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Entrepreneurship in the transition region: an analysis based on the Life in Transition Survey

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Summary:

Entrepreneurial activity is a key contributor to economic growth, innovation and the development of a market economy in transition countries. Data from the Life in Transition Survey reveal that financial sector development and access to credit are the most important drivers of entrepreneurship. Education is associated with a higher probability of trying to set up a business, but not with more entrepreneurial success. Women are less likely to attempt to set up a venture but no less likely to succeed than men once they try. Furthermore, entrepreneurial activity develops in clusters. An individual is more likely to try – and succeed – in setting up a business in a region that is already home to many entrepreneurs.

Keywords: entrepreneurship, transition economies, Life in Transition Survey

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1. Introduction

The success of a transition economy is linked closely to entrepreneurial activity. In economies in the early stages of transition, entrepreneurship is an important ingredient of structural change, since new domestic business (in addition to foreign direct investment) is essential to create industries that did not exist, or to revitalise those that were stagnant, under socialism.¹ Research also shows that sales and employment grow faster in entrepreneurial ventures than in state or privatised firms and that new businesses are more efficient.² In more advanced countries, including the new EU members,³ entrepreneurship is likely to be an indispensable ingredient of a sustainable growth model that emphasises innovation rather than booms in consumption and investment in non-tradeable sectors fuelled by debt inflows. Also, entrepreneurial ventures may be an effective way to mitigate income shocks associated with economic crises, by providing households with an alternative source of employment.

In this paper we analyse the determinants of entrepreneurship in the EBRD countries of operations using data from the 2010 round of the Life in Transition Survey (LiTS). Its conclusions are partly in line with previous cross-country research, but also provide some surprises and new findings. In particular, the results confirm that development of the financial sector and access to credit are important determinants of entrepreneurial success. At the individual level, the analysis suggests that more education is associated with a higher propensity to start a business, although not with a higher likelihood of success. We also find that entrepreneurship is linked to individual attitudes, such as a willingness to take risks, and that women, although less likely to attempt to set up a business, are no less likely to succeed than men when they try to be entrepreneurs. This may argue for policies targeted at encouraging potential female entrepreneurs.

The evidence in this paper also supports the theory that entrepreneurial activity develops in clusters. In regions where such activity is more prevalent, individuals appear more likely to try to set up a business and to succeed in doing so. Whether this reflects a positive “spillover” effect from existing entrepreneurial activity or simply the fact that some regions provide a better environment for entrepreneurs cannot be conclusively answered in this paper, although our analysis suggests that the former impact may be present, at least to some degree.

We also examine *necessity* entrepreneurship, in which individuals are forced to create small businesses because of the lack of formal employment, and *opportunity* entrepreneurship, where they instead act on ideas and profit opportunities. Businesses in the former category will be less likely to innovate, thus having a limited positive impact on economic growth (although evidence shows they are not detrimental to it). The LiTS data demonstrate that similar individual, regional and country-wide features contribute to the likelihood of trying and being successful in starting a business among opportunity entrepreneurs and the wider entrepreneurial population. Based on this analysis, policy-makers should not worry about the possibility of encouraging the *wrong* kind of entrepreneurship: supporting all business starters should translate into higher activity among opportunity entrepreneurs.

Lastly, we caution that certain policies which are found to positively affect entrepreneurship across the transition region as a whole may in fact have the opposite, or a weaker, impact in individual countries. For example, in the countries that are part of the Commonwealth of

¹See Berkowitz and DeJong (2004).

²See McMillan and Woodruff (2002).

³ The new EU members are Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, the Slovak Republic and Slovenia.

Independent States (CIS),⁴ increasing the proportion of the population that has completed secondary and tertiary education may actually have a detrimental effect on entrepreneurial success among those respondents who tried to start a business. We argue that in the CIS, increasing the quality, rather than quantity, of education, may be relevant.

⁴ The CIS includes Armenia, Azerbaijan, Belarus, Kazakhstan, the Kyrgyz Republic, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.

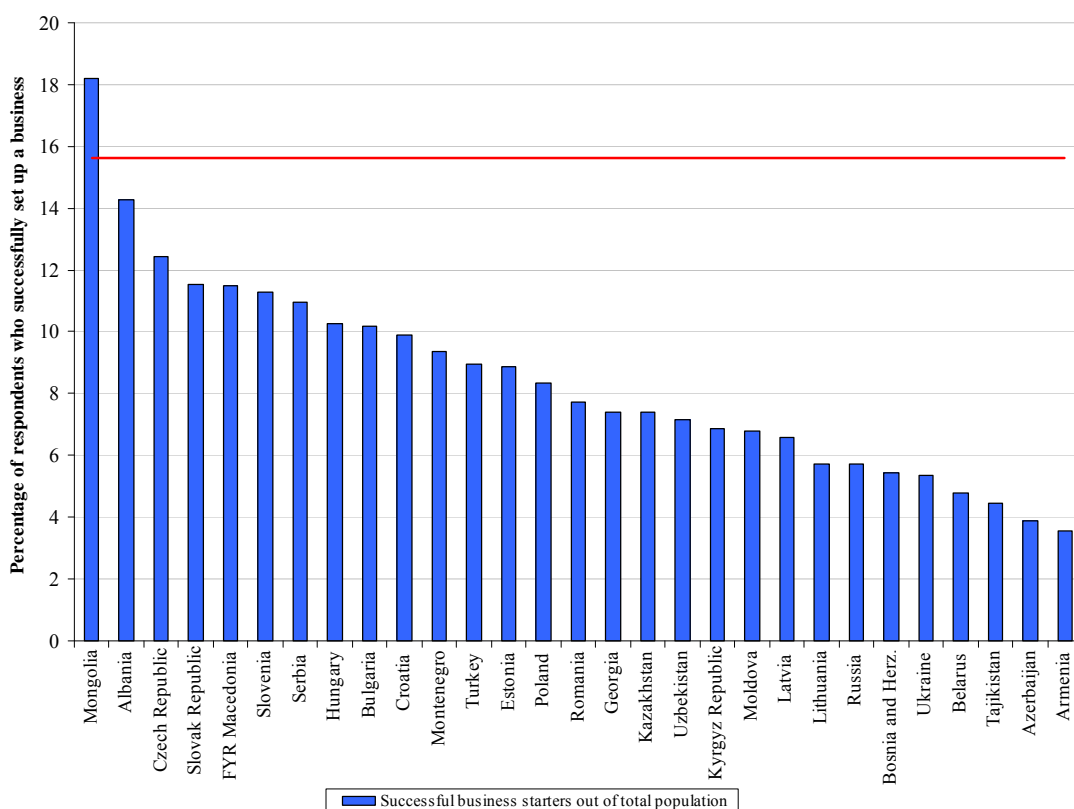
2. Data description

The main data source we use is the 2010 LiTS, in which individuals were asked if they had ever tried to start a business. If they had, they were also asked when they last tried and whether they succeeded, and if not, why not. These data are complemented by information on characteristics ranging from respondents' wealth and education levels to their perceptions of corruption and trust in others and in their countries' institutions.⁵

Chart 1 shows that the proportion of successful business starters is much lower in the transition region than in the western comparator countries included in the LiTS.⁶ In most transition countries this proportion is less than the Western average of 16 per cent (ranging from just over 3.5 per cent in Armenia to more than 14 per cent in Albania). The only exception is Mongolia, where the figure is slightly over 18 per cent, for reasons that are explored in detail in Annex 2.

Chart 1

Mongolia is the only transition country with more successful business start-ups than the Western average



Source: LiTS.

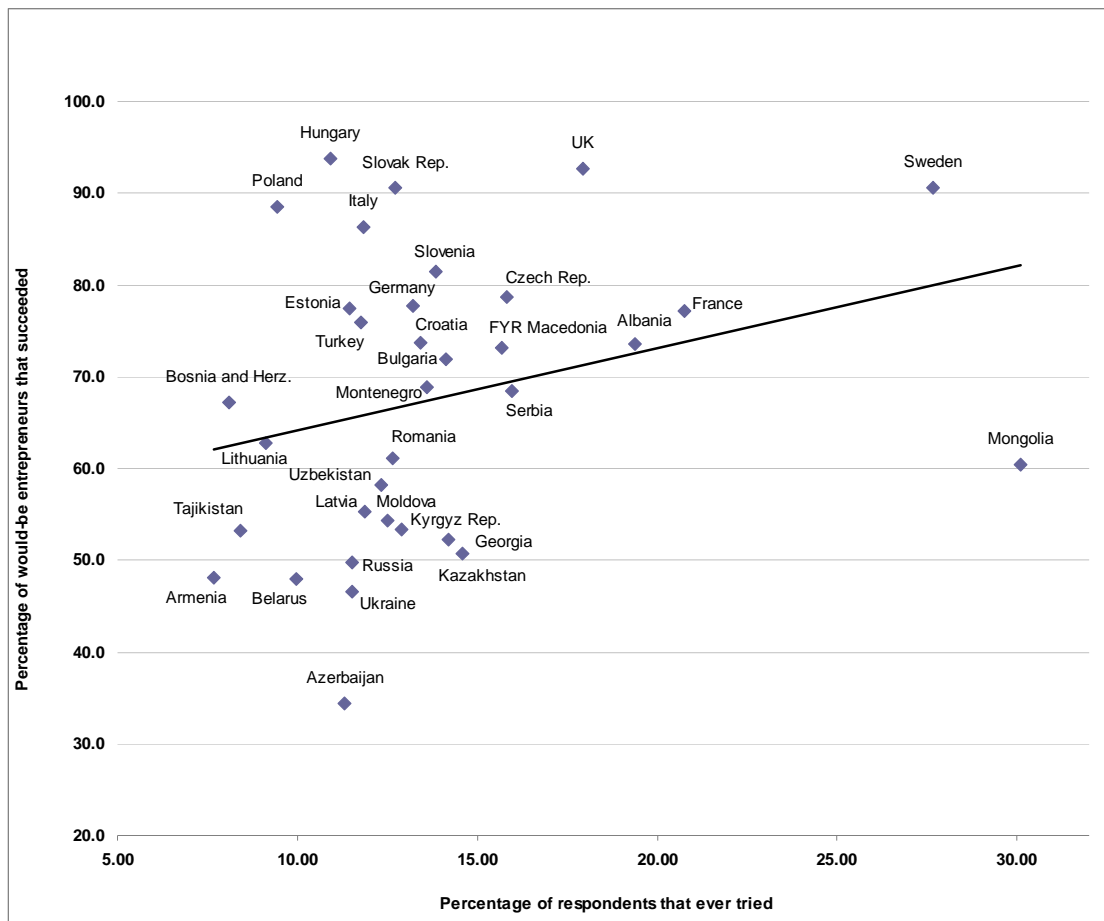
Note: For each country, this graph plots the proportion of the population who successfully set up a business. The horizontal red line indicates the average of the Western comparator countries (France, Germany, Italy, Sweden and the United Kingdom).

