**Senior Research Workshop**

**ECON 407**

Title: ***Impact of Long-Term Finance on Entry of Firms.***

Prepared by: Hree Farhat

Student ID: 105114631

Professor: Yahong Zhang

Submission Date : April 3rd, 2019



**Impact of long-term finance on entry of firms**

###### Abstract

Although the theoretical literature on this topic straightforwardly indicates that long term finance has a positive impact on the entry of firms, the empirical literature is rather unambiguous about the positive effect of long-term finances on firm entries. Therefore, in this paper I have investigated whether long-term finance has any effect on the firm entry across the world. I collected a database on short-term and long-term credit in 85 countries over the period of 1995-2014. I have analyzed whether differences in entrepreneurship are correlated with the provision of short-term and long-term finances. Data on entrepreneurship is extracted from GEM and ED: the Global Entrepreneurship Monitoring dataset (GEM) which consists of different characteristics of firm creation. The ED captures business registration and concentrates exclusively on the formation of new limited liability companies. Data on long term finances is extracted from World Bank. The econometric results after conducting the test specifies that short-term credit exerts a positive impact at each stage of firm creation from it’s start-up to registration. Whereas, on the other hand, it is found that, long-term credit does not significantly facilitate firm entry.

*Keywords:* Long-term finance; banks; entrepreneurship; credit constraints

###### Introduction

The new entry of firms has become the engine of economic and social development throughout the world in recent years. The role of entrepreneurship has changed dramatically between the traditional and new economies after World War II. Comprehending the institutional drivers of new firm entry is therefore of major importance in scheming effective economic strategies around the world. Existing papers have documented that, alongside macroeconomic factors (Koellinger and Thurik, 2012), and business regulation (Djankov et al., 2002; Stel et al, 2005), the availability of external finance is one of the vital determinants of new firm creation.

Short-term and long-term credit may play differing roles in the development of entrepreneurship. We define short-term credit as credit with a maturity of one year or less and long-term credit as credit whose maturity exceeds one year. Unlike short-term credit, long-term loans allow entrepreneurs to be flexible with repayments. They have time to invest funds in their business after start-up and earn profit before they can repay the loan. An entrepreneur relying exclusively on short-term credit must rapidly generate cash-flows in order to meet repayment obligations which is a very hard task for new businesses. Therefore, better access to long-term financing could encourage firms to enter as they have the option to repay their loans later.

However, there’s some doubt about the absolute positive impact of long-term finance. Banks are more reluctant to grant long-term loans than short-term ones. Loans with longer maturity worsen asymmetric information problems (especially moral hazard) and often imply larger loan amounts, generating higher risk for banks. Short-term credit can be more useful to entrepreneurs in lessening credit constraints because it is more available for borrowers who lack an established credit history. Entrepreneurs can raise additional funds with access to short term loans.

Hence this paper empirically evaluates the impact of long-term credit on new entry of firms as opposed to short term credit. We firstly collect a database on short-term and long-term credit to private sector to GDP. We focus exclusively on credit provided by commercial banks for two main reasons. Firstly, data on other sources of long-term finance are rarely available and are not comparable across countries. Second, bank lending is the primary and main source of credit for young firms, especially in developing countries. Our database on bank loan includes all countries (both developed and developing) for which we could compile a reliable data source. The initial dataset that’s collected from World Bank covers 85 countries over the period 1995-2014, including 48 developing countries and 37 high-income countries.

The relationship between long-term bank credit and firm entry rate is then investigated. Two datasets are considered: the Global Entrepreneurship Monitor (GEM) dataset and the Entrepreneurship database (ED) from Doing Business website. Other miscellaneous data are also collected from World Bank, WDI and ICRG.

The remainder of this paper is organized as follows. Section 2 talks about the literature that’s behind the motivation of the paper, Section 3 displays the data sources and Section 4 presents the methodology used for analyzation. Section 5 presents the main findings of the test. The final section concludes the paper.

**2. Literature**

This paper directly contributes to the extensive empirical literature on the impact of long-term finance on firm entry. Though the theoretical literature is rather unambiguous, the empirical literature does not provide evidences of the positive effect of banking development on entrepreneurial activities. Researches based on household surveys, often present a strong correlation between capital and the propensity to start a business both in developed economies (Evans and Jovanovic, 1989) and in developing countries (Demirgu¸c-Kunt et al.¨ , 2011).Evidence from other parts of the world is, however, less clear-cut. For instance, while Beck et al. (2015) find a positive effect of external finance on a household’s decision to set up a business in China, Elston et al. (2016) underline the role of informal finance for industrialists. In another situation, Demirgu¸c-Kunt et al.¨ (2011) show that access to bank finance is not significant in a decision to launch an a business in Bosnia and Herzegovina. Klapper et al. (2010) report a positive role of financial development on new firm start-up, but econometric results in the paper are weakly robust. Other papers ( Klapper et al., 2015) indicate that new business creation is more sensitive to business cycles in more industrialized countries, underlining the role banking development plays in promoting entrepreneurship. Ho and Wong (2007), however, challenge this view. They show that, the availability of debt financing, contrary to that of informal financing, does not affect firm creation.

The empirical approach of this paper copies recent papers that investigate cross-country differences in entrepreneurship using panel data (e.g., Klapper et al., 2010; Klapper and Love, 2011, 2014). After controlling for potential confounding variables and country unobserved timeinvariant heterogeneity, we document that, contrary to short-term credit, long-term credit provision over GDP has no impact on the firm entry rate. Interestingly, while the GEM and ED databases often provide conflicting results, we find the provision of short-term credit seems beneficial to spurring the creation of a new business (GEM) and registration in the formal sector (ED).

