

FUNDAÇÃO GETULIO VARGAS
ESCOLA DE ADMINISTRAÇÃO DE EMPRESAS DE SÃO PAULO

DIMITAR KRASIMIROV STOYANOV

**SENIOR ENTREPRENEURSHIP IN EMERGING MARKETS:
EVIDENCE FROM THE GLOBAL ENTREPRENEURSHIP MONITOR**

SÃO PAULO

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Thesis presented to Escola de Administração
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Getúlio Vargas, as a requirement to obtain the
title of Master in International Management
(MPGI).

Knowledge Field: Gestão e Competitividade
em Empresas Globais

Advisor: Prof. Dr. Luis Henrique Pereira

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Committee members:

Prof. Luís Henrique Pereira

Prof. Marcos Primo

Prof. Maria José Tonelli

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ABSTRACT

This paper identifies the reasons for the higher level of senior entrepreneurship in developing countries compared to developed countries. The study focuses mainly on the five biggest emerging markets – China, India, Brazil, Russia and Mexico. It uses data from the Global Entrepreneurship Monitor 2016/17, 2017/18, 2018/19, 2019/20 and interviews with local experts to test twenty possible determinants of senior entrepreneurship in developing countries from the existing literature. The study finds that there is a moderate to strong relationship between the level of senior entrepreneurship and three of the twenty factors. Entrepreneurial intentions is the most important factor for the level of senior entrepreneurship. The other two factors that are positively correlated with senior entrepreneurship activity are confidence in one's skills and the median age of a nation. This study should be of interest to policy makers, financial institutions and investors. The main limitations of this study are that it generalizes a complex phenomenon across a set of heterogeneous countries and relies to a large extent on a correlational analysis that in theory does not prove the existence of causal relationship between the variables.

KEY WORDS: senior entrepreneurship, emerging markets, developing countries China, India, Brazil, Russia, Mexico

RESUMO

Esta dissertação identifica as principais causas para o nível mais alto de empreendedorismo sênior nos países em desenvolvimento em comparação com os países desenvolvidos. O estudo é focado principalmente nos cinco maiores países emergentes - China, Índia, Brasil, Rússia e México. O trabalho usa dados do Global Entrepreneurship Monitor 2016/17, 2017/18, 2018/19, 2019/20 e entrevistas com especialistas locais para testar vinte possíveis determinantes do empreendedorismo sênior em países em desenvolvimento que foram identificados da literatura existente. O estudo conclui que existe uma relação moderada a forte entre o nível de empreendedorismo sênior e três dos vinte fatores considerados. As intenções empreendedoras são o fator mais importante para o nível de empreendedorismo sênior. Os outros dois fatores que são positivamente correlacionados com o nível de empreendedorismo sênior são o nível de confiança nas habilidades e a idade média do país. Este estudo deve ser útil para os decisores políticos, instituições financeiras e investidores. As principais limitações deste estudo são que ele generaliza um fenômeno complexo em um grupo de países heterogêneos e depende muito de uma análise de correlação que teoricamente não prova a existência de relação causal entre as variáveis.

PALAVRAS CHAVE: Brasil, Rússia, México, China, Índia, empreendedorismo sênior, mercados emergentes, países em desenvolvimento

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Abbreviations and acronyms

Abbreviation	Definition
HDI	Human Development Index
EM	Emerging markets
GEM	Global Entrepreneurship Monitor
CEE	Central and Eastern Europe
SME	Small and Medium Enterprises
BNDES	Brazilian Development Bank
OECD	Organization for Economic Cooperation and Development
AMLO	Andrés Manuel López Obrador
GDP	Gross Domestic Product
TEA	Total Entrepreneurial Activity
IT	Information technology
LATAM	Latin America

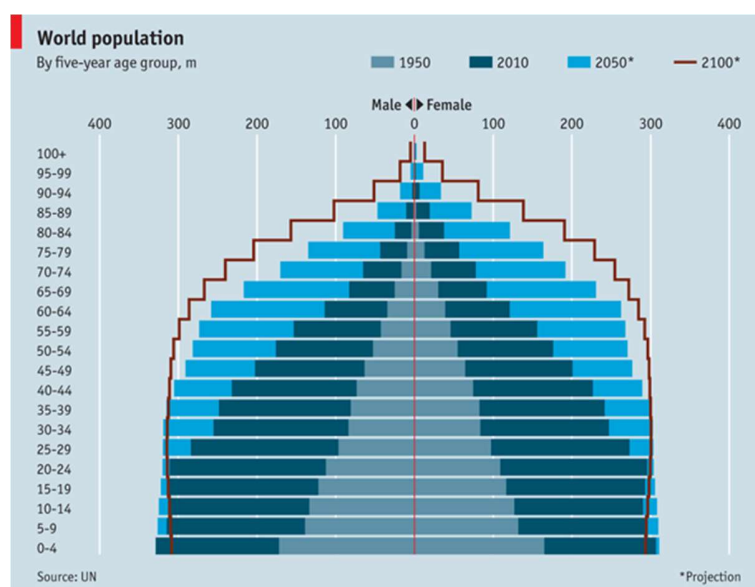
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1 Introduction

Entrepreneurship is the driving force of economic growth and innovation in the modern world. The key importance of entrepreneurship and young high-growth companies for job creation is well documented in the literature. According to Birch, Haggerty and Parsons (1995) less than 5% of businesses generated nearly all new jobs in the US over the studied periods. Nowadays, it is commonly believed that entrepreneurs are recently graduated students or dropouts as a result of popular success stories from the Silicon Valley but this perception is not reflecting accurately the reality. Meanwhile, it is true that nearly half of the founders of billion dollar startups were less than 30 years old at the time of the founding of their company, older people are playing an increasingly important role because of the ageing of the world population. Currently more than 16% of the world population is over 55 years and this age group is expected to double by 2050 (UN, 2017). The average global life expectancy has increased significantly from 65 in the 90s to around 72 years today. It is expected to increase further in the next years and reach 77 by 2050 (UN, 2015). In many developed countries such as the United Kingdom, South Korea and Japan the life expectancy is already above 80. More than 60% of the senior people in the world live in Asia and around 15% in Europe. The median age on the old continent is expected to increase dramatically from 38 to 52 by 2050. By 2100 22.3% of people will be aged more than 65 years compared with only 7.6% in 2010 (Beckett & Frederick, n.d.).

Figure 1 – World population by five-year age group (The Economist. 2011)



These demographic changes will affect negatively the aggregate level of entrepreneurship. A higher level of older people in a population influences negatively entrepreneurship at the country level (Levesque & Minniti, 2011). Most of the existing literature on senior entrepreneurship focuses on the developed world and there is very little research on this phenomenon in emerging markets. However, developing countries are particularly important because they account for 84% of the world's population and their share continues to increase (World Bank, 2019). In 1950, 32% of the world population lived in rich countries but it is expected that their share will shrink to only 13% in 2100. According to the data from the Global Entrepreneurship Monitor, the level of senior entrepreneurship in developing economies is around two times higher than the level in developed countries. Senior entrepreneurship in emerging markets is a little explored topic and most of the available literature is focused on general entrepreneurship or senior entrepreneurship in a specific developing country. Up to date, there are only two papers that study senior entrepreneurship in Russia and CEE from Rehak & Pilikova and Zavyalova, Starikova & Chubaeva, one paper on senior entrepreneurship in China published by Volovelsky & Dana and one global analysis from Saiz-Alvarez & Martinez. The goal of this paper is to identify what are the reasons for the higher senior entrepreneurship activity in developing countries compared to developed using data from the Global Entrepreneurship Monitor and interviews with experts. Data sets will be extracted from the 2015/16, 2016/17, 2017/18, 2018/19 and 2019/20 editions of the Global Entrepreneurship Monitor and interviews with leading experts will be conducted to identify factors that influence senior entrepreneurship. By identifying the key factors this study will fill a gap in the entrepreneurial finance literature and can be useful for policy makers around the globe who want to create better conditions for senior entrepreneurs. What makes this study unique with respect to the existing literature on senior entrepreneurship in developing countries is that it combines quantitative data from the Global Entrepreneurship Monitor with insights from experienced experts to provide a cross-regional perspective. GEM is the only reliable source of quantitative information on senior entrepreneurship across multiple countries and years, while the interviews with experienced people provide a deeper understanding of this complex phenomenon. To limit the scope and improve the quality of the research, there is a bigger focus on the five biggest emerging markets – China, India, Brazil, Russia, Mexico¹ and their respective regions – Asia, Latin America and Europe. Chapter 2

¹ Based on Nominal GDP

will provide a review of the existing literature on senior entrepreneurship and entrepreneurship in emerging markets. The following chapter will explain the methodology used, analyze the data and discuss the results. Chapter 4 will summarize the findings and conclude the study. Finally, in Chapter 5 and 6, we will have a look at the limitations of this paper and the potential for further research.

1.1 Key terms

Entrepreneurship is any attempt at new business or new venture creation, such as self-employment, a new business organization, or the expansion of an existing business, by an individual, a team of individuals, or an established business (Reynolds et al., 1999).

Senior entrepreneurs are individuals aged 55 years or more that start a business (Rehak & Pilikova, 2016). There are multiple terms that have the same meaning and are often used interchangeably – “Older Entrepreneur”, “Golden Age Entrepreneur”, “Grey Entrepreneur”, “Seniorpreneur”, “Third-Age Entrepreneur”, “Late-life Entrepreneur”, “Second career entrepreneur” and “Elderly Entrepreneur”.

Developing economies or emerging markets are countries with a Gross National Product per capita of less than 12376 USD (Wordbank, 2020).

Active aging refers to the situation where people continue to participate in the formal labor markets as well as engage in other unpaid productive activities such as care provision to family members and volunteering and live healthy, independent and secure lives as they age (WHO, 2019). Governments around the world are increasingly searching for ways to prolong the working life, reduce unemployment of senior people and increase the social contribution of older individuals.

Global Entrepreneurship Monitor was founded in 1997 by the London Business School and Babson College to fill the gap on entrepreneurship in different countries. GEM covers more than 100 countries and studies multiple aspects of entrepreneurship (Saiz-Alvarez & Martinez, 2019). Nowadays it is the richest source of information on senior entrepreneurship.

Total Early Stage Entrepreneurial activity measures the amount of aged adults who have taken action to start a business in the last 12 months and adults that are actively managing a firm that is not more than 42 months old (GEM, 2020).

Business discontinuation (volatility) – Percentage of the adult population aged between 18 and 64 years (who are either a nascent entrepreneur or an owner-manager of a new business) who have, in the past 12 months, discontinued a business, either by selling, shutting down, or otherwise discontinuing an owner/ management relationship with the business (GEM, 2014)

Entrepreneurial intentions (spirit) – Percentage of individuals involved in any stage of entrepreneurial activity excluded who are latent entrepreneurs and who intend to start a business within three years (GEM, 2014).

Belief in own skills – Percentage of individuals aged 18-64 involved in any stage of entrepreneurial activity excluded who believe they have the required skills and knowledge to start a business. (GEM, 2014).