⁵Some of these data have already been used in previous chapters of the 2011 *Transition Report*. See Annex 1 for a full list and definitions of individual, country and regional variables, both from the LiTS and from other sources.

⁶These are France, Germany, Italy, Sweden and the United Kingdom.

The proportion of successful entrepreneurs shown in Chart 1 is the product of two components: the rate at which a respondent tries to start a business, and the rate at which he or she succeeds, conditional on trying.⁷ Chart 2 shows that there is a positive correlation between the proportion of respondents who ever tried to start a business and those who succeeded once they tried. Countries with frequent entrepreneurial start-up attempts also tend to be countries in which would-be entrepreneurs are more likely to be successful. The chart also demonstrates that the trial rate does not vary widely across Western and transition countries, with the exception of Sweden and Mongolia. However, the entrepreneurial success rate varies considerably between the Western comparator countries and the transition region, as well as within the region. While approximately 13 per cent of would-be entrepreneurs tried to start a business in Germany and the Kyrgyz Republic, the German success rate was almost 78 per cent compared with only 53 per cent in the Kyrgyz Republic. Similarly, although respondents in Kazakhstan and Slovenia were equally likely to try to start a business, Slovenians were nearly 30 percentage points more likely to succeed.

Chart 2
Business start-up trial and success rates are correlated



Source: LiTS.

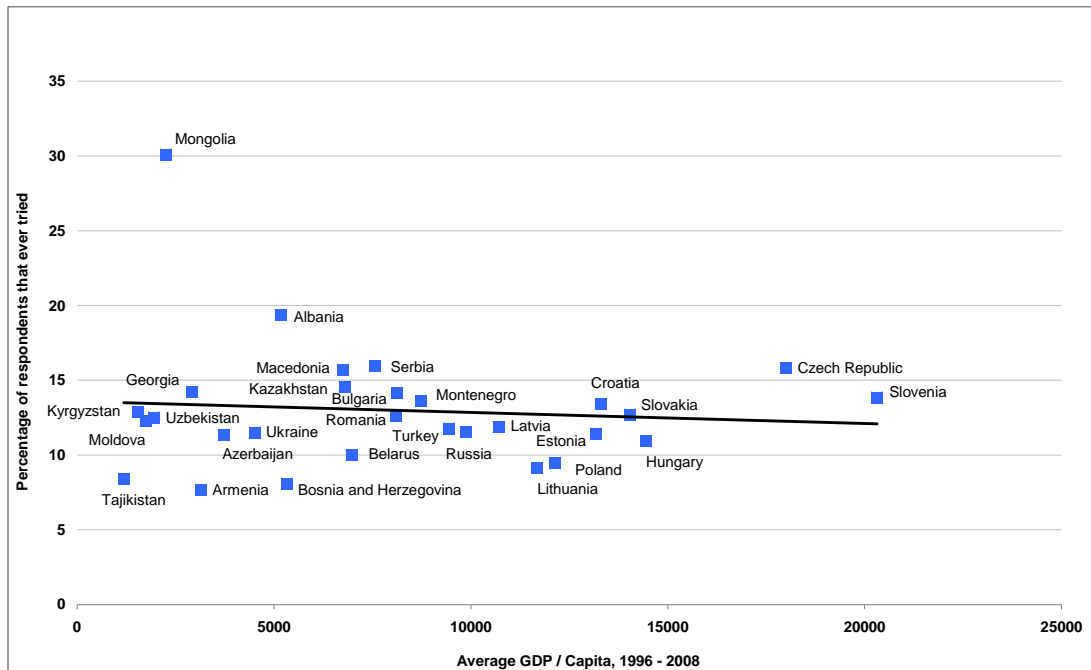
Note: For each country, this graph plots the proportion of respondents who ever tried to set up a business against the proportion of those who were successful starters.

⁷ In other words, the share of successful business starters out of the whole population is a simple product of the share of people who try to set up a business out of the whole population and the share of those who succeed in setting it up out of the subset of people who have tried.

Are these differences related to cross-country variation in the level of economic development? Charts 3a and 3b plot the country-level entrepreneurial trial and success rates, respectively, against GDP per capita. While the proportion of people who attempted to start a business is not correlated with per capita income, economic development seems to be associated with a higher likelihood that would-be entrepreneurs will succeed. This may mean that richer countries provide a better environment for successful entrepreneurship or that countries that foster successful entrepreneurship stand a better chance of becoming wealthy. Country wealth is probably correlated with other country-level characteristics that may have an impact on entrepreneurship, such as financial development and the quality of institutions. In addition, the individual characteristics of respondents may matter, as well as regional-level controls. The next section shows that when all these factors are taken into account, there is no longer a positive effect of GDP per capita on entrepreneurship.

Chart 3a

In most transition countries, fewer than 15 per cent of individuals try to set up a business

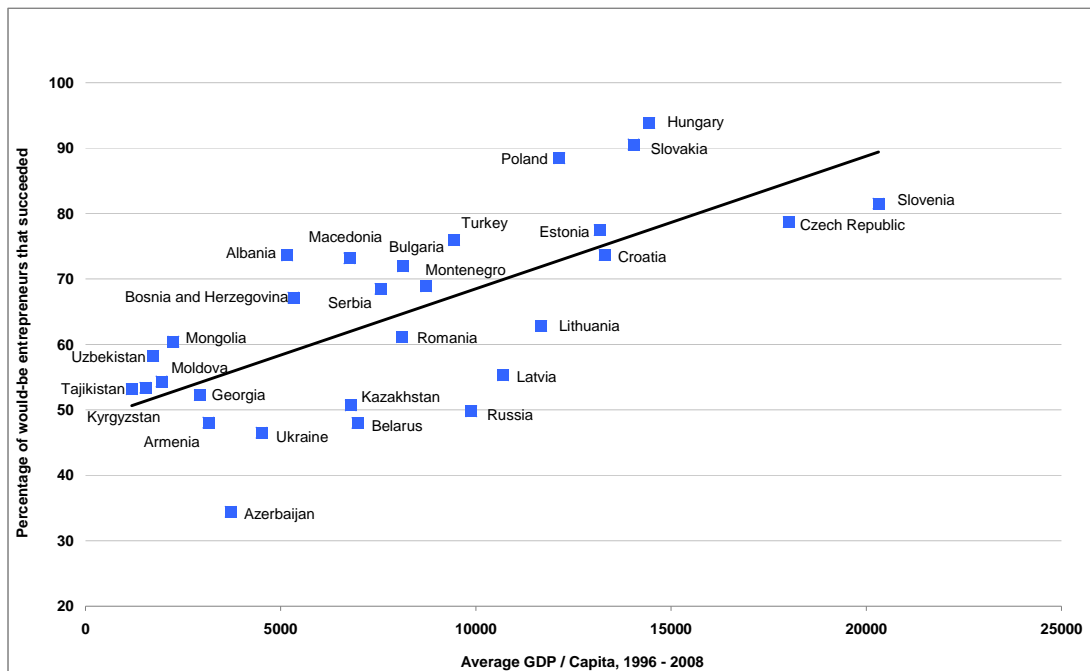


Source: LiTS.

Note: For each country, this graph plots the proportion of the population that has ever tried to set up a business against the 1996-2008 average of GDP per capita, and includes a trend line.

Chart 3b

The success rate of business start-ups is strongly correlated with income per capita



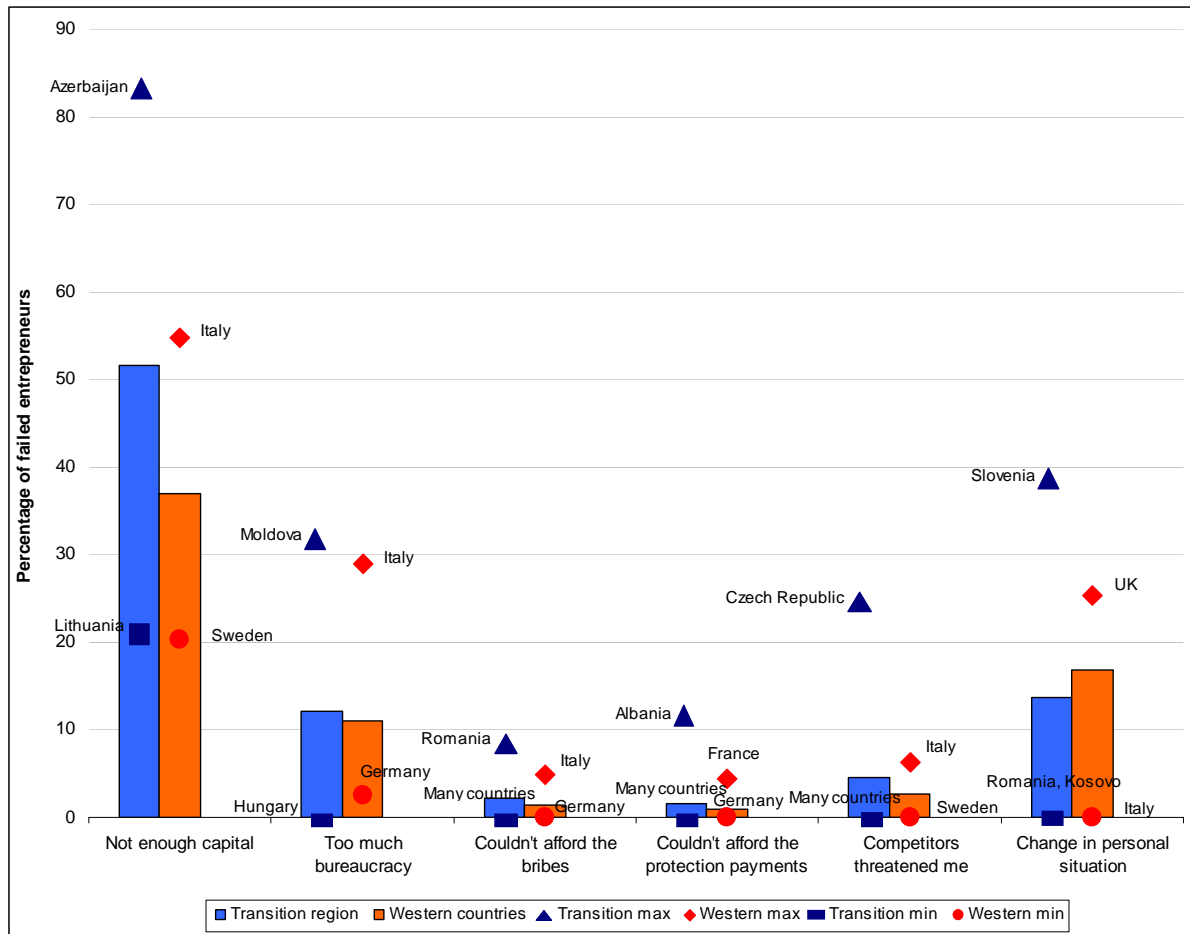
Source: LiTS.

