The influence of venture capital availability on entrepreneurial activity: a country level analysis

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Abstract

This thesis studies the relationship between venture capital (VC) and two different types of entrepreneurship: necessity-motivated entrepreneurship, and opportunity-motivated entrepreneurship. This thesis uses the 2015 data from the Global Entrepreneurship Monitor, the 2014 and the 2015 data from the World Bank, I find that VC availability positively influences opportunity-motivated entrepreneurial activity, which confirms the findings of previous studies. However, in the empirical analysis, there is no significant role of VC availability towards necessity-motivated entrepreneurial activity. From further literature findings, the two general distinctions of entrepreneurial motivation need revamp to explain the relationship between venture capital and entrepreneurial activity.

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1. Introduction

Entrepreneurship is regarded as an essential field of study that completes various economic theories of markets, firms, organisations, and change (Shane & Venkataraman, 2000). Entrepreneurs play a role as the agents of change channel innovative ideas to markets and stimulating economic growth (Wong & Autio, 2005). Moreover, a country's level of economic growth increases as entrepreneurship rises (Wennekers & Thurik, 1999). Entrepreneurship can be a catalyst to economic, technological, and social growth and development (Zahra & Wright, 2016). Carree and Thurik (2003) support the notion of entrepreneurs' contribution to economic performance of a country by initiating innovations, creating competition, and enhancing rivalry. With the realisation of how relevant entrepreneurship research is, more leading journals and reputable conferences dedicate their support towards the discipline in recent years (Bruton et al., 2008).

Entrepreneurship varies across countries, and there are several factors that can explain the differences. For example, the government as a country-specific institution, holds a significant influence in stimulating entrepreneurship; higher government spending is associated with better quality of institutions to fund law and order enforcement systems (Aidis et al., 2012). High quality institutions indicate a supportive business environment, thus encourages entrepreneurial activities. Characteristics such as start-up culture in a region may drive individual entrepreneurial opportunity perception, which then entrepreneurial activity (Stuetzer et al., 2014). Economic development level of a country also influences entrepreneurial activities as sine in developing countries, entrepreneurship is a means of survival due to the lack of job opportunities in the formal sector (Naudé, 2010). Entrepreneurship is often credited in emerging economies as for the creation of jobs and encouraging innovation (Desai, 2011). Ho & Wong (2009) argue that there are more entrepreneurial opportunities in developing countries.

However, entrepreneurs in developing economies face more obstacles than those in developed nations such as crime, corruption, and infrastructure, but the most significant obstacle for entrepreneurs to set up small businesses face is access to financing (Ayyagari et al., 2008). In addition to that, financial constraints such as minimum capital requirement for nascent entrepreneurs discourages entrepreneurship activity (Van Stel et al., 2007). Unlike large firms, SMEs generally find it difficult to secure financing from banks (World Bank, n.d.). Due to greater information and transaction costs, small businesses face a high degree of uncertainty and information asymmetry, which makes it more difficult to attain external financing (Gompers &

Lerner, 2001; Beck et al., 2008), and especially for entrepreneurs in less-developed economies that rely on informal, family connections for capital (Beck et al., 2007).

Venture capital (VC) presents an opportunity to finance small businesses for entrepreneurial firms that face lack of access to capital and the difficulty of securing debt finance as one of the leading alternative financing solutions in the form of equity financing (Denis, 2004). VC investments have seen formidable growth recently. The value of VC investments made globally in 2009 is $26 billion, and the value of VC investments increased tenfold in 2019 to $257 billion (NVCA, 2020). With the increased popularity of VC in the world of business, it will be highly relevant to learn its importance towards entrepreneurship.

Previous studies such as Popov & Roosenboom (2013) and Samila & Sorenson (2011) find VC to have a positive influence towards entrepreneurial activity. Lerner (2010) also suggests that the promotion of venture capital and high-potential entrepreneurship is important to stimulate economic growth. However, the premise of VC as an aid to encourage entrepreneurial activities in general might not be as promising as it is for opportunity-motivated entrepreneurship, as VC firms pay a lot of attention to companies' revenue growth and business models as criteria for the entrepreneurs to receive VC funds; only a few firms can attain VC funding (Block et al., 2019). Moreover, VC financing are typically more interested in innovation-oriented industries, such as software, telecommunications, and biotechnology; these industries account for only 10% of the world's GDP. Most entrepreneurial ventures are unlikely to attain VC financing, and this also applies for entrepreneurs operating in less innovation-oriented industries such as manufacturing (De Bettignies & Brander, 2006).