This work is also directly linked to the body of literature focusing on real impact of long-term finance. Existing literature documents that firms with higher long-term debt ratios grow faster than their counterparts (Demirgu¸c-Kunt and Maksimovic¨ , 1998), have lower growth volatility (Demirgu¸c-Kunt et al.¨ , 2017) and suffer less from credit contraction following a financial crisis (Vermoesen et al., 2013). This micro-evidence is in line with macro-evidence underlining the positive effect of long-term credit on growth (Gbenyo and Kpodar, 2010). To our knowledge, we are the first to study the effect of short-term and long-term bank credit provision on firm entry. By focusing on entrepreneurship, we challenge previous findings on the beneficial impact of long-term credit on firm dynamics. The provision of long-term bank credit does not help entrepreneurs.

###### 3. Data

3.1 Credit Maturity

Finance is broken down into two categories. Short-term credit is defined as loans with a maturity of one year or less and long-term credit as loans whose maturity exceeds one year. We transform the data by dividing these figures by current GDP in local currency for each country-year. As a result, we get the ratio of short-term credit over GDP and long-term credit over GDP. The total credit over GDP is the sum of these indicators and this variable is comparable to the usual ratio of credit to GDP employed in many studies.

The initial database considers 85 countries over the period 1995-2014 collected from World Bank. The list of countries, provided in Appendix.

Basic descriptive statistics, displayed in Table 1, indicate that total credit represents

48% of GDP on average and that three fifths of loans have a maturity above one year. Average values, however, hide large variations across countries. The level and percentage of long-term credit increases with the level of a country’s development. Differences across continents, displayed in Table 1, reflect differences in terms of development.

Table 1: Bank credit maturity, by country group

Total credit Maturity breakdown Sample

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | WDI | Author | Short-t. | Long-t. | % of LT | Nb of | Nb of |
|  |  |  | to GDP | to GDP | to total loan | Obs. | Count. |
| All countries | 48.1 | 47.9 | 14.7 | 33.8 | 60.0 | 1211 | 85 |
| *By income level*  Low income | 11.8 | 11.6 | 7.2 | 4.3 | 33.5 | 196 | 14 |
| Lower middle income | 22.5 | 22.7 | 10.5 | 12.3 | 47.0 | 171 | 14 |
| Upper middle income | 45.0 | 43.8 | 11.9 | 31.9 | 66.3 | 300 | 20 |
| High income | 74.2 | 71.2 | 20.2 | 52.2 | 70.2 | 544 | 37 |
| *By continent*  East Asia & Pacific | 86.6 | 91.1 | 35.2 | 56.0 | 64.4 | 78 | 6 |
| Latin America & Caribbean | 61.0 | 62.2 | 18.4 | 47.7 | 72.1 | 165 | 11 |
| Europe & Central Asia | 64.3 | 57.7 | 13.4 | 44.3 | 71.1 | 539 | 36 |
| Middle East & North Africa | 45.9 | 47.9 | 20.1 | 27.8 | 53.2 | 113 | 9 |
| Sub-Saharan Africa | 13.0 | 13.0 | 7.8 | 5.2 | 36.2 | 316 | 23 |

Figures are obtained using the complete dataset (85 countries, period 2000-2014

We observe an increase of long-term bank credit in absolute and relative terms from

2000 to 2014 (Table 2). The ratio of long-term loans to GDP rose from 23 to 42 from

2000 to 2014 and its share in total credit increased from 62% to 74%. In an unreported analysis, we scrutinize whether the increase of the ratio of long-term credit is a common feature of both developed and developing countries.

Table 2: Bank credit maturity, by year

Total Long-term credit Short-term credit Nb of

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| credit | % of GDP | % of TC | % of GDP | % of TC | countries |
| 1995 53.7 | 30.9 | 57.6 | 22.7 | 42.4 | 12 |
| 1996 49.9 | 30.0 | 60.2 | 19.8 | 39.8 | 19 |
| 1997 38.0 | 22.4 | 58.9 | 15.6 | 41.1 | 29 |
| 1998 41.5 | 25.4 | 61.2 | 16.1 | 38.8 | 32 |
| 1999 37.7 | 22.6 | 60.1 | 15.0 | 39.9 | 36 |
| 2000 37.9 | 23.7 | 62.5 | 14.2 | 37.5 | 50 |
| 2001 37.0 | 23.9 | 64.6 | 13.1 | 35.4 | 55 |
| 2002 37.3 | 24.6 | 66.0 | 12.7 | 34.0 | 58 |
| 2003 38.2 | 26.1 | 68.3 | 12.1 | 31.7 | 67 |
| 2004 40.4 | 27.5 | 68.2 | 12.8 | 31.8 | 72 |
| 2005 43.0 | 29.7 | 69.2 | 13.2 | 30.8 | 75 |
| 2006 45.5 | 31.8 | 70.0 | 13.7 | 30.0 | 78 |
| 2007 49.6 | 35.0 | 70.6 | 14.6 | 29.4 | 80 |
| 2008 52.8 | 37.2 | 70.4 | 15.7 | 29.6 | 80 |
| 2009 55.7 | 40.0 | 71.9 | 15.7 | 28.1 | 82 |
| 2010 54.9 | 40.1 | 73.0 | 14.8 | 27.0 | 83 |
| 2011 59.0 | 43.1 | 73.1 | 15.9 | 26.9 | 76 |
| 2012 58.7 | 43.0 | 73.2 | 15.7 | 26.8 | 76 |
| 2013 57.7 | 42.1 | 73.1 | 15.5 | 26.9 | 77 |
| 2014 57.4 | 42.6 | 74.1 | 14.9 | 25.9 | 74 |

TC refers to total credit (sum of short-term credit and long-term credit).