Note: For each country, this graph plots the proportion of successful business starters out of those who tried against the 1996-2008 average of GDP per capita, and includes a trend line.

Chart 4 indicates that insufficient capital was the most frequently cited reason for entrepreneurial failure in both the transition region and the Western comparators, and even more so in the transition countries. This could either be because individuals and their families did not have enough funds to successfully start a business, or because respondents lived in regions or countries with underdeveloped financial systems, making it harder for would-be entrepreneurs to borrow. Bureaucratic impediments were the next most commonly cited reason for failing to set up a business. The relative importance of these constraints differs across transition countries (see Chart 5). While the threat from competition was reported as the principal reason for business failure in the Czech Republic, over 80 per cent of unsuccessful entrepreneurs in Azerbaijan, Mongolia and Turkey cited capital constraints.

Chart 4

Insufficient capital is the most frequently cited reason for failing to set up a business

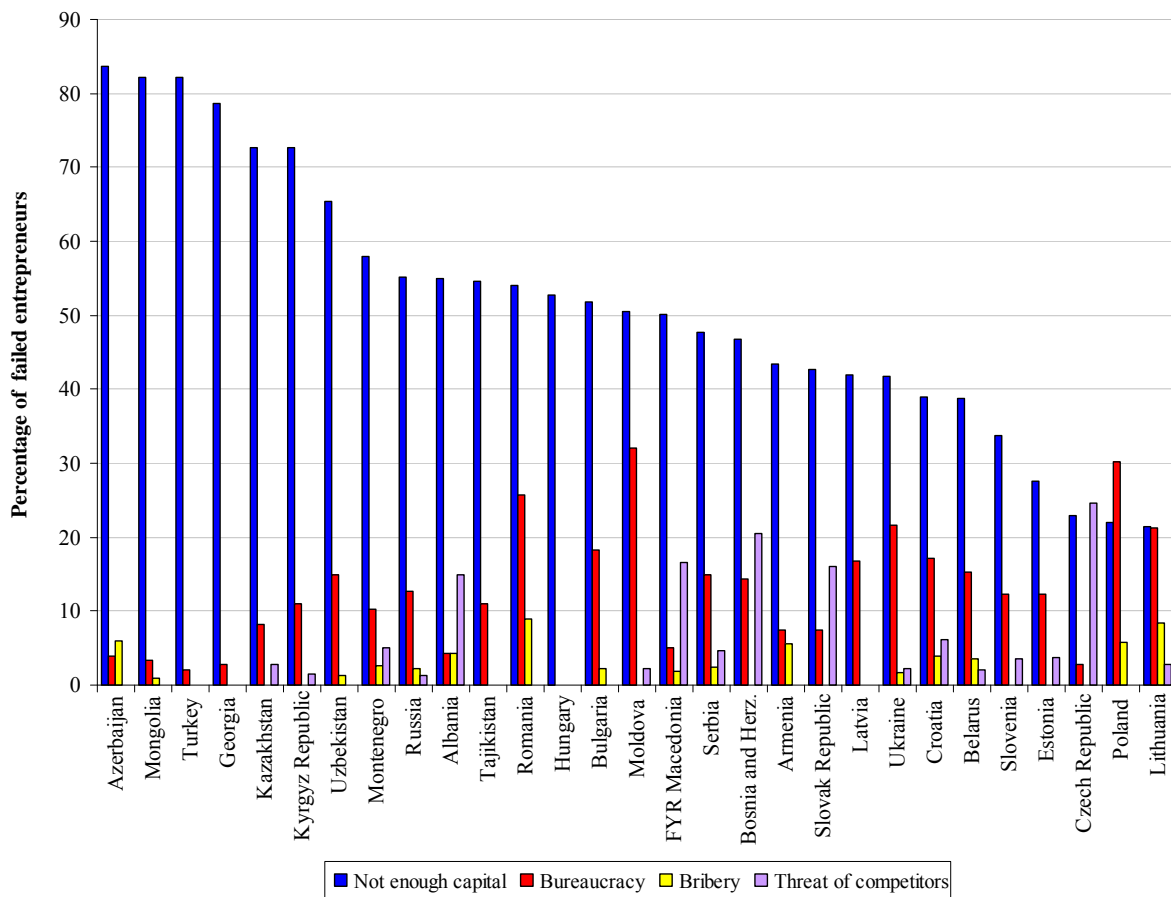


Source: LiTS.

This graph compares the transition region to the five Western comparator countries. For each cited reason, the proportion of respondents who listed that specific reason for not managing to set up a business is calculated against all respondents who tried to set up a business and failed.

Chart 5

Insufficient capital is a problem for over 80 per cent in Azerbaijan, Mongolia and Turkey



Source: LiTS.

Note: For each country, this graph plots the proportion of respondents who listed a specific reason for not managing to set up a business, calculated against all respondents who tried to set up a business and failed.

3. Empirical results

In the remainder of this paper we employ multivariate regression techniques to jointly analyse the impact of individual, regional and country-level characteristics on entrepreneurship (see Annex 1 for a summary of the techniques used). The focus is on what determines the likelihood that a household will report a successful attempt to start a business – and on the two steps that lead to this outcome: (i) why respondents try to start a business; and (ii) why they are successful in the venture, compared with others who try but fail. The results for (i) and (ii) can help identify relevant policies that may encourage either more start-up attempts or make it easier for would-be entrepreneurs to succeed. At the same time, studying the determinants of overall entrepreneurial success can be useful for policy-makers who want to know the combined impact of a factor that may affect both the propensity to try to start a business and the probability of success.

Table 1: Entrepreneurial trial and success rates

Dependent variable	With individual and country controls			With individual, country and regional controls		
	Trial	Success Trial	Success	Trial	Success Trial	Success
	[1]	[2]	[3]	[4]	[5]	[6]
Individual Variables						
Borrowed successfully		0.147*** (0.018)			0.140*** (0.017)	
Borrowed unsuccessfully		-0.363*** (0.031)			-0.302*** (0.027)	
Father's Education	0.001 (0.001)	0.004 (0.003)	0.002 (0.001)	0.002** (0.001)	0.004 (0.003)	0.002** (0.001)
Member Communist Party	0.031* (0.016)	0.038 (0.033)	0.022* (0.011)	0.032** (0.015)	0.058* (0.031)	0.025** (0.011)
Secondary Education	0.030*** (0.009)	-0.004 (0.040)	0.022*** (0.008)	0.025** (0.010)	0.017 (0.033)	0.020** (0.008)
Bachelor or Master Education	0.066*** (0.012)	0.017 (0.046)	0.048*** (0.010)	0.053*** (0.013)	0.050 (0.037)	0.043*** (0.010)
Good Health	-0.002 (0.008)	0.103*** (0.038)	0.013* (0.007)	-0.004 (0.006)	0.080** (0.035)	0.009 (0.006)
Male	0.064*** (0.009)	-0.012 (0.016)	0.040*** (0.008)	0.065*** (0.008)	-0.009 (0.019)	0.039*** (0.007)
Age	0.009*** (0.001)		0.006*** (0.001)	0.009*** (0.001)		0.006*** (0.001)
Age^2	-0.000*** (0.000)		-0.000*** (0.000)	-0.000*** (0.000)		-0.000*** (0.000)
Age at Trial		0.001 (0.002)			0.001 (0.002)	
Age at Trial^2		-0.000 (0.000)			-0.000 (0.000)	
Vote	0.017* (0.009)	0.041* (0.021)	0.015** (0.007)	0.017** (0.008)	0.022 (0.020)	0.015** (0.006)
Urban	0.005 (0.009)	-0.013 (0.017)	0.001 (0.008)	0.000 (0.007)	-0.006 (0.015)	0.001 (0.006)
Willingness to Move	0.057*** (0.010)	-0.076*** (0.020)	0.020** (0.009)	0.051*** (0.009)	-0.068*** (0.016)	0.015* (0.009)
Risk Score	0.020*** (0.002)	0.019*** (0.006)	0.017*** (0.002)	0.021*** (0.002)	0.020*** (0.005)	0.017*** (0.002)
Trust Score	-0.001 (0.003)	0.001 (0.010)	-0.000 (0.002)	-0.002 (0.002)	-0.000 (0.009)	-0.001 (0.002)

Table 1 continued

Country variables						
# Bank branches / 1,000 pop, 1996 - 2008	0.293*	0.191	0.206*	-0.044	0.017	-0.052
	(0.168)	(0.202)	(0.122)	(0.047)	(0.069)	(0.045)
ln(GDP/capita), 1996 - 2008	-0.029*	0.011	-0.017	-0.015*	-0.012	-0.011*
	(0.015)	(0.034)	(0.011)	(0.008)	(0.013)	(0.006)
Procedures start business, 2004 -11	-0.010***	-0.011	-0.007***	-0.002	-0.000	-0.000
	(0.004)	(0.009)	(0.003)	(0.002)	(0.002)	(0.002)
National average corruption	-0.005	-0.058	-0.010	-0.007	-0.022**	-0.007
	(0.014)	(0.069)	(0.016)	(0.009)	(0.009)	(0.007)
National average liberties	0.001	0.024***	0.004***	0.002**	0.005**	0.003***
	(0.002)	(0.005)	(0.001)	(0.001)	(0.002)	(0.001)
Standard deviation of inflation, 1996-2008	0.013**	0.017	0.012**	-0.007*	0.002	-0.003
	(0.005)	(0.022)	(0.005)	(0.004)	(0.006)	(0.003)
Exports, 1996 - 2008	0.067	-0.002	0.031	0.058***	0.041	0.022
	(0.083)	(0.169)	(0.068)	(0.020)	(0.041)	(0.017)
Trademarks, 1996 - 2008	-0.018	0.023	-0.006	-0.003	-0.005	0.002
	(0.016)	(0.038)	(0.013)	(0.005)	(0.011)	(0.004)
Regional variables						
Regional average trial				0.988***	0.040	0.664***
				(0.044)	(0.046)	(0.069)
Regional average success				-0.006	0.946***	0.114***
				(0.009)	(0.036)	(0.018)
Regional demeaned corruption				-0.014**	-0.010	-0.010**
				(0.006)	(0.014)	(0.005)
Regional demeaned liberties				0.000	0.002	0.001
				(0.001)	(0.002)	(0.001)
Regional average relative wealth				-0.015***	-0.007	-0.009**
				(0.004)	(0.007)	(0.004)
Respondents completing interview	19,650	2,784	19,650	19,541	2,784	19,541
R squared	0.074	0.161	0.059	0.101	0.253	0.082

Source: LiTS, World Development Indicators, Doing Business, EBRD Banking Survey.

