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'To what extent do natural disasters affect entrepreneurial activity in developing countries?'

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Abstract

The pursuit of stable economic growth is a pressing goal for countries with a less developed economy, also known as ‘developing countries’. The skill to exploit unnoticed opportunities is one definition used for entrepreneurship and is seen as one of the main drivers of economic growth. However, the escalating occurrence of natural disasters worldwide presents a substantial hurdle to accomplishing these goals and ensuring consistent support for entrepreneurship. This threat motivated this research on to what extent severe natural disasters affect entrepreneurial activity in developing countries in the short run. Using the Fixed Effects panel data approach, the effects of all severe natural disasters on entrepreneurial activity in 19 developing countries between 2006 and 2016 are first examined. The sample is then divided into two types of severe natural disasters, climatic (droughts and wildfires) and geologic (earthquakes, volcanic activity, or landslides), and their effects on entrepreneurial activity are examined. This thesis does not find significant evidence that severe natural disasters negatively impact entrepreneurial activity in developing countries. However, climatic natural disasters exhibit a more significant negative effect in the short run, while the impact of geologic disasters remains inconclusive. In the case of climatic disasters, it is advised to implement local government support programs and increase work with Non-Governmental Organizations to increase entrepreneurial activity again after disasters.

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1. Introduction

There are two occupational groups; employees and entrepreneurs. Employees rely on a salary as their source of income, while entrepreneurs earn profits. Someone can be drawn to one occupational group more than another. Creativity, risk-taking, and independence are characteristics that increase someone's chances of becoming an entrepreneur (Knörr, 2013). Next to characteristics, the economic phase of the country someone lives in can influence the chance of someone becoming an entrepreneur. These stages can be defined by a country's Gross National Income (GNI). In 2018, if the GNI per capita was below 3.896 US dollars, the country was classified as 'developing', and a GNI above classifies a country as 'developed' (World Bank Data Team, 2019). Based on the economic theory of entrepreneurial push and pull motivation, people will be 'pushed' into entrepreneurship by negative factors such as unemployment or a lack of career prospects. Others will be 'pulled' into entrepreneurship by positive factors such as the need for independence or innovation (Kirkwood, 2009). Multiple studies have found that in a developing country, entrepreneurs establish themselves because they cannot find another job- a push factor- and become 'necessity-entrepreneurs.' In developed countries, the motivation to become an entrepreneur is to innovate and expand the market with their product or service, becoming 'opportunity-entrepreneurs' (Van Der Zwan, 2016). According to Baumol and Strom (2007), entrepreneurship, especially the skills to exploit unnoticed opportunities, is one of the main forces driving economic growth.

Natural disasters are more likely to affect developing countries than developed countries. In addition to being hit with increasing intensity and frequency, natural disasters are a constant part of life in developing nations. Because these nations frequently lack the resources to prepare for or recover from a disaster, the poor are disproportionately affected in multiple ways (Marcelo Giugale, Director of Financial Advisory and Banking, World Bank Treasury, 2017). Developing nations are currently attempting to accelerate and stabilize their economic growth. However, due to the increasing frequency of natural disasters, achieving these objectives and promoting entrepreneurship consistently is challenging. This problem motivates the following research question:

'To what extent do natural disasters affect entrepreneurial activity in developing countries?'

The relevant theories and hypotheses will be discussed in the Theoretical Framework. The main findings of this paper will come after an explanation of the data collection and methodology. Finally, robustness checks, conclusions, limitations, and ideas for future research are discussed.

2. Theoretical Framework

2.1 Existing literature

2.1.1 Natural Disasters and Entrepreneurial Activity

The effect of natural disasters on economic development has had some contrasting conclusions in the past; economic theories have a different view on the effect of a natural disaster. According to Solow's (1956) neoclassical growth model, decreasing the capital-labor ratio could temporarily deviate a country from its long-term growth path. On the contrary, models based on Schumpeter's (1934) creative destruction could argue that the economic shocks associated with a natural disaster will allow new businesses to enter, increasing economic growth. Multiple studies, such as those of Harrison (1994) and Storey (2016), have indicated that fast-growing firms, also known as gazelles, which are different from new firms, generate enormous growth and job creation in developed countries. Next to this, the paper of Valliere and Peterson (2009) found that in developed countries, a significant portion of economic growth is due to entrepreneurs exploiting national investments in knowledge creation and regulatory freedom. These papers illustrate that entrepreneurial activity is a mechanism through which growth can be caused. Recent literature still primarily focuses on the effects of economic growth, and the factors that determine economic development are usually overlooked.

A natural disaster is a shock that significantly impacts the country, including the entrepreneurial activity there. There is not a singular definition of a natural disaster in the literature. From an economic perspective, it can be seen as a 'natural event that causes a perturbation to the functioning of the economic system, with a significant negative impact on assets, production factors, output, employment, or consumption.' (Hallegatte and Przyluski, 2010, p. 2) Next, the classification of a 'severe' natural disaster is not yet established. The paper of Fomby et al. (2013) works with a threshold of 1% of the population affected by the natural disaster to categorize it as 'severe' and 0.01% of the population threshold for a 'moderate' natural disaster. This threshold for a severe natural disaster is also applied in this thesis to ensure that only significant catastrophic disasters are included.

Entrepreneurial activity is defined differently in the literature. Initially, the definition was mostly based on a top-down approach, where the basis lies in a philosophical definition with little concern for the ability to be measured (Ahmad and Seymour, 2008). To account for the measurability of entrepreneurial activity, most papers investigating the relationship between natural disasters and entrepreneurship use the New Business Density as a proxy. (Boudreaux et al., 2019; Boudreaux et al., 2022). The New Business Density is the number of all newly registered limited liability businesses in the calendar year (World Bank Open Data, 2003).

The effect of a natural disaster on entrepreneurial activity can be theorized in two different ways.

A natural disaster could positively affect entrepreneurial activity by creating new opportunities. Berg and Schrader (2012) found that after a natural disaster, credit demand increases. Increased lending could lead to increased consumption and investments, eventually creating more business opportunities and making room for more entrepreneurial activity.

On the other hand, a natural disaster could negatively affect entrepreneurial activity as it creates uncertainty. This could create a fear of failure and discourage start-up activity (Monllor and Murphy, 2017). According to research on the impact of natural disasters on entrepreneurial activity, Boudreaux et al. (2019) found that the devastating effects of a natural disaster decrease start-up activity in the short term, with no effect beyond one or two years. This is in line with the research of Boudreaux et al. (2022), who found no significant effects for countries with low-quality governance after three years. As the uncertainty effect is expected to dominate the opportunities, the following hypothesis is drawn:

H1: In the short run, entrepreneurial activity in developing countries is negatively affected by natural disasters.

2.1.2 Developed versus Developing Countries

Most of the past literature has intensely focused on developed countries and their effect on entrepreneurial activity. However, recently, the question was raised whether this represents the whole world. The results changed as researchers started considering a country's different economic stages. When looking into the different economic stages, research has found different effects of natural disasters depending on the economic development of that country.

When investigating the different stages of economic development, it became clear that the reasons for becoming an entrepreneur changed with the times. Margolis (2014) suggests that circa two-thirds of the individuals in a country with a less developed economy, also known as a developing country, become entrepreneurs because they do not have a better alternative, which will lead to individuals called 'necessity' entrepreneurs. Whereas Valliere and Peterson (2009) found that in countries with a more developed economy, also known as developed countries, more entrepreneurs are growth-oriented and exploit national investments in knowledge creation and regulatory freedom, also known as 'opportunity' entrepreneurs.

Boudreaux et al. (2019) found that after splitting their sample into developed and developing countries, different effects of the type of natural disaster exist depending on that country's economic development level. In their study, they classified natural disasters into two categories. The first category is climatic natural disasters, which include events such as droughts and wildfires. The second category is geologic natural disasters, which include earthquakes, volcanic activity, or landslides.

According to Boudreaux et al. (2019), climatic natural disasters discourage start-up activity in developing countries. These countries are affected the most, as they usually do not have the resources to prepare compared to developed countries. In addition, climatic events tend to impact agriculture production more than geologic events in developing countries. On the contrary, in developed countries, geologic events discourage start-up activity the most compared to climatic events.

Following these findings, the following two hypotheses are drawn:

H2: Climatic natural disasters will have a more significant negative effect on entrepreneurial activity than the total natural disasters in developing countries in the short run.

H3: Geologic natural disasters will have a less significant negative effect on entrepreneurial activity than the total of natural disasters in developing countries in the short run.

