

**How entrepreneurship is affected by intergenerational mobility in US, and globally**

**Vasiliki Vlachou**

**TIME-MBE**

**Fall-Semester 20/21**



technology innovation  
management & entrepreneurship

## Contents

1. INTRODUCTION .....	4
2. LITERATURE REVIEW.....	5
2.1 Intergenerational Mobility .....	5
2.2 Entrepreneurship.....	7
2.3 Literature Review .....	8
3. EMPIRICAL METHODOLOGY.....	14
3.1 The model.....	14
4. RESULTS.....	24
5. CONCLUSIONS.....	26
7. DATA SECTION.....	28
6. REFERENCES.....	28

## List of tables and figures

Table 1: Distribution of entrepreneurs by sector and class, source: Velez-Grajales and Velez-Grajales (2012, p.9).....	9
Table 2: Descriptive Statistics for the United States Analysis.....	15
Table 3: Descriptive Statistics concerning the Global Analysis .....	16
Table 4: Correlation Matrix for the United States Analysis .....	17
Table 5: Correlation Matrix for Global Analysis .....	18
Table 6: Regression analysis results for the United States .....	24
Table 7: Regression analysis results for Global data .....	25
Figure 1: Scatter plot- BHQ4 vs GEI for Global Analysis .....	19
Figure 2: Scatterplot – GINIc vs GEI for Global Analysis.....	20
Figure 3: Scatter plot – GDP vs GEI for Global Analysis.....	21
Figure 4: Scatter plot – Absolute Upward Mobility vs RNE for States Analysis .....	22
Figure 5: Scatter plot – GINI vs RNE for States Analysis .....	22
Figure 6: Scatter plot – Mean of Parent Income vs RNE for States Analysis .....	23

# 1. INTRODUCTION

The present dissertation aims at investigating an important issue related to economic and social growth, the effect of intergenerational mobility on entrepreneurship. In this paper, an effort to answer the following questions is made. The first one is to understand why inequality has relationship with entrepreneurship. The second question to be answered is why entrepreneurship is affected by mobility and inequality of opportunity. Inequality in a country means that the resources are not equally distributed and usually most of the population earn less than the average, and the rest of the population are wealth. Considering this, we could assume that this is a motivation for poor people to become rich. In the other hand we could think high income countries where inequality is not common and we can observe that those countries have more entrepreneurship activity, as a result we can understand that education possible is a factor that help entrepreneurship. As far as the second question, we could predict that if someone's parents are entrepreneurs and all his life had social stimuli around business it would be easier for him to follow the same career. In addition, for someone that has no relationship with entrepreneurship and his family hasn't have money to help him it would be more difficult to succeed in that field. According to existing literature, as inequality increase, wealth accumulation occurs, leading to more enterprise creation Ragoubi and El Harbi (2017). However, after reaching a certain inequality threshold, this relationship becomes negative (an inverted U-shaped relationship between entrepreneurship and income inequality appears) Kuznets (1995).

The methodology used to answer the above-mentioned questions in the following. First, literature review is realized, so as to provide information on existing research on the topic. Insight on important terms is provided, as well as previous research results concerning mobility, inequality and entrepreneurship. Then, quantitative, secondary research is realized using data from two different sources. First, in order to provide information on the United States, data from Kaufman (early stage entrepreneurship data by state 1998-2019) for 51 states are used. Also, the international mobility measures from Chetty et al. (2014) are used in the analysis. Then, in order to provide answers for the global environment, data from Global Entrepreneurship Index for 92 countries are used. Research results are provided in the analysis and results chapter. Conclusions follow to summarize answers referring to the research questions and recommendations

are made referring to entrepreneurship and its relationship with mobility and inequalities.

for year 2019 and we use the intergenerational mobility measures from Chetty et al. (2014). In addition, we examine Global Data for 92 countries and use to measure entrepreneurship. For intergenerational mobility we use the dataset from World bank. (GDIM, 2018).

## **2. LITERATURE REVIEW**

The present dissertation aims at investigating an important issue related to economic and social growth, the effect of intergenerational mobility and inequalities on entrepreneurship. Below, the two terms, entrepreneurship and intergenerational mobility are defined, so as to better understand their meaning and importance, and then extended literature review on the subject is presented, in order to reveal the aspects of the subject already studied and set the framework for the present study.

### **2.1 Intergenerational Mobility**

Intergenerational mobility is a form of social mobility. Social mobility describes the potential of the members of a society to change their social status during their life (intra-generational mobility), or across generations (intergenerational mobility). Intergenerational mobility can be defined as “the extent to which the key characteristics and outcomes of individuals differ from those of their parents” and “intergenerational immobility can be defined as the extent to which these key characteristics and outcomes for children are similar to those for their parents” (D'Addio 2007, p.10). Intergenerational mobility is a multi dimensional concept and it depends on a lot of different factors, like geography, financial conditions, social conditions, historical conditions, parental status and household characteristics. In order to better understand the parameters which influence intergenerational mobility, one can reflect on the way

that financial growth of previous decades has enabled children to upgrade their status, relative to that of their parents.

The World Bank has developed a Global database on intergenerational Mobility. This database provides the opportunity to clarify several terms related to intergenerational mobility and this may prove useful for researchers and official authorities. These terms include the following:

- Absolute upward mobility, which refers to the case where children have better living standards compared to those of their parents.
- Relative upward mobility, refers to the “extent to which an individual’s position on the economic scale is independent of the position of his or her parents” and it is related to lower inequality of opportunities

These terms are used in research related to intergenerational mobility this is the reason they are mentioned here (GDIM, 2018).

Intergenerational mobility is a factor of social change and it is important to study its parameters. First, intergenerational mobility is highly related to social welfare and income distribution of the previous and next generations. Indeed, present generation inherit their ancestors’ legacy and future generations will be influenced by the present status. Then, intergenerational mobility is considered a major contributor to equality. Through mobility, financial inequality is reduced and resources are allocated in a more “socially equitable” way (Harding, 2003). Besides, when a society believes in equal opportunities, then, people’s evolution is based mainly on their personal talents, knowledge and efforts, and not on their background. Another important parameter of intergenerational mobility is that it contributes to better financial efficiency. More specifically, mobility allows talents and competencies to be revealed and used and this is in favour of economic growth. Economic growth depends a lot on the full exploitation of individuals’ skills and when this is the case, costs and benefits are allocated in a fairer way from generation to generation (Bowles, Gintis, & Osborne, 2001).

The entire above reveal that in order to gain a thorough understanding of intergenerational mobility, the following need to be identified:

- Which are the most important resources which affect individuals’ opportunities in life?
- Which are the channels through which these resources are transmitted?

