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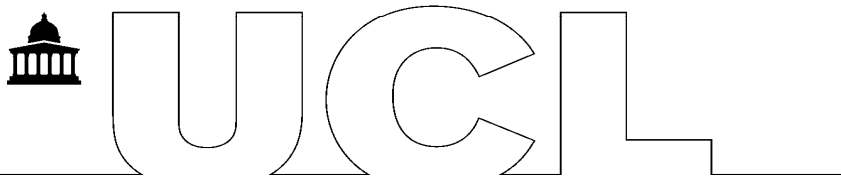

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START-UP FINANCING IN THE AGE OF GLOBALISATION

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Economics Working Paper No.96

December 2008, rev. November 2010

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Start-up Financing in the Age of Globalisation

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Abstract

We investigate the determinants of start-up financing in 54 countries, using the Global Entrepreneurship Monitor (GEM) surveys for years 2001-2006. We find that financial liberalisation increases the total financial size of the individual start-up entrepreneurial project both via the increased use of external and of own funds. In addition, the volume of start-up finance responds positively to international capital inflows as represented by loans from non-resident banks and remittances, and negatively to the volume of offshore deposits. The positive impact of remittances on total volume of start-up financing is via own finance of the entrepreneur.

Keywords: start-up finance, entrepreneurial traits, informal finance, financial freedom, capital flows, Global Entrepreneurship Monitor, GEM.

The authors thank Paul Reynolds for his helpful suggestions and comments in preparation of this paper. We are indebted to Stan Mickiewicz and Pavel Kuryan for their assistance. In addition, we are grateful to participants of seminars at Warsaw University, University of Tartu, Reading University, University of Oxford and the biannual EACES conference in Moscow and the anonymous referees of this journal for very useful comments.

1. Introduction

One of the common problems for new ventures is raising sufficient funding enabling them to launch and operate businesses successfully. Accordingly, finance availability and cost have been cited as one of the major constraints for entrepreneurship (Storey 1994; Beck *et al.* 2005; 2008; OECD 2006). The lack of credit history and of credible reputation distinguishes start-ups from established firms, creating a disadvantage for the former when it comes to the issue of funding (Huyghebaert and Van de Gucht 2007). Given small scale of entrepreneurial projects, a higher asymmetry in information and higher risk, financial institutions find it costly to monitor small businesses, even if advances in technology (including the risk scoring techniques) imply that the banking sector is capable to handle the entrepreneurial finance better than in the past (De la Torre *et al.* 2008).

The relative difficulty of start-ups in accessing finance is likely to be aggravated by a weak domestic business environment, including inadequate legal frameworks and repressed financial systems. However, globalisation of the financial markets implies that the entrepreneurs are gaining more access to international financial markets, albeit often indirectly, via domestic banking systems. As a result, access to the international sources of finance may substitute for domestic institutional weaknesses. At the same time, this implies that entrepreneurs become particularly sensitive to the volume and the direction of the international flows of finance (Tornell and Westermann 2005).

Building on these insights, in this paper, we investigate the determinants of the total, own and external volume of start-up finance using the Global Entrepreneurship Monitor (GEM) 2001-2006 surveys. More specifically we examine the impact of the financial environment, property rights system and international financial flows on financing at the time of entrepreneurial entry, controlling for various individual characteristics of entrepreneurs such as their education, experience and social capital. In particular, our investigation focuses on the following issues:

- Is the amount of finance used by entrepreneurs when launching their ventures affected by the quality of legal system and the extent of the government intervention in the financial sector?

- What is the role of informal finance?

- Are domestic sources of finance for start-ups augmented by net international financial flows?

- Are those alternative sources of finance operating via enhancing external or own finance used by the entrepreneur?

A comparative advantage of our research can be summarised as follows.

First, while existing empirical studies tend to focus on firm/entrepreneur-specific characteristics (Harris and Raviv 1991; Coleman 2000; Cassar 2003; Huyghebaert and Van de Gucht 2007), in our research we augment these with institutional country-level indicators. This enables us to examine the impact of the business environment on start-up finance. Accordingly, along with individual GEM data, we use various country-level measures comprising a start-up contextual environment. We can use this aggregate data as our explanatory factors without being concerned with simultaneity bias, as the individual decision of a potential entrepreneur does not affect country-level institutions or economic development.

Second, we explore the links between net financial flows from abroad and start-up finance. Apart from Giannetti and Ongena (2005) and Alfaro and Charlton (2007), this theme has been hardly covered in the literature. Yet as hypothesised by Tornell and Westermann (2005), it is the local entrepreneurial sector that is particularly sensitive to international financial flows. Consistent with this perspective, financial globalisation implies more opportunities for entrepreneurial finance, albeit at cost of higher risk of negative shocks. This has implications for both the way the global financial architecture should be designed and to the way we should respond to the financial crises.

Third, we use the GEM data set that offers a unique opportunity to study nascent entrepreneurs (or start-ups; for the definition see Section Three). While firm finance literature abounds, it is largely centred around the established businesses. Limited empirical work has been done on start-up financing due to lack of data. As most studies use surveys of existing entrepreneurs, the potential for survivorship bias confounding these studies is high (on a similar note see Cassar 2003).

The paper proceeds as follows. The next section discusses theoretical issues pertaining to the start-up finance. We declare explicit hypotheses to be tested. Section Three describes the data and methodology. Empirical results follow in Section Four. Finally, Section Five presents conclusions and policy implications.

2. Determinants of Start-up Finance

Studies on start-up financing have been mostly motivated by the arguments pertaining to the informational asymmetries theories the central theme of which is that market imperfections lead to credit rationing. However, it is frequently overlooked that (i) financial globalisation may alleviate some of those constraints enhancing domestic supply of credit via inflow of capital from abroad (Tornell and Westermann, 2005), (ii) the transaction costs associated with the informational asymmetry and consequently

also the potential for credit rationing are strongly affected by the cross-country heterogeneity in the financial and legal institutions. With the development of the latter, the transactions costs of the financial contract should be expected to diminish.

Existing comparative research suggests that the institutional environment, comprised of formal and informal rules, plays an important role in the entrepreneurship development, affecting individuals' decision to enter entrepreneurship, allocation of their effort among its various uses (productive or unproductive), and entrepreneurial strategies, including financing and growth (Baumol 1990; Johnson *et al.* 2002; Van Stel *et al.* 2007; Ho and Wong, 2007; Aidis *et al* 2008, 2010; Ardagna and Lusardi 2008), but less is known about the impact of those factors on entrepreneurial finance. We distinguish the two key institutional dimensions which are likely to influence financial structure of startups: (1) protection of property rights; and (2) financial openness and financial regulatory environment. We discuss these dimensions below.

2.1 Protection of Property Rights

Acemoglu and Johnson (2005) see protection of property rights from expropriation as the key institutional dimension which they interpret in a narrow sense, as distinguished from the 'contracting institutions'. The economic agents can overcome obstacles and deficiencies in 'contacting institutions' by changing the preferred form of contractual arrangements and developing private contracting systems. In contrast, instability of core property rights has a fundamental negative effect on economic activity, sizeable investment and new entry in particular. In an environment with weak protection of property rights, financial contracts are less likely to be concluded, leading to the underdevelopment of finance (Acemoglu and Johnson 2005; see also: Johnson *et al.* 2002). Relational lending tends to dominate in finance, and that has a negative effect on provision of credit to small enterprises and start-ups (De la Torre *et al.* 2008). Based on what we have said, our first hypothesis is formulated as follows.

H1: Weak property rights discourage financiers, both formal and informal, limiting a new entrepreneur's use of external finance. They also diminish incentives for own investment, resulting in smaller individual start-up projects as measured by the size of finance used.