2.2 Gap and Contribution to Literature

This thesis will investigate the relationship between natural disasters and entrepreneurial activity in developing countries. The scientific relevance is that most of the literature focuses on the impact of natural disasters on economic growth. However, the relationship between natural disasters and entrepreneurship needs to be addressed more. Next, this thesis investigates the effect of only severe natural disasters, which has not been done with only developing countries as a sample in the existing literature. The social relevance of this thesis is that by distinguishing between different kinds of natural disasters in developing countries, policies could be implemented depending on the effects and kinds of natural disasters that occur the most in the specific country. Hopefully, this can add to those countries' resilience against natural disasters. Finally, with rising interest in policies for entrepreneurs worldwide, this thesis can expand our knowledge of natural disasters' effects in developing countries.

3. Data and Methodology

3.1 Data Description

3.1.1 Sample

The sample includes 19 countries between 2006 – 2016, as the dependent variable 'New Business Density' is only available from 2006 onwards. The New Business Density is defined as the number of new limited liability companies (or their equivalent) registered in the calendar year (World Bank Open Data, 2023). The data about natural disasters is retrieved from the Emergency Events Database (EM-DAT) (2023). This is a database where natural disasters worldwide are included if they meet one of the following criteria: Ten or more people reported being killed. One hundred or more people reported being affected. Declaration of a state of emergency and/or call for international assistance. As the database includes all kinds of natural disasters, from minor to extremely severe, this paper uses only severe natural disasters to not bias the results. Based on the paper of Fomby et al. (2013), only natural disasters are included if more than 1% of the population is affected, as they classify these as 'severe.' As investigated by Fomby et al. (2013) and Boudreaux et al. (2022), three years after the natural disaster hit, there are small and no significant effects anymore on GDP growth in developing countries. For that reason, I will check up to three years before the sample period (2003 – 2005) if the country was hit by a natural disaster of a severe magnitude; more than 1% of the population was affected. If they were hit, they were excluded from the sample to ensure no biased results from a previous natural disaster.

After this, the GNI classification divides the countries into developing or developed countries using the WorldBank GNI classifications from 2018, before Corona. The WorldBank classifies countries as 'developing' if they are in the low–income and lower–middle–income rankings. A county is ranked as 'developed' if it is in the upper–middle and high–income rankings. The exact classifications are shown in Table 1. Next, the data about the New Business Density was introduced, and all the countries that did not have any data were dropped. They entailed the countries of Cameroon, the Syrian Arab Republic, and Yemen. After this, all the control variables were included, and the panel dataset was created. Finally, the countries that were hit more than once by a severe natural disaster during 2006 – 2016 were dropped to single out the effect of only one severe natural disaster hit and therefore avoid the issue of in-sample serial correlation.

Table 1: WorldBank GNI per capita classifications in 2018

Threshold	**GNI / Capita (current US$)**
Low – income	< 996
Lower – middle income	996 – 3.895
Upper – middle income	3.896 – 12.055
High – income	> 12.055

Adapted source: World Bank Data Team, 2019

3.1.2 Dependent Variable

To measure entrepreneurship in developing countries, the variable New Business Density per 1000 between the ages of 15-64 is chosen as the dependent variable. This is the number of new limited liability corporations registered in a year. The natural logarithm is taken as there is a power distribution; the histograms of the distributions can be found in Appendix A under Figure 1 and Figure 2. The data is retrieved from the World Bank's Entrepreneurship Database.

3.1.3 Independent Variable

The independent variable in this study is if a country was hit by a severe natural disaster, which will be a dummy variable of 1 if a natural disaster hit the country between 2006 – 2016 in that specific year. It would be zero if the country had not been hit that year. The lags up to two years before the natural disaster strikes are included based on the research of Boudreaux (2019) to examine the effects of natural disasters better and account for the dynamic effects of natural disasters.

3.1.4 Control Variables

The control variables are based on the papers of Boudreaux et al. (2019) and Boudreaux et al. (2022). All the data is retrieved from the WorldBank database (2023). The natural logarithm was used for some variables because of a skewed distribution. By taking the natural logarithm, the distribution becomes more symmetric or similar to a normal distribution. This helps prevent the influence of outliers in the data. The histograms of those variables can be found in Appendix A.

The lag of the natural logarithm of the New Business Density per 1000 people between the ages of 15-64. This includes all the limited liability companies registered annually. The natural logarithm of New Business Density is included in the model to account for entrepreneurial dynamism, based on the works of Boudreaux (2019) and Dutta and Sobel (2016). Histograms are in Figures 3 and 4 in Appendix A.

School enrollment in primary grade, as a percentage of the gross. This is the ratio of total enrollment, regardless of age, and the age group population that should be in primary education.

The number of procedures to start a business. This includes all the processes necessary to start a business, such as permits, licenses, and verifications to begin operating.

Domestic credit to the private sector as a percentage of GDP. These are financial resources provided by financial corporations to the private sector, such as loans and other methods that allow for a repayment claim.

The natural logarithm of the number of days needed to start a business. These are the calendar days necessary to complete the procedures to begin operating a new business. Histograms are shown in Figures 5 and 6 in Appendix A.

The annual GDP growth. The growth rate at market prices is based on a constant local currency. GDP is the gross value of all resident producers in the economy minus any subsidies not included in the value of the products. It is aggregated and based on US dollars. The growth rate at market prices is based on a constant local currency.

The natural logarithm of land area per square kilometer. This is a country's total area, excluding major rivers and lakes, national claims to the continental shelf, and exclusive economic zones. The natural logarithm is taken as it has a power of law distribution. Histograms are shown in Figures 7 and 8 in Appendix A.

3.1.5 Descriptive Statistics

The descriptive statistics are shown in Table 2 to summarize and describe the variables used in these tests. The dataset is unbalanced, with variation between 209 observations and a minimum of 150 observations of the dependent variable, 'New Business Density.'

Next to this, the correlation matrix in Table 2 and the covariance matrix in Table 3 of the final variables used can be found in Appendix B. Noticeable is the high correlation between New Business Density and the lag of New Business Density. However, this is a logically high correlation as this is the same variable the year before. Therefore, it is not problematic for the interpretation of the results. Moreover, all the other variables are not significantly correlated with each other.

Table 2: Summarizing statistics

Variable	Observations	Mean	Standard deviation	Minimum	Maximum
Year	209	2011	3.170	2006	2016
Country	209	10	5.490	1	19
New Business Density (log)	167	-1.098	1.622	-4.969	2.214
New Business Density $(log)_{t-1}$	150	-1.107	1.616	-4.969	2.029
Hit by a severe natural disaster	209	0.043	0.203	0	1
School enrollment in primary grade (% of gross)	186	104.902	15.1614	63.461	149.271
Number of procedures to start a business	202	8.381	2.437	4	15
Domestic credit to the private sector (% of GDP)	182	26.955	25.105	0.000	95.507
Number of days needed to start a business (log)	202	2.986	0.768	1.386	5.118
Annual GDP growth	208	4.834	5.399	-36.392	20.716
Land area in sq. km. (log)	209	11.840	2.005	6.697	14.634

Note: This Table contains the summarizing statistics of all the variables. Column(1) shows the number of observations. Column(2) shows the average of all variables, and Columns (3,4,5) show the standard deviation, minimum and maximum, respectively.

3.2 Methodology

3.2.1 Hausman Test

After conducting all the steps above, The dataset finishes with 19 countries and unbalanced data from 2006 – 2016 for each country.

After creating the panel dataset, the Hausman test was conducted to test whether to use a Random Effects or Fixed Effects Model. The results are shown in Table 4. The Hausman test found a p-value of 0.0000. Therefore, as it is smaller than the chosen significance level of 0.05, a Fixed Effects model is the right fit for the data. A Fixed Effects Model uses data from multiple entities, in this context, countries, and considers all the time-invariant characteristics of those countries to find the effect of the relevant time-variant variables or characteristics.

Table 4: Hausman test

	Coëfficiënt
Chi-square test value	27.99
P-value	0.0000

Note: This Table shows the results of the Hausman test performed on the sample.

3.2.2 Assumptions Fixed Effects Model

The assumptions of Fixed Effects are tested to ensure the validity of statistical inference.

Firstly, the model assumes no perfect multicollinearity. This entails that the independent variables are not perfectly correlated with each other. The multicollinearity Variance Inflation Factor (VIF) test advises only using variables below the threshold of 10 to ensure the multicollinearity is not too strong. The multicollinearity results can be found in Table 5 in Appendix C, where it can be seen that the VIF values of land area in sq. km. (log), school enrollment in primary grade (% of gross), number of procedures to start a business, and number of days needed to start a business (log) are above the generally used threshold of 10. By dropping the variables ‘sq. km. (log)’, ‘The number of procedures to start a business’, and ‘number of days needed to start a business (log)’ the VIF values all fall below the threshold of 10. These variables are dropped to ensure that the following Models are interpretable. None of these variables have been proven to be significant, such as by Boudreaux et al. (2019). However, as enrollment in primary school is seen as a significant control variable in the work of Boudreaux et al. (2019), this is still included.

Secondly, the Fixed Effects model assumes time-invariant group-specific effects. The model assumes that all time-invariant variables are implicitly captured using Fixed Effects.