2 Literature review

2.1 Senior entrepreneurship

Initial entrepreneurial activity follows an inverted U-shape curve with respect to age. Entrepreneurial intentions peak at 25-35 years and decline with age. Intentions tend to be lower among the youngest and oldest age groups (Levesque & Minnit, 2011). This is logical given that young people usually are not ready for entrepreneurship and older people have little time to enjoy the benefits that their business generates (Kautonen, 2008). Countries that have too old or young populations are likely to suffer from a lower level of entrepreneurship activity because of the nonlinear relationship between age and entrepreneurial intentions. In fact, there is a very sharp decline in entrepreneurial intentions from the age of 50 years (Schott, Rogoff and Herrington, 2017) and in most countries, senior entrepreneurs show the lowest level of Total early-stage Entrepreneurial Activity (Bosma, Hill, Somers, Kelley, Levie & Tarnawa, 2020). As individuals become older, they become less willing to invest time in activities that do not produce instant returns (Kautonen, 2008). There is a large gap between the portion of young people and seniors that want to start a business. Seniors are 2.5 times less likely than young individuals to intend to start a business (Duhamel, Erogul, Greidanus and St-Jean, 2016). Nevertheless, senior entrepreneurship is a growing trend due to the demographic changes and increased interest in active aging (Hudson & Goodwin, 2014). In general, senior entrepreneurship is concentrated in small and medium enterprises (Saiz-Alvarez & Martinez, 2019). According to GEM, the average share of senior entrepreneurs in the countries that they studied is 6.6% and the mean age is 59.47 years (Saiz-Alvarez & Martinez, 2019). Seniors tend to run more traditional businesses and engage less in IT related businesses (Hudson & Goodwin, 2014). It must be noted that the impact of age on entrepreneurship activity differs between technology based and traditional businesses. The critical age for Tech entrepreneurship is higher (Levesque & Minniti, 2011).

2.2 Senior employment

People aged over 50 years have significantly lower chances of returning to the labor market and the probability of self-employment increases with age (Kautonen, 2008). Over 50% of people in UK stopped working by the year before they reached state pension age (Clegg & Fifer, 2014). The function of probability of entrepreneurial behavior for owner managers and reluctant entrepreneurs versus age has an inverse U shape (Rehak & Pilkova, 2016). According to Saiz-Alvarez & Martinez

(2019) the need for survival is the main driver for senior self-employment. For example in the UK, there are millions of unemployed senior people (Hudson & Goodwin, 2014). More precisely, 28% of people aged between 50 and 65 are out of work and 60% of those think that they will unlikely work again (Clegg & Fifer, 2014).

2.3 Motivation for senior entrepreneurs

There are two categories of factors that encourage senior entrepreneurship – push and pull factors. Some seniors become entrepreneurs as it is their only available employment option but the majority are opportunity driven, given that 2/3 of people were employed prior to becoming entrepreneurs and most left voluntarily (Harms, Luck, Kraus & Walsh, 2014). Opportunity driven entrepreneurship is 5 times more common than “necessity entrepreneurship” (Hudson & Goodwin, 2014) but seniors have the lowest ratio of opportunity to necessity entrepreneurship (Schott, Rogoff & Herrington, 2017) and push factors might be more prominent in some countries (Harms, Luck, Kraus & Walsh, 2014). Ramesh (2020) suggests that necessity entrepreneurship is more common in developing economies due to lack of employment opportunities and other sources of income. Many gray entrepreneurs benefit from a stable income from a pension and do not rely on the income from business. Furthermore, seniors have more free time since they do not need to devote time to earning money and do not have contractual obligations (Bogenhold, 2016). Many seniors want to remain occupied, be valued, give back to society (Hudson & Goodwin, 2014) and have a higher chance of being social entrepreneurs. According to Harms, Luck Kraus and Walsh (2014), the biggest push driver for gray entrepreneurs is the incompatibility of their personal goals with their employment. A study in the UK found that wealth creation was the main goal for less than 20% of senior entrepreneurs (Clegg & Fifer, 2014). Other drivers include lack of job security, job market discrimination and health problems (Harms, Luck, Kraus & Walsh, 2014). Unemployed old people are the group that is most likely to express entrepreneurial intentions. Senior entrepreneurs are mostly man and senior women have the lowest entrepreneurial intentions of all groups, which is mainly attributed to social and cultural factors. Senior woman are more often pushed into entrepreneurship by necessity than man (Schott, Rogoff and Herrington, 2017). The pull drivers are autonomy, purpose, enjoyment, flexibility and financial incentives. Many older people also start businesses to better harmonize their work and family (Harms, Luck, Kraus & Walsh, 2014).

2.4 Factors determining senior entrepreneurship

According to Saiz-Alvarez & Martinez (2019) business volatility and entrepreneurial spirit increase senior entrepreneurship, meanwhile higher average age and development of a country have a negative impact on senior entrepreneurial activity. They argue that the annual rate of business abandonment has the greatest explanatory capacity of senior entrepreneurial activity, followed by the average age of the population and the Human Development Index². On one side, this means that when the rate of abandonment and the entrepreneurial spirit of a society grow, the level of senior entrepreneurship increases as well. On the other side, a decrease in the rate of business abandonment and the entrepreneurial spirit of a society results in a lower senior entrepreneurship. HDI appears to be more relevant for senior entrepreneurship in developing countries. Duhamel, Erogul, Greidanus and St-Jean (2016) suggest that skills have a positive impact on the probability of a person to start a new business. In another study, the authors conclude that the determinants of entrepreneurship change depending on the institutional environment and that improvement in institutional environment encourages older people to pursue entrepreneurship (Lu, 2010). A GEM study on Senior Entrepreneurship found that older entrepreneurs have the lowest confidence in their own ability to start and run a business (Schott, Rogoff and Herrington, 2017). In another paper, Kim argues that the institutional settings of countries on three dimensions of seniors' conditions lead to cross-country differences. The dimensions are health, income security and education attainment. Public expenditure on pension and education have a negative effect on senior entrepreneurship rate meanwhile poverty rate of seniors is positively linked to senior entrepreneurship rate (Kim, 2017). The likelihood of a person being engaged in early-stage entrepreneurial activity decreases with higher status in society. However, at the same time seniors with higher education are more likely to be engaged in early-stage entrepreneurial activity and the more educated a person is, the more likely that person is to start and develop a sustainable business (Rehak & Pilkova, 2016).

² HDI is an index that ranks countries based on life expectancy, education and per capita income

Table 1: Summary of the factors determining senior entrepreneurship from the literature

Study	Factor	Impact on senior entrepreneurship
Saiz-Alvarez, J. & Coduras-Martínez, A., 2019	Business volatility	Positive effect (50,3% explanatory capacity), most relevant for countries affected by economic crises
	Development (HDI)	Negative effect (33,1% explanatory capacity)
	Average age	Negative effect (42,8% explanatory capacity)
	Entrepreneurial spirit	Positive effect (40,6% explanatory capacity)
Kim, J., 2017	Health	No significant effect
	Income security	Negative
	Education attainment	Negative
Kautonen, T., 2013	Opportunity cost of time	Negative
	Insufficient information on how to start a business	Negative
	Lack of financial support	Negative
	Government benefits	Negative
	Ageism	Negative
	Availability of information and resources	Negative
	Regulations	Negative
	Social environment	Ambiguous
Entrepreneurship in EM		
Lu, J. & Tao, Zhigang, 2010	Age	Negative impact
	Education	Negative impact
He, C., Lu J. & Qian, H., 2018	Communist membership	Negative
	Education	Positive
	Rural origin	Positive
	Buddhist culture	Positive

Djankov, S., Qian, Y., Roland G. & Zhuravskaya, E., 2016	Entrepreneurs in family	Positive
	Risk aversion	Negative
Rehak, J., Pilkova, A., 2016	Higher status in society	Negative
	Education	Positive

The factors determining senior entrepreneurship that appear most often in the existing literature are education and age. Education is identified as an important factor in four studies and age in two. Two of the papers that study senior entrepreneurship in developing countries suggest that education has a positive impact on the level of senior entrepreneurship, while the other two papers, which do not focus on developing countries suggest a negative relationship between education and senior entrepreneurial activity. Therefore, it is possible that education has a different impact on senior entrepreneurial in developed versus developing countries. Age appears in two studies, one focused on developing countries and one on senior entrepreneurship in general. The authors of both studies suggest a negative effect of age on entrepreneurial activity. The position of individuals in society is given much more consideration in the research on developing countries. Half of the factors from the four papers on EM are related to social class (communist membership, rural origin, higher status in society and entrepreneurs in family) compared to only one in the literature on all countries. This might be the case because of a greater importance of social class for senior entrepreneurship in developing countries.

2.5 Performance of senior entrepreneurs

Senior entrepreneurs usually have much more resources, capabilities and valuable experience than their younger counterparts do. They have accumulated capital from previous employment and poses larger networks (Kautonen, 2008). The survival rate of companies founded by senior entrepreneurs after 3 years is 70%, while the rate for younger founders of startups is only 28% (Hudson & Goodwin, 2014). Older people provide a higher amount of financing from personal funds and are less likely to discontinue a business due to a problem with profitability or access to finance (Schott, Rogoff, and Herrington, 2017). Moreover, seniors usually do not have mortgages and dependents (Kautonen, 2008). According to Duhamel, Eroglu, Greidanus and Jean (2016) age does not influence the perception of entrepreneurial opportunities, fear of failure or level of skills. Gray entrepreneurs tend to be more conservative in their growth expectations (Schott, Rogoff, and Herrington, 2017). A study of senior entrepreneurs in the UK found that businesses of senior

entrepreneurs are growing their revenue by 19%, employment by 21% and created jobs at a rate of over 7 times faster than that of the UK economy. Their profit is also growing significantly faster at 47% (Clegg & Fifer, 2014).

2.6 Senior entrepreneurship in emerging markets

The level of Senior Entrepreneurship is highest in South America and lowest in Europe. Out of the five biggest developing countries, India has the highest percentage of senior entrepreneurs, followed by Brazil and Russia has the lowest percentage. The entrepreneurial activity by age in Russia and China is in line with the global pattern meanwhile in India, Brazil and Mexico it deviates from the normal. In Brazil and Mexico the 35-44 age group has the highest proportion of entrepreneurs. In India, the oldest age group does not have the lowest percent of entrepreneurial activity of all groups. A bigger part of the senior Entrepreneurs are opportunity-driven and the proportion of necessity driven entrepreneurs is highest in Asia (GEM, 2020).

2.7 Senior Entrepreneurship in China

Private enterprise was banned in China for a big part of the 20th century and became a possible option only in 1993 after the economic reforms. Nowadays, there are six types of senior entrepreneurship in China – rural, self-employed, necessity driven, desiring to continue working after 65, indigenous elders and foreigners. The rural entrepreneurs are usually retired people who “spent much of their life on government farms” and “can sell surplus food with no need for advanced entrepreneurial skills”. Self-employed senior entrepreneurs includes “those who choose to continue their careers, but instead of being labeled as employees, they establish an independent business”. The fourth type are people “who have decided after a career as employees that they want to continue to work after the legal requirement to retire at the age of 65 and they choose to be entrepreneurs to fulfil their time with something they like to do”. Indigenous elders are people from different ethnic groups other than the Han. In general, seniors in China benefit from Confucian culture since it emphasizes the need to respect older people. Chinese people appreciate experience and have more trust in seniors (Volovelsky & Dana, 2019).