I am interested in the extent of VC's influence on entrepreneurial activity at a country level, given the findings of Wennekers et al. (2005) on necessity-motivated and opportunity-motivated entrepreneurship across countries; these two concepts of entrepreneurship will be the thesis' main theoretical foundation. Gu & Qian (2019) explain how VC positively affects opportunity-motivated, innovative entrepreneurship in developing countries. This study aims to add value to an array of literatures in explaining the influence of VC in encouraging entrepreneurial activity when entrepreneurial motivation is considered. Thus, this research aims to answer the question:

To what extent does VC availability influences entrepreneurial activity after taking entrepreneurial motivation into account?

2. Literature review and hypotheses formulation

2.1. Venture capital and entrepreneurial activity

VC firms finance small businesses through setting up funds in the form of partnerships, between investors and the small businesses (Brander et al., 2002). As an intermediary, VC firms start raising venture funds from investors to finance young firms. These young firms are typically characterised with few tangible assets and operate in fast-changing industries. The VC firms may also instil a managerial role in the young firms to monitor the performance of the young firms. Consistent favourable performance will add value to the young firms that the VC firms invest in. Following that, the VC firm will exit on profitable deals and returning investors' money. (Gompers & Lerner, 2001). The emergence of VC financing undoubtedly contributes to the growth of innovative start-up firms (Bertoni & Tykvova, 2015). Innovation itself is important for economic growth. Higher innovative activity can indicate a higher economic growth rate. (Hassan & Tucci, 2010) VCs contribute highly to the growth of start-up activities. According to Samila & Sorenson (2011), the return on VC investments in a young firm stimulates the entry of additional two to twelve new young firms. VC funding also stimulates new business opportunities, which is an indicator of entrepreneurship activity (Popov & Roosenboom, 2013).

In the light of entrepreneurial motivation, opportunity-motivated entrepreneurs require financing to exploit new business opportunities (Randoy & Goel, 2003). VC fosters entrepreneurship through the provision of financial means as traditional financiers such as banks render innovation-oriented firms to carry high-risk investments (Gu & Qian, 2019). VCs are typified with the interest in financing innovative projects and thus, the presence of VC expands SME financing channels, so that the increased options of financial aid will help the entrepreneurs in taking the opportunities. Entrepreneurs also prefer VC financing over bank loans as VC can make significant managerial support to new firm (De Bettignies & Brander,2006). VC firms may also inject management skill as innovative industries that VC firms usually invest in, need management expertise (Baum & Silverman, 2004).

Thus, venture capital has the potential to positively influence entrepreneurship, especially after identifying the benefits that VC has over more traditional sources of financing. Based on the findings, the first hypothesis generated is:

H1 - VC availability positively affects opportunity-motivated entrepreneurial activity

2.2. Entrepreneurial motivation and entrepreneurship activity

Entrepreneurs are generally regarded as risk takers. Entrepreneurial process is triggered when these risk-taking individuals want to seize business opportunities. Different entrepreneurs have different motivation and capacity to make use of the business opportunities. The difference in motivation has a significant impact on the entrepreneurial process. (Shane et al., 2003). One application of the theory on entrepreneurial motivation and entrepreneurship activity at a country level is Wennekers et al. (2005), which explains the relationship between a country's economic development level and entrepreneurial activity rates through a U-curve. Nascent entrepreneurship is highest in countries that lie at the extreme ends of the graph; either the country has a very low income per capita, or the country has a remarkably high income per capita, with countries in between the extremes being the least entrepreneurial. Wennekers et al. (2005) describe this phenomenon through the distinction of two entrepreneurship types: opportunity-motivated and necessity-motivated entrepreneurship. Countries with exceptionally low income have entrepreneurs that do business ventures out of survival, given the limited career opportunities in the labour market, unlike entrepreneurs in developed economies. In developed economies where opportunity-motivated entrepreneurship is dominant, most entrepreneurs expect their ventures to expand further and create more new job opportunities (Acs et al., 2008). The fact that the leading countries in total VC investments are developed economies (OECD, 2020) leads to an interesting inquiry on the extent of VC investments' influence towards entrepreneurial activity in different countries, in which entrepreneurship in developed economies is mostly opportunity-motivated (Stam & Van Stel, 2011), and necessity-motivated entrepreneurship is prevalent in developing economies (Naudé, 2010).

