Financial Frictions, Cyclical Fluctuations and the Innovative Nature of New Firms

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February 15, 2018

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Abstract

How do financial factors and cyclical fluctuations affect the innovative content of new businesses? This paper answers this question by combining a multi-country entrepreneurial level dataset with country level business cycle data and sector level information on technology. Our main data source is the Global Entrepreneurship Monitor dataset, which is a multi-country multi-year survey of entrepreneurial decisions. We merge this dataset with a country specific business cycle indicator (GDP growth) and a financial crisis indicator from Laeven and Valencia (2013). Finally, we also combine it with two sector level indicators: an external financial dependence indicator (Kroszner et al, 2007) and an indicator of intangibility (share of intangible over total assets, see Falato et al, 2014, and Caggese and Perez, 2018). We use the dataset to identify three types of startups which are likely to be innovative and/or with high growth potential: i) Businesses started to provide a new product or service. ii) Startups for which the new entrepreneur is expecting high employment growth (controlling for country effects). iii) Startups in high-intangible industries, which should have higher growth potential given the more innovative content of intangible technologies. We control for country fixed effects, as well as for individual characteristics such as age, education and income group, and we find that all startups, but especially startups with high growth potential, were much more procyclical in the presence of the financial crisis. That is, the financial crisis reduced significantly more startups with high growth potential than the other types, especially in countries with greater contraction in output. Importantly we also show that startups with high growth potential were strongly negatively affected by the financial crisis only in industries classified as with high external financial dependence. In other words, we find evidence strongly consistent with the hypothesis that financial frictions affected the composition of business startups during the financial crisis, reducing the incentives of entrepreneurs to start riskier and more innovative businesses with more growth potential.

Keywords: Financial Crisis, Entrepeneurship

JEL Categories: E20, E32, D22, J23, M13.

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1 Introduction

The entry and exit of businesses matter for job creation and aggregate output (Haltiwanger, Jarmin, and Miranda, 2013). In particular, they are potentially important for business cycle fluctuations, because employment created by startups is volatile and procyclical. Sedlaceck and Sterk (2017) show that not only firm entry declined strongly during the 2007-2009 financial crisis, but also that the startups that did enter during that period were significantly weaker in their potential to create jobs in the future. This evidence suggests that changes in the composition of entry during the financial crisis might be an important factor to explain the slow recovery that followed.

Which factors affect the incentives of potential entrepreneurs to start different types of businesses, and how are these factor changing over the business cycle? Entrepreneurial choices among heterogeneous individuals have been extensively analysed in the occupational choice and innovation literature (e.g. Poschke, 2013). Other authors focus on the mobility of inventors and disruptive innovators, and on the reallocation of highly skilled labour (among others, see Acemoglu, Akcigit and Celik (2017) and Akcigit, and Kerr (2017)). However, little is known about how the innovative content of new businesses are affected by financial factor and cyclical fluctuations. Are the variations in entry determined by changes in the population of potential entrepreneurs, or do they reflect a change in the incentives and barriers faced by them?

This paper aims to answer these questions by combining a multi-country entrepreneurial level dataset with country level business cycle data and sector level information on technology. Our main data source is the Global Entrepreneurship Monitor dataset, which is a multi-country multi-year survey of entrepreneurial decisions, with detailed information about entrepreneurial skills as well as information on the innovative nature of the firms created. Our baseline dataset includes the 2002-2013 period, and a total of around 1 million individual level observations from 19 OECD countries. We merge this dataset with a country specific business cycle indicator (GDP growth) and a financial crisis indicator from Laeven and Valencia (2013). Finally, we also combine it with two sector-level indicators: an external financial dependence indicator (Kroszner et al, 2007) and an indicator of intangibility (share of intangible over total assets, see Falato et al, 2014, and Caggese and Perez, 2018). Both sector level indicators are computed using US data only, and over a long period of time (1990-2014), and are to be interpreted as

capturing technological characteristics of the industries that are applicable also to the same industries in other countries. We use the dataset to identify different types of startups. In particular, we consider three types which are likely to be with high growth potential: i) Businesses started to provide a new product or service. ii) Startups for which the new entrepreneur is expecting high growth (controlling for country effects). iii) Startups in high-intangible industries, which should have higher growth potential given the more innovative content of intangible technologies. We perform several Probit regressions where the dependent variable is equal to one, if the individual starts a business, and zero otherwise. We consider as dependent variable both any type of startups and the three types described above. Among the regressors we include GDP growth at the country level, a financial crisis dummy, and the interaction between the two. Importantly, we include as control variables not only country fixed effects, but also individual characteristics such as age, education and income group. This way we control for the relation between financial and business cycle conditions conditional on given characteristics of the population of potential entrepreneurs. Our main result are as follows: first, we find that all startups, but especially startups with high growth potential, were much more procyclical in the presence of the financial crisis. That is, the financial crisis reduced significantly more startups with high growth potential than the other types, especially in countries with greater contraction in output. This result holds whether we exclude countries that did not experience the financial crisis (and therefore we compare business dynamics before and during the crisis for countries that suffered it), or we include them (and therefore we compare crisis with non crisis countries). Second, while the previous result does not prove causality, we show that startups with high growth potential were strongly negatively affected by the financial crisis only in industries classified as with high external financial dependence. In other words, we find evidence strongly consistent with the hypothesis that financial frictions affected the composition of business startups during the financial crisis, reducing the incentives of entrepreneurs to start riskier and more innovative businesses with more growth potential.

2 Data

2.1 GEM dataset

Our main data source is the Global Entrepreneurship Monitor (GEM), the most comprehensive cross-country survey on entrepreneurial activity currently available (Reynolds et al., 2005). The GEM includes random samples of adult-age individuals from over 100 countries with sample sizes ranging from around 1000 in some small countries to over 200,000 in Spain. The period of the sample used for our analysis is 2002-2013.[1] As data on many of the smaller countries are only available for few years, we clean the data by dropping countries with observations with less than ten years of data. This leaves 22 countries in our sample with three (Argentina, Brazil, China) being non-OECD countries, which we also drop.[2] Thus, our final sample includes 19 countries with around one million individual observations.

We use the following two survey questions to identify individuals starting a business (nascent entrepeneurs):

"Over the past twelve months have you done anything to help start a new business, such as looking for equipment or a location, organizing a start-up team, working on a business plan, beginning to save money, or any other activity that would help launch a business?"

"Will you personally own all, part, or none of this business?"

An individual is classified as starting a business if he/she answers "yes" to the first question and "all" or "part" to the second question. Thus, a nascent entrepreneur must have been active in setting up a new business during the last year and at least own part of this business. Some studies (e.g. Koellinger and Thurik, 2012) impose the additional restriction that the business must not have paid salaries or wages for more than three months. However, we think that this might lead to missing too many new nascent businesses and therefore relax this restriction.