Thirdly, it is assumed that there is homoscedasticity. This entails that the error term has constant variances across the countries investigated and is not systematically related to the independent variables. After conducting a White test with robust standard errors, the standard errors changed substantially when including the robust standard errors. This suggests that the conventional standard errors are unreliable due to possible heteroscedasticity. Therefore, robust standard errors will be included in all the models to provide a more reliable and valid statistical inference in heteroscedasticity. The White test results can be found in Table 6 in Appendix C.

Fourthly, the error term is assumed to be serial uncorrelated with other observations over time. Clustered-robust standard errors will be included in the Models to account for this.

Finally, the assumption is made that the observations are independent. The observations used cannot be correlated with each other or influenced by variables not included in the model. As many of the countries used in the dataset are next to each other, it cannot be concluded that all the observations are independent due to potential spillover effects. This methodological threat will be further discussed in the Limitations. The exact locations of each country can be found in Appendix C in Figure 9.

3.3 Hypotheses

3.3.1 Hypothesis 1

The first hypothesis tested is whether, in the short run, entrepreneurial activity is negatively affected by severe natural disasters. The first hypothesis will test the overall effect of a severe natural disaster on all the control variables. The Hausman test indicated that a Fixed Effects Model is the right model for this data and will be applied to all hypotheses.

Regression 1:

$$\text{Log(New Business Density}_{it}) = \beta_0 + \beta_1 * \text{Log(New Business Density}_{t-1}) + \beta_2 * \text{Hit by a severe natural disaster (total)}_{it} + \beta_3 * \text{School enrollment primary}_{it} + \beta_4 * \text{Domestic credit to private sector}_{it} + \beta_5 * \text{GDP growth annual}_{it} + \Upsilon_i + \varepsilon_{it}$$

Where $\text{Log(New Business Density}_{it})$ is the natural logarithm of the new business density per 1000 people for country_i and time_t, β_0 is the intercept, and β_1 up to β_5 are the coefficients for each of the variables, Υ_i is the country-specific fixed effect and ε_{it} is the error term.

Afterward, the first and second lag of 'Hit by a severe natural disaster' is considered to account for the dynamic effects of natural disasters. Natural disasters have effects that could last beyond the direct event and even have consequences over a longer period of time. Leading to the second and third Regressions:

Regression 2:

$\text{Log(New Business Density}_{it}) = \beta_0 + \beta_1 * \text{Log(New Business Density}_{t-1}) + \beta_2 * \text{Hit by a severe natural disaster (total)}_{t-1} + \beta_3 * \text{School enrollment primary}_{it} + \beta_4 * \text{Domestic credit to private sector}_{it} + \beta_5 * \text{GDP growth annual}_{it} + \Upsilon_i + \varepsilon_{it}$

Regression 3:

$\text{Log(New Business Density}_{it}) = \beta_0 + \beta_1 * \text{Log(New Business Density}_{t-1}) + \beta_2 * \text{Hit by a severe natural disaster (total)}_{t-2} + \beta_3 * \text{School enrollment primary}_{it} + \beta_4 * \text{Domestic credit to private sector}_{it} + \beta_5 * \text{GDP growth annual}_{it} + \Upsilon_i + \varepsilon_{it}$

Where $\text{Log(New Business Density}_{it})$ is the natural logarithm of the new business density per 1000 people for country_i and time_t, β_0 is the intercept, and β_1 up to β_5 are the coefficients for each of the variables, where $\text{Hit by a severe natural disaster (total)}_{t-1}$ and $\text{Hit by a severe natural disaster (total)}_{t-2}$ are the variables indicating the lag of the previous and two years before a disaster hitting, Υ_i is the country-specific fixed effect and ε_{it} is the error term.

3.3.2 Hypothesis 2

Secondly, we test if the kind of natural disaster has a different impact than the total of natural disasters. This hypothesis will focus on climatic natural disasters and their effect on entrepreneurial activity in the short run. Regression 4 considers only climatic natural disasters. Therefore, the dummy variable 'Hit by a severe natural disaster' will take on one if hit by a severe climatic natural disaster and zero if not hit by a severe natural disaster.

Regression 4:

$\text{Log(New Business Density}_{it}) = \beta_0 + \beta_1 * \text{Log(New Business Density}_{t-1}) + \beta_2 * \text{Hit by a severe natural disaster (climatic)}_{it} + \beta_3 * \text{School enrollment primary}_{it} + \beta_4 * \text{Domestic credit to private sector}_{it} + \beta_5 * \text{GDP growth annual}_{it} + \Upsilon_i + \varepsilon_{it}$

In Regression 5 and Regression 6 the dynamic effects of climatic natural disasters are taken into account by taking the first lag and second lag in Regression 5 and 6 of being hit by a severe natural disaster.

Regression 5:

$\text{Log(New Business Density}_{it}) = \beta_0 + \beta_1 * \text{Log(New Business Density}_{t-1}) + \beta_2 * \text{Hit by a severe natural disaster (climatic)}_{t-1} + \beta_3 * \text{School enrollment primary}_{it} + \beta_4 * \text{Domestic credit to private sector}_{it} + \beta_5 * \text{GDP growth annual}_{it} + \Upsilon_i + \varepsilon_{it}$

Regression 6:

$\text{Log(New Business Density}_{it}) = \beta_0 + \beta_1 * \text{Log(New Business Density}_{t-1}) + \beta_2 * \text{Hit by a severe natural disaster (climatic)}_{t-2} + \beta_3 * \text{School enrollment primary}_{it} + \beta_4 * \text{Domestic credit to private sector}_{it} + \beta_5 * \text{GDP growth annual}_{it} + \Upsilon_i + \varepsilon_{it}$

Where $\text{hit by a severe natural disaster (climatic)}_{t-1}$ and $\text{hit by a severe natural disaster (climatic)}_{t-2}$ are the lags of being hit by a severe climatic natural disaster in the previous period and two years prior.

3.3.3 Hypothesis 3

Thirdly, the final regression is tested to see if severe geologic natural disasters have a less negative effect compared to the total of natural disasters on entrepreneurial activity in developing countries in the short run. In Regression 7, the dummy variable 'hit by a severe natural disaster' is one if a severe geologic natural disaster hit that country and zero if a severe natural disaster did not hit.

Regression 7:

$\text{Log(New Business Density}_{it}) = \beta_0 + \beta_1 * \text{Log(New Business Density}_{t-1}) + \beta_2 * \text{Hit by a severe natural disaster (geologic)}_{it} + \beta_3 * \text{School enrollment primary}_{it} + \beta_4 * \text{Domestic credit to private sector}_{it} + \beta_5 * \text{GDP growth annual}_{it} + \Upsilon_i + \varepsilon_{it}$

In the final two models, Regression 8 and Regression 9, the dynamic effects of natural disasters are considered.

Regression 8:

$\text{Log(New Business Density}_{it}) = \beta_0 + \beta_1 * \text{Log(New Business Density}_{t-1}) + \beta_2 * \text{Hit by a severe natural disaster (geologic)}_{t-1} + \beta_3 * \text{School enrollment primary}_{it} + \beta_4 * \text{Domestic credit to private sector}_{it} + \beta_5 * \text{GDP growth annual}_{it} + \Upsilon_i + \varepsilon_{it}$

Regression 9:

$\text{Log(New Business Density}_{it}) = \beta_0 + \beta_1 * \text{Log(New Business Density}_{t-1}) + \beta_2 * \text{Hit by a severe natural disaster (geologic)}_{t-2} + \beta_3 * \text{School enrollment primary}_{it} + \beta_4 * \text{Domestic credit to private sector}_{it} + \beta_5 * \text{GDP growth annual}_{it} + \Upsilon_i + \varepsilon_{it}$

Where hit by a severe natural disaster (geologic)$_{t-1}$ and hit by a severe natural disaster (geologic)$_{t-2}$ are the lags of being hit by a severe geologic natural disaster in the previous year and the two years before.

4. Results

4.1 The Effect of Severe Natural Disasters on Entrepreneurial Activity

The results of the first three Fixed Effects regressions are presented in Table 7. All the Models show a highly significant positive effect of the lag of New Business Density on the New Business Density. Model 1 indicated that a one percent increase in the New Business Density a year before is associated with a 0.6641% increase in New Business Density that year while holding all other variables constant.