As Ayyagari et al. (2008) find that the most significant hurdle for nascent entrepreneurs is the lack of access to financing, however, nascent entrepreneurs with a necessity-motivated reason are with more likely to set up a business than the opportunity-motivated nascent entrepreneurs (Van Stel et al. 2007). Since VCs only select firms with high profitability, labour productivity, and sales growth, as well as firms that invest more in R&D activities (Guo & Jiang, 2013), necessity-motivated entrepreneurs are unlikely to get VC funding. This raises the argument for which venture capital does not necessarily promote necessity-motivated entrepreneurship. VC firms may only select high-growth start-ups mostly on its initial stages, while necessity-motivated entrepreneurs that do not aim for growth, will not be under the attention of VC firms.

In line with the findings, the other hypothesis is as follows:

H2 – VC availability negatively affects necessity-motivated entrepreneurship

3. Data and methodology

This thesis uses the 2015 edition of the Global Entrepreneurship Monitor (GEM) database and the 2014 and the 2015 World Bank Group's TCdata360, from the World Economic Forum Global Competitiveness Index dataset to empirically test the influence of entrepreneurial motivation on venture capital–entrepreneurial activity. GEM is a leading consortium that consists of national country teams in association with academic institutions. GEM collects data on entrepreneurship from individual entrepreneurs across country (GEM, n.d.). The World Economic Forum Global Competitiveness Index measures the set of institutions, policies, and factors that determine the level of productivity of a country (World Bank, n.d.). The sample for this thesis is 56 countries that participated in GEM's 2015-16 Annual Report. Full data set is available in Table 5 in the Appendix.

Entrepreneurial activity is measured by total early-stage entrepreneurial activity (TEA) from the Global Entrepreneurship Monitor (GEM) dataset. The two dependent variables in this thesis are derived from the TEA. TEA is defined as the percentage of individuals aged 18-64 years old who are actively involved in business start-ups. These individuals are either starting new businesses recently or thinking of starting a business (nascent entrepreneurs), as well as have owned a business for 42 months (owner–manager of new firms) (GEM, n.d). According to Reynolds et al. (2005), TEA is the most widely used GEM measure as it represents a various group of entrepreneurs, which display different motivations to engage in entrepreneurship activities. The GEM dataset captures both necessity-motivated and opportunity-motivated entrepreneurs through a survey conducted involving individuals in start-ups or with an existing business. As entrepreneurial motivation is one of the key concepts of this thesis, opportunity-motivated TEA and necessity-motivated TEA are deemed to be suitable dependent variables. The country choice was based on data availability in both the GEM database and the World Bank Group's TCdata360, which consists of 56 participating countries.

3.1. Dependent variable

Opportunity-motivated entrepreneurial activity

The dependent variable to test Hypothesis 1 is opportunity-motivated entrepreneurial activity, defined as the percentage of all respondents involved in TEA and reporting opportunity as major motive to engage in entrepreneurship.

Necessity – motivated entrepreneurial activity

The dependent variable to test Hypothesis 2 is necessity-motivated entrepreneurial activity, defined as the percentage of all respondents involved in TEA and reporting necessity (no better choice for work) as major motive to engage in entrepreneurship.

3.2. Independent variable

Venture capital availability

The independent variable used is venture capital (VC) availability taken from the World Bank Group's TCdata360 of 2014 edition. Venture capital availability is an index taking values 1 to 7 in response to the question "In your country, how easy is it for entrepreneurs with innovative but risky projects to find venture capital?" with 1 being "Extremely difficult and 7 being "Extremely easy". This index reflects the opinion of an average of 100 business executives per country, as part of the Executives Opinion Survey used for over 40 years. The Survey in particular identifies information that is not otherwise available on a global scale (Schwab, 2013). Venture capital availability is one of the sub-indices that makes up for the Global Competitiveness Index (GCI). An alternative measure for VC availability is the value of VC investments in each country. However, venture capital availability index better reflects the accessibility to venture capital investment for entrepreneurs.

3.3. Control variables

To account for factors that influence entrepreneurship and venture capital availability, control variables are included. Several studies suggest that GDP per capita, unemployment rate, total population, and female population rate, influence entrepreneurship. Ease of doing business score captures various regulatory characteristics of a country, hence its inclusion.