- Which is the amount of resources transmitted between generations?
- Which are the implications of this transmission for all stakeholders?

In order to respond to these questions and study the way the general context affects individuals' lives, researchers need to bear in mind that the macro-economic context has a very important role, because, as mentioned above, when the financial conditions are favourable, then children are more likely to be better off, compared to their parents. Also, the resources are multiple and are transmitted in several ways (Black, Devereux, & Salvanes, 2004).

## **2.2 Entrepreneurship**

Entrepreneurship is considered as a main driver of social prosperity and social change. Entrepreneurs are those individual who are proactive, creative and innovative and are capable of recognizing opportunities and are also willing to take risks (Rauch & Frese, 2007). Entrepreneurs are those people who have the competencies, skills and knowledge to effectively combine resources, in order to offer products and services. Of course, the modern business environment is constantly changing and this requires entrepreneurs to have even more skills. Modern entrepreneurs need to be ready to change and adapt to new circumstances, while they need to be able to work and survive in the modern technologically driven environment.

The role of entrepreneurship in society is of great importance and this is the reason why the present study focuses on the way it is affected by intergenerational mobility. First, through entrepreneurship new products and services are developed and offered in the market. In this way, consumers' needs and expectations are fulfilled and the total product of a country is increased. Also, through innovation, entrepreneurship manages to constantly improve products and services and to offer more sophisticated products.

In addition, the development of new products and services entails the involvement of a lot of different stakeholders and this generates value for several partners in the society. Besides, new jobs are created and people have the opportunity to work and increase their income. In this way, local communities are benefited and are allowed to grow. As a result, entrepreneurship contributes in the development of local communities through the creation of opportunities and the motivation of related businesses (Shane & Venkataraman, 2000).

Furthermore, entrepreneurship can act as a regenerator of a community. Multinational companies or local entrepreneurs can establish their business and positively affect the local community by providing jobs, introducing new processes, new structures and even new cultures (Cliff, Jennings, & Greenwood, 2006).

Then, entrepreneurship contributes to individuals' income increase as well as to the national income increase. Investments are realized in several sectors which fuel economic development and social prosperity. Last but not least, entrepreneurship contributes in knowledge development and distribution, while it favours innovation and change. Businesses invest a lot on R&D, while they develop programs in co-operation with universities and other institutions and in this way knowledge is promoted and diffused to the society (Spilling, 2011).

The entire above demonstrate the importance of the two variables discussed in the present dissertation, intergenerational mobility and entrepreneurship. It is interesting to reveal the ways intergenerational mobility affects entrepreneurship because, in this way, it may be easier for societies to accept differences and promote equality and mobility. Below, literature review of previous research on the subject follows.

### **2.3 Literature Review**

Velez-Grajales and Velez-Grajales (2012), investigated the relationship between entrepreneurship and intergenerational mobility in Mexico, using data by the Mexican Social Mobility Survey conducted in 2006. The researchers argue that people need to have equal opportunities in life, so as to gain a social status which will be the result of their personal effort, rather than the result of their origin and family socio-economic status. In fact, when individual's development is driven by their own efforts and talents, then social mobility is enhanced and this contributes to social prosperity. Under this framework, the researchers study the role of entrepreneurship in the development of intergenerational mobility. The main driver of their research is the fact that it is widely accepted that individuals who become entrepreneurs are not based on the personal characteristics mentioned above, but they rely on family wealth or family tradition on entrepreneurship. When this is the case, mobility is negatively affected and this represents an issue which needs to concern official authorities.



According to research results, entrepreneurial activity is positively correlated to upward mobility. Nevertheless, there are some characteristics, like family background and personal traits that act as mediators between entrepreneurship and intergenerational mobility. In fact, there are different barriers for different social groups. For example, entrepreneurs who come from low-income families, even if they experience upward mobility, find it more difficult to reach the high-income and upper class status than entrepreneurs whose parents belong to the middle or upper class, in terms of income and social status. Furthermore, someone's decision to become an entrepreneur is highly related to their father's occupation, and not to educational or wealth factors. Last, entrepreneurial activity has better financial outcomes for those entrepreneurs whose parents belong to high social classes or and have high income. The table below demonstrates the distribution of entrepreneurs in Mexico by sector and class.

	<b>All</b>	<b>Poor</b>	<b>Middle Class</b>	<b>Rich</b>
<b>Agriculture</b>	14%	36%	10%	5%
<b>Industry</b>	16%	13%	18%	17%
<b>Construction</b>	4%	3%	4%	4%
<b>Trade</b>	33%	31%	34%	31%
<b>Transport</b>	6%	3%	8%	2%
<b>Services</b>	15%	9%	12%	31%
<b>Other Services</b>	13%	6%	14%	10%

**Table 1: Distribution of entrepreneurs by sector and class, source: Velez-Grajales and Velez-Grajales (2012, p.9)**

It is indicative that rich entrepreneurs mainly have firms in the services and trade sectors, while lower-class entrepreneurs have businesses in the agricultural sector. Furthermore, according to results, the decision of becoming an entrepreneur is highly related to their father's occupation. In fact, when the father is an entrepreneur, children, and especially sons, are more likely to also become entrepreneurs. In addition, Velez-Grajales and Velez-Grajales (2012) argue that entrepreneurs are more successful than other professionals, because entrepreneurship has a substantial positive effect on income. But this result is also affected by family, since those that do not have entry barrier concerning the family background have more possibilities to succeed and

increase their income. Moreover, those whose fathers worked in large firms are more probable of becoming entrepreneurs than those whose fathers worked at SMEs. As a result, once again, it is father's occupation and not educational background or personal talents and competencies that affect individuals' decision to become entrepreneurs.

Chetty et al. (2014), developed a research trying to reveal whether the statement that US is the "land of opportunity" is valid or not. They used income data from tax records for more than 40 million children in order to reveal the aspects of intergenerational mobility in the country. Their research results, first of all indicate that there is high correlation between parents' and children's income. Also, parents' income has a significant, positive role on children's education, and more specifically college attendance, while it is negatively correlated to birth rates. Also, intergenerational mobility differs according to the "Commuting Zone" a child was born and raised. Commuting zones are "geographical aggregations of counties that are similar to metro areas but cover the entire U.S., including rural areas" (Chetty, Hendren, Kline, & Saez, 2014). According to results, a child who started from a low income family has more chances to become rich in San Jose than in Charlotte. Also, the researchers found that upward mobility is facilitated in areas where there is not much residential segregation, there are less income inequalities and there is family stability. In addition, the upward mobility is enhanced in areas better schools and better social capital. As a consequence, for Chetty et al. (2014), intergenerational mobility in the US is not the same throughout the country, but instead it differs according to the geographical location and this is something that needs further investigation so as official authorities develop practices to eliminate differences.