2.2 Financial Regulation and Financial Development

Along with a well-functioning property rights system, developed financial institutions have been argued to play an important role in enhancing the level of entrepreneurial activity (Aidis *et al.* 2008) and in firm's growth (Beck 2005 *et al.*). Financial intermediaries facilitate the risk amelioration in the presence of problems created by information and transaction frictions, by developing expertise in risk assessment and in monitoring (Levine 1997; Barth *et al.* 2006; De la Torre *et al.* 2008). Parallel to this, the financial sector affects firm financing through the allocation of savings towards investment projects (Levine *et al.* 1999). Developed financial institutions are found to be particularly beneficial for small firms compared to large ones (Barth *et al.* 2006; Beck *et al.* 2005; 2008). The same should apply even more to start-ups. Yet efficient and well developed financial sector is conditioned by appropriate financial regulation, which remains at the centre of policy-oriented economic debate. While it appears that regulatory focus on supporting transparency, on access to information and on enhancing market-based monitoring has been clearly beneficial, the scope of financial restrictions and the scope and discretion of the direct supervisory oversight is a more controversial issue, with emerging empirical evidence of some negative effects, including both lower financial efficiency and higher likelihood of financial crises. These negative effects may be seen as either unintended (public interest view) or as a by-product of regulatory capture by special interests within the financial sector (venal corruption) and/or by political interests imposed from above (systemic corruption) (Barth *et al.* 2006; 2008).

Consistent with this, Jappeli and Pagano (1994) argue that heterogeneity in liquidity constraints across countries is largely attributed to the regulation of the financial sector. Excessive financial restrictions are likely to lead to financial disintermediation (Korosteleva and Lawson 2010). This may have further adverse consequences for new firms. Burdensome financial regulation is seen to be inefficient, empowering governmental officials, fuelling corruption and benefiting incumbent firms (Barth *et al.* 2008). Typically, it is also associated with growing share of direct state majority ownership of banks. State banks are likely to prioritise state owned firms and discriminate against entrepreneurs in their lending policies (De la Torre *et al.* 2008).

Consequently, our next hypothesis is formulated as follows:

H2: Extensive financial restrictions reflecting conditions of financial repression have negative effects on the use of external finance and on the total volume of start-up finance.

Informal finance comprised of family and friends' funds and investment of private business angels is also important for start-ups. In their study of nascent entrepreneurs in the USA, Campbell and De Nardi (2007) show that informal finance, primarily from friends and family, is the second largest source of start-up financing after own funds. Informal finance is often seen as substitute for formal finance when the latter is unattainable (Allen, Quian and Quian 2005), although the informal sector may also be the sector of choice, given that informal loans, in particular from friends or relatives may be cheaper (Guirkinger 2008). Reliance on informal funds may also be typical for entrepreneurs in developing countries, with a number of them preferring to stay in the shadow economy, which typically implies small size (Straub 2005; Batra 2003). Empirical evidence suggests that informal finance does not perfectly substitute for formal finance as it fails to scale up (Ayyagari et al. 2008; Estrin et al. 2009; Du and Girma 2009). Accordingly, it is unlikely that informal finance can lead to projects characterised by larger-scale, if not enhanced by efficient regulatory environment, which creates incentives for both savings and larger-scale investment.

At the same time, informal finance may be seen as more than just an endogenous response to the prevailing setup of formal institutions: its role is also supported by strong incentives embedded at the level of long-lasting cultural values and social attitudes. It is one possible way to explain an important role informal finance plays in Far-East Asia (Smallbone and Jianzhong, 2008). Here we posit that informal finance plays an independent albeit limited role in start-up finance and posit our next hypothesis.

H3: The size of the informal financial sector is of significant importance to entrepreneurs in increasing the likelihood of the use of external funding at time of entry, but may have no significant positive effect on the financial scale of their project.

Similarly to informal finance, international financial flows may be seen as only partially correlated with the local regulatory and legal environment. In general, both strong local property rights and local financial liberalisation will enhance international financial flows. From this point of view, the joint impact of these three factors could be difficult to disentangle. At the same time, however, international flows of finance may partly substitute for the weaknesses of local environment, which is the main intuition offered by Tornell and Westermann (2005). While prior research typically assumes that the entrepreneurial sector would benefit least from increased external openness compared with large firms (e.g. Giannetti and Ongena 2005), Tornell and Westermann

(2005) argue the contrary. The key point here is that typically large firms have always better access to international financial markets, either directly via stock exchanges or indirectly via financing from foreign owners. This implies that the differential effect of wider external financial openness is stronger on small firms. This impact needs not to come in a form of direct loans from abroad, but may operate via the intermediation of the domestic banking sector, enhancing availability of credit. Accordingly, even under weak property rights and/or restricted domestic finance, the larger players may still benefit from reputational capital, which would substitute for effective external protection of the financial contract and would facilitate access to direct funding from abroad; they may also form relational capital with large banks (typically government controlled) extracting rents in the form of privileged access to credit. In turn, this implies that the small firms will benefit relatively more from the appearance of new external sources of finance, either direct (say, in a form of remittances or loans from foreign banks) or indirect (say, via enhancing domestic supply of credit based on foreign sources of finance that may result in lower cost of capital; also via increasing competition in the domestic financial sector). According to Alfaro and Charlton (2007), financial integration particularly benefits entrepreneurship more reliant on external finance due to the size requirements. However, financial integration also implies that this group of users of finance will be more sensitive to reversals in cross-border financial flows.

Accordingly, we hypothesise:

H4: Cross border capital flows have significant impact on start-up finance, including both its total amount and the use of external funding.

2.3 Controls: Entrepreneurial Traits and Start-up Characteristics

Existing empirical studies focus on firm-specific characteristics including ownership structure, growth aspirations, and owners' characteristics as key factors determining start-up finance. The important role of entrepreneurial personal traits, attitude to risk, motivation and cognition have been advocated to explain entrepreneurial entry, decision-making and survival (Parker 2004; Arenius and Minniti 2005; Aidis *et al.* 2007; Aidis *et al.* 2008; Ardagna and Lusardi 2008). More specifically, such socio-demographic features of entrepreneurs as age, gender, work status and social capital are shown to be significant determinants of entrepreneurial entry (Aldrich *et al* 1987; Coleman 2000; Johanisson 2000; Minniti *et al.* 2005; Levesque and Minniti 2006, Aidis *et al.* 2010).

In our models we include socio-economic characteristics of entrepreneurs (age, gender, employment status, education, current ownership of another business, acting as business angel in the past, knowing other entrepreneurs) and personal cognitive features (opportunity motivation in particular).

In particular, previous research indicates that entrepreneurs' financial decision-making (in particular capital purchases) is a quadratic function of the entrepreneur's age (Holtz-Eakin *et al.* 1994). We introduce age squared to test this. We also expect being male and having current work experience to be positively associated with the total financial size of the project and the use of external funds.

Modern entrepreneurship theory emphasizes the importance of self-efficacy of individuals for entering entrepreneurship. Self-efficacy may be enhanced through social learning (Harper 2003). Being embedded in various business networks is one example of how this may occur (Minniti *et al.* 2005). Previous studies show that social networks facilitate entrepreneurs' access to finance (Aldrich *et al* 1987; Johanisson 2003). Respectively, we also expect social capital to be positively associated with the overall size of the project and to enhance entrepreneurs' reliance on external funds.

Start-ups driven by perceptions of opportunities (as contrasted with necessity motive), may appear as more attractive to external financiers, not just because of the higher expected returns, but also because the modern banking sector derives its start-ups related profits not just (and not primarily) from direct lending, but also from offering a wider range of financial services, including servicing personal accounts of prospective employees of a new business (De la Torre *et al.* 2008). Thus, profit opportunities for the providers of finance are closely related to the expected size of a new project and new entry being driven by perception of opportunity is a good predictor of this.

Finally, we also expect start-up ownership structure to affect both the entrepreneurs' access to external finance and the overall size of entrepreneurial project. We include the variable that identifies start-ups with more than one owner. A positive effect of having business partners at the time of the start-up (resource-based view) may be similar to the network effect discussed above: additional business partners enhance network capital of the new venture.

While these are our main control variables at the individual level, in our study we also introduce controls at macro level as discussed below.

2.4 Control variables at the macro level

We control for the stage of economic development and business cycles by introducing per capita GDP (at purchasing power parity) and annual rate of economic growth (Carree *et al.* 2002, Wennekers *et al.* 2005). As far as start-up financing is concerned, our prior expectation has been to find a positive relationship between per capita GDP and the use of external finance as well as with the overall financial size of the project.