Note: Standard errors in parentheses are clustered at the country level. Estimation is done by OLS. The dependent variables are as follows: in regressions (1) and (4) Trial, which is a dummy variable equal to 1 if the respondent has ever tried to set up a business; in regressions (2) and (5) Success conditional on Trial, which is a dummy variable equal to 1 if the respondent has tried and succeeded in setting up a business; in regressions (3) and (6) Success, which is a dummy variable equal to 1 if the respondent has succeeded in setting up a business, regardless if he or she has tried or not. Sample: respondents from all transition countries. *** significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

The results presented in Table 1 point to a number of drivers of entrepreneurial activity. Interestingly, factors that contribute to a higher likelihood of an individual trying to set up a business do not necessarily increase his or her chances of success, and vice versa. It seems that there is no single factor that increases both the entrepreneurial trial and success rates in the transition region, and that multiple approaches are necessary to help raise the number of successful start-ups. The policy implications are discussed in the conclusion of this paper.

The first three columns in Table 1 present results from regressions including only country-level and individual variables. In columns [4], [5] and [6] the analysis is augmented with regional-level variables. There is a strong *a priori* case for having regional variables in the regression: for example, institutional quality varies across regions rather than just at the country level, and regional clusters of entrepreneurs may make it easier for new entrepreneurial activity to develop. However, for many of these regional variables – particularly variables capturing institutions – there are no reliable data sources. The only means of measuring these factors is by aggregating the views of LiTS respondents located in a particular region. This in turn could be a source of error, because the LiTS was designed to be representative at the country rather than regional level.⁸ Each of these two approaches – a regression model that includes possibly mismeasured regional variables, and one that ignores the regional dimension altogether – is imperfect, but considering both allows for a comparison of the results and their robustness.

Individual-level characteristics

Some of the most interesting results in Table 1 relate to the determinants of entrepreneurship measured at the individual level by the LiTS, including: the ability to access capital; income; education; gender; perceptions about the institutional environment; demographic variables; and individual attitudes. These results are largely consistent across the two types of regressions considered in the table, in that they are not significantly affected by the presence of regional variables. These findings are summarised below.

Access to capital, income and wealth

The LiTS asked all individuals who tried to set up a business whether they had attempted to borrow money for the venture and, if so, whether they had obtained a loan. Access to capital emerged as the single strongest predictor of an entrepreneur's success. Individuals who tried to start a business and were able to borrow from a bank, non-governmental organisation (NGO), microfinance institution or from informal sources were 14-15 percentage points more likely to be successful, compared with those who did not try to borrow. In contrast, respondents who were unable to borrow from any of these sources were 30-36 percentage points more likely to experience business failure, relative to the same reference group. The success rate was therefore highest among those who sought, and managed, to borrow during their start-up attempt, followed by those business starters who did not try to borrow (presumably because their own savings or income were deemed sufficient to finance their plans), and lowest for those who attempted to borrow and failed.

Importantly, the large variations in the probability of business success across these groups are likely to reflect the effect of access to borrowing *per se* as well as the fact that individuals who tried to borrow but were rejected may have had a less worthy business idea than those

⁸Comparable regional data for all of the EBRD countries of operations included in the survey are unavailable from any other sources. In addition, regional LiTS data have been used in other published studies (see Grosjean, 2011).

who were granted a loan. The analysis cannot distinguish between these two effects, although country-level results on financial development (see below) suggest that the access to finance effect must have been present.

Household income and wealth also appear to be important determinants of entrepreneurial activity. However, they are difficult to measure and their effect appears to be weaker than that of access to finance. Income and wealth at the time of the survey likely do not represent well those variables measured at the time of the business attempt. Therefore, the father's education level and the respondent's membership in the Communist Party⁹ are used as proxies for individual income at the time of the entrepreneurial attempt (the latter may also capture the importance of social networks in addition to income).¹⁰ Table 1 shows that individuals who were richer and better socially connected at the time of their last start-up attempt were more likely to pursue an entrepreneurial activity, but the effects are not estimated precisely. In particular, a respondent who was a member of the Communist Party was about 3 percentage points more likely to try to start a business, and about 2.5 percentage points more likely to be successful, relative to the total population (see columns [1], [3], [4] and [6]).

Taken together, these results highlight the importance of financial development, economic development and social capital in encouraging entrepreneurial activities. The three processes are intertwined, as financial development has been shown to lead to growth, while social capital is related to differences in economic development.¹¹

Education and health

Table 1 shows that education positively affects the probability of trying to be an entrepreneur, but does not have a significant effect on the likelihood that a business start-up will be successful. Respondents who completed secondary school were about 2.2 to 3.0 percentage points more likely to try to set up a business than those with only primary or no education. A completed university education (Bachelor or Master's degree) raised this probability to between 5.3 and 6.6 percentage points (columns [1] and [4]). These effects feed through to the overall rate of successful business start-ups (columns [3] and [6]), raising it by about 2.0 and 4.8 percentage points, respectively.

Education is likely to be a proxy for other individual characteristics that encourage entrepreneurial attempts, such as greater self-confidence or perceived ability. Formal education may be less important when it comes to success. In itself, it may not teach people the business acumen necessary for success, and may not be necessary for the particular types of businesses that LiTS respondents operate. For example, an entrepreneur wishing to establish a beauty salon may not require secondary or university education in order to successfully set up the business.

The results also indicate a fairly prominent role for health. According to the analysis, respondents who consider themselves to be in good health are 8.0 to 10.3 percentage points more likely to be successful, conditional on trying. The effect on overall entrepreneurial success (taking into account trying) is smaller however, and only marginally statistically significant.

⁹ Both of these measures are very likely to be correlated with the income and wealth of a respondent at any point in his or her life, including at the time when he or she may have tried to start a business.

¹⁰Djankov et al. (2005, 2007 and 2008) use both of these measures in an analysis of entrepreneurship in Russia, China and Brazil.

¹¹See Arcand, Berkes and Panizza (2011) and Putnam (1993).

Demographic and social variables

The analysis also considers the impact of gender, age, whether a respondent voted in the previous election, and urban residence. The likelihood of voting is included as it may be correlated with several omitted individual characteristics relevant to entrepreneurship.¹²

Men are more likely to try to start a business, but female entrepreneurs are equally likely to succeed. Table 1 shows that when it comes to the trial rate, the gender difference is 6.5 percentage points, but there is no significant difference when success, conditional on trying, is considered. There could be several reasons why women might be less willing to try entrepreneurial activities: they may have alternative working preferences (due to child care considerations, for example), or they may anticipate discrimination when it comes to taking out a loan. Even though men are no more likely to succeed in business than women who try, the higher trial rate among men translates to a higher proportion (by about 4 percentage points) of successful male business starters in the population as a whole.

At the individual level, the analysis reveals that age has an inverted U-shape effect on the likelihood of having ever tried to start up a business. The likelihood increases until about the age of 50 and drops off after that. Since the cumulative likelihood of having tried to start a business increases over time, this suggests that relatively younger individuals are more likely to attempt an entrepreneurial venture. Also, respondents who voted in the previous election are around 2 percentage points more likely to attempt to start a business, and 2.2 to 4.1 percentage points more likely to succeed, although the effects are not precisely estimated.

Individual attitudes

Risk-tolerant respondents are more likely to both try and succeed at starting a business. The correlation is quite large and highly statistically significant. For example, the 5 per cent of LiTS respondents who reported a maximum willingness to take risks (on a 1 to 10-point scale) tended to be around 10 percentage points more likely to both try and succeed in starting a business than those who reported only an average willingness (just under 5 on the scale).

Willingness to relocate also has a positive effect on trying to start a business (despite a negative effect on success), raising the probability of successful entrepreneurship by about 2 percentage points. People who are willing to make sacrifices for their business idea may be more likely to try to start a business but, once they have successfully launched it, they may be less inclined than others to move from their current location. This would explain the lack of a positive correlation between the willingness to move and success, conditional on trying.

Lastly, trusting other people does not seem to have an independent impact on entrepreneurial activities in the transition region.

Country-level variables

Many of the individual-level characteristics discussed above also reflect country-level factors, such as the level of financial development, the quality of institutions, the quality of the educational system or the general wealth of the country. As a result, these factors are influenced by country-level policies.

There are, nonetheless, two reasons why including additional direct measures of country-level variables may contribute to the analysis. First, individual perceptions and experiences

¹²Research has shown that voting is correlated with a multitude of individual-level characteristics that are not fully captured by the LiTS survey, including race, class, and ability.

are not the only, and not necessarily the best, measures of country-level factors that influence entrepreneurship. For example, if a would-be entrepreneur cannot obtain financing, this could either reflect a poorly developed financial system or a weak business idea, or both. Second, several aspects of the national business environment that might affect entrepreneurship may not have been captured by any of the individual characteristics considered thus far. This includes some institutional factors for which there is perception-based data in the LiTS itself, such as corruption, but also aspects of the business environment for which there is data from other sources (including the World Development Indicators, the Doing Business database and the EBRD Banking survey), such as macroeconomic stability, the size of export markets, the degree of technological development within a country and the bureaucratic obstacles in setting up a new business.

