TALLINN UNIVERSITY OF TECHNOLOGY
School of Business and Governance
Department of Business Administration

Sakshi Kukreti

ANALYSIS OF CODEPENDENCY BETWEEN IMMIGRANT LABOR AND ESTONIAN STARTUPS

Master's thesis
International Business Administration

Supervisor: Antti Ainamo, PhD

Tallinn 2021

I hereby declare that I have compiled the thesis independently and all works, important standpoints and data by other authors have been properly referenced and the same paper has not been previously presented for grading.
The document length is 15111 words from the introduction to the end of conclusion.

Sakshi Kukreti ……

(signature, date)

Student code: TVTM194328

Student e-mail address: sakukr@ttu.ee

Supervisor: Antti Ainamo, PhD:

The paper conforms to requirements in force

……

(signature, date)

Chairman of the Defence Committee:

Permitted to the defence

……

(name, signature, date)

TABLE OF CONTENTS

ABSTRACT

Immigrant or non-native workers play a vital role in any globalized economy. Estonia has been known worldwide for its minimal bureaucracy, digital society, and open-door policies towards immigration. Startup Visa, a policy launched in January 2017 with a goal to help the Estonian startups access global talent with a visa system that is easy for the ones relocating, as well as the companies hiring, is a proof of Estonia's immigrant-friendly policies. By the end of Q3 2020, one-fifth of the startup employees and one-third of the startup founders in Estonia were immigrants (i.e., foreign citizens). In particular, 54% of new companies in CyberTech space in Estonia were started by immigrants – proving that Estonian high-tech startups ecosystem is becoming increasingly characterized by startups which have immigrants as key individuals.

With the Estonian startup ecosystem growing at an accelerated pace, this study investigates how the current influx in entrepreneurial immigration is causally linked to the startup ecosystem. Based on the survey conducted in this research, following findings have been observed:

1. Immigrants, who move to Estonia for work, find the entrepreneurial policies in Estonia favorable and intend to setup their own business in the future, thereby contributing to the startup ecosystem's growth further. In few cases, immigrants arrive to Estonia with explicit intent to start their own business at some point of their career.
2. Many immigrants who move to Estonia for study, contribute to the startup ecosystem by working in small to medium-sized organizations for the duration of their studies (these organizations may or may not necessarily be startups or come under that umbrella). Respondents from non-Estonian profile also indicated that they would like to either join (matured) startups or start their own businesses after completing their studies thereby contributing to the Estonian startup ecosystem.

The study also creates a scope for further research where cyclic dependency between immigration and the Estonian startup ecosystem can be analyzed at micro level.

Keywords: immigration, immigrants, economy, startups, labor market, cross-border

INTRODUCTION

Immigration's effect on a nation's economy has been widely debated in many studies over the years and has been a popular topic of discussion (Organization for Economic Co-operation and Development 2014, Is migration good …). Countries with aging population or limited labor force, in particular, have been argued to rely heavily on immigrant work force for the economic activities: Immigrants can help countries deal with the economic implications of aging population or labor force shortage (McDonald, Kippen 1999; Collado et al. 2004; Borjas 2014). What has attracted less research than immigrants as employees, is, understanding the contribution of immigrants in the entrepreneurial ecosystem of a national economy with an ageing population or limited labor force.

The study first takes a look at some interesting facts about Estonia, its economy, and the Estonian startup ecosystem before the study moves on to the immigration aspect. Estonia is referred to as the world's one of the most technologically advanced country (Schulze 2019; Tambur 2016). Estonian residents can do anything they need to run their businesses online, sign documents digitally, register company online in a matter of minutes. Another entrepreneur-friendly detail about Estonia is that it is a country where an entrepreneur has the ability to open a bank account without physically visiting the bank or even being present in Estonia. Not just that, Estonia also has had the most attractive tax regime in the developing world for the last three years in a row, according to the International Tax Competitiveness Index, which adds to the country's excellent economic climate for entrepreneurs. The low corporate tax rate of 21%, with no double taxes on dividend income, is one of the main reasons for Estonia's high ranking (Vabamäe, Lilles 2017).

Estonia is a digital country in more ways than one, its entrepreneurship community being one of the strongest in Europe. Government funding is a key component that fosters and trains these phenomenally successful start-ups for growth. Estonian government systematically collaborates with more than 100 businesses and organizations which have helped to establish this entrepreneurial paradise in the first place, and they support entrepreneurs at every point of the process, from concept to scaling (Saluveer, Truu 2020). Many young entrepreneurs, prefer Estonia

as a country to setup their business because of the country's advanced national IT technology, known as e-services, which helps you to do anything online, from founding a corporation in a day to filing taxes in a few minutes. The extent of such fostering entrepreneurial ecosystem can be clearly stated from the fact that towards the end of 2019, Estonia was home to four unicorns: Skype, PlayTech, Wise Limited and Bolt (Value for Startups, Startup Estonia), 900 registered startups with approximately 6,000 employees, paying more than 75 million Euros in annual workforce taxes, and annually attracting a healthy 266 million Euros in foreign investments (Saluveer, Truu 2020). Hence, Estonia for good reasons can be said to have become one of the most developed startup ecosystems where young Information and Communication Technology (ICT) companies are booming (Mets 2017).

However, Estonia's situation is no different than other big economies like the United States or Canada which have seen major immigrant influx over the years. Estonia's dependency on immigrant labor force, dates back to the end of 20th century. Ever since joining the European Union, Estonia has seen a steady influx of immigrants to sustain and grow its economic activities (Tammur et al. 2017). Economic sectors such as agriculture and manufacturing rely heavily on immigrant labor force coming from neighboring soviet bloc countries (Hansson 1992).

Based on the context set above, it becomes important to specify how immigrant labor influx trends impact the Estonian Startup ecosystem. There is a need for such a study which provides knowledge and can prove valuable for the Estonian/Non-Estonian entrepreneurs who need to know to what extent Estonian markets have large enough talent pool to sustain and accelerate their given startup idea, as well as, vice versa, talent would appear to be over-abundant for a given market niche. At the same time, from an immigrant's perspective, such a study could help them to understand the Estonian startup landscape, how they might be able to contribute to it and simultaneously benefit from it.

Therefore, in theoretical framework this study will discuss all the interactive components revolving around immigrants and Estonian startup ecosystem. With a focused aim, this study will then answer below mentioned research questions while validating or rejecting the set hypothesis.

Aim and Research questions:

The study investigates the codependent nature of the relationship between immigrant labor and the Estonian startups. Based on the context set above, this study will validate the following hypotheses:

1. Immigrant labor and foreign entrepreneurs are playing a crucial role in establishing and maintaining the Estonian startup ecosystem.
2. Highly skilled immigrant labor has benefitted the most from the flexible startup policies and startup initiatives in Estonia.

This study will also answer the following research questions:

1. How and why do some entrepreneurial startups build on foreign talent to make them "Cross Border" startups?
2. How and why this rich talent pool of immigrant labor and entrepreneurs can be said to contribute to be leading to an accelerated growth of the Estonian startup ecosystem?

Research objectives:

A study of the relationship between the Estonian startup ecosystem and immigrant labor becomes very important in the context set above to determine its short and/or long-term implications to the Estonian economy. It is also important to research any risks associated with this circular dependency which could be taken as part of future research. This study answers the research questions mentioned above, by describing the relationships between macro level Estonian startup growth and the immigrant labor influx associated with it.

Research methodology:

The research method chosen for this thesis is a mix of qualitative and quantitative model. Based on the data collected from the online databases and survey results provided by native and non-native employed workers, the study performs statistical analysis to find the correlation between the identified variables. On the basis of the findings, the study then validates or rejects the hypothesis set above.

The questions in the study survey, have been formulated in advance and they cover major aspects of dependency between immigration and startup ecosystem from the perspective of employed native and non-native workers including students and their dependents. The survey was forwarded to multiple native and non-native workers, students from different organizations in Estonia and their responses were collated for a detailed analysis. The analysis results were then analyzed with the macro level data collected from public databases of Statistics Estonia and Tax & Customs board of Estonia.

In the first chapter of this study, the literature review has been discussed with the aim of providing a theoretical background to the thesis for its readers. Theoretical framework will provide a general overview about the startup ecosystem in Estonia, immigrant entrepreneurship, and the case of cross border startups. After theoretical review is complete, the study then presents a detailed explanation of the methodology and describes the entire research process. The third chapter of this thesis provides an analysis of the results gathered from various sources, discussion around these and the subsequent chapters present study's results and conclusions to its readers.

1. THEORETICAL FRAMEWORK

To understand the concepts related to immigration and economies, the author collected information and data from various scientific journals which are listed in the references section of this paper. Most part of the theoretical framework has been setup using the existing literature and academic journals around immigration, its economics and entrepreneurship.

An immigrant is a person living in a country other than that of his or her birth (Bolter 2019). The term immigrant can be used interchangeably with other terms that include "migrant," the "foreign born," and "international migrant" (Bolter 2019). While the terms migrant and immigrants could be used interchangeably, the International Organization for Migration defines migrant in a more precise manner as “An umbrella term, not defined under international law, reflecting the common lay understanding of a person who moves away from his or her place of usual residence, whether within a country or across an international border, temporarily or permanently, and for a variety of reasons.”

Based on above definition of an immigrant, one might determine that the process of moving immigrants is called immigration. “Immigration relates to the movement of peoples from one country into another, for residential rather than visiting purposes, which may be for a number of reasons, including economic, familial, social or personal.” (Immigration, UK Politics Magazine). In the sub sections of this chapter, the study further establishes the link between the key components/characteristics of immigration identified by Aldrich and Waldinger (1990); “opportunity structures, group characteristics and strategies” and why and how they can generally be said to co-exist and have a dependency on each other in any national ecosystem.

The framework of this study is based on the three concepts from Aldrich and Waldinger (1990), using the genesis and recent history of the Estonian entrepreneurial ecosystem as case in point, and thus paving the way for research into the present and future of the Estonian ecosystem.

This study approaches the review in three broad categories:

1.1. Opportunity structures

1.2. Group characteristics

1.3. Strategies

1.1. Opportunity Structures

Opportunity structures "include the ease with which access to business opportunities is obtained, and access is highly dependent on the level of interethnic competition and state policies". (Aldrich, Waldinger 1990). In this section, the study looks into the different factors which create the opportunities for immigrants in a flourishing or growing startup ecosystem and attract them to immigrate to country like Estonia. At the same time, this study will also focus on how this immigrant work force, in return creates more opportunities for that national market and ecosystem to flourish.

1.1.1. Market conditions

One of the major economic arguments discussed when talking about immigration is that immigrants create jobs upon arrival in the host country, not because they spend money on goods and services, but also because they tend to be entrepreneurial and therefore create more job opportunities for the people around them (Skandalis et al. 2014).

In a country like Estonia, the rise of Skype and PlayTech marked the beginning of entrepreneurial culture and the ecosystem. Skype was founded in 2003 and has since become highly known for its telecommunication application was founded by a Swedish, a Danish, and four Estonians (Shaed 2019). PlayTech, another renowned startup was founded in 1999 by an Israeli entrepreneur. From the beginning of Estonia's entrepreneurial inning, it can be observed that Estonia attracted non-native entrepreneurs and provided opportunities for them in the market conditions suitable at the time for such technology driven industry. "If economically successful, immigrant entrepreneurship provides work and income exactly for those members of categories of the population who face, on average, substantial obstacles on the labor market which leads to their persistently high rates of unemployment." (Kloosterman, Rath 2002). The direct economic impact of these early immigrant entrepreneurs was even more important than merely providing jobs for themselves and their employees. These immigrant entrepreneurs indirectly contributed to the employment opportunities

in Estonian economy by networking along the suppliers' chain. Skype, at present, has 1000+ employees whereas PlayTech has 5900 employees located in 19 different offices distributed across the world (LinkedIn Skype and PlayTech).

The owners of these companies came up with innovative ideas for the Estonian market which soon became famous globally, Skype was especially renowned for its instant messaging services. What is more intriguing is that both the aforementioned startups are under the Information and Technology umbrella. Fast forwarding from 2003 to present, Estonia has seen a boom in the Software and Consultancy Industry where the number of businesses in Information Technology (IT) sector have increased drastically. Thus, proving that the businesses in software industry especially in financial technology (FinTech) have increased over the time and the market conditions have remained suitable for newcomers. This in our use case creates attractive opportunities for immigrants, as such technological sectors have kept growing and flourishing over a period (Saluveer, Truu 2020).

At the same time, it can also be seen that the Estonian ecosystem is big enough to accommodate the continuous growth of such technology driven companies which not only support the native entrepreneurs but equally support immigrant entrepreneurs since "54% of new CyberTech companies were started by foreign citizens" (Startup Estonia 2020, The Revenue Of CyberTech…) in Estonia.

1.1.2. Necessity and relatability of products

Entrepreneurs are someone who have a deeper understanding of their customers and their thought process is solution centric. An entrepreneur can also be described as "one who undertakes innovations, finance and business acumen in an effort to transform innovations into economic goods." (Abouzeedan, Hedner 2010). Based on this definition, Entrepreneurship can be defined as the act of being an entrepreneur. The European Commission, however, sees entrepreneurship as "acting upon opportunities and ideas and transforming them into value for others, which can be financial, cultural, or social." (European Commission, Internal Market, Industry, Entrepreneurship and SMEs). The end goal of entrepreneurship is not just to be creative and innovative while creating products or services, but to provide a solution to a problem. When a business truly solves a problem, which resonates not just with the native population but also with the immigrants, this study sees another opportunity.

For example, a highly reputed and famous startup “Wise was founded and is built by immigrants, for immigrants.” (Wise Ltd., LinkedIn). The company has more than ten million customers from all over the world (Wise Ltd). Their money transfer service is used not just by Estonians, but people of different nationalities and companies of different origin use Wise for its offered services. One possibility of opportunity generation is that when immigrants in Estonia started using Wise’s money transfer services to send the money back to their native country, they could have possibly referred the company to their friends or family or connections. Hence, a product which an immigrant group uses and can relate to innately, ends up creating an opportunity in the ecosystem and a possibility of a cross border startup. It also creates opportunity for competition to grow, like Wise Limited, Revolut is a competitor, and it also leads to inference that there are more people needed in financial technology industry in Estonia because the number of customers is growing for the company and as a causal effect, they would need to grow.

Another example is Bolt Food. Immigrant patterns define that for immigrants to settle they need to feel comfortable in the environment and have a sense of belonging in the host country. Food habits and cultural habits are also very important in settling of immigrants in a new country. Bolt Food services caters the food related needs of most of the immigrants by providing a link between the different ethnic restaurants available and the immigrants who enjoy such country specific cuisine. A huge opportunity the author sees is for college students who realize the growing customer base especially during cold winters and such students seize the moment by taking the job opportunities made available to them in the form of providing food delivery door to door.

Additionally, there is a possibility of exclusion from job opportunities leads many immigrants to seek out business opportunities.

1.1.3. State policies

The number of immigrants allowed in a country, their purpose of stay, taxes paid by them, their liabilities and their duration of stay are some of the factors that are governed by the state policies. By state policies the study means the labor laws, entry and exit laws that a country has in place, regarding the incoming immigrants. Estonia undoubtedly exceeds the expectation in this aspect as compared to other countries across European Union. “Bureaucracy is low, arguably due to the early age of the country but also because in a small country, there are fewer exceptions and less complexity.” (Dumas 2014). Estonia is one of the countries where immigrant students do not have a limit on the number of hours they can work while they are studying. A student can continue to

work as a full-time employee while studying without having the need of a separate work permit (Working, Study in Estonia) unlike the United States of America, Germany, United Kingdom, Australia and New Zealand (Study in the USA 2020, Can I work …; Germany Visa, Germany Student Visa …; Neill 2018). Students who migrated to Estonia, find this as an opportunity and have this categorized as one of the major reasons for their immigration.

Another Estonian policy, Startup Visa, an initiative that helps non-Estonian entrepreneurs to establish their companies and hire the best talent available to meet their business needs from across the world is a highly attractive opportunity for immigrants. "Estonian startups have the world's highest success rate of obtaining a Visa for foreign candidates at 84.5%, more than double the success rate than the global average (41%)" (Mets 2017; Global Startup Ecosystem Report 2017). Estonia is attractive for both immigrant entrepreneurs and immigrant labor who seek better opportunities.

Settle in Estonia is another initiative, for people who are pursuing their higher studies and are eligible for getting a longer-term residence permit and settling in Estonia (Police and Border Guard Board, Estonia).

1.1.4. Concentrated population

Estonia is a small nation with a just 1.3 million population. It is impressive to see the mark it has already created on the global level (Global Startup Ecosystem Report 2017) but the smaller population comes with its own pros and cons. One could state that if the population is small and there are more resources available in the market which can be utilized, then it automatically creates opportunities for non-native people. In return of the resources utilized, the non-native workforce contributes to the economy of the nation in terms of the tax paid by the company or the individual along with goods and services consumed.

In context of Estonia, it continues to receive a steady influx of immigrants from the former Soviet bloc countries as well as other nearby nations because of its traditionally friendly and peaceful relationship with other countries (Estonia's bilateral relations). In addition to that, the proximity of Estonia to the former Soviet bloc counties as well as its relative better standard of living as compared to immigration's source nations are the main reasons that led many to choose Estonia as a country of destination. In recent years, immigrants have found Estonia to be especially

appealing due it is friendlier policies towards entrepreneurship and a friendlier approach to immigration.

At the time of this research, the author was unable to find a research based on studying the impact of immigrants on the ageing population of Estonia. If extrapolated one could observe that smaller population of the nation does create an opportunity for immigrants as has been observed in the studies done in Spain, Australia and the United States of America (McDonald, Kippen 1999; Collado et al. 2004; Borjas 2014).

Collado et al. (2004) analyzed the impact of immigration in the Spanish Welfare State to conclude "a higher number of immigrants will substantially help to alleviate the fiscal burden on future generations in Spain". Similarly, McDonald and Kippen (1999) researched to find a perfect number of immigrants that would help in "delaying of ageing" in Australia. Both these research studies focused on studying how younger immigrants in their country could help improve the foreseen negative impacts of aging in the coming years i.e., from demographic perspective. A similar study could be conducted for Estonia but meanwhile one could only say there are equal possibilities of positive or negative impact of immigrants on ageing population of Estonia.