Figures are obtained using the complete dataset (85 countries)

We show that the percentage of long-term credit increases in high-income, middle-income and low-income countries (at least after 2005 for the latter group). In addition, this trend is occurring faster in low-income countries, suggesting a possible convergence of credit maturity

3.2 Firm Entry

There are two frequently-used datasets designed to measure entrepreneurship across the world: the Global Entrepreneurship Monitor (GEM) dataset and the Enterpreneurship Database (ED) from Doing Business. The ED previously circulated under the name of World Bank Group Entrepreneurship Surveys (WBGES). Contrary to the majority of studies on drivers of entrepreneurship, we employ both databases and exploit their differences.

The Global Entrepreneurship Monitor (GEM) is an initiative aimed at better understanding entrepreneurship around the world. The GEM defines an entrepreneur as an individual who starts a new business or manages a young firm. The entrepreneur can operate in the formal or informal sector and the entrepreneurial activity can be a full-time or a part-time business. Data are obtained using harmonized surveys across different countries. The entry rate is captured by the Total early-stage Entrepreneurial Activity (TEA) rate from GEM dataset which is the percentage of the adult population (18-64 year-olds) who are currently starting a new business or who own or manage a young firm (less than 42 months).

The second database, the ED, focuses on firm registration as a legal entity (and therefore exclusively on the formal sector). Data are extracted from national business registries. The business entry rate is defined as the number of newly registered firms with limited liability per 1,000 working-age people (ages 15-64).

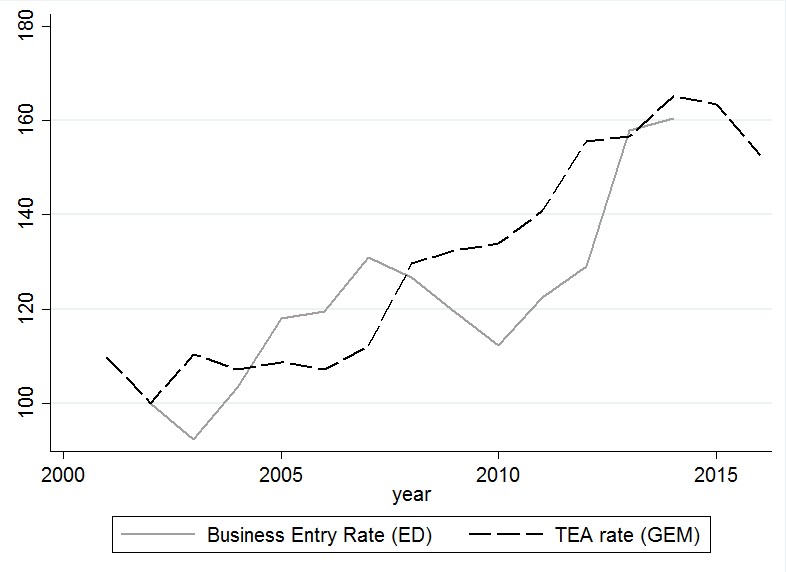
Table 3: Entrepreneurship rates from GEM and ED datasets, by country group

TEA rate (GEM) Business entry rate (ED)

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Mean | 25th | Median | 75th | Obs | Mean | 25th | Median | 75th | Obs |
| All countries | 11.02 | 5.83 | 8.98 | 14.11 | 777 | 2.98 | 0.61 | 1.62 | 3.95 | 1,386 |
| *By income level*  Low income | 28.32 | 25.21 | 30.52 | 33.67 | 14 | 0.25 | 0.05 | 0.15 | 0.38 | 105 |
| Lower middle income | 17.55 | 10.23 | 15.55 | 22.47 | 68 | 0.88 | 0.22 | 0.53 | 1.00 | 315 |
| Upper middle income | 14.46 | 8.81 | 13.32 | 19.39 | 204 | 2.88 | 0.87 | 1.71 | 3.64 | 411 |
| High Income | 8.20 | 5.29 | 7.16 | 10.19 | 491 | 4.76 | 2.00 | 3.34 | 6.23 | 555 |
| *By continent*  East Asia & Pacific | 11.03 | 6.05 | 10.59 | 14.68 | 106 | 4.23 | 0.72 | 2.22 | 6.10 | 166 |
| Europe & Central Asia | 6.92 | 5.02 | 6.47 | 8.53 | 370 | 3.67 | 1.17 | 2.78 | 4.68 | 547 |
| Latin America & Caribbean | 17.36 | 13.08 | 16.72 | 21.01 | 155 | 3.15 | 0.71 | 1.73 | 3.23 | 256 |
| Middle East & North Africa | 10.37 | 6.53 | 9.4 | 12.79 | 57 | 2.00 | 0.53 | 1.19 | 1.96 | 121 |
| North America | 11.13 | 9.51 | 11.17 | 12.63 | 26 | 0.98 | 0.86 | 0.94 | 1.07 | 13 |
| South Asia | 10.57 | 9.08 | 10.59 | 11.49 | 13 | 0.52 | 0.05 | 0.11 | 0.39 | 85 |
| Sub-Saharan Africa | 22.53 | 9.14 | 25.60 | 33.23 | 50 | 1.61 | 0.16 | 0.59 | 1.25 | 198 |