Accordingly, the following country-level variables are considered: (i) the number of bank branches relative to the population as a country-level proxy of financial development;¹³ (ii) macroeconomic variables, such as the standard deviation of inflation, exports as a share of GDP, and the number of trademarks per 10,000 people; and (iii) institutional measures, including corruption and civil liberties (both measured by individual perceptions from the LiTS itself),¹⁴ and the number of administrative procedures necessary to start a business. In addition, per-capita income is included as a general control. With the exception of the variables that are derived from LiTS responses, all variables are included in the form of long-run (1996-2008) averages, in line with the fact that the entrepreneurial experiences of LiTS respondents may stretch well back in time (given that they were asked whether they had *ever* tried to set up a business).¹⁵

The main outcome is that few of these country-level variables appear to have statistically significant effects that are consistent across specifications. The main exceptions are institutional variables. A 10-percentage point rise in the civil liberties index has a significant impact on the probability of business success ranging between 0.5 and 2.4 percentage points, while the effect of this variable on the entrepreneurial trial rate is smaller but still positive. Most other institutional variables, such as the number of procedures required to start a business and average corruption perceptions, also work in the expected direction, although they are statistically significant only in some regressions.

Financial development, as proxied by the penetration of bank branches, appears to have a large influence in the expected direction in regressions [1] and [3], but this is only marginally statistically significant and disappears when regional controls are included. Among the macroeconomic controls, only the coefficient on the share of exports out of GDP has the expected positive sign across most specifications, but the magnitude of the effect is small and statistically significant only in regression [4]. Lastly, GDP per capita appears to have a negative effect on the rate at which entrepreneurs try to start a business. However, this is only marginally statistically significant in regressions [1], [4] and [6] and not significant in the remaining specifications.

The results for GDP per capita are not necessarily surprising. Many of the variables that might generate the positive correlation between per capita income and entrepreneurship in the raw data – such as financial development, institutional quality, education and health – are already taken into account in the regression. The fact that the coefficient on per capita GDP

¹³This variable is averaged over the period 1996-2008 and is from the EBRD Banking Survey.

¹⁴Since the LiTS is representative at the country level, individual perceptions of corruption and the extent to which formal institutions exist can be aggregated at the country level and included in the regressions.

¹⁵Due to data availability, the variable measuring the average number of procedures required to start a business is averaged over the period 2004-11.

turns negative in the presence of these variables may be because richer countries have fewer necessity entrepreneurs (see below). Similarly, the statistically weak effect of bank penetration may be because access to finance is already measured at the individual level in the regression. Lastly, the weak effect of macroeconomic variables could either be due to the fact that, as long-run averages, they are poor proxies for the environment prevailing at the time of a particular start-up attempt. Alternatively, these factors might be of secondary importance for new businesses, at least for the range of average values prevailing in transition countries during the 1996-2008 period, which was characterised by stability and steady growth in many countries.

Regional-level variables

At the regional level, the analysis presented in Table 1 focuses on two main questions. First, does a larger presence of entrepreneurs in a specific region induce more would-be entrepreneurs to attempt to set up businesses in that region, and does it increase their likelihood of success? This is referred to as regional *cluster effects*.¹⁶ Second, is there institutional variation at the regional level which affects entrepreneurship in the direction suggested by the country-level variables? Both of these effects appear to be present, with sometimes surprising strength.

To check for regional cluster effects, regional average success and trial rates were calculated from the individual LiTS responses and added to the list of explanatory variables. Table 1 shows that respondents are more likely to try setting up a business in regions that have a higher average trial rate, and are also more likely to succeed in regions that have a higher average success rate. The magnitude of these effects is large: a 10 percentage point rise in the regional trial rate makes respondents 9.9 percentage points more likely to try to start a business, and there is a nearly identical effect of the regional success rate on the individual likelihood of success, conditional on trying (columns [4] and [5]). This could suggest either that there are positive spillovers from existing entrepreneurial activity, or that cluster effects may be indicative of other regional-level factors that encourage entrepreneurship but are not explicitly measured in the analysis.

To study the potential effects of regional institutions, we include two variables capturing the differences in average perceptions of corruption and civil liberties, respectively, between LiTS respondents living in a particular region and the country as a whole. The results suggest that corruption perceptions at the regional level have a significant effect on discouraging would-be entrepreneurs: a 10 percentage point rise in regional corruption, relative to the country average, decreases the probability of an entrepreneurial attempt by 1.4 percentage points and that of a successful venture by 1.0 percentage point (columns [4] and [6]). In contrast, deviations (from the country mean) in the perception of civil liberties at the regional level do not seem to have an impact. This is perhaps because there is not much variation in these liberties at the regional level, and because their influence is already largely captured by the (highly statistically significant) national-level variable.

In addition, the results show that regional income, measured using aggregated individual measures of relative wealth,¹⁷ is again inversely related to entrepreneurial outcomes. As before, the interpretation for this may be that richer regions have fewer necessity entrepreneurs.

¹⁶See Giannetti and Simonov (2009), and Chen et al. (2010).

¹⁷This variable was not used at the individual level because of its volatility and concerns about its measurement. At the level of regional aggregates, these issues are less of a concern.

The contribution of regional variables to the explanatory capacity of the analysis can be gauged by comparing the *R squared*, which expresses the proportion of the overall variation in entrepreneurship that is attributable to the explanatory variables, in the regressions with and without the regional variables. Without regional variables, this share is low (as is typical for household data): for example, only about 7.4 per cent in the trial regression (column [1]) and 16.1 per cent in the success regression (column [3]). With regional variables, these shares increase to 10.1 and 25.3 per cent, respectively. This suggests that understanding the regional drivers of entrepreneurship in the transition region – and particularly, what is behind regional cluster effects – may be key in future research.

4. Robustness checks

Entrepreneurship: necessity or opportunity?

Before discussing the policy implications of the analysis presented thus far, it is necessary to confirm that the factors identified in Table 1 do in fact drive socially desirable forms of entrepreneurial activity – that is, promoting businesses with opportunities to grow or to support growth elsewhere in the economy – rather than just necessity entrepreneurship, in which individuals pursue self-employment due to the lack of other alternatives. While previous evidence suggests that necessity entrepreneurship is not detrimental to economic development and growth, and may in fact have benefits by increasing employment, its growth benefits are limited – because, for example, it is not based on new ideas and does not generate knowledge transfers.¹⁸ As a result, if the policies required for promoting opportunity entrepreneurship are at odds with those encouraging business starters in general (including necessity ones), policy-makers may wish to focus solely on the former category.

To ascertain whether this is the case, the regression analysis of the previous section was repeated on a sub-sample of respondents who declared that they *preferred* to be self-employed, and was compared with the results obtained from the entire sample. If an individual who has tried to start a business prefers self-employment to other types of work, he or she is more likely to be an opportunity entrepreneur.¹⁹ Conversely, a respondent who favours formal employment is more likely to become a business starter out of necessity.

The results of this analysis are shown in Table 2. Although there are differences in the magnitudes of some of the coefficients when the sample is restricted only to respondents preferring self-employment, the coefficient signs almost always agree across samples. One of the exceptions is GDP per capita, which has a positive coefficient (significantly so in regressions [4] and [6]). This is encouraging, as the negative coefficient in the previous regression was interpreted as reflecting the presence of necessity entrepreneurs, which should no longer be the case in the smaller sample. These results suggest that any policy conclusions based on analysis in the previous section should apply also to opportunity entrepreneurs.

¹⁸See Acs and Varga (2005).

¹⁹Although the survey only provides information about a respondent's *current* preference for self-employment, such a measure may actually be more appropriate than using preferences for self-employment at the time when a business started. The measure we use captures respondents who like self-employment *ex post*, which may be more accurate than the *ex ante* measure since it is based on individuals' actual entrepreneurship experiences.

Table 2: Entrepreneurial trial and success rates among individuals that prefer to be self-employed

Dependent variable	With individual and country controls			With individual, country and regional controls		
	Trial	Success Trial	Success	Trial	Success Trial	Success
	[1]	[2]	[3]	[4]	[5]	[6]
Individual variables						
Borrowed successfully		0.092*** (0.025)			0.086*** (0.025)	
Borrowed unsuccessfully		-0.409*** (0.056)			-0.364*** (0.052)	
Father's education	0.005* (0.003)	0.005* (0.003)	0.006*** (0.002)	0.007*** (0.002)	0.004* (0.003)	0.007*** (0.002)
Member Communist Party	0.102*** (0.033)	0.082 (0.055)	0.102*** (0.039)	0.106*** (0.034)	0.097* (0.054)	0.107*** (0.038)
Secondary education	0.060*** (0.020)	0.017 (0.049)	0.058*** (0.021)	0.053*** (0.018)	0.020 (0.035)	0.049*** (0.015)
Bachelor or Master's education	0.103*** (0.021)	-0.017 (0.061)	0.078*** (0.024)	0.092*** (0.024)	0.007 (0.049)	0.067*** (0.022)
Good health	0.011 (0.020)	0.061 (0.047)	0.031* (0.018)	0.006 (0.019)	0.060 (0.045)	0.021 (0.018)
Male	0.072*** (0.022)	-0.025 (0.023)	0.050*** (0.019)	0.073*** (0.020)	-0.019 (0.024)	0.051*** (0.018)
Age	0.015*** (0.002)		0.012*** (0.002)	0.014*** (0.002)		0.012*** (0.002)
Age^2	-0.000*** (0.000)		-0.000*** (0.000)	-0.000*** (0.000)		-0.000*** (0.000)
Age at trial		0.002 (0.003)			0.001 (0.003)	
Age at trial^2		-0.000 (0.000)			-0.000 (0.000)	
Good health	0.011 (0.020)	0.061 (0.047)	0.031* (0.018)	0.006 (0.019)	0.060 (0.045)	0.021 (0.018)
Vote	0.022 (0.022)	0.078*** (0.028)	0.035* (0.018)	0.028 (0.019)	0.049* (0.029)	0.038** (0.015)
Urban	0.003 (0.018)	-0.023 (0.029)	-0.010 (0.017)	0.001 (0.017)	-0.008 (0.028)	-0.001 (0.018)
Willingness to move	0.025* (0.014)	-0.098*** (0.025)	-0.019 (0.015)	0.020 (0.013)	-0.086*** (0.023)	-0.021 (0.013)
Risk score	0.029*** (0.005)	0.021*** (0.006)	0.029*** (0.005)	0.031*** (0.005)	0.020*** (0.006)	0.029*** (0.005)
Trust score	0.002 (0.008)	-0.014 (0.012)	0.000 (0.007)	-0.000 (0.006)	-0.018 (0.012)	-0.002 (0.006)