Table 7: The effect of severe natural disasters and other factors on New Business Density

	Full sample		
Variables	(1) FE	(2) FE	(3) FE
New Business Density $(log)_{t-1}$	0.6641*** (0.1562)	0.6668*** (0.1506)	0.5811*** (0.1520)
Hit by a severe natural disaster	0.0072 (0.0644)		
Hit by a severe natural $disaster_{t-1}$		0.3093 (0.3040)	
Hit by a severe natural $disaster_{t-2}$			-0.2563 (0.2499)
School enrollment in primary grade (% of gross)	0.0008 (0.0101)	-0.0012 (0.0099)	-0.0003 (0.0106)
Domestic credit to the private sector (% of GDP)	0.0041 (0.0073)	0.0042 (0.0072)	0.0041 (0.0085)
Annual GDP growth	0.0035 (0.0053)	0.0036 (0.0052)	0.0040 (0.0057)
Constant	-0.3959 (1.1638)	-0.1959 (1.0611)	-0.3202 (1.1476)
Number of observations	110	110	104
R-squared (within)	0.6025	0.6172	0.5140

Note: This Table shows the results of Fixed Effects regressions of 17 countries with 110 or 104 observations. The dependent variable is the natural logarithm of New Business Density. The sample is taken from the period 2006-2016. Standard errors are reported in parentheses below the coefficients and are clustered-robust standard errors at the country level. The stars indicate statistical significance with ***p<0.01, **p<0.05, *p<0.1.

The lag of New Business Density stays highly significant across all models, even when including the lag of being hit by a severe natural disaster. However, being hit by a severe natural disaster is insignificant in all the Models. Therefore, we cannot interpret the effect of natural disasters on the New Business Density. Interestingly, the coefficients of being hit by a severe natural disaster remain

positive, even after including the different lags. This aligns with the school of thought that natural disasters stimulate entrepreneurial activity as they create opportunities for entrepreneurs. However, as the coefficients are insignificant, we cannot accept or reject the first hypothesis that severe natural disasters negatively affect entrepreneurial activity in the short run.

As a robustness check, the Fixed Effects Models are compared with another panel data method; Random Effects. The results' reliability and generability are enhanced if the main conclusions stay robust when including Random Effects. The Random Effects Model results and explanation for the first three regressions can be found in Table 8 in Appendix D.

4.2 The Effect of Severe Climatic Natural Disasters on Entrepreneurial Activity

The results of the second three Models are presented in Table 9. The sample group has changed compared to the previous three regressions. Now, the sample group is compiled of only countries that have been hit by a severe climatic natural disaster between 2006 - 2016 or were not hit during that period. Models 4, 5, and 6 all show a positive and highly significant relation between the lag of the New Business Density and the New Business Density. This relation gradually decreases when considering the lags of experiencing a severe natural disaster in Models 5 and 6. In Models 4 and 5, being hit by a severe climatic natural disaster is negatively and highly significantly associated with the New Business Density. Model 4 suggests that being hit by a natural disaster has a negative effect of 20,02% on the New Business Density compared to countries that were not hit, all else equal. Model 5 shows that being hit by a natural disaster in the previous year indicates an estimated decrease of 16,66% in the New Business Density in the current period, all else remaining equal. This aligns with the second hypothesis that climatic natural disasters will significantly negatively affect entrepreneurial activity in the short run. However, noticeably, Model 6 estimates a positive but insignificant relationship between a climatic natural disaster two years prior and the New Business Density in the current period. This contradicts the findings of Boudreaux et al. (2019), who found a remaining negative but insignificant relation in those periods for climatic natural disasters. The robustness check for Models 4 - 6 can be found in Appendix D Table 10.

Table 9: The effect of severe climatic natural disasters and other factors on New Business Density

	Climatic sample		
Variables	(4) FE	(5) FE	(6) FE
New Business Density $(log)_{t-1}$	0.7294*** (0.1434)	0.7280*** (0.1444)	0.6468*** (0.1632)
Hit by a severe climatic disaster	-0.2002*** (0.0386)		
Hit by a severe climatic $disaster_{t-1}$		-0.1666*** (0.0428)	
Hit by a severe climatic $disaster_{t-2}$			0.0535 (0.0562)
School enrollment in primary grade (% of gross)	0.0017 (0.0134)	0.0020 (0.0134)	0.0070 (0.01347)
Domestic credit to the private sector (% of GDP)	-0.0021 (0.0064)	-0.0020 (0.0064)	-0.0027 (0.0087)
Annual GDP growth	0.0021 (0.0064)	0.0022 (0.0065)	0.0013 (0.0062)
Constant	-0.1764 (1.3612)	-0.2097 (1.3616)	-0.7760 (1.3377)
Number of observations	69	69	65
R-squared (within)	0.7533	0.7526	0.6891

Note: This Table shows the results of Fixed Effects regressions of 11 countries with 69 or 65 observations. The dependent variable is the natural logarithm of New Business Density. The sample is taken from the period 2006-2016. Standard errors are reported in parentheses below the coefficients and are clustered-robust standard errors at the country level. The stars indicate statistical significance with ***p<0.01, **p<0.05, *p<0.1.

4.3 The Effect of Severe Geologic Natural Disasters on Entrepreneurial Activity

The results of the final three regressions are shown in Table 10. In this sample, only countries that were hit by a severe geologic natural disaster or were not hit by any severe natural disaster were included. Similar to the other regressions, the lag of New Business Density is positively and highly significantly associated with the New Business Density in the current period. Only the two lags are significant when a severe natural disaster strikes and the sign changes periodically. Model 8 indicates that being hit by a geologic natural disaster in the previous year indicates an estimated increase of 122,01 % in the New Business Density in the current period, all else remaining equal. While Model 9 indicates that being hit by a severe geologic natural disaster two years before indicates a decrease in the New Business Density of 133,37% in the current period, all else remaining equal. Therefore, only Model 9 aligns with the third hypothesis that severe geologic natural disasters negatively affect

entrepreneurial activity compared to the total of natural disasters in developing countries, as we cannot interpret the coefficient of Model 7 since it is not significant.

In Model 7 and Model 9, the school enrollment in primary grade as a percentage of the gross is positive and highly significant. This indicates that a one percent rise in primary grade school enrollment is associated with a 0.0154% (Model 7) and a 0.0216% (Model 9) increase in New Business Density. The constant is significant in both Model 7 and Model 8, which could indicate that the constant captures unobserved or omitted variables that influence the New Business Density in this sample. This could lead to potential biases; therefore, the conclusions made based on these Models should be cautiously drawn. The robustness check of Models 7 - 9 can be found in Appendix D Table 11, where the results indicate that these Models may not be so robust.

Table 10: The effect of severe geologic natural disasters and other factors on New Business Density

	Geologic sample		
Variables	(7) FE	(8) FE	(9) FE
New Business Density $(\log)_{t-1}$	0.7557*** (0.1407)	0.7586*** (0.1255)	0.7628*** (0.0747)
Hit by a severe geologic disaster	-0.0624 (0.1067)		
Hit by a severe geologic disaster$_{t-1}$		1.2201*** (0.0588)	
Hit by a severe geologic disaster$_{t-2}$			-1.3337*** (0.1057)
School enrollment in primary grade (% of gross)	0.0154** (0.0076)	0.0050 (0.0103)	0.0216** (0.0093)
Domestic credit to the private sector (% of GDP)	0.0001 (0.0084)	-0.0016 (0.0071)	0.0002 (0.0085)
Annual GDP growth	0.0015 (0.0063)	0.0026 (0.0068)	-0.0028 (0.0060)
Constant	-1.9094** (0.9951)	-0.7062 (0.8977)	-2.4990** (0.9882)
Number of observations	71	71	67
R-squared (within)	0.7335	0.7968	0.7638

Note: This Table shows the results of Fixed Effects regressions of 11 countries with 71 or 67 observations. The dependent variable is the natural logarithm of New Business Density. The sample is taken from the period 2006-2016. Standard errors are reported in parentheses below the coefficients and are clustered-robust standard errors at the country level. The stars indicate statistical significance with ***p<0.01, **p<0.05, *p<0.1.

5. Conclusion and Limitations

5.1 Conclusions

The research question: 'To what extent do natural disasters affect entrepreneurship in developing countries?' is answered by testing three hypotheses.

The first hypothesis that in the short run, entrepreneurial activity in developing countries is negatively affected by natural disasters. cannot be conclusively answered based on Models 1, 2, and 3 associated with being hit by (the total) severe natural disasters are insignificant and even show a positive relation to New Business Density. In Models 1 and 2, the coefficient is positive, suggesting an insignificant positive relation between a severe natural disaster and the New Business Density in developing countries. This may suggest that experiencing severe natural disasters boosts entrepreneurial activity in developing nations by opening up new opportunities, consistent with Berg and Schrader's (2012) findings that natural disasters increase business opportunities, which in turn increase entrepreneurial activity. However, as none of the results, except for the lag of New Business Density, are significant, it is concluded that this sample shows no evidence that natural disasters significantly negatively influence entrepreneurial activity.

Regarding the second hypothesis that, in the short run, climatic natural disasters will have a more significant negative effect on entrepreneurial activity compared to the total natural disasters in developing countries. We can accept this hypothesis for the current year and the year before the natural disasters hit (Models 4 and 5) as those Models are significantly negative. This is in line with the results of Boudreaux et al. (2019), who also found a significantly negative relationship between climatic natural disasters and entrepreneurial activity the year before. However, they found a, though insignificantly, negative relationship for the two years before, whereas the result in this study became positive and insignificant two years before the natural disaster hit (Model 6). In this sample, the first hypothesis is accepted for the current year and the year before the severe climatic natural disaster hits, as it is significantly more negative than the total natural disasters in developing countries.