2.8 Senior Entrepreneurship in Central and Eastern Europe

The level of senior entrepreneurship in Central and Eastern Europe is much lower compared to developed countries in Europe or the US and the main reason for the missing generation of senior

entrepreneurs that appears in the literature is that those countries had a communist economic system in the past. Slovakia has the lowest TEA of seniors in the region, Russia has the lowest level of senior established entrepreneurial activity and Hungary has the highest entrepreneurial activity at both stages (Rehak & Pilkova, 2016). According to the same authors, there are no significant differences between the key drivers of senior's TEA in CEE countries and the rest of Europe. However, another author suggests the main motivation of gray entrepreneurs in Russia is financial, which differs from the rest of the world. Senior entrepreneurs generally distrust the banking system and their main problem is the lack of funds is again in contrast to other countries. Consulting services is the most common area for senior entrepreneurs in Russia, while public services and trade are the most desired areas for new businesses. Senior people in Russia have very low motivation to open a business and are not ready to change their lifestyle for the sake of their entrepreneurial activity (Zavyalova, Starikova & Chubaeva, 2020).

2.9 Stories of senior entrepreneurs in Emerging markets from the Global Entrepreneurship Monitor

Yujing Yang (China) is a founder of a company producing and selling textiles and home accessories. She shares that the main motivation for her decision to become an entrepreneur was the desire to have control over her life and career development. In her view, the environment is not supportive of senior entrepreneurship but being a woman is an advantage

Evelyne Schimmel and Carlos Spiller (Uruguay) are founders of a residential center for adults. They believe there are no initiatives for older entrepreneurs in their country and their academic background combined with previous business experience were crucial for their success.

Yusof Mohamad (Malaysia) is an owner of a trading business. In his opinion, the political climate has a strong negative influence on business, obtaining financing in his country is very challenging and his contacts from the past proved very valuable.

Carmen Lucia Pereira (Brazil) has a company that specializes in construction and renovation of sidewalks. Her main motivation was increasing her income and finding an occupation, as she was not able to find a job. In addition to that, she mentions that it was not possible for her to get financing and she obtained a 30 000 BRL loan from a relative (Schott, Rogoff, & Herrington, 2017).

2.10 Entrepreneurship in Brazil

Brazil has the highest amount of venture capital investments in South America and the activity has increased significantly in the last years. Despite that, the level of investments is still nearly 2 times lower than the global average (Azevedo, 2020). Entrepreneurship is highly concentrated in the South region, which accounts for more than 90% of all investments. Sao Paulo is the largest and most mature ecosystem in South America. More than 70% of the top 50 startups in Brazil are located in Sao Paulo (Appendix 2). Financial services is the most popular sector with 24% of top 50 startups, followed by e-commerce and marketing (Appendix 3). Until recently, interest rates in Brazil were one of the highest in the world. Access to capital in Brazil is difficult and commercial banks in Brazil generally provide only short-term debt with the exception of BNDES (Insper, Spectra and ABVCAP, 2018). However, there are six active angel networks in Brazil (Appendix 7) which has a positive impact on access to capital for startups. The median amount of total funding in Brazil for the top 50 startups is 20.6 million USD (Appendix 1). In general, Brazilian entrepreneurs lack experience and ambition to create global businesses. Only 7% of Brazilian startup customers are international (World Economic Forum, 2014).

2.11 Entrepreneurship in Mexico

Mexico has the lowest level of venture capital investments among large developing countries, venture capital investments in 2019 totaled 650 million USD, which is just 0,051% of its GDP (Azevedo, 2020). The size of the Mexican Venture Capital market is smaller than that of Singapore, meanwhile the country has 20 times bigger population. Mexico City is the center of entrepreneurial activity with 70 % of the top 50 startups (Appendix 5). Financial services are the most popular sector for startups and accounts for 36% of the top startups, followed by e-commerce and healthcare (Appendix 6). There are multiple obstacles for Entrepreneurship in Mexico. Firstly, financial markets are significantly underdeveloped, the cost of capital is high and funding is not easily available (Castañeda & Alcalde, 2013). There are only two active Angel investor networks in Mexico – Angel Investment Network and Ark Angels. Secondly, the entrepreneurial ecosystem and the market is underdeveloped. Forty five percent of startups point the maturity of the market as their biggest problem (Sanz, 2018). Thirdly, the education system is not very good and there is lack of high quality technical talent. There are a plenty of engineers with 110 000 engineering graduates per year but Guzman finds that most of the people have little experience and limited

skills. Moreover, the quality of the Mexican research is low, and it is ranked at the bottom of OECD countries (Guzman, 2011). Fourthly, Mexican entrepreneurs do not have a global mindset and more than 80% of startups focus only on the domestic market (Appendix 4). Only 13% of startups in Mexico serve foreign customers (Startup Genome, 2016). Most entrepreneurs engage in low risk and low value added endeavors with little investment (Hernandez, 2011).. Finally, the new government led by AMLO has stopped all programs supporting startups and entrepreneurship (Rance & Kikhia). The United States account for 80% of Mexican exports and a big part of the firms focus on outsourcing, assembly or other low-value activities. Many startups from Spain enter the market since Mexico is the most populous Spanish speaking country in the world. Sixty two percent of Spanish technology startups plan to expand to Mexico (Sanz, 2018). The average starting equity investment of startups is around 15 000\$ and 75% of all startups are led by male individuals (Gali, 2017). ITESM is the leading institutions that encourages entrepreneurship in the country. The sectors that are growing most are Fintech, E-health, IoT and E-learning. In 2018, the government approved a new Law of Fintechs, which should have a positive impact on startup development (Sanz, 2018).

2.12 Entrepreneurship in China

In 2019, Venture Capital investments in China equaled 0.57% of the country's GDP (Bain & Co, 2019). This level of activity is 2 times higher than the world average and similar to the level in the USA. Chinese are generally risk tolerant and the country has embraced a "mass entrepreneurship" culture (He, Lu & Qian, 2019). This is why, China is the second largest producer of unicorns worldwide. It has a huge domestic market and the institutional environment is supportive for entrepreneurship. There are two Chinese cities among the top 20 ecosystems globally – Beijing, which is ranked fourth and Shanghai, which is ranked eight. Shanghai also ranks third in the world for funding (Startup Genome, 2019). However, there are big differences between different provinces in China similarly to the US (Phan, Zhou and Abrahamson 2010). The eastern part of the country has nearly 3 times higher number of private entrepreneurs than the Central and the Central has almost 2 times the number in the Western region (Ramesh, 2020). Zhongguancun, which is located in the Haidian District of Beijing is known as the "Silicon Valley" of China (Batjargal, 2007). Shenzhen is considered the world capital for hardware entrepreneurship. Together with Macau and Hong Kong, it forms the "Silicon Delta" (Ahlstrom, Yang, Wang and Wu, 2017) Interestingly, science parks in China combine manufacturing with technological

innovation. There are three main types of entrepreneurs in China – street vendors, Chinese who lived abroad and educated managers of state-owned enterprises (Ramesh, 2020). Most entrepreneurs that have created high-tech ventures are ex-employees of research and development institutes in China or Chinese with western education and experience (Batjargal, 2007). They tend to be young, married males with good financial conditions and preference for risk taking (Lu, 2020). In China, females more often engage in entrepreneurship out of necessity, rather than opportunity (He, Lu & Qian, 2019). Innovation in China follows a more centralized and top-down approach compared to other countries (Ahlstrom, Yang, Wang and Wu, 2017). The state is highly involved in business and internet, which creates both opportunities and uncertainties (Batjargal, 2007). As an example, the Chinese government launched a National Equities Exchange and Quotations in 2013, which is a platform where startups can list their shares (He, Lu & Qian, 2019). One of the most striking differences with the rest of the world is that the successful entrepreneurs in China have the “right to retain profit” rather than full ownership. In the past, entrepreneurship had a low status. Individual’s social network and *guanxi* are extremely important factors for entrepreneurs in China. *Guanxi* is a sort of network of social obligations, which facilitates the allocation of labor and capital for a profitable outcome. It reduces the uncertainty around the behavior of investors and entrepreneurs and decreases transaction costs. Chinese entrepreneurs prefer to use savings or money from family members rather than borrow from financial institutions due to their Confucian values (emphasis on self-efficiency within the family) (Ramesh, 2020).

2.13 Entrepreneurship in India

The level of venture capital activity as percentage of GDP is slightly above the world average and the second highest level among large emerging markets (PTI, 2020). India and China have a very high percentage of products that are different from the ones in the west (Kautonen, 2013). The Indian market is very specific and difficult, which forces entrepreneurs to be more flexible. More than 40% of the population is unbanked, lives without stable access to electricity and do not have access to good education or health services. There are 600000 villages and the potential consumers are less than one sixth of the population. Moreover, every state differs in terms of culture, geography and income (Prabhu & Jain, 2015). Bangalore is often referred to as the Silicon Valley of India. It ranks 20th among the top 20 ecosystems globally (Bhide, 2004). Indian entrepreneurs are more risk averse compared to other developing countries. Entrepreneurship in India is constrained by the cast system and firms tend to remain small due to rigid labor laws and inefficient

tax system (Ramesh, 2020). The majority of private enterprises in India employ only one person (Prabhu & Jain, 2015). Indian entrepreneurs often create conglomerates of many small firms. Startups in India begin with a high amount of capital meanwhile their size is small (Bhide, 2004). Historically the cast system did not encourage innovation and lower casts have lower rate of entrepreneurship (Medhora, 1965). Due to their small size, most firms do not benefit from economies of scale. A large portion of the population (around 43%) is still employed in agriculture (Ramesh, 2020). The infrastructure in India is not very developed and many entrepreneurs have to produce key goods such as electricity (Bhide, 2004). Jugaad is a fundamental element of the innovation and entrepreneurial culture in India. It is essentially a flexible approach to getting more by less or “the art of overcoming harsh constraints by improvising an effective solution using limited resources”. It allows Indians to overcome limitations such as scarcity of capital, technology, infrastructure and skilled labor (Prabhu & Jain, 2015).

2.14 Entrepreneurship in Russia

Venture capital activity in Russia is almost six times lower than the global average (Crunchbase, 2020). The number of Small and Medium Enterprises is 2 times lower than the average in the neighboring European Union (Safonov, 2014). Entrepreneurship is something new in Russia, given its communist past and the fact that private enterprise was legally prohibited until 1992 (Djankov, Miguel, Qian, Roland, Zhuravskaya, 2004). Entrepreneurship is dominated and heavily influenced by the state through different channels. The government accounts for 33% of the economy and up to 50% of employment, thus it is the most important customer for many companies (Di Bella, Dynnikova & Slavov, 2019). In addition to that, the government controls several key organizations and investors in the sector such as the Russian Direct Investment Fund, the tech park Skolkovo or the largest bank Sberbank, which employs the largest number of IT specialist of all companies in Russia. According to Chepurensko (2013), businesses in Russia follow a system of contractual relationships between business and bureaucrats. Entrepreneurs have three main strategies for dealing with authorities – exchange, distancing or sponging. Other challenges include lack of external finance and pressure from big businesses. There is a high level of local talent and Moscow has one of the best engineers in the world with 83% of them having at least 2 years of startup experience. In 2016, Moscow ranked number 1 in the world in terms of talent (Startup Genome, 2016). However, there are insufficient marketing and business experts and the entrepreneurial intentions of people are very low. Similarly, to other emerging markets, the institutional

environment is very weak. The main obstacles are low availability of financing, small pool of commercial talent, weak institutions and legal environment. Sixty eight percent of ex-entrepreneurs state that they have escaped from entrepreneurship forever. Interestingly, the more established businesses and older people have a much less optimistic view about the future prospects (Cherupenko, 2013).