Gandelman and Robano (2014), wished to investigate the relationship between intergenerational mobility and entrepreneurship in Uruguay. For this reason they estimated the relationship between parents' education and income and children's schooling and used survey household data for the period 1982 – 2010. Uruguay is a country which received substantial amounts of immigrants who managed to ascend the social and financial ladder through entrepreneurship. In fact, in this way a stable and strong middle class was established in the country. Bearing this in mind, the researchers tried to relate education and income to intergenerational mobility.

The researchers found that the levels of intergenerational mobility were decreased over time, especially during the years 1982-2000. As a result, children whose parents are

more educated are more likely to receive more education. In addition, children's access to higher education is unequal. Children of upper socioeconomic environments have better access to education. Furthermore, non-mandatory education reveals low levels of intergenerational mobility. In other words, children of less benefited social and economic classes do not always attend university or even the last three years of secondary school. This phenomenon increases inequality and has a negative impact on intergenerational mobility. Besides, there are significant differences in the quality of education received by children of different social groups. Nevertheless, entrepreneurship can facilitate intergenerational mobility, as it did back in the era where the country received immigrants from around the world.

Qian (2020), studied the relationship between entrepreneurship and Economic Geography on intergenerational mobility in US cities. He focuses on urban, metropolitan areas, because in these areas more than 93% of the total businesses of the country are located. First, the researcher argues that there is a positive correlation between entrepreneurial activity and upward mobility. He states that entrepreneurs make savings which, in the long term, allow them to create wealth and achieve better upward mobility. Besides, entrepreneurship, according to previous research, also has important side effects which also enhance upward mobility. Successful, self-made businesspeople act as examples for low-income people and motivate them to "work hard" in order to gain a better income and social status (Scott, Johnstone-Louis, Sugden, & Wu, 2012). Start-ups also represent an example of how entrepreneurship enhances upward mobility. Start-ups help create new jobs but also contribute in technological development. In their majority, they represent high-quality and highly paid jobs and are an opportunity for well-educated members of lower classes to move upwards, as far as their financial position and social status are concerned (Haltiwanger, Jarmin, & Miranda, 2013). Another way entrepreneurial activity supports upward mobility is by fuelling the government with the necessary financial resources (in the form of taxes). In this way, public welfare is ameliorated, more lower-income individuals have access to education and health and it is more probable for these individuals to develop a career. Last, the researcher supports the idea that entrepreneurship is a factor of change in all aspects of people's life. Institutional changes, cultural changes and social changes are related to entrepreneurship and, as a consequence, all individuals, of all different socioeconomic statuses may be benefited (McMullen, 2011).

On the other hand, Qian (2020), argues that entrepreneurship is negatively correlated to intergenerational mobility. This is mainly due to the fact that personal savings as well as family wealth background are important determinants for starting a business. Also, individuals who belong to wealthy families are more prone to risk taking, which is a main element of entrepreneurship. Furthermore, families which belong to upper socioeconomic levels have better access to resources needed to start a business. As a consequence, family financial prosperity is positively related to entrepreneurship and this reduces upward mobility.

The entire above set the framework for the researcher's study. Through regression analysis, correlation analysis and scatter plots, he reveals the degree at which entrepreneurship predicts intergenerational mobility. He found that entrepreneurship has a positive contribution to intergenerational upward mobility and this can be used by policy makers in order to reduce inequalities and develop a system which offers the same opportunities to all.

Goel and Saunoris (2020) investigated the influence of income inequality on entrepreneurship. Income inequality is a result of social, and thus intergenerational, low mobility. This is the reason why this article can contribute to the present research. The authors argue that income inequality can have both positive and negative effects on entrepreneurial activity. Sometimes, income inequalities may act as a motivating factor for individuals to undertake entrepreneurial activity and improve their financial condition. The researchers call this attitude "the greasing effect". On the other hand, individuals who came from social classes with low income do not have the chance, and more specifically the financial resources, to start a business. The researchers call this situation "the sanding effect". They also state that when entrepreneurship is developed in a country, it may be easier to become an entrepreneur; there are established networks, knowledge and information diffusion is apparent and there is social capital and official support to start a business.

Under this framework, the researchers developed a model, where the dependent variable is "entrepreneurship" and the independent variables are income inequality, economic prosperity, institutional conditions and colonial heritage of the country. They used data of 91 countries, for the years 2006-2015. Entrepreneurship is measured in terms of new business entry per 1,000 inhabitants at working age. According to their research results, income inequality acts as a motivator for individuals to become

entrepreneurs; it is “grease” for entrepreneurship. Also, “the sanding effect” mentioned above is more apparent in countries where entrepreneurship is not developed. Economic freedom and democracy have a positive impact on entrepreneurship, while, at the same time, countries with colonial legacy have more entrepreneurs than others.

Vasiliki Vlachou

### 3. EMPIRICAL METHODOLOGY

The present research aims at answering the following questions. The first one is how entrepreneurship is affected by inequality. The second question to be answered is how entrepreneurship is affected by mobility and inequality of opportunity. In order to provide answers, quantitative, secondary research is realized using data from two different sources. First, in order to provide information on the United States, data from Kaufman (early stage entrepreneurship data by state 1998-2019) for 51 states are used. Also, the international mobility measures from Chetty et al. (2014) are used in the analysis. Then, in order to provide answers for the global environment, data from Global Entrepreneurship Index for 92 countries are used. Below, the research model and results are provided.

#### 3.1 The model

In order to answer to the research questions, the general estimated equation is the following:

$$\text{Entrepreneurship} = a_0 + b_1\text{GDP} + b_2\text{IMD} + e$$

Regression analysis was used to examine how entrepreneurship is affected by intergenerational mobility. In addition, correlation analysis is used, as well as scatter plots, so as to reveal potential relationships between the variables.

For the analysis referring to the United States, the dependent variable is Entrepreneurship. Data were derived from “Kaufman indicators early stage entrepreneurship data by state (1998—2019)”. That dataset represents new businesses creation in the US, integrating several high-quality, timely sources of information on early stage entrepreneurship. Furthermore, the following indicators are included in the dataset: rne, ose, sjc, ssr

For the purposes of the present analysis, the **rne** indicator is used as it captures all new business owners, regardless of business size or origin, as well as all new business owners including those who own incorporated or unincorporated businesses.

GDP, which stands for the real Gross Domestic Product per capita by state, was obtained by the United States Census Bureau.

Intergenerational Mobility data are provided by Chetty et al. (2014). It is a dataset with 51 states, 2770 counties and 20 variables. For the purposes of the present research, the average of each state is used concerning the following variables: Teenage Birth Rate, Mean Child Income, Mean Parent Income, GINI index and Absolute Upward Mobility.