Table 1. List of control variables

Variable	Definition	Source
GDP per capita, in US Dollar	The sum of gross value added by all resident producers in the economy plus any product taxes minus subsidies not included in the valuation of output, divided by mid-year population.	World Bank
Ease of doing business score	It captures the gap of each economy from the best regulatory performance observed on each of the indicators across all economies. An economy's ease of doing business score is reflected on a scale from 0 to 100, where 0 represents the lowest and 100 represents the best performance.	World Bank
Unemployment	The share of the labour force that is without work but available for and seeking employment.	World Bank
Population	Total population counts all residents in a country regardless of legal status or citizenship.	World Bank
Female population rate	The share of a country's population that is female	World Bank

Acs et al. (2008) find that a positive and significant association between entrepreneurship and economic development is present. Thus, GDP per capita as one possible indicator for economic development is controlled in the model. The amount of foreign direct investment induces entrepreneurship activity (Anokhin & Schulze, 2009), hence I control for population as a proxy for economic size. According to the gravity equation in international trade, bilateral exports are proportional to economic size (Chaney, 2018). Female population rate is also controlled as women have lower intentions to become an entrepreneur than men (Zhao, 2005). Unemployment is controlled as high level of unemployment leads to entrepreneurial activity of self-employed individuals (Audretsch et al., 2001). Ease of doing business score consists of multiple regulatory factors that influence entrepreneurship activity such as, but not limited to, start-up time, credit information, dealing with permits, and paying taxes (World Bank, n.d.). Controlling for ease of

doing business score will further aid the extent to which VC availability can explain entrepreneurship activity.

The thesis uses simple multivariate OLS regression to estimate the influence of VC availability on two types of entrepreneurial activity: necessity-motivated entrepreneurial activity, and opportunity-motivated entrepreneurial activity.

The model to test H1 is as follows:

$$TEAopportunity_i = \alpha + \beta_1 VCavailability + \sum_k \beta_k X_{ik} + e_i$$

The model to test H2 is as follows:

$$TEAneccessity_i = \alpha + \beta_1 VCavailability + \sum_k \beta_k X_{ik} + e_i$$

Where i denote each country

α = Constant term

TEAopportunity = Percentage of 18-64 population who are either a nascent entrepreneur or owner-manager of a new business and reporting opportunity as major motive to engage in entrepreneurship.

TEAneccessity = Percentage of 18-64 population who are either a nascent entrepreneur or owner-manager of a new business and reporting necessity as major motive to engage in entrepreneurship.

VCavailability = How easy is it for start-up entrepreneurs in a country with innovative but risky projects to obtain equity funding? [1 = extremely difficult; 7 = extremely easy]

X_k = Set of control variables

e = Error term

4. Results

4.1. Summary statistics and correlations

Table 2 shows the summary of variables this thesis uses. As Table 2 suggests, the average percentage of opportunity-motivated entrepreneurship is 9.234%. On the other hand, the average percentage necessity-motivated entrepreneurship is 3.402%. It is found that necessity-motivated entrepreneurship is prevalent in developing economies from the literature review. However, from the GEM dataset, it is proven otherwise. Most entrepreneurs in the world are opportunity-motivated (GEM, 2016). VC availability's average value is at 2.952, with values ranging from 1.700 to 4.340, and standard deviation of 0.718. The correlation between variables that this thesis uses is in Table A.1. in the Appendix. The TEA of opportunity-motivated entrepreneurs has significant negative associations with GDP per capita, the ease of doing business index, and unemployment.

The correlation between the TEA of necessity-motivated entrepreneurs and the rest of the variables is in Table A.2. in the Appendix. The results suggests that TEA of necessity-motivated entrepreneurs has significant negative associations with VC availability, GDP per capita, and the ease of doing business index.

Table 2. Summary statistics of variables used in this thesis

Variables	Mean	Standard Deviation	Min	Max
TEA Opportunity	9.234	5.533	2.302	27.663
TEA Necessity	3.402	2.787	0.400	11.818
VC Availability	2.952	0.718	1.700	4.340
GDP per capita ($)	21075.74	23140.99	1219.249	105462
Ease of doing business score	69.098	8.933	46.437	82.927
Unemployment	8.435	5.839	0.600	26.070
Female population rate	50.666	1.074	48.004	54.160
Population	8.84e+07	2.52e+08	569604	1.38e+09

Source: GEM (2016); World Bank (n.d.)

4.2. Regression analysis

Table 3 shows the multivariate OLS regression results of VC availability on entrepreneurial activity. The regression used is robust since OLS regression is sensitive to outliers. Conducting robust regression helps in overcoming heteroskedasticity due to outliers. Multicollinearity is not an issue in the model, evident from a variance inflation factors (VIF) test, in Table 7 in the Appendix. A sign of severe or serious multicollinearity is when VIF value reaches 10 or more (O'Brien, 2007). The mean VIF test value for the variables used in this thesis's regression is 1.64.