[1] The survey started in 1999, but the first three years have less observations and variables, therefore we only included the years 2002-2013

[2] We eliminate these developing countries to limit cross country heterogeity in the data. Nonetheless their inclusion does not change significantly the results (see Appendix A.5).

Around 27% of nascent entrepreneurs in our sample declare to have paid salaries or wages for more than three months. The results remain qualitatively unaffected when we exclude them (see Appendix A.5).

There are several additional questions regarding the kind of business an individual is starting that we use to classify new firms as being innovative (Inn), taking advantage of an opportunity (Opp) or being started out of necessity (Nec). Further, we identify new firms with high potential in terms of employment growth ($Growth$). The exact survey questions and methods used for the classification of these subcategories are detailed in Appendix A.1.

2.2 Business cycle and financial crisis data

We use yearly data of GDP per capita from the Penn World Tables and calculate yearly growth rates and deviations from trend as business cycle measures (details in Appendix A.2). To identify financial crises at the country-year level, we rely on data on systemic banking crises from Laeven and Valencia (2013). According to their measure, 14 countries of our sample suffered a financial crisis, lasting from 2007 to 2013 in the US and the UK and from 2008 to 2013 in the remaining countries. There were no financial crises in Chile, Croatia, Finland, Japan and Norway.

2.3 Financial dependence data

The GEM dataset also contains information on the industrial sector in which a business is started. The sectors are classified following the ISIC Rev.3 classification until 2008 and the ISIC Rev.4 classification from 2009 onwards. Kroszner et al. (2007) provide an indicator for external financial dependence for the manufacturing sector under the ISIC Rev.2 classification. This is defined as fraction of capital expenditures not financed with cash flow from operations. Furthermore, Caggese and Perez (2018) compute an indicator of the share of intangible over total assets for the same sectors. We match these data to the sector variable of the GEM, giving us information on external financial dependence for around 2,000 observations (5.4% of all business started) and of the share of intangible assets for around 17,000 observations (54% of all businesses started). We use this information to classify sectors with high or low external

financial dependence and high or low share of intangible assets. Further details and list of the sectors with their classifications can be found in Table 12 in Appendix A.4. The correlation between the two measure for manufacturing sectors is 0.14.

2.4 Descriptives

Table 1 shows that, in terms of unconditional averages, the percentage of individuals starting a business is 33.9% lower during the financial crisis (1.6 versus 2.42). However, for the three categories of firms with high growth potential that we identify, the drop is much larger. The creation of innovative firms and the ones expecting high employment growth drops by 40% and 42.%, respectively. The drop is more than 43% and therefore the largest for firms in sectors with a high share of intangible capital, consistent with the hypothesis that financial frictions affect firms in these sectors more.

Table 1: Percentage of individuals starting a firm

	All	*Inn*	*Growth*	*High Intan.*
Full	2.07	.74	.96	.64
No Fin. crisis	2.42	.9	1.17	.79
Fin. crisis	1.6	.54	.67	.45
% Difference	-33.88	-40	-42.74	-43.04

3 Empirical analysis

3.1 Empirical Strategy

Our first step is to estimate how the propensity to start a business correlates with the business cycle, and how this relation has been affected by the financial crisis that started in 2007. Our baseline is the following probit model:

$$Pr(start_{i,j,t} = 1|X_{i,j,t}) = \Phi(\beta_0 + \beta_1 bus_{j,t} + \beta_2 fin_{j,t} + \beta_4 bus_{j,t} \cdot fin_{j,t} + \sum_{k=0}^{N} \gamma_k X^k_{i,j,t} + \varepsilon_{i,j,t}),$$

where $start_{i,j,t} = 1$ is a dummy indicating that individual i in country j in year t is starting a business, $bus_{j,t}$ is a variable capturing the state of the business cycle in country j at time

t (to be specified below), $fin_{i,j,t} = 1$ is a dummy indicating a financial crisis in country j in year t and $X^k_{i,j,t}$ is a vector of control variables including country dummies, age and educational level.[3] Alternatively to the indicator for a financial crisis, we also use an indicator for the Great Recession. This is a dummy equal to one if a country has suffered two subsequent quarters with negative economic growth during the time period 2008-2010. By this we aim to distinguish whether the creation of new firms was most affected in the time of low growth during the Great Recession or in the whole period of financial distress in the banking sector, which, according to the the Laeven and Valencia (2013) classification persists until 2013 in most countries (see Table 11 in the Appendix).

We perform regressions using the dummy for a start of any business as dependent variables as well as dummies for starts in subcategories only. Because we control for individual characteristics, such as age and educational level, our analysis identifies how the propensity to start different types of businesses vary over the business and financial cycle conditional on the quality of the potential entrepreneurial pool.

Our second step is to verify to what extent financial problems cause variations in the types of startups created by splitting them according to their external financial dependence. We focus on manufacturing start ups and follow Rajan and Zingales (1998), and several other authors, in considering an industry-level External Financial Dependence (EFD) indicator. The hypothesis is that different technological features of the industries determine different financing needs of firms. Industries with higher external financial dependence are more likely to be affected by the unexpected increase in financial frictions during the financial crisis. While the large drop in firm entry during the financial crisis has been documented by many studies, nobody, to the best of our knowledge, analysed the dynamics of the different types of startups created. For this second step, we estimate the above model for alternative specifications where the dependent variable $start_{i,j,t} = 1$ is equal to one for startups in groups of industries selected according to high or low values of EFD, and zero otherwise.

[3]In Appendix A.5 we show also the results with dummies for the income level (three categories) and year dummies as additional controls.

Table 2: GDP growth rate and probability to start a firm

	(1) All	(2) Inn	(3) Growth	(4) High Intan.	(5) All	(6) Inn	(7) Growth	(8) High Intan.
GDP growth	2.101*	1.206	1.845	2.566*	1.672*	0.876	1.229	1.809*
	(1.1097)	(0.9388)	(1.3263)	(1.3457)	(0.9873)	(0.9247)	(1.0626)	(1.0608)
Fin. crisis					-0.079	-0.070	-0.118*	-0.139**
					(0.0605)	(0.0441)	(0.0679)	(0.0686)
Observations	944570	944570	944570	944570	944570	944570	944570	944570
R-squared	0.060	0.078	0.070	0.040	0.061	0.079	0.071	0.041

* p<0.1, ** p<0.05, *** p<0.01

Note: The dependent variable is a dummy that is equal to one if an individual is a nascent entrepreneur. Controls are dummies for three education levels, age and country-fixed effects. Observations are weighted by the weight variable included in the GEM dataset.