Finally, the third hypothesis tests if, in the short run, geologic natural disasters will have a less significant negative effect on entrepreneurial activity compared to the total of natural disasters in developing countries. With this hypothesis, there are only significant results the two years before being hit by a severe geological disaster, Model 8 and 9. However, only in Model 9 is there a negative and significant effect. In the year before being hit by a natural disaster, the results are significant but have a positive relation (Model 8), which contradicts the third hypothesis. Next to this, the robustness test of this hypothesis indicates that the results may not be robust (Appendix D Table 11). The third

hypothesis that severe geologic disasters have a less significant negative effect on entrepreneurial activity compared to the total of severe disasters cannot be accepted or rejected.

Since hypothesis 2 is the only significant and robust result, the study's findings only allow for policy implications for nations that have experienced severe climatic disasters. Countries that experience climate-related natural disasters should implement policies to encourage entrepreneurial activity, as it significantly declines after a disaster. A possible policy is to include local government support programs that offer financial assistance, mentoring, or networking opportunities in disaster-affected areas. Next to this, governments can increase their engagement with Non-Governmental Organizations (NGOs) that specialize in entrepreneurship to ensure infrastructure reconstruction or other post-disaster measures related to stability (Monllor and Murphy, 2017). The effects of geologic disasters are significant. However, they are contradictory to each other and, therefore, cannot be implemented in a straightforward manner.

5.2 Limitations and future research

There are some limitations to this study. Firstly, the Fixed Effects Models cannot control for omitted variables that vary over time. Therefore, if variables change over time, that affects the dependent variable, in this case, the New Business Density, which is not included in the model, and the results may be biased if the trends are different. Secondly, in this particular model, the choice has been made to only count natural disasters as one if more than 1% of the population was affected by said disaster. This leads to the limitation that everything below the 1% threshold is marked as not a natural disaster. Therefore, a bias could arise from natural disasters, which affected almost 1% of the population. However, after creating a histogram of the percentage (Figure 9 in Appendix E), most natural disasters were far below the 1% threshold. Therefore, this did not create a significant issue. However, the fact that many of the countries in the sample are located next to each other can lead to an issue of interdependence. In this case, if a severe natural disaster hits a country, there is a chance of spillover effects on neighboring countries. Another possible limitation is that the variable ‘annual GDP growth’ could be a potentially bad variable. A bad control variable arises when adding this variable to a regression equation, which may lead to the regression not accurately capturing the true relationship between the variables and eventually leading to biased results (Cinelli et al., 2020). However, when excluding annual GDP growth from the Fixed Effects Regressions, the results do not change significantly, as can be seen in Appendix E, Table 12, which indicates that the potential effects of the bad variable are limited. Finally, there are some data gaps for developing countries. This leads to a big decrease in the sample size for the model. This could lead to overfitting the data.

Next to this, while testing the second and third hypotheses, the sample size decreased significantly, which increased the chance of biases, limited generalizability, and decreased the statistical power of the Models.

Future research should look into how natural disasters affect long-term entrepreneurial activity in developing countries to further develop beneficial policies in affected nations. Another suggestion is to investigate other natural disasters, as this study only focuses on climatic and geologic disasters.

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Appendix A: Histograms of Distributions