The above studies suggest that immigrants when mixed in an ageing population have positive impacts and the contribution of the same in case of Estonia cannot be completely neglected, while discussing the opportunities created for immigrants due to Estonia's smaller population.

1.1.5. Theories of Immigration

"Economic theory is well suited to help understand the possible consequences of immigration for receiving economies, and the theoretical aspects of the possible effects of immigration for the receiving economies' labor markets" (Dustmann et al. 2005). In this research, to study the impact of immigration on the British labor market, the authors provide empirical evidence to support that there is "no compelling evidence that immigration has overall effects on aggregate employment, participation, unemployment and wages but some differences according to education." (Dustmann et al. 2005).

The authors of the above study agree that when immigrants enter the labor market, they change the skill and composition of the labor market. But then it is also likely that these changes could potentially harm the chances of the native workers or it might not have any impact on the chances

of the native workers in the longer run. Therefore, it cannot be said that economic theories are "clear-cut" (Dustmann et al. 2005) but in general it could be agreed that the "Economic models predict that labor market effects of immigration depend most importantly on the structure of the receiving economy, as well as the skill mix of the immigrants, relative to the resident population." (Dustmann et al. 2005).

With this pretext, this study further extends the theoretical framework to analyze the effects of immigration on the Estonian startup ecosystem in two subcategories: supply-side effects creating employment opportunities and demand-side effects creating employment opportunities.

In supply-side effects creating employment opportunities, the inputs for this effect are foreign labor force and domestic labor force, which can either be a substitute or a complement to each other. When these two inputs are substitutes in production, an increase in the supply of one input will decrease the demand for its substitute (Dustmann et al. 2003). Also "an increase in the labor supply through increased immigration in a labor market will lead to an increased competition for jobs among immigrants" (Dustmann et al. 2003). Immigration flows can result in increased wages for native workers if the inputs are complimentary to each other, meaning that if there is a skill shortage in the host geography and non-native workers (immigrants) are available to fulfill this shortage, it would result in increased job opportunities in general, further resulting in an increased demand for labor and eventually leading to higher wages of native-born workers (Feridun 2005). The statistics for Estonia provide the empirical evidence that over the years foreign and domestic labor force have complemented each other since the average gross wages in the highly skilled sectors have increased gradually from 2010 to 2020 and the increase in the wage is not based on native/non-native population. (Appendix 8, 9, 10).

The second category demand-side effects creating employment opportunities assumes that the product demand is constant in a given economy. The inputs remain the same i.e., foreign labor force and domestic labor force. Foreign labor force themselves to consume goods and services, make expenditure and therefore the expenditure generated by the inflow of immigration in turn, causes an increase in the demand for labor.

The effect of immigration on the level of unemployment in an economy can be studied through two perspectives. Some studies argue that the employment of immigrants decreases the employment of domestic workers on a one-for-one basis (Johnson 1980). The studies in this

category also state that a given number of jobs exists in the economy and that if one of these positions is taken by an immigrant, then that job is no longer available for a legal resident. Other studies state that immigrants only accept work that resident workers are unwilling/incapable to perform and thus take no jobs from native workers (Feridun 2005). “Immigration does cause some substitution of undocumented immigrants for domestic workers, but the amount of displacement is less than the total employment of immigrants.” (McConnell et al. 2003). In case of Estonia, this effect of immigration varies depending on the sectors of employment. For example, the Information and Technology activities have overall seen a gradual increase in both native and non-native employed population (Appendix 2). Whereas, for agriculture and manufacturing sectors, it is difficult to agree on a generalized pattern from the number of employed populations stated under Appendix 3, 4, 5 and 6.

In the above context, the study discussed the different economic, cultural, demographic and technological aspects of Estonia that create opportunity structures to “provide the niches and routes of access for potential entrepreneurs” (Aldrich, Waldinger 1990) as well as non-entrepreneurs. The discussion was also based on the historic theory of immigration and supply-demand side effects leading to the creation of opportunities.

1.2. Group Characteristics

The second category of this study’s theoretical framework is group characteristics which will enable it to qualitatively establish an interdependency between the immigrants and the Estonian startup ecosystem. “Group characteristics are emphasized by researchers concerned with why particular ethnic groups are disproportionately concentrated in ethnic enterprises” (Aldrich, Waldinger 1991).

1.2.1. Characteristics of Immigrant entrepreneurs based on Entrepreneurship Theories

Immigration is “strongly influenced by the push-pull model of labor mobility.” (Sowell 1996). The push factors are certain life situations that provide an immigrant reason to be dissatisfied with one’s present geographic/socio-economic locale. The pull factors can be classified as some of the attributes of distant geographies that make themselves appear appealing to the immigrants. (Dorigo, Tobler 2005). Therefore, it can be stated that migration between geographies occurs

because of variations in people's geographic or demographic settings and their individual experiences.

According to Shane and Venkataraman (2000), several entrepreneurship theories view an entrepreneur as the one who bears any and all residual uncertainty when starting a new venture. The study also points out that risk-taking propensity of an individual and opportunities available in a geographic area also influence entrepreneurial decisions. Another incentive for immigrant self-employment can also be attributed to the desire of the enhancement of one's social status in the community.

Another study performed by Agrawal and Chavan (1997) found that the ethnic communities have had several reasons for choosing to start their own business at their career. Some of these reasons include:

- arrival circumstances
- settlement
- education level
- financial status
- family background
- job market
- knowledge of language
- their experience
- no job satisfaction
- independence
- discrimination
- opportunities for better financial benefits

While the scope of this study does not cover the attributes that lead to immigration, this study still considers the factors like arrival circumstances, settlement, education level and job market in its survey questions to understand the immigrant characteristics.

According to their study "Most of the Lebanese said they were into business because they had their uncles, fathers or brothers into business who helped them (a case of family background)" while "the Spanish and the Polish said that they had tried hard getting jobs but because of the lack

of knowledge of English and the non-recognition of their qualifications they had to go into business to survive" (Agrawal, Chavan 1997).

Another study undertaken by Zhou (1992) states that entrepreneurship represents an important avenue for economic progress of immigrant minorities. His study identifies two main types of ethnic entrepreneurs in any geographic location:

1. Ethnic enclave entrepreneurs

   According to the study, these entrepreneurs include immigrants who are bounded by ethnicity, an ethnic community's social structures or by geographic location. This category of entrepreneurs operates businesses in immigrant neighborhoods where their own ethnic group dominates and they "themselves" feel connected in a system of ethnic social networks. Estonia's Russian diaspora is one of the prime examples of this category.
2. Middleman-minority entrepreneurs

   This category refers to the immigrant group which plays an intermediary economic role between producers of the dominant group and consumers in different societies (Zhou 2008; Min, Bozorgmehr 2003).

Another aspect that fosters immigrant entrepreneurship was discussed by Model and Lapido (1996) where they state that often "immigrants are given second preference to natives as employees". Clark and Drinkwater's (1998) also argue that entrepreneurship for an immigrant is a way to escape from discrimination in the paid employment sector. One of the prime examples of this limitation is that new immigrants who are not fluent in the Estonian language are limited in their ability to use their skills which were acquired in their native country of origin. To bypass this limitation, these immigrants may choose to start a business instead of working for an existing organization.

Wennekers, Uhlaner, and Thurik (2002) proposed that technology, level of economic development, culture and institutions influence the demand for entrepreneurship by creating opportunities available for start-ups. On the other hand, Krueger and Pischke (1997) argued that the higher rate of job creation in the United States compared to that of Europe is linked to the relative easiness of new entry and expansion by an entrepreneurial firm. Countries benefiting the most from immigration, like the United States, Australia, and Canada have historically placed little to no formal barriers to immigrants' geographical or economic mobility and thereby facilitating the potential of immigrant business start-up (Aldrich, Waldinger 1990; Borjas 1994).

1.2.2. Predisposing factors

These factors refer to "the skills and goals that individuals and groups bring with them to an opportunity". This study classifies immigrant/non-native population into three different profiles based on their skills and purpose of migration. The classification helps to identify and answer the questions such as what kind of immigrants actually migrate to the country? Which sector do they contribute to? Are they somehow connected to or contributing to Estonian startup ecosystem? These questions are also in line with the survey questionnaire which will be discussed in the next section of methodology and help to identify the predisposing factors.

1. **Skilled immigrants**: These can be further classified into low and high skilled immigrant workers. The study observes that there is a constant increase in the number of immigrants in the Information and Communications sector from Appendix 2. Estonian startup also reveals that the number of startups increased in this sector from the duration of 2010 – 2020 (Appendix 19). In this context, it can be said that the high-skilled immigrant labor has increased as the number of startups in the Information and Technology sector increase. Whereas the number of low-skilled labors have remained as is.

2. **Immigrant students**: Studying abroad has become a common notion for most of the students as they want to gain global exposure and also, they find it as an opportunity to migrate to a place with more opportunities. "In many universities, a continuum and a variety of startup pre-accelerators, startup accelerators; entrepreneurs, investors and other support actors, are in place to facilitate entrepreneurship" (Ainamo et al. 2021). Tallinn University of Technology and Estonian Business School provide courses on entrepreneurship and provide tools that facilitate entrepreneurship. A student who aspires to be an entrepreneur can hone his/her skill because the courses help them from as early as creating a business model to providing guidance on giving an elevator's pitch. Immigrant students either aspire to be entrepreneurs, or they tend to join a company depending on their personality traits.

3. **Dependent immigrants**: Not much can be said on the preferences and skills of this third group. They could either belong to one of the above categories or might choose to not respond to any opportunity. For instance, the high-skilled immigrants coming to Estonia are probable to work for a tech company. Their spouse might also be highly skilled immigrant, in that case, Estonia does not require the spouse to have a different visa status

to be eligible to work. But there is also a possibility that the spouse decides to study, in that case it highly depends on their choice of course that which opportunities could they contribute to in future. However, there is also a third possibility where the spouse migrated but is not actively involved in the Estonian labor market.

The effects of such migration based on profiles will eventually cause the supply and demand side effects that the study has discussed earlier under opportunity structure section.

1.3. Strategies

Strategies arise from the "interaction of opportunities and group characteristics." (Aldrich, Waldinger 1990). In simple terms strategy can be defined as the best possible manner in which an individual makes use of the available resources and opportunities at any given time. In this section, the study explores Estonia's strategy over the years to become one of the most promising startup eco system in the world.

Dumas (2014) provides a detailed overview of the various conditions that led to the growth of start-ups in Estonia, particularly after the collapse of Soviet Union. In his attempt to study the cause of the rise of Estonian startup sphere, Dumas (2014) also categorizes the Estonian startup growth into three distinct phases. This study further categorizes the growth model given by Dumas, into the form of strategies rather than just phases. The reason being that every phase is actually based on certain conditions and resources that were available to Estonia at a given moment in time.

1.3.1. Innovation and success as strategy

"An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations" (Organization for Economic Co-operation and Development -Eurostat 2005). "The gestation phase (roughly 2000–2007)" (Dumas 2014) can be described as the period where few of the companies like Skype and Play-tech were formed by Estonian entrepreneurs along with foreign businesspeople. The success of these firms prompted other entrepreneurs as it stirred confidence in them that small IT startups could succeed as well. At the same time, few venture funds were started that encouraged local entrepreneurs to start and implement their ideas. While entrepreneurship was gaining traction, few of the initiatives led by

the Estonian government in the digitalization of banking services and e-government strategies "fostered the development of high-level IT skills and high Internet usage." (Dumas 2014).

The study argues that Estonia had interesting innovations up its sleeve from the beginning, but it needed some capital and push from foreign entrepreneurs or businesspeople. The innovation and success brought by some of the early startups acted as a catalyst to boost the Estonian startup ecosystem and innovative changes like these provided "opportunities for the new and different one" (Dogan 2017) in the Estonian market.

1.3.2. Economic crisis and Innovation

The next phase "wake-up phase (2008–2010)" (Dumas 2014) was at the time of global economic crisis where just like any other part of the world, Estonia too, saw a drop in the GDP. Due to survival reasons, few of the companies employing the substantial number of IT resources dropped the number of employees significantly. The global economic crisis brought along multiple impacts out of which following two can be closely related to this study i.e.,

1. people losing their jobs.
2. a drastic reduction in "the short-term willingness of companies to invest in innovation." (Archibugi et al. 2013).

In their research on economic crisis and innovation the authors Archibugi et al. (2013) provide evidence that "crisis led to a concentration of innovative activities within a small group of fast-growing new firms" during the economic crisis in UK. This correlates with Dumas (2014) observation where he believes that the wake-up phase in Estonia began with the return of these let go IT resources to a pool which could think of contributing more to startup ecosystem.

1.3.3. Promotion of startup culture

The "growth phase" (Dumas 2014) was characterized by "intensive and systematic approach" (Dumas 2014) to create startups. This phase was more focused at promoting startups and launching accelerator programs. This period marked by a great deal of entrepreneurial activities and accelerator programs eventually led to an increase in the number of start-ups and venture capital. The result being that today "Estonia has become one of the developed startup ecosystems where young ICT companies are booming." (Mets 2017).

The interesting fact is that Dumas credits the small size of the nation for enabling startup development. The growth can be contributed to few attributes in the sense “Bureaucracy is low, arguably due to the early age of the country but also because in a small country.” (Dumas 2014). The availability of e-government services and high internet usage opened the doors for entrepreneurs as they did not have to worry about more cost associated with launching their product since Estonia, as a country has a small geography.

1.3.4. Training and skills

In his research to study the contribution of the educational tiger leap program to the ICT startup booming in Estonia, the author describes “the role of ICT as the engine of the innovation-driven development” (Mets 2017). The Tiger Leap program was launched in Estonia in 1996 which enabled the schools to have computers and avail the ICT services. Mets (2017) explains that due to the Tiger Leap initiative, computer science classes were held which educated and raised awareness among the students. In the year 2000, the government launched an e-government initiative which included Estonian residency cards enabled with digital signing, having health registry online, e-tax filing and e-prescription.

1.3.5. Government initiatives

Even though the study by Dumas (2014) brings out the innovation phases of Estonia, the question of “starving start-ups of manpower during their growth phase” remained unanswered. Both studies, Dumas (2014) and Mets (2017) fail to mention or acknowledge the immigrant labor force being one of the factors responsible for this accelerated growth of the Estonian startup ecosystem. This problem, however, was anticipated in advance by the Estonian government, investors, and the entrepreneurs alike. The Startup Visa initiative was launched in January 2017 with a “goal to help the Estonian startups access global talent with a visa system that is easy for the ones relocating as well as the companies hiring” (Lukk 2020).

1.3.6. Cross Border Startup strategy for capital investment and funding

It is believed that “firms rarely stay within the boundaries of a single industry or country” (Alvarez-Garrido, Guler 2018). “The necessity for Estonian startups to go international is exacerbated by the absence of a fully developed and deep-pocketed local investor network, thus forcing local start-ups to seek investment from abroad” (Dumas 2014). It is quite natural that when startups are being funded by foreigners, they would also receive guidance from international entrepreneurs from the

early stages of funding. As a result, “Estonian-founded start-ups find it easy to set up their official headquarters abroad (chiefly in the UK or US)” (Dumas 2014) for example Wise Limited with its headquarters in London, Starship Robots with headquarters in San Francisco and Monese with headquarters in London, UK.

It is also known that “foreign partnership was the only type possible for the emergence of Estonian IT entrepreneurship, because local capital and international business skills were missing” (Dumas 2014) which is one reason cross-border startups gained more value over the time. They utilized from the skilled entrepreneurs or workers or investors who were not from the host startup country. Another research agrees that cross-border startup gets “management benefit” (Alvarez-Garrido, Guler 2018) which basically means that “high-status cross-border VC firms may add more value to their ventures through their resources and expertise” (Alvarez-Garrido, Guler 2018).

Another study, “based on 402 Israeli startups that exited via crossborder M&A (2002–2009), shows that foreign stakeholders, although a burden during the early stage when the local stakeholders are contributing, in fact increase the likelihood of success of the startup’s exit via cross-border M&A” (Dashti, Shwartz 2018). In their research the authors have tried to study the impact and contribution of all the stakeholders in a venture’s lifecycle including both the local and foreign actors. Their findings showed that “while entrepreneurs attach a higher value to local stakeholders during the early stage of the startup venture, the likelihood of succeeding in selling the venture via a cross-border M&A to global companies is higher among startup ventures that embraced foreign stakeholders in their network composition at an early stage” (Dashti, Shwartz 2018).

The author interprets that the reason Cross-Border startups are so popular also depends on what solution the startup is providing and whom does it benefit the most. London is known for its FinTech industry, so it is no wonder Wise and Monese have their headquarters there. London is also culturally diverse, hence definitely the customer base is already available. Hence, even though the innovators and founders are from one country, there is a high possibility that a venture firm realizes the potential of the product to be used in other countries and hence they prefer international expansion, thus utilizing not just the foreign investors and entrepreneurs but the also the workforce.

As a result, from all the theoretical background this study concludes that there are three main components in its framework “opportunity structures, group characteristics and strategies”

(Aldrich, Waldinger 1990). The study also discusses how each of these components can further be classified into subcategories and factors. The factors either individually or in combination with other factors, impact the Estonian startup ecosystem and the influx of the immigrants.

After carefully analyzing all the studies, the author infers that firstly, the Estonian startup ecosystem and the immigrant influx has grown in tandem over the years due to multiple demographics, political, economic and innovative factors. While few of the studies talk about positive impacts of immigration on ageing population, the others argue over the factors that lead to the entrepreneurial behavior of immigrants in certain countries and eventually how does their entrepreneurial behavior impact the host country. This has been mostly received positively as in the case of Greece, UK, and US (Skandalis 2014; Dustmann 2005; Camarota 2013). Most of these studies provide both positive and negative opinions while majority of them proving that increase in immigration usually leads to positive outcomes. However, none of these studies considers the impact of immigrants and their role in enhancing the startup ecosystem and the startup culture.

The present study's conclusion is based on the studies done by Dumas (2014) and Mets (2017). Even though, there has been a detailed research done on the factors that led to the booming startup culture in Estonia, none of them talks about the role of immigrants. The studies have missed to mention or acknowledge the immigrant labor force being one of the factors responsible for the accelerated growth of the Estonian startup ecosystem. Undoubtedly, there was a slight hint in the study about possible issues that could be caused by such growing ecosystem. By analyzing the IT resources of few companies and the significant increase in the demand of human resources over the time Dumas (2014) concluded that the need for the engineering workforce had increased due to the increase in the number of startups which could pose "threat to the development of the Estonian start-up" (Dumas 2014). Additionally, for a smaller country like Estonia, its "size might play against it by starving start-ups of workforce during their growth phase" (Dumas 2014).