3.2 Regression results - baseline

In Table 2 we show the results of the baseline probit model with an indicator of the creation of any startup as the dependent variable. In the first column, we only include the GDP growth rate, which controls for the business cycle conditions. Because we add country fixed effects, it measures the effect of differential GDP growth with respect to the country average. The coefficient is positive, indicating that startup creation is procyclical, and significant. Columns 2 to 4 consider the startups in our 3 subcategories related to new firms with high growth potential. Innovative startups have growth potential because they are businesses started to provide an innovative product or service. Growth startups are by construction defined as new firms for which the potential entrepreneur is expecting high growth. Finally, startups in high intangible industries are likely to have growth potential because of the more innovative content of more intangible technologies. Empirical evidence shows that intangible capital accumulation is the most important component of industry growth in the last 40 years (Caggese and Perez, 2018). The coefficient of GDP growth is not significant for innovative and growth firms, indicating that over all the sample period these startups are not procyclical. It is instead significant for High intangible startups. In columns 5 to 8 we also add a financial crisis dummy, which is always negative, indicating lower propensity to start a firm during the crisis (conditional on GDP growth), and significant for the Growth and High Intangible startups.

3.3 Regression results with interaction term

In Table 3 we include an interaction between GDP growth and financial crisis, and therefore the coefficient of the variable *GDP growth* measures the average effect of changes in GDP growth across all countries outside financial crisis periods. The interaction term on the other hand measure the effect during financial crisis periods. Its effect is large and statistically significant, which implies that startup creation is strongly procyclical in times of financial crisis, but not in normal times.

In column 2 to 7 we estimate the specification with the interaction term for different categories of startups. Additionally to the categories shown in Table 2, we consider only startups that are created due to a business opportunity, due to necessity and startups in sectors with a low intangible capital share. As the probit regression coefficients cannot be directly interpreted, we show the elasticities evaluated at the variable means in the bottom table. The values indicate by how many percent the probability to start a new firm changes when the GDP growth increases by one percent (holding all the other regressors constant at their mean value). This makes it easier to compare the effects in terms of magnitude across subcategories.

The propensity to start a business is procyclical across all startup categories, but not statistically significant in normal times. The financial crisis coefficient is negative for all the specifications but much larger in magnitude for *Growth* and *High Intan.* startups and not significant for the necessity and low intangible startups. The interaction between Financial crisis and GDP growth is always very large and statistically significant. Since GDP growth was slower during the the financial crisis relative to the previous period, the positive interaction coefficient indicates that the financial crisis is correlated to a significant slowdown in startups especially for those countries that experienced larger contractions in GDP. Moreover, the stronger effect appears to be for growth startups and high intangible startups, which are two among the three types of startups that identify firms with high growth potential. The effect is weaker for necessity startups than opportunity ones. This is intuitive as during an economic slowdown it is more difficult to find regular employment and therefore relatively more startups are created because there is no other option to get work than because of good opportunities. Likewise the weaker effect of the interaction term on low intangible startups is in line with our expectation.

Table 3: GDP growth rate and probability to start a firm

	(1) All	(2) Inn	(3) Growth	(4) High Intan.	(5) Opp	(6) Nec	(7) Low Intan.
GDP growth	0.608	0.059	0.115	0.471	0.553	0.403	0.562
	(0.6263)	(0.6154)	(0.5682)	(0.6105)	(0.5384)	(0.5069)	(0.5650)
Fin. crisis	-0.158**	-0.134***	-0.211**	-0.257**	-0.201**	-0.089	-0.099
	(0.0754)	(0.0374)	(0.0971)	(0.1045)	(0.0946)	(0.0730)	(0.0606)
Fin. crisis x GDP growth	4.865**	4.396***	6.122*	6.675**	5.100*	4.301**	3.730**
	(2.3337)	(1.5419)	(3.2069)	(3.3323)	(2.6960)	(1.9077)	(1.8961)
Observations	944570	944570	944570	944570	944570	944570	944570
R-squared	0.063	0.081	0.074	0.045	0.060	0.057	0.064

* p<0.1, ** p<0.05, *** p<0.01

Elasticities

	All	*Inn*	*Growth*	*High Intan.*	*Opp*	*Nec*	*Low Intan.*
GDP growth	3.64	.4	.77	3.26	3.47	2.8	3.54
Fin. crisis	-16.71	-16.18	-24.89	-31.29	-22.29	-10.91	-10.97
Fin. crisis x GDP growth	1.78	1.84	2.49	2.81	1.95	1.82	1.43

Note: The dependent variable is a dummy that is equal to one if an individual is a nascent entrepreneur of the respective category. Controls are dummies for three education levels, age and country-fixed effects. Observations are weighted by the weight variable included in the GEM dataset.

Also in terms of the elasticity, the effect are the largest for *Growth* and *High Intan.* startups. We define the former as new entrepreneurial firms which expect, in 5 years time, to become larger than the average firm size in the industry. They are meant to capture startups with high growth potential. However, they might be more sensitive to GDP simply because potential entrepreneurs are generally more pessimistic of their growth potential during periods of economic decline, regardless of the type of business they want to start. This reason might contribute to the large coefficient, in percentage changes, for *Growth* starters.

The elasticity of innovative starters with respect to GDP growth is close to zero during normal times. Therefore, conditional on not being in a financial crisis, innovative starters are found to be less cyclical than the other type of startups. This might be because of a creative destruction effect: during a recession more incumbents fail and the reduction in competition makes it easier to find a market opportunity for new products. Finally, necessity starters are also less procyclical than the other type of firm startups. This finding is consistent with evidence that economic slowdowns are periods in which unemployed workers might be forced into self-employment.

Overall, the most striking result emerging from these regression is the fact that *Growth* and *High Intan.* starters are not only negatively affected more by the crisis on average, but also they

Table 4: GDP growth rate and probability to start a firm

	(1) All	(2) Inn	(3) Growth	(4) High Intan.	(5) Opp	(6) Nec	(7) Low Intan.
GDP growth	2.020	1.094	1.790	2.219	2.130	1.321	1.646
	(1.4241)	(1.2196)	(1.6418)	(1.6662)	(1.4914)	(1.0123)	(1.1366)
Great Recession	0.042	0.029	0.038	-0.023	0.015	0.031	0.062
	(0.0900)	(0.0976)	(0.0957)	(0.0873)	(0.0913)	(0.0596)	(0.0797)
GR x GDP growth	3.157**	3.180***	3.260**	4.513***	2.618*	3.801***	2.323*
	(1.4098)	(1.1395)	(1.5134)	(1.7043)	(1.5330)	(0.9599)	(1.2870)
Observations	944570	944570	944570	944570	944570	944570	944570
R-squared	0.061	0.079	0.071	0.041	0.057	0.056	0.063