Figures are obtained using the complete datasets

Both databases capture different aspects of firm creation and often describe different realities (Acs et al., 2008). The ED focuses on firm registration and the firm entry into the formal sector, while the GEM concentrates on business creation, irrespective of legal status (i.e., formal and informal). Comparisons of the two variables of entrepreneurship, displayed in Table 3, are interesting and verify those made by Acs et al. (2008). First, the level of entry rate according to the TEA exceeds the rate of business registrations. This is explained by the fact that the business entry rate considers only formal registration, while the TEA rate also includes informal firms. Second, GEM data tend to report significantly higher levels of entrepreneurship in developing countries than in developed countries. The ED data present the inverse. In other words, they indicate that there is more entrepreneurial activity in developing countries but that a lesser share of firms operate under a formal status. Finally, the TEA rate and the business entry rate are not correlated (*ρ* = −0*.*06). It is therefore not surprising that both datasets provide conflicting results on the drivers of firm entry. Nonetheless, we observe in Figure 1 that both the TEA rate and the business entry rate have increased over the past decade. As expected (Klapper and Love, 2011), the level of new business registrations has been impacted by the Global Financial Crisis but the Total early-stage Entrepreneurial Activity rate does not reach a similar decrease during this period.

Figure 1: Evolution of TEA rate and business entry rate (base 100 = 2002)

Studies often focus on one database because they are investigating only one aspect that is related either to firm birth or to firm registration. By using both datasets, it can be analyzed whether short-term credit and long-term credit ease constraints faced by entrepreneurs at the different stages of entrepreneurship.

###### 4 Methodology

For analyzing if credit maturity affects firm entry, a simple empirical test is performed to investigate whether a country’s firm entry rate is related to it’s finances. This is a similar methodology that’s found in previous studies using panel data (e.g., Klapper et al., 2010, 2015; Klapper and Love, 2014).

We estimate the following model:

*Entryit* = *βFit*−1 + Γ**X***it* + *αt* + *αi* + *εit* (1)

where *Entryit* is a measure of entry rate in country *i* in year *t* using both indicators provided by GEM (TEA rate) and ED (Business entry rate). *Fit*−1 is the ratio of total private credit to GDP (defined as the sum of short-term and long-term credit) in year *t* – 1(the ratio of credit to GDP is entered with one lag to limit endogeneity issue), **X***it* is a matrix of time-variant country characteristics (see below), *αt* is a matrix of time fixed effects and *αi* is an unobservable country-specific effect.

In a second step, we rerun the same model by dividing total credit over GDP between short-term finances to GDP and long-term finances to GDP as follows:

 (2)

where is the ratio of short-term credit to GDP and is the ratio of long-term credit to GDP in country *i* in year *t* − 1. Greater availability of long-term credit (resp. short-term credit) is beneficial for firms’ entry if *βLT >* 0 (resp. *βST >* 0).

We run two different estimation methods to control for unobserved cross-country heterogeneity: a random-effect model and a fixed-effect model. The random-effect model assumes that the unobservable individual effects (*αi*) are random variables that are distributed independently of the regressors. This model allows us to exploit both within and between-variation but is potentially biased due to the presence of any unobserved time-invariant difference between countries that affects both financial development and entry rate. Inclusion of country fixed-effects (in place of random-effect) allows us to control for this potential source of endogeneity but only exploits the within variation.

An important consideration is the need to isolate the impact of financial development from other country characteristics. The inclusion of country fixed effects allows us to control for all time-invariant country characteristics but we also control for time-variant country factors (**X***ct*). First, we control for economic development by adding GDP per capita because both long-term credit and entrepreneurship are potentially correlated with the level of development. Second, we add the (lagged) growth rate of real GDP because both the level of financial development (due to higher demand for financial services) and firm entry (Koellinger and Thurik, 2012) can be affected by business cycles. Finally, the degree of financial deepening, especially for long-term credit, is potentially related to the business environment that a given entrepreneur is operating in a given country. We therefore include several indicators of business environment extracted from Doing Business from their web data. Details about variable definitions are summary statistics are reported below