These statements bring us back to the questions such as: can Estonia manage with the same size of talent resource pool? Has immigrant labor not impacted the startup ecosystem in Estonia in any way? The study in the later sections answers these questions by thoroughly investigating the impact of immigrant laborers who have over the time increased both high and low skilled talent resource pool of Estonia that would help sustain the startup ecosystem and not let it starve.

2. RESEARCH METHODOLOGY

In this chapter, the author first describes the deductive research approach of the study and the justification for the approach. This research was conducted by collating data from different sources available both online and offline. On the basis of research data availability and the nature of the research conducted, with a given sample size, the study in the section 2.2 explains and provides justification for the use of sequential explanatory research. The nature and type of data needed for the study has been explained in the further sub sections. Sub section 2.3 of this chapter provides information on the quantitative and qualitative research methods, methods of data collection and parameters required for studying the immigrants' impact on Estonian startup ecosystem.

2.1. Research Approach

This study uses a deductive approach under which "test consequences are drawn from the hypotheses" (Nola, Sankey 2014). "Deductive reasoning is a theory testing process which commences with an established theory or generalization and seeks to see if the theory applies to specific instances" (Hyde 2000). Using a deductive approach, the study first generates a theoretical framework from the theory of immigration and the impacts of immigration on an economy discussed in chapter 1. In the previous research, it can be observed that immigrants have had a positive impact on the countries with ageing population (McDonald, Kippen 1999; Collado et al. 2004; Borjas 2014). Few studies have also stated that immigrants either have positive impact on the wages of the labor in the labor market and they do not reduce the chances of employment of native workers (Feridun 2005; Kloosterman, Rath 2002). Based on the studies that have already been conducted in the field of immigration, entrepreneurship and impacts of both in an economy, the author of this study then puts forward two hypotheses which have been stated in the introduction section of this study. The hypotheses will be tested in chapter 3 where the data analysis is performed and the results of these would be explained in chapter 4.

2.2. Research Design

The study used sequential explanatory approach, for which the data was collected from both primary and secondary data sources. Sequential explanatory approach is "characterized by the collection and analysis of quantitative data in a first phase of research followed by the collection and analysis of qualitative data in a second phase that builds on the results of the initial quantitative results." (Creswell et al. 2003). The author first gathers the quantitative data and then conducts a survey to gather qualitative data to test the second hypothesis which has been set as "Highly skilled immigrant labor has benefitted the most from the flexible startup policies and startup initiatives in Estonia".

Primary data sources comprised of the data collected from public sources which included publicly available online and government databases. Additionally, an exhaustive survey questionnaire with the questions provided in Appendix 21, was also formulated with the objective to help understand the immigrant's perspective and extract granular aspects of employment from native and non-native workers in Estonia. Secondary data sources included academic papers, blogs, books, economic articles, social media platforms for professional purpose, global reports, official company website and other online publications which helped in understanding the available research and identifying the areas of exploration.

In order to answer the research question: "How and why this rich talent pool of immigrant labor and entrepreneurs can be said to contribute to be leading to an accelerated growth of the Estonian startup ecosystem?" the study needed to first collect data to prove that over a period, the Estonian startup ecosystem has had an accelerated growth. Secondly, data about the immigrant population was also required for the same duration of growing startup phase to identify whether the talent pool of immigrants increased or not. Therefore, the primary data was gathered from three separate online databases. From Startup Estonia, the information was gathered about the number of startups in a given sector and new startups that were created each year from 2010-2020. The immigrant data was obtained from Statistics Estonia's public database. Descriptive statistics was then used on this data to analyze the results.

Additionally, this study made use of survey questionnaire to collect qualitative data because "survey data may be characterized by small sample sizes when analyzing specific groups in the population (like immigrants, in particular when breaking them down by education group, gender,

or other demographic characteristics). This is due to the fact that immigrants represent a small fraction of the population." (Dustmann et al. 2005, F332). It seemed logical to create immigrant profiles (as discussed under section 1.2.2.) and analyze their responses regarding the benefits they received.

2.3. Research Methods

This study uses a combination of quantitative and qualitative research methods. A combination of these "approach to research provides researchers with the ability to design a single research study that answers questions about both the complex nature of phenomenon from the participants' point of view and the relationship between measurable variables" (Williams 2007).

The methodology is split into two parts:

1. Macro level data collection
2. Micro level data collection

And finally, the relationship between the variables at macro and micro level is explored by making use of descriptive statistics tools.

2.3.1. Macro level data collection and methodology

The macro level questions focusing on immigration and Estonian economy were answered using Statistics Estonia's public datasets. "Statistics Estonia (SE) is a state authority in the area of government of the Ministry of Finance." (Development Plan of Statistics Estonia 2018–2022)

Statistics Estonia's datasets provided a complete overview of main economic indicators such as labor market, economic units, and service activities within Estonian economy. Labor market statistics from Statistics Estonia were able to provide an overview of the labor market situation in Estonia and provide insights into the total number of the employed native vs non-native population in different sectors.

Next part of the research was to acquire granular information about startups founded in Estonia over the years. For this purpose, the study used Startup Estonia's startup database (Startup Database, Startup Estonia), which is a governmental initiative aimed to supercharge the Estonian

startup ecosystem. With this dataset, the study had access to all the startups founded in Estonia since 2010, their funding, and categorical information. One of the key dimensions, the startup turnover over the years and their employee count year over year (YOY), however, was missing from this dataset. To fill this gap, the study then made use of Tax and Customs Board of Estonia's public dataset about companies and their tax information. The study will hereafter refer to the Tax and Customs Board of Estonia as e-MTA.

There was however no means to directly collate these three datasets as they originate from diverse sources and have no common identifier(s) which can be used for correlation. To get the collated data, this study applied the following approach.

1. Collate startup Database from Startup Estonia, which lists the startup's founded in a particular year on Microsoft Excel (Startup Database, Startup Estonia)
2. Collate annual data from Tax and Customs Board for years 2017, 2018, 2019, 2020 on Microsoft Excel (Estonian Tax and Customs Board, Taxes paid, turnover …)
3. Made use of tools such as SQL programming language using IntelliJ Integrated Development Environment (IDE) to find the correlation between these two data sets.

This study made use of Structured Query Language (SQL) to find a correlation between these two data-sources. Data from Startup Estonia was stored in a table named startup_details, whereas annual data from Tax and Customs Board was stored in tables named

1. employer_details_2020
2. employer_details_2019
3. employer_details_2018
4. employer_details_2017

SQL queries to find correlation between startup_details and employer_details_20xx are attached presented under Appendix 20. The final data was collated from all the sources by the author in an excel sheet. With these results, it was easy to analyze the trends for State and Labor taxes that startups have paid for the years of 2017, 2018, 2019 and 2020 and these are discussed in the next chapter.

2.3.2. Micro level data collection and methodology

The data collected so far was missing the link to immigrants, as to how they tie into the Estonian startup ecosystem and how both immigrants and Estonian startup ecosystem have benefited from

the growth over the years. To test this study's second hypothesis: "Highly skilled immigrant labor has benefitted the most from the flexible startup policies and startup initiatives in Estonia", immigrant's perspective was required as well.

For this particular reason, the study employed the usage of a survey to be answered by two groups of respondents:

1. Employed Estonian citizens
2. Employed Non-Estonian citizens

The questionnaire aimed at addressing following research questions:

1. Do Non-Estonian workers prefer to work at startups? Did they immigrate to Estonia for this specific reason?
2. Did the Non-Estonian workers choose to immigrate to Estonia because of its entrepreneurship friendly policies and did this help them setup their businesses?
3. Which sectors of economy are the most preferred by Immigrants who come to Estonia for work, and how many of the startups founded in Estonia operate in one of these sectors?
4. Did the immigrant's employer help them in relocation?

A questionnaire was prepared in the manner to include all the questions as seen from Appendix 21. With the survey results, this study was able to answer the questions above and form a conclusion for its hypothesis that highly skilled immigrant labor had indeed benefitted the most from the flexible startup policies and startup initiatives in Estonia.

2.3.3. Variables and hypotheses

Hypothesis 1: Immigrant labor and foreign entrepreneurs are playing a crucial role in establishing and maintaining the Estonian startup ecosystem.

To establish the relationship between immigrant labor and the Estonian startup ecosystem, the study defined three variables:

1. number of employed non-Estonian population in age group of 15 - 74
2. number of employees hired by the startups (gives information about employment opportunities created under startup umbrella)
3. labor tax contribution of the startups

The first two variables were first discussed and analyzed over the period of 2010 to 2020. However, the data for third variable is only available from 2017 to 2020, therefore, to increase the sample size the author has taken quarterly data for this time period.

Using statistical analysis, "for investigating and modeling the relationship between variables" (Montgomery et al. 2021) the study first understands the behavior of individual variables over the years and then finds a linear or non-linear pattern between them. The same linear/ non-linear relationship is analyzed among the independent variables to further check the correlation. Statistical test using correlation analysis was conducted between the individual variables to find the direction and strength of the relationship.

The study then uses regression analysis as "Regression analysis was chosen as the technique to predict the impact of a labor shortage on construction worker wages, as prediction of a dependent variable based on response of an independent variable is a primary purpose of this type of evaluation." (Golden, Skibniewski 2010) Additionally, "simple regression of out-migration by British nationals in the years 1994-2004 on foreign-born immigration rates" (Gordon et al. 2007) provides evidence that "There is a similar relation for out-migration from the UK by foreigners, in relation again to their lagged in-migration rate, but this seems essentially to reflect the incidence of return/onward migration."

Hypothesis 2 of the study states: Highly skilled immigrant labor has benefitted the most from the flexible startup policies and startup initiatives in Estonia. The response received from the survey were analyzed and the results have been discussed in chapter 4.

2.3.4. Procedure and participants

For the macro level analysis, the process involved conducting a longitudinal study on the variables defined in section 2.3.1 over the four years from 2017 to 2020, with a time period of 6 months. Thus, resulting in the overall sample size of 16. The data was collected from three different sources i.e., e-MTA, Statistics Estonia and Startup Estonia. Since, the study tries to find if there is a relationship between independent variables of quantitative nature, correlation analysis is used.

For the micro level analysis, the process involved conducting a survey where the sample size n=80 involved responses from both native and non-native employed workers, students and immigrants who migrated with their spouse. Availability sampling was then used to collect the native and non-

native elements of the population "because of their accessibility to the researcher" (Dattalo 2008, 5). The survey was conducted only in Tallinn from 21st March 2021 till 4th April 2021, where the questionnaire was circulated via social media and personal networks to the organizations and institutions that were available and accessible to the researcher. The questionnaire included both closed and open-ended questions. Some of the survey questions were measured on 10-point scale, with 1 being easiest and 10 being the most difficult.

2.4. Limitations of the methodology

The study is subjected to few limitations in terms of data gathering and prone to certain biases with reference to the mode of survey circulation. The section below discusses the limitation this study has faced.

2.4.1. Data limitation

Data collection through e-MTA was limited as the information was available only through the period of 2017 to 2020, data from a larger period would have increased the confidence in results. Startup Estonia's database had detailed information about the startups formed in Estonia but there was no easy way to link the information from both the sources as e-MTA covers all the information and not just startups. The result collated from both data sources using SQL resulted in a reduced sample size since not all results in collated data had all the details required for the analysis. Therefore, the study could not study the impact of all startups founded in Estonia from 2010 to 2020 as data was missing/not available for some of them. Additionally, the study period had to be shortened to 2017-2020 due to the lack of data available in the public databases.

Furthermore, the statistics on how many startups are founded in Estonia by non-native persons is not available on any of the online databases.

2.4.2. Survey limitation

The survey has few limitations as well due to the sampling technique where "bias is introduced into the sample" (Dattalo 2008) due to the volunteers belonging from certain organizations and institutions. Additionally, the survey does not guarantee that all volunteers belong to the startup ecosystem. As the survey was circulated via social media, both Estonians and non-Estonians from startups as well as non-startups have filled the questionnaire. Hence, data from non-startup

organizations was included in the results as well. However, the researcher did include the company name as an optional field to accumulate precise information needed for the study.

2.4.3. Time limitation

The author reached out to 10 prominent startups to obtain the employee classification data over a period in order to support and validate the first hypothesis. The author also reached out to Statistics Estonia and Startup Estonia as well, to obtain the APIs that could expose the employee classification data per employer. However, both organizations did not have the requested data. Two of the startups responded where one was a matured unicorn. The senior operation specialist needed time to collate the data for contributing in the research. A similar response was received from Startup Estonia that it would take them longer time to respond to the query. The author did not receive any response from the other 8 organizations. Due to the time restrictions, the above-mentioned data could not be collected and included in the study.

3. ANALYSIS AND DISCUSSION

In this section, the study analyses the data gathered using the approach and methodology described in the previous section. The analysis had been conducted at the macro level to understand the startup ecosystem and immigrant influx count over the past years meanwhile, micro level analysis provides a deeper understanding of immigrant's perspective.

3.1. Macro Level Analysis

One of the research questions of the study aims to answer: "How and why this rich talent pool of immigrant labor and entrepreneurs can be said to contribute to be leading to an accelerated growth of the Estonian startup ecosystem?".

In order to achieve this, first the growth of the Estonian startup ecosystem over a period is analyzed. In chapter 1, the study has already provided all the required theoretical background on the startup ecosystem growth. In this chapter, the study now analyzes the quantitative data available from the Startup Estonia's Database. (Startup Estonia, Startup Database)

Table 1. Number of startups founded, 2010-2020

Year	Number of startups founded
2010	8
2011	22
2012	28
2013	48
2014	58
2015	73
2016	96
2017	153
2018	261
2019	220
2020	114

Source: Author's calculations based on data from Startup Estonia

From the above table it is evident that the number of startups has had a consistent growth in terms of number of startups founded over a period of 2010 to 2020. A drop can be observed in the year 2020, and this drop can be attributed to the incomplete datasets for said year.

From Startup Estonia's Database, the study then considers the total capital raised by the startups and the increment in the capital raised year over year (YOY). The table below describes the figures associated with them.

Table 2. Total capital raised in EUR, contribution of Estonia vs Foreign, Change year over year in total capital of the startups, 2010–2020

Year	Total raised capital (EUR)	Capital from Estonia (EUR)	Capital Estonia vs Foreign investment	No of deals	% Change YOY
2009	4,315,000	3,565,000	82.6%	8	-
2010	18,530,601	4,290,601	23.2%	11	329.4%
2011	8,341,900	3,873,001	46.4%	20	-55.0%
2012	23,422,500	3,109,500	13.3%	29	180.8%
2013	30,875,441	6,427,400	20.8%	45	31.8%
2014	69,130,033	6,239,000	9.0%	46	123.9%
2015	97,035,106	10,374,000	10.7%	39	40.4%
2016	106,244,045	14,415,201	13.6%	48	9.5%
2017	288,811,760	4,652,850	1.6%	47	171.8%
2018	325,161,481	12,877,200	4.0%	39	12.6%
2019	264,554,290	25,915,852	9.8%	72	-18.6%
2020	452,786,224	30,805,923	6.8%	65	71.2%

Source: Startup Estonia

From the above table it is evident that the change in total capital raised by the startups year over year has majorly been positive which tells us that more and more investment was done in the startup ecosystem.

To interpret the total capital raised by the startups over the period of 2010 to 2020, a bar graph is used. Upon visualization it can be seen the total capital raised in Euros has grown over the years with 2019 being an outlier.

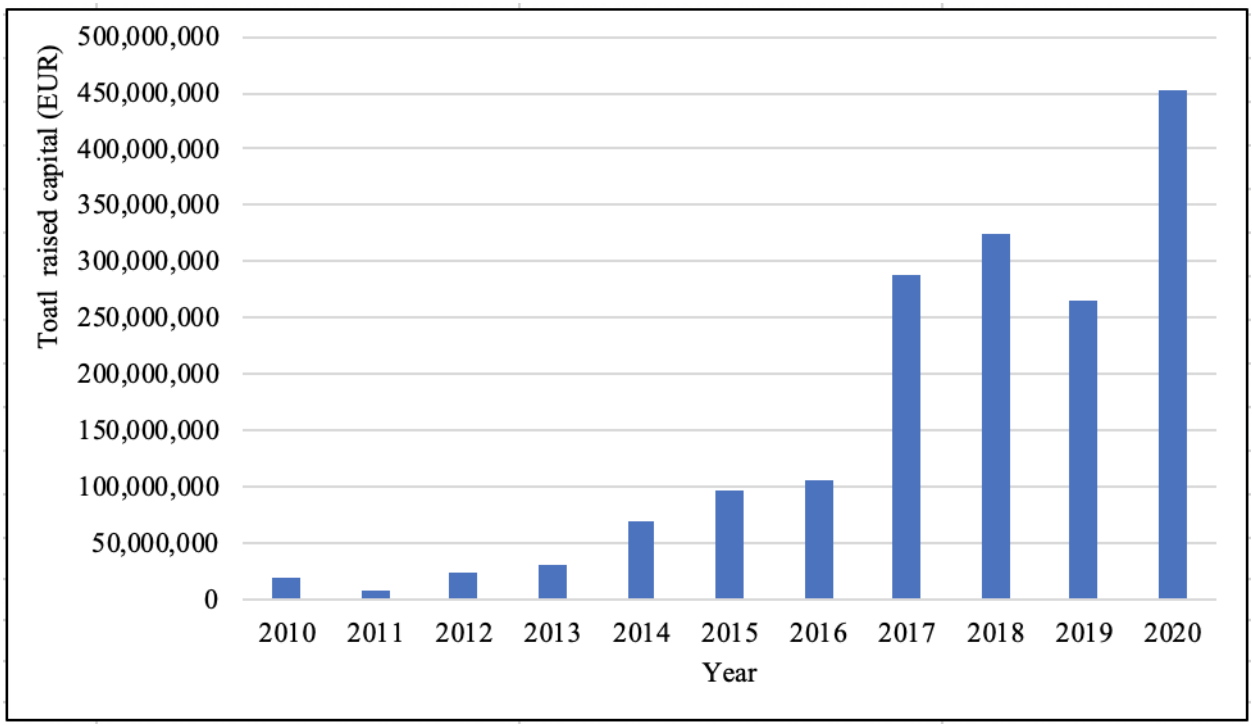


Figure 1. Total raised capital by startups (EUR), 2010-2020
Source: Author's creation based on Table 2

Next, the study will analyze the growth of immigrant labor in Estonia. Limitation on the data for the number of foreign entrepreneurs restricts the study to consider the entire non-Estonian population.