* p<0.1, ** p<0.05, *** p<0.01

Elasticities

	All	*Inn*	*Growth*	*High Intan.*	*Opp*	*Nec*	*Low Intan.*
GDP growth	12.08	7.5	11.93	15.29	13.36	9.17	10.37
Great Recession	1.78	1.39	1.8	-1.12	.68	1.52	2.74
GR x GDP growth	-1.04	-1.19	-1.19	-1.7	-.9	-1.45	-.8

Note: The dependent variable is a dummy that is equal to one if an individual is a nascent entrepreneur of the respective category. Controls are dummies for three education levels, age and country-fixed effects. Observations are weighted by the weight variable included in the GEM dataset.

become much more procyclical in crisis periods. Therefore, these results imply that, in order to understand the slow recovery after the financial crisis, it is important to understand why the entry of innovative firms has been so negatively affected. One possible channel, already outlined before, is that businesses with a high growth potential require relatively larger fixed costs, which are more difficult to finance in a financial crisis. Another possibility is the interaction between uncertainty and financial frictions. A recession is a period of high uncertainty, which might be good for innovations in the absence of financial frictions, while with financial frictions uncertainty is bad because of the costs associated to bankruptcy in case of a negative outcome.

In Table 4 we replace the financial crisis indicator by an indicator for the Great Recession (two subsequent quarters of negative growth in the period 2008-2010). Contrary to the financial crisis, the Great Recession has no significant negative effect on *Growth* and *High Intan.* starters. However, during the Great Recession, the procyclicality of these startups of these types is strongly enhanced. Moreover, the creation of innovative and *Low Intan.* firms becomes somewhat more procyclical.

3.4 Manufacturing sectors and external finance dependence

A potential explanation of the results shown in the previous section is a causal effect of tighter financial frictions during the financial crisis that affected more severely riskier and more innovative businesses. In order to investigate further on this hypothesis, in this section we repeat our estimations considering only starts in the manufacturing sector, for which we have data on financial dependence based on Kroszner et al. (2007). Additionally to distinguishing innovative and firms with high growth potential, we identify the ones with low and high external financial dependence (*low EFD* and *high EFD*) among all manufacturing start-ups.

Table 5: Percentage of individuals starting a firm in manufacturing

	All	*Inn*	*Growth*	*High Intan.*	*Low EFD*	*High EFD*
Full	.22	.09	.1	.64	.12	.1
No Fin. crisis	.27	.11	.12	.79	.15	.12
Fin. crisis	.15	.06	.07	.45	.09	.06
% Difference	-44.44	-45.45	-41.67	-43.04	-40	-50

Analogously to Table 1, Table 5 shows the percentages of individuals starting manufacturing firms. The difference in the probability to start a manufacturing firm between a financial crisis period and period outside a financial crisis is 0.12, which corresponds to a decrease by 44%. This is larger than the decrease for all new firms. In the different subcategories, the decreases lie in the range of 40% to 50%. Notably, the drop is the lowest for firms in sectors with low external finance dependence and the highest for firms in sectors with high external finance dependence. This is in line with our expectation that firms that have to rely more heavily on external financing are more affected by financial frictions.

Table 6 shows the regression results. With respect to the effect of the financial crisis, columns 1-4 confirm the key findings from the previous section. A financial crisis negatively affects the probability to start a new manufacturing firm and also enhances its cyclicality. Moreover, the effects are stronger for innovative firms and the ones with high growth potential. However, if we distinguish new firms by the degree of external financial dependence in their sectors, done in columns 5 and 6, we find a small effect of the financial crisis dummy and an insignificant effect of the interaction with GDP growth on the probability to start a firm in a sector with low EFD, whereas both effects are large and significant for the high EFD sector.

Table 6: GDP growth rate and probability to start a firm in manufacturing

	(1) All	(2) Inn	(3) Growth	(4) High Intan.	(5) Low EFD	(6) High EFD
GDP growth	-0.109	-1.072	-1.387	0.471	1.186*	-1.361
	(1.2192)	(1.2605)	(1.1262)	(0.6105)	(0.6870)	(1.6129)
Fin. crisis	-0.156**	-0.146**	-0.220***	-0.257**	-0.069*	-0.241**
	(0.0721)	(0.0600)	(0.0846)	(0.1045)	(0.0404)	(0.1030)
Fin. crisis x GDP growth	5.827**	5.776**	8.179**	6.675**	2.835	8.747**
	(2.8452)	(2.4276)	(3.9682)	(3.3323)	(2.0482)	(3.7755)
Observations	944570	944570	944570	944570	944570	944570
R-squared	0.051	0.071	0.068	0.045	0.035	0.070

* p<0.1, ** p<0.05, *** p<0.01

Note: The dependent variable is a dummy that is equal to one if an individual is a nascent entrepreneur of the respective category in the manufacturing sector. Controls are dummies for three education levels, age and country-fixed effects. Observations are weighted by the weight variable included in the GEM dataset.

Table 7: GDP growth rate and probability to start a firm in manufacturing

	(1) All	(2) Inn	(3) Growth	(4) High Intan.	(5) Low EFD	(6) High EFD
GDP growth	1.262	0.125	0.390	2.219	2.187**	0.198
	(1.5697)	(1.4756)	(1.8787)	(1.6662)	(0.9721)	(1.9768)
Great Recession	0.072	0.063	0.086	-0.023	0.118	0.010
	(0.0926)	(0.0983)	(0.1040)	(0.0873)	(0.0930)	(0.0831)
GR x GDP growth	2.987*	3.021*	3.702	4.513***	1.398	4.426**
	(1.7457)	(1.7998)	(2.2640)	(1.7043)	(1.9487)	(1.9900)
Observations	944570	944570	944570	944570	944570	944570
R-squared	0.049	0.069	0.064	0.041	0.036	0.064

* p<0.1, ** p<0.05, *** p<0.01

Note: The dependent variable is a dummy that is equal to one if an individual is a nascent entrepreneur of the respective category in the manufacturing sector. Controls are dummies for three education levels, age and country-fixed effects. Observations are weighted by the weight variable included in the GEM dataset.

In tables 8, 9 and 10, we distinguish between combinations of the categories innovative, growth and high intangible share with having low or high financial dependence. Columns 1 and 3 of Table 8 suggest that the creation of both non-innovative and innovative startups is not negatively affected by the financial crisis and also not more procyclical during the financial crisis for sectors with low EFD (*Noinnxlow* and *Innxlow*). However, the creation of both types decreases and is more procyclical during a financial crisis for sectors with high EFD (*Noinnxhigh* and *Innxhigh*). The effects are especially large for innovative startups in column 4. Thus, innovative startups seem to be most severely affected by financial frictions. One explanation for this could be the risky nature of startups offering new products or services.

