MASTER'S THESIS

An inquiry into the potential effects of long term emigration and brain drain on the long-term sustainability of Lithuanian economic growth

Student: Martin Sørensen

Student Number: 125452

Total Number of Characters: 141247 (Max 182000)

Total Number of Pages: 76 (Max 80)

Supervisor Name: Peter Gammeltoft

Table of Contents

List of Abbreviations....4

Acknowledgements....5

Executive Summary....6

Introduction....7

Problem Statement and Research Question....8

Methodology and Structure....10

A Brief History of Lithuania....11

Lithuania Today....13

Geopolitics....13

Economics....13

Introduction....13

GDP....14

Development....16

Trade Commodities....18

GNI....19

FDI....21

Demographics....22

Introduction....22

Population....22

Migration....23

Labour Force....26

Fertility Rate....29

Unemployment....31

Literature and Theoretical Framework....33

Introduction....33

Understanding Brain Drain....33

Focusing on Economic Growth Drivers....36

Assessing Factors Concerning Net Migration....44

Analysis 53
Understanding Economic Theory 53
Introducing the Economic Models 53
Applying Economic Theory to Interpret Lithuania's Situation 64
The Effects of Declining and Ageing Population 65
Accelerating Economic Development in the Long Term 67
The Role of Remittances in Development 70
Analysing the Labour Market in Lithuania 73
Conclusions and Practical Implications 75
References 77
List of Figures 82
Appendices 83

List of Abbreviations

EU	European Union
UN	United Nations
NATO	North Atlantic Treaty Organisation
UNESCO	United Nations Educational, Scientific and Cultural Organisation
ILO	International Labour Organisation
USSR	Union of Soviet Socialist Republics
LTL	Lithuanian Litas (former Lithuanian currency)
USD	United States Dollar
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GNI	Gross National Income
HDI	Human Development Index
CIS	Commonwealth of Independent States
US/USA	United States/of America
UK	United Kingdom
FDI	Foreign Direct Investment
WTO	World Trade Organisation
EODB	Ease of Doing Business Rankings
BoP	Balance of Payments
RLG	Remittance-Led Growth (hypothesis)
MPL	Marginal Product of Labour
MPK	Marginal Product of Capital
TCN	Third Country Nationals
TRP	Temporary Residence Permit
ECB	European Central Bank

Acknowledgements

The acknowledgements in this paper are generally limited given the extenuating circumstances under which this paper was written, and prevented the collection of any specific primary data for analysis.

That said, the following must be acknowledge for the support they gave in making this thesis possible:

Firstly, Peter Gammeltoft for his patient and accommodating supervision that provided effective guidance, direction and suggestion, particularly in identifying key interest areas worth studying from both a personal and academic perspective. Your advice was invaluable, especially with regards to formulating a specific research focus, and identifying some of the best methods to go about deriving a research structure.

Secondly, Milda Jundulaitė, for being a huge motivator behind studying a problem of this nature in the first place. Thank you for your knowledge, guidance and inspiration to explore a real world problem from the perspective of a young nation whose difficult past has not hindered it from daring to dream for a better future.

Executive Summary

The issue of emigration and brain drain has been a considerable worry for the economy of Lithuania almost immediately since gaining independence from the Soviet Union in 1990. Many have feared the long term repercussions of such a phenomenon on the sustainability of economic growth in the small Baltic republic if nothing is done to curtail the issue.

This paper sought after investigating to what extent brain drain has and will pose economic pressures that may lead to long term decline in development and living standards in the event the issue worsens over time, by combining economic and demographic data about the country over time, particularly since independence, and compiling and applying them to general economic theory that can explain trends in small open economies both in the short and the long term, it was found and concluded that although the issue of brain drain should not be taken lightly, it's not necessarily a guarantee that the Lithuanian economy will struggle.

Whilst labour, particularly effective labour is an important factor for long-term development, other factors, particularly the continued advancement in the level of technology and labour augmenting capabilities within and amongst the workforce was proven to be the defining factor for sustaining economic growth even in the face of a declining and ageing population.