"The working age population is defined as those aged 15 to 64. This indicator measures the share of the working age population in total population." (Organization for Economic Co-operation and Development, working age population). Hence, the study uses Data from Statistics Estonia for the employed working age population under two categories, Estonians vs Non-Estonians as seen under Table 3. The scope of the study focuses only on these two profiles.

Table 3. Number of persons employed in thousands in the working age group, 2010-2020

Year	Estonians (in thousands)	Non-Estonians (in thousands)
2010	391.6	176.4
2011	416.5	186.7
2012	426.6	188.4
2013	430.0	191.3
2014	438.7	186.1
2015	448.1	192.8
2016	455.0	189.7
2017	460.5	198.1
2018	461.0	203.7
2019	459.6	211.7
2020	450.3	206.3

Source: TT332: Labour status of population aged 15-74 by group of persons (place of residence, ethnic nationality, citizenship, marital status), sex and age group, Statistics Estonia

From the above information, the data for non-Estonians working group has been represented below in the form of a line graph which shows a linear trend line.

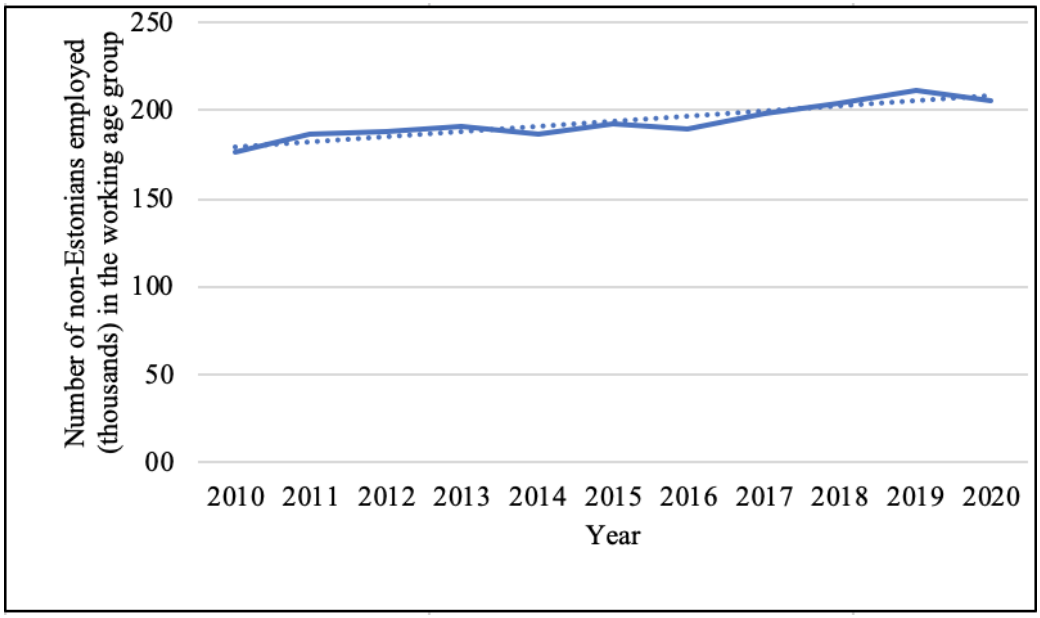


Figure 2. Number of non-Estonians employed (thousands), 2010–2020
Source: Author's creation based on data from Table 3

The next data is collated from e-MTA to take the different taxes paid by the startups over the period of 2017 to 2020 on a quarterly basis. "According to data, compiled by Startup Estonia, a

governmental initiative aimed at supercharging the country's startup ecosystem, the state budget gains more than ever from the employment taxes paid by Estonian startups. The sum was €28 million in 2016, €36 million in 2017 and €46 million in 2018." (Tambur, 2019). Hence, the study analyzed the data of taxes paid by top 10 startups which have one of the highest turnovers as per Startup Estonia.

The data for the Figures 3 and 4 was collated from the data available under the Appendix 15, 16, 17 and 18.

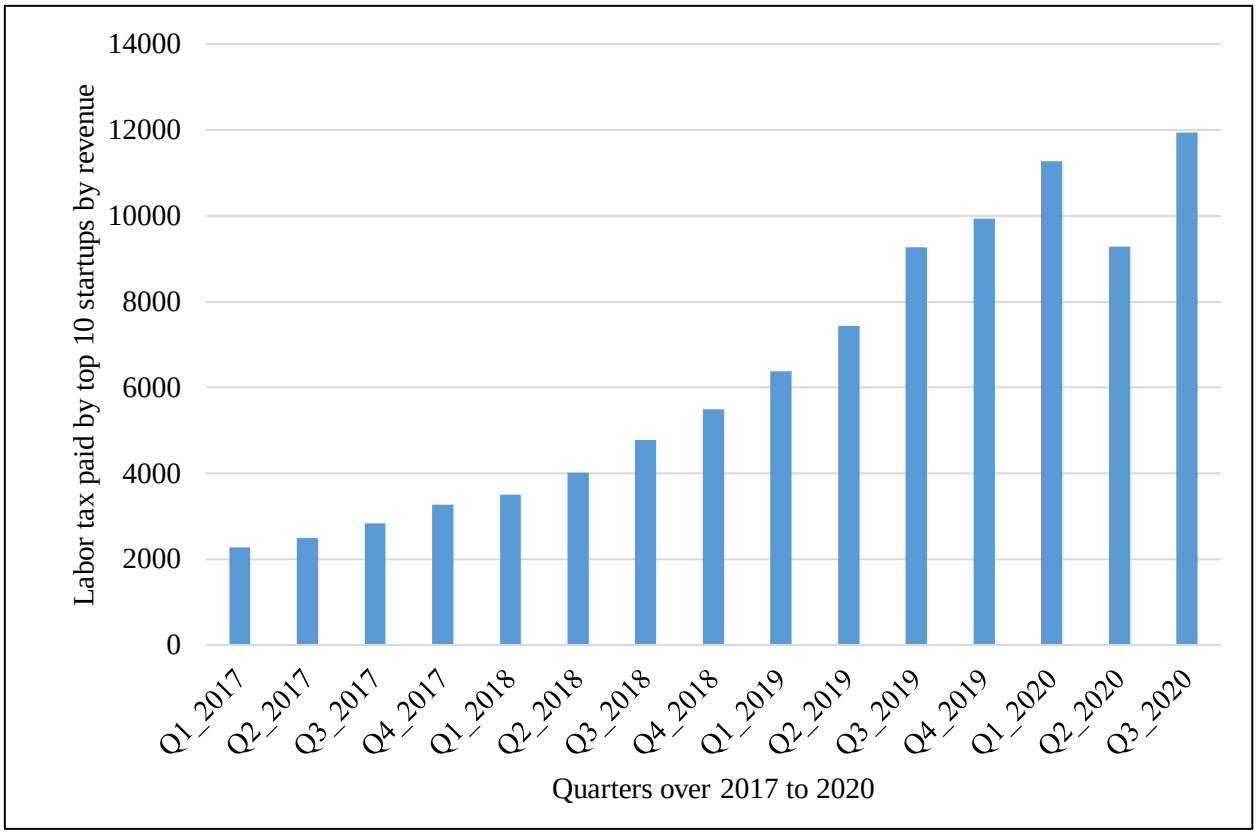


Figure 3. Labor tax paid by top 10 startups by revenue quarterly (in thousand EUR), 2017-2020
Source: Author's creation based on data from Appendix 15,16, 17 and 18

Based on Figure 3, the author noticed an exponential growth in the labor tax paid by the selected startups.

During the same period from 2017 to 2020, the study also observed increase in the number of employees working in the startups. Figure 4 shows a linear increase in the employment opportunities created by these startups.

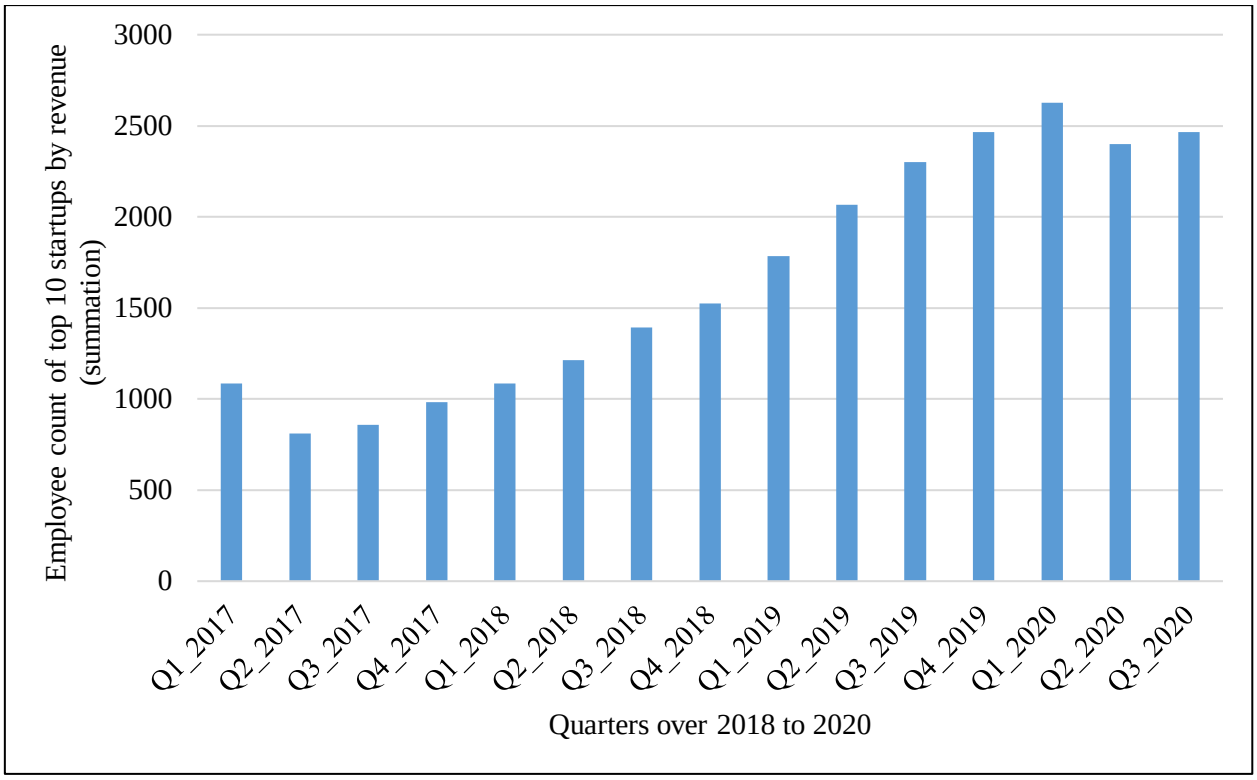


Figure 4. Employee count of top 10 startups by revenue quarterly (in thousands of EUR), 2017-2020
Source: Author's creation based on data from Appendix 11,12, 13 and 14

So far, the study has inferred that number of startups increased and during the same period of 2010 to 2020, the number of employed non-Estonian population within age group of 15-74 increased in Estonia. The taxes paid by the startups increased considerably from a period of 2017 to 2020, every quarter and the employment opportunities created by these startups increased too. It is evident that all the above-mentioned variables have been increasing in a linear fashion (referring to Table 1, Table 3, Figure 3 and Figure 4). Based on the context set above, this study would like to check if there is a relation between these variables and if yes, then are these variables dependent on each other.

3.1.1. Hypothesis 1

Upon the availability of data for the research, this study takes three independent variables:

1. Number of employed non-Estonian population in age group of 15-74 (independent)
2. Number of employment opportunities created by sampled startups (dependent)
3. Labor tax paid by the sampled startups (dependent)

The next set of analysis involves the statistical analysis of these variables using Correlation and then Simple Linear Regression.

Step 1: Create a scatter plot against the independent and dependent variables to check any pattern Aforementioned two variables can be correlated if there exists a linear pattern between them. Therefore, if a trendline exists, the study can proceed, otherwise the two variables can be considered to be scattered, and no further statistics can be derived.

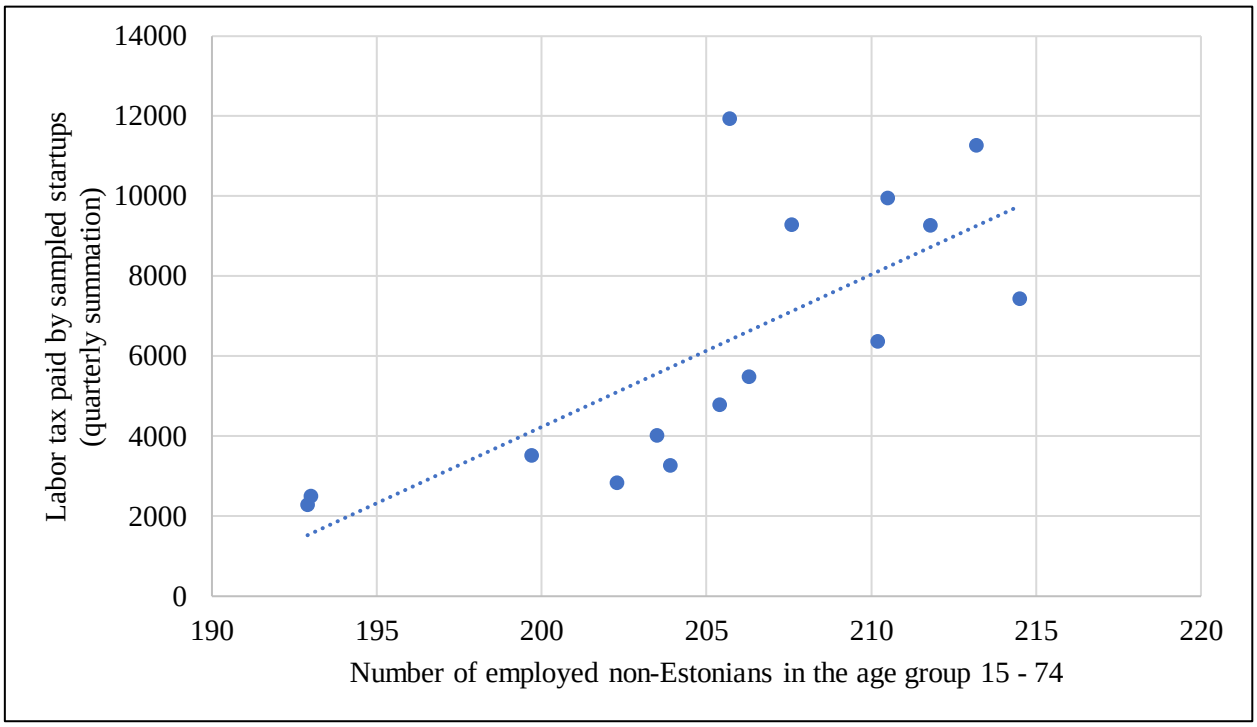


Figure 5. Scatter plot between the labor tax paid by sample startups and number of employed non-Estonians in the working age group, 2017-2020
Source: Author's creation based on data from Appendix 15,16, 17, 18 and Table 3

A positive linear pattern between the non-Estonian workers and the labor tax paid can be observed from the scatter plot above. Similarly, a positive linear pattern also exists between non-Estonian workers and the employee count of the sampled startups.

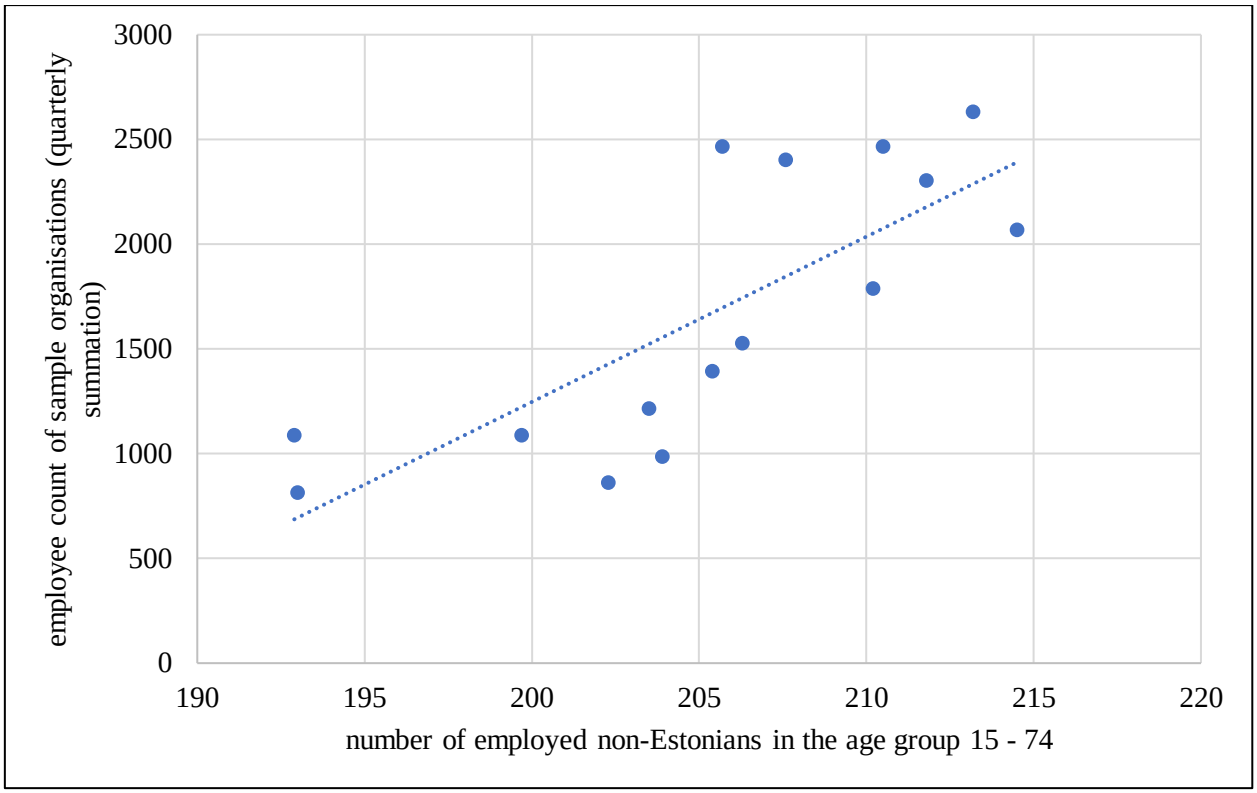


Figure 6. Scatter plot between the employee count of the sample startups and number of employed non-Estonians in the working age group, 2017-2020
Source: Author's creation based on data from Appendix 11,12, 13,14 and Table 3

Step 2: Establish a correlation (positive or negative) and its strength

If the pattern between the variables is scattered, the research would have stopped as no further relationship could be established. Since, a positive linear pattern was observed, this study tries to establish if these variables are correlated.