As far as the Global analysis is concerned, the dependent variable, Entrepreneurship, is extracted by The Global Entrepreneurship Index and Development Institute. The variable is called GEI (Global Entrepreneurship Index). The Global Entrepreneurship Index is published annually and measures the health of entrepreneurship ecosystem, using a ranking system among countries. The GEDI methodology starts from 2015. For the purposes of the present research, data from the year 2019 for 92 countries are used.

GDP is the real Gross Domestic Product per capita (in U.S. dollars and in constant prices of 2010). The source used was The World Bank.

In order to measure intergenerational mobility, multiple variables are used. More specifically, the data set provided by the World bank is used (GDIM, 2018). The following variables are included in the analysis, referring to intergenerational mobility: MEANp, MEANc, GINIp, GINic, IGP, Q4BH, BHQ4 and Q4CHILD.

First, descriptive statistics are provided, on the table below:

Variable	Obs	Mean	Std. Dev.	Min	Max
name	0				
year	51	2019	0	2019	2019
rne	51	3.006471	.7426758	1.71	4.69
Gini	51	.3900284	.0733428	.3061305	.79688
Mobility	51	43.67234	4.264898	35.76625	54.42102
Gdp	51	8.328071	.4568562	7.474307	9.447236
Par_Income	51	4.853926	.0892599	4.690971	5.072075
Chil_Income	51	4.667218	.0630034	4.537901	4.790829

**Table 2: Descriptive Statistics for the United States Analysis**

Variable	Obs	Mean	Std. Dev.	Min	Max
Countries	0				
Year	92	2019	0	2019	2019
GEI	92	36.28587	20.93852	8.8	86.8
GDP	92	3.859733	.6458475	2.688849	4.966406
MEANp	92	7.868897	3.840159	.8066445	13.73524
MEANc	92	10.89475	3.561749	2.155445	15.79512
GINIp	92	.3374901	.22237	0	.8587683
GINIc	92	.22691	.1642614	0	.8030852
Q4BH	92	.2251688	.0688191	0	.4150189
BHQ4	92	.1384818	.0333175	0	.2278028

**Table 3:** Descriptive Statistics concerning the Global Analysis

	year	rne	Gini Mobility	Gdp	Par_In~e	Chil_I~e
year	.					
rne	. 1.0000					
Gini	. 0.0130	1.0000				
Mobility	. 0.0054	-0.6540*	1.0000			
Gdp	. -0.0221	0.1196	-0.1973	1.0000		
Par_Income	. -0.3026	0.0440	0.2343	0.0887	1.0000	
Chil_Income	. -0.1951	-0.5377*	0.8407*	-0.0768	0.6463*	1.0000

\*p<0.001

	year	rne	Gini Mobility	Gdp	Par_In~e	Chil_I~e
year	.					
rne	. 1.0000					
Gini	. 0.0130	1.0000				
Mobility	. 0.0054	-0.6540*	1.0000			
Gdp	. -0.0221	0.1196	-0.1973	1.0000		
Par_Income	. -0.3026	0.0440	0.2343	0.0887	1.0000	
Chil_Income	. -0.1951	-0.5377*	0.8407*	-0.0768	0.6463*	1.0000



\*p<0.01

	year	rne	Gini	Mobility	Gdp	Par_Income	Chil_Income
year	.						
rne	.	1.0000					
Gini	.	0.0130	1.0000				
Mobility	.	0.0054	-0.6540*	1.0000			
Gdp	.	-0.0221	0.1196	-0.1973	1.0000		
Par_Income	.	-0.3026*	0.0440	0.2343	0.0887	1.0000	
Chil_Income	.	-0.1951	-0.5377*	0.8407*	-0.0768	0.6463*	1.0000

\*p<0.05

**Table 4: Correlation Matrix for the United States Analysis**

Table 4 shows correlation coefficients between entrepreneurship, the measures of intergenerational mobility and GDP.

For the significant level 0.01 none of the variables is highly significant but we find a positive relationship for entrepreneurship and mobility and Gini. The correlation coefficient between rne (entrepreneurship) Mobility is positive 0.0054 but it is not statistically significant at the 0.05 level. For the significant level 0.05 highly significant is the variable “Parent\_Income” with negative relationship.

	Year	GEI	GDP	MEANp	MEANc	GINIp	GINIc
Year	.						
GEI	.	1.0000					
GDP	.	0.8980*	1.0000				
MEANp	.	0.7657*	0.8297*	1.0000			
MEANc	.	0.7784*	0.8765*	0.8942*	1.0000		
GINIp	.	-0.6333*	-0.7309*	-0.9043*	-0.7989*	1.0000	
GINIc	.	-0.6230*	-0.7486*	-0.7906*	-0.8702*	0.8701*	1.0000
Q4BH	.	0.4137*	0.4021*	0.4096*	0.3302	-0.2826	-0.1682
BHQ4	.	0.4288*	0.4480*	0.4280*	0.4129*	-0.2490	-0.1885
		Q4BH	BHQ4				
Q4BH		1.0000					
BHQ4		0.7796*	1.0000				

\*p<0.001

	Year	GEI	GDP	MEANp	MEANc	GINIp	GINIc
Year	.						
GEI	.	1.0000					
GDP	.	0.8980*	1.0000				
MEANp	.	0.7657*	0.8297*	1.0000			
MEANc	.	0.7784*	0.8765*	0.8942*	1.0000		
GINIp	.	-0.6333*	-0.7309*	-0.9043*	-0.7989*	1.0000	
GINIc	.	-0.6230*	-0.7486*	-0.7906*	-0.8702*	0.8701*	1.0000
Q4BH	.	0.4137*	0.4021*	0.4096*	0.3302*	-0.2826*	-0.1682
BHQ4	.	0.4288*	0.4480*	0.4280*	0.4129*	-0.2490	-0.1885
		Q4BH	BHQ4				
Q4BH		1.0000					
BHQ4		0.7796*	1.0000				