In order to facilitate such advancements, it was recommended that Lithuania continue attracting FDI in labour augmenting activities, which have proven to yield successful thus far due to the effective establishment of legislation and infrastructure to support such investments. Additionally, it was urged that Lithuania address its immigration practices in making them more effective in attracting foreign effective labour to offset the loss of skilled local workers to emigration.

Introduction

"If you want a more productive economy, you need to invest in the skills of our workforce." – Jeremy Corbyn[1]

It has often been a common consensus that the talent, size and skillset of a nation's working population is essential in its propensity for economic growth and development. Such a paradigm has played a visible and active role in the emergence of many nations throughout history. As a matter of fact, in particular case studies, developing the abilities of a growing labour force by means of raising investment in education, has played a profound role in transforming low income countries, to some with large economic and political influence. South Korea is a prime example of such policies yielding powerful returns (Isozaki, 2019).

However, as time has progressed, so has the global landscape. International legislature, geopolitical relationships and technological advancements have all contributed to a world that operates somewhat differently to when these classical paradigms could be fully applied.

The most basic form of economic theory defines that the productivity of any country is defined by the size of its capital, labour and level of technology (Mankiw & Taylor, 2014):

$$Y = F(K, L)$$
$$Y = output$$
$$K = capital$$
$$L = labour$$

To expound upon this idea, additional theory under the Solow Model, which serves as a dynamic framework to view economic development in the long-run, suggests that any given nation's output is determined by its utilisation of capital, as well as the availability of labour especially "effective/efficient labour" (Mankiw & Taylor, 2014).

$$Y = F(K, L \times E)$$
$$L \times E = number\ of\ effective\ workers$$

A key assumption behind the applicability of the model is the growth a nation's general and effective labour force, which is a common characteristic of all developing nations throughout history. Traditionally, most emerging countries have predominantly youthful populations, accompanied by a continuous growth in overall population size.

[1] (Corbyn, 2020)

What happens however when these assumptions are no longer met? What happens when a nation on the cusp of breaking from an emerging market to a fully-developed status doesn't have a youthful population. Furthermore, what are the implications further influence the issue when population growth is not only stagnant, but negative as a result of losing much of its prospective effective labour to emigration.

Such a scenario sets the stage for the reality of many emerging European nations who only recently achieved their independence after liberalisation from the Soviet Union . Amongst them, the issue is particularly worrisome in the Republic of Lithuania, a small Baltic nation that has lost approximately 25% of its population in only 30 years; predominantly as a result of emigration (Ubarevičienė & van Ham, 2017).

Immediately after achieving independence on March 11, 1990, Lithuania set its sights for a free democratic tomorrow, emerging from the quagmire of centuries of occupation and several decades of communism. The road forward would not be easy. Not only would the country have to re-draw all the policies put in place by foreign administrations, it also had to find ways to bring its population out of a Soviet economic mentality, if the visions for a free-market economy were to bear any fruit. For the larger part of its existence as a free nation, Lithuania's primary state of affairs involved greater integration with the free world, whilst essentially playing economic and developmental "catchup" with the majority of its western European counterparts (Eidintas, Bumblauskas, Kulakauskas, & Tamosaistis, 2013).

The path was turbulent, as the notion of converting planned economies into free ones was vastly uncharted territory. Lithuania struggled in its first years as a new republic, but found its footing, and quickly established an economic prowess boasting impressive growth rates. Despite being struck by 2 economic recessions in 1992 and 2008, the latter being the most devastating, the country has averaged an annual GDP growth of 4.3%, higher than today's average EU growth rate of 2.0% (The World Bank, 2020).

Problem Statement and Research Question

Today most of Lithuania's economic indicators show signals of promising economic development. However, given the annual loss of young talent to emigration, coupled with an increasingly ageing population, questions are being asked as to how sustainable continued growth will be in the foreseeable future.

The unique situation in Lithuania poses some intriguing questions that need to be asked of existing economic theory. As the regular assumptions for young growing populations fail to be met, coupled with relatively low net migratory losses and predominantly low FDI levels, complications arise as the regular

paradigms and characteristics present in economic theory are not entirely present. That said, in spite of the circumstances, Lithuania has managed to exhibit strong growth trends in the face of a potential looming crisis. Whilst typical factors of production decrease, Lithuania's economic progression continually rises, as does its other indicators in visualising holistic development.