Table 4: Summary Statistics

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Panel A: Models using GEM data | | |  |  |  |
| Variable | Obs. | Mean | Std. Dev. | Min | Max |
| TEA rate | 251 | 8.978008 | 6.173737 | 2.44 | 38.55 |
| Total credit/GDP | 251 | 68.07062 | 30.81505 | 5.915368 | 143.6752 |
| Short-term credit/GDP | 251 | 15.91691 | 10.56697 | 2.686329 | 57.80505 |
| Long-term credit/GDP | 251 | 52.71039 | 27.25711 | 1.154395 | 117.0423 |
| Growth | 251 | 1.816135 | 3.508607 | -12.90611 | 12.92044 |
| GDP per capita (in log) | 251 | 9.802266 | .9572759 | 6.418737 | 11.58387 |
| Start a business | 251 | 1.762163 | .4993057 | .6931472 | 2.70805 |
| Registering property | 251 | 1.656507 | .4829481 | 0 | 2.639057 |
| Enforcing contract | 251 | 3.488484 | .1613658 | 3.044523 | 3.850147 |
| Resolving insolvency | 251 | 54.31195 | 21.86951 | 0 | 90.2 |
| Panel B: Models using ED | data |  |  |  |  |
| Variable | Obs. | Mean | Std. Dev. | Min | Max |
| Business entry rate | 451 | 3.195171 | 2.951785 | .0084 | 17.2608 |
| Total credit/GDP | 451 | 56.69467 | 32.3901 | 7.224331 | 143.6752 |
| Short-term credit/GDP | 451 | 14.03796 | 9.02198 | 2.491565 | 53.65152 |
| Long-term credit/GDP | 451 | 42.65667 | 28.26732 | 2.67105 | 117.0423 |
| Growth | 451 | 2.682963 | 4.359845 | -14.55986 | 23.63913 |
| GDP per capita (in log) | 451 | 9.100367 | 1.289032 | 5.994983 | 11.62597 |
| Start a business | 451 | 1.891125 | .4478498 | .6931472 | 2.772589 |
| Registering property | 451 | 1.647574 | .4767572 | 0 | 2.639057 |
| Enforcing contract | 451 | 3.540674 | .1826104 | 3.044523 | 3.931826 |
| Resolving insolvency | 451 | 42.41264 | 22.4503 | 0 | 90.2 |
|  |  |  |  |  |  |

The list of sources of data, variables and description of variables are here.

*Dependent variables*

Variable

Description

Source

*a*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| TEA rate*ct* | Percentage of adults population (18-64 year-old) who are  currently starting a new business or the owner and managers of a young firm (less than 42 months). |  |  | GEM |
| Business Entry Rate*ct*  *Independent variables*  *Credit variables* | Number of newly registered firms with limited liability per 1,000 working-age people (ages 15-64). |  |  | ED |
| Total credit/GDP | Bank credit to the private sector over GDP, sum of short-term and long-term credit |  |  | World Bank |
| Short-term credit/GDP | Short-term bank credit over GDP defined as loans with a maturity below or equal to one year |  |  | World Bank |
| Long-term credit/GDP  *Control variables* | Long-term bank credit over GDP defined as loans with a maturity above one year |  |  | World Bank |
| Growth | Growth of real GDP |  |  | WDI |
| GDP per capita | GDP per capita (Constant USD), in log with one lag |  |  | WDI |
| Start a business | Number of days to start a business (in log) |  |  | DB |
| Registering property | Number of days to register property (in log) |  |  | DB |
| Enforcing contact | Number of days to enforce a contract (in log) |  |  | DB |
| Resolving insolvency | Recovery rate (per USD) |  |  | DB |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |  |  |
| *a*GEM: Global Entrepreneurship Monitor database; World Bank; ED: Entrepreneurship Database; WDI: World Development Indicators; DB: Doing Business | |  |  |  |

Data for 108 countries are available from on TEA and from ED for 137 countries. However, due to the lack of explanatory variables for many countries, our final sample includes only 43 countries (period: 2005-2015, 251 observations) when we employ the TEA rate (GEM dataset) and 57 countries (period: 2005-2014, 451 observations) when we explain the business entry rate (ED dataset). The list of countries is reported in

Appendix.

###### 5 Baseline results

Table 5: The determinants of entrepreneurship and total credit

TEA rate (GEM data) Business entry rate (ED data)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | OLS | RE | FE | OLS | RE | FE |
|  | (1) | (2) | (3) | (4) | (5) | (6) |
| Total credit/GDP (lagged) | -0.0324\*\* | -0.0116 | 0.00216 | 0.0143\*\* | 0.00722 | 0.00377 |
|  | (-2.07) | (-0.41) | (0.07) | (2.01) | (1.02) | (0.55) |
| Growth (lagged) | 0.0323 | 0.0220 | 0.0154 | 0.126\*\*\* | 0.0570\*\*\* | 0.0514\*\* |
|  | (0.23) | (0.20) | (0.16) | (2.83) | (2.89) | (2.45) |
| GDP per capita (lagged) | -2.900\*\*\* | -2.742\*\* | 7.463 | 0.862\*\*\* | 1.192\*\*\* | 1.793 |
|  | (-4.00) | (-2.18) | (1.29) | (7.08) | (3.89) | (1.23) |
| Start a business | 1.656\* | 0.879 | 1.016 | -2.033\*\*\* | 0.371 | 0.544 |
|  | (1.90) | (0.95) | (1.09) | (-4.60) | (0.86) | (1.24) |
| Registering property | -1.043 | -0.410 | -0.715 | -0.829\*\*\* | -0.486 | -0.486 |
|  | (-1.31) | (-0.39) | (-0.74) | (-3.04) | (-1.07) | (-0.93) |
| Enforcing contract | -5.414\*\* | 5.050 | 14.34 | -0.630 | 2.084 | 5.635 |
|  | (-2.08) | (0.77) | (1.53) | (-0.87) | (0.95) | (1.28) |
| Resolving insolvency | 0.00526 | 0.0198 | -0.00921 | -0.0324\*\*\* | -0.00326 | -0.00240 |
|  | (0.24) | (0.54) | (-0.21) | (-4.00) | (-0.26) | (-0.17) |
| Obs. | 251 | 251 | 251 | 451 | 451 | 451 |
| Country | 43 | 43 | 43 | 57 | 57 | 57 |
| R2 | 0.320 |  | 0.849 | 0.293 |  | 0.922 |

Standard errors are clustered at the country-level. \*, \*\*, and \*\*\* indicate significance at 10%, 5% and 1%, respectively.