Table 2 continued

Country variables						
# Bank branches / 1,000 pop, 1996 - 2008	0.460 (0.299)	-0.065 (0.188)	0.230 (0.263)	-0.012 (0.149)	-0.055 (0.103)	-0.124 (0.163)
ln(GDP/capita), 1996 - 2008	0.030 (0.024)	0.051 (0.035)	0.035 (0.025)	0.036** (0.015)	0.012 (0.019)	0.032** (0.015)
Procedures start business, 2004 -11	-0.014* (0.008)	-0.010 (0.010)	-0.011 (0.009)	-0.002 (0.005)	0.004 (0.005)	-0.000 (0.006)
National average corruption	0.030 (0.042)	0.012 (0.079)	0.031 (0.046)	0.012 (0.015)	-0.015 (0.019)	0.009 (0.017)
National average liberties	-0.001 (0.004)	0.019*** (0.005)	0.005 (0.004)	-0.000 (0.003)	-0.001 (0.003)	0.001 (0.002)
Standard deviation of inflation, 1996-2008	0.033 (0.021)	0.038* (0.021)	0.036 (0.027)	0.009 (0.017)	0.030*** (0.008)	0.018 (0.019)
Exports, 1996 - 2008	0.114 (0.205)	-0.121 (0.142)	0.058 (0.203)	0.200* (0.104)	0.013 (0.064)	0.161 (0.106)
Trademarks, 1996 - 2008	-0.014 (0.039)	0.034 (0.032)	0.008 (0.039)	-0.004 (0.019)	-0.005 (0.013)	0.002 (0.020)
Regional variables						
Regional average trial				1.376*** (0.078)	-0.027 (0.076)	0.981*** (0.087)
Regional average success				0.100* (0.054)	0.874*** (0.059)	0.290*** (0.061)
Regional demeaned corruption				-0.044*** (0.014)	-0.012 (0.017)	-0.048*** (0.011)
Regional demeaned liberties				0.001 (0.002)	0.010*** (0.003)	0.004** (0.002)
Regional average relative wealth				-0.014 (0.018)	0.004 (0.014)	-0.005 (0.015)
Respondents completing interview	4,447	1,226	4,447	4,419	1,226	4,419
R squared	0.102	0.179	0.105	0.148	0.274	0.150

Sources: LiTS, World Development Indicators, *Doing Business*, EBRD Banking Survey.

Note: Standard errors in parentheses are clustered at the country level. Estimation is done by OLS. The dependent variables are as follows: in regressions (1) and (4) Trial, which is a dummy variable equal to 1 if the respondent has ever tried to set up a business; in regressions (2) and (5) Success conditional on Trial, which is a dummy variable equal to 1 if the respondent has tried and succeeded in setting up a business; in regressions (3) and (6) Success, which is a dummy variable equal to 1 if the respondent has succeeded in setting up a business, regardless if he or she has tried. Sample: respondents from all transition countries who prefer to be self-employed. *** significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

Certain individual characteristics appear to have a stronger effect in the restricted sample. In particular, the impact of education on the propensity of individuals to start a business nearly doubles in the sample of respondents who prefer to be self-employed. The coefficients on the individual income variables, father's education and individual membership of the Communist Party, are also nearly three times higher in the regressions explaining the entrepreneurial trial rate, and double in the regressions explaining business success. The reason for this could be that opportunity entrepreneurs are more likely to establish bigger and more sophisticated enterprises, requiring a higher degree of education and investment, relative to necessity business starters. A formerly unemployed respondent is unlikely to have decided to run his or her own enterprise, for example, if it involves high start-up costs as well as specialised knowledge acquired through formal education.

Some of the regional variables also appear to have stronger effects in the restricted sample. A 10 percentage point rise in regional corruption, relative to the country average, decreases the probability of an entrepreneurial start-up attempt by 4.4 percentage points and of overall business success by close to 5 percentage points (the latter figure is just 1 percentage point in the full sample). Similarly, regional cluster effects appear to be even more important: the propensity of individuals to start a business out of opportunity rather than necessity in regions with high trial rates increases by 35 per cent (compare column [4] in Tables 1 and 2), and the coefficient on the average regional success rate more than doubles in the regression exploring the determinants of a successful business starter out of the total population (similarly compare column [6]). These results are intuitive: opportunity entrepreneurs are more likely to attract the attention of corrupt officials since they are more worthwhile targets for extracting bribes. And, as argued above, businesses that are created out of opportunity rather than necessity would be expected to generate higher knowledge spillovers, which could explain the increase in cluster effects.

Differences in determinants of entrepreneurship across the transition region

An important question for policy-makers is whether the findings in Tables 1 and 2 are applicable to different geographical groupings within the transition region. Table 3 replicates the analysis in Table 1 but breaks down the sample into those countries belonging to the CIS, the new EU member states and the five Western comparator countries. Because of limited variation at the country and regional levels, these disaggregated regressions are run without regional and country controls.²⁰

²⁰Instead, a full set of country "dummy variables" are included. Each assigns a value of 1 to observations belonging to a particular country and 0 otherwise.

Table 3: Entrepreneurial trial and success rates, by geographic region

Country sample Dependent variable	All countries			CIS			New EU		
	Trial	Success Trial	Success	Trial	Success Trial	Success	Trial	Success Trial	Success
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Individual variables									
Borrowed successfully		0.147*** (0.018)			0.109*** (0.039)			0.154*** (0.044)	
Borrowed unsuccessfully		-0.356*** (0.036)			-0.437*** (0.066)			-0.330*** (0.062)	
Father's education	0.003*** (0.001)	0.003 (0.003)	0.003*** (0.001)	0.003 (0.002)	0.000 (0.004)	0.002 (0.001)	0.003 (0.002)	0.010* (0.005)	0.004** (0.002)
Member Communist Party	0.037** (0.015)	0.062** (0.030)	0.030*** (0.011)	0.041 (0.031)	0.085* (0.049)	0.024* (0.014)	0.021 (0.022)	0.071 (0.049)	0.021 (0.020)
Secondary education	0.031*** (0.009)	0.029 (0.036)	0.025*** (0.008)	-0.007 (0.015)	-0.307*** (0.099)	-0.025* (0.015)	0.046*** (0.015)	0.018 (0.069)	0.029** (0.014)
Bachelor or Master's education	0.059*** (0.012)	0.055 (0.042)	0.047*** (0.010)	0.038** (0.019)	-0.257** (0.117)	0.008 (0.020)	0.081*** (0.021)	0.030 (0.091)	0.062*** (0.018)
Good health	-0.006 (0.007)	0.080** (0.034)	0.007 (0.006)	-0.016 (0.011)	0.086* (0.047)	0.005 (0.010)	-0.001 (0.013)	0.082 (0.069)	0.003 (0.012)
Male	0.064*** (0.008)	-0.015 (0.015)	0.038*** (0.007)	0.055*** (0.014)	0.009 (0.034)	0.029*** (0.009)	0.063*** (0.010)	0.002 (0.025)	0.045*** (0.006)
Age	0.009*** (0.001)		0.006*** (0.001)	0.007*** (0.001)		0.004*** (0.001)	0.011*** (0.002)		0.009*** (0.001)
Age^2	-0.000*** (0.000)		-0.000*** (0.000)	-0.000*** (0.000)		-0.000*** (0.000)	-0.000*** (0.000)		-0.000*** (0.000)
Age at trial		0.001 (0.002)			0.002 (0.004)			0.001 (0.002)	
Age at trial^2		-0.000 (0.000)			-0.000 (0.000)			0.000 (0.000)	
Vote	0.014 (0.009)	0.034* (0.020)	0.012* (0.007)	0.019* (0.011)	-0.000 (0.044)	0.007 (0.008)	0.030 (0.020)	0.081*** (0.025)	0.033** (0.015)
Urban	0.004 (0.007)	-0.002 (0.017)	0.002 (0.006)	0.007 (0.014)	0.017 (0.037)	0.009 (0.011)	0.009 (0.010)	-0.057* (0.034)	0.001 (0.010)
Willingness to move	0.054*** (0.009)	-0.085*** (0.017)	0.016** (0.008)	0.063*** (0.014)	-0.084** (0.040)	0.009* (0.006)	0.059*** (0.010)	-0.046*** (0.016)	0.035*** (0.010)
Risk score	0.020*** (0.002)	0.021*** (0.005)	0.017*** (0.002)	0.021*** (0.003)	0.027** (0.012)	0.015*** (0.003)	0.021*** (0.004)	0.016** (0.007)	0.020*** (0.004)
Trust score	-0.004** (0.002)	0.002 (0.009)	-0.002 (0.002)	-0.005** (0.002)	-0.006 (0.016)	-0.002 (0.002)	-0.002 (0.002)	0.004 (0.025)	-0.001 (0.004)
Country fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
Respondents completing interview	22,051	3,060	22,051	6,684	799	6,684	5,797	824	5,797
R squared	0.083	0.204	0.067	0.072	0.182	0.051	0.084	0.202	0.074

Source: LiTS.

Note: Standard errors in parentheses are clustered at the country level. Estimation is done by OLS. The dependent variables are as follows: in regressions (1), (4) and (7) Trial, which is a dummy variable equal to 1 if the respondent has ever tried to set up a business; in regressions (2), (5) and (8) Success conditional on Trial, which is a dummy variable equal to 1 if the respondent has tried and succeeded in setting up a business; in regressions (3), (6) and (9) Success, which is a dummy variable equal to 1 if the respondent has succeeded in setting up a business, regardless if he or she has tried or not. All regressions include country dummies. Sample: All transition countries (regressions 1-3); CIS countries (regressions 4-6); New members of the EU (regressions 7 - 9). *** significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

While most of the signs and magnitudes are consistent – for example, the analysis confirms the importance of individual borrowing constraints across both regions – some significant differences emerge. The most notable concerns the impact of higher education: secondary education does not seem to have an effect on the entrepreneurial trial rate in the CIS region, while the coefficient on CIS university education in the trial regressions is just two-thirds of the estimate for the overall sample. Secondary and higher education even appear to have a negative impact on entrepreneurial success in the CIS region. This finding is puzzling, and could point to problems with the quality of post-primary education in the CIS countries.