Somewhere throughout Lithuania's young history since liberation, policy makers, economists and key decision makers got things right; and they did so in the face of entirely uncharted territory in transforming a planned economy to a market economy in the span of a decade.

In summary, it would appear that certain aspects of economic theory need to be revisited, and potentially amalgamated in order to truly explain the situation in Lithuania and its counterparts. Not only as a means of trying to make sense of the country's economic development despite the supposed adverse conditions, but also trying to provide future value as other countries in similar positions attempt to achieve their own successes.

Alongside this analysis, a natural next step would be to gain a more concrete and elaborate understanding on the concept of brain drain, and what positive and negative implications these pose on young and developing nations in the 21st century. Developing a concise appreciation and acknowledgement of the concept is also a quality of increasing importance as the world continually embraces a greater ease of mobility, not just in leisure terms, but of labour as well.

Therefore the following questions arise:

1) *What threats do declining populations pose upon the future of the Lithuanian economy?*
2) *What economic factors are most important to prioritise to ensure economic growth?*
3) *To what extent can remittances aid the development of the Lithuanian economy?*
4) *How can economic theory explain the difficulties with regards to Lithuanian unemployment, considering it is a highly influential push factor for emigration?*

All of these questions lead up to the prime research question investigated by this paper:

"In what ways will emigration and brain drain affect the sustainability of Lithuanian economic growth, and how can sustained economic development continue to be achieved?"

Methodology and Structure

In order to gain as holistic a view of the current specific problem faced by Lithuania, the paper will be structured as follows.

The first sections of this paper will involve the combined collection of quantitative data in the form of official country statistics, and qualitative data in the form of detailed descriptions of some of the key events that have unfolded in the country, particularly since independence, that can provide explanatory power to some of the trends visualise in the quantitative data. By mixing the two methods together, the aim is to gain both a visual and tangible representation of the development of various economic and demographic factors over time, whilst being offered all the relevant information to understand how and why these trends are presented in the way they are.

Following the presentation of raw country-specific information and data, a compilation of literature will be reviewed as a means of gaining a superior understanding the phenomenon of brain drain and the nuances around it. By nuances, these refer to the various opportunities and threats they post to the economy in focus, and additionally how various push and pull factors influence the degree to which the problem affects the nation.

In introducing and applying theory to analyse the problem at hand, a mixture of an inductive and deductive approach (Grønhøj & Bergenholtz, 2016) will be used. What this means is that an understanding of data and previous hypotheses and results of various studies about brain drain, in and out of the Lithuanian case, will be used to define what theories are most necessary and applicable to effectively investigate the issue at hand. However in terms of actual analysis, the processing of all trends and information from previous sections will be centred around the selected theories in order to not necessarily synthesise new theories or hypotheses, but rather confirm or reject some of the assumption previously made about how emigration will affect Lithuanian economic growth, and how economic growth can be sustained in the face of such pressures.

A Brief History of Lithuania

In order to fully appreciate the nation that is in focus throughout this paper, gaining at least a brief understanding of its history and background would be highly valuable in understanding the context from which many of the present day constructs have been formed. These constructs can include, but are not limited to societal behaviours and tendencies, culture, economic prowess and geopolitical relations.

The Republic of Lithuania today is comprised of a relatively small land mass along the Baltic Sea. With a total area of only about 65,300 square kilometres (Central Intelligence Agency, 2020), it is drastically smaller in comparison to its historic size, where at its 15th century peak, the country spanned from the Baltic Sea all the way to the Black Sea, with territories spanning the areas that today make up part of Latvia, Russia, Belarus, Poland, Ukraine and Moldova .

Fate would however prove cruel to the nation following the collapse of the Polish-Lithuanian Commonwealth in 1795, whereby territories were partitioned and modern day Lithuania came under the rule of the Russian Empire. For over 100 years, Lithuania would combat forced Russification, until the First World War when the territory was annexed by the German Empire.