We introduced the GDP annual growth rate to reflect cyclicality in economic performance. We expect that at the period of recession, when the financial sector contracts, entrepreneurs rely more on their own funds or on informal investments from their family and friends. Furthermore, a project is more likely to be small in scale.

We also introduce an indicator of government size. Both entrepreneurial entry in general and entrepreneurial financial decisions specifically may be affected by welfare provision and higher tax burden, which increase opportunity cost and decrease expected returns to entrepreneurial activity respectively (Aidis et al. 2010).

The next section describes our data and methodology.

3. Data and Methodology

3.1 Sample

To explore the determinants of the financial structure of business start-ups, we use the data collected through the GEM adult population surveys in 2001-2006,

covering 54 countries worldwide[1]. The data consists of representative samples of at least 2,000 individuals in each country, drawn from the working age population. GEM surveys were completed through phone calls and through face-to-face interviews in countries, where low density of the telephone network could create a bias. National datasets are harmonised across these countries (Reynolds et al. 2005).

GEM data distinguishes between (i) people with the intention to start a business, (ii) nascent entrepreneurs (who are already in a process of establishing a new firm, also labelled start-ups) and (iii) currently operating young firms (under three and a half years). For the purpose of this study we will focus on start-ups. This is a category, where initial entrepreneurial financing decisions may be captured best, without being affected by a subsequent development of individual businesses. Start-ups or nascent entrepreneurs are, according to GEM criteria, defined as individuals between 18-64 years old, showing some action towards setting up a new business whether fully or partly owned. They also must not yet have paid any wages or salaries for more than three months. Altogether, start-ups (or nascent entrepreneurs), young firms under three and a half years and established businesses account for 3.66, 2.8 and 6.85 per cent of the whole GEM dataset respectively.

GEM dataset provides unique information on start-up characteristics such as ownership structure, informal finance and entrepreneurs' personal characteristics, ranging from standard socio-economic characteristics to more specific entrepreneurial traits allowing us to draw additional inferences consistent with section 2.3 above. The following sub-section discusses variable definitions and measurements in more detail.

3.2 Variables: Definitions and Measurement

There is no universally accepted set of measures of institutional quality. In their majority researchers have used what is commonly referred to as institutional outcome variables (Glaeser *et al.* 2004). The commonly used measures include Polity IV (Political Regime Characteristics and Transitions) indicators and survey indicators provided by the International Country Risk Guide, those provided by the World Bank Governance project; the World Bank's Doing Business survey; and the Heritage Foundation – Wall Street Journal "Economic Freedom" database. In reality, there is a continuum between the long-term stable institutional arrangements and short-term

[1] The original dataset covers 55 countries. However some observations, including all observations on Venezuela, were dropped from the sample as extreme outliers, as we suspected a serious country-specific measurement error on start-up finance (for further discussion see the text). Countries included in the sample are those presented at Figures 1-3.

government policies, and delimiting the two in an exact way is conceptually difficult (Glaeser *et al.* 2004). The expectations of the economic actors about durability of given policies, laws on books and administrative practice play a critical role, and identifying *a priori* the empirical characteristics of institutional and policy setup conducive to economic development and entrepreneurship is not easy.

As argued in Section 2, we take property rights as the key component of the institutional setup representing 'higher order' institutions (Williamson, 2000). We follow Acemoglu and Johnson (2005) who argue that the measure of effective constraints imposed on the executive branch of the government, (which is reported by the Polity IV project: <<http://www.systemicpeace.org/polity/polity4.htm>>), is superior to other widely used indicators.

In our focus on formal finance we face a problem of very high correlation between the ratio of domestic credit to private sector to GDP taken as a measure of the size of the formal financial sector, and our key control variable, which is GDP per capita, even if domestic credit has been used in previous studies on entrepreneurship (Klapper *et al.* 2006; Beck *et al.* 2008). We see no good solution to this problem as this high level of correlation translates into lack of robustness and sensitivity to specifications. As a result, we narrow our focus, concentrating on measures of financial regulation and financial openness, which do not lead to such problems. Accordingly, to measure the extent of financial restrictions we use the indicator of financial freedom from the Heritage Foundation database. The financial freedom index measures the extent of restrictions imposed on financial activities (with reverse sign), i.e. the state intervention in the national financial system, which goes beyond the prudential supervision and informational, transparency and audit requirements. Low values of the financial freedom index indicate direct state influence on the allocation of finance, including state ownership of financial institutions (Beach and Kane 2008).

Along with the financial regulation measure we introduce proxies for financial globalisation to test our Hypothesis 4. These measures include loans from non-resident banks, offshore deposits as a proportion of domestic deposits and remittances inflow relative to GDP. They were obtained from the World Bank 'Financial Structure' dataset (2008, version 4).

We introduce the prevalence rate of informal investors, which proxies for the availability of informal funds that can be used for an individual start-up capital. It is derived from our GEM data by taking the average percentage of respondents who invested in someone else's start-up in the past three years in each country-year sub-sample (Reynolds et al. 2005; Bygrave and Reynolds 2004).

Our government size indicator is proxied by a measure of government expenses in relation to GDP taken from World Bank WDI database. Alternatively, we also utilize an alternative measure of government size obtained from Heritage Foundation – Wall Street Journal, which is simply based on the cubic transformation of the same government expense measure as reported by World Bank (and comes with a reverse sign), but has an advantage of a wider coverage.

Finally, we use the individual-level GEM-defined variables to represent network capital, business ownership and opportunity motive. We aim to capture social network effects by introducing a dummy variable which shows if the respondent knows some other entrepreneurs. In addition, we introduce a dummy representing a current owner of any other existing businesses. This captures both network effects and individual entrepreneurial experience (Wennekers's *et. al.* 2005). To examine the effects of the ownership structure variable we use a dummy that identifies start-ups with more than one owner. Finally, to measure an opportunity motivation we introduce a dummy variable equal to one if launching a start-up is driven by a respondent recognising an opportunity (as contrasted with the necessity motive) (see Table 1).

As our dependent, we look at the volume of individual start-up finance, including: the total amount of finance, the amount of own finance, and of external finance. The volume of own finance is calculated as the difference between total and external finance as reported by the respondents. We take the original GEM data expressed in local currencies and scale it by dividing by the nominal per capita GDP (in local currency), to get cross-country compatible data. We also experimented with relying on total volume of finance expressed in constant US dollars, but these exercises are less revealing, as most of the variation is explained by GDP per capita. We believe that the size of start-up scaled by GDP per capita produces an indicator that is a good comparative measure of the economic significance of an individual project.

For further details regarding definitions and descriptive statistics of dependent variables, as well as the correlation matrix for institutional and macroeconomic variables see respectively Tables 1 and 2.

{Tables 1-2 about here}

3.3 Methodology

We use OLS regression augmented with country-years effects as our main estimator for the volume of finance, and apply a binary-outcome selection estimator that does not rely on excluding restrictions for the indicator variable for the use of external

finance. Initially, we considered applying the Heckman selection model (known also as Tobit II model) instead. However, a problem we encountered using a Heckman model was multicollinearity, due to the identification problem caused by the use of identical or nearly identical variables to estimate both selection and outcome equations. In this case identification proceeds only on the basis of distributional assumptions about the residuals alone and not due to variation in the explanatory variables (Sartori 2003). To overcome this problem one should impose exclusion restrictions. Yet the choice of a variable for that is challenging and difficult to justify theoretically. In our experiments with Heckman model, we used business constraints (from Heritage Foundation) as an identification variable, assuming that business constraints are sunk costs that theoretically should only matter entrepreneurial entry decision but should not have any significant effects on a start-up financial decision. However, insignificance of Mill's ratio, which is the specific parameter of a Heckman specification, most likely indicated the problem of misspecification of either selection or outcome models. To solve this problem we applied an alternative estimator of the selection model which does not require imposing excluding restrictions, but makes use of an additional piece of information which allows assuming that error terms for two equations are identical for each observation (see Sartori 2003 for further discussion). Respectively, we define our selection and outcome choices as follows:

$y_{i0} = 1$ if $z_1 = 0$, 0 otherwise

$y_{i1} = 1$ if $z_1 = 1$ and $z_2 = 0$

$y_{i2} = 1$ if $z_1 = 1$ and $z_2 = 1$.