There are four models involved in this thesis. Model 1, the first column of Table 3, estimates the relationship of the control variables on opportunity-motivated entrepreneurial activity. Model 2, the second column, tests the relationship of the control variables on necessity-motivated entrepreneurial activity. Model 3, the third column, estimates Hypothesis 1 as it estimates the relationship of VC availability on opportunity-motivated entrepreneurial activity. Model 4, the fourth column, estimates the relationship of VC availability on necessity-motivated entrepreneurial motivation on entrepreneurial activity.

Table 3. Total early-stage entrepreneurial activity based on entrepreneurial motivation

	(1) TEA Opportunity	(2) TEA Necessity	(3) TEA Opportunity	(4) TEA Necessity
VC availability			2.003*	0.775
			(1.117)	(0.600)
GDP per capita	-8.68e-06	-0.0000279**	-0.0000228	-0.0000334**
	(0.000233)	(0.0000103)	(0.0000266)	(0.0000125)
Ease of doing business score	-0.304**	-0.165**	-0.365**	-0.188**
	(0.098)	(0.0364)	(0.114)	(0.0471)
Unemployment	-0.269**	-0.0520	-0.212*	-0.030
	(0.103)	(0.0608)	(0.110)	(0.0675)
Female population rate	0.762	0.0739	1.204*	0.245
	(0.641)	(0.271)	(0.675)	(0.334)
Population	-2.65e-09	-1.97e-09	-3.46e-09*	-2.29e-09*
	(1.90e-09)	(1.29e-09)	(1.98e-09)	(1.27e-0.9)
Constant	-5.665	12.265	-29.873	2.900
	(31.777)	(13.354)	(32.672)	(16.430)
R^2	0.307	0.443	0.340	0.462
N	56	56	56	56

Robust standard error in parentheses. *p-value <0.1, **p-value<0.05

4.3. Robustness check

A robustness check is carried out through another multivariate OLS regression, using the same variables of interest from a different year to see if the model can be replicated. The data used for the robustness check is the 2013 edition of World Bank's Doing Business sub-index for the independent variable, venture capital availability, and the 2014 World Bank data for the control variables. The GEM dataset of 2014 is the data source of the dependent variables, necessity-motivated entrepreneurship and opportunity-motivated. In the 2014 edition, there are countries that do not participate in the 2015 edition, such as Russia and Angola, to name a few. This robustness check extends the number of panels from 56 countries to 64 countries. The full list of participating countries for the robustness check is available in Table B.2. in the Appendix. From the regression results, the robustness check confirms that VC availability holds positive and significant association with opportunity-motivated entrepreneurial activity. However, no significant relationship is present between VC availability and necessity-motivated entrepreneurial activity.

Table 4. Total early-stage entrepreneurial activity based on entrepreneurial activity, data from 2013 for VC availability and from 2014 for TEA.

	(1)	(2)
	TEA	**TEA**
	Opportunity	**Necessity**
VC availability	2.200*	0.460
	(1.150)	(0.466)
GDP per capita	-0.0000996**	-0.0000468**
	(0.0000312)	(0.0000115)
Ease of doing business score	-0.157*	-0.073**
	(0.0818)	(0.033)
Unemployment	-0.286*	-0.015
	(0.145)	(0.063)
Female population rate	-0.106	-0.075**
	(0.077)	(0.334)
Population	-7.42e-09**	-1.69e-09
	(2.66e-09)	(1.25e-0.9)
Constant	24.809**	12.126**
	(5.836)	(2.714)
R^2	0.391	0.437
N	64	64

Robust standard error in parentheses. *p-value <0.1, **p-value<0.05

4.4.   Hypothesis 1

In Model 3, after controlling for a set of variables, the regression results suggest that the association between VC availability on opportunity-motivated entrepreneurial activity is positive and significant under the 10% significance level. For every unit increase in VC availability, there is a positive association by 2.003 units of entrepreneurial activity. VC availability reliably predicts opportunity-motivated entrepreneurial activity, and statistically significant to support of Hypothesis 1. These findings are in line with previous literatures, (Popov & Roosenboom, 2013; Samila & Sorenson, 2011). Therefore, Hypothesis 1 is accepted.