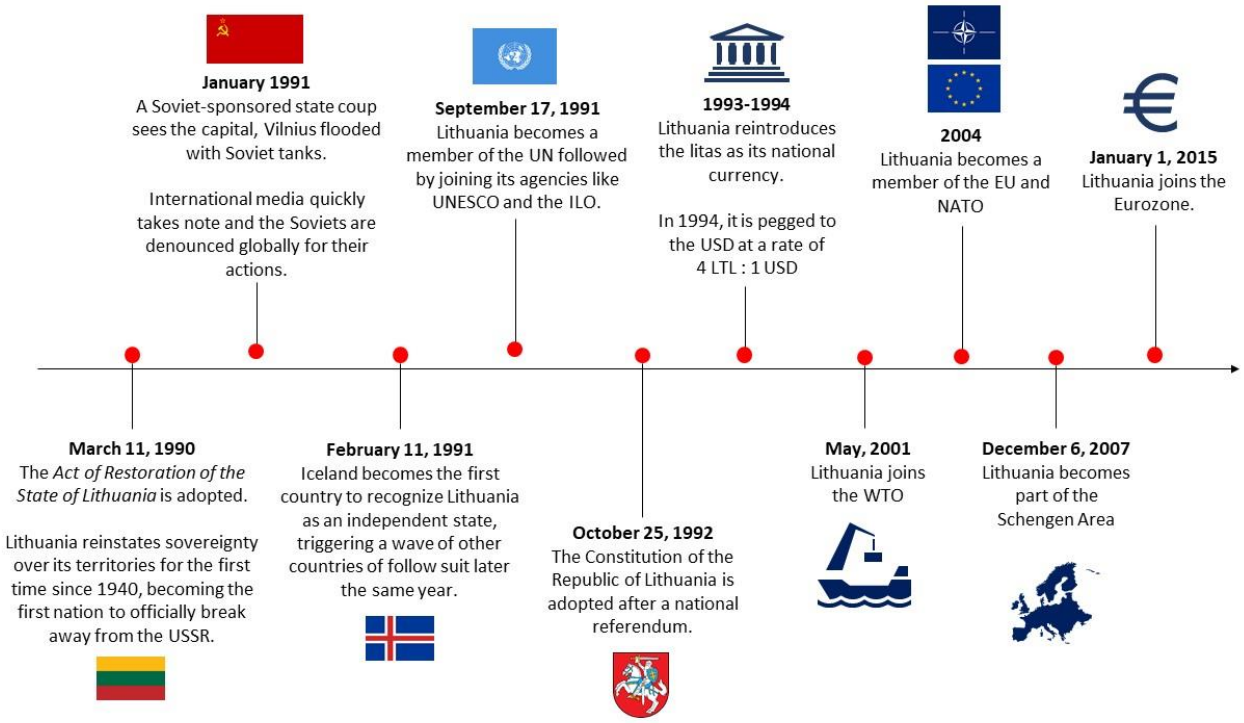
As the war drew to a close, and the Germans would soon be forced to suffer the consequences under the Treaty of Versailles, a group of 20 Lithuanian intelligentsia took advantage, and successfully adopted an act that declared the country's independence on February 16, 1918. For the first time in centuries, Lithuania was an independent state since the Grand Duchy of Lithuania. International recognition would be delayed however, as the country was forced into three armed conflicts with the Bolsheviks and Bermontians following the collapse of the Russian Empire, as well as the Poles who attempted to lay claims on the capital region, Vilnius.

The interwar period, despite characterised by a period of independence was burdened with a series of territorial disputes. All of which would eventually prove futile as World War II broke out, and Lithuania became a region suffering from both Nazi and Soviet occupation.

Following the end of the war, Lithuania would be forced into being one of the various republics that made up the USSR, until 1991 when after years of resistance, Lithuania would once again win its freedom.

Since restoring the independence that the nation had originally won in 1918, Lithuania would spend the first years immediately after liberalisation re-defining itself; eliminating the communist policies that had been put in place during occupation and transitioning to an open market that followed the footsteps of the western democratic model. The nation was quick to establish itself and gained representation in the UN. The country also actively sought after membership in the European project and all associations associated with a united Europe. It worked tirelessly to meet the criteria that allowed them to join European Union.