We find a very similar pattern when we look at non-growth and growth startups in Table 9. Finally, the results in Table 10 indicate that the procyclicality for startups in sectors with high EFD is stronger, if the firms in the sector also have a high share of intangible capital.

Finally, in Appendix A.5 we replicate all the regressions after excluding the countries that did not experience (according to Laeven and Valencia 2013) a systemic banking crisis. This way the crisis dummy is only identified by comparing the crisis period with the pre-crisis period for countries that experienced the crisis. Moreover in another robustness check we exclude the construction sector. We do this because in most countries the collapse of this sector caused the banking crisis, rather than the other way round. Both these robustness checks confirm the results shown before.

Altogether, the presented evidence suggests that the difficulty to obtain external financing when growth is low and financial institutions are in distress reduces the creation of innovative and potentially strongly growing firms disproportionately. The reduction of new innovating and growing firms might be an important factor that can explain the sluggish growth after a financial crisis.

Table 8: GDP growth rate and probability to start a firm in manufacturing

	(1) Noinnxlow	(2) Noinnxhigh	(3) Innxlow	(4) Innxhigh
GDP growth	1.317*	0.050	0.846	-2.561
	(0.7057)	(1.1684)	(0.6112)	(1.6341)
Fin. crisis	-0.088	-0.179*	-0.038	-0.248***
	(0.0552)	(0.1062)	(0.0406)	(0.0771)
Fin. crisis x GDP growth	3.263	6.798*	2.130	9.454***
	(2.4781)	(3.7107)	(1.6940)	(3.3198)
Observations	944570	944570	944570	922564
R-squared	0.033	0.040	0.038	0.109

* p<0.1, ** p<0.05, *** p<0.01

Note: The dependent variable is a dummy that is equal to one if an individual is a nascent entrepreneur of the respective category in the manufacturing sector. Controls are dummies for three education levels, age and country-fixed effects. Observations are weighted by the weight variable included in the GEM dataset.

Table 9: GDP growth rate and probability to start a firm in manufacturing

	(1) Nogrowthxlow	(2) Nogrowthxhigh	(3) Growthxlow	(4) Growthxhigh
GDP growth	1.904**	-0.378	-0.102	-2.200
	(0.7760)	(1.3788)	(0.4477)	(1.5515)
Fin. crisis	-0.019	-0.200**	-0.149***	-0.257**
	(0.0431)	(0.0874)	(0.0567)	(0.1088)
Fin. crisis x GDP growth	1.216	6.805**	5.369	10.018**
	(1.4669)	(3.1647)	(3.6823)	(4.2056)
Observations	944570	944570	944570	922564
R-squared	0.031	0.053	0.051	0.083

* p<0.1, ** p<0.05, *** p<0.01

Note: The dependent variable is a dummy that is equal to one if an individual is a nascent entrepreneur of the respective category in the manufacturing sector. Controls are dummies for three education levels, age and country-fixed effects. Observations are weighted by the weight variable included in the GEM dataset.

Table 10: GDP growth rate and probability to start a firm in manufacturing

	(1) Lowxlow	(2) Lowxhigh	(3) highxlow	(4) highxhigh
GDP growth	0.190	-1.501	1.291*	-0.849
	(0.8738)	(1.6743)	(0.7498)	(1.2180)
Fin. crisis	-0.213***	-0.232*	-0.042	-0.228***
	(0.0812)	(0.1259)	(0.0489)	(0.0652)
Fin. crisis x GDP growth	5.666	8.114**	2.353	8.787**
	(4.7180)	(3.7008)	(1.8748)	(3.5734)
Observations	914645	944570	944570	944570
R-squared	0.028	0.077	0.037	0.053

* p<0.1, ** p<0.05, *** p<0.01

Note: The dependent variable is a dummy that is equal to one if an individual is a nascent entrepreneur of the respective category in the manufacturing sector. Controls are dummies for three education levels, age and country-fixed effects. Observations are weighted by the weight variable included in the GEM dataset.

4 Conclusion

To be added.

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A Variable Definitions

A.1 Business types identified from GEM questions

Innovative start-ups

A start-up is classified as innovative if at least one of these three questions is answered as follows:

- "Will/do all, some, or none of your potential customers consider this product or service new and unfamiliar?"
  Answer: "Yes"
- " How long have the technologies or procedures required for this product or service been available?"
  Answer: "Less than a year"
- "Right now, are there many, few, or no other businesses offering the same products or services to your potential customers?"
  Answer: "No other businesses"

Opportunity start-ups

A start-up is classified as out of opportunity for the following answers:

- "Are you involved in this start-up to take advantage of a business opportunity or because you have no better choices for work?"
  Answer: "Take advantage of business opportunity" OR "Combination of both of the above"

Necessity start-ups

A start-up is classified as out of necessity for the following answers:

- "Are you involved in this start-up to take advantage of a business opportunity or because you have no better choices for work?"
  Answer: "No better choices for work" OR "Combination of both of the above"

Growth start-ups

In order to classify a start-up as one with high growth potential, we refer to the following two questions:

- "Right now how many people, not counting the owners but including exclusive subcontractors, are working for this business?"

- "How many people will be working for this business, not counting the owners but including all exclusive sub-contractors, when it is five years old?"

We compute the average size of established firms by sector (at the two-digit level) and country using the answer to the first question given by respondents that are currently owner of established firms. We then classify a start-up with a high growth potential as one for which the answer to the second question, i.e. the expected size in five years, exceeds the average size of firms in the same sector and the same country.

Promising start-ups

A promising start-up is one that has a high probability of having a high growth potential. In order to predict this probability, we perform a logit regression of our identifier of a start-up with high growth potential on the founder's age and dummies for education, country and income group. A start-up is classified as promising, if the thus predicted probability is above its median at the country level.

A.2 Business cycle data

We take yearly data of GDP per capita data from the Penn World Tables. We compute yearly GDP growth as the percentage change in expenditure-side real GDP at chained PPPs. In order to get the deviation from GDP trend, we apply an HP filter with smoothing parameter 100 to the series of the logarithm of the GDP starting in 1990.

A.3 Financial crisis data

We identify years in which a particular country is in a financial crisis by using data on systemic banking crises from Laeven and Valencia (2013). The following table shows the countries in our sample, the corresponding crisis period and the number of observations.