Using statistical tools for correlation, the Pearson correlation coefficient (r) is calculated between the variables.

Table 4. Results of running correlation using descriptive statistics

	Employed workers	Labor tax pad in EUR
Non-Estonian Employees employed in working age group	1	
Labor tax pad in EUR	**0.744129644**	1

Source: Author's creation based on data from Appendix 15,16, 17, 18 and Table 3

Table 5. Results of running correlation using descriptive statistics

	Employed workers	Employee count
Non-Estonian Employees employed in working age group	1	
Employee count	**0.778181021**	1

Source: Author's creation based on data from Appendix 11,12, 13, 14 and Table 3

The correlation coefficient (r) is positive and greater that 0.74 in both the cases. Hence, a positive and strong correlation between the variables is said to exist between the two.

Step 3: Test the formula to test if there is a relationship between variables

The quantitative data of two variables could still give a positive and strong correlation. But in order to state if two variables could have a relationship, the below condition ought to be satisfied.

$$|r| \geq 2/\sqrt{n} \quad (1)$$

where

n - sample size,

r - correlation coefficient

In this case, the sample size is 15 as the study used quarterly data from 2017 to 2020 (4X4). But the data for last quarter of 2020 was not included due to missing non-Estonian employed workers in Statistics Estonia.

For the first relationship between employed non-Estonians and labor tax paid by sampled startups, the equation is satisfied as:

$$0.744 \geq 2/\sqrt{15}$$
$$0.744 \geq 0.516$$

Similarly, for the second relationship between employed non-Estonians and employee count in the sample startups, the equation is satisfied as:

$$0.778 \geq 2/\sqrt{15}$$
$$0.778 \geq 0.516$$

Hence, the study also concludes that there indeed is a relationship between the variables.

Step 4: Perform Linear Regression to find the causality between set variables

Correlation is only a means to test the relationship between two independent variables. However, as discussed in section 2.3.1, linear regression helps to find the relationship between variables. By looking at the regression data, the study would be able to infer if there indeed is a relationship between the immigrant/non-Estonian employees and the startup ecosystem (sampled by top 10 startups by revenue).

Regression of Employees employed on non-Estonian employed sample population

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,74412964
R Square	0,55372893
Adjusted R Square	0,51940038
Standard Error	2318,88865
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	86736444,9	86736444,9	16,130277	0,00146653
Residual	13	69904179,6	5377244,59		
Total	14	156640625			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
Intercept	-71979,178	19493,9185	-3,6923914	0,00270906	-114093,23	-29865,127	-114093,23	-29865,127
Employees employed	381,052805	94,8777222	4,01625162	0,00146653	176,081948	586,023662	176,081948	x

Figure 7. Linear regression of labor tax paid by the sampled startups on non-Estonian employed population in working age group, 2017-2020
Source: Author's creation based on data from Appendix 15,16, 17, 18 and Table 3

Regression of Labor tax paid by sampled startups on non-Estonian employed sample population

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,77818102
R Square	0,6055657
Adjusted R Square	0,5752246
Standard Error	431,666915
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	3719011,1	3719011,1	19,9585942	0,00063393
Residual	13	2422372,23	186336,325		
Total	14	6141383,33			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
Intercept	-14533,8835	3628,84161	-4,00510274	0,00149762	-22373,5192	-6694,24782	-22373,5192	-6694,24782
Employees employed	78,9038313	17,661725	4,46750425	0,00063393	40,7479943	117,059668	40,7479943	117,059668

Figure 8. Linear regression of employee count in the sampled startups on non-Estonian employed population in working age group, 2017-2020
Source: Author's creation based on data from Appendix 11,12, 13, 14 and Table 3

The important parameters to consider are p-value and Significance F, as these two variables would test our hypothesis and level of confidence. Based on the values this study can either fail to reject or sucessfully reject the null hypothesis set above.

3.2. Micro Level Survey Analysis

The study is multifaceted in the sense, first the macro level elements are studied for understanding the Estonian startup ecosystem and its trend. In this section, the opinion of sample population is considered to understand their thoughts on policies and the benefits they associate to the accelerating startup culture. The survey questionnaire was designed keeping the profiles under section 1.2.2 under consideration.

3.2.1. Estonian and Non Estonian respondents

For the study, the survey was distributed to a group of Estonian and Non-Estonian works to get their inputs on startup ecosystem in Estonia. Due to limited timeframe, survey could acquire only 80 responses based on which the following analysis has been done.

Based on the responses, respondents can be categorized into two groups:

1. Native Workers (35%)
2. Non-Native Workers (65%)

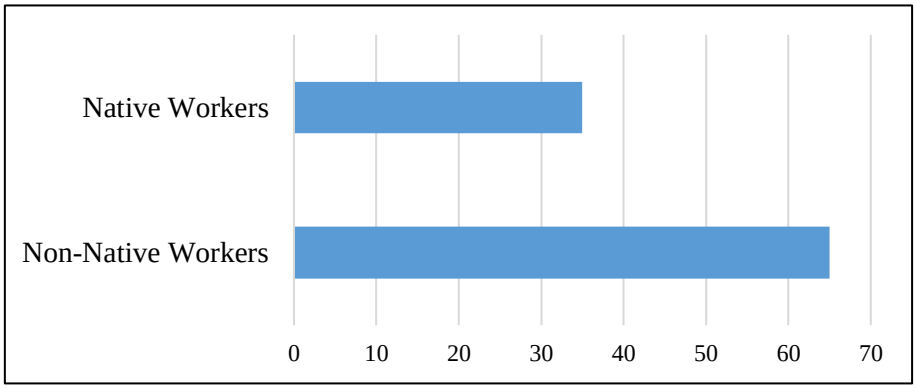


Figure 9. Respondent classification based on questionnaire responses
Source: Author's creation based on the responses received from Appendix 21

3.2.2. Organizational classification

The survey was designed to extract granular information about each of the group and their organization classification. In this study, the author has coded the category of "used to be a startup but no longer one" as a matured startup which either exited the startup ecosystem or have grown as an enterprise. Wise Ltd. for example, can be classified as a matured startup based on its employees and operation size whereas Pipedrive could be placed in the similar category based on its acquisition by another organization.

Based on the responses, 89% native workers (Figure 10) stated that they were either working for an organization which used to be a startup but is no longer one (matured startup). At the same time, 54% of the non-native workers (Figure 11) respondents were working in matured startups and 20% of them were working for existing startups. These responses reveal the affinity of both native and non-native worker groups towards working in organizations which can be grouped under startup or matured startup category.

Focusing on non-native workers, the survey reveals that only 23% of non-native workers were working for organizations which do not belong to the startup ecosystem. Based on the sample size of this survey, these figures do indicate the affinity of non-native workers choosing early or matured startups.

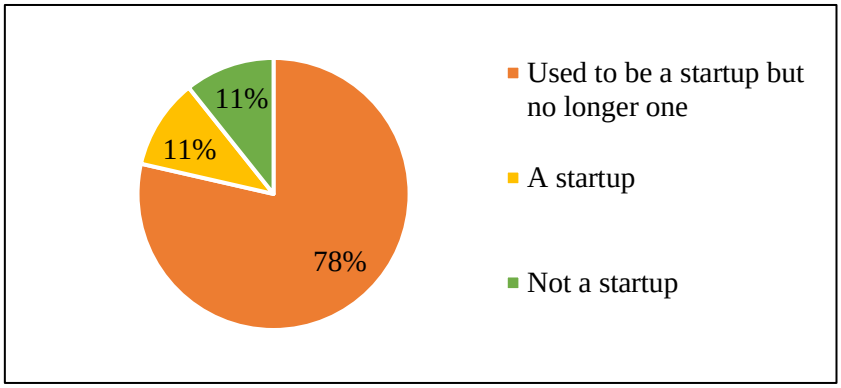


Figure 10. Organizational details of the working native respondents
Source: Author's creation based on the responses received from Appendix 21

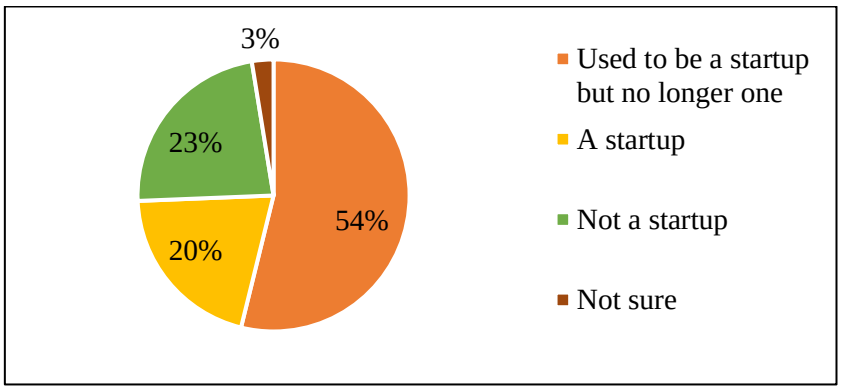


Figure 11. Organizational details of the working non-native respondents
Source: Author's creation based on the responses received from Appendix 21

The survey also revealed that majority of Non-Estonian Respondents immigrated to Estonia for either work (53.8%) or study (34.6%). Only 1.9% of respondents immigrated for setting up their own business and the remaining 9.6% immigrated with their spouse.

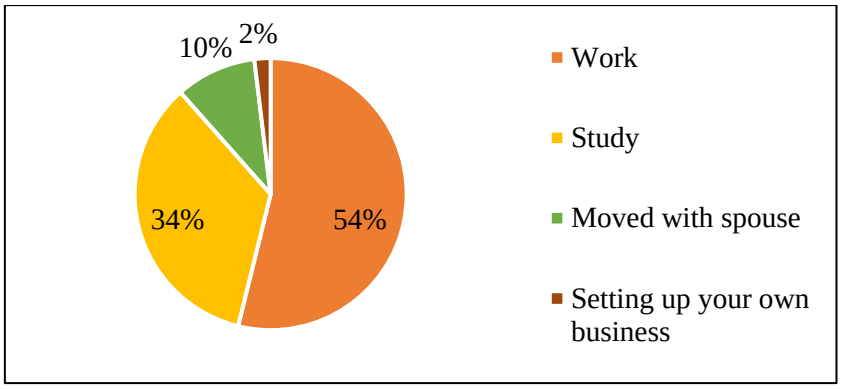


Figure 12. Organizational details of the working non-native respondents
Source: Author's creation based on the responses received from Appendix 21

This information is of great use as it would help us answer one of the research questions as to why people migrate to Estonia and does startup ecosystem of the country influence immigrant's decision.

3.2.3. Non Estonian Students

Another interesting point, which survey revealed was that all Non-Estonian respondents, who immigrated to Estonia for studies, were also working in an organization at the same time. This relates to the discussion earlier in the section 1.1.3. where the discussion was around countries and their rules regarding the student work hours.

33.4% of foreign student respondents showed their affinity towards either setting up their own business or joining a startup in Estonia, and 38.9% of these respondents chose to work for a matured startup. The rest of the respondents (27.8%) indicated that they would like to move out of Estonia to either start their business or work.

3.2.4. Non Estonian Workers including students

Non-Estonian respondents who migrated to Estonia for work, were split on the question whether they found immigration policies relatively easier and friendly compared to other countries. A major portion (82%) of respondents (Figure 13) agree that the policies are easier whereas a small portion (8%) disagree. The calculated percentages have been rounded up in the Figures 13 and 14.

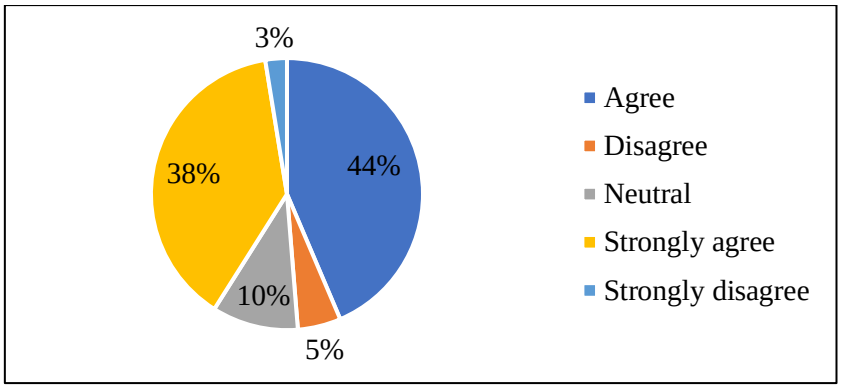


Figure 13. Estonian immigration policies are relatively easier and friendly compared to other countries
Source: Author's creation based on the responses received from survey

54% of these respondents (Figure 14) also agreed that immigration policies played a key role in their decision to immigrate to Estonia for either work or study.

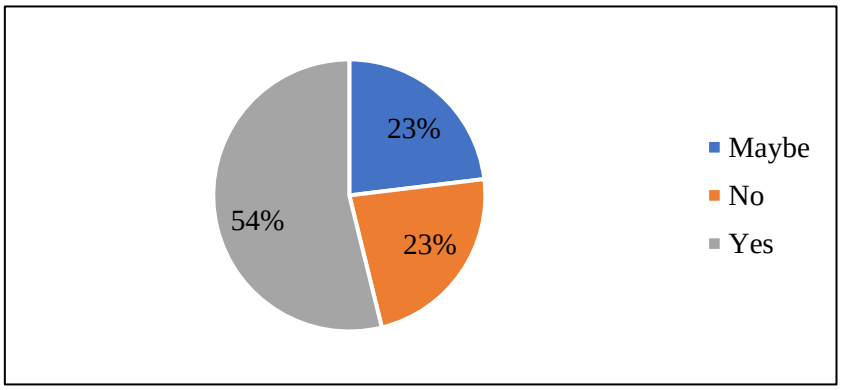


Figure 14. Did these policies play any role in your consideration of Estonia
Source: Author's creation based on the responses received from survey

Based on scale from 1 to 4 (1 being the easiest), a majority of the Non-Estonian respondents (82%) who immigrated to Estonia for study/work, found Estonian immigration process and getting a job in their respective fields easy whereas 28% found the process to be somewhat difficult to manage.

On the topic of relocation, 46% of the Non-Estonian respondents who immigrated to Estonia for work had received some help from their employers during the immigration process. These statistics help strengthen the argument that Estonian firms care about their employees and are willing to provide help relocating the right talent from across the world. At the same time this talent is benefiting from the friendlier policies of the Estonian startup ecosystem.

Based on their experiences so far, a majority of the Non-Estonian respondents (72%) agreed that they would also recommend Estonia as a place to immigrate, further contributing to the ecosystem by adding more resources into the pool.

When asked about what category of organization, the respondents work for, only 10% of the Non-Estonian respondents mentioned that they work in a small organization (less than 250 employees), whereas 31% of the respondents were working in large and 56% in enterprise organizations. Drilling down further on the organization classification, the survey results revealed that 54% of the respondents were working in an organization that was previously classified as a startup.

This result also signifies that the Non-Estonian workers prefer working for established/matured startups rather than early startups. This result could stem from the fact that immigrants sometimes lookout for stability, and joining matured startups or organizations provides them with such opportunities. Only 21% Non-Estonian workers indicated that they work for early startups.

3.2.5. Non native Entrepreneurs

Analyzing results from Non-Estonian workers who immigrated to Estonia for setting up their business, survey revealed that majority of them agreed that Estonian immigration and entrepreneurship policies are easier and friendly compared to other countries and these policies played a part in their decision to start their business in Estonia. But the number of such non-native entrepreneurs is very less. A similar kind of issue was faced at the macro level where the study could not find resources or data pertaining to the number of immigrant entrepreneurs on the online databases.

Of all Non-Estonian respondents, who started their business in Estonia, 86% of them were able to access resources and obtain required permits easily. 14% of them however, stated that it was difficult to get the necessary permits for setting up their businesses. This result matches the theory “Ethnic business owners commonly confront a number of problems in founding and operating their businesses” (Aldrich, Waldinger 1990) and varies from the conception that it is easy to get the required permits or necessary resources for setting up your business in Estonia.

Approximately 57% of such entrepreneurs stated that they would consider expanding to other markets outside Estonia to meet their business growth needs. This correlates to the Cross-Border

Startup utilizing the foreign capital and foreign labor. All of non-native entrepreneurs (100%) agreed that existing policies in Estonia are favorable to entrepreneurs.

3.2.6. Dependent immigrants

The survey had a small sample size for the respondents which fall under the dependent migrants' profile. 80% of them found it easy to get the Estonian visa or residence permit, and almost all of these respondents' spouses migrated to Estonia for work. Even with a small sample size, this profile yields interesting facts, 40% of such respondents stated that they would prefer to work for small to medium size companies and had an affinity to join a startup. At the same time, 20% of such respondents also indicated that they would like to setup their own business in Estonia in the future.

RESULTS

Table 6 below presents the consolidated results of the macro level analysis conducted in this study to check if there is a correlation between the number of non-native Estonian working population and the startup growth while also examining the nature of their relationship.