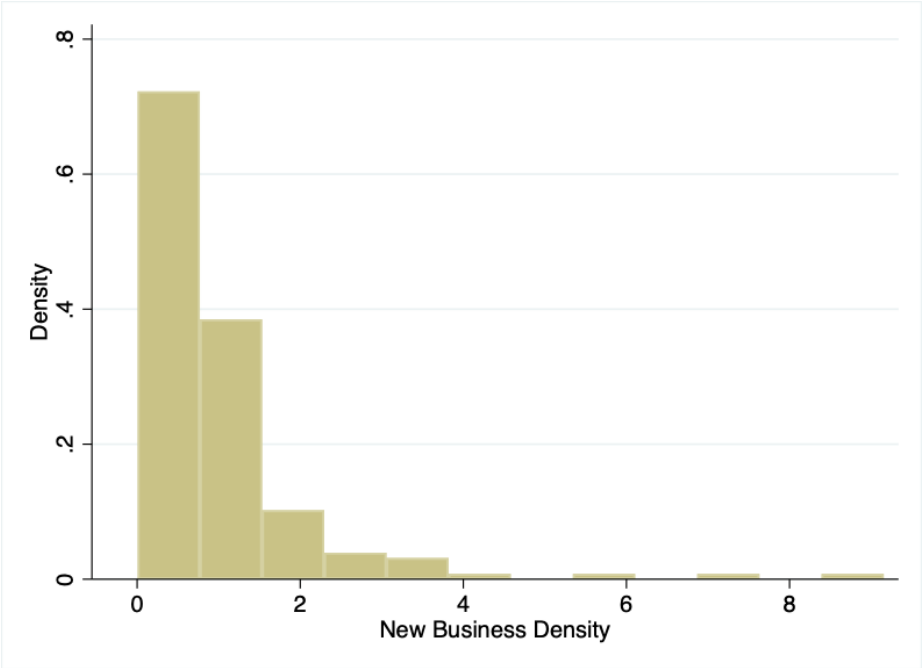

Figure 1: Histogram of the New Business Density

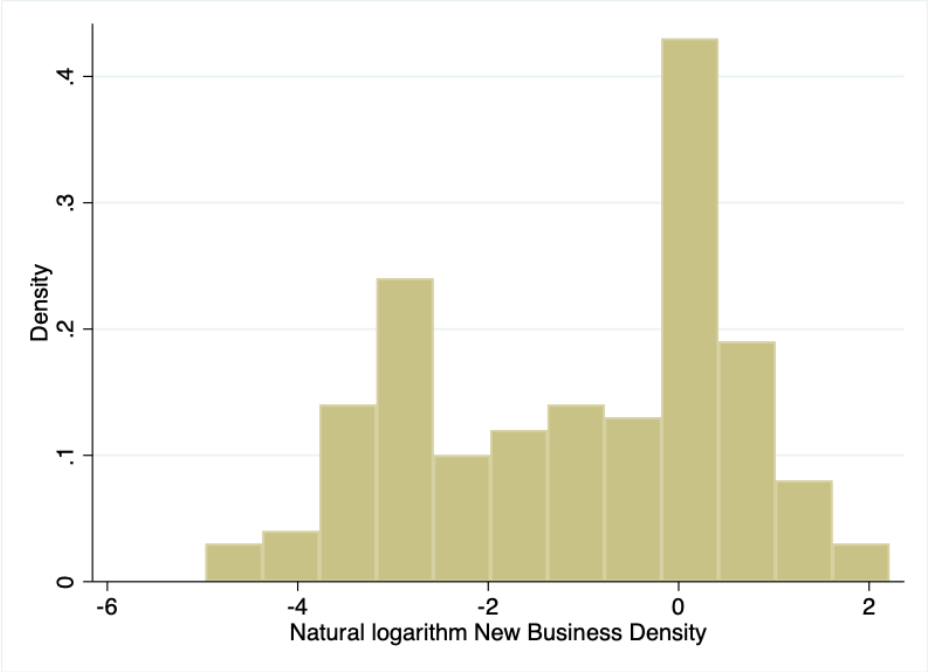

Figure 2: Histogram of the natural logarithm New Business Density

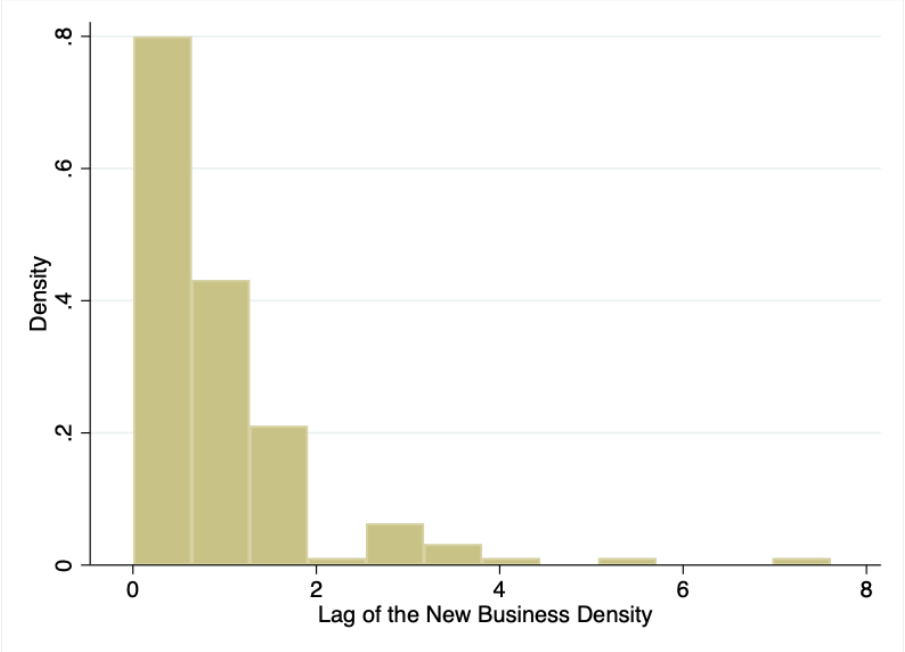

Figure 3: Histogram of the lag of the New Business Density

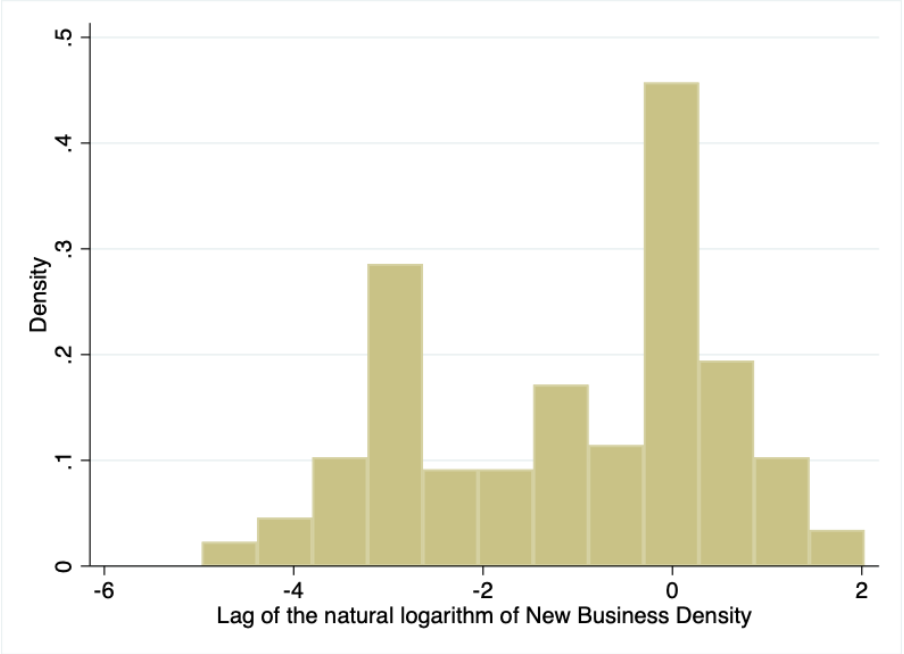

Figure 4: Histogram the lag of the natural logarithm of the New Business Density

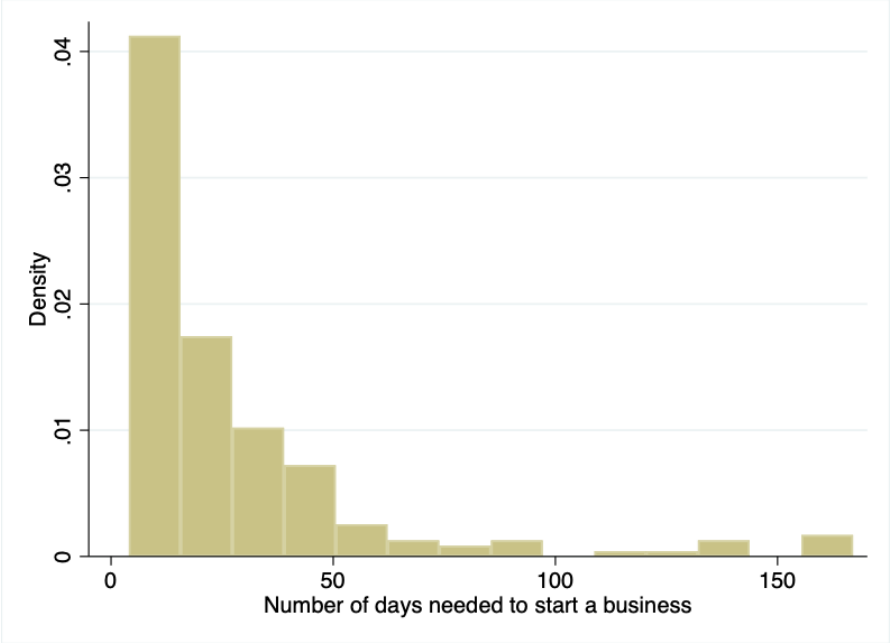

Figure 5: Histogram of the number of days needed to start a business

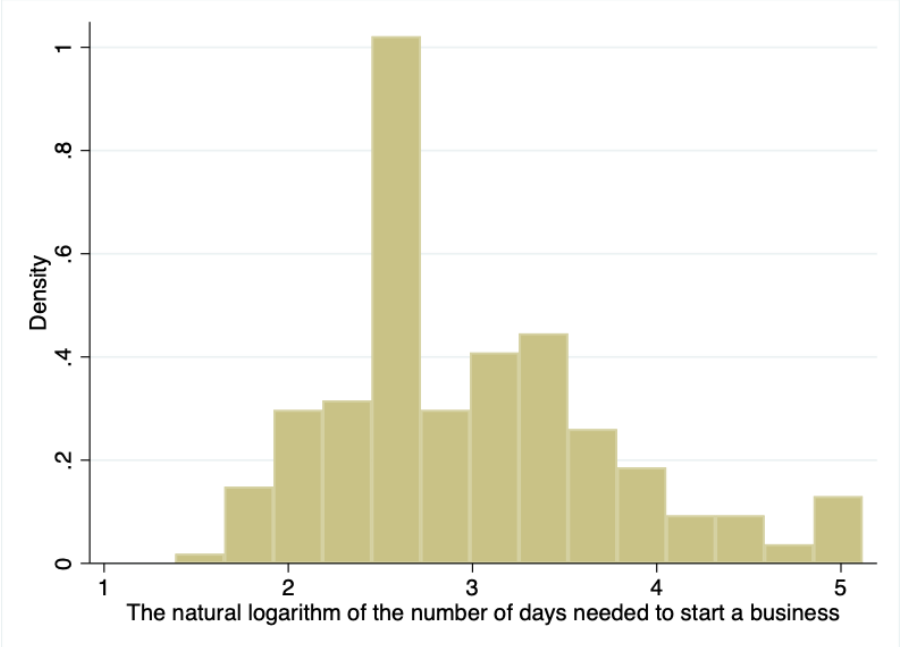

Figure 6: Histogram of the natural logarithm of the number of days needed to start a business