Here, z_1 indicates entrepreneurial entry decision and z_2 relates to the use of external funding. Thus, y_{i0} has value of 1 if a respondent does not enter entrepreneurship; y_{i1} has value of 1 if a respondent enters entrepreneurship but does not rely on external funding; and y_{i2} has value of 1 if an individual enters entrepreneurship and relies on the use of external funding in financing a start-up. The model is estimated by using a maximum likelihood method.

However, while implementing the model, we discovered that it does not converge when the full set of country and time individual effects is used to control for unobserved heterogeneity. Therefore, we estimated the model without controlling for country and time effects, but declare the limitation.

In turn, this problem is overcome when we apply the one-stage regression model. Regression models converged even as we used the full set of country-years

individual effects. Using a larger set of country-years effect instead of two sets of country effects and time effects has been our preferred option, as we want to capture not just unobserved (constant) cross-country heterogeneity but also account for measurement errors specific to each country-year sub-sample.

To summarize we face the following trade-off in our estimation strategy. We can either apply selection models without country-year effects but based on the full sample information (i.e. controlling for entry decision), or rely on the one stage OLS estimator while controlling for a full set of country-year effects but not for the first stage selection. We report both and there is sufficient consistency between the two set of results to have some confidence in findings.

3.4 Robustness

In this study we also encountered a serious problem with outliers in the finance variables related to country-years samples. We investigated the data by aggregating the individual volume of start-up finance as country-year sub-sample level medians. For a small number of country-years samples the observations are clearly not in a plausible range, with some extreme cases, where medians are shifted compared with other countries by a factor of more than one hundred. To alleviate this problem we looked more closely into the distributions of country-year subsamples medians and eliminated few country-year subsamples, where the finance medians were severe outliers as defined by being outside the outer fence (defined by interquartile range multiplied by three). As a result, the following country year subsamples were excluded from subsequent analysis: Belgium 2003, Iceland 2004, Italy 2002, Slovenia 2003-2006, Venezuela 2003-2005.

A different problem relates to trade-offs between using more precise measures and increasing missingness in data. In particular, the problem relates to the World Bank measure of government size versus an alternative but less precise measure of government size obtained from the Heritage Foundation (which has better coverage). We tested the impact of missingness by introducing a dummy which codes all observations used in the regression with the World Bank measure of government size (as in Table 3, specification 1 below) and inserting it into specifications analogous to 5-6 in Table 3, which rely on the Heritage Foundation proxy for government size. Along with this dummy we also introduced an interaction term between the dummy and a property rights measure. The interaction term has been significant. The outcome of this exercise suggest that insignificance of results for property rights we record for specifications with World Bank government size measure is driven by reduction in sample size.

In the next section we discuss our empirical results.

4. Empirical Results

4.1. Correlations based on country-level medians

We start our discussion by examining cross-country variation in the amount of total start-up finance and own funds in relation to the stages of economic development, business cycle and cross-border financial flows (share of offshore deposits), see Figures 1-3 below.

Figure 1 shows the country-level median (data pooled over time) of the amount of total finance for start-up (USD) plotted against the level of economic development. Not surprisingly, a number of lower income countries demonstrate low levels of the financial scale of the project (e.g. Uganda). As GDP pc increases reflecting greater financing opportunities, so does the size of the project (e.g. Latvia, Croatia, Czech Republic, Portugal in the middle range). However, with a certain point of the economic development, we discover the relationship to be heteroscedastic: start-ups in the developed countries find themselves positioned within a wide range of project size values, spread from cases like United Arab Emirates with very high median size of the project to Norway, with very little finance associated with any new start-up. Very similar pattern is confirmed when we focus on the volume of own financial investment instead of total finance.

In turn, Figure 2 illustrates the importance of international financial flows for the median financial size of a start-up as captured at country level. The correlation between the two is negative and is primarily driven by some Latin American countries that seem to experience capital flight combined with lack of new entrepreneurial projects of a larger financial size (Argentina, Columbia, Uruguay). Amongst the comparator middle income countries, South Korea is located at the opposite side of the spectrum.

Finally, we move to our preferred measure of start-up finance that is the nominal amount scaled by nominal GDP per capita, which indicates the comparable economic importance of a start-up project. The country level medians are pitched against another variable of interest, which is GDP growth (Figure 3). We find few Asian economies located as outliers within the upper right hand side section of the graph above the least squared line (China, Korea, Taiwan, United Arab Republic, Jordan, India, Thailand). These are the countries characterised by above average rates of economic growth and by sizeable start-up projects. It is consistent with the fact that saving rates in Asia are high and while much of the development is driven by foreign capital, domestic

entrepreneurship plays equally important role. In contrast, all Latin American countries in our sample are located below the least squared line. This suggests that much less of the economic growth is associated with new entry based on significant amount of finance. Entry – while widespread - remains constrained in terms of average economic size. Comparing Figure 3 with Figure 2 we notice that on top of the fact that those countries generate less domestic savings, it is also that some of these savings clearly flow abroad instead of being invested within.

4.2 Estimation results based on individual data

We report out results in Tables 3-4 (Regression models) and Table 5 (Selection models). Model 1 in Table 3 is our benchmark specification for the total volume of finance. In specifications 2-4, we replace the indicator of financial freedom with our proxies for internationalisation of finance (loans from non-resident banks, share of off-shore deposits, remittance inflows). Specifications 5 and 6 correspond to models 2 and 3, but with Heritage Foundation measure of government size replacing the World Bank measure of government expenses over GDP. This enables us to use more observations. Table 4 reports specifications based on the same set of explanatory variables as for Table 3 (models 1, 3, 4), but now with the volume of external finance taken as the dependent variable. Next we present the same specifications but for the amount of own finance. Finally, in Table 5 we report similar models but now using selection models without exclusion restrictions.

We find partial support for our Hypothesis 1. The results are sensitive to a sample size. When the larger sample is used (as in models 5 and 6 in Table 3), the property rights indicator is significant. However, it is not significant in other specifications for the volume of finance that use more restricted sample (see section 3.4). In turn, it becomes highly significant for the likelihood of the use of external finance, when the selection model is used (Table 5), but here we do not control for country-level unobserved heterogeneity. Thus we find some evidence suggesting that strong protection of property rights is conducive to the larger overall volume of start-up finance.

We confirm our Hypothesis 2. Financial liberalisation has significant positive impact on the average total volume of start-up finance (model 1 in Table 3), on the average volume of own finance (Table 4 model 4) and on the average volume of external finance (Table 4 model 1) as well as on the likelihood of the use of external finance (Table 5, model 1). The results indicate that financial liberalisation not only increases the volume of external finance used by entrepreneurs but also provides more

opportunities for (potential) entrepreneurs to accumulate savings to be subsequently used for business formation.

We find some support for our Hypothesis 3. Prevalence of informal finance seems to be a good predictor of the use of external finance by an entrepreneur (selection models 1-3 in Table 5). However it has no impact on the volume of finance, as expected. Taken together, the results could suggest that informal finance plays some important role enabling new entrepreneurs to access finance, but the size of these injections are limited. Larger financial projects are supported by formal finance, which in turn, consistent with our Hypothesis 2 is unlikely to play a role in entrepreneurial finance under the repressed financial systems.

Last but not least, we see support for our Hypothesis 4 based on three alternative proxies for the internationalisation of finance. First, loans from non-resident banks are associated with larger size of the average volume of finance for start-up (based on specification 2 in Table 3) and also with the likelihood of use of external finance (the outcome of the selection model, Table 5, model 2). However, as verified by correlation matrix, this variable is relatively highly correlated with GDP per capita, and this is probably a reason why the variable becomes insignificant in specification 5 of Table 3 and why the models for the volume of own finance and for external finance (based on a smaller number of observations while keeping full set of country-year effects) could not converge (and therefore are not reported).

Similarly, inflow of remittances from abroad is associated with higher volume of finance (Table 3, model 4) and with higher volume of own finance (Table 4, model 6), but not with the use of external finance (Table 4, model 3). This is consistent with our expectations, as it indicates that remittances are mostly used in entrepreneurial finance directly via private channels leading to larger average volume of own finance. Their impact on external entrepreneurial finance via banking channels seems to be less significant.