Table 6. Linear regression results

Regression Analysis of variables	Relationship exists (yes/no)	Correlation coefficient (r) $-1 \geq r \leq +1$	Significance F
Labor tax paid by the sampled startups on employed non-Estonian working population	0.745 >=0.516, yes	0.745, positive and strong correlation	0.0014 < 0.05, statistically significant model
Employee count of the sampled startups on employed non-Estonian working population	0.778 >=0.516, yes	0.778, positive and strong correlation	0.0006 < 0.05, statistically significant model

Source: author's creation consolidated from Table 4, 5 and Figure 7,8

To analyze the dependency of the growing startup ecosystem on the immigrant labor, the study has chosen the labor tax paid by the startups and the employee count of the startups (considering the Startup Visa initiative) as two dependent variables which signify the growth of the Estonian startup ecosystem. The number of employed non-Estonian working population has been considered to represent the immigrant population, an independent variable. Referring to Table 1 and Table 2, explained under the section 3.1, it is evident that the startup ecosystem in Estonia has had an exponential growth during the period of 2010-2020.

From Table 3 of the same section, the author additionally observed the growth in the number of immigrants for the same period. However, just by looking at the linear growth, it is not possible to predict if two phenomena and the factors causing them could be related. Furthermore, this study would also like to analyze the nature of the relationship between these variables, whether one

variable depends on the other or not. Therefore, Table 6 consolidates the results of the steps performed for linear regression analysis under the section 3.1.2.

The first column tests the feasibility of the relationship existing between the variables depending on the sample size and the correlation. The equation (1) holds true for both the cases; therefore, it is feasible to have a relationship between the considered variables with the given sample size of n=15. The second column in this table shows the results of the correlation coefficient. In both the cases, the results have a value greater than 0.7 which indicates that the variables have a positive and a strong correlation. This concludes that a positive change in one variable will lead to a positive change in other as well. In context of this study, the change in number of immigrants will result in change in labor tax paid by the startups and employment opportunities created by such startups. In order to determine if the number of immigrants is indeed the independent variable and the factors representing the startup Ecosystem are dependent variables, a linear regression analysis has been performed on the data, the results of which are presented in column 3 of Table 6.

The values of significance F depicts the confidence of our statistical model. In other words, the probability of null hypothesis being true. For the study the hypothesis was set as: Immigrant labor and foreign entrepreneurs are playing a crucial role in establishing and maintaining the Estonian startup ecosystem. Therefore, the null hypothesis can be defined as “Immigrant labor and foreign entrepreneurs have no role in establishing and maintaining the Estonians startup ecosystem”.

For this study, the author considered a confidence percentage of 95 which means that if the chances of null hypothesis are greater than or equal to 100% - 95% = 5% => 0.05, then the study will fail to reject the null hypothesis. The value for the linear regressions of labor tax paid by the sampled startups and the employment opportunities created by the sampled startup on number of non-Estonian working population comes out to be substantially lower than 0.05 from Table 6, fourth column, based on which, this study rejects the null hypothesis.

The first part of this study is validated at this point indicating that there is a strong and positive correlation between the number of immigrants and factors representing the Estonian startup ecosystem, where number of immigrants are the independent variables. In order to study the circular dependency, this study also needs to validate that the immigrants benefit the most from the flexible startup policies and startup initiatives in Estonia to validate or reject the second hypothesis.

The survey results were consolidated into an excel sheet to collate the percentage of the responses. From the results of the survey, the study observed that 82% of the non-Estonian worker respondents were highly skilled labor as they had mentioned their field of work in the questionnaire (Figure 15).

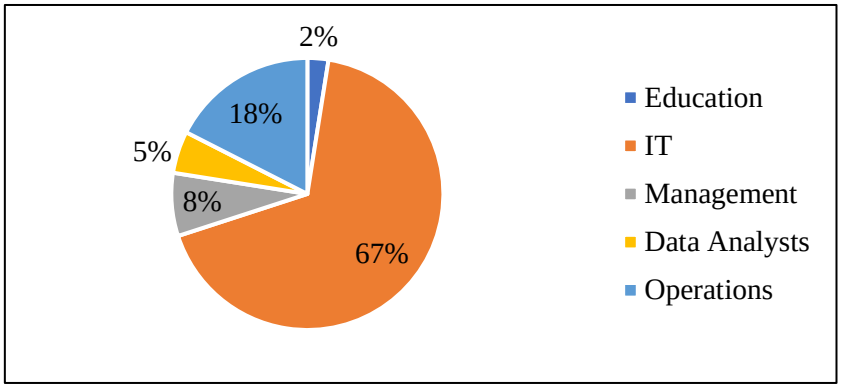


Figure 15: Field of work classification of respondents
Source: Author's creation based on the responses received from survey

46% of non-Estonian workers had also received relocation to Estonia from their employer. Additionally, the survey revealed that 74% non-Estonian workers were either working in early startups or matured startups (Figure 11).

Hence, based on the above figures, this study can conclusively state that highly skilled immigrant labor has benefitted the most from the from the flexible startup policies and startup initiatives in Estonia.

CONCLUSION

The objective of this research was to study of the relationship between the Estonian startup ecosystem and immigrant labor with the aim of investigating the co-dependent nature of aforementioned relationship.

The study started with a theoretical background discussing the work and research that has already been conducted in the field of immigrant labor, economy of a nation, entrepreneurship and how these three impact each other. The theoretical framework of this study puts forward how opportunities and group characteristics are a result of combined efforts of entrepreneurs and the host country. The study then evaluates all these factors with respect to Estonia, concluding with the strategies which led to the rise of Estonia's startup culture and the contribution made by immigrants to promote the startup culture. From study's literature review, it is evident that immigrant entrepreneurs have had a prominent role in Estonia's startup ecosystem since the beginning.

This study then answers two research questions. The first one: How and why do some entrepreneurial startups build on foreign talent to make them "Cross Border" startups? The study finds that few of the renowned Estonian startups have their headquarters outside Estonia like Wise Limited, Monese and Starship Technologies. In early sections of this thesis, the study answers the question that the startups use Cross-Border concept as a strategy due to three main reasons. The first one being the venture capital and funding. From Startup Estonia's data from Figure 1, it is concluded how the foreign capital investment in Estonia's startups had increased in an exponential manner over the past few years. The startups are able to attract more of this foreign investment by making them visible on the global market. One of the best ways to do it is, by setting up the headquarters in a place which is more accessible and has resources accessible easily, just like the Silicon Valley. The second reason being that foreign investors or workers, or entrepreneurs bring in their own experience and expertise to the startups. The study also observed that involvement of the foreign investors also eases out the process of merger and acquisitions at the later stage. The third reason is the availability of the consumers/customers in a specific market. A product might

be developed in a different country, but the end users could be a from a completely different country. Hence, Cross-Border startups emerge out to be beneficial as they help to represent the startup among its users.

The second research question that the study addresses is: How and why this rich talent pool of immigrant labor and entrepreneurs can be said to contribute to be leading to an accelerated growth of the Estonian startup ecosystem? The study gathered and analyzed data available on the online databases of Estonian Custom and Tax Board, Startup Estonia and Statistics Estonia. Although, the data regarding the exact number of immigrant entrepreneurs was not available on the databases considered therefore, the research question only addresses the contribution of immigrant labor in general and not of the immigrant entrepreneurs.

The macro level indicators for the number of startups founded every year from Table 1, the growth in the total capital raised by the startups from Figure 1, the contribution of the top 10 startups by revenue in terms of labor tax paid (Figure 3) and employment opportunities created (Figure 4) indicate a linear growth pattern Estonian startup ecosystem. At the same time Figure 2 depicts the linear growth in terms of number of employed non-native Estonian in the working group. This study shows that the above indicators are correlated. But to understand how and why immigrant labor is contributing to the aforementioned factors, the micro level research results were concluded. The micro level research showed that the immigrants come to Estonia primarily to either study or work. 82.1% of the non-native respondents found the Estonian immigration policies and getting a job in Estonia in their field as easy. 46.2% of these respondents had received relocation from their employers. 71.8 % of the non-native respondents agreed that they would also recommend Estonia as a place to immigrate. 53.8% of such respondents were working in an organization that was previously classified as a startup.

These figures from the survey indicate that the immigrants are ready to relocate to Estonia due to friendlier policies, a growing startup culture. From the Startup Visa initiative, it is known that Startups can provide relocation and employment to the resources acquired from different nations. The affinity of immigrants to refer Estonia to their colleagues and family hints that immigrants prefer Estonia due to its friendly immigration policies which answers our research questions. The immigrant labor contributes to the Estonian startup ecosystem by working for the startups in Estonia. The reason why they prefer to work for startups is because the organizations provide

relocation, the immigration policies of Estonia are easy, and it is easy to find jobs in the respective fields for the immigrants.

This study was able to validate the hypothesis based on gathered data and answer the research questions, but the author observed few limitations in the process. Firstly, the research had initially set out to gather the employee classification data from few of the startups. But the required data was not accessible publicly over Statistics Estonia or Startup Estonia's databases. And not all organizations that were reached for the study could provide the requested data within the time period of this study. Secondly, the study missed certain immigrant profiles during the initial phase of the study. For example, Bolt could not share the requested information because they had many foreigners who had moved to Estonia before working for Bolt and had lived here for several years, also they had people who had lived in Estonia all their lives but did not have Estonian citizenship, and they had Estonian nationals who had lived abroad for years and now moved back to Estonia to work. Additionally, Bolt couriers and drivers are not direct Bolt employees but are part of independent partners that provide services for Bolt. This study missed considering the classification of above-mentioned cases into the correct profiles.

The data for macro level study was sampled from a period of 2017 to 2020 on a quarterly basis. The last quarter of 2020 was skipped from analysis since the data for immigrant working population of that quarter was not available over Statistics Estonia. Tax and revenue details of the startups were not available over e-MTA prior to year 2017. This led to a reduced sample size. Pipedrive was able to provide the requested employee classification data but with one sample size, statistical analysis could not be performed. A further research with data from a group of n startups can be conducted to study, how immigration increased in Estonia with the growth of these startups. The future study could then prove circular dependency by interchanging the dependent and independent variables.

This study would furthermore like to reiterate the need for a research that focuses on answering broad level research questions which could further solidify the understanding of relationship and dependency between immigration and ecosystems that depend on it. This research provides a baseline for such further studies, both in the area of regulation of the immigration policies in Estonia and the cause and effect of the accelerating Cross-Border startup ecosystems.

LIST OF REFERENCES

Abouzeedan, A., Hedner, T., Sweden, G., & Klofsten, M. (2010). Innovation and entrepreneurship–new themes for new times, *Annals of Innovation & Entrepreneurship*, 1:1, DOI: 10.3402/aie.v1i1.5601.

Agrawal, R. K. & Chavan, M. (1997). "Entrepreneurship development amongst the ethnic community in Australia."

Ainamo, A., Pikas, E., & Mikkelä, K. (2021). University Ecosystem for Student Startups: A 'Platform of Trust'Perspective. In *Educating Engineers for Future Industrial Revolutions: Proceedings of the 23rd International Conference on Interactive Collaborative Learning (ICL2020), Volume 2 23* (pp. 269-276). Springer International Publishing.

Aldrich, H. E., & Waldinger, R. (1990). Ethnicity and entrepreneurship. *Annual review of sociology*, *16*(1), 111-135.

Alvarez-Garrido, E., & Guler, I. (2018). Status in a strange land? Context-dependent value of status in cross-border venture capital. *Strategic Management Journal*, *39*(7), 1887-1911.

Archibugi, D., Filippetti, A., & Frenz, M. (2013). Economic crisis and innovation: is destruction prevailing over accumulation? *Research Policy*, *42*(2), 303-314.

Borjas, G. J. (1994). The economics of immigration. *Journal of economic literature*, 32(4), 1667-1717.

Borjas, G. J. (2014). *Immigration economics*. Harvard University Press.

Camarota, S. A. (2013) *The fiscal and economic impact of immigration on the United States*. Center for Immigration Studies. Retrieved from https://cis.org/Testimony/Fiscal-and-Economic-Impact-Immigration-United-States, 12 March 2021.

Can I Work in the USA While Studying? (2020). Study in the USA. Retrieved from https://www.studyusa.com/en/a/1237/can-i-work-in-the-usa-while-studying, 12 April 2021.

Clark, K., S. Drinkwater, & D. Leslie (1998). Ethnicity and Self-Employment Earnings in Britain 1973-95. *Applied Economics Letters*, 5, 631-634.

Collado, M. D., Iturbe-Ormaetxe, I., & Valera, G. (2004). Quantifying the impact of immigration on the Spanish welfare state. *International Tax and Public Finance*, 11(3), 335-353.

Creswell, J. W., & Creswell, J. (2003). *Research design* (155-179). Thousand Oaks, CA: Sage publications.

Dashti, Y., & Schwartz, D. (2018). Should start-ups embrace a strategic approach toward integrating foreign stakeholders into their network? *Innovation*, *20*(2), 164-191.

Dattalo, P. (2008). *Determining sample size: Balancing power, precision, and practicality*. Oxford University Press.

Development Plan of Statistics Estonia 2018–2022. Statistics Estonia. Retrieved from https://www.stat.ee/dokumendid/1231827, 13 April 2021.

Dogan, E., (2017). A strategic approach to innovation. *Journal of Management, Marketing and Logistics (JMML)*, V.4, Iss.3, p290-300.

Dorigo, G., & Tobler, W. (1983). Push-pull migration laws. *Annals of the Association of American Geographers*, 73(1), 1-17.

Dumas, M. (2014). The Rise of the Estonian Start-Up Sphere 2014. *IT Professional*, 16(4), 8-11.

Dustmann, C., Fabbri, F., Preston, I., & Wadsworth, J. (2003). The local labour market effects of immigration in the UK.

Dustmann, C., Fabbri, F., & Preston, I. (2005). The impact of immigration on the British labour market. *The Economic Journal*, 115(507), F324-F341.

Entrepreneurship and SMEs. European Commission. Retrieved from https://ec.europa.eu/growth/smes/supporting-entrepreneurship_en, 12 April 2021.

Estonia's bilateral relations. Internet Archive. Retrieved from https://web.archive.org/web/20070702011903/http://www.vm.ee/eng/kat_176/, 12 April 2021.

Estonian startups continue to grow in the first quarter of 2020 (2020). Startup Estonia. Retrieved from https://startupestonia.ee/blog/estonian-startups-continue-to-grow-in-the-first-quarter-of- 2020, 14 February 2021.

Feridun, M. (2005). Investigating the economic impact of immigration on the host country: The case of Norway. *Prague Economic Papers*, 4, 350-362.

Germany Student Visa – How to Get a German Student Visa. Germany Visa. Retrieved from https://www.germany-visa.org/student-visa/student-visa-visum-zu-studienzwecken/, 12 April 2021.

Global Startup Ecosystem Report 2017, 102-103, 2017. Urenio. Retrieved from https://www.urenio.org/2017/03/23/2017-global-startup-ecosystem-report/, 14 February 2021.

Golden, S. K., & Skibniewski, M. J. (2010). Immigration and construction: Analysis of the impact of immigration on construction project costs. *Journal of Management in Engineering*, 26(4), 189-195.

Gordon, I. R., Travers, T., & Whitehead, C. M. (2007). The impact of recent immigration on the London economy. *London School of Economics and Political Science.*

Hansson, A. H. (1992). Transforming an Economy While Building a Nation The Case of Estonia. *Stockholm Institute of East European Economics.*

Hyde, K. F. (2000). Recognising deductive processes in qualitative research. *Qualitative market research: An international journal*.

International Organization for Migration. Migration Law Database. Retrieved from https://imldb.iom.int/_layouts/15/IML.Portal/AppPages/KeywordSearch.aspx?QueryCu rren tLang=English&Keyword=estonia&Category=Migrant%20Workers, 14 February 2021.

IR20: Employed native and immigrant population by Indicator, Economic activity, Origin and Reference period. Statistics Estonia. Retrieved from http://andmebaas.stat.ee/Index.aspx?DataSetCode=IR20, 12 April 2021.

Johnson, G. E. (1980). The labor market effects of immigration. *ILR Review*, 33(3), 331-341.

Kloosterman, R., & Rath, J. (2002). Working on the fringes: immigrant businesses, economic integration and informal practices. *Marginalisering eller Integration*, NUTEK, Stockholm, 177-88.

Krueger, A. B., & J.-S. Pischke (1997). A Statistical Analysis of Crime against Foreigners in Unified Germany. *Journal of Human Resources*, 32,182-209.

Lukk, M. 2020. *Hiring globally - What does the Startup Visa mean to the Estonian economy... And to me?* Startup Estonia. Retrieved from https://startupestonia.ee/blog/hiring-globally-what-does-the-startup-visa-mean-to-the-estonian-economy-and-to-me#:~:text=The%20Startup%20Visa%20was%20launched,relocate%20their%20compa nies%20to%20Estonia.

McDonald, P., & Kippen, R. (2004). The impact of immigration on the ageing of Australia's population. Canberra, ACT: *Research School of Social Science*, The Australian National University.

Mets, T. (2017). From the educational tiger leap program to the ICT startup booming in Estonia. 15th *International Conference on Emerging eLearning Technologies and Applications (ICETA)* 1-4. IEEE.

Meyers, E. (2000). Theories of International Immigration Policy-A Comparative Analysis. *The International Migration Review*, 34(4), 1245-1282. doi:10.2307/2675981.

Migration Data Portal. *The bigger picture. Estonia – Key migration statistics*. Retrieved from https://migrationdataportal.org/?i=stock_abs_&t=2019&cm49=233, 14 February 2021.

Min, P. G., & Bozorgmehr, M. (2000). Immigrant entrepreneurship and business patterns: a comparison of Koreans and Iranians in Los Angeles. *The International Migration Review*, Vol 34(3), 707.

Model, S. & Lapido D. (1996). Context and Opportunity: Minorities in London and New York. *Social Forces,*75, 485-510.

Montgomery, D. C., Peck, E. A., & Vining, G. G. (2021). *Introduction to linear regression analysis*. John Wiley & Sons.

Neill, A. (2018). *6 Great Countries Where You Can Work While Studying*. Jobboard Finder news. Retrieved from https://www.jobboardfinder.com/news/6-great-countries-where-you-can-work-while-studying/, 12 April 2021.

Nola, R., & Sankey, H. (2014). *Theories of scientific method: an introduction*. Routledge.

Organization for Economic Co-operation and Development (2005), *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data, 3rd Edition*. The Measurement of Scientific and Technological Activities, OECD Publishing, Paris, https://doi.org/10.1787/9789264013100-en.