4.5.   Hypothesis 2

The regression results of Model 4 after controlling for a set of variables, shows that that VC availability does not hold a statistically significant relationship on necessity-motivated entrepreneurship. Therefore, Hypothesis 2 is not supported nor contradicted. An explanation for this observation is that there are entrepreneurs in transition from necessity-motivated entrepreneurship to opportunity-motivated entrepreneurship. Entrepreneurial motivations play a role in leading entrepreneurs from one stage of the entrepreneurial process to another (Shane et al., 2003). The necessity-motivated entrepreneurs in transitions hold high aspirations (Puente et al., 2019), and might claim themselves as opportunity-motivated entrepreneurs. Hence, the dataset from GEM cannot fully capture the influence of VC availability on entrepreneurs other than those who are opportunity-motivated.

5. Discussion

Generally, access to finance is very important for SMEs and for businesses that are reliant on external financing (Aghion et al., 2007). Samila & Sorenson (2011) believe that the emergence of VC investments in recent years increases the berth for entrepreneurial financing; entrepreneurs have more ways of external financing to choose from. Opportunity-motivated entrepreneurs are is positively related with innovation (Hessels et al., 2008). Thus, opportunity-motivated entrepreneurs that spearhead innovative firms benefit the most from VC investments, compared to entrepreneurs in general, which is defined as individuals that demonstrate any behaviour in establishing a new business without necessarily promoting innovation (Gu & Qian, 2019). In conclusion, the higher VC availability in a country, the higher the opportunity-motivated entrepreneurial activity of a country will be.

However, empirical results suggest that VC availability has no significant relationship with necessity-motivated entrepreneurial activity. Several explanations are offered. Wennekers et al.

(2005) theory on U-curve entrepreneurial activity is influenced through necessity/opportunity entrepreneurial motivation; developing countries relatively have less entrepreneurs engaging in entrepreneurial activity out of opportunity. However, according to Acs et al. (2008), the a linear relationship is observed instead; entrepreneurial activity rises with the level of economic development. Entrepreneurship is negatively related with economic development in countries which are in the transition process from factor-driven stage of economic development to efficiency-driven stage of economic development. (Acs et al., 2008). This implies that classifying entrepreneurs into necessity-motivated or opportunity-motivated oversimplifies entrepreneurs' motives and fails to consider how motivation changes over time. Most individuals that are engaged in entrepreneurship activity out of necessity evolve into opportunity-motivated entrepreneurs (Williams, 2008). Puente et al. (2019) offer an alternative way to classify entrepreneurial motivation, with the inclusion of 'transition' motivation stage between necessity and opportunity. Thus, due to the presence of entrepreneurs in the transition, the influence `of VC availability on necessity-motivated entrepreneurial activity cannot be fully captured.

6. Conclusion

Overall, this thesis aims to analyse the importance of venture capital on entrepreneurship at a country level. The thesis also attempted to analyse if entrepreneurial motivation plays a part in the relationship. The research question formed by the inquiry is: To what extent does VC availability influences entrepreneurial activity after taking entrepreneurial motivation into account?

This thesis confirms that VC financing asserts an important role towards stimulating opportunity-motivated entrepreneurship through empirical analysis using OLS regression method. Access to financing is one of the biggest constraints that entrepreneurs face (Ayyagari, 2008), and venture capital offers an alternative means for entrepreneurial finance, enlarging the possibility for entrepreneurs to attain financing (Denis, 2004; De Bettignies, 2007; Samila & Sorenson, 2011). However, this thesis does not find any significant results in the relationship between VC availability and necessity-motivated entrepreneurial activity. This thesis acknowledges that entrepreneurial motivation cannot be simply reduced into a dichotomy between necessity and opportunity (Williams, 2008) and the distinction between the two gets increasingly blurred over time.

This thesis has limitations that should be considered. There is a limited sample size for the participants of GEM's National Level Survey. I encourage that the expansion of participating countries in GEM's annual survey will be beneficial for future research on entrepreneurship.

Existing literatures (Lerner, 2010; Wong et al., 2005; Gu & Qian, 2019) consider the role of innovation in determining entrepreneurial motivation in studies that involve venture capital's role in entrepreneurship. Hence, the distinction of entrepreneurship activity based on motivation should also consider innovation, especially in analysing the relationship between venture capital and entrepreneurship. Another suggestion is to assess the relationship of VC and entrepreneurship on an individual level instead of country level. For instance, Gompers et al. (2006) considers entrepreneurs' prior experience as a proxy for luck in determining the likelihood of obtaining VC funding. Lastly, the use of panel data is also suggested as it opens the possibility of using methods that can tackle issues of endogeneity through the inclusion of time-varying characteristics, specifically after identifying that entrepreneurial motivation can change over time. The method used in this thesis, multivariate linear regression, carries omitted variable bias.