Finally, larger share of offshore deposits is significantly and negatively associated with the volume of total finance, of own finance, and of external finance. This illustrates that financial internationalisation may result both in inflows supporting entrepreneurship, but also in outflows that would work against it. The latter may be related to two different issues. It may either indicate a situation of a country where investment opportunities are decreasing when the economy reaches some level of development (Ireland on Figure 2) or countries where weak institutions create incentives for capital flight (several Latin American countries on Figure 2).

Our other results suggest that entrepreneurs' socio-economic characteristics, such as age, gender and education emerge as significant predictors of the overall financial

scale of the project. Age exhibits a non-linear relationship with the size of the project, suggesting that while very young entrepreneurs are less likely to launch financially ambitious projects, the financial scale of the project increases with age, perhaps reflecting better access to resources and more confidence based on accumulated experience and knowledge of own skills. By that time the entrepreneurs are also likely to have some established reputation that may ease up their access to credit matching the use of own funds. However, beyond a certain age point the sign reverses with old entrepreneurs launching less sizable projects, perhaps due to shorter time horizon and changes in attitudes towards risk (Table 3).

Interestingly, the pattern becomes different once we disaggregate total finance.

While the results of Table 5 consistently suggest non-monotonicity between age and the use of external financing, with respect to the volume of external funding used for a start-up, only the linear term is significant, indicating that age exhibits a positive monotone relationship with the amount of external finance used. On the other hand, age appears insignificant in predicting the amount of own funds (see Table 4).

Males are more likely to launch financially ambitious projects, to use external finance, to acquire more external funds and to invest more of their own funds. This finding extends previous studies of the role of gender (e.g. Minitti *et al.* 2005).

Post-secondary and higher education appear to matter for the financial scale of the project, but their effects become insignificant for the amount of external and internal funds of start-up, possibly because a large proportion of observations is lost as disaggregated information is not always available. Here, our results on personal characteristics contrast to some extent with Cassar's (2003) findings, which suggest that experience and higher education don't exert a significant effect upon start-up financing.

An opportunity motive, being a business angel in the past and a presence of additional business partners (co-owners) appear to be strongly and positively associated with the overall financial size of the project and the amount of external finance for start-ups. Interestingly, knowing other entrepreneurs play no role in own finance, but becomes a significant factor affecting the volume of external finance.

Our macroeconomic control variables are all significant in the selection model on determinants of use of external finance (Table 5). Namely, size of government comes with negative sign; being located in a post-Communist economy has a negative impact and use of external finance is less likely in rich countries. The latter effect becomes more intuitive once we notice from Table 4 that level of development is positively associated with the amount of own finance invested, albeit the result oscillates between marginally significant and marginally insignificant. Similarly, while GDP growth has a negative impact on likelihood of use of external finance, it is positively associated with

the total volume used for the individual start-up, albeit again the result becomes insignificant once the sample size is reduced (Table 3, specifications 1-4 versus 5-6).

5. Conclusions

Our findings may be summarized as follows.

First, consistent with the literature, it seems that strong protection of property rights system has positive impact determining the use of external finance and the financial size of the entrepreneurial project. However the latter result is sensitive to sample size and should be treated with caution.

Second, we find that financial liberalisation seems to affect all aspects of start-up financing positively. It increases both the likelihood of the use of external finance and its volume in start-ups. It also creates ample opportunities for entrepreneurs to accumulate savings to be subsequently used for launching their own businesses. Both channels (external and internal) result in higher total financial size of the project. While financial liberalisation measure is correlated with the more fundamental dimension of property rights (the correlation coefficient is at 0.28), it may also play an autonomous role enhancing finance. As stressed by Tornell and Westermann (2005), if reform of the fundamental property rights and contracting frameworks "is not feasible, financial liberalisation may be a second best response" (ibid. p.19), and this is what we observe in many middle income countries. Our contribution is to demonstrate that liberalisation of finance supports not just the SME sector (as in Tornell and Westermann's (2005) model) but also new entry associated with large-scale projects requiring adequate levels of financing. These are projects of economic significance that can be potentially seen as the micro drivers for economic development and growth.

Third, our findings suggest that informal finance while facilitating start-ups' access to external finance, does nothing to enhance large scale project. This implies that high-growth oriented start-ups - that are typically associated with larger scale of finance - require more sophisticated institutions, including a well-developed financial system.

Fourth, extending Tornell and Westermann's (2005) argument, we find that start-ups benefit not just from financial liberalisation, but also more specifically from financial openness. By focusing on some selected indicators of cross-border financial flows we investigated few channels through which financial openness enhances entrepreneurial finance. More specifically, we found that inflow of remittances is directly associated with larger volume of own finance, which in turn affects the total financial size of the start-up project as well. In contrast, loans from non-resident banks increase the likelihood of use of external finance, and again result in higher volume of overall start-up finance. And

finally the larger share of offshore deposits affects both external and own funding negatively and results in lower overall volume of finance. We see the latter as an important result: it demonstrates that while financial liberalisation and financial openness can bring some positive results, these may remain limited without deeper institutional reforms establishing rule of law and credible protection of assets and contracts. What we observe in countries like Argentina, Columbia or Uruguay (Figure 3) is that with weak institutions, openness leads to capital flight and new entrepreneurial ventures are limited in size of investment. Thus, while we conclude that financial liberalisation and globalisation seem to be supporting entrepreneurship, its positive impact is constrained for nations that are unable to arrive at some stable, sustainable institutional frameworks that limit systemic risk of policy reversals and of arbitrary interventions, encouraging individual investment and entrepreneurship. In this our findings are consistent with the argument developed by Philippon and Véron (2008) suggesting that improvement in legal and regulatory environment leading to augmentation of the domestic financial system could be more beneficial for facilitating financing of emerging firms with high-growth potential, compared with any direct subsidies or intervention.

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Table 1: Descriptive statistics and definitions of explanatory variables

Variable	Definition	Mean	S.D.	No of obs
Business environment, financial globalisation variables and macroeconomic controls:				
Property rights	Polity IV 'Executive Constraints'; scores from 1="unlimited authority" to 7="executive parity"; higher value denotes less arbitrariness	6.49 (6.72)	1.27 (.94)	17,582 (539,351)
Size of government, WB	Government expenses (including consumption and transfers) relative to GDP, World Bank, "World Development Indicators", April 2009 version.	26.85 (31.64)	8.97 (9.00)	17,582 (539,351)
Size of government, HF	Heritage Foundation indicator of government expenditures, based on the following formula: 100 – 0.03 (% Expenses/GDP)^2; note sign	57.89 (48.65)	20.52 (19.98)	17,582 (539,351)
Informal finance prevalence	The average percentage of business angels in each country-year sub-sample (authors'calculation)	4.26 (2.72)	3.57 (2.03)	17,582 (539,351)
Financial freedom	Heritage Foundation index, scores from 0 to 100, with 100 representing the maximum freedom	69.88 (71.82)	17.61 (17.67)	17,582 (539,351)
Loans from non resident banks	Offshore bank loans (AMT outstanding) relative to GDP, World Bank "Financial Structure" dataset (2008 v.4)	.45 (.59)	.54 (.55)	17,582 (539,351)
Share of offshore deposits	Offshore bank deposits relative to domestic deposits, World Bank "Financial structure" dataset	.15 (.15)	.14 (.13)	17,582 (539,351)
Remittance inflows	Net remittance inflows as a share of GDP, World Bank "Financial Structure" dataset (2008 v.4)	.018 (.009)	.042 (.024)	16,747 (514,805)
GDP per capita	GDP per capita at purchasing power parity, constant at 2005 $USD (WB WDI April 2009)	23,841 (27,668)	13,082 (10,049)	17,582 (539,351)
GDP growth	Annual GDP growth rate (WB WDI April 2009)	3.96 (3.19)	2.79 (2.33)	17,582 (539,351)
Personal characteristics:				
Age	The exact age of the respondent at time of the interview	38.01 (44.06)	11.98 (16.14)	17,582 (539,351)
Age squared	Age squared			17,582 (539,351)
Male	1=male, 0 otherwise	.64 (.46)	.48 (.16)	17,582 (539,351)
Employment	1=respondent is either in full or part time employment, 0 if not	.81 (.59)	.39 (.49)	17,582 (539,351)
Post-secondary & higher education	1=respondent has a post secondary or higher education attainment, 0 otherwise	.44 (.35)	.49 (.47)	17,582 (539,351)
Higher education	1=respondent has a higher education attainment	.21 (.14)	.41 (.35)	17,582 (539,351)
Current owner of business	1=current owner/manager of business, 0 otherwise	.17 (.07)	.38 (.25)	17,582 (539,351)
Business angel	1=business angel in past three years, 0 otherwise	.13 (.03)	.33 (.16)	17,582 (539,351)
Knows other entrepreneurs	1=personally knows entrepreneurs, in last two years, zero if not	.67 (n/a)	.447 (n/a)	17,582 (n/a)
Opportunity	1=nascent entrepreneur declares an opportunity motive, zero otherwise	.59 (n/a)	.49 (n/a)	17, 582 (n/a)
More than 1 owner of business	1=start-up has more than one owner, zero otherwise	.48 (n/a)	.50 (n/a)	17,582 (n/a)