Table 2: Entrepreneurship in the biggest emerging markets

Country	Brazil	China	India	Mexico	Russia
Main hub for entrepreneurship	Sao Paulo	Beijing	Bangalore	Mexico City	Moscow
Ecosystem ranking	30	4	26	-	-
Population, million	211	1398	1366	127,6	144,4
GDP per capita USD	8712	10262	2104	9863	11585
Venture capital investments as % of GDP	0,16%	0,57%	0,31%	0,05%	0,05%
TEA 55-64 years	12,4	2,8	14,7	9,3	3,6
Median age	33,5	38,4	28,4	29,2	39,6
Entrepreneurial intentions	30,2	21,4	33,3	16,3	9,8

Sources: GEM (Ecosystem ranking, TEA 55-64 years, Entrepreneurial intentions), World bank (GDP per capita), Worldometers (Population, Median Age), Bain & Co (Venture Capital investments)

It is clear that high-growth entrepreneurship is underdeveloped in three of the top five developing countries. According to Levesque and Minniti (2011), market forces usually eliminate imbalances between the demand and supply of entrepreneurs but in some cases institutional rigidities prevent such redistribution, resulting in a shortage of entrepreneurial activity.

3 Methodology

3.1 Framework

This research follows a mixed methods methodology with two sequential explanatory strands (Creswell and Plano Clark, 2011). Mixed method design is a research design that involves both quantitative and qualitative data (Creswell, 2009). Though mixed method research relies on qualitative and quantitative data collection and analysis, they often are parallel without much real mixing, and the questions they ask and the inferences they make are either qualitative or quantitative in nature, as opposed to blended (Teddlie & Tashakkori, 2003). The first strand consists of a correlational research based on secondary data from the Global Entrepreneurship Monitor. The second strand is qualitative and based on interviews with experts on entrepreneurship from developing countries. The data was collected sequentially, the quantitative strand was first and had a greater priority. The goal of the qualitative strand is to explore the identified relationships in detail and check if there is a causal relationship between them. The two sources of data are mixed and interpreted in the discussion section. This design was chosen for this study, because there are very few experts on senior entrepreneurship in emerging markets, the topic is not covered extensively in the existing literature and the limitations resulting from the COVID-19 pandemic. Mixed methodology benefits from both the reliability of a large high-quality dataset and the valuable insights offered by experts in the field. Both the quantitative and qualitative approaches have biases (Pole, 2007). The combination of qualitative and quantitative data in mixed methods reduces the biases and provides a more complete picture.

3.2 Sampling

Quantitative data

Finding cross-country data sets on senior entrepreneurship is difficult and that is especially true for developing countries. This research relies on data from the Adult Population Survey of the Global Entrepreneurship Monitor. The selection of the GEM Report as a main source is not accidental and is dictated by the fact that it is the only reliable source of data on early-stage senior Entrepreneurial Activity in emerging markets. This survey includes more than 2000 interviews per country. All the data for Europe, Asia & Pacific, South America and North America from the GEM Global Report of 2019/20, 2018/19, 2017/18, 2016/17 and 2015/16 was used. The dataset for this study includes

221 data points for each of the variables Total early-stage Entrepreneurial Activity, Entrepreneurial Intentions, Business exits, skills and share of necessity driven entrepreneurs. Middle Eastern and African countries were excluded for three important reasons. Firstly, none of the five largest emerging markets is located in those regions. Secondly, many countries in the Middle East are classified as high income or developed, meanwhile they have very weak institutional environments and characteristics that are typical for developing countries. Thirdly, senior entrepreneurship in those regions differs from the rest of the world. In some Arab countries, age appears to be not a negative but positive factor for entrepreneurship. For example, in Qatar senior entrepreneurs are more active than any other age group.

Qualitative data

It is hard to find a large number of senior entrepreneurs, experts on senior entrepreneurship or entrepreneurship in developing countries that are willing to be interviewed. It was impossible to develop a systematic way of finding and getting in touch with senior entrepreneurs across different countries. Therefore, all authors of articles on entrepreneurship in developing countries or senior entrepreneurship from the reference list of this study with publicly available contact details and the local representatives of the Global Entrepreneurship Monitor indicated on the website of the organization were invited. In the case of Brazil, there were no such people and I invited one of the best scholars on Entrepreneurship in Brazil, who I knew personally. The total number of people contacted was 46, 13 of which answered and in the end, only five of them participated in an interview. It must be noted that, the choice of scholars rather than real senior entrepreneurs might generate some biases. Firstly, academics might live in a “bubble”, interacting mostly with people from a certain class rather the whole spectrum of the society and have an inaccurate view of senior entrepreneurship. Secondly, their perspective might be influenced by the theoretical knowledge they have and their research work. Lastly, the fact that prestigious institutions employ them might prevent them from sharing controversial or sensitive information.

3.3 Data analysis

3.3.1 Quantitative

The data from the Global Entrepreneurship monitor was analyzed using correlational research. Correlational research is a quantitative type of research that measures the type and strength of a

relationship between two variables (Privitera, 2016). In this study, the variables are Total Entrepreneurial Activity of the 55-64 age group and multiple factors that could influence the level of senior entrepreneurship.

The median rate of senior entrepreneurship of the countries included in the data set (Appendix 11) is 6.0%, meanwhile the rate in developed economies is 5% and the median rate in the developing countries is 9.45% (GEM, 2020/19/18/17/16). This suggests that senior entrepreneurship is more prevalent in in developing countries. A high level of senior entrepreneurship can result from both strong push (excessive poverty) or pull factors (high wealth). Nineteen possible determinants of senior entrepreneurship were identified in the literature review and their correlation with TEA of the 55-64 years age group was tested. One additional attitude indicator from the Global Entrepreneurship Monitor was included as well.

Table 3: Possible determinants of senior entrepreneurship

Factor at a country level	Source for second variable	Correlation coefficient
1. Business volatility	GEM	0,44*
2. HDI	UN	-0,22
3. Median age	UN	-0,55
4. Entrepreneurial spirit	GEM	0,73
5. Health	Worldbank	-0,33
6. Government benefits	OECD	-0,62
7. Education attainment	UN	-0,2
8. Opportunity cost of time	OECD	-0,23
9. Insufficient information on how to start a business	GEM	0

10. Ageism	Population Protection	0,27
11. Availability of information and resources	OECD	-0,03
12. Regulations	World Bank	-0,21
13. Social environment	GEM	0,32
14. Communist membership	-	Not applicable to most countries
15. Rural origin	UN	0,04
16. Buddhist culture	-	Not applicable to most countries
17. Entrepreneurs in family	GEM	0,33
18. Risk aversion	Hofstede Insights	0,07
19. Status in society	-	No data
20. Belief in own skills	GEM	0,62

*based on GEM data from 2015/16/17/18/19/20

According to Cohen (1988), a correlation coefficient above 0.5 suggests a strong correlation between two variables. Only four of the tested variables showed a significant correlation with Total early-stage Entrepreneurial activity of the 55-64 years age group in all countries and passed this threshold.

Table 4: Key factors for senior entrepreneurship (correlation matrix)

TEA 55-64 years	Entrepreneurial intentions	Skills	Median age	Pension spending
All countries	0,73	0,62	-0,55	-0,62
Developing	0,73	0,65	-0,53	-
Developed	0,62	0,48	-0,44	-0,61

Sources: GEM, Worldbank, CIA

Table 5: Summary of the regression coefficients

VARIABLE (developing countries)	R	R SQUARE	F
Entrepreneurial intentions	0,7337	0,5383	86,2639
Skills	0,6533	0,4268	55,0985
Median age	0,5251	0,2758	10,2828

Entrepreneurial intentions is the variable that has the highest correlation with TEA across all countries. This variable measures the percentage of people within a specific country that expect to start a new business in the next three years (GEM, 2020). The correlation between TEA and intentions in developing countries is 0.73 and the adjusted R square is 0,532 (Appendix 8), which indicates a strong positive linear relationship. Countries with high level of entrepreneurial intentions also have a higher level of senior entrepreneurship and vice-versa. Out of the five biggest emerging markets, Brazil has the highest percentage of senior entrepreneurs among adult population and highest entrepreneurial intention among the five emerging markets. Russia has the lowest proportion of senior entrepreneurs and lowest entrepreneurial intention. Those observations are in line with the correlation coefficient. Skills is the second factor, which is positively correlated with entrepreneurial activity of the 55-64 age group. It shows the portion of people that believe that they have the required knowledge and skills to start a business. The correlation coefficient of the skills factor in developing countries is 0.65 with adjusted R square of 0,419 (Appendix 9). This suggest that there is a moderate to strong positive relationship between the variables. Brazilians have the highest confidence in their capabilities and highest percentage of senior entrepreneurship, while Russians have the lowest confidence and level of senior entrepreneurship. This is again in line with the correlation coefficient. The third variable median age is negatively correlated with the TEA of the 55-64 age group and has a correlation coefficient of -0,53 in developing countries. This means that there is a moderate negative correlation between the median age in a country and senior entrepreneurship. Finally, there is one variable that has a correlation coefficient above 0.5 in all countries but unknown in developing countries and one variable that appears to have a weak correlation that does not pass the 0.5 threshold. The variable pension spending, which indicates the

percentage of GDP that a country spends on pensions and social benefits is moderately correlated with senior entrepreneurship on a global level. However, there data available only for a few countries and only one of them is developing. Lastly, business exits which measures the amount of people who have exited a business in the last 12 months (GEM, 2020) has a weak correlation with senior entrepreneurship and does not pass the 0.5 threshold. The correlation coefficient for all countries based on data from 2015/16, 2016/17, 2017/18, 2018/19 and 2019/20 is 0.44 and 0.41 for developing countries only. However, it should be noted that without the data for 2016/17 the value increases from 0.44 to 0.7 and from 0.41 to 0.72 (strong positive correlation, Appendix 10). There is a significant probability that the 2016/17 data is not accurate and distorts the real coefficient.