Table 11: Countries and financial crisis years

Country	Start year	End year	Observations
Belgium	2008	2013	30331
Chile	-	-	38432
Croatia	-	-	22944
Denmark	2008	2013	28527
Finland	-	-	22436
France	2008	2013	23331
Germany	2008	2013	68825
Greece	2008	2013	20652
Hungary	2008	2013	22409
Ireland	2008	2013	20952
Italy	2008	2013	24863
Japan	-	-	22374
Netherlands	2008	2013	39988
Norway	-	-	22419
Slovenia	2008	2013	29269
Spain	2008	2013	237017
Sweden	2008	2013	45666
United Kingdom	2007	2013	190832
United States	2007	2013	52567

Notes: The periods are systemic banking crises taken from Laeven and Valencia (2013)

A.4 Financial dependence data

We match the values for external dependence (1980-1999) from Table 12 of Kroszner et al. (2007) to the 22 manufacturing sectors identified in the GEM dataset. For the sectors that we can match across the Compustat SIC classification and the 2-digit sectors in the GEM dataset, we take the intangible capital share from Caggese and Perez (2018). We then calculate the median values for both measures and classify a sector has having high (low) external dependence or intangible share if its value is above (below) the median.

Table 12: Sectors and financial dependence

Sector	Name	External dependence	Intangible share
1	Agriculture and hunting	-	low
10	Mining of coal and lignite	-	low
11	Oil and gas extraction	-	low
13	Mining of metal ores	-	low
15	Food and Beverages	high	low
16	Tobacco	low	high
17	Textiles	high	high
19	Leather	low	low
20	Wood products	high	low
21	Paper products	low	low
22	Printing and publishing	low	high
23	Petroleum and coal	high	low
24	Other chemical products	low	high
25	Rubber and plastic products	high	low
26	Non-metal products	low	low
27	Iron and steel	high	low
28	Metal products	low	high
29	Machinery	high	high
30	Office and computing	high	high
31	Electrical machinery	high	high
32	Radio	high	high
33	Professional equipment	high	high
34	Motover vehicles, trailers	low	low
35	Other transport equipment	low	high
36	Furniture	low	high
37	Recycling	-	high
45	Construction	-	high
50	Sale, maintenance, repair of motor vehicles	-	low
51	Wholesale and commission trade	-	high
52	Retail trade	-	low
55	Hotels and restaurants	-	low
71	Renting of machinery and equipment	-	high
72	Computer and related activities	-	high
73	Research and development	-	high
74	Other business activities	-	high
85	Health and social work	-	low
92	Recreational, cultural and sporting activities	-	low

Notes: External dependence based on Kroszner et al. (2007) and intangible share based on Caggese and Perez (2018).

A.5 Robustness checks

Excluding countries without financial crisis

Table 13: GDP growth rate and probability to start a firm

	(1) All	(2) Inn	(3) Growth	(4) High Intan.	(5) All	(6) Inn	(7) Growth	(8) High Intan.
GDP growth	1.986**	1.202**	3.213***	3.490***	2.179**	1.430*	2.650***	2.706***
	(0.8424)	(0.5209)	(1.0192)	(1.1038)	(0.8498)	(0.7800)	(0.9717)	(0.9682)
Fin. crisis					0.026	0.030	-0.070	-0.103*
					(0.0311)	(0.0357)	(0.0499)	(0.0612)
Observations	853392	853392	853392	853392	853392	853392	853392	853392
R-squared	0.035	0.026	0.036	0.035	0.035	0.026	0.036	0.036

* p<0.1, ** p<0.05, *** p<0.01

Note: The dependent variable is a dummy that is equal to one if an individual is a nascent entrepreneur of the respective category. Controls are dummies for three education levels, age and country-fixed effects. Observations are weighted by the weight variable included in the GEM dataset.

Table 14: GDP growth rate and probability to start a firm

	(1) All	(2) Inn	(3) Growth	(4) High Intan.	(5) Opp	(6) Nec	(7) Low Intan.
GDP growth	1.426**	0.879	0.561	0.793*	1.360**	1.008	0.860**
	(0.6723)	(0.8505)	(0.3452)	(0.4538)	(0.5333)	(0.6801)	(0.4160)
Fin. crisis	-0.015	0.001	-0.209**	-0.239**	-0.058	0.041	-0.085
	(0.0497)	(0.0371)	(0.0901)	(0.1015)	(0.0691)	(0.0543)	(0.0547)
Fin. crisis x GDP growth	1.895	1.374**	6.381*	6.211*	2.057	1.621	3.334*
	(1.2142)	(0.5814)	(3.2609)	(3.2258)	(1.5370)	(1.1299)	(1.7531)
Observations	853392	853392	853392	853392	853392	853392	853392
R-squared	0.036	0.026	0.039	0.039	0.036	0.025	0.037

* p<0.1, ** p<0.05, *** p<0.01

Note: The dependent variable is a dummy that is equal to one if an individual is a nascent entrepreneur of the respective category. Controls are dummies for three education levels, age and country-fixed effects. Observations are weighted by the weight variable included in the GEM dataset.

Table 15: GDP growth rate and probability to start a firm

	(1) All	(2) Inn	(3) Growth	(4) High Intan.	(5) Opp	(6) Nec	(7) Low Intan.
GDP growth	2.043**	1.065	3.312**	3.270**	2.396**	1.014	2.379**
	(0.8865)	(0.7094)	(1.4918)	(1.5441)	(0.9871)	(0.6548)	(0.9743)
Great Recession	0.024	0.004	0.102	0.024	0.025	0.008	0.098
	(0.0507)	(0.0556)	(0.0924)	(0.0865)	(0.0557)	(0.0285)	(0.0779)
GR x GDP growth	0.349	1.088	3.748*	4.086**	-0.228	0.795	1.720
	(1.3090)	(0.9685)	(1.9347)	(1.9891)	(1.1687)	(1.5611)	(1.5045)
Observations	853392	853392	853392	853392	853392	853392	853392
R-squared	0.035	0.026	0.038	0.036	0.036	0.025	0.037

* p<0.1, ** p<0.05, *** p<0.01

Note: The dependent variable is a dummy that is equal to one if an individual is a nascent entrepreneur of the respective category. Controls are dummies for three education levels, age and country-fixed effects. Observations are weighted by the weight variable included in the GEM dataset.

Table 16: GDP growth rate and probability to start a firm in manufacturing

	(1) All	(2) Inn	(3) Growth	(4) High Intan.	(5) Low EFD	(6) High EFD
GDP growth	1.659*	1.353*	0.906	0.793*	1.582	1.530***
	(0.8646)	(0.6952)	(0.9083)	(0.4538)	(1.3046)	(0.4601)
Fin. crisis	-0.085*	-0.043	-0.131**	-0.239**	-0.072	-0.096
	(0.0502)	(0.0483)	(0.0523)	(0.1015)	(0.0594)	(0.0598)
Fin. crisis x GDP growth	3.876*	3.224*	5.352*	6.211*	2.724	5.129*
	(2.2211)	(1.6682)	(3.1931)	(3.2258)	(1.9650)	(3.0588)
Observations	853392	853392	853392	853392	853392	853392
R-squared	0.028	0.025	0.037	0.039	0.024	0.033

* p<0.1, ** p<0.05, *** p<0.01

Note: The dependent variable is a dummy that is equal to one if an individual is a nascent entrepreneur of the respective category in the manufacturing sector. Controls are dummies for three education levels, age and country-fixed effects. Observations are weighted by the weight variable included in the GEM dataset.