Organization for Economic Co-operation and Development, 2014. *Is migration good for the economy?* Migration Policy Debates. Retrieved from https://www.oecd.org/migration/OECD%20Migration%20Policy%20Debates%20Numero%202.pdf, 12 April 2021.

Organization for Economic Co-operation and Development, *Working age population.* Retrieved from https://data.oecd.org/pop/working-age-population.htm#:~:text=The%20working%20age%20population%20is%20defined%20as%20those%20aged%2015%20to%2064, 13 April 2021.

PA001: Average gross wages (salaries), labour cost, hours actually worked and number of employees by economic activity section (quarterly). Statistics Estonia. Retrieved from http://andmebaas.stat.ee/index.aspx?queryid=4196, 12 April 2021.

PlayTech, Retrieved from https://www.playtech.com/about-us, 5 April 2021.

Police and Border Guard Board, Estonia. Retrieved from https://www2.politsei.ee/en/teenused/residence-permit/tahtajaline-elamisluba/pusivalt-eestisse-elama-asumiseks/, 5 April 2021.

Recap of the third quarter of the Estonian startup sector - growth through crisis (2020). Startup Estonia. Startup Estonia. Retrieved from https://startupestonia.ee/blog/recap-of-the-third-quarter- of-the-estonian-startup-sector-growth-through-crisis, 14 February 2021.

Saluveer, S., Truu, M. (2020). *Startup Estonia White Paper 2021-2027*. Retrieved from https://media.voog.com/0000/0037/5345/files/SE_Whitepaper_Web%20(1)-1.pdf, 14 February 2021.

Schulze, E. (2019). *How a tiny country bordering Russia became one of the most tech-savvy societies in the world*. CNBC.

Shaed, S. (2019). *The Skype Mafia: Who Are They And Where Are They Now*? Forbes. Retrieved from https://www.forbes.com/sites/samshead/2019/08/21/the-skype-mafia-who-are-they-and-where-are-they-now/?sh=1fb02e647399, 5 April 2021.

Shane, S., & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review*, 25(1), 217–226.

Skandalis, K. S., & Ghazzawi, I. A. (2014). Immigration and entrepreneurship in Greece: Factors influencing and shaping entrepreneurship establishments by immigrants. *International Journal of Entrepreneurship*, 18, 77.

Skype, LinkedIn. Retrieved from https://www.linkedin.com/company/skype/, 5 April 2021.

Sowell, T. (1996). *Migrations and cultures: A world view* (No. 04; JV6217, S6.). Internal Market, Industry.

Startup Database. Startup Estonia. Retrieved from https://startupestonia.ee/startup-database, 12 April 2021.

Tambur, S. (2016). e-Estonia. Retrieved from https://e-estonia.com/digital-ecomony-estonia-from-it-tiger-to-the-worlds-most-pre-eminent-e-state/, 12 April 2021.

Tambur, S. (2019). *Estonian startups have paid €150 million in taxes to state's coffers since 2016.* Estonian World. Retrieved from https://estonianworld.com/business/estonian-startups-have-paid-e150-million-in-taxes-to-states-coffers-since-2016/, 13 April 2021

Tammur, Alis, A. Puur, and T. Tammaru. *Is there a migration turnaround taking place in Estonia? Migration trends in 2000–2015.* Estonian human development report 2016/2017.

Taxes paid, turnover and number of employees, Estonian Tax and Customs Board, Retrieved from https://www.emta.ee/eng/taxes-paid, 12 April 2021.

The products behind 7 of Estonia's international founders (2019). Startup Estonia. Retrieved from https://startupestonia.ee/blog/the-products-behind-7-of-estonia-s-international-founders, 14 February 2021.

The Revenue of CyberTech Startups Increases By More than 50% (2020). Startup Estonia. Retrieved from https://startupestonia.ee/blog/the-revenue-of-cybertech-startups-increases-bymore-than-50, 14 February 2021.

TT332: Labour status of population aged 15-74 by group of persons (place of residence, ethnic nationality, citizenship, marital status), sex and age group. Statistics Estonia. Retrieved from http://andmebaas.stat.ee/Index.aspx?DataSetCode=TT332, 12 April 2021.

Vabamäe, K., Lilles, K. (2017) *Why is Estonia a Startup Paradise?* E-Estonia. Retrieved from https://e-estonia.com/why-is-estonia-a-startup-paradise/, 12 April 2021.

Value for startups. Startup Estonia. Retrieved from https://startupestonia.ee/why-estonia/value-for-startups#:~:text=Startups.,valued%20over%20%24100m%20each, 12 April 2021.

Wennekers, S., Uhlaner, L.M. & Thurik, R. (2002). Entrepreneurship and its conditions: a macro perspective. *International Journal of Entrepreneurship Education*, 1, 25-64.

What is the Estonian Startup Visa? Startup Estonia. Retrieved from https://startupestonia.ee/visa, 14 February 2021.

Williams, C. (2007). Research methods. *Journal of Business & Economics Research (JBER)*, *5*(3).

Wise Ltd. LinkedIn. Retrieved from https://www.linkedin.com/company/wiseaccount/posts/?feedView=all, 5 April 2021.

Wise Ltd. Retreived from https://wise.com/, 5 April 2021.

Working. Study in Estonia. Retrieved from https://www.studyinestonia.ee/working#:~:text=International%20students%20in%20Estonia%20do,studies%20within%20the%20nominal%20time, 5 April 2021.

Zhou, M. (1992). New York's Chinatown: The Socioeconomic Potential of an Urban Enclave. Philadelphia. PA: *Temple University Press*.

APPENDICES

Appendix 1. Labor status of population of working age15-74 by group of ethnic nationality, 2010-2020

Year	Estonians (in thousands)	Non-Estonians (in thousands)
2010	451.6	230.3
2011	460.5	227.5
2012	461.8	221.7
2013	461.5	218.5
2014	466.8	207.6
2015	473.6	209.6
2016	481.3	210.1
2017	481.7	217.1
2018	483.2	219.3
2019	477.5	225.1
2020	478.0	226.6

Source: TT332: Labour status of population aged 15-74 by group of persons (place of residence, ethnic nationality, citizenship, marital status), sex and age group, Statistics Estonia

Appendix 2: Employed native and immigrant population in information and communication Sector, 2010-2020

	Number of persons employed, thousands		
Information and communication	year	native population	immigrant population
	2010	11.0	1.7
	2011	14.8	2.0
	2012	16.3	2.2
	2013	17.3	2.4
	2014	19.3	2.8
	2015	24.3	-
	2016	24.5	3.8
	2017	27.3	3.9
	2018	24.7	5.1
	2019	26.9	5.4
	2020	26.2	4.9

Source: IR20: Employed native and immigrant population by Indicator, Economic activity, Origin and Reference period, Statistics Estonia

Appendix 3: Employed native and immigrant population in agriculture, forestry, and fishing sector, 2010-2020

	Number of persons employed, thousands	
Year	native population	immigrant population
2010	22.8	1.1
2011	25.5	1.1
2012	26.5	-
2013	24.8	1.7
2014	22.8	1.3
2015	23.8	1.2
2016	23.7	1.3
2017	22.2	0.9
2018	21.0	0.9
2019	20.7	-
2020	18.4	1.0

Source: IR20: Employed native and immigrant population by Indicator, Economic activity, Origin and Reference period, Statistics Estonia

Appendix 4: Employed native and immigrant population in manufacturing sector, 2010-2020

	Number of persons employed, thousands	
Year	native population	immigrant population
2010	71.8	34.9
2011	83.7	35.4
2012	83.3	32.1
2013	81.6	34.8
2014	81.5	32.6
2015	87.5	33.1
2016	87.4	33.3
2017	93.0	31.9
2018	92.6	31.2
2019	88.3	32.9
2020	86.0	32.6

Source: IR20: Employed native and immigrant population by Indicator, Economic activity, Origin and Reference period, Statistics Estonia

Appendix 5: Employed native and immigrant population in administrative and support service activities Sector, 2010-2020

		Number of persons employed, thousands	
Administrative and support service activities	year	native population	immigrant population
	2010	14.1	4.9
	2011	12.5	4.9
	2012	15.3	6.0
	2013	15.2	7.5
	2014	12.6	6.2
	2015	12.6	6.0
	2016	15.7	5.6
	2017	17.9	5.7
	2018	18.2	6.8
	2019	16.9	6.8
	2020	16.2	6.8

Source: IR20: Employed native and immigrant population by Indicator, Economic activity, Origin and Reference period, Statistics Estonia

Appendix 6: Employed native and immigrant population in professional, scientific, and technical activities Sector, 2010-2020

		Number of persons employed, thousands	
Professional, scientific, and technical activities	year	native population	immigrant population
	2010	18.5	2.5
	2011	21.2	1.9
	2012	21.0	2.2
	2013	23.3	2.8
	2014	22.6	4.0
	2015	21.3	4.1
	2016	22.2	2.5
	2017	26.3	2.9
	2018	27.6	3.1
	2019	27.8	3.8
	2020	27.6	4.4

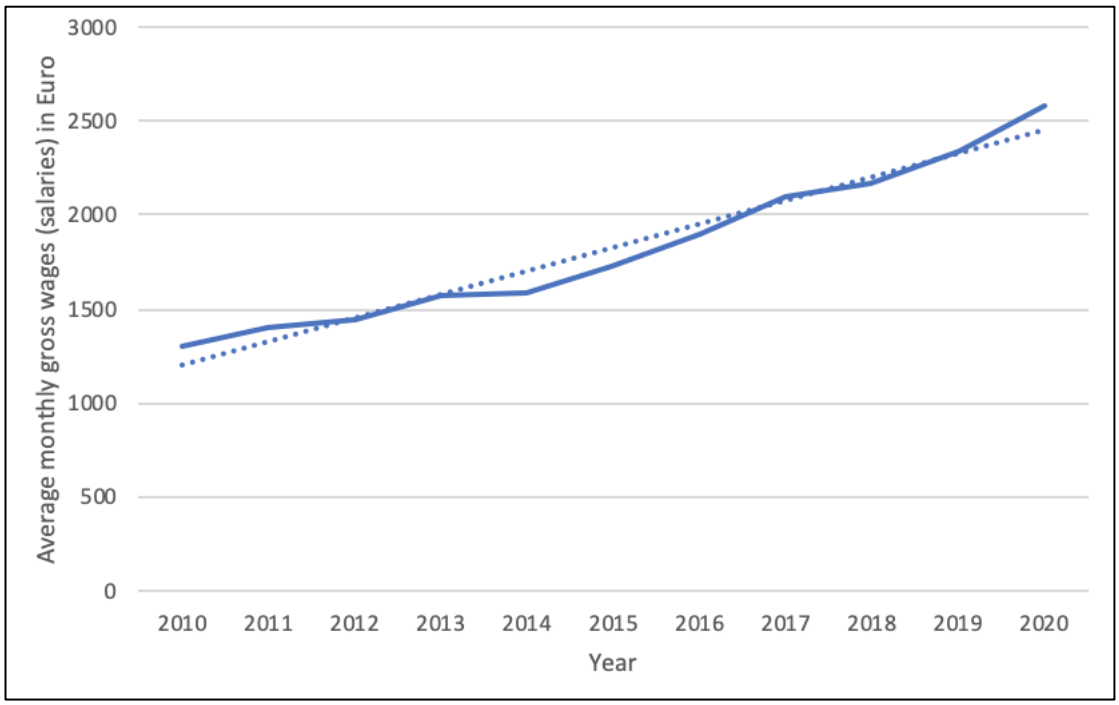
Source: IR20: Employed native and immigrant population by Indicator, Economic activity, Origin and Reference period, Statistics Estonia

Appendix 7: Employed native and immigrant population in financial and insurance activities Sector, 2010-2020

		Number of persons employed, thousands	
Financial and insurance activities	year	native population	immigrant population
	2010	7.8	-
	2011	8.2	2.1
	2012	9.2	1.6
	2013	8.8	1.4
	2014	7.0	-
	2015	7.7	1.8
	2016	8.8	2.2
	2017	10.7	-
	2018	10.8	1.6
	2019	10.8	1.5
	2020	10.2	1.3

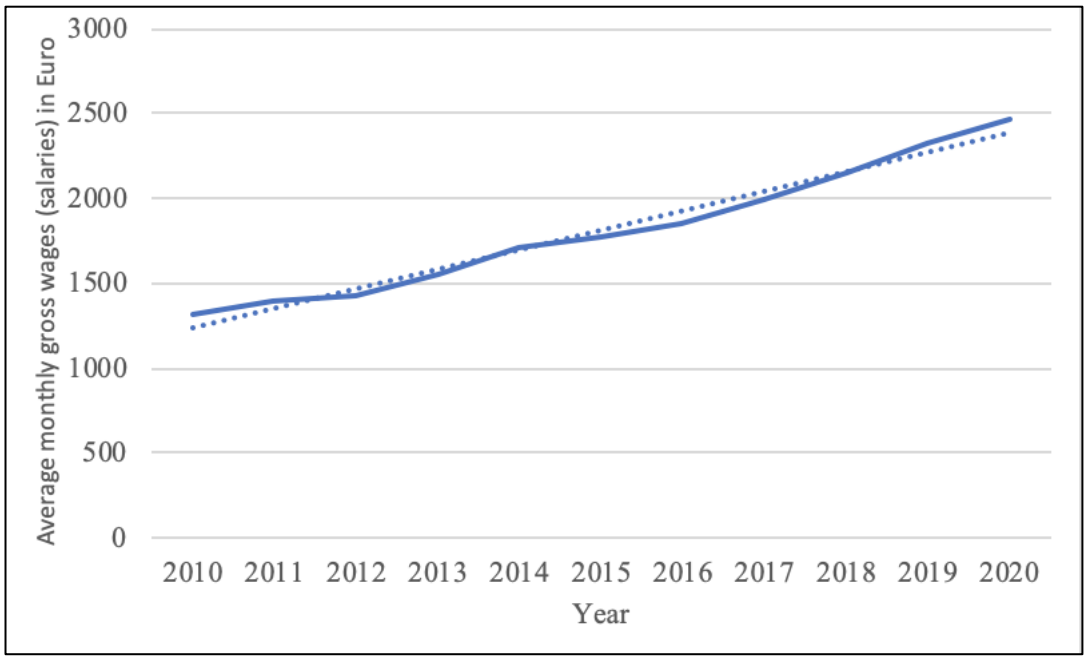
Source: IR20: Employed native and immigrant population by Indicator, Economic activity, Origin and Reference period, Statistics Estonia

Appendix 8: Average monthly gross wages (salaries) in Euro in information and communication sector, 2010-2020



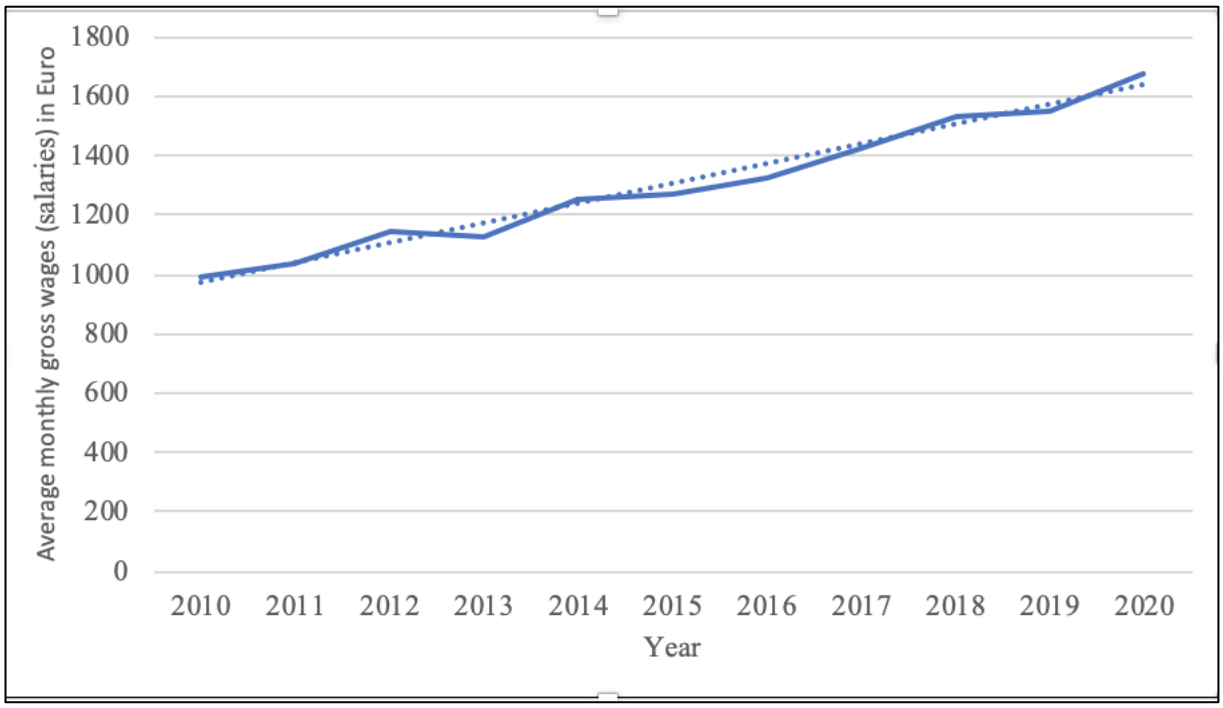
Source: Author's creation based on the data from PA001: Average gross wages (salaries), labour cost, hours actually worked and number of employees by economic activity section (quarterly), Statistics Estonia

Appendix 9: Average monthly gross wages (salaries) in Euro in financial and insurance activities, 2010-2020



Source: Author's creation based on the data from PA001: Average gross wages (salaries), labour cost, hours actually worked and number of employees by economic activity section (quarterly), Statistics Estonia

Appendix 10: Average monthly gross wages (salaries) in Euro in professional, scientific and technical activities, 2010-2020



Source: Author's creation based on the data from PA001: Average gross wages (salaries), labour cost, hours actually worked and number of employees by economic activity section (quarterly), Statistics Estonia

Appendix 11: Employee count of top 10 startups by revenue over the period 2017 (quarterly)