3.3.2 Qualitative

The interviews were structured and based on a neo-positivist conception (Roulston, 2010). They were conducted over the internet via Zoom or email. Three of the interviews were conducted via Zoom and lasted for approximately 30 minutes. After that, they were recorded and transcribed. The other two were received in text format by email. All interviewees were asked around 10 nearly identical questions related to senior entrepreneurship in their country. Most of the questions were open ended and neutral to minimize any bias and obtain as much information as possible. The interviewees had good knowledge of entrepreneurship in their country and were familiar with the interview method. They did not have access to the research and I did my best to avoid influencing their answers. All information from the interviews was analyzed following a deductive approach, summarized and included in the data analysis section. Deductive means reasoning from the particular to the general. If a causal relationship or link seems to be implied by a particular theory or case example, it might be true in many cases. A deductive design might test to see if this relationship or link did obtain on more general circumstances (Gulati, 2019). All ethical principles were respected throughout the interview process. The interviewees participated voluntarily and gave their consent. Moreover, no sensitive information or identifies have been revealed.

	LOCATION	CHANNEL	SEX	Qualification	Date
INTERVIEWEE A	BRAZIL	ZOOM	MALE	PhD	26/10/20
INTERVIEWEE B	MEXICO	EMAIL	FEMALE	MBA	05/11/20

INTERVIEWEE C	INDONESIA	ZOOM	MALE	PhD	05/11/20
INTERVIEWEE D	INDIA	EMAIL	MALE	Unknown	09/11/20
INTERVIEWEE E	COLOMBIA	ZOOM	FEMALE	PhD	09/11/20

Brazil

The first interview revealed that one of the main reasons for the high level of entrepreneurship in Brazil is the cultural background of local people. A large of the population are descendants of European immigrants who moved to the Americas in search of opportunities and a better life. Another key reason is the social security system. The pension system in Brazil does not work well and most people receive low pensions that are not enough to have a normal life. Interviewee A shared that “Yes, we do have a pension system. It does not work very well. The amount is relatively low. Let’s say that 90% of people (vast majority) get 1000 BRL which is around 200 USD per month”. This forces many people to search for additional sources of income. According to Interviewee A, who is a famous Brazilian scholar, the percentage of seniors that start a business to survive is significantly higher than the percentage of those driven by opportunity. Companies in Brazil avoid hiring old people because they tend to be less flexible and more costly. Older people have more expensive lifestyles and families to sustain, which makes them less attractive employees. It is more difficult for individuals older than 45 years old to find a job and they tend to be the first ones to be fired when businesses face difficulties. Those elderly people need to continue paying their bills and are often forced to become entrepreneurs. Most of them operate small shops, work as street vendors or provide services to local communities. The social class might also be an important factor for senior entrepreneurial activity. The portion of necessity relative to opportunity entrepreneurs is likely to be higher for people in lower social classes. In terms of skills, the interviewee expects senior entrepreneurs to have better social skills but to lack some technological skills such as sending emails and building systems. Finally, older people have less energy, resilience and expected faster returns compared to younger individuals.

Mexico

The second interviewee shared that the low level of entrepreneurship in Mexico is mainly a result of three problems. The first problem is the inefficient financial market, which makes it difficult for

people to get financial support to start a business. The second issue is that older people do not have the necessary knowledge and ability to manage a business. However, nowadays the education system includes more trainings on the subject and promotes entrepreneurial attitudes. Therefore, the problem might become less relevant in the future. In addition to that, the culture encourages people to have jobs rather than take risks and become entrepreneurs. The majority of seniors do not receive social benefits because they have worked in the informal market and earn just enough money to survive. Therefore, they cannot identify business opportunities in the market and do not have inspirations to increase their income. Instead, seniors generally rely on their children to support them in the last period of their life. Some firms in Mexico require employees to be under 40 years old and for seniors it is difficult to find a job. Younger people have more and better job opportunities since they have better education, use new technologies and are willing to change. According to the expert, most of the senior entrepreneurs operate in the services sector. They tend to engage in “a very small type of retail commerce (what is call in Mexico: “la tiendita de la esquina”, the little store around the corner). Finally, the interviewee believes seniors have more experience and wisdom but suffer from additional barriers such as health issues, discrimination and low technological knowledge.

Indonesia

According to the expert interviewed, senior entrepreneurs in Indonesia are generally people who have worked for the government and retired or low to middle level employees who have completed their employment contract and decided to setup a business within the same field with a friend or relative. Most commonly, seniors open a business in the food industry, a small shop in their local area or a trading business (buying products from another area at a lower price and reselling them). The majority of Indonesians do not receive a pension with the exception of government employees. It is more difficult for seniors to find a job and the probability decreases the lower level of education they have. That is why seniors rely on support from their family. Seniors tend to have more experience but are usually more careful and afraid of taking risks. The biggest barriers for senior entrepreneurs are lack of capital, insufficient technological skills and lack of customer acquisition capabilities. According to Interviewee C, “seniors usually rely on their sons or daughters to help them in adopting technologies and sell online, especially given that at the moment online shopping is very popular in Indonesia.

India

Interviewee D believes that entrepreneurship is very common in India because of the large and young population, the lower level of education, high level of ambition, low level of industrial development and people's aspirations for better lives. He also thinks that the high level of senior entrepreneurship in the country is mainly due to the fact that Indians have a wide range of passions that feed into new ideas and innovations. Those passions are often of high interest to big communities and many seniors convert their passions into creative income-generating projects. Another important factor that he mentions is the social security system in India, which way behind other countries. In his words: "I strongly, believe that compared to our westerns counterparts the social security in India is way behind". According to the interviewee, seniors have more experience and knowledge since "the more you screw up in your life, the more you learn". The biggest challenge for senior entrepreneurs in India appears to be balancing between having a vision and execution. It seems that some seniors have good ideas but have difficulties bring them into reality.

Colombia

The interviewee thinks that the main reason for the high level of entrepreneurial activity in Colombia is the historically high unemployment rate. The average unemployment rate in the last 20 years has been around 12% and it has increased to around 17% due to the COVID- 19 pandemic. This situation forces many people to look for other sources of income and become entrepreneurs. When it comes to senior entrepreneurship, there are some additional factors like demographics. The life expectancy of Colombians has increased dramatically and people are staying active longer. Interviewee E shared that "the demographics are changing. We used to have a life expectancy of 50-55 years in the 50s. Now the life expectation is around 75-76. People in Colombia are staying active longer". Another factor is that companies in Colombia start pushing out employees once they reach the age of 40-50 years. Firms prefer younger people because they are less expensive and have knowledge in new fields. The senior employees who lose their job have a low probability of finding a new job. Most of those people are still in good condition and need a source of income, which pushes them to entrepreneurship. There are also people who retire around 60 years but receive a pension that is not enough to keep their living standard and consider entrepreneurship as an option to increase their income. A small percentage of seniors do not have financial problems but want to continue doing something productive. They do not want to be employees and want to

have some freedom, so they become entrepreneurs. The biggest barrier for seniors who want to become entrepreneurs is their mindset. Most of them have been employees for around 30 years and have employee mentality. They believe that having a lot of experience is enough to develop a new enterprise and often make mistakes. Moreover, seniors face difficulties with obtaining funding from financial institutions due to their age or medical condition. Another obstacle is that their expertise tends to be very narrow and related to a specific industry. That is why seniors usually try to start businesses related to their previous experience. Most of the seniors start businesses in traditional industries or consulting but the type of business vary depending on the social class. People from lower classes tend to operate very basic activities such as production of doors or windows while the ones from higher classes often provide coaching services or assistance to corporates. According to the respondent, seniors are better able to handle people, markets, finance, managerial issues than their younger peers but lack entrepreneurial perspective and technical skills. The expert strongly believes that there is a strong need for more procedures and educational programs that teach entrepreneurial behavior to seniors, especially given that the share of seniors will continue to grow in the next years. On a different note, similarly to other developing countries many people in Colombia create companies for tax, legal, control or other purposes, which might affect the accuracy of the data on entrepreneurial activity.

3.4 Results

The correlational analysis showed that three variables have moderate to high correlation with senior entrepreneurship in developing countries. Entrepreneurial intentions is the factor with highest correlation, which is in line with the findings of Saiz-Alvarez & Martinez (2019) that entrepreneurial spirit influences senior entrepreneurship. If a higher percentage of the population intends to start a business, more people will eventually follow through. The interviews revealed that seniors in developing countries have high entrepreneurial intentions due to several socio-economic factors. Firstly, their countries have weak or non-existent social security and retirement systems, which forces people to look for other sources of income and become entrepreneurs. In his study, Ramesh (2020) suggests that necessity entrepreneurship is more common in developing countries due to lack of employment opportunities and other sources of income. Zavyalova, Starikova & Chubaeva, 2020 also find that the main motivation of grey entrepreneurs in Russia is financial. In addition to that, people in some developing countries such as Brazil appear to have a higher risk appetite because of their culture and history of immigration in search of fortunes. Skills is the second factor that has a moderate to high correlation with senior entrepreneurship. Eroglu, Greidanus and St-Jean (2016) concluded that skills increase the likelihood of a person to start a new business, thus supporting a causal relationship between skills and the level of senior entrepreneurial activity. All interviews stated that in general seniors lack technological skills. In some countries such as Indonesia, seniors do not have sufficient commercial skills and find it difficult to acquire customers, while in other such as Mexico seniors do not have enough knowledge on how to manage a business or lack an entrepreneurial mindset. Finally, the median age of a country's population is negatively correlated with the level of senior entrepreneurship. This is consistent with the research of Saiz-Alvarez & Martinez (2019) who found that a higher average age at a country level decreases the level of senior entrepreneurial activity. The median age in developing countries is significantly lower compared with the developed ones (32 versus 42.5 years). According to all interviewees, it is very difficult for seniors to find a job in their countries, given the competitive local labour markets and abundance of young employees. Most likely, it is much easier for seniors in developed countries to find a job, since the median age there is much higher and there are fewer young employees. In many developing countries like Indonesia, this issue is even more aggravated by the fact that on average seniors have a lower level of education. There is insufficient data on the public expenditure on pensions in developing countries but the

information from the interviews suggests that the public expenditure on pension has a negative effect on senior entrepreneurship rate. The finding of Kim (2017) that poverty rate of seniors is positively linked to senior entrepreneurship rate appears to be valid for developing countries. The theory of Saiz-Alvarez & Martinez (2019) that business volatility leads to higher level of senior entrepreneurship was not confirmed based on all GEM data from 2016 to 2020 but there is a significant chance that the GEM data for 2016/17 is not accurate given that the data for the other years has a two times higher correlation coefficient. The interviews also revealed that necessity driven entrepreneurship is very common in developing countries and a large part of entrepreneurs engage in low risk and value added endeavours with little investment. These observations are confirmed by the data from the Global Entrepreneurship Monitor. The average rate of necessity driven entrepreneurship in developed countries is 24,7% compared with 35,9% in developing countries and the percentage of entrepreneurs who expect to hire less than five people in the next years in developing countries is more than 50% higher compared to developed countries.

