	0.23*	-0.12*	1.00

Note: * - significant at 0.05 level. Source: CIS Urban Audit 1995-2008.

Table 3: Estimation Results

Estimation of the model Dependent variable S_{it} (Number of small businesses registered - SME)						
Variable	Pooled OLS	p-values	FE	p-values	SYS-GMM	p-values
	(1)		(2)		(3)	
L.LnSME	0.93 (0.02)	0.00	0.370 (0.02)	0.00	0.519 (0.15)	0.00
expenditure_gdp	-0.693 (0.03)	0.03	-0.030 (0.05)	0.57	-0.342 (0.20)	0.09
capital_investment_gdp	-0.403 (0.05)	0.43	-0.090 (0.08)	0.28	-0.052 (0.38)	0.89
university	0.005 (0.00)	0.01	-0.010 (0.02)	0.75	0.030 (0.01)	0.001
lnpopdensity	0.021 (0.02)	0.32	0.590 (0.07)	0.00	0.170 (0.12)	0.16
airpollution	0.004 (0.02)	0.78	0.020 (0.06)	0.73	0.161 (0.09)	0.07
unemploym	-0.001 (0.01)	0.75	0.001 (0.00)	0.98	-0.046 (0.02)	0.046
latitude	-0.002 (0.00)	0.08	-	-	-0.011 (0.01)	0.38
longitude	0.002 (0.00)	0.12	-	-	0.005 (0.01)	0.15
distance	-0.001 (0.00)	0.73	-	-	-0.001 (0.00)	0.87
gdppr_city	-0.000 (0.00)	0.24	0.000 (0.00)	0.28	0.000 (0.00)	0.00
gdppr_city^2	0.000 (0.00)	0.32	0.000 (0.00)	0.80	0.000 (0.00)	0.00
capitalcity	0.009 (0.03)	0.78	-	-	-0.087 (0.31)	0.78
banking	0.006 (0.02)	0.84	0.280 (0.10)	0.00	0.476 (0.27)	0.08
large_pri	0.034 (0.05)	0.51	0.120 (0.06)	0.07	-0.111 (0.09)	0.18
exconsrt	0.010 (0.00)	0.58	-0.040 (0.02)	0.20	0.034 (0.04)	0.35
hfbusfree	-0.010 (0.01)	0.00	-0.001 (0.00)	0.69	-0.00 (0.002)	0.98
constant	0.650 (0.26)	0.01	0.19 (0.71)	0.78		
Country controls	No		No		Yes	
Year dummies	No		Yes		Yes	
R-square	0.95		0.47			
Pr>z AR(2)					0.27	
Hansen test, Pr.>chi2					0.56	
Dif. Hansen test, Pr.>chi2					0.64	
Number of obs.	730		730		730	

Source: Authors' calculations based on CIS Urban Audit dataset 1995-2008.

Notes: Standard errors (in parentheses) are robust to heteroskedasticity. The figures reported for the Hansen test and Difference Hansen test are the p-values for the null hypothesis: valid specification. Instruments for first differences equation GMM-type [L(2/.).(LnSME unemploym capital_invest_gdp gdppr_city gdppr_city^2)] collapsed. Instruments for levels equation: GMM-type [DL.(LnSME unemploym capital_invest_gdp gdppr_city gdppr_city^2) collapsed and all other regressors, including time controls, used as standard instruments here. Note: the autocorrelation test shows that the residuals are an AR(1) process which is what is expected. The test statistic for second-order serial correlation is based on residuals from the first-difference equation. Number of instruments 81. F(33, 83) = 3505.77