FIGURE 1: A Summary of the History of Lithuania since gaining Independence



Multiple Sources:

(Eidintas, Bumblauskas, Kulakauskas, & Tamosaistis, 2013)

(Embassy of the Republic of Lithuania to the State of Israel, 2014)

(Central Intelligence Agency, 2020)

Lithuania Today

Geopolitics

After Lithuania regained its independence in 1990, a new era began for the nation. As mentioned previously, the country made substantial successful efforts to integrate with the western democratic world.

Independence also however allowed the nation to make some form of peace with its former adversaries. Most notably, after territorial disputes that led to severe hatred between Poland and Lithuania, the two nations signed a friendship pact that would foster stronger ties whilst renouncing all historic claims made on each other's territories. Lithuania also managed to establish healthy economic ties with Russia remains an important trade partner despite geopolitical tensions that hinder closer relationships.

Economics

Introduction

The newly established Lithuania spent the first few years of its independence undergoing a series of turbulent but necessary reforms to lay the groundwork for the type of nation its leaders wanted to build.

The country initially saw its liberation as an opportunity to more "freely" adapt existing policies, especially in agriculture to produce at the scale necessary to start integrating to the western world. In essence, it assumed it could trade with the waste under "liberalised" Soviet production practices. These assumptions, however, proved to be fundamentally false (Eidintas, Bumblauskas, Kulakauskas, & Tamosaistis, 2013).

Upon regaining access to the rest of the world, Lithuania quickly realised how fragile and "primitive" its own economy was comparatively faring. This was particularly worrying considering that Lithuania had been considered one of the strongest economic republics in the former USSR. This wasn't enough. The path to realise any form of competitiveness or even relevance in the global economy would be longer and more complex than anticipated.

GDP

The reality of the era was that Lithuania's existing industrial prowess was reliant on raw materials from the Soviet Union, as well as Soviet markets to sell in. All of this became irrelevant, as Lithuania was now an independent nation, and the USSR was imminently collapsing. Alternatively, selling products to the west was equally unviable, as the subpar quality of local goods meant they were unlikely to be received by these markets. Taking all this into account, the economy fell into recession immediately post-independence from 1992 to 1994.