Next, we examine the differential impact of short-term and long-term credit on entrepreneurship. We remove total credit over GDP and include both short-term credit over GDP and long-term credit over GDP, as documented in Eq. 2. Econometric results are displayed in Table 6. Coefficients associated with long-term credit are often negative but are never statistically significant at the usual threshold. On the contrary, we find that coefficients associated with the ratio of short-term credit are statistically significant and positive. Irrespective of the econometric methods or entrepreneurship indicators considered, the rate of firm entry is higher when the provision of short-term credit increases. The economic impact of short-term credit is far from negligible. A one standard deviation increase of short-term credit raises the TEA rate by almost 1.5 points (16% of the TEA mean) and the business entry rate by 0.66 points (20% of the mean of the business entry rate). Analysis of control variables indicates that growth has a positive impact on firm registration but not on business creation. We fail to prove a close relationship between the business environment and entrepreneurship.

The determinants of entrepreneurship and credit by maturity capital needs, small investment, etc.). We also document that entrepreneurs are more willing to register as a limited liability company when short-term credit is more readily available. This latter result could be explained not only by the costs induced by registration procedures but also by a demand channel: firms may expect to have access to formal finance in countries where short-term credit is easily available. Unfortunately, we are unable to distinguish between these two possible explanations. However, our findings illustrate that long-term credit does not affect entry of new firms. One possible explanation for this is the inability of new firms to get access to long-term bank financing.

In a nutshell, our findings indicate that the provision of short-term credit helps new firms to overcome sunk costs induced by the creation of a new business (such as working Table 6:

Table 6: The determinants of entrepreneurship and credit by maturity

TEA rate (GEM data) Business entry rate (ED data)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | OLS | RE | FE | OLS | RE | FE |
|  | (1) | (2) | (3) | (4) | (5) | (6) |
| Short-term credit/GDP (lagged) | 0.0838\*\* | 0.130\*\* | 0.141\* | -0.0303\*\* | 0.0561\*\* | 0.0738\*\* |
|  | (2.39) | (2.11) | (1.72) | (-2.27) | (2.23) | (2.46) |
| Long-term credit/GDP (lagged) | -0.0589\*\*\* | -0.0424 | -0.0220 | 0.0131 | -0.00421 | -0.00968 |
|  | (-3.41) | (-1.28) | (-0.52) | (1.43) | (-0.50) | (-1.05) |
| Growth (lagged) | 0.0823 | 0.0359 | 0.0302 | 0.109\*\* | 0.0575\*\*\* | 0.0538\*\*\* |
|  | (0.56) | (0.31) | (0.30) | (2.52) | (3.01) | (2.86) |
| GDP per capita (lagged) | -2.903\*\*\* | -2.840\*\* | 7.070 | 0.997\*\*\* | 1.112\*\*\* | 1.311 |
|  | (-3.98) | (-2.30) | (1.18) | (10.21) | (3.59) | (0.85) |
| Start a business | 1.815\*\* | 0.874 | 0.908 | -0.975\*\*\* | 0.432 | 0.510 |
|  | (2.12) | (0.93) | (0.91) | (-2.70) | (0.99) | (1.14) |
| Registering property | -0.254 | 0.0297 | -0.514 | -0.826\*\*\* | -0.559 | -0.575 |
|  | (-0.30) | (0.02) | (-0.35) | (-2.98) | (-1.13) | (-0.94) |
| Enforcing contract | -8.695\*\*\* | 0.957 | 9.318 | -0.534 | 1.391 | 4.874 |
|  | (-3.15) | (0.15) | (1.14) | (-0.67) | (0.61) | (1.04) |
| Resolving insolvency | 0.00866 | 0.0118 | -0.0126 | -0.0325\*\*\* | -0.00711 | -0.00325 |
|  | (0.40) | (0.34) | (-0.31) | (-4.41) | (-0.58) | (-0.22) |
| Obs. | 251 | 251 | 251 | 451 | 451 | 451 |
| Country | 43 | 43 | 43 | 57 | 57 | 57 |
| R2 | 0.361 |  | 0.856 | 0.230 |  | 0.906 |

Standard errors are clustered at the country-level. \*, \*\*, and \*\*\* indicate significance at 10%, 5% and 1%, respectively.

###### 

###### 6. Conclusion

This paper empirically explores whether short-term and long-term credit is beneficial for firm creation. Although a large body of literature indicates that financial constraints limit the entry of new firms, the impact of the provision of long-term financing for entrepreneurs is theoretically ambiguous. On the one hand, entrepreneurs may benefit from long-term financing to overcome entry costs. Contrary to short-term credit, long-term credit allows entrepreneurs to invest in projects with delayed returns. On the other hand, one might raise doubts about the positive impact of long-term financing if entrepreneurs are unable to get access to long-term credit. Loans with longer maturity may be oriented towards existing borrowers who have a previous relationship with a formal lender to the detriment of new borrowers. According to this view, a better provision of short-term credit would be more useful to alleviate the credit constraints of entrepreneurs because these funds are more accessible for borrowers without credit history.