Other interesting differences relate to membership in the Communist Party, which has a stronger effect on the probability that an entrepreneur will be successful in the former CIS region than in the new EU region (perhaps reflecting a more pronounced impact of communism on individual income and social networks in the past). A respondent's willingness to relocate decreases the likelihood of entrepreneurial success by 4.6 percentage points in the new EU countries, and by almost double that in the CIS region and in the overall sample. Willingness to take risks appears to be more important for entrepreneurial success, conditional on trying, in the CIS countries than in the new EU members.

5. Conclusion

What are the characteristics of successful business starters in the transition region? And what can policy-makers do to encourage more entrepreneurial activity? We find a number of drivers of business start-up attempts and success at the individual, regional and country levels, many of which suggest ample opportunities for policy-makers to get involved.

Expanding the availability of credit appears to be the most important factor in increasing the entrepreneurial success rate and should rank highly on the policy agenda. The results also show that women are less likely to try to start a business, even though they are no less successful than their male counterparts when they try. This may argue for greater support, including lending, to encourage potential female entrepreneurs. Such a policy will likely increase not only their own welfare, but also that of other family members and could be a source of economic growth.

We also find that more educated respondents are more likely to try entrepreneurial activities. Interestingly, however, such individuals appear no more likely to succeed, conditional on trying, perhaps because the quality or relevance of post-secondary education in the transition region is not sufficient to affect business success, especially in CIS countries. While the findings of this paper therefore support the general case for more and better education, it is important to understand why higher education does not seem to promote entrepreneurial success in the region, and what can be done about it. This poses a challenge to both researchers and policy-makers.

Lastly, the results lend strong support to the theory that entrepreneurship is shaped by regional factors, including regional institutions that benefit entrepreneurial activity (by reducing corruption, for example). This is an encouraging finding, since regional institutions may be easier to reform or incentivise than those at the national level. In addition, higher levels of entrepreneurship in a region seem to encourage even more start-up activity. This result requires further research, as it is not completely clear from the analysis whether a higher presence of entrepreneurs reflects genuine spillover effects or merely better business conditions that are not directly measurable. If it is the former, then policy-makers may be advised to encourage entrepreneurial activity in regions that already exhibit higher rates of enterprise start-ups. This is an uncomfortable conclusion, insofar as it implies that differences in living standards across regions could be exacerbated. However, entrepreneurial success in some regions is likely to raise growth and employment for a country as a whole.

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Annex 1

Regression techniques and robustness checks used in the analysis

In each household interviewed in the LiTS, a randomly chosen adult respondent was asked two separate questions related to entrepreneurship: if he or she had ever tried to set up a business; and if he or she had actually succeeded in doing so at some point in the past. Based on these two questions, the LiTS data allow for the separate analysis of (i) what affects the individual probabilities of becoming a *would-be* entrepreneur (that is, a respondent who has tried to set up a business); (ii) what affects the individual probabilities of becoming an *actual* entrepreneur *conditional* on trying; and (iii) the determinants of both trying and succeeding, that is, of the *unconditional* probability of entrepreneurial success. In Tables 1, 2 and 3 the results of these three analyses are shown for a variety of samples and potential determinants.

All regressions underlying these tables assume a *linear probability model*, which is estimated using ordinary least squares (OLS). In addition, three checks are conducted to verify that the main results are robust to the technique used:

- estimation of all specifications assuming a probit model, using maximum likelihood
- estimation of all specifications assuming a linear probability model calculated using two-stage least squares, treating GDP per capita as endogenous
- estimation of the probability of success conditional on trying using a Heckman selection model.

The estimation models and assumptions underlying the main regression and robustness checks are described briefly below.

Regression techniques

The following linear probability models are estimated. These regressions provide results that are similar to, but easier to interpret than, a probit model, as in the OLS model each coefficient can be interpreted as a constant marginal effect of a determinant on the probability of the outcome shown on the left-hand side of the equations that follow:

$$(1) \text{ Trial}_{i,r,k} = \delta_0 + \mathbf{X}_{i,r,k} \delta_1 + \mathbf{Y}_{r,k} \delta_2 + \mathbf{Z}_k \delta_3 + \varepsilon_{i,r,k}$$

$$(2) \text{ Success}_{i,r,k} \mid \text{ Trial}_{i,r,k} = \gamma_0 + \mathbf{X}_{i,r,k}^* \gamma_1 + \mathbf{Y}_{r,k} \gamma_2 + \mathbf{Z}_k \gamma_3 + \eta_{i,r,k}$$

$$(3) \text{ Success}_{i,r,k} = \rho_0 + \mathbf{X}_{i,r,k} \rho_1 + \mathbf{Y}_{r,k} \rho_2 + \mathbf{Z}_k \rho_3 + \xi_{i,r,k},$$

where $\text{Trial}_{i,r,k}$ is a dummy variable equal to 1 if individual i from region r in country k has tried to set up a business, and $\text{Success}_{i,r,k}$ is a dummy variable equal to 1 if the individual has succeeded in setting up a business. To allow for possible correlations among the answers of individuals living in the same country, all standard errors, $\varepsilon_{i,r,k}$, $\eta_{i,r,k}$, $\xi_{i,r,k}$ are clustered at the country level.

$\mathbf{X}_{i,r,k}$ and $\mathbf{X}^*_{i,r,k}$ are vectors of individual level variables (such as age, gender, education; see Table A.1). As respondents who tried to set up a business were asked additional questions, $\mathbf{X}^*_{i,r,k}$ contains additional variables to $\mathbf{X}_{i,r,k}$: age at time of trial instead of age at the time of interview, and dummy variables set to unity if the potential entrepreneur tried to borrow money successfully or not.

$\mathbf{Y}_{r,k}$ is a vector of regional level variables (see Table A.1) obtained by calculating the regional averages or the regional deviations from country averages of variables contained in the LiTS. Although the survey is not representative at the regional level, the averages can nevertheless be useful proxies, for example, the average trial and success rate proxy for how entrepreneurial a region is.

\mathbf{Z}_k is a vector of country level variables (see Table A.1) that capture the macroeconomic and country-wide environment that entrepreneurs likely faced at the time of their trial and potential success.

Robustness checks

In addition to re-estimating the main regressions using the probit model, two alternative estimation techniques are used.

Instrumental variables approach

GDP per capita is a potentially endogenous variable as it can be correlated with omitted variables that are not captured by the LiTS. In addition, there may be reverse causality between GDP per capita and entrepreneurship, as high rates of entrepreneurship may increase a country's income.

In order to isolate the exogenous variation in GDP per capita, the results from Table 1 are re-estimated using two-stage least squares. In the first stage, the average GDP per capita of neighbouring countries, weighted by their respective border length, is included as an instrument for a country's GDP per capita (in the spirit of Acemoglu et al. 2008). This instrument is a strong predictor of a country's own GDP per capita. In the second stage the regression results turn out broadly similar to those in Table 1.

Heckman correction

Regressions (1) and (2) constitute a two-part model (TPM). The estimates of the TPM can be used to disentangle the independent effects that the explanatory variables have on the two parts of the entrepreneurship process (trial and success). In contrast, regression (3) combines the two outcomes and looks at overall success by considering $Success_{i,r,k}$ to be 0 for those individuals who have never tried to set up a business.

From a policy point of view, all three regression specifications are of interest. However, OLS estimates of (2) are likely subject to selection bias: since regression (2) provides the conditional estimate of the probability of being an actual entrepreneur, relative only to those respondents who have chosen to try to start a business, its results may not be valid for all respondents. For example, the positive impact of a father's education in the regression estimating success, conditional on trial, may simply reflect the fact that richer and more socially connected respondents are more likely to *try* to start a business. Moreover, the results in regression (2) may be biased due to the impact of individual characteristics that are not captured by the survey. For example, Table 1 shows that risk-tolerant respondents are more likely to try to start a business and to succeed at doing so. However, these two samples may also include successful entrepreneurs who are both less risk-loving and more intelligent. As a

result, the coefficient on a respondent's propensity to take risks in regression (2) will be underestimated.

In order to correct for this selection bias, a Heckman correction is applied to regression (2), taking into account that trying to set up a business is not independent of, but rather a necessary condition for, succeeding in setting up a business. As it was impossible to *a priori* identify a variable affecting only the first-stage (trying) from the second stage (succeeding) (the exclusion restriction approach to the Heckman correction), the correction rests solely on the assumption of a specific joint distribution of the residuals in the two stages (a bivariate normal distribution). This approach is generally not considered desirable, since it produces unbiased but inefficient and imprecise estimates in the success regression. However, these issues may be less of a concern in the present analysis, as the LiTS has a sample size of more than 33,000 observations.²¹ Moreover, the Heckman maximum likelihood estimation is used instead of the Heckman two-stage estimation, as it is more robust to the lack of a credible exclusion restriction.²²

This exercise produces results that are very similar to those of regression (2) above. Therefore it is reasonable to assume that, even with all the caveats in mind, the results of regression (2) can be used for policy recommendations.

²¹See Maddala (1985a&b) and Puhani (2000).

²²See Puhani (2000).