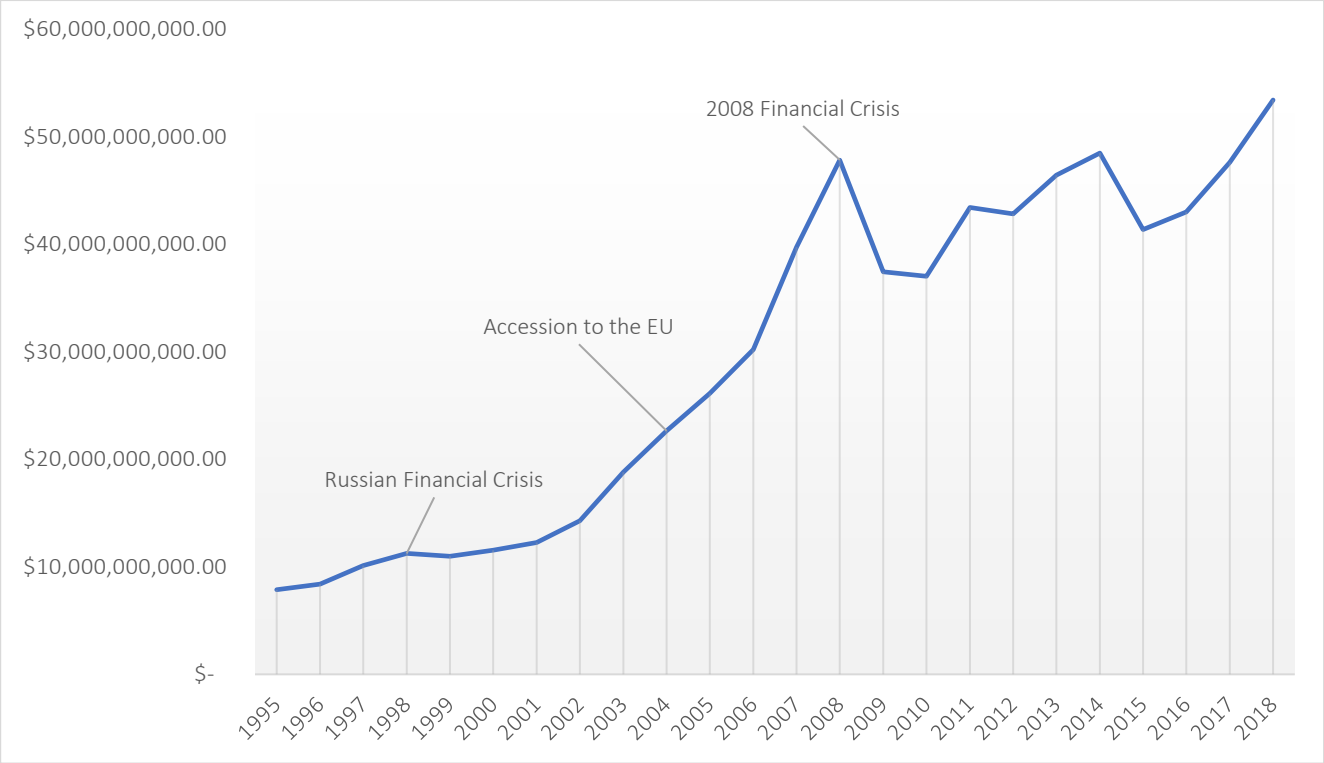
The burden of the fragile economy fell hardest upon the Lithuanian society. Despite years clamouring for independence, Lithuanians had grown accustomed to the Soviet lifestyle and system. Citizens of all backgrounds were used to the practice of being labourers who followed orders of the state. The notion of economic and societal independence was somewhat puzzling, and most of the population didn't fully understand the opportunities and freedom that was now suddenly afforded to them.

In order to begin realigning the structures in which the nation operated, many state-owned enterprises underwent a period of privatisation (Central Intelligence Agency, 2020). New primary and secondary companies slowly became established. A new class of enterprises emerged, now operating under the standards of the Western economies they all hoped to target.

During the era of privatisation, because of a range of different factors, many of the large companies in Lithuania went bankrupt leaving thousands of people unemployed. Economic development additionally received a blow when two of Lithuania's largest banks failed in 1995, directly impacting the national budget. 30% of Lithuanian businesses were adversely affected by the failures, while most others experienced negative externalities. Although the events that transpired sealed a sentiment of distrust in banks amongst Lithuanians, it also taught critical and valuable lessons to surviving financial entities who adopted more cautious policies that reduced the levels of bad debt incurred.

Since 1995, after years spent in recession, Lithuania's economy finally began moving in an upward trend.

FIGURE 2.1.1: Lithuanian GDP in current USD since 1995



Source: (The World Bank, 2020)