\*p<0.01

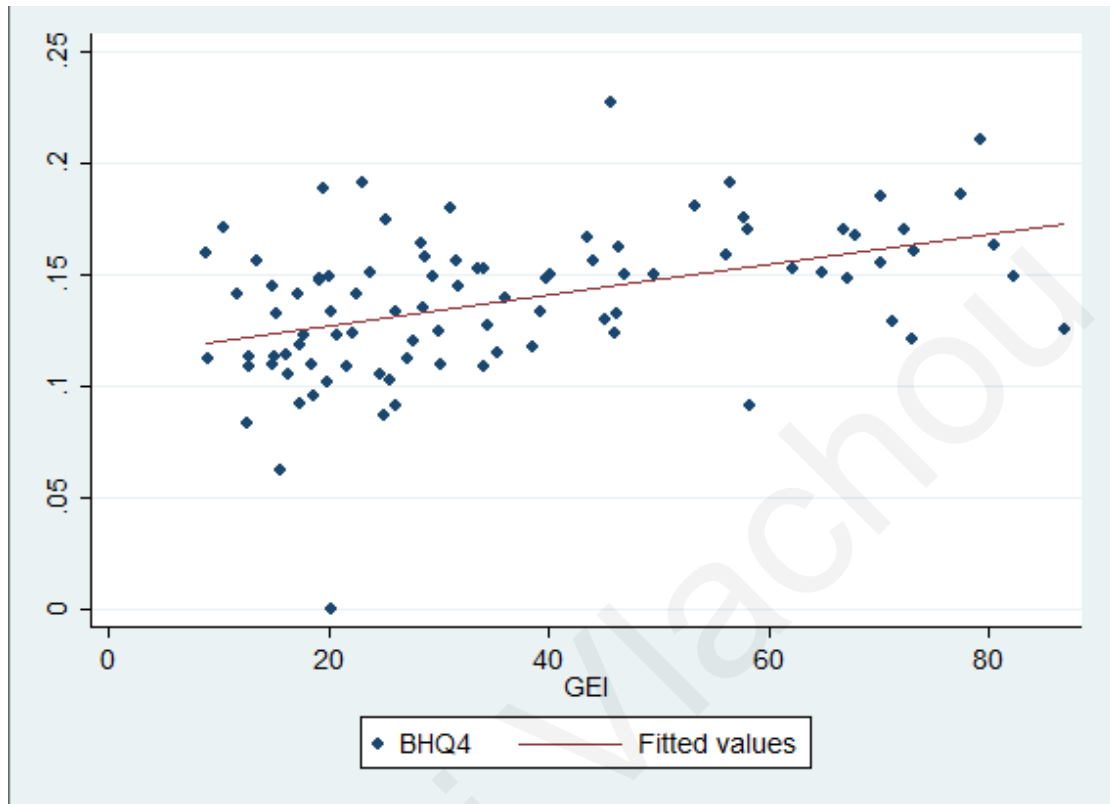
	Year	GEI	GDP	MEANp	MEANc	GINIp	GINIc
Year	.						
GEI	.	1.0000					
GDP	.	0.8980*	1.0000				
MEANp	.	0.7657*	0.8297*	1.0000			
MEANc	.	0.7784*	0.8765*	0.8942*	1.0000		
GINIp	.	-0.6333*	-0.7309*	-0.9043*	-0.7989*	1.0000	
GINIc	.	-0.6230*	-0.7486*	-0.7906*	-0.8702*	0.8701*	1.0000
Q4BH	.	0.4137*	0.4021*	0.4096*	0.3302*	-0.2826*	-0.1682
BHQ4	.	0.4288*	0.4480*	0.4280*	0.4129*	-0.2490*	-0.1885
		Q4BH	BHQ4				
Q4BH		1.0000					
BHQ4		0.7796*	1.0000				

\*p<0.05

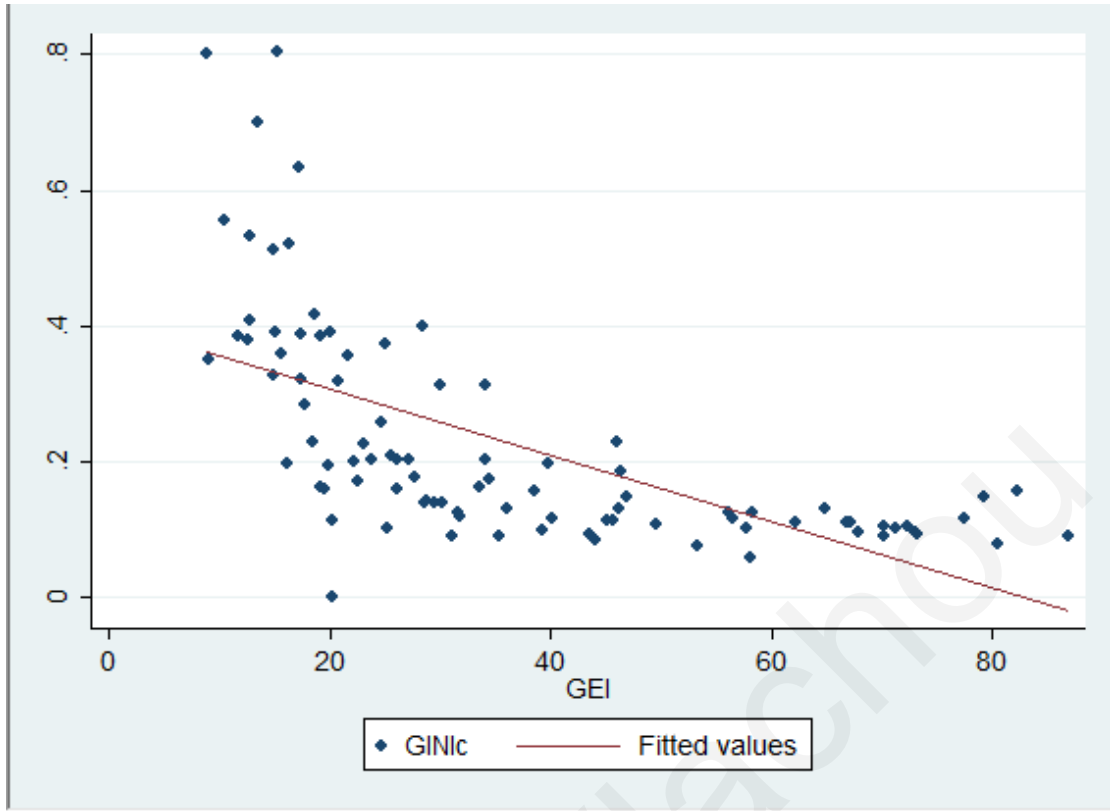
**Table 5:** Correlation Matrix for Global Analysis

Table 5 shows correlation coefficients between GEI (entrepreneurship), the variables that measure intergenerational mobility and GDP. For the highly significant level of 0.001, all the variables are significant. In addition, the correlation between Global entrepreneurship Index and Q4BH (probability child from highest quartile ends up in bottom half) is positive 0.4137, as is the correlation between GEI and BHQ4