4 Conclusion

Senior entrepreneurship is a particularly important phenomenon for developing countries in the context of an aging population and increasing life expectancy that will continue to gain prominence. Currently, developing countries have much younger populations than developed countries but their age structure is also starting to change. Most of the factors identified in the existing literature do not have a strong correlation (correlation coefficients below 0.5) with the Total early-stage Entrepreneurial Activity of the 55-64 years old group, which is somewhat disappointing but not unusual given the current replication crisis in the field of social sciences. Two of the factors identified as having an explanatory capacity by Saiz-Alvarez, J. & Coduras-Martínez, A. (2019) in their paper – Entrepreneurial spirit (positive) and Average age (negative) were confirmed by the data in this study. One factor suggested by Saiz-Alvarez, J. & Coduras-Martínez, A. (2019) - business volatility was neither confirmed nor rejected, given that it showed a weak to moderate correlation in the complete data set but a strong correlation in 80% of the data. An additional positively correlated factor – belief in own skills, which did not appear previously in the literature was discovered as well. There is some evidence from the literature review and the interviews that social class might be an important factor for senior entrepreneurial activity in developing countries such as India, China, Brazil, Colombia and the type of business that seniors operate but there is need for more data and research. The data from the Global Entrepreneurship Monitor revealed that entrepreneurial intentions, which measures the interest of people within a country to start a business, is the most important factor for senior entrepreneurship activity. The existing literature and interviews with local experts revealed that senior entrepreneurial intentions is a story of two sides. There are significant differences in terms of the predominant driver across countries and regions. On one side, there are seniors like Yujing Yang from China who can retire or find a job but instead prefer to become entrepreneurs due to their desire to have more freedom, give back to society or simply remain busy. On the other side, there are necessity driven individuals like Carmen Lucia Pereira from Brazil who become entrepreneurs because they need an additional source of income or cannot find a job. Eventually, both drivers influence the level of entrepreneurial intentions and level of senior entrepreneurship in developing countries. Entrepreneurial intentions in emerging markets are significantly higher because of more competitive labor markets, weaker pension systems and cultural differences. Companies in developing markets prefer hiring young employees and push out the older ones because youngsters are more flexible, have better skills in

new fields and are less expensive. Seniors in developing countries tend to start traditional (not technology related) businesses in the field where they have most experience and skills. The belief in own skills is also positively correlated with senior entrepreneurship in developing countries. This is also confirmed by the case of the Uruguayan entrepreneurs from GEM. According to several local experts, the biggest barriers that prevent seniors from creating new businesses are lack of technological skills and entrepreneurial mindset. Older people also find it hard to identify business opportunities and acquire customers. Seniors and young people have different types of skills, strengths, weaknesses and they can benefit a lot from working together. Younger people have better technological skills, stronger motivation and good understanding of the needs of the new generation while seniors have a wealth of experience, large networks and social skills. The two groups can complement each other. As demonstrated by the stories of the Malaysian and Brazilian senior entrepreneurs from GEM and the interviews, seniors find it extremely difficult to obtain capital due to perception of high risk for institution given their worse health condition or lack of collateral. There is insufficient support for senior entrepreneurs in developing countries and urgent need for governments to develop programs that help seniors. Special assistance programs for seniors can boost economic activity and reduce the burden of old people on government finances. Those programs should aim to improve the technological skills of seniors, teach them entrepreneurial behavior and incentivize financial institutions or investors to provide them funding. Finally, the rate of senior entrepreneurship in developing countries is likely to decrease in the future given that the median age in those countries is increasing as well and the age of nation is negatively correlated with total entrepreneurial activity of people in the 55-64 age group.

5 Limitations

The first limitation of this study is that it tries to generalize and explain a phenomenon across 100 non-homogeneous countries. The second limitation of the interview is that all of the interviewees are academics and not real senior entrepreneurs. It is possible that their opinions and expectations differ from the ones of real senior entrepreneurs. The COVID-19 pandemic made it impossible to find and interview real senior entrepreneurs. Seniors tend to be less active on the internet and many do not use online communication channels such as Zoom, Skype or email. Another limitation is that the research relies heavily on correlational analysis but correlation does not imply causation. This problem is addressed by incorporating a second source of data to provide more evidence on the type of relationship.

6 Further research

One possible area for future research is the impact that age has on the skills of individuals and the likelihood of success. Are people aged 55 years better at building companies than those aged 64 years? Does the success rate change with age? Does the average firm size differ depending on the age? Another area that is not covered extensively in the existing literature is the impact of social class on senior entrepreneurship. It would be also interesting to check what is the impact of entrepreneurship on the health and wellbeing of seniors. Are senior entrepreneurs happier compared to employed and unemployed seniors? Are they in a better physical and mental condition?

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Appendices

Appendix 1 - Top 50 startups in Brazil in 2019

Company	Rounds	Total funding, mn USD	City	Sector	Market
Nubank	9	707,6	Sao Paulo	Financial	Domestic
iFood	7	591,9	Campinas	Food Delivery	LATAM
99	5	241,3	Sao Paulo	Car Sharing	Domestic
Netshoes	2	215	Sao Paulo	E-commerce	LATAM
Loggi	6	134	Sao Paulo	Delivery	Domestic
Estapar	2	125	Sao Paulo	Parking	Domestic
Sao Pauloring Global	9	103,8	Sao Paulo	Field force operations optimization	International
Uniassevi	2	100	Bluminau	Education	Domestic
Dr. Consulta	5	91,9	Sao Paulo	Healthcare	Domestic
Creditas	7	88	Sao Paulo	Financial	Domestic
Quinto Andar	5	85,3	Sao Paulo	Real Estate	Domestic
Yellow	3	75,3	Sao Paulo	Bike Sharing	LATAM
VivaReal	6	74,8	Sao Paulo	Real Estate	Domestic
Hortifruti	2	70,4	Sao Paulo	Retail	Domestic
GuiaBolso	5	66	Sao Paulo	Financial	Domestic
TrocaFone	7	51,6	Sao Paulo	E-commerce	Domestic + Argentina
Neoway	3	45	Florianopolis	Marketing	USA
Beleza na Web	3	45	Sao Paulo	E-commerce	Domestic
ContaAzul	5	37	Florianopolis	Financial	Domestic
Infracommerce	10	30,3	Sao Paulo	E-commerce	International
Zenvia	1	28,25	Porto Alegre	Marketing	Domestic
RD Station	1	26,2	Florianopolis	Marketing	International
Neon	3	25,5	Sao Paulo	Financial	Domestic
Baby.com.br	2	21,1		E-commerce	Domestic
Ambar Technologies	2	20	Sao Paulo	Real Estate	International
Pitzi	3	19,5	Sao Paulo	Financial	Domestic
ViajaNet	3	19	Sao Paulo	Travel	Domestic
Oppa	3	18,9	Sao Paulo	E-commerce	Domestic
Avante	3	18,8	Sao Paulo	Financial	Domestic
Elo7	3	18	Sao Paulo	E-commerce	LATAM
GetNinjas	5	16,8	Sao Paulo	Service on Demand	Domestic
Affero Lab	2	15,35	Rio de Janeiro	Education	Domestic
Passei Direto	4	13,9	Rio de Janeiro	Education	Domestic

iMusica	3	12	Rio de Janeiro	Digital Content	International
MadeiraMadeira	5	11,5	Curitiba	E-commerce	Domestic
Mandaê	4	11,3	Sao Paulo	Logistics	Domestic
Geofusion	4	10,65	Sao Paulo	Marketing	Domestic
EduK	2	10	Sao Paulo	Education	Domestic
REBEL	4	36,6	Sao Paulo	Financial	Domestic
Contabilizei	5	9,5	Sao Paulo	Financial	Domestic
Olist	5	8,8	Curitiba	E-commerce	Domestic
Enalta	2	8	Sao Carlos	Marketing	Domestic
Bom Pra Crédito	2	8	Sao Paulo	Financial	Domestic
Liv Up	2	7,5	Sao Paulo	Food	Domestic
Geekie	1	7	Sao Paulo	Education	Domestic
Nibo	4	6,6	Rio de Janeiro	Financial	Domestic
Buscape	2	6,5	Sao Paulo	Comparison platform	LATAM
Magnetis	2	6,4	Sao Paulo	Financial	Domestic
Contech	1	6,3	Sao Paulo	Paper	Domestic
Omiexperience	3	6,2	Sao Paulo	Management	Domestic
Average	3,78	68,3			
Median	3	20,6			

Appendix 2 - Location of top 50 startups in Brazil in 2019

City	Number	Share
Sao Paulo	36	72%
Rio de Janeiro	4	8%
Florianopolis	3	6%
Curitiba	2	4%
Bluminau	1	2%
Porto Alegre	1	2%
Campina	1	2%
Sao Carlos	1	2%

Appendix 3 - Sectors of top 50 startups in Brazil in 2019

Sector	Number	Share
Financial	12	24%
E-commerce	9	18%
Marketing	5	10%
Education	5	10%

Delivery	3	6%
Real Estate	3	6%
Sharing	2	4%
Retail	1	2%
Food	1	2%
Travel	1	2%
Paper	1	2%
Digital Content	1	2%
Service on demand	1	2%
Comparison	1	2%
Management	1	2%
Healthcare	1	2%
Parking	1	2%
Field force operations optimization	1	2%

Appendix 4 - Top 50 startups in Mexico in 2019

Company	Rounds	Total funding, mn USD	City	Sector	Market
Konfio	7	102,8	Mexico City	Financial	Domestic
Grin Scooters	4	72,7	Mexico City	Scooter Sharing	Domestic
Clip	10	42,3	Mexico City	Financial	Domestic
Kueski	5	38,3	Jalisco	Financial	Domestic
Cornershop	4	31,7	Mexico City	Delivery	Domestic
Farmacias Personalizadas	2	22	Monterrey	E-commerce	Domestic
GAIA	3	17,9	Mexico City	E-commerce	Domestic
Lumbrera	3	15,1	Mexico City	Financial	Domestic
Kubo.financiero	5	11,3	Mexico City	Financial	Domestic
eFactor	1	10	Garcia	Financial	Latin America
Airtm	4	9,7	Mexico City	Financial	International
Conekta	6	8,7	Mexico City	Financial	Domestic, International Clients
Sr.Pago	4	8,2	Mexico City	Financial	Domestic
Médica Santa Carmen	3	8,2	Queretaro	Healthcare	Domestic
UnDosTres	4	8,2	Mexico City	Financial	Domestic
Gaudena	5	8,1	Mexico City	E-commerce	Domestic
Trendier	4	8	Mexico City	E-commerce	Domestic
Dentalia	1	6,8	Mexico City	Healthcare	Domestic
Enlight Mexico	2	5,6	Mexico City	Solar energy	Domestic
Kinedu	3	4,9	Monterrey	Education	International
Barared	1	3,1	Cuauhtémoc	Financial	Domestic
Carrot	4	2,95	Mexico City	Car sharing	Domestic