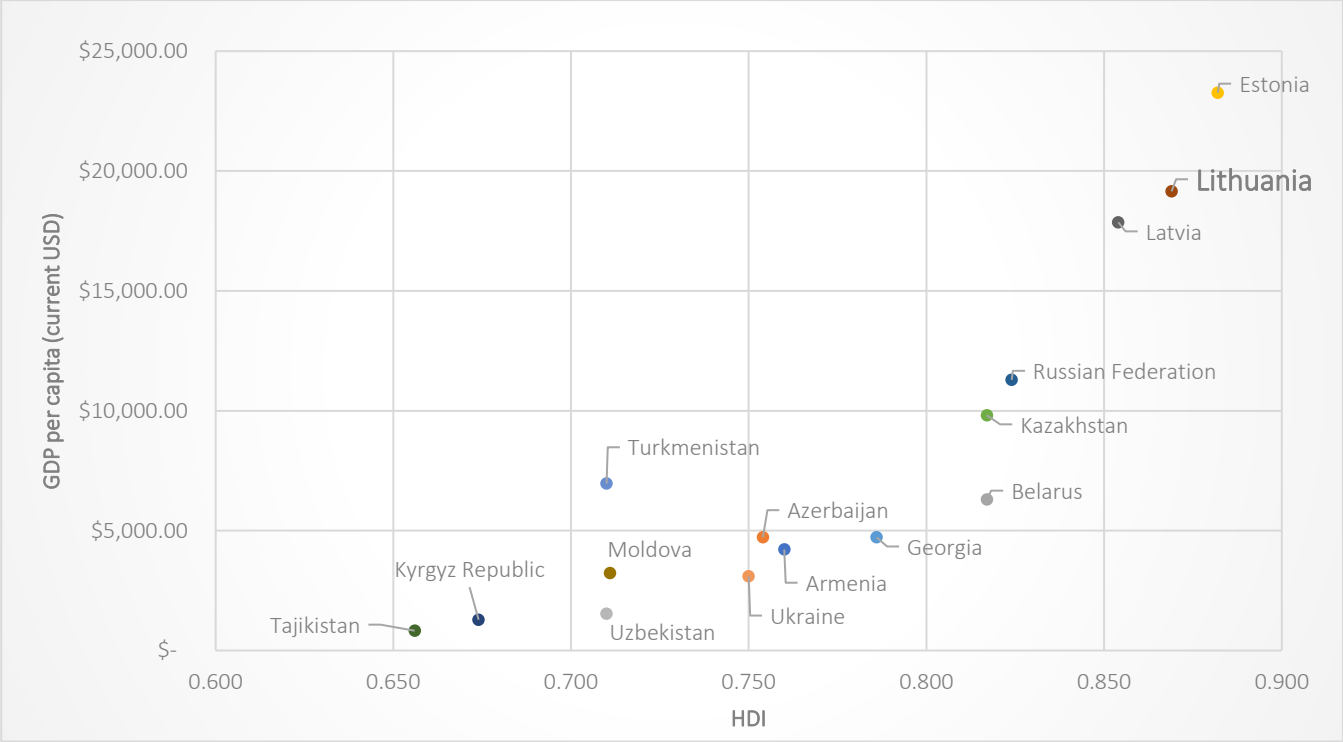
The Lithuanian economy would experience turbulent periods during 1998 and particularly during 2008 during the Russian and Global Financial Crisis respectively.

In 1998, Russia alongside the CIS served as important partners that encompassed a significant portion of Lithuania's exports and imports. As the economies slowly went into an economic crisis, Lithuania's economic performance was naturally affected, which further fuelled the push for local markets to prioritise serving Western markets as opposed to those of the former USSR. As a result, Lithuania's exports to the CIS reduced by more than 50% between 1998 and 1999, and Germany and Poland gradually became primary export markets.

Development

Today, Lithuania has come a long way from being a nation gridlocked in adapting to a liberalised way of life, to a more western oriented progressive economic nation. As the graph below will highlight, Lithuania and its Baltic counterparts have made substantial progress from both an economic and socio-developmental perspective. The graph presents a scatter plot between current GDP per capita and HDI scores as a means of pitting each nation's economic strength to its developmental status.