This paper empirically investigates the impact of long-term and short-term bank loan provisions on entrepreneurship. In doing so, we confront a new hand-collected database on bank loan maturity with data on entrepreneurship at the country-level. Data on shortterm and long-term credit granted to the private sector were collected on 85 countries, including 48 developing countries and 37 high-income countries over the period 19952014. Short-term credit is defined as credit with a maturity of one year or less and long-term credit as credit whose maturity exceeds one year. We combine our database on bank loan maturity with cross-country data on entrepreneurship from two different datasets: the Global Entrepreneurship Monitor (GEM) dataset and the Entrepreneurship

Database (ED). Both databases capture different aspects of firm creation and describe different realities (Acs et al., 2008). The ED focuses on firm registration and firm entry in the formal sector, while the GEM concentrates on business creation, irrespective of legal status (formal and informal). Contrary to the majority of studies on the drivers of entrepreneurship, we employ both databases and exploit their differences.

Econometric findings document that long-term credit provision over GDP has no impact on the entry rate. On the contrary, short-term credit exerts a positive impact on firm creation. These results hold for both measures of entrepreneurship considered. In other words, the provision of short-term credit is beneficial to spurring entrepreneurship at each stage, from the beginning of a new business venture (assessed by the GEM data) to registration in the formal sector (proxied by the ED).

Our findings do not suggest that long-term credit is not useful for entrepreneurs. They simply signal that short-term credit is more effective than long-term credit to alleviate financial constraints faced by entrepreneurs. Better provision of short-term credit allows entrepreneurs to apply for a formal loan instead of relying exclusively on informal loans or internal funds. However, an increase in long-term loans does not help entrepreneurs in their business if they are unable to produce hard information that qualifies them for these loans. Long-term loans are certainly limited to previous (good) borrowers who have previous relationships with formal lenders and/or credit history.

From a policy perspective, our findings indicate that facilitating access to short-term finance can be of prime importance for stimulating entrepreneurship. This is crucial because new firms create more jobs both in developed countries (Haltiwanger et al., 2013) and in developing countries.

Form a research perspective, we can suggest three ways for future works. First, it could be useful to confirm our conclusions by employing micro-evidence. Second, as underlined by King and Levine (1993), banking development can affect entrepreneurial activity not only by increasing the amount of funding dedicated to entrepreneurs but also through screening improvement and risk diversification. To our knowledge there is no paper that disentangles these three channels. Our paper’s finding suggests that banking development affects entrepreneurial activities through resources allocated to entrepreneurs. Indeed, contrary to long-term loans, short-term credit is more easily allocated for new borrowers. However, our findings just provide a simple suggestion on the channel through which finance impacts entrepreneurship. Future works should focus explicitly on disentangling the three channels through which financial development can be related to entrepreneurial activities. Finally, external funds are important because they influence not only the ability of individuals to enter into markets, but also post-entry development of firms (Beck et al., 2008). In spite of a lack of impact on firm creation, long-term finance could positively impact post-entry growth and survival probability. To our knowledge, evidence is rather scarce on this subject and additional research is needed.

###### References

Acs, Z. J., Desai, S., and Klapper, L. F. (2008). What does ”entrepreneurship”data really show? *Small Business Economics*, 31(3):265–281.

Beck, T., Buy¨ ukkarabacak, B., Rioja, F. K., Valev, N. T., et al. (2012). Who gets the¨ credit? And does it matter? Household vs. firm lending across countries. *BE Journal of Macroeconomics*, 12(1):1–46.

Beck, T., Demirgu¸c-Kunt, A., Laeven, L., and Levine, R. (2008). Finance, firm size, and¨ growth. *Journal of Money, Credit and Banking*, 40(7):1379–1405.

Beck, T., Lu, L., and Yang, R. (2015). Finance and growth for microenterprises: evidence from rural China. *World Development*, 67:38–56.

Demirgu¸c-Kunt, A., Horva´th, B. L., Huizinga, H., et al. (2017). How does long-term¨ finance affect economic volatility? *Journal of Financial Stability*, In press.

Demirgu¸c-Kunt, A., Klapper, L. F., and Panos, G. A. (2011). Entrepreneurship in post-¨ conflict transition. *Economics of Transition*, 19(1):27–78.

Demirgu¸c-Kunt, A. and Maksimovic, V. (1998). Law, finance, and firm growth.¨ *Journal of Finance*, 53(6):2107–2137.

Djankov, S., La Porta, R., Lopez-de Silanes, F., and Shleifer, A. (2002). The regulation of entry. *Quarterly Journal of Economics*, 117(1):1–37.

Elston, J. A., Chen, S., and Weidinger, A. (2016). The role of informal capital on new venture formation and growth in China. *Small Business Economics*, 46(1):79–91.

Evans, D. S. and Leighton, L. S. (1989). Some empirical aspects of entrepreneurship. *American Economic Review*, 79(3):519–535.

Gbenyo, K. and Kpodar, K. (2010). Short versus long-term credit and economic performance: Evidence from the WAEMU. *IMF Working Paper*, 10/115.

Haltiwanger, J., Jarmin, R. S., and Miranda, J. (2013). Who creates jobs? Small versus large versus young. *Review of Economics and Statistics*, 95(2):347–361.

Ho, Y.-P. and Wong, P.-K. (2007). Financing, regulatory costs and entrepreneurial propensity. *Small Business Economics*, 28(2):187–204.

Klapper, L., Amit, R., and Guill´en, M. F. (2010). Entrepreneurship and firm formation across countries. In *International differences in entrepreneurship*, pages 129–158. University of Chicago Press.