Table A.1: Variable definitions and sources

Variable name	Description	Source
<i>Dependent variables</i>		
Trial	Dummy variable equal to 1 if respondent has ever tried to set up a business, zero otherwise	LiTS 2010, q530
Success Trial	Dummy variable equal to 1 if respondent has tried and succeeded to set up a business, zero if he or she tried but failed	LiTS 2010, q532
Success	Dummy variable equal to 1 if respondent has succeeded in setting up a business, zero otherwise (whether he or she tried and failed, or never tried)	LiTS 2010, q532
<i>Individual level controls</i>		
Borrowed successfully	Dummy variable equal to 1 if respondent attempted to and was successful in borrowing money for the business (from relatives, friends, private money lenders, banks, NGOs, microfinance institutions or other sources)	LiTS 2010, q534, q535
Borrowed unsuccessfully	Dummy variable equal to 1 if respondent attempted to but was not successful in borrowing money for the business (from relatives, friends, private money lenders, banks, NGOs, microfinance institutions or other sources)	LiTS 2010, q534, q535
Father's education	Years of respondent's father's full-time education	LiTS 2010, q718
Member Communist Party	Dummy variable equal to 1 if respondent has been a member of the Communist Party	LiTS 2010, q714
Secondary education	Dummy variable equal to 1 if respondent completed lower secondary, upper secondary or post secondary education	LiTS 2010, q515
Bachelor or Master's education	Dummy variable equal to 1 if respondent completed Bachelor or Master's education	LiTS 2010, q515
Male	Dummy variable equal to 1 if respondent is male	LiTS 2010, q102
Age	Age of respondent	LiTS 2010, q104
Age at trial	Respondent's age when trying to set up a business	LiTS 2010, q104, q531
Good health	Dummy variable equal to 1 if respondent's health is good or medium	LiTS 2010, q704
Vote	Dummy variable equal to 1 if respondent has voted in local elections, parliamentary elections, or presidential elections	LiTS 2010, q319
Urban	Dummy variable equal to 1 if respondent lives in an urban setting	LiTS 2010, qtablec
Willingness to move	Dummy variable equal to 1 if respondent is willing to move for a job	LiTS 2010, q528
Risk score	Score of respondent's willingness to take risks in general on a scale from 1 to 10	LiTS 2010, q537
Trust score	Score of respondent's trust in other people on a scale from 1 to 5	LiTS 2010, q302
Prefer to be self-employed	Dummy variable equal to 1 if respondent's ideal job is self-employment	LiTS 2010, q526

Table A.1 continued:

<i>Country level controls</i>		
# Bank branches / 1,000 pop, 1996 - 2008	1996-2008 average of number of bank branches per 1,000 inhabitants	EBRD Banking Survey
ln(GDP/capita), 1996 - 2008	1998-2008 average of log of GDP per capita	World Development Indicators
Procedures start business, 2004 - 11	2004-11 average number of procedures to start a business	World Bank Doing Business
National average corruption	Average number of respondents in a country that believe that people like them have to make unofficial payments or gifts when requesting official documents or when going to courts for a civil matter. Variable is weighted using national survey weights	LiTS 2010, q601
National average liberties	National average of the rights existence score (calculated for each respondent as the average of scores on a scale of 1 to 5 of existence of free elections, law and order, freedom of speech, peace and stability, independent press, political opposition, free and fair courts, minority rights and freedom to travel). Variable is weighted using national survey weights.	LiTS 2010, q312
SD of inflation, 1996-2008	1996-2008 average of standard deviation of inflation in the past six years	World Development Indicators
Exports, 1996 - 2008	1996-2008 average of exports of goods and services (as a share of GDP)	World Development Indicators
Trademarks, 1996 - 2008	1996-2008 average number of trademark applications per 10,000 inhabitants	World Development Indicators
<i>Regional level controls</i>		
Regional average trial	Regional average of number of respondents who tried to set up a business	LiTS 2010, q530
Regional average success	Regional average of number of respondents who tried and succeeded to set up a business	LiTS 2010, q532
Regional demeaned corruption	Difference between regional and national average corruption (calculated as the number of respondents who believe that people like them have to make unofficial payments or gifts when requesting official documents or when going to courts for a civil matter). The national average is obtained using national survey weights, while the regional average is unweighted.	LiTS 2010, q601
Regional demeaned liberties	Difference between regional and national liberties (calculated for each respondent as an average of scores on a scale of 1 to 5 of existence of free elections, law and order, freedom of speech, peace and stability, independent press, political opposition, free and fair courts, minority rights and freedom to travel). The national average is obtained using national survey weights, while the regional average is unweighted.	LiTS 2010, q312
Regional average relative wealth	Regional average of respondent's perceived place on a 10-step income ladder	LiTS 2010, q227

Annex 2

Why do so many Mongolians try to be entrepreneurs?

As shown in Chart 1, Mongolia recorded a higher rate of successful business starters, according to the LiTS, than any other transition country. This reflects the fact that 30 per cent of the population has tried to start a business at some point in the past.²³ This figure is more than double the 12 per cent average trial rate of all the other transition countries, and higher even than Sweden's 28 per cent rate. It is also much higher than the rate that would be expected, given the country, regional and individual characteristics prevailing in Mongolia, based on the regression analyses presented in Table 1.²⁴

What could explain the large discrepancy between the actual rate of entrepreneurial attempts in Mongolia and the rate that one would expect based on its general characteristics? This case study explores the role of an externally funded entrepreneurship development programme, which was in place for several years before the 2010 LiTS. It concludes that this may have had a strong impact on Mongolia's entrepreneurial trial rate, given the country's relatively small population and some distinctive geographic and socio-economic characteristics. In addition, it is possible that the programme also had a positive effect on the success of Mongolia's entrepreneurs, although other factors, such as remittances, are likely to have been important too.

Mongolia is the most sparsely populated country in the world, with little arable land and a great area covered by steppes. Approximately 30 per cent of Mongolians are nomadic or semi-nomadic, making a living mainly from breeding livestock. The majority of the population lives in cities, with 40 per cent of the total living in Ulaanbaatar, the capital, and another 20 per cent living in the three other biggest cities.²⁵ The past 20 years have seen high rural-to-urban migration, with former nomads settling into informal tent-dwelling *ger* districts surrounding the largest cities. For example, in Ulaanbaatar 60 per cent of the population lives in *ger* districts, which are much poorer than areas dominated by apartment buildings. Unemployment in *ger* districts is also higher, with an unemployment rate of half of the working-age population, compared with the national average of 36.4 per cent.²⁶

Between 2002 and 2009 the population of these districts was targeted by the Growing Entrepreneurship Rapidly (GER) Initiative, a development project run by CHF International (a non-governmental development organisation) and funded by the US Agency for International Development and US Department of Agriculture.²⁷ The GER Initiative focused on recent migrants to the *ger* districts in the four largest cities and provided them with fee-

²³In contrast, the business success rate among Mongolians, conditional on trying, was about average for the transition region (around 60 per cent; see Chart 2).

²⁴Two related techniques are used to estimate the extent to which the regression analysis underestimates the entrepreneurial trial and success rates, conditional on trying, in Mongolia. An analysis of the prediction errors from the regressions shows that while these figures are high for both entrepreneurial outcomes, the predicted trial rate is the most imprecisely estimated, relative to all countries included in the sample. Similarly, including a variable in the statistical analysis that is 1 for all observations from Mongolia, and 0 otherwise, demonstrates that the Mongolian success and trial rates are underestimated.

²⁵Darkhan, Erdenet and Choibalsan. See National Statistical Office of Mongolia, *Yearbook 2008*.

²⁶World Bank, "Enhancing policies & practices for *ger* area development in Ulaanbaatar" (2010); CHF International, "GER Initiative final report" (2009).

²⁷The programme ran officially from 2002 until March 2009. From October 2008 onwards, CHF transferred its management to Development Solutions, a Mongolian NGO that it helped to establish. While Development Solutions is still administering the programme, it has significantly cut down its coverage and activities (Development Solutions web site: www.dsmongolia.org/intro.html).

based services related to business consulting and training, financial services, employment training and matching, association development and business and legal information. In addition, it helped individuals liaise with large corporations and financial institutions that could either support entrepreneurial activity or provide access to finance. For example, in July 2004 GER negotiated an agreement between Darkhan Nekii, a large sheepskin manufacturer and programme client, under which the company would buy stitched garments from small entrepreneurs.²⁸

As a result of these activities, the programme is likely to have made it more attractive for necessity entrepreneurs to try to start a business. More importantly, by networking with companies and financial institutions, the GER initiative also created market possibilities for opportunity business starters.

Three factors suggest that the GER programme may have had a significant impact on increasing the rate at which potential entrepreneurs tried to start businesses in Mongolia.

It had a wide coverage, reaching more than 20 per cent of the population and working with roughly one-half of officially registered formal enterprises.²⁹ Since many of the Mongolian entrepreneurs interviewed in the LiTS likely operate informally, the overall effect of the programme may have been even larger.

Although the programme officially started in 2002, its activities intensified in 2004-05,³⁰ LiTS data show that close to 60 per cent of all respondents who tried to start a business did so in 2004 or later (the rest having made attempts between 1990 and 2003).

The types of business that GER financed appeared to match the industries in which LiTS respondents were active.³¹ The LiTS data suggest that Mongolians tried to start a business in urban and semi-urban areas, as 22 per cent of potential entrepreneurs were in services (other than tourism and financial intermediation); 15 per cent in trade (wholesale and retail) and vehicle repair; and 8 per cent in education. Moreover, 46 per cent of potential entrepreneurs who have tried to set up a business are located in, or around, Ulaanbaatar. This sectoral distribution of would-be entrepreneurs broadly corresponds to the employment profile of GER clients, who were also primarily engaged in non-agricultural businesses, such as services, trade and manufacturing.³²

In summary, this evidence suggests that the GER programme could have been an important factor in explaining the extraordinary propensity of Mongolians to attempt entrepreneurial activities. Furthermore, it may also have raised the success rate of entrepreneurs. Nevertheless, the impact of the programme may to some extent be specific to Mongolia's distinctive geographic, social and economic characteristics: namely, a large proportion of the population with low formal employment living within relatively concentrated urban and semi-urban areas. These caveats need to be taken into account by policy-makers considering similar entrepreneurship programmes elsewhere.

²⁸USAID web site: <http://mongolia.usaid.gov/our-work/program-archives/ger-intitiative/>

²⁹The 2009 GER report lists 14,712 business owners among its clients, and 7,211 *future* businesses, making a total of 21,923. This data covers the period 2002-09. Although a comparable figure for total business owners during the entire period is unavailable, one can use the *average* number of officially registered enterprises over the period 2002-08, which is 42,438 (Mongolian Business Register).

³⁰USAID web site: <http://mongolia.usaid.gov/our-work/program-archives/ger-intitiative/>

³¹The LiTS does not record the sector in which businesses have been set up, only the sector in which the respondent is currently occupied.

³²USAID web site: <http://mongolia.usaid.gov/our-work/program-archives/ger-intitiative/>