Visor ADL	5	2,8	Mexico City	Financial	Domestic
Nubity	5	2,7	Mexico City	Cloud	International
Pig.gi	3	2,4	Mexico City	Marketing	Domestic
Rocket.La	6	2,3	Mexico City	Financial	Domestic
Urbvan	4	2,2	Mexico City	Ride sharing	Domestic
Tu Canton	5	2,1	Mexico City	Real Estate	Domestic
Petsy	4	2	Mexico City	E-commerce	Domestic
Diverza	1	2	Monterrey	Accounting	Domestic
Fitwel	1	2	Mexico City	Wellness	Domestic
VoxFeed	2	1,8	Guadalajara	Digital Content	Domestic
Apli	2	1,5	Mexico City	HR	Domestic
KarmaPulse	1	1,5	Mexico City	Data	International
100 Ladrillos	1	1,4	Guadalajara	Real Estate	Domestic
Nexu	2	1,4	Mexico City	Financial	Domestic
TiZKKA	4	1,4	Mexico City	Fashion	International
Cuídate	4	1,4	Mexico City	Healthcare	Domestic
InstaFit	9	1,2	Cuauhtémoc	Wellness	Domestic
yotepresto	3	1,2	Guadalajara	Financial	Domestic
Bebitos	2	1,2	Mexico City	E-commerce	Domestic
Unima	3	1,1	Zapopan	Healthcare	International
Salud Fácil	4	1	Mexico City	Healthcare	Domestic
Voy al Doc	2	1	Mexico City	Healthcare	Domestic
Aliada	3	0,95	Mexico City	Domestic Service	Domestic
Prestadero	2	0,91	Mexico City	Financial	Domestic
Bind ERP	2	0,9	Monterrey	Marketing	Domestic
Inventive Power	3	0,7	Zapopan	Solar energy	Domestic
Mifiel	3	0,5	Guadalajara	Financial	Domestic
Prixz	1	0,5	Mexico City	Delivery	Domestic
Average	3,44	9,77			
Median	3	2,35			

Appendix 5

Location of top 50 Mexican startups in 2019

City	Number	Share
Mexico City	35	70%
Monterrey	4	8%
Guadalajara	4	8%
Cuauhtémoc	2	4%
Zapopan	2	4%
Garcia	1	2%
Jalisco	1	2%
Queretaro	1	2%

Appendix 6

Sectors of top 50 Mexican startups in 2019

Sector	Number	Share
Financial	18	36%
E-commerce	6	12%
Healthcare	6	12%
Solar energy	2	4%
Real Estate	2	4%
Ride Sharing	3	6%
Delivery	2	4%
Wellness	2	4%
Marketing	2	4%
HR	1	2%
Data	1	2%
Fashion	1	2%
Digital Content	1	2%
Education	1	2%
Domestic Service	1	2%
Cloud	1	2%

Appendix 7

Anjos do Brasil	www.anjosdobrasil.net
Gavea Angels	www.gaveaangels.org.br
GV Angels	www.gvangel.com.br
Poli Angels	www.poliangels.com.br
HBS Angles	www.hbsangels.com.br
LAAS	www.laasoc.com

Appendix 8

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,73
R Square	0,5383
Adjusted R Square	0,5320
Standard Error	4,4931
Observations	76

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	1741,4708	1741,4708	86,2639	0,0000
Residual	74	1493,8908	20,1877		
Total	75	3235,3617			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95,0%</i>	<i>Upper 95,0%</i>
Intercept	1,4381	1,0776	1,3345	0,1861	-0,7091	3,5854	-0,7091	3,5854
X Variable 1	0,3400	0,0366	9,2878	0,0000	0,2671	0,4129	0,2671	0,4129

Appendix 9

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,6533
R Square	0,4268
Adjusted R Square	0,4190
Standard Error	5,0061
Observations	76,0000

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1,0000	1380,8334	1380,8334	55,0985	0,0000
Residual	74,0000	1854,5282	25,0612		
Total	75,0000	3235,3617			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95,0%</i>	<i>Upper 95,0%</i>
Intercept	-5,1322	2,1476	-2,3898	0,0194	-9,4113	-0,8531	-9,4113	-0,8531
X Variable 1	0,2800	0,0377	7,4228	0,0000	0,2049	0,3552	0,2049	0,3552

Appendix 10

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0,6463							
R Square	0,4177							
Adjusted R Square	0,4072							
Standard Error	4,9147							
Observations	57,0000							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	1,0000	953,1564	953,1564	39,4609	0,0000			
Residual	55,0000	1328,4963	24,1545					
Total	56,0000	2281,6526						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95,0%	Upper 95,0%
Intercept	-5,1032	2,5273	-2,0193	0,0483	-10,1679	-0,0384	-10,1679	-0,0384
X Variable 1	0,2793	0,0445	6,2818	0,0000	0,1902	0,3684	0,1902	0,3684

Appendix 11

Year	Country	TEA 55-64 years	Entrepreneurial Intentions	Exited a business	Have the skills	Average Age	Developed	Developing	Pension spending	Necessity driven
2018-2019	Angola							Yes		38,8
	Argentina	5,1	14,8	3,9	48,8	33		Yes		27,9
	Austria	3,5	11,8	5	48,3		Yes		13,3	15,90
	Brazil	9,7	26,1	4,3	54,3	34		Yes		37,5
	Bulgaria	2,4	3,9	1,8	36,9			Yes		28,6
	Canada	9,3	14,5	8,6	55,9	41	Yes		4,7	13,7
	Chile	19,6	48,7	7,1	62,5	35	Yes		2,8	23,6
	China	5,1	15,3	2,5	24,2	38		Yes		27,8
	Colombia	13,9	48,8	4,7	66,4	31		Yes		12,2
	Croatia	2,3	18,6	3,4	52,3		Yes			32,3
	Cyprus	3,7	15,3	2,3	45,9		Yes			11,5
	Egypt							Yes		47,6
	France	4	18,6	2,9	37,5	42	Yes		13,9	22,3
	Germany	2,4	5,9	1,6	38,3	46	Yes		10,1	16,7
	Greece	5,4	7,5	3,4	46,4		Yes		16,9	15,6
	Guatemala	14,7	49,7	7,4	65,2	23		Yes		37,7
	India	6,9	20,6	4,9	52,2	28		Yes		46,3
	Indonesia	10	21,2	1,4	64	30		Yes		25,2
	Iran							Yes		36,4
	Ireland	7,6	15,4	3,8	45,6	38	Yes		3,6	19,5
	Israel						Yes		4,8	16,4
	Italy	2,1	9	1,6	29,8	47	Yes		16,2	11,4
	Japan	2,6	5	1,8	10,1	48	Yes		9,4	20,2
	Lebanon							Yes		36,1
	Luxembourg	6,5	14,7	3,7	43,9		Yes		8,4	12
	Madagascar	13,7	32,6	4,3	51,5			Yes		31,3
	Morocco							Yes		31,2
	Netherlands	6,6	7,7	2,5	46,1		Yes		5,4	8,9
	Panama	8,4	18,9	3,4	42,1		Yes			13
	Peru	18,6	39,7	7,6	71,8	31		Yes		23,1
	Poland	2,2	9,5	2,4	46,6		Yes			8,4
	Puerto Rico	4,6	22,9	3,1	47,5	45	Yes			22,9
	Qatar						Yes			16,5
	Korea	14,5	31	2,5	49,7	44	Yes		3	21
	Russia	2	2,2	1,6	27,5	40		Yes		39,8
	Saudi Arabia						Yes			29,9
	Slovakia	4,9	13,7	3,6	53,3		Yes		7,3	27
	Slovenia	2,8	15,3	2,4	51		Yes		11,1	24,2
	Spain	4,7	6,2	1,7	48,5	45	Yes		11	22,6
	Sudan							Yes		27,9
	Sweden	4,2	9,6	3,7	38,4		Yes		7,2	9,3
	Switzerland	4,2	6,9	2	36,3		Yes		6,5	7,4
	Taiwan	3,3	24,1	5,4	28,2		Yes			24,5
	Thailand	17,4	31,5	8,1	51			Yes		17,9
	Turkey							Yes		16,3
	United Arab Emirates						Yes			20,6
	United Kingdom	6,2	7,2	2,7	46,6	41	Yes		6,2	12,9
	United States	10,4	12,2	4,7	55,6	38	Yes		7	8,1
	Uruguay	4,5	24,2	6,6	59		Yes			29,4

2 0 1 7 - 2 0 1 8	Australia	9,3	13,2	3,8	49,3	Yes		4,18	16,8
	China	6,8	15,3	2,8	27,2		Yes		32,4
	India	9,1	10,3	3,2	42,1		Yes		38,6
	Indonesia	5	28,1	4,8	57,3		Yes		24,8
	Iran						Yes		29,9
	Israel					Yes		4,8	16,4
	Japan	4,2	3,7	1,5	10,8	Yes		9,4	15,6
	Kazakhstan	9,3	46,2	7,5	64,7		Yes		17,8
	Korea	14,2	2,8	2,7	45,7	Yes		3	22
	Lebanon						Yes		38
	Malaysia	9,5	17,6	8,3	46,1		Yes		7
	Qatar					Yes			12
	Saudi Arabia					Yes			32,5
	Taiwan	3,4	25,7	4	25,9	Yes			15,4
	Thailand	15,6	37,4	9,2	48,9		Yes		8,8
	United Arab Emirates					Yes			16,5
	Vietnam	15,3	25	4,2	53		Yes		15,9
	Argentina	3,5	13,4	3	43,1		Yes		21,4
	Brazil	10,3	15,3	5,3	55,9		Yes		39,9
	Chile	17,1	45,8	7,1	61,8	Yes		2,8	25,7
	Colombia	11,9	52,5	6,5	68,5		Yes		20,1
	Ecuador	23	48,2	8,8	74,1		Yes		42,3
	Guatemala	13,4	46,5	6	64,5		Yes		32,1
	Mexico	8	13,2	3,5	50,1		Yes	2,3	25,5
	Panama	12,5	20,8	2,7	57,6	Yes			19,8
	Peru	16,7	43,2	6,2	67,6		Yes		16,7
	Puerto Rico	4,7	18,3	2,7	46,7	Yes			31,7
	Uruguay	7	27,4	5	57,5	Yes			21,5
	Bosnia	1,5	4,6	1,3	35,5		Yes		28,3
	Bulgaria	2,5	5	1,3	38,4		Yes		26,9
	Croatia	3,4	17,5	4	50,8	Yes			34,7
	Cyprus	3,5	16,7	4,3	46,4	Yes			28,9
	Estonia	8,7	18,1	4,4	49,7	Yes		7	18,6
	France	4	17,6	3,3	36,3	Yes		13,9	20,6
	Germany	3,4	7,2	1,6	37,5	Yes		10,1	11,1
	Greece	1,7	7,1	5,1	43,4	Yes		16,9	20,2
	Ireland	7,7	11,9	3,3	42,2	Yes		3,6	20,9
	Italy	1,8	10,3	2,1	30,4	Yes		16,2	14
	Latvia	2,6	17,3	4,2	49	Yes		7	22,7
	Luxembourg	4,9	11	3,2	40,9	Yes		8,4	13,6
	Netherlands	5,4	8,1	3,1	44,6	Yes		5,4	7,2
	Poland	2,5	9,7	2,8	52,4	Yes			9
	Slovakia	13,1	9	4,2	48,5	Yes		7,3	34,8
	Slovenia	2,3	14,2	2,3	53,3	Yes		11,1	19,6
	Spain	3	5,6	1,9	44,8	Yes		11	28,3
	Sweden	4,5	8,1	2,5	34,5	Yes		7,2	7,5
	Switzerland	5	10,5	1,1	42,1	Yes		6,5	13,9
	United Kingdom	5	7,3	2,6	48,2	Yes		6,2	13,6
	Canada	8,1	14,1	6,9	55,6	Yes		4,7	17,1
	United States	7,6	14,5	4	54,3	Yes		7	10,6