Table 17: GDP growth rate and probability to start a firm in manufacturing

	(1) All	(2) Inn	(3) Growth	(4) High Intan.	(5) Low EFD	(6) High EFD
GDP growth	3.010***	2.228***	2.717	3.270**	3.025**	2.597***
	(1.1477)	(0.7530)	(1.6684)	(1.5441)	(1.2336)	(0.9461)
Great Recession	0.088	0.084	0.098	0.024	0.132	-0.017
	(0.1098)	(0.1148)	(0.1200)	(0.0865)	(0.1047)	(0.1125)
GR x GDP growth	2.922	3.448	4.692**	4.086**	1.215	5.999***
	(2.1804)	(2.1698)	(2.3454)	(1.9891)	(2.1486)	(2.3121)
Observations	853392	853392	853392	853392	853392	853392
R-squared	0.028	0.026	0.037	0.036	0.025	0.033

* p<0.1, ** p<0.05, *** p<0.01

Note: The dependent variable is a dummy that is equal to one if an individual is a nascent entrepreneur of the respective category in the manufacturing sector. Controls are dummies for three education levels, age and country-fixed effects. Observations are weighted by the weight variable included in the GEM dataset.

Table 18: GDP growth rate and probability to start a firm in manufacturing

	(1) Noinnxlow	(2) Noinnxhigh	(3) Innxlow	(4) Innxhigh
GDP growth	1.708	1.438**	1.149	1.473*
	(1.2453)	(0.6822)	(1.3229)	(0.8239)
Fin. crisis	-0.098	-0.106	-0.030	-0.064
	(0.0667)	(0.0906)	(0.0698)	(0.0610)
Fin. crisis x GDP growth	3.028	5.009	2.246	4.627*
	(2.4748)	(3.4444)	(1.6512)	(2.7427)
Observations	853392	853392	853392	853392
R-squared	0.027	0.031	0.020	0.036

* p<0.1, ** p<0.05, *** p<0.01

Note: The dependent variable is a dummy that is equal to one if an individual is a nascent entrepreneur of the respective category in the manufacturing sector. Controls are dummies for three education levels, age and country-fixed effects. Observations are weighted by the weight variable included in the GEM dataset.

Table 19: GDP growth rate and probability to start a firm in manufacturing

	(1) Nogrowthxlow	(2) Nogrowthxhigh	(3) Growthxlow	(4) Growthxhigh
GDP growth	1.971	1.672**	0.660	1.147
	(1.4194)	(0.6802)	(1.0956)	(0.7820)
Fin. crisis	-0.020	-0.101	-0.154**	-0.085
	(0.0692)	(0.0662)	(0.0604)	(0.0596)
Fin. crisis x GDP growth	1.572	4.301	4.545	5.685*
	(1.7881)	(2.9225)	(3.2392)	(3.0998)
Observations	853392	853392	853392	853392
R-squared	0.019	0.036	0.044	0.030

* p<0.1, ** p<0.05, *** p<0.01

Note: The dependent variable is a dummy that is equal to one if an individual is a nascent entrepreneur of the respective category in the manufacturing sector. Controls are dummies for three education levels, age and country-fixed effects. Observations are weighted by the weight variable included in the GEM dataset.

Table 20: GDP growth rate and probability to start a firm in manufacturing

	(1) Lowxlow	(2) Lowxhigh	(3) highxlow	(4) highxhigh
GDP growth	0.673	1.535**	1.285	1.336
	(1.3077)	(0.6342)	(1.3881)	(0.8984)
Fin. crisis	-0.195**	-0.078	-0.042	-0.123*
	(0.0842)	(0.0870)	(0.0654)	(0.0632)
Fin. crisis x GDP growth	5.019	4.307	2.331	6.072*
	(5.3116)	(2.8032)	(2.1195)	(3.3562)
Observations	823191	853392	853392	853392
R-squared	0.029	0.032	0.022	0.041

* p<0.1, ** p<0.05, *** p<0.01

Note: The dependent variable is a dummy that is equal to one if an individual is a nascent entrepreneur of the respective category in the manufacturing sector. Controls are dummies for three education levels, age and country-fixed effects. Observations are weighted by the weight variable included in the GEM dataset.

Excluding construction sector

Table 21: GDP growth rate and probability to start a firm

	(1) All	(2) Inn	(3) Growth	(4) High Intan.	(5) All	(6) Inn	(7) Growth	(8) High Intan.
GDP growth	1.139	0.434	2.093	2.522**	1.088	0.424	1.469	1.552*
	(0.8970)	(0.6076)	(1.3302)	(1.2532)	(0.8417)	(0.6776)	(1.0975)	(0.8802)
Fin. crisis					-0.010	-0.002	-0.118*	-0.181***
					(0.0422)	(0.0282)	(0.0651)	(0.0679)
Observations	956842	956842	956842	956842	956842	956842	956842	956842
R-squared	0.059	0.078	0.064	0.039	0.059	0.078	0.065	0.042

* p<0.1, ** p<0.05, *** p<0.01

Note: The dependent variable is a dummy that is equal to one if an individual is a nascent entrepreneur of the respective category. Controls are dummies for three education levels, age and country-fixed effects. Observations are weighted by the weight variable included in the GEM dataset.

Table 22: GDP growth rate and probability to start a firm

	(1) All	(2) Inn	(3) Growth	(4) High Intan.	(5) Opp	(6) Nec	(7) Low Intan.
GDP growth	0.374	-0.071	0.235	0.487	0.389	0.068	0.576
	(0.6511)	(0.5492)	(0.5735)	(0.5416)	(0.5714)	(0.5405)	(0.5600)
Fin. crisis	-0.053	-0.033	-0.223**	-0.273***	-0.093	0.005	-0.098
	(0.0583)	(0.0275)	(0.0943)	(0.0981)	(0.0754)	(0.0566)	(0.0605)
Fin. crisis x GDP growth	2.767**	2.224***	6.617**	5.538*	2.845*	2.426**	3.684*
	(1.3627)	(0.7670)	(3.2767)	(3.0576)	(1.5752)	(1.1602)	(1.9070)
Observations	956842	956842	956842	956842	956842	956842	956842
R-squared	0.059	0.079	0.068	0.044	0.057	0.049	0.062

* p<0.1, ** p<0.05, *** p<0.01

Note: The dependent variable is a dummy that is equal to one if an individual is a nascent entrepreneur of the respective category. Controls are dummies for three education levels, age and country-fixed effects. Observations are weighted by the weight variable included in the GEM dataset.