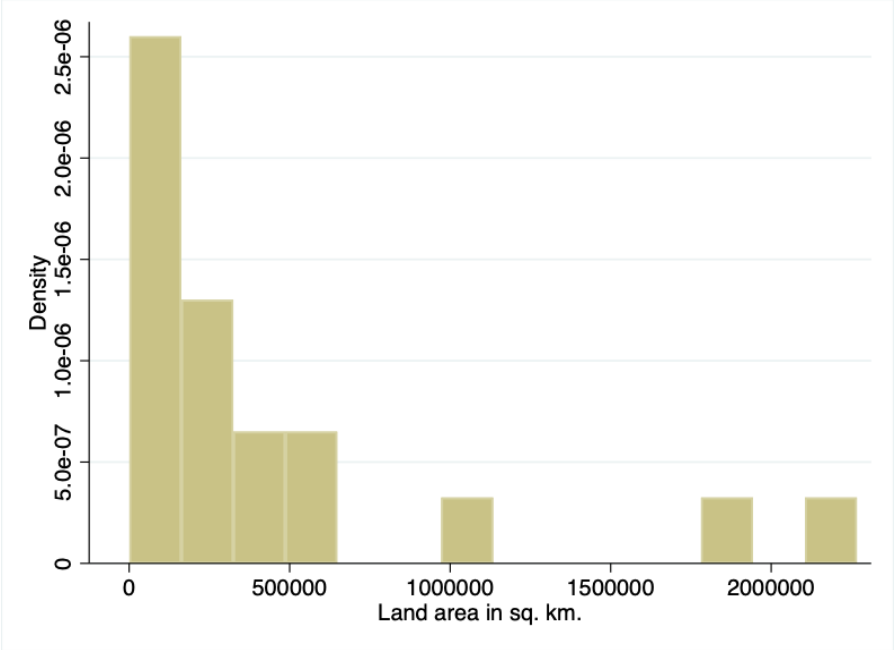

Figure 7: Histogram of the land area of a country in square kilometers

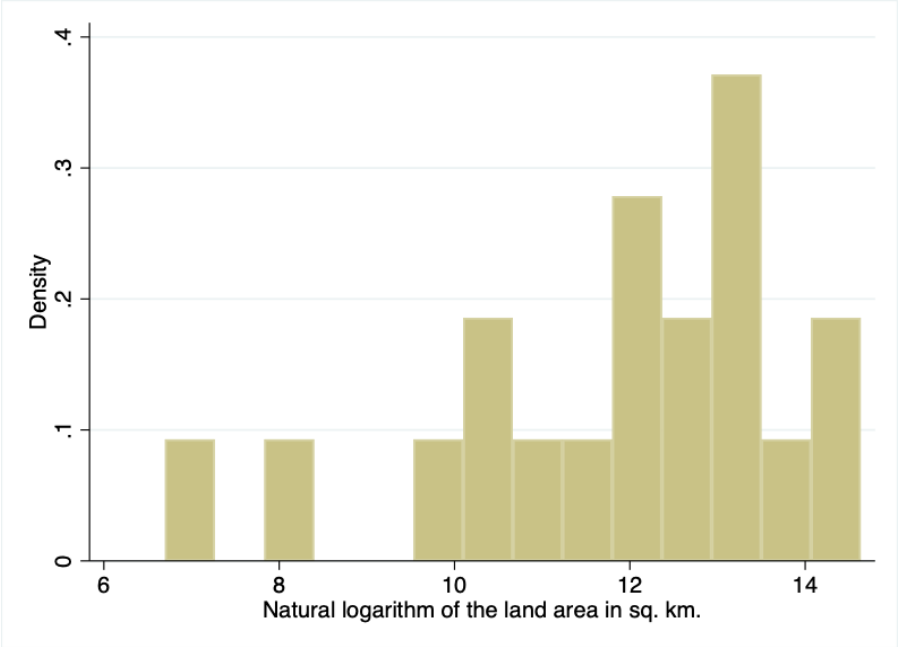

Figure 8: Histogram of the natural logarithm of the land area in square kilometers

Appendix B: Descriptive Statistics

Table 2: Variable correlation matrix

	New Business Density (log)	New Business Density $(log)_{t-1}$	Hit by a severe natural disaster	School enrollment in primary grade (% of gross)	Domestic credit to the private sector (% of GDP)	Annual GDP growth
New Business Density (log)	1.0000					
New Business Density $(log)_{t-1}$	0.9759	1.0000				
Hit by a severe natural disaster	0.0151	0.0090	1.000			
School enrollment in primary grade (% of gross)	0.2045	0.1870	0.0414	1.0000		
Domestic credit to the private sector (% of GDP)	0.3792	0.3792	0.0527	0.1285	1.0000	
Annual GDP growth	0.0253	-0.0010	-0.0113	0.1127	-0.1947	1.0000

Table 3: Variable covariance matrix

	New Business Density $(log)_{t-1}$	Hit by a severe natural disaster	School enrollment in primary grade (% of gross)	Domestic credit to the private sector (% of GDP)	Annual GDP growth	Constant
New Business Density $(log)_{t-1}$	0.0037					
Hit by a severe natural disaster	0.0007	0.0241				
School enrollment in primary grade (% of gross)	0.0000	-0.0001	0.0001			
Domestic credit to the private sector (% of GDP)	-0.0001	0.0001	-0.0000	0.0001		
Annual GDP growth	0.0000	0.0002	0.0000	0.0000	0.0001	
Constant	0.0030	0.0013	-0.0107	-0.0005	-0.0008	1.1874

Note: This table shows the results of a variable covariance matrx. The dependent variable is the natural logarithm of the New Business Density.

Appendix C: Assumptions Fixed Effects Testing

Table 5: Variance Inflation Factor tests

	Full sample			
Variable	**VIF**	**1/VIF**	**VIF**	**1/VIF**
Land area in sq. km. (log)	26.82	0.0372		
School enrollment in primary grade (% of gross)	25.36	0.0394	5.17	0.1933
Number of procedures to start a business	23.32	0.0428		
Number of days needed to start a business (log)	21.95	0.0456		
Domestic credit to the private sector (% of GDP)	4.37	0.2288	3.03	0.3302
Annual GDP growth	2.07	0.4823	2.09	0.4776
New Business Density $(log)_{t-1}$	1.69	0.5901	1.36	0.7362
Hit by a severe natural disaster	1.07	0.9377	1.05	0.9512
Mean VIF	13.33		2.54	

Note: This Table shows the results of two Variance Inflation Factor tests of two different regressions.

Table 6: White test with robust standard errors

Variables	Full sample	
	(1) FE	(2) FE
New Business Density $(log)_{t-1}$	0.6641*** (0.0612)	0.6641*** (0.1562)
Hit by a severe natural disaster	0.0072 (0.1553)	0.0072 (0.0644)
School enrollment in primary grade (% of gross)	0.0008 (0.0101)	0.0008 (0.0102)
Domestic credit to the private sector (% of GDP)	0.0041 (0.0068)	0.0041 (0.0073)
Annual GDP growth	0.0035 (0.0071)	0.0035 (0.0053)
Constant	-0.3959 (1.0897)	-0.3959 (1.1638)
Number of observations	110	110
R-squared (within)	0.6025	0.6025
Robust	NO	YES

Note: This Table shows the results of Fixed Effects regressions of 17 countries with 110 observations. The dependent variable is the natural logarithm of New Business Density. The sample is taken from the period 2006-2016. Standard errors are reported in parentheses below the coefficients and are robust in Column(2) and not robust in Column(1). The stars indicate statistical significance with ***p<0.01, **p<0.05, *p<0.1.

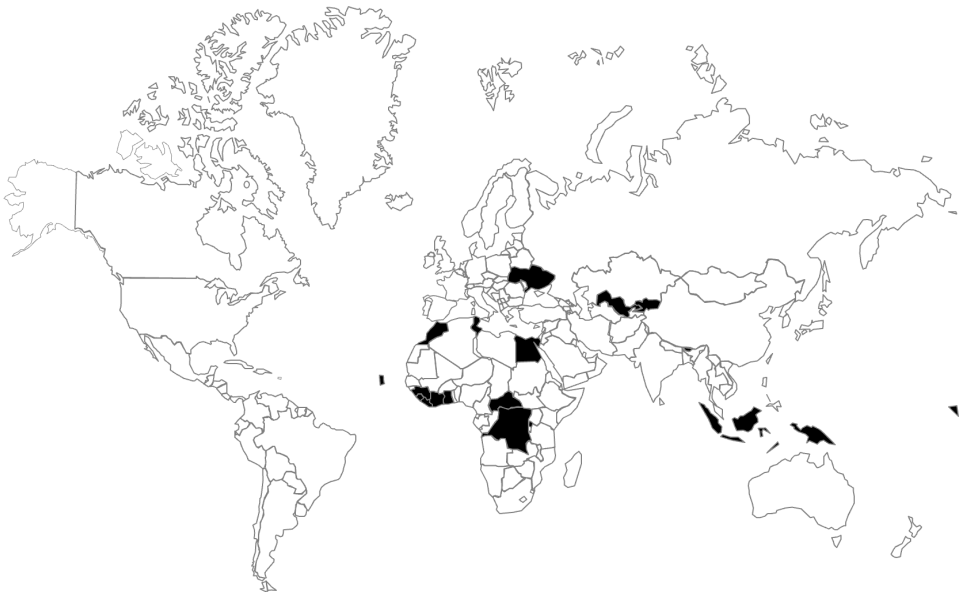

Figure 9: Location of all the countries included in the used sample, highlighted in black.

Appendix D: Robustness Checks Models 1 - 9

C.1 Robustness Check Models 1-3

In Table 8 it can be seen that the sign and significance for the lag of New Business Density stay the same in all the Models compared to the Fixed Effects Models, indicating robustness to the results. Being hit by a severe natural disaster in the Random Effects Model stays insignificant. However, in Model 2 of the Random Effects, the variable has a negative association with New Business Density, whereas, in the Fixed Effects Model, this stays a positive relation until Model 3. Next to this, school enrollment is the primary grade as a percentage of the gross is significant in all three Models and has a continuously positive association with the Random Effects, whereas, with the Fixed Effects Models, the variable is never significant and has a negative relation with the New Business Density in Models 2 and 3. Domestic credit to the private sector as a percentage of the GDP switches signs when implementing Random Effects Model and therefore is not seen as robust.