Klapper, L. and Love, I. (2011). The impact of the financial crisis on new firm registration. *Economics Letters*, 113(1):1–4.

Klapper, L., Love, I., and Randall, D. (2015). New firm registration and the business cycle. *International Entrepreneurship and Management Journal*, 11(2):287–306.

Koellinger, P. D. and Thurik, R. A. (2012). Entrepreneurship and the business cycle. *Review of Economics and Statistics*, 94(4):1143–1156.

Paulson, A. L. and Townsend, R. (2004). Entrepreneurship and financial constraints in

Thailand. *Journal of Corporate Finance*, 10(2):229–262.

Valev, N. T. and Tasic, N. (2008). The maturity structure of bank credit: Determinants and effects on economic growth. *National Bank of Serbia Working Paper*, 13.

van Stel, A., Carree, M., and Thurik, R. (2005). The effect of entrepreneurial activity on national economic growth. *Small Business Economics*, 24(3):311–321.

King, R. G. and Levine, R. (1993). Finance, entrepreneurship and growth. *Journal of*

*Monetary Economics*, 32(3):513–542.

Vermoesen, V., Deloof, M., and Laveren, E. (2013). Long-term debt maturity and financing constraints of SMEs during the Global Financial Crisis. *Small Business Economics*, 41(2):433–448.

**Long-term finance and entrepreneurship Appendix**

###### Appendix Sample and variable definition

Sample (list of countries)

**Bank loan maturity (long-term and short-term finance) database (85 countries)**

In parenthesis we report coverage of data.

Albania (2002-2014); Algeria (1997-2014); Antigua and Barbuda (2000-2014); Austria(2002-14); Azerbaijan (2005-2014); Bahamas (1998-2014); Barbados (1995-2014); Belarus (1999-2014); Belgium (2001-2014); Benin (1997-2014); Bosnia and Herzegovina (2000-2014); Botswana (2000-2014); Bulgaria (2004-2014); Burkina-Faso (1997-2014); Burundi(2003-2014); Cameroon (2000-2010); Central African Rep (2000-2010); Chad (2000-2010);Chile (1995-2014); Comoros (2013-2014); Congo (2000-2010); Coˆte d’Ivoire (1997-2014); Croatia (2010-2014); Czech Rep (1995-2014); Dem. Rep. of Congo (2001-2014); Denmark (2000-2014); Djibouti (2006-2014); Dominica (2000-2014); Equatorial Guinea (2000-2010); Estonia (1997-2014); Finland (2003-2014); France (1995-2014); Gabon (2000-2010); Georgia (2001-2014); Germany (1995-2014); Greece (1998-2014); Grenada (20002014); Guatemala (2009-2014); Guinea (2003-2010); Guinea Bissau (2001-2014); Hungary (2003-201); Ireland (2003-2014); Italy (2005-2014); Jordan (2009-2014); Kazakhstan (1996-2014); Kosovo (2001-2014); Kyrgyz Rep. (1996-2014); Latvia (2003-2014); Lithuania (2004-2014); Luxembourg (1999-2014); Macao (1995-2014); Macedonia (1995-2014); Madagascar (1996-2013); Malaysia (1996-2014); Mali (1997-2014); Malta (2003-2013);Mauritania (2004-2014); Mongolia (2007-2014); Morocco (2006-2014); Netherlands (1998-2014); New Zealand (2004-2014); Niger (1997-2014); Nigeria (2006-2014); Oman (2004-2014); Poland (1996-2014); Portugal (1996-2014); Romania (1997-2014); Russia (20072014); Rwanda (1999-2014); Saudi Arabia (1995-2014); Senegal (1997-2014) Serbia (19992014); Singapore (1995-2003); Slovak Rep. (2003-2014); Slovania (1995-014); St. Kitts and Nevis (2000-2014); St. Lucia (2000-2014); St Vincent (2000-2014); weden (19962014); Taiwan (2004-2014); Togo (1997-2014); Tunisia (1995-2014); Ukraine (2002-2014); Uruguay (2003-2014); Yemen (2005-2013)

**Global Entrepreneurship Monitor (43 countries)**

Algeria, Austria, Barbados, Belgium, Bosnia and Herzegovina, Bostwana, Bulgaria, Burkina-

Faso, Chile, Croatia, Czech Rep., Denmark, Estonia, Finland, France, Georgia, Germany,

Greece, Guatemala, Hungary, Ireland, Italy, Kazakhstan, Latvia, Lithuania, Luxembourg, Macedonia, Malaysia, Morocco, Netherlands, Nigeria, Poland, Portugal, Russia, Saudi

Arabia, Senegal, Serbia, Slovak Rep., Slovenia, Sweden, Tunisia, Uruguay, Yemen

**Entrepreneurship Database (57 countries)**

Albania, Algeria, Antigua and Barbuda, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bostwana, Bulgaria, Burkina-Faso, Chile, Croatia, Czech Rep., Denmark, Dominica, Estonia, Finland, France, Gabon, Georgia, Germany, Greece, Grenada, Guatemala, Hungary, Ireland, Italy, Jordan, Kazakhstan, Kyrgyz Rep., Latvia, Lithuania, Luxembourg, Macedonia, Madagascar, Malaysia, Malta, Mongolia, Morocco, Netherlands, Nigeria, Oman, Poland, Portugal, Russia, Rwanda, Senegal, Serbia, Slovak Rep.,

Slovenia, St. Vincent, Sweden, Togo, Tunisia, Ukraine, Uruguay