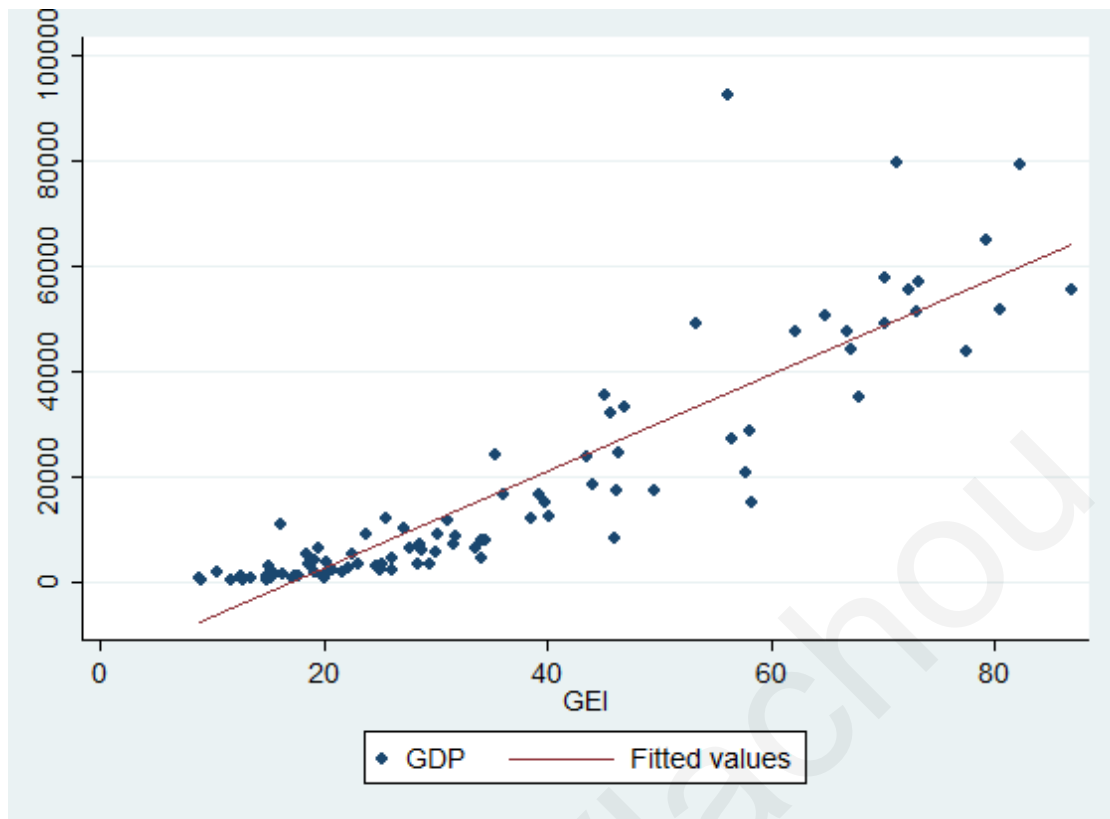
(probability child from bottom half ends up in Q4), which is 0.4288. The Gini index of parents and children has negative impact in all variables. Overall, our findings indicate that entrepreneurship is positively related to intergenerational mobility.



**Figure 1:** Scatter plot- BHQ4 vs GEI for Global Analysis



**Figure 2:** Scatterplot – GINIc vs GEI for Global Analysis



**Figure 3:** Scatter plot – GDP vs GEI for Global Analysis

Figures 1,2 and 3 present scatter plots between global entrepreneurship index and variables that were discussed above. The upward sloping for BHQ4, and the downward sloping for GINIc are demonstrated, and are in accordance with correlation results. In addition, on figure 3, the upward sloping for GDD and GEI is clear.