2 0 1 6 - 2 0 1 7	Australia	11,5	12,3	4,4	52,3		Yes			16,5
	China	5,7	21,3	6,4	29,8			Yes		26,7
	Georgia	5,9	12,8	11,1	41,6			Yes		51,1
	Hong Kong	5,4	16,3	5	32,4		Yes			17
	India	9,4	14,9	26,4	44			Yes		35
	Indonesia	11,3	23,2	2,9	55,1			Yes		14,5
	Iran							Yes		33,9
	Israel						Yes		4,8	15,2
	Jordan							Yes		26,4
	Kazakhstan	6,8	16,8	3,4	50			Yes		25,4
	Korea	7,6	27,5	8,2	45,1		Yes		3	23,9
	Lebanon							Yes		39,4
	Malaysia	0,7	4,9	14,6	28,3			Yes		16,1
	Qatar						Yes			10,5
	Saudi Arabia						Yes			7,5
	Taiwan	4,1	25,8	10,9	25,2		Yes			22,3
	Thailand	11,6	22,6	6,9	43,5			Yes		19,5
	Turkey							Yes		17,6
	United Arab Emirates						Yes			29,2
	Argentina	7,9	28	10	61,2			Yes		31
	Belize	22,2	42,9	18,8	84,6			Yes		8,3
	Brazil	15	27,7	5,6	53,6			Yes		42,4
	Chile	16,9	44,7	10,1	61,2		Yes		2,8	22,7
	Colombia	18,1	49,6	8,9	67,9			Yes		13
	Ecuador	27,1	36,7	11,8	71,3			Yes		28
	El Salvador	12,5	33,4	11,3	70,6			Yes		36,2
	Guatemala	10,6	37	6,3	61,6			Yes		38,4
	Jamaica	5,5	37,9	9	83,5			Yes		44,7
	Panama	9,3	9,7	7,1	48		Yes			15
	Peru	17,7	43,5	8,3	69			Yes		12,8
	Puerto Rico	5,1	19,4	7,4	47,9		Yes			30,8
	Uruguay	5,6	25,5	14,6	55,6		Yes			28,2
	Austria	5	10,4	11,3	49,6		Yes		13,3	15,6
	Bulgaria	2,5	7,1	7,3	39,7			Yes		30,9
	Croatia	2,9	18,2	4,1	50,2		Yes			30,5
	Cyprus	6,6	16,7	4,7	52,4		Yes			24,2
	Estonia	4,2	16,4	8,8	43,7		Yes		7	17,7
	Finland	3,6	10,4	2,9	35,8		Yes		11,4	7,1
	France	2,4	15,7	8,5	36,3		Yes		13,9	11,1
	Germany	3,2	6,2	4,7	37,4		Yes		10,1	21,8
	Greece	3,3	8,1	2,8	41,7		Yes		16,9	34
	Hungary	2,9	15,1	3,4	38,4		Yes		9,2	20,1
	Ireland	9,7	12,9	10,1	44,9		Yes		3,6	15,6
	Italy	2,5	10,1	4,4	31,2		Yes		16,2	10,9
	Latvia	5,7	18,9	7,2	49,9		Yes		7	13,9
	Luxembourg	5,2	11,9	12,3	40,8		Yes		8,4	11,2
	Macedonia	2,2	24,9	6,4	54,5			Yes		38,9
	Netherlands	7,4	7,4	7,5	41,2		Yes		5,4	21,1
	Poland	7,4	20,8	9,8	60,2		Yes			26,6
	Portugal	4	13,3	4	42,4		Yes		13,3	20,8
	Russia	1,15	2,1	6,7	28,4			Yes		30,6
	Slovakia	10,7	8	12,2	44		Yes		7,3	40,2
	Slovenia	2	11,4	5	51,8		Yes		11,1	21,8
	Spain	3,2	5,1	4,4	46,7		Yes		11	26
	Sweden	6,5	8,4	10,2	35,5		Yes		7,2	4,5
	Switzerland	7,4	7,9	4,4	43,3		Yes		6,5	14,1
	United Kingdom	7,7	9,1	6,3	48		Yes		6,2	13,5
	Canada	10,7	14	16,3	54,1		Yes		4,7	14,3
	United States	7,3	11,7	7,7	55		Yes		7	11,4

2 0 1 6 - 2 0 1 5	Australia	7	14,4	4,5	48,2		Yes			12,7
	China	5,8	19,5	2,7	27,4			Yes		34,7
	India	9,3	9,2	2,3	37,8			Yes		18,9
	Indonesia	13,7	27,5	3,7	65,3			Yes		19
	Iran									28,8
	Israel						Yes		4,8	12,4
	Kazakhstan	7,6	17,5	3,1	52,1			Yes		27,5
	Korea	11,5	6,6	2	27,4		Yes		3	24,4
	Lebanon							Yes		27,4
	Malaysia	2,6	5,6	1,1	27,8			Yes		13,7
	Philippines	17,9	37,1	12,2	69			Yes		25,6
	Taiwan	3,3	26,1	3,8	25,4		Yes			14,9
	Thailand	9,3	16,7	3,4	46,2			Yes		17,2
	Vietnam	8,4	22,3	3,7	56,8			Yes		37,4
	Argentina	9,2	29,1	6,3	61,6			Yes		29,8
	Barbados	9,9	21,6	3,8	75		Yes			15,2
	Brazil	13,2	24,4	6,7	58,3			Yes		42,9
	Chile	21	50	8,5	65,7		Yes		2,8	25,3
	Colombia	15,5	48,2	7,2	59,5			Yes		33,3
	Ecuador	25,8	46,3	8,3	72,2			Yes		30,6
	Guatemala	11,9	36,9	4	60			Yes		45,8
	Mexico	14,7	13,7	6,4	45,8			Yes	2,3	18,9
	Panama	9,8	13,9	2,2	49,4		Yes			45,3
	Peru	15,2	38,6	8,8	65,3			Yes		25,2
	Puerto Rico	4,3	11,1	0,9	50,4		Yes			25,1
	Uruguay	6,2	25,4	4,7	61		Yes			18,2
	Belgium	2,9	10,9	1,9	31,9		Yes		10,7	27,5
	Bulgaria	0,9	5,3	1,4	35,2			Yes		33,4
	Croatia	3	17,2	2,9	47,5		Yes			40,1
	Estonia	4,6	16,7	2	44		Yes		7	13,7
	Finland	4,4	10,9	2,7	37,4		Yes		11,4	15
	Germany	2	7,2	1,8	36,2		Yes		10,1	17,1
	Greece	5,7	8,3	3,4	46,8		Yes		16,9	22,3
	Hungary	5	14,8	2,8	38,7		Yes		9,2	23,2
	Ireland	7,6	14,6	3,1	45		Yes		3,6	19,3
	Italy	3,4	8,2	1,9	30,5		Yes		16,2	18,7
	Latvia	4,2	22,2	3,4	49,1		Yes		7	17,1
	Luxembourg	7,2	13,5	4,2	44		Yes		8,4	9,3
	Macedonia	0,7	23,3	2,3	54,4			Yes		52,1
	Netherlands	4,2	9,4	2,1	40,6		Yes		5,4	14,7
	Norway	5,2	4,8	1,6	30,8		Yes		6,6	10,6
	Poland	3,9	20	2,7	55,9		Yes			28,1
	Portugal	6	16,2	3,2	48,9		Yes		13,3	24,5
	Romania	6,2	29	3,3	46,3		Yes			27,5
	Slovakia	3,5	15,7	5,4	52,4		Yes		7,3	31,1
	Slovenia	2	9,1	1,8	48,6		Yes		11,1	23,7
	Spain	2,2	5,6	1,6	45,3		Yes		11	24,8
	Sweden	6	8,4	2,7	36,7		Yes		7,2	9,2
	Switzerland	4,9	7	1,7	44		Yes		6,5	10,1
	United Kingdom	5,4	8,2	2,3	43,6		Yes		6,2	23,9
	Canada	9,5	11,6	5	50,5		Yes		4,7	13,5
	United States	7,4	12,4	3,6	55,7		Yes		7	14,3

2 0 1 9 / 2 0 2 0	Armenia	15	32,2	6,4	70		Yes		88,8
	Australia	8	13	4,5	56	Yes			41,4
	Belarus	1,1	6,6	1,7	42,3		Yes		51,7
	Brazil	12,4	30,2	6,1	62		Yes		88,4
	Canada	7,4	11,9	8,4	56,8	Yes		4,7	62,8
	Chile	30	57,6	8,3	75,5	Yes		2,8	68,7
	China	2,8	21,4	7,5	67,4		Yes		65,8
	Croatia	3,2	20,6	3,6	71,2	Yes			74
	Cyprus	8,3	21,2	2,6	58,2	Yes			58
	Germany	4,4	9,1	3,4	45,8	Yes		10,1	42,6
	Greece	6,7	12,4	2,5	51,6	Yes		16,9	51,6
	India	14,7	33,3	5	85,2		Yes		87,5
	Ireland	8,6	14,6	4,1	42	Yes		3,6	40,7
	Italy	0,7	5,4	0,8	48,1	Yes		16,2	89,5
	Japan	2,6	4,3	1,1	14	Yes		9,4	32,7
	Latvia	5,1	23,2	3,5	57	Yes		7	68,3
	Luxembourg	4	12,9	4,7	48,5	Yes		8,4	38,3
	Mexico	9,3	16,3	4,3	70,7		Yes	2,3	85
	Netherlands	6	9,2	2,6	41,9	Yes		5,4	23,6
	Norway	6	5,7	2,6	31,5	Yes		6,6	25,6
	North Macedonia	3,7	20,3	3,8	60,9		Yes		83,6
	Guatemala	13,1	52,2	6	77,4		Yes		89,7
	Ecuador	29,9	42,5	9,2	78,3		Yes		82,7
	Colombia	13,7	35,5	5,6	72,4		Yes		90,1
	Pakistan	1,6	27,9	4,9	63		Yes		92,1
	Panama	17,1	40,8	6,5	72,9	Yes			86,9
	Poland	0,3	6	3,2	50,4	Yes			15,8
	Portugal	6,8	19,8	3	61,4	Yes		13,3	54,4
	Puerto Rico	5	23,8	2,2	55,7	Yes			84,3
	Korea, Rep.	17,9	25,7	3,1	51,7	Yes		3	35,1
	Russian Federation	3,6	9,8	3,4	35,6		Yes		78,8
	Slovak Republic	4,7	13,6	4	53,1	Yes		7,3	63,3
	Slovenia	2,1	15	1,9	57,5	Yes		11,1	60,1
	Spain	4,2	7,4	1,6	50,8	Yes		11	42,3
	Sweden	4,4	10,9	5	50,7	Yes		7,2	38,8
	Switzerland	7,8	10,7	3	49,2	Yes		6,5	50,4
	Taiwan, China	4,8	14,4	2,7	42	Yes			33,4
	United Kingdom	4,2	7,6	3,4	55,2	Yes		6,2	64,4
	United States	13,4	13,7	5,1	65,5	Yes		7	41,4