Table 2: Descriptive statistics and definitions of dependent variables

Variable	Definition	Mean	S.D.	No of obs
Regression models (start-ups)				
Total funds	Volume of total funds scaled down by nominal GDP pc, local currency units; only observations with non-zero finance declared	24.55	799.09	17,582
Own funds	Volume of own funds scaled down by nominal GDP pc, same as above	4.64	169.62	13,719
External funds	The difference between total funds and own funds	12.07	385.55	13,719
Selection models				
Start-up entry (selection equation)	0 = respondent is not engaged in start-up activity; 1 = respondent is engaged in start-up	.019	.136	514,805
Use of external funds (outcome equation)	0 = respondent is engaged in start-up activity but relies only on own funding; 1 = respondent is engaged in start-up activity and relies on the use of external funds	.628	.483	13,631

Notes to Tables 1 and 2:

1. Source: GEM 2001-2006 unless specified otherwise.
2. Descriptive statistics for the regression model are based on sub-sample of nascent entrepreneurs (start-ups) for which finance information is available. Descriptive statistics for the binary-outcome selection model are based on the whole sample (entrepreneurs and non-entrepreneurs). In each cell, the first entry corresponds to regression model and descriptive statistics for binary-outcome selection model are reported in parentheses.
3. All statistics are based on the set of observations actually used in estimations (i.e. eliminating join effect of missingness in all variables).

Table 3: Regression estimation results for start-up total funds scaled down by nominal GDP pc

	(1)	(2)	(3)	(4)	(5)	(6)
Independent variables:	Coeff (rob st error)	Coeff (rob st error)	Coeff (rob st error)	Coeff (rob st error)	Coeff (rob st error)	Coeff (rob st error)
Age	4.606**	4.606**	4.606**	4.679**	4.193**	4.195**
	(1.809)	(1.809)	(1.809)	(1.946)	(1.707)	(1.709)
Age squared	-0.045**	-0.045**	-0.045**	-0.046**	-0.041**	-0.041**
	(0.020)	(0.020)	(0.020)	(0.021)	(0.019)	(0.019)
Male	27.739***	27.739***	27.739***	27.417***	26.121***	26.139***
	(9.943)	(9.943)	(9.943)	(10.355)	(9.141)	(9.152)
Employment	1.699	1.699	1.699	1.740	-1.765	-1.829
	(7.593)	(7.593)	(7.593)	(8.107)	(6.992)	(7.008)
Post-secondary & higher ed.	44.530**	44.530**	44.530**	43.315**	41.544**	41.699**
	(20.287)	(20.287)	(20.287)	(21.479)	(19.012)	(19.048)
Higher education	-25.486	-25.486	-25.486	-21.035	-21.502	-21.781
	(29.981)	(29.981)	(29.981)	(31.791)	(28.258)	(28.296)
Current owner of business	8.115	8.115	8.115	9.280	7.391	7.391
	(25.605)	(25.605)	(25.605)	(26.823)	(23.299)	(23.358)
Business angel	62.471*	62.471*	62.471*	66.973**	57.628*	57.852*
	(32.191)	(32.191)	(32.191)	(34.048)	(29.687)	(29.769)
Knows other entrepreneurs	6.028	6.028	6.028	5.093	4.648	4.529
	(5.046)	(5.046)	(5.046)	(5.212)	(4.791)	(4.798)
Opportunity	4.626	4.626	4.626	3.824	5.091	5.133
	(12.133)	(12.133)	(12.133)	(12.667)	(11.031)	(11.056)
More than one business owner	28.306**	28.306**	28.306**	28.373**	27.031***	27.041***
	(11.307)	(11.307)	(11.307)	(11.786)	(10.349)	(10.367)
Informal finance prevalence	-1.253	0.279	-2.018	-1.310	-1.062	-1.281
	(1.575)	(1.650)	(1.609)	(1.627)	(1.139)	(1.213)
Financial freedom	0.677***	-	-	-	-	-
	(0.245)	-	-	-	-	-
Loans from non-resident banks		578.792***	-	-	125.106	-
		(209.101)	-	-	(176.622)	-
Share of offshore deposits		-	-54.408***	-	-	-45.452***
		-	(19.656)	-	-	(16.776)
Remittance inflows		-	-	162.622***	-	-
		-	-	(61.228)	-	-
Property rights, Polity IV	9.149	10.229	5.887	7.997	10.122*	12.220*
	(7.499)	(7.726)	(6.901)	(7.543)	(5.890)	(6.272)
Size of government, WB WDI	0.128	1.084	-1.027	-0.089	-	-
	(0.675)	(0.785)	(0.762)	(0.683)	-	-
Size of government, HF					0.232	0.468
					(0.254)	(0.347)
GDP growth	2.678	3.827	2.169	2.108	3.725*	4.672*
	(2.749)	(2.956)	(2.673)	(2.759)	(2.260)	(2.453)
GDP per capita	-0.001	-0.001	-0.001	0.001	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Transition	-31.724	-34.509	-16.974	-4.020	-20.181	-25.527
	(23.986)	(24.648)	(20.943)	(19.579)	(18.877)	(20.155)
Constant	-248.594**	-326.447**	-125.380	-225.354**	-223.965***	-227.168**
	(113.219)	(135.643)	(84.970)	(112.468)	(82.806)	(88.400)
Sigma	792.7783	792.778	792.778	805.597	757.039	757.696
	(224.991)	(224.991)	(224.991)	(232.358)	(213.754)	(213.944)
Observations	17,582	17,582	17,582	16,747	19,384	19,350

Notes: Country- time effects included; **** p<0.001, *** p<0.01, ** p<0.05, * p<0.1

Table 4: Regression estimation results for start-up external and own funds scaled down by nominal GDP pc