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8. Appendix

Table A.1. Correlation matrix between opportunity-motivated TEA and the rest of the variables

	TEA Opportunity	VC Availability	GDP per capita ($)	Ease of doing business score	Unemployment	Female population rate	Population
TEA Opportunity	1.000						
VC Availability	-0.070	1.000					
GDP per capita ($)	-0.280**	0.478**	1.000				
Ease of doing business score	-0.452**	0.411**	0.584**	1.000			
Unemployment	-0.230*	-0.347**	-0.081	-0.127	1.000		
Female population rate	0.060	-0.388**	-0.074	0.183	0.196	1.000	
Population	-0.006	0.192	-0.153	-0.271**	-0.153	-0.456*	1.000

**p<0.05, *p<0.1

Table A.2. Correlation matrix between necessity-motivated TEA and the rest of the variables

	TEA	VC Availability	GDP per capita ($)	Ease of doing business score	Unemployment	Female population rate	Population
TEA Necessity	1.000						
VC Availability	-0.235*	1.000					
GDP per capita ($)	-0.501**	0.478**	1.000				
Ease of doing business score	-0.610**	0.411**	0.584**	1.000			
Unemployment	-0.045	-0.347**	-0.081	-0.127	1.000		
Female population rate	0.009	-0.388**	-0.074	0.183	0.196	1.000	
Population	0.004	0.192	-0.153	-0.271**	-0.153	-0.456*	1.000

**p<0.05, *p<0.1

Table B.1. Sample countries from 2014 and 2015 for VC availability and total early-stage entrepreneurial activity, respectively. Also included are the percentages of all GEM respondents that are involved in TEA and reporting opportunity and necessity, respectively, as major motive to engage in entrepreneurship.

Country	TEA	TEA Necessity	TEA Opportunity	VC Availability
Argentina	17.74	5.28	11.96	1.75
Australia	12.79	1.63	10.88	3.56
Belgium	6.24	1.71	3.76	3.34
Botswana	33.23	11.82	20.57	2.80
Brazil	20.98	8.99	11.85	2.72
Bulgaria	3.46	1.16	2.30	2.69
Cameroon	25.37	7.55	16.27	2.18
Canada	14.72	1.99	11.95	3.43
Chile	25.93	6.56	17.48	3.27
China	12.84	4.46	8.26	3.76
Colombia	22.67	7.54	14.86	2.57
Croatia	7.69	3.08	4.55	2.22
Ecuador	33.56	10.25	23.10	3.22
Egypt	7.39	3.14	4.24	2.90
Estonia	13.14	1.80	11.14	3.28
Finland	6.59	0.99	5.30	4.05
Germany	4.70	0.80	3.77	3.23
Greece	6.75	1.50	5.08	1.70
Guatemala	17.71	8.11	9.47	2.75
Hungary	7.92	1.84	5.67	2.05
India	10.83	2.05	8.52	3.31
Indonesia	17.67	3.35	14.19	3.73
Iran	12.93	3.73	8.73	1.82
Ireland	9.33	1.80	7.44	2.65
Israel	11.82	1.47	9.39	4.19
Italy	4.87	0.91	3.63	1.84
Kazakhstan	11.00	3.03	7.58	2.61
Latvia	14.11	2.41	11.36	2.78
Lebanon	30.15	8.25	21.80	2.78
Luxembourg	10.19	0.95	8.78	4.02
Malaysia	2.93	0.40	2.53	4.20
Mexico	21.01	3.97	16.56	2.58
Morocco	4.44	1.26	3.07	2.80
Netherlands	7.21	1.06	5.90	3.48
North Macedonia	6.11	3.18	2.57	2.46
Norway	5.66	0.60	4.61	4.32
Panama	12.80	5.80	6.65	4.03
Peru	22.22	5.61	16.21	2.90
Philippines	17.16	4.40	12.64	3.06
Poland	9.21	2.58	6.38	2.28
Portugal	9.49	2.32	7.00	2.22
Romania	10.83	2.98	7.50	2.44
Senegal	38.55	10.43	27.66	2.24
Slovakia	9.64	3.00	6.59	2.69