Table 8: The effect of severe natural disasters and other factors on New Business Density

	Full sample		
Variables	(1) RE	(2) RE	(3) RE
New Business Density $(log)_{t-1}$	0.9549*** (0.0210)	0.9475*** (0.0304)	0.9475*** (0.0304)
Hit by a severe natural disaster	0.0682 (0.0922)		
Hit by a severe natural $disaster_{t-1}$		-0.3346 (0.3511)	
Hit by a severe natural $disaster_{t-2}$			-0.3346 (0.3511)
School enrollment in primary grade (% of gross)	0.0040** (0.0023)	0.0040** (0.0027)	0.0040* (0.0027)
Domestic credit to the private sector (% of GDP)	-0.0006 (0.0007)	-0.0007 (0.0008)	-0.0007 (0.0008)
Annual GDP growth	0.0076 (0.0070)	0.0087 (0.0082)	0.0087 (0.0082)
Constant	-0.3495 (0.2796)	-0.3371 (0.3359)	-0.3371 (0.3359)
Number of observations	110	110	104
R-squared (within)	0.5993	0.6131	0.5106

Note: Note: This Table shows the results of Random Effects regressions of 17 countries with 110 or 104 observations. The dependent variable is the natural logarithm of New Business Density. The sample is taken from the period 2006-2016. Standard errors are reported in parentheses below the coefficients and are clustered-robust standard errors at the country level. The stars indicate statistical significance with ***p<0.01, **p<0.05, *p<0.1

C.2: Robustness Checks Models 4-6

Table 10 shows the Random Effects Results of Models 4, 5, and 6. The lag of New Business Density stays highly significant and positive to the New Business Density. Hit by a severe climatic natural disaster, results remain highly significant and negative in Models 4 and 5 and become insignificant and positive in Models 6 in both the Fixed Effects and the Random Effects. This indicates that the variables we are interested in are robust to a certain extent. School enrollment in primary grade as a percentage of gross becomes significant in the Random Effects Model but stays positive. Domestic credit to the private sector as a percentage of the GDP is negatively related to New Business Density and is even significant in Models 4 and 5. Therefore, this variable can again be seen as not robust.

Table 10: The effect of severe climatic natural disasters and other factors on New Business Density

	Climatic sample		
Variables	(4) RE	(5) RE	(6) RE
New Business Density $(\log)_{t-1}$	0.9148*** (0.0363)	0.9139*** (0.0364)	0.8940*** (0.0527)
Hit by a severe climatic disaster	-0.2480*** (0.0424)		
Hit by a severe climatic disaster$_{t-1}$		-0.1857*** (0.0459)	
Hit by a severe climatic disaster$_{t-2}$			0.0625 (0.0652)
School enrollment in primary grade (% of gross)	0.0034* (0.0021)	0.0035* (0.0021)	0.0047** (0.0027)
Domestic credit to the private sector (% of GDP)	-0.0012* (0.0009)	-0.0011* (0.0009)	-0.0011 (0.0012)
Annual GDP growth	0.0070 (0.0094)	0.0072 (0.0094)	0.0065 (0.0094)
Constant	-0.2707 (0.2641)	-0.2819 (0.2650)	-0.4177 (0.3332)
Number of observations	69	69	65
R-squared (within)	0.7521	0.7515	0.6869

Note: This Table shows the results of Random Effects regressions of 11 countries with 69 or 65 observations. The dependent variable is the natural logarithm of New Business Density. The sample is taken from the period 2006-2016. Standard errors are reported in parentheses below the coefficients and are clustered-robust standard errors at the country level. The stars indicate statistical significance with ***p<0.01, **p<0.05, *p<0.1.

C.3 Robustness Check Models 7 -9

In Table 11, the results of Random Effects Models of Regression 7, 8, and 9 are shown. The lag of the New Business Density remains positive and highly significant throughout the Random Effects Models. Being hit by a severe geologic natural disaster remains only significant in Models 8 and 9. However, the sign changes from negative to positive in Model 9 of Random Effects. This could indicate that this Model is less robust than previously thought. School enrollment in primary grade as a percentage of the gross becomes insignificant with Random Effects in Models 7 and 9. Next, Domestic credit to the private sector as a percentage of the GDP becomes negative in all Models and even significant in Model 8, compared to Fixed Effects. Indicating that these variables may not be so robust.

Table 11: The effect of severe geologic natural disasters and other factors on New Business Density

	Geologic sample		
Variables	(7) RE	(8) RE	(9) RE
New Business Density $(log)_{t-1}$	0.9142*** (0.0299)	0.9121*** (0.02636)	0.8772*** (0.0442)
Hit by a severe geologic disaster	-0.0187 (0.0469)		
Hit by a severe geologic $disaster_{t-1}$		1.1436*** (0.0486)	
Hit by a severe geologic $disaster_{t-2}$			1.4707*** (0.0276)
School enrollment in primary grade (% of gross)	0.0034 (0.0035)	0.0024 (0.0039)	0.0050 (0.0042)
Domestic credit to the private sector (% of GDP)	-0.0015 (0.0014)	-0.0022* (0.0015)	-0.0011 (0.0016)
Annual GDP growth	0.0030 (0.0067)	0.0036 (0.0071)	-0.0001 (0.0065)
Constant	-0.2883 (0.4439)	-0.1717 (0.4651)	-0.4888 (0.5255)
Number of observations	71	71	67
R-squared (within)	0.7265	0.7927	0.7485

Note: This Table shows the results of Random Effects regressions of 11 countries with 71 or 67 observations. The dependent variable is the natural logarithm of New Business Density. The sample is taken from the period 2006-2016. Standard errors are reported in parentheses below the coefficients and are clustered-robust standard errors at the country level. The stars indicate statistical significance with ***p<0.01, **p<0.05, *p<0.1.

Appendix E: Limitations Study

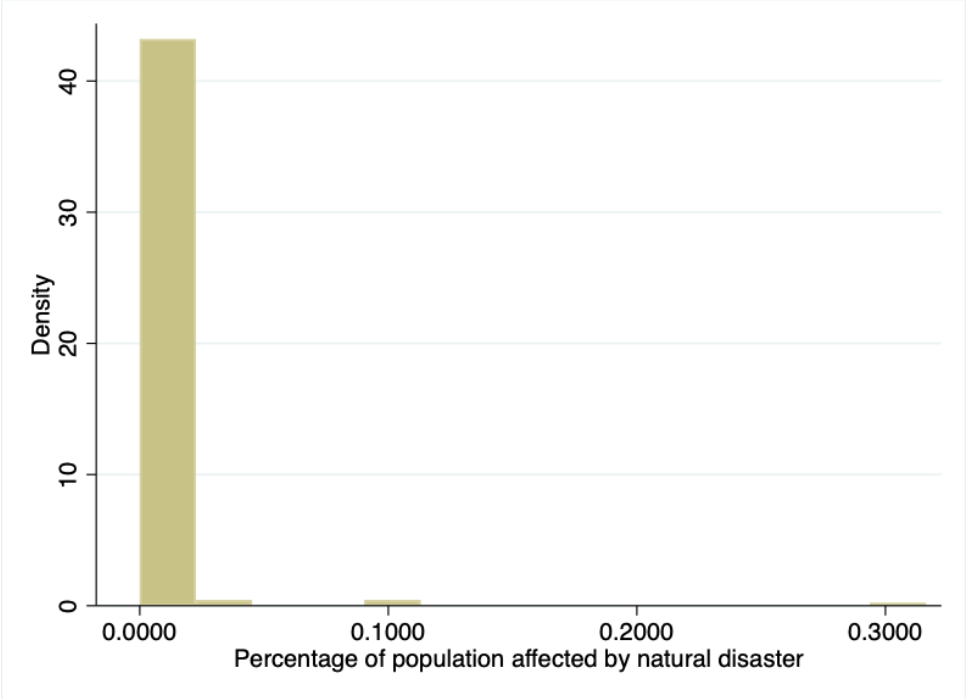

Figure 9: The percentages of the population affected by a natural disaster in de sample countries between 2006 - 2016

Table 12: The effect of severe natural disasters and other factors on New Business Density excluding annual GDP growth

	Full sample		
Variables	(1) FE	(2) FE	(3) FE
New Business Density $(log)_{t-1}$	0.6625*** (0.1571)	0.6655*** (0.1515)	0.5805*** (0.1523)
Hit by a severe natural disaster	-0.0040 (0.0583)		
Hit by a severe natural $disaster_{t-1}$		0.3084 (0.3011)	
Hit by a severe natural $disaster_{t-2}$			-0.2588 (0.2530)
School enrollment in primary grade (% of gross)	0.0007 (0.0102)	-0.0013 (0.0099)	-0.0002 (0.0107)
Domestic credit to the private sector (% of GDP)	0.0033 (0.0072)	0.0034 (0.0071)	0.0033 (0.0086)
Constant	-0.3390 (1.1641)	-0.1364 (1.0590)	-0.2860 (1.1608)
Number of observations	110	110	104
R-squared (within)	0.6014	0.6160	0.5120

Note: This Table shows the results of Fixed Effects regressions of 17 countries with 110 or 104 observations. The dependent variable is the natural logarithm of New Business Density. This Regression excluded the variable 'annual GDP growth'. The sample is taken from the period 2006-2016. Standard errors are reported in parentheses below the coefficients and are clustered-robust standard errors at the country level. The stars indicate statistical significance with ***p<0.01, **p<0.05, *p<0.1.