Dependent variable	External funds / nominal GDPpc			Own funds / nominal GDPpc		
Independent variables:	Coeff. (rob.se)	Coeff. (rob.se)	Coeff. (rob.se)	Coeff. (rob.se)	Coeff. (rob.se)	Coeff. (rob.se)
Age	1.921*	1.921*	1.796	0.606	0.606	0.624
	(1.130)	(1.130)	(1.195)	(0.495)	(0.495)	(0.516)
Age squared	-0.017	-0.017	-0.016	-0.005	-0.005	-0.005
	(0.012)	(0.012)	(0.013)	(0.005)	(0.005)	(0.005)
Male	9.778**	9.778**	8.240*	4.031**	4.031**	4.185**
	(4.404)	(4.404)	(4.219)	(1.700)	(1.700)	(1.782)
Employment	3.960	3.960	3.837	2.881	2.881	3.160
	(2.511)	(2.511)	(2.655)	(1.896)	(1.896)	(2.062)
Post-secondary & higher education	15.321	15.321	11.340	8.103	8.103	8.561
	(10.264)	(10.264)	(9.937)	(7.512)	(7.512)	(8.013)
Higher education	-8.916	-8.916	-0.948	-4.195	-4.195	-4.630
	(15.184)	(15.184)	(14.012)	(6.157)	(6.157)	(6.720)
Current owner of business	-1.332	-1.332	0.371	-1.895	-1.895	-2.033
	(6.964)	(6.964)	(7.077)	(3.956)	(3.956)	(4.152)
Business angel	39.272	39.272	43.787*	13.040	13.040	13.752
	(24.030)	(24.030)	(25.247)	(10.412)	(10.412)	(11.024)
Knows other entrepreneurs	6.768*	6.768*	5.431	0.985	0.985	1.035
	(3.973)	(3.973)	(3.861)	(0.780)	(0.780)	(0.811)
Opportunity	11.391**	11.391**	10.944**	-3.203	-3.203	-3.414
	(4.649)	(4.649)	(4.678)	(4.521)	(4.521)	(4.755)
More than one business owner	16.052**	16.052**	14.850**	4.087	4.087	4.293
	(7.265)	(7.265)	(7.394)	(2.592)	(2.592)	(2.725)
Informal finance prevalence	-0.624	-1.068	-0.897	0.410	0.175	0.473
	(0.991)	(0.969)	(0.967)	(0.544)	(0.506)	(0.564)
Financial freedom	0.393*	-	-	0.208*	-	-
	(0.223)	-	-	(0.118)	-	-
Share of offshore deposits	-	-31.592*	-	-	-16.722*	-
	-	(17.929)	-	-	(9.458)	-
Remittance inflows	-	-	81.519	-	-	52.560*
	-	-	(53.168)	-	-	(30.153)
Property rights, Polity IV	4.030	2.135	2.448	3.237	2.234	3.186
	(5.750)	(5.125)	(5.581)	(3.633)	(3.314)	(3.641)
Size of government, WB WDI measure	0.033	-0.637	-0.187	0.101	-0.254	0.056
	(0.490)	(0.523)	(0.466)	(0.325)	(0.351)	(0.322)
GDP growth	0.629	0.334	0.068	1.538	1.382	1.468
	(2.021)	(1.933)	(1.955)	(1.295)	(1.247)	(1.281)
GDP per capita	-0.000	-0.000	0.001	0.000	0.000	0.001*
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
Transition	-1.678	6.887	15.767	-14.160	-9.626	-6.314
	(26.519)	(23.731)	(22.176)	(12.280)	(10.416)	(9.286)
Constant	-125.963	-54.417	-93.018	-67.609	-29.740	-65.287
	(91.891)	(63.407)	(86.730)	(52.925)	(39.064)	(52.451)
Sigma	383.908	383.908	375.511	169.142	169.142	173.249
	(136.146)	(136.146)	(144.991)	(79.138)	(79.138)	(81.056)
Observations	13,719	13,719	13,075	13,719	13,719	13,075

Notes: Country-time effects included; **** p<0.001, *** p<0.01, ** p<0.05, * p<0.1

Table 5: Binary-outcome selection model without exclusion restrictions

	(1)		(2)		(3)	
VARIABLES	Selection	Outcome	Selection	Outcome	Selection	Outcome
Dependent variable: The use of external finance conditional on startup entry						
Age	0.024****	0.015****	0.024****	0.015****	0.027****	0.018****
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Age squared	-0.000****	-0.000****	-0.000****	-0.000****	-0.000****	-0.000****
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Male	0.263****	0.269****	0.260****	0.269****	0.257****	0.265****
	(0.009)	(0.011)	(0.009)	(0.011)	(0.009)	(0.011)
Employment	0.206****	0.196****	0.211****	0.206****	0.219****	0.211****
	(0.011)	(0.013)	(0.011)	(0.013)	(0.011)	(0.013)
Post-secon.& higher ed.	0.094****	0.077****	0.097****	0.079****	0.093****	0.074****
	(0.011)	(0.013)	(0.011)	(0.013)	(0.011)	(0.013)
Higher education	0.088****	0.092****	0.094****	0.095****	0.104****	0.105****
	(0.013)	(0.016)	(0.013)	(0.016)	(0.014)	(0.016)
Current owner of busin.	0.118****	0.106****	0.118****	0.104****	0.117****	0.105****
	(0.014)	(0.016)	(0.014)	(0.016)	(0.014)	(0.017)
Business angel	0.497****	0.467****	0.496****	0.468****	0.487****	0.455****
	(0.017)	(0.019)	(0.017)	(0.019)	(0.017)	(0.020)
Informal finance preval.	0.062****	0.070****	0.069****	0.076****	0.074****	0.081****
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Financial freedom	0.003****	0.002****	-	-	-	-
	(0.000)	(0.000)	-	-	-	-
Loans, non-resid. banks	-	-	0.066****	0.097****	-	-
	-	-	(0.011)	(0.013)	-	-
Remittance inflows	-	-	-	-	-0.693****	-0.591***
	-	-	-	-	(0.162)	(0.182)
Property rights	0.055****	0.068****	0.075****	0.089****	0.096****	0.122****
	(0.005)	(0.006)	(0.005)	(0.006)	(0.006)	(0.007)
Size of government, WB	-0.017****	-0.014****	-0.017****	-0.015****	-0.015****	-0.012****
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
GDP growth	-0.015****	-0.008***	-0.018****	-0.010****	-0.021****	-0.012****
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
GDP per capita	-0.000****	-0.000****	-0.000****	-0.000****	-0.000****	-0.000****
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Transition	-0.112****	-0.124****	-0.090****	-0.102****	-0.119****	-0.154****
	(0.022)	(0.027)	(0.022)	(0.027)	(0.022)	(0.027)
Constant	-2.716****	-2.859****	-2.724****	-2.920****	-2.893****	-3.204****
	(0.056)	(0.065)	(0.057)	(0.066)	(0.063)	(0.074)
Observations	539,351		539,351		514,805	

Notes: **** p<0.001, *** p<0.01, ** p<0.05, * p<0.1

Figure 1: Median amount of total finance in USD and GDP per capita (purchasing power parity)