Startup Name	Q1_2017	Q2_2017	Q3_2017	Q4_2017
Bolt	195	67	104	174
Transferwise	542	451	464	486
Paxful	18	7	11	16
Veriff	14	7	8	11
Monese	63	43	45	52
Starship Technologies	113	94	103	110
Milrem Robotics	45	60	44	46
Topia	8	7	7	7
Scoro	44	31	31	36
Testlio	42	45	41	46
Total	1084	812	858	984

Source: Author's creation based on the consolidated data from Estonian Tax and Customs Board and Startup Estonia, Appendix 20

Appendix 12: Employee count of top 10 startups by revenue over the period 2018 (quarterly)

Startup Name	Q1_2018	Q2_2018	Q3_2018	Q4_2018
Bolt	195	208	242	266
Transferwise	542	606	680	725
Paxful	18	23	33	39
Veriff	14	20	40	65
Monese	63	77	85	109
Starship Technologies	113	129	130	120
Milrem Robotics	45	54	67	75
Topia	8	8	25	24
Scoro	44	47	46	55
Testlio	42	40	43	45
Total	1084	1212	1391	1523

Source: Author's creation based on the consolidated data from Estonian Tax and Customs Board and Startup Estonia, Appendix 20

Appendix 13: Employee count of top 10 startups by revenue over the period 2019 (quarterly)

Startup Name	Q1_2019	Q2_2019	Q3_2019	Q4_2019
Bolt	293	341	447	499
Transferwise	782	833	853	893
Paxful	57	66	95	106
Veriff	159	269	309	305
Monese	122	139	162	175
Starship Technologies	136	147	155	186
Milrem Robotics	106	126	123	128
Topia	23	27	35	44
Scoro	62	68	70	76
Testlio	45	49	51	52
Total	1785	2065	2300	2464

Source: Author's creation based on the consolidated data from Estonian Tax and Customs Board and Startup Estonia, Appendix 20

Appendix 14: Employee count of top 10 startups by revenue over the period 2020 (quarterly)

Startup Name	Q1_2020	Q2_2020	Q3_2020	Q4_2020
Bolt	537	547	606	683
Transferwise	957	954	939	929
Paxful	121	129	154	157
Veriff	293	226	231	229
Monese	176	140	132	126
Starship Technologies	239	119	120	130
Milrem Robotics	133	117	118	126
Topia	42	37	32	33
Scoro	76	74	76	80
Testlio	54	57	57	59
Total	2628	2400	2465	2552

Source: Author's creation based on the consolidated data from Estonian Tax and Customs Board and Startup Estonia, Appendix 20

Appendix 15: Labor tax paid by top 10 startups by revenue over the period 2017 (quarterly)

Startup Name	Q1_2017	Q2_2017	Q3_2017	Q4_2017
Bolt	106,386.33	135,499.82	208,751.49	355,495.68
Transferwise	1,355,084.53	1,354,317.06	1,478,472.34	1,755,903.86
Paxful	463.04	5674.31	14,301.89	32,947.85
Veriff	18,422.59	21,801.49	22,995.49	26,687.04
Monese	98,382.28	158,460.31	161,595.44	169,759.06
Starship Technologies	248,109.45	314,485.56	387,203.04	425,996.54
Milrem Robotics	126,177.26	137,346.98	171,895.37	116,258.16
Topia	25,609.27	21,412.58	21,979.48	18,715.65
Scoro	116,345.14	111,071.92	119,084.06	126,987.35
Testlio	180,918.75	229,592.37	247,365.87	237,540.69
Total	2,275,898.64	248,9662.4	2,833,644.47	3,266,291.88

Source: Author's creation based on the consolidated data from Estonian Tax and Customs Board and Startup Estonia, Appendix 20

Appendix 16: Labor tax paid by top 10 startups by revenue over the period 2018 (quarterly)

Startup Name	Q1_2018	Q2_2018	Q3_2018	Q4_2018
Bolt	543,527.39	705,558.11	852,060.52	1,047,719.28
Transferwise	1,643,235.06	1,811,716.02	2,060,170.70	2,183,585.96
Paxful	66,938.53	77,881.66	139,671.52	216,702.96
Veriff	34,257.63	43,411.68	76,178.89	184,877.71
Monese	198,509.81	248,865.02	299,694.50	399,550.83
Starship Technologies	476,145.06	530,742.61	598,354.93	602,372.67
Milrem Robotics	133,850.98	151,711.02	186,063.64	219,852.35
Topia	24,317.93	23,233.48	159,924.17	174,561.83
Scoro	150,367.94	177,997.16	192,424.19	207,877.32
Testlio	235,329.75	240,733.90	215,341.58	246,142.10
Total	3,506,480.08	4,011,850.66	4,779,884.64	5,483,243.01

Source: Author's creation based on the consolidated data from Estonian Tax and Customs Board and Startup Estonia, Appendix 20

Appendix 17: Labor tax paid by top 10 startups by revenue over the period 2019 (quarterly)

Startup Name	Q1_2019	Q2_2019	Q3_2019	Q4_2019
Bolt	1,321,280.48	1,508,855.43	1,867,229.85	2,320,665.49
Transferwise	2,453,460.04	2,631,551.38	3,137,085.58	2,938,354.11
Paxful	300,611.25	523,112.45	528,999.87	674,673.24
Veriff	275,523.51	558,187.00	878,504.11	1,119,046.63
Monese	458,374.70	512,504.69	616,865.78	716,024.85
Starship Technologies	584,223.23	498,483.79	919,698.97	744,055.15
Milrem Robotics	293,743.10	425,454.63	511,355.11	497,671.04
Topia	175,679.91	233,711.36	212,801.94	296,058.05
Scoro	253,516.93	276,903.37	324,600.45	335,927.12
Testlio	252,962.73	265,033.42	272,466.01	299,168.86
Total	6,369,375.88	7,433,797.52	9,269,607.67	9,941,644.54

Source: Author's creation based on the consolidated data from Estonian Tax and Customs Board and Startup Estonia, Appendix 20

Appendix 18: Labor tax paid by top 10 startups by revenue over the period 2020 (quarterly)

Startup Name	Q1_2020	Q2_2020	Q3_2020	Q4_2020
Bolt	2,803,326.77	2,561,988.27	2,498,901.57	3,429,057.21
Transferwise	3,378,372.35	3,386,615.28	3,891,657.41	3,376,024.58
Paxful	926,666.97	872,794.09	933,919.09	1,117,717.84
Veriff	1,137,812.40	673,677.21	1,727,031.77	1,045,335.06
Monese	796,495.97	339,689.73	939,863.64	867,373.14
Starship Technologies	836,453.39	355,212.13	551,458.67	717,902.75
Milrem Robotics	513,237.99	145,381.20	365,920.45	606,005.78
Topia	300,053.39	121,171.24	286,337.88	415,160.85
Scoro	269,897.62	492,108.80	363,029.44	383,458.86
Testlio	309,986.47	328,756.78	375,705.96	356,029.30
Total	11,272,303.32	9,277,394.73	11,933,825.88	12,314,065.37

Source: Author's creation based on the consolidated data from Estonian Tax and Customs Board and Startup Estonia, Appendix 20

Appendix 19: Year and number of startups founded in the year

Year founded	Number of startups founded
2009	1
2010	8
2011	22
2012	28
2013	48
2014	58
2015	73
2016	96
2017	153
2018	261
2019	220
2020	114

Source: Author's calculations based on data from Startup Estonia

Appendix 20: Queries to find correlation between employer details and startup details data

Year 2017

```
select
        sd.id,
        sd.name,
            sd.sector,
            sd.business_modal,
            sd.year_founded,
            sd.webpage,
            ed2017.name,
            ed2017.registry_code,
            ed2017.county,
            ed2017.employees,
            ed2017.field_of_activity,
            ed2017.labor_taxes,
            ed2017.state_taxes,
            ed2017.turnover
from startup_details sd
        join employer_details_2017 ed2017
                on ed2017.name like concat('%', sd.name, '%');
```

Year 2018

```
select
        sd.id,
        sd.name,
            sd.sector,
            sd.business_modal,
            sd.year_founded,
            sd.webpage,
            ed2018.name,
            ed2018.registry_code,
            ed2018.county,
            ed2018.employees,
            ed2018.field_of_activity,
            ed2018.labor_taxes,
            ed2018.state_taxes,
            ed2018.turnover
from startup_details sd
        join employer_details_2018 ed2018
                on ed2018.name like concat('%', sd.name, '%');
```

Year 2019

```
select
        sd.id,
        sd.name,
            sd.sector,
            sd.business_modal,
            sd.year_founded,
            sd.webpage,
            ed2019.name,
            ed2019.registry_code,
            ed2019.county,
            ed2019.employees,
            ed2019.field_of_activity,
            ed2019.labor_taxes,
            ed2019.state_taxes,
            ed2019.turnover
from startup_details sd
        join employer_details_2019 ed2019
                on ed2018.name like concat('%', sd.name, '%');
```

Year 2020

```
select
        sd.id,
        sd.name,
            sd.sector,
            sd.business_modal,
            sd.year_founded,
            sd.webpage,
            ed2020.name,
            ed2020.registry_code,
            ed2020.county,
            ed2020.employees,
            ed2020.field_of_activity,
            ed2020.labor_taxes,
            ed2020.state_taxes,
            ed2020.turnover
from startup_details sd
        join employer_details_2020 ed2020
                on ed2018.name like concat('%', sd.name, '%');
```

Appendix 21: Survey Questionnaire for Micro level data collection based on respondent profiles

Immigration to Estonia & Start-ups

Dear Participant

My name is Sakshi Kukreti and I am currently pursuing MBA at Tallinn University of Technology. For my master's thesis, I am examining the dependency between the start-up ecosystem and the immigrant labor force in Estonia.

I would like to invite you to participate in this research study by completing the survey. The following questionnaire will require approximately 5-10 minutes to complete. If you choose to participate in this survey, please try to answer as many questions as possible to the best of your knowledge. Please note that there are no right or wrong answers for the questions listed in this survey.

To ensure that all information will remain confidential and anonymous, you will not be asked to provide any personally identifiable information.

I would like to thank you for taking the time to assist me in my educational endeavors. If you require additional information or have any questions related to this survey, please feel free to contact me via email mentioned below.

Sincerely
Sakshi Kukreti
sakukr@ttu.ee

A note on privacy
This survey is anonymous. The record of your survey responses does not contain any identifying information about you. All of the information that you provide will be treated as confidential and will only be used for research purposes. Your participation is voluntary. You are entitled to ask that part, or all, of the record of your involvement in the survey be deleted or destroyed.

Q1. Are you a citizen of Estonia?

Yes	No
Classifies respondent as Native	Classifies respondent as Non-native

1. Non-native respondents

Q2. Did you immigrate to Estonia for:

Study	Work	Setting up your own business	Moved with Spouse
Classifies respondent as Student	Classifies respondent as a Worker	Classifies respondent as an Entrepreneur	Classifies respondent as a Spouse

A. Students

Q3. Your place of study: Open ended question

Q4. Your study level:

Bachelor's Degree	Master's Degree	PHD

Q5. Do you currently work for any organization?

Yes	No
Classifies respondent as Student + Worker	Classifies respondent as Student

Q6. Do you currently own or plan to start a new business?

Yes	No
Classifies respondent as Student + Entrepreneur	Classifies respondent as Student

Q7. After completing your studies, will you consider?

Opening your own business in Estonia	Joining a startup in Estonia as your next place of work	Joining a company in Estonia which no longer is a startup, as your next place of work	Moving to other country for setting up business or work	Moving back to your country for setting up business or work

B. Workers

Q8. In your opinion, Estonian immigration policies are relatively easier and friendly compared to other countries.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Q9. Did these policies play any role in your consideration of Estonia as your prospective place of work/study?

Yes	No	Maybe

Q10. On a scale of 1-10, how easy or difficult it was, to get Estonian visa and/or residence permits for your study/job?

1	2	3	4	5	6	7	8	9	10
Easy									Difficult

Q11. On a scale of 1-10, how easy or difficult it was to find work in your field of work in Estonia?

1	2	3	4	5	6	7	8	9	10
Easy									Difficult

Q12. What is your field of work? (e.g. information & technology, communications, agriculture etc.): Open ended search

Q13. Did you receive any help from your prospective organization for relocation to Estonia?

Yes	No

Q14. Name of the organization that you work for: Open ended question

Q15. The organization you work for is

small - less than 250 employees	medium - less than 500 employees	large - less than 1000 employees	enterprise - 1001 or more employees

Q16. Your organization can be classified as

A startup	Used to be a startup but no longer one	Not a startup (matured organization)	Not Sure

Q17. Based on your relocation experience so far, would you recommend (or are you planning to recommend) your colleagues/family to immigrate to Estonia?

Yes	No	Maybe

Q18. In future, would you consider starting your own business in Estonia?

Yes	No	Maybe

C. Entrepreneurs

Q19. Your business name: Open ended question

Q20. In your opinion, Estonian immigration and entrepreneurship policies are relatively easier and friendly compared to other countries.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree

Q21. While considering Estonia as your prospective country to setup work, did these policies factor into your decision?

Yes	No	Maybe

Q22. On a scale of 1-10, how easy or difficult it was to get Estonian visa and/or necessary permits for starting your business?

1	2	3	4	5	6	7	8	9	10
Easy									Difficult

Q23. On a scale of 1-10, how easy or difficult was it for you to start your business in Estonia?

1	2	3	4	5	6	7	8	9	10
Easy									Difficult

Q24. Is it easy to access the required resources, and/or help from government/various agencies to start your business?

Yes	No

Q25. Are you able to find the required labor force to maintain your business needs and further grow your business?

Yes	No

Appendix 21 continued

Q26. Does Estonian consumer market meet your needs for consistent business growth?

Yes	No

Q27. Have you considered/ will you consider expanding to other markets outside of Estonia?

Yes	No	Maybe

Q28. In your opinion, do the existing policies for setting up new businesses in Estonia, favorable to entrepreneurs?

Yes	No

Q29. If no, can you please describe, what policy blocks you the most from either successfully setting up your business or growing your business? Open ended question

D. Spouses

Q30. On a scale of 1-10, how easy or difficult it was to get Estonian visa and/or residence permits for your move?

1	2	3	4	5	6	7	8	9	10
Easy									Difficult

Q31. Your spouse immigrated to Estonia for

Study	Work	Starting a new business

Q32. Have you considered/will you in future consider finding a job in Estonia?

Yes	No	Maybe

Appendix 21 continued

Q33. Your preference to the organization that you would like to work for

small - less than 250 employees	medium - less than 500 employees	large - less than 1000 employees	enterprise - 1001 or more employees

Q34. You would prefer working in

Startup	Mature company (Not a Startup)	Not Sure

Q35. Have you considered/will you in future consider starting a new business in Estonia?

Yes	No	Maybe

2. Native respondents

Q36. What is your current profession?

Student	Working for an organization	Managing your own business	Planning to start your own business	None of the above
Classifies respondent as Student	Classifies respondent as a Worker	Classifies respondent as an Entrepreneur	Classifies respondent as an Entrepreneur	

A. Students

Q37. Your place of study: Open ended question

Q38. Your study level:

Bachelor's Degree	Master's Degree	PHD

Appendix 21 continued

Q39. Do you currently work for any organization?

Yes	No
Classifies respondent as Student + Worker	Classifies respondent as Student

Q40. Do you currently own any business?

Yes	No
Classifies respondent as Student + Entrepreneur	Classifies respondent as Student

B. Workers

Q41. The organization you work for is

small - less than 250 employees	medium - less than 500 employees	large - less than 1000 employees	enterprise - 1001 or more employees

Q42. Your organization can be classified as

A startup	Used to be a startup but no longer one	Not a startup (matured organization)	Not Sure

Q43. Name of the organization that you work for: Open ended question

Q44. What is your field of work? (e.g. information & technology, communications, agriculture etc.): Open ended question

Q45. In future, would you consider starting your own business in Estonia?

Yes	No	Maybe

C. Entrepreneurs

Q46. Your business name (please leave empty, if you don't have one yet): Open ended question

Q47. Did you consider starting your business in Estonia, because of its relatively friendly entrepreneurship policies?

Yes	No	Maybe

Q48. On a scale of 1-10, how easy or difficult it is to get necessary permits for starting a business?

1	2	3	4	5	6	7	8	9	10
Easy									Difficult

Q49. Is it easy to access the required resources, and/or help from government/related agencies to start your business?

Yes	No

Q50. Were/are you able to find the required labor force to maintain your business needs and further grow your business?

Yes	No

Q51. Does Estonian consumer market meet your needs for a consistent business growth?

Yes	No

Q52. Have you considered/ will you consider expanding to other markets outside of Estonia?

Yes	No	Maybe

Appendix 21 continued

Q53. In your opinion, do the existing policies for setting up new businesses in Estonia, favorable to entrepreneurs?

Yes	No

Q54. If no, can you please describe, what policy blocks you the most from either successfully setting up or growing your business? Open ended question

Appendix 22. Non-exclusive licence

A non-exclusive licence for reproduction and publication of a graduation thesis[11]

I Sakshi Kukreti (*author's name*)

1. Grant Tallinn University of Technology free licence (non-exclusive licence) for my thesis Analysis of co-dependency between the immigrant labor and Estonian startups,
(*title of the graduation thesis*)

supervised by Antti Ainamo,
(*supervisor's name*)

1.1 to be reproduced for the purposes of preservation and electronic publication of the graduation thesis, incl. to be entered in the digital collection of the library of Tallinn University of Technology until expiry of the term of copyright;

1.2 to be published via the web of Tallinn University of Technology, incl. to be entered in the digital collection of the library of Tallinn University of Technology until expiry of the term of copyright.

2. I am aware that the author also retains the rights specified in clause 1 of the non-exclusive licence.

3. I confirm that granting the non-exclusive licence does not infringe other persons' intellectual property rights, the rights arising from the Personal Data Protection Act or rights arising from other legislation.

11.05.2021 (date)

[1] *The non-exclusive licence is not valid during the validity of access restriction indicated in the student's application for restriction on access to the graduation thesis that has been signed by the school's dean, except in case of the university's right to reproduce the thesis for preservation purposes only. If a graduation thesis is based on the joint creative activity of two or more persons and the co-author(s) has/have not granted, by the set deadline, the student defending his/her graduation thesis consent to reproduce and publish the graduation thesis in compliance with clauses 1.1 and 1.2 of the non-exclusive licence, the non-exclusive license shall not be valid for the period.*