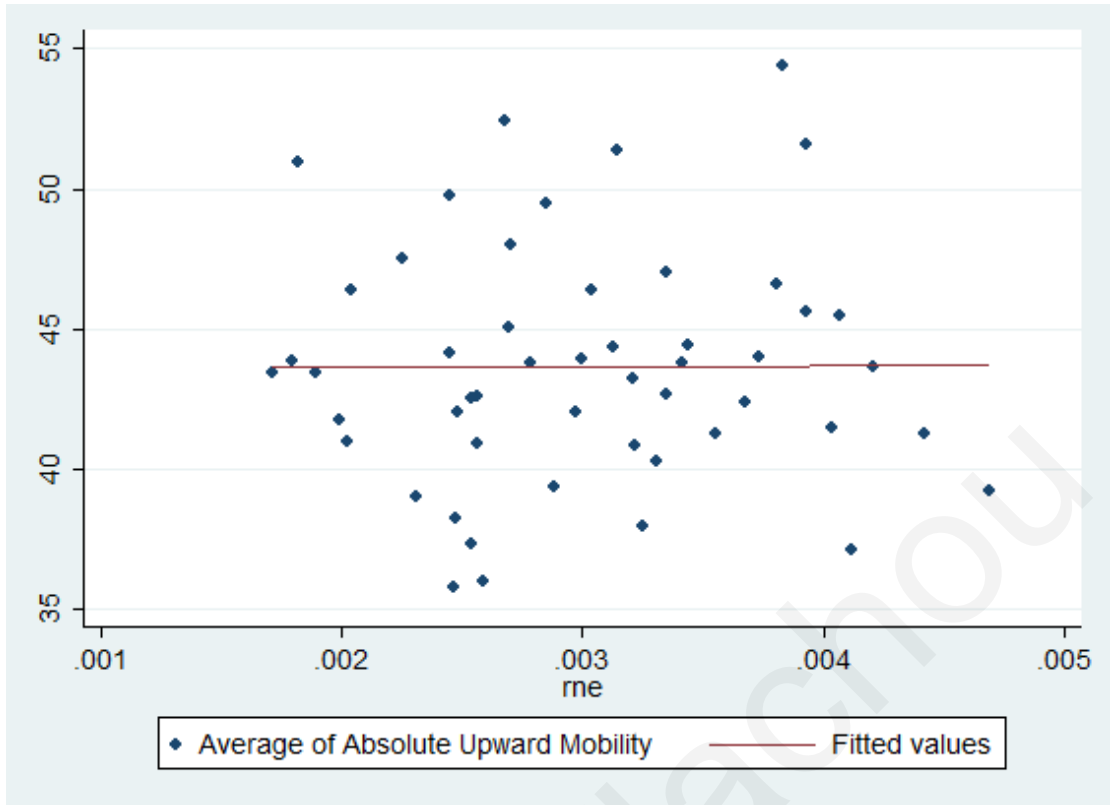


Figure 4: Scatter plot – Absolute Upward Mobility vs RNE for States Analysis

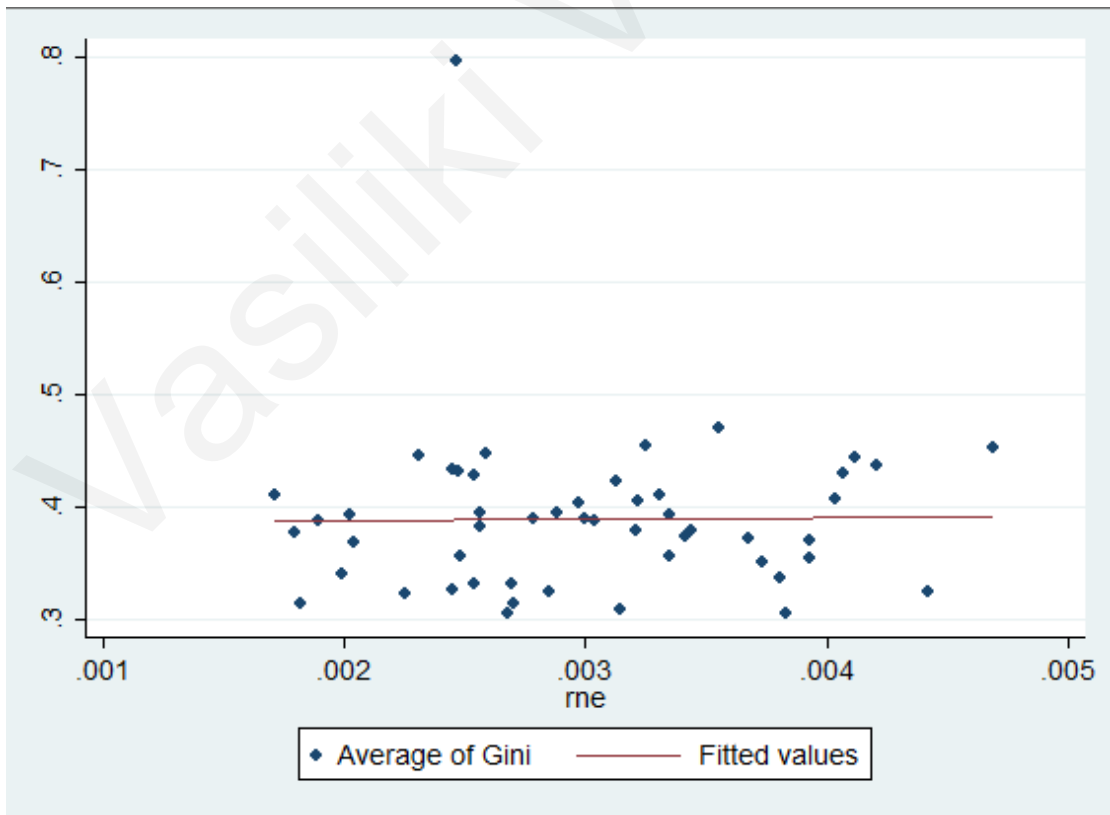
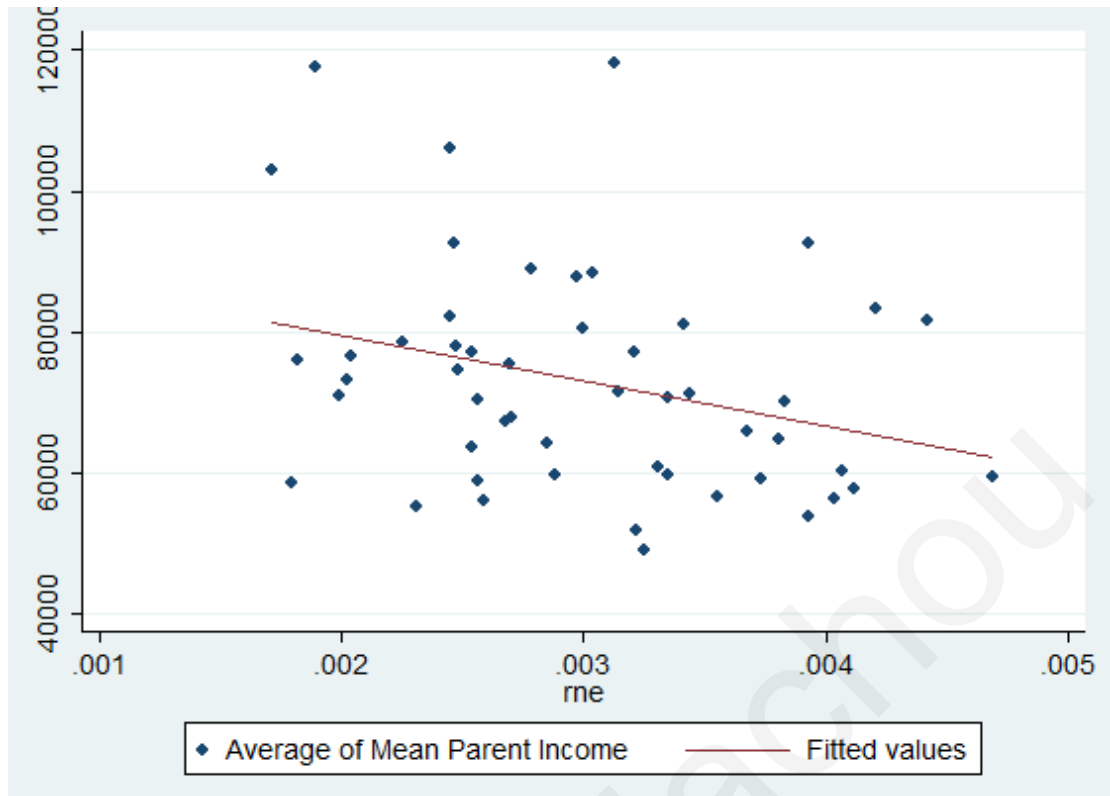


Figure 5: Scatter plot – GINI vs RNE for States Analysis



**Figure 6:** Scatter plot – Mean of Parent Income vs RNE for States Analysis

Figures 4 and 5 show an infinitesimal change for positive relationship between the variables, but it is important to remember that none of these variables are highly significant at any level. The Average mean of Parent Income which is highly significant at 0.05 level and has negative coefficient correlation, and the scatter plot also depicts this relationship.