Slovenia	5.91	1.40	4.31	2.01
South Africa	9.19	3.05	6.04	3.29
South Korea	9.25	2.25	6.90	2.13
Spain	5.70	1.41	4.19	2.26
Sweden	7.16	0.66	5.49	4.30
Switzerland	7.31	0.74	6.24	3.44
Thailand	13.74	2.36	11.16	3.05
Tunisia	10.13	1.83	8.03	3.01
United Kingdom	6.93	1.66	5.15	3.50
United States	11.88	1.70	9.77	4.34
Uruguay	14.28	2.60	11.51	2.53
Vietnam	13.65	5.10	8.55	2.56

Source: GEM (2016); World Bank (2015)

Table B.2. Sample countries for the robustness check from 2013 and 2014 for VC availability and total early-stage entrepreneurial activity, respectively. Also included are the percentages of all GEM respondents that are involved in TEA and reporting opportunity and necessity, respectively, as major motive to engage in entrepreneurship.

Country	TEA	TEA Necessity	TEA Opportunity	VC Availability
Angola	21.50	5.26	15.51	2.35
Argentina	14.41	4.04	9.76	1.78
Australia	13.14	2.31	10.71	3.40
Austria	8.71	0.95	7.12	2.69
Barbados	12.71	1.85	9.39	2.33
Belgium	5.40	1.66	3.41	3.30
Bolivia	27.40	6.26	21.01	3.36
Botswana	32.79	9.92	22.04	2.70
Brazil	17.23	4.99	12.17	2.57
Burkina Faso	21.71	4.84	16.34	1.47
Cameroon	37.37	12.51	22.14	2.31
Canada	13.04	2.04	9.95	3.63
Chile	26.83	4.73	21.73	3.31
China	15.53	5.16	10.21	3.92
Colombia	18.55	6.18	12.25	2.57
Costa Rica	11.33	2.19	8.99	2.21
Croatia	7.97	3.71	4.09	2.20
Denmark	5.47	0.30	4.98	2.50
El Salvador	19.48	6.23	13.21	3.03
Estonia	9.43	1.42	7.02	3.43
Finland	5.63	0.88	4.57	4.26
France	5.34	0.86	4.38	3.25
Georgia	7.22	3.51	3.65	2.15

Germany	5.27	1.22	3.99	3.40
Greece	7.85	2.73	4.83	1.86
Guatemala	20.39	8.28	12.06	2.73
Hungary	9.33	3.10	6.04	2.11
India	6.60	2.09	3.96	3.51
Indonesia	14.20	2.91	11.16	3.91
Iran	16.02	6.20	9.70	1.89
Ireland	6.53	1.94	4.47	3.03
Italy	4.42	0.60	3.46	1.97
Jamaica	19.27	6.18	12.64	2.15
Japan	3.83	0.72	2.91	3.45
Kazakhstan	13.72	3.62	9.48	2.99
Lithuania	11.32	2.22	9.01	2.68
Luxembourg	7.14	0.84	6.09	4.18
Malaysia	5.91	1.04	4.87	4.60
Mexico	18.99	4.26	14.48	2.52
Netherlands	9.46	1.48	7.60	3.49
Norway	5.65	0.20	4.90	4.32
Panama	17.06	4.49	12.47	3.64
Peru	28.81	4.72	23.78	2.85
Philippines	18.38	5.40	12.96	3.33
Poland	9.21	3.39	5.45	2.35
Portugal	9.97	2.73	7.11	2.55
Qatar	16.38	3.53	12.63	4.78
Romania	11.35	3.28	7.96	2.61
Russia	4.69	1.83	2.75	2.74
Singapore	10.96	1.25	9.24	4.29
Slovakia	10.90	3.55	7.00	2.77
Slovenia	6.33	1.61	4.52	2.03
South Africa	6.97	1.97	4.97	3.19
Spain	5.47	1.63	3.61	2.34
Suriname	2.10	0.11	1.54	2.03
Sweden	6.71	0.53	5.65	4.16
Switzerland	7.12	1.02	5.33	3.43
Thailand	23.30	4.15	18.86	3.04
Trinidad and Tobago	14.62	1.76	12.64	2.21
Uganda	35.53	6.71	28.72	2.23
United Kingdom	10.66	1.37	8.91	3.56
United States	13.81	1.86	11.26	4.45
Uruguay	16.08	2.57	13.24	2.61

Vietnam	15.30	4.55	10.75	2.69

Table C.1. VIFs of all variables used in the thesis

Variable	VIF	1/VIF
VC availability	1.99	0.502
Ease of doing business score	1.95	0.513
GDP per capita	1.74	0.574
Female population rate	1.59	0.631
Population	1.39	0.719
Unemployment	1.17	0.854
Mean VIF	1.64	