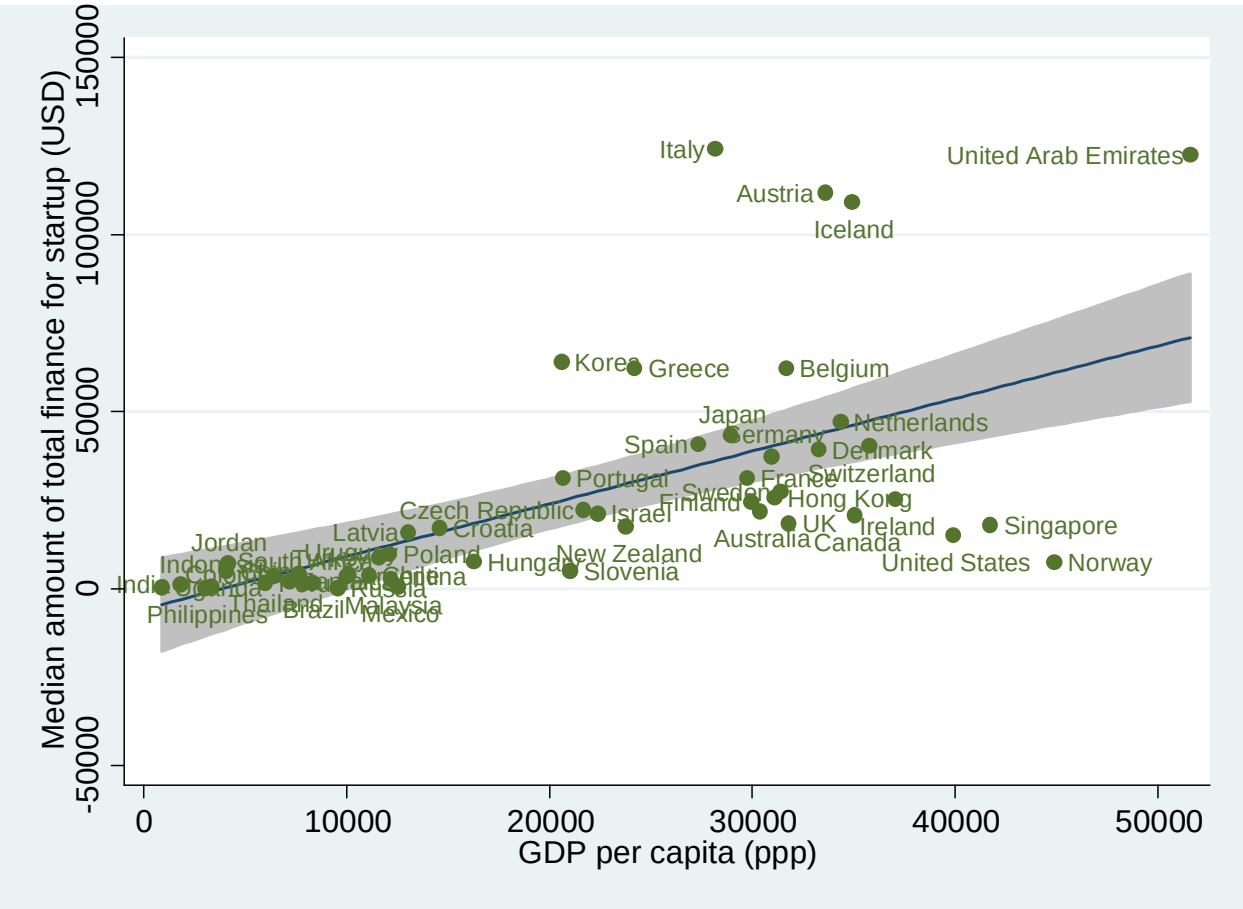


Figure 2: Median amount of total finance for start-up (USD) and offshore deposits

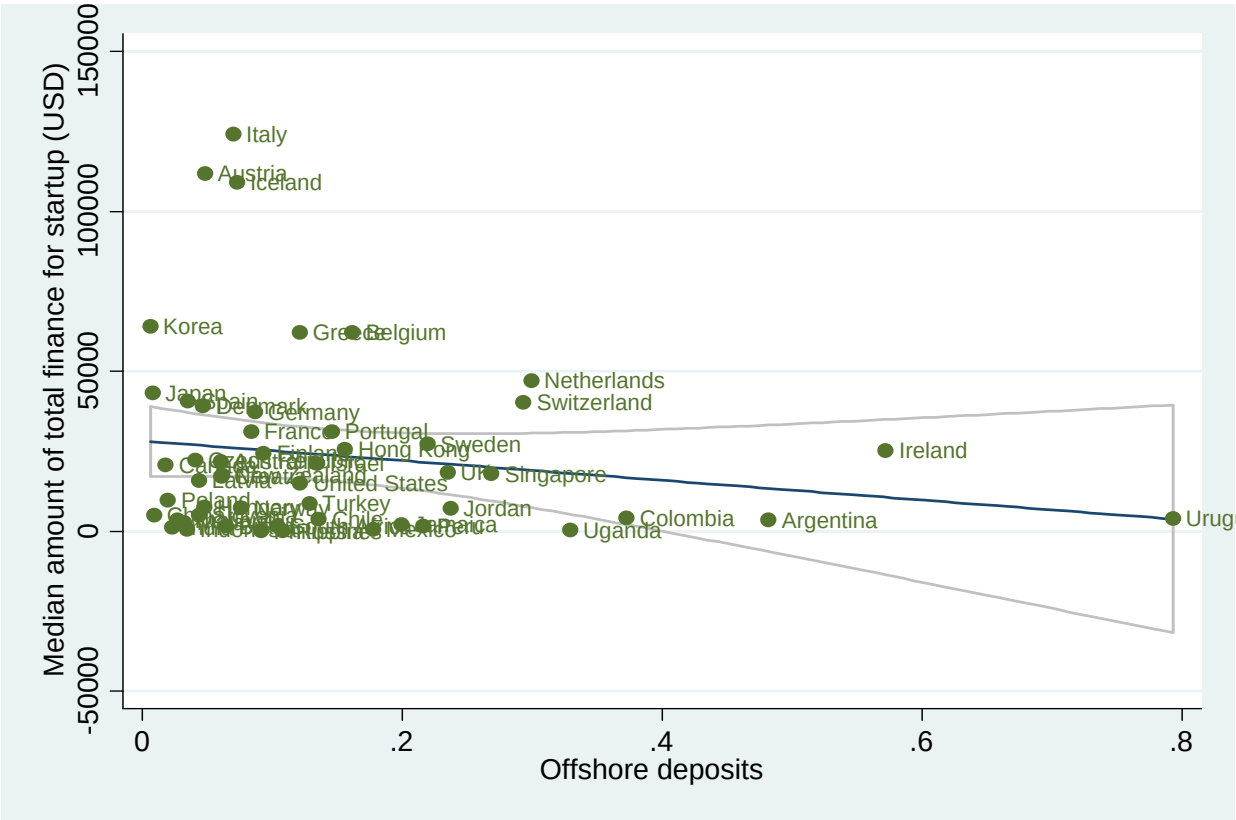
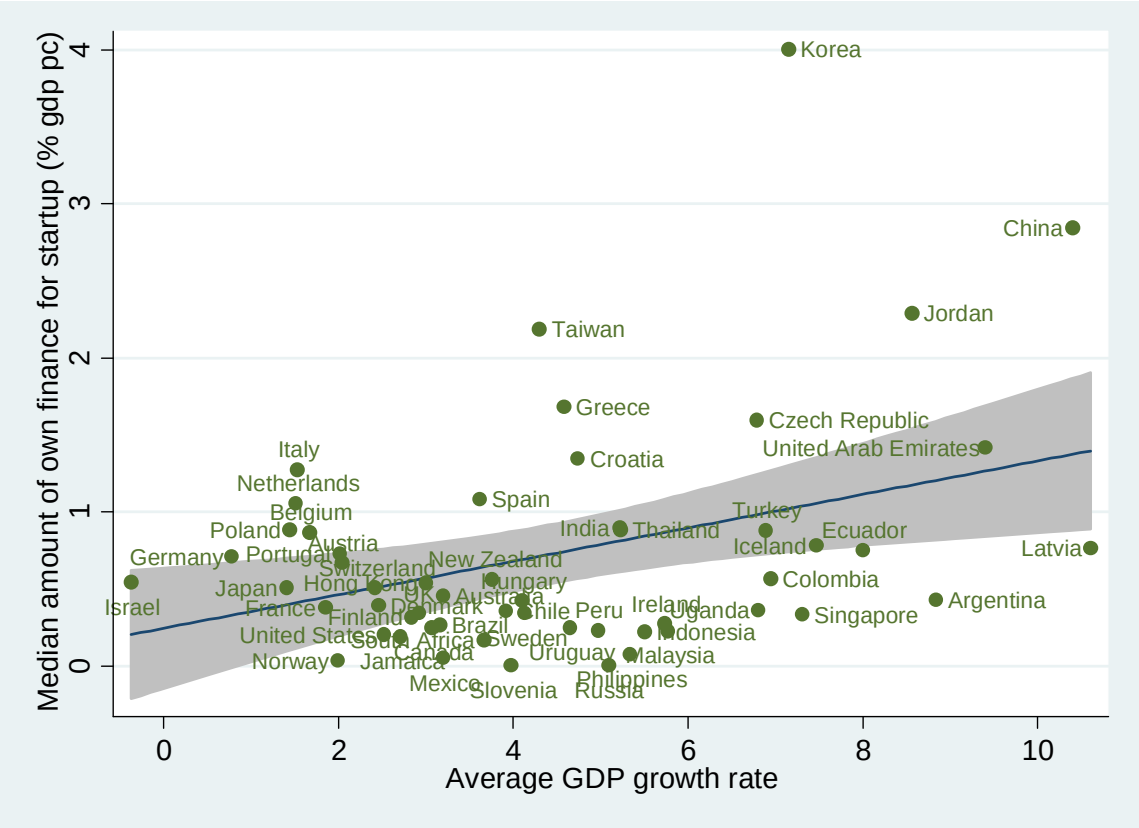


Figure 3: Median amount of own funds for start-up (% of nominal GDP pc ppp) and GDP growth



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