## 4. RESULTS

### 4.1 Regression analysis results

	(1)	(2)	(3)
	rne	rne	rne
Gdp	-0.0359 (-0.15)	-0.0351 (-0.15)	0.0700 (0.30)
Gini		0.289 (0.15)	0.543 (0.26)
Mobility		0.00344 (0.10)	0.105 (1.54)
Par_Income			-0.247 (-0.10)
Chil_Income			-7.664 (-1.21)
_cons	3.306 (1.71)	3.036 (1.00)	34.60* (2.01)
N	51	51	51
R-sq	0.000	0.001	0.139

t statistics in parentheses  
\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

**Table 6:** Regression analysis results for the United States



	(1) GEI	(2) GEI	(3) GEI
GDP	29.11*** (19.36)	31.09*** (11.85)	28.61*** (8.85)
GINIp		-3.332 (-0.35)	19.48 (1.20)
GINIc		16.59 (1.24)	7.184 (0.37)
Q4BH		22.01 (0.95)	21.82 (0.94)
BHQ4		-26.14 (-0.54)	-45.64 (-0.91)
MEANp			1.774 (1.71)
MEANc			-0.385 (-0.36)
_cons	-76.09*** (-12.93)	-87.71*** (-8.05)	-90.71*** (-8.27)
N	92	92	92
R-sq	0.806	0.815	0.823

t statistics in parentheses  
\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

**Table 7: Regression analysis results for Global data**

Tables 6 and 7 show the OLS regression results. In each case (United States & Global data), the variables described above are used to measure entrepreneurship and Intergenerational mobility.

As far as the United States Analysis is concerned, a positive impact of Mobility to Rne entrepreneurship Index can be revealed, but the variable is not highly significant. Also, GINI index has a positive impact on Rne entrepreneurship Index but it is not highly significant either.

In the case of the Global Analysis only GDP is statistically significant, it has a positive impact on GEI, and it is highly significant at 0.001 level. In addition GINIc and GINIp have positive impact on GEI but are not highly significant.

## 5. CONCLUSIONS

The present dissertation aimed at investigating the effect of intergeneration mobility on entrepreneurship. More specifically, two questions were developed, and answered through quantitative secondary research. The research used data from both the United States and the Globe. A model was developed and data from Kaufman (early stage entrepreneurship data by state 1998-2019) for 51 states as well as data from Global Entrepreneurship Index for 92 countries were used. Also, the international mobility measures from Chetty et al. (2014) were used in the analysis. A model was developed and correlations were revealed. Also, regression analysis was realized in order to reveal the relationship among variables.

Scatter plots were used and they confirmed correlation results. As for regression analysis results, only in the case of the Global analysis GDP has a positive impact on GEI, and it is highly significant at 0.001 level.

The entire above indicate that entrepreneurship is related to mobility and inequality of opportunity and this is more apparent in the case of Global data. These results can be useful to policy makers so as to develop policies which may reduce inequalities in education and social standards. Entrepreneurship can also act as a means to promote mobility and participation of lower class population in financial activity. In this way, inequalities may be reduced. Nevertheless, further research is suggested in order to analyze data from other countries and country communities, like the European community, so as to develop regional policies concerning mobility enhancement.

## 6. DATA SECTION

<b>Name</b>	<b>Explanation</b>	<b>Provided by</b>
Rne	Rate of new entrepreneurs	Kaufmann
Ose	Opportunity share of new entrepreneurs	Kaufmann
Sjc	Start up early job creation	Kaufmann
Ssr	Start up early survival rate	Kaufmann
MEANp	mean of parents' year of education.	Chetty
MEANc	mean of children's year of education.	Chetty
GINIp	GINI index of parents' year of education.	Chetty
GINIc	GINI index of children's year of education.	Chetty
Q4BH	probability for a child from highest quartile ends up in bottom half.	Chetty
BHQ4	probability for a child from bottom half ends up in Q4 (the highest quartile).	Chetty

## 7. REFERENCES

- Black, S., Devereux, P., & Salvanes, K. (2004). *Why the Apple Doesn't Fall Far: Understanding Intergenerational Transmission of Human Capital*. Federal Reserve Bank of San Francisco.
- Bowles, S., Gintis, H., & Osborne, M. (2001). The Determinants of Earnings: A behavioural Approach. *Journal of Economic Literature* , 39, pp. 1137-1176.
- Chetty, R., Hendren, N., Kline, P., & Saez, E. (2014). *Where is the land of opportunity? The geography of intergenerational mobility in the United States*. NATIONAL BUREAU OF ECONOMIC RESEARCH.
- Cliff, J., Jennings, P., & Greenwood, R. (2006). New to the game and questioning the rules: the experiences and beliefs of founders who start imitative versus innovative firms. *Journal of Business Venturing* , 21, pp. 633-663.
- D'Addio, A. (2007). *Intergenerational Transmission of Disadvantage: Mobility or Immobility Across Generations? A Review of the Evidence for OECD Countries* . OECD.
- Gandelman, N., & Robano, V. (2014). Intergenerational Mobility and entrepreneurship in Uruguay. *Latin American Journal of Economics* , 51 (2), σσ. 195-226.
- GDIM. (2018). *Global Database on Intergenerational Mobility*. Washington, D.C.: Development Research Group, World Bank.
- Goel, R., & Saunoris, J. (2020). Does income inequality sand or grease the wheels of entrepreneurial activity? International evidence. *Australian Economic Papers* , 59, pp. 138-160.
- Haltiwanger, J., Jarmin, R., & Miranda, J. (2013). Who creates jobs? Small versus large versus young. *Review of Economics and Statistics* , 95 (2), pp. 319-347.
- Harding, D. (2003). Counterfactual Models of Neighborhood Effects: The Effect of Neighborhood Poverty on High School Dropout and Teenage Pregnancy. *American Journal of Sociology* , 109 (3), pp. 676-719.
- McMullen, J. (2011). Delineating the domain of development entrepreneurship: a market-based approach to facilitating inclusive growth. *Journal of Business Venturing* , 35 (1), pp. 185-193.

Qian, H. (2020). Entrepreneurship and the Economic Geography of Intergenerational Mobility in US Cities. Στο Z. Chen, W. Bowen, & D. Whittington, *Development Studies in Regional Science Essays in Honor of Kingsley E. Haynes* (σσ. 373-385). Springer.

Rauch, A., & Frese, M. (2007). Let's put the person back into entrepreneurship research: a meta-analysis on the relationship between business owners' personality traits, business creation, and success. *European Journal of Work and Organizational Psychology* , 16 (4), pp. 353-385.

Scott, L., Johnstone-Louis, M., Sugden, K., & Wu, M. (2012). Enterprise and inequality: a study of Avon in South Africa. *Enterprise Theory and Practice* , 36 (3), pp. 543-568.

Shane, S., & Venkataraman, S. (2000). Prior knowledge and the discovery of entrepreneurial opportunities. *Organization Science* , 11 (4), pp. 448-469.

Spilling, O. (2011). Mobilising the entrepreneurial potential in local community development. *Entrepreneurship & Regional Development* , 11 (3), pp. 23-35.

Velez-Grajales, V., & Velez-Grajales, R. (2012). *Intergenerational Mobility and Income Effects for Entrepreneurial Activity in Mexico*. Inter-American Development Bank Department of Research and Chief Economist.