Table 23: GDP growth rate and probability to start a firm

	(1) All	(2) Inn	(3) Growth	(4) High Intan.	(5) Opp	(6) Nec	(7) Low Intan.
GDP growth	1.018	0.170	2.047	2.225	1.265	0.326	1.668
	(1.0599)	(0.7857)	(1.6450)	(1.4744)	(1.1872)	(0.7136)	(1.1228)
Great Recession	-0.011	-0.035	0.054	-0.022	-0.015	-0.012	0.065
	(0.0547)	(0.0555)	(0.0902)	(0.0640)	(0.0633)	(0.0295)	(0.0790)
GR x GDP growth	0.752	1.437*	4.153***	3.988***	0.272	0.955	2.274*
	(1.1628)	(0.8611)	(1.4790)	(1.4892)	(1.0715)	(1.3244)	(1.2918)
Observations	956842	956842	956842	956842	956842	956842	956842
R-squared	0.059	0.079	0.065	0.040	0.056	0.049	0.061

* p<0.1, ** p<0.05, *** p<0.01

Note: The dependent variable is a dummy that is equal to one if an individual is a nascent entrepreneur of the respective category. Controls are dummies for three education levels, age and country-fixed effects. Observations are weighted by the weight variable included in the GEM dataset.

Table 24: GDP growth rate and probability to start a firm in manufacturing

	(1) All	(2) Inn	(3) Growth	(4) High Intan.	(5) Low EFD	(6) High EFD
GDP growth	0.043	-0.946	-1.015	0.487	1.310*	-1.357
	(1.2060)	(1.1959)	(1.1238)	(0.5416)	(0.7467)	(1.6194)
Fin. crisis	-0.161**	-0.145**	-0.227***	-0.273***	-0.082**	-0.241**
	(0.0707)	(0.0570)	(0.0822)	(0.0981)	(0.0417)	(0.1031)
Fin. crisis x GDP growth	5.835**	5.880***	7.774**	5.538*	3.057	8.725**
	(2.6862)	(2.2156)	(3.8226)	(3.0576)	(1.8796)	(3.7821)
Observations	956842	956842	956842	956842	956842	956842
R-squared	0.052	0.073	0.071	0.044	0.038	0.068

* p<0.1, ** p<0.05, *** p<0.01

Note: The dependent variable is a dummy that is equal to one if an individual is a nascent entrepreneur of the respective category in the manufacturing sector. Controls are dummies for three education levels, age and country-fixed effects. Observations are weighted by the weight variable included in the GEM dataset.

Table 25: GDP growth rate and probability to start a firm in manufacturing

	(1) All	(2) Inn	(3) Growth	(4) High Intan.	(5) Low EFD	(6) High EFD
GDP growth	1.464	0.288	0.756	2.225	2.414**	0.221
	(1.5723)	(1.4243)	(1.9139)	(1.4744)	(1.0491)	(1.9685)
Great Recession	0.085	0.078	0.095	-0.022	0.134*	0.014
	(0.0833)	(0.0870)	(0.0928)	(0.0640)	(0.0791)	(0.0830)
GR x GDP growth	3.081*	3.136*	3.793*	3.988***	1.748	4.349**
	(1.6570)	(1.6986)	(1.9365)	(1.4892)	(1.8866)	(2.0116)
Observations	956842	956842	956842	956842	956842	956842
R-squared	0.050	0.071	0.067	0.040	0.039	0.062

* p<0.1, ** p<0.05, *** p<0.01

Note: The dependent variable is a dummy that is equal to one if an individual is a nascent entrepreneur of the respective category in the manufacturing sector. Controls are dummies for three education levels, age and country-fixed effects. Observations are weighted by the weight variable included in the GEM dataset.

Table 26: GDP growth rate and probability to start a firm in manufacturing

	(1) Noinnxlow	(2) Noinnxhigh	(3) Innxlow	(4) Innxhigh
GDP growth	1.550**	0.058	0.826	-2.565
	(0.7450)	(1.1704)	(0.6400)	(1.6470)
Fin. crisis	-0.103*	-0.179*	-0.044	-0.249***
	(0.0538)	(0.1062)	(0.0402)	(0.0775)
Fin. crisis x GDP growth	3.244	6.769*	2.610*	9.445***
	(2.3536)	(3.7157)	(1.3746)	(3.3300)
Observations	956842	956842	956842	934632
R-squared	0.034	0.039	0.044	0.106

* p<0.1, ** p<0.05, *** p<0.01

Note: The dependent variable is a dummy that is equal to one if an individual is a nascent entrepreneur of the respective category in the manufacturing sector. Controls are dummies for three education levels, age and country-fixed effects. Observations are weighted by the weight variable included in the GEM dataset.

Table 27: GDP growth rate and probability to start a firm in manufacturing

	(1) Nogrowthxlow	(2) Nogrowthxhigh	(3) Growthxlow	(4) Growthxhigh
GDP growth	1.860**	-0.367	0.379	-2.204
	(0.7817)	(1.3851)	(0.5560)	(1.5604)
Fin. crisis	-0.024	-0.200**	-0.166***	-0.257**
	(0.0447)	(0.0875)	(0.0549)	(0.1090)
Fin. crisis x GDP growth	1.705	6.779**	4.902	10.006**
	(1.3106)	(3.1678)	(3.4506)	(4.2172)
Observations	956842	956842	956842	934632
R-squared	0.030	0.052	0.058	0.081

* p<0.1, ** p<0.05, *** p<0.01

Note: The dependent variable is a dummy that is equal to one if an individual is a nascent entrepreneur of the respective category in the manufacturing sector. Controls are dummies for three education levels, age and country-fixed effects. Observations are weighted by the weight variable included in the GEM dataset.

Table 28: GDP growth rate and probability to start a firm in manufacturing

	(1) Lowxlow	(2) Lowxhigh	(3) highxlow	(4) highxhigh
GDP growth	0.200	-1.498	1.311*	-0.844
	(0.8778)	(1.6823)	(0.7499)	(1.2230)
Fin. crisis	-0.213***	-0.232*	-0.041	-0.228***
	(0.0807)	(0.1261)	(0.0492)	(0.0652)
Fin. crisis x GDP growth	5.630	8.097**	2.304	8.760**
	(4.7215)	(3.7086)	(1.8854)	(3.5769)
Observations	926712	956842	956842	956842
R-squared	0.028	0.076	0.036	0.052

* p<0.1, ** p<0.05, *** p<0.01

Note: The dependent variable is a dummy that is equal to one if an individual is a nascent entrepreneur of the respective category in the manufacturing sector. Controls are dummies for three education levels, age and country-fixed effects. Observations are weighted by the weight variable included in the GEM dataset.