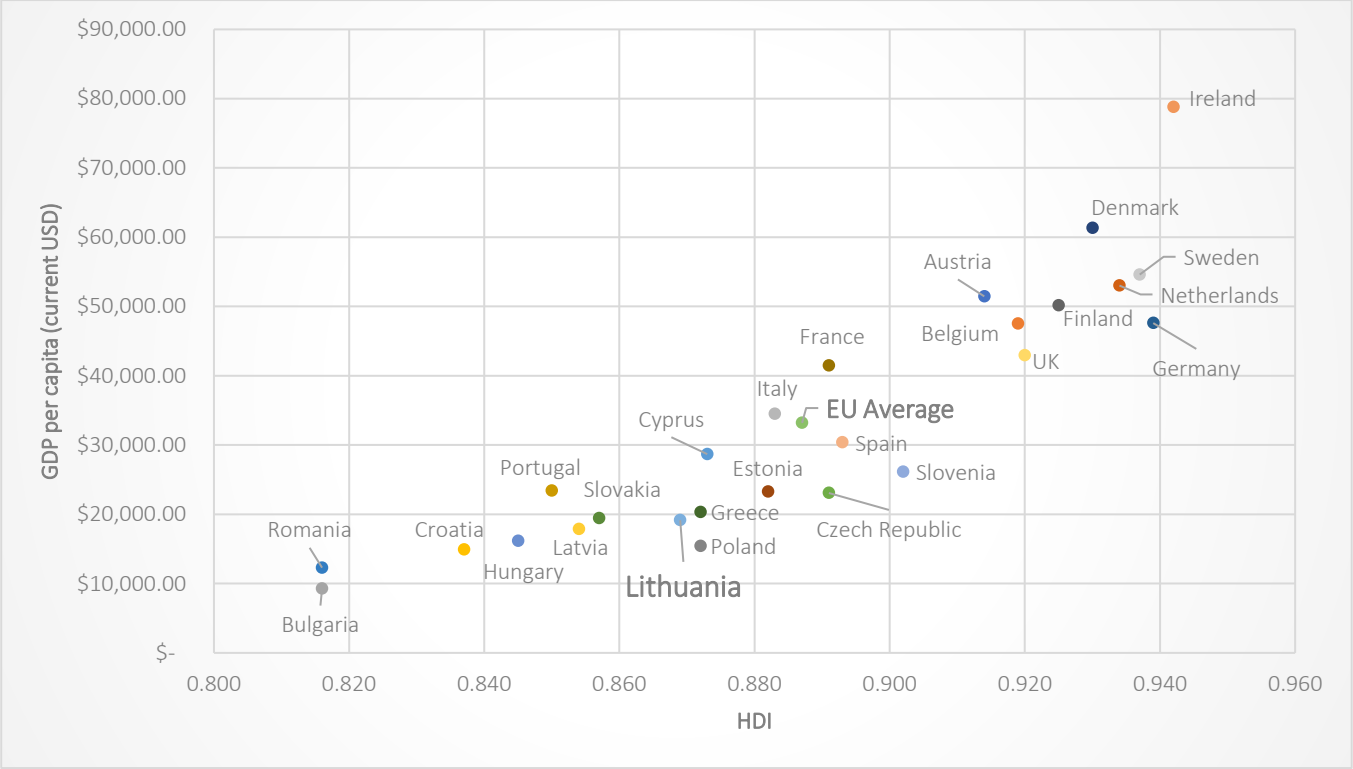
FIGURE 2.1.2: A visualisation of the GDP per capita and HDI scores of all former Soviet Republics in 2018



Source: (United Nations Development Programme, 2018), (The World Bank, 2020)

That said however, in comparison to the Western capitalist world with which Lithuania has strived hard to integrate itself with, evidence suggests that although Lithuania's existing figures are by no means problematic, the country still lags behind its European counterparts:

FIGURE 2.1.3: A visualisation of the GDP per capita and HDI scores of all EU members in 2018



Source: (United Nations Development Programme, 2018) (The World Bank, 2020)

***NOTE**: For statistical purposes, the above graph excludes the outliers of Luxembourg and Malta.*
As figures are from 2018, the UK is also still included in the graph and calculation of the EU Average.

As the graph demonstrates, compared to Lithuania's EU counterparts, the country is still economically and developmentally below average. There are two ways however of interpreting and being critical of the data presented here. On the one hand, despite Lithuania's overall ranking it should be noted that Lithuania's HDI of and GDP per capita of approximately 0.87 and $20,000 respectively, are still characteristic of highly developed, high income nations. In an overall global perspective, Lithuania is in fact a wealthy nation despite its young age and troubled history. That said however, in spite of Lithuania's growth over the recent decades, the issue stands that the nation was late to enter an economic race that automatically put it at a disadvantage. To illustrate this, Lithuania's HDI in 1990, hence still under Soviet occupation, was 0.732, 35th in the whole world. 30 years later, that figure now stands at 0.87, yet Lithuania's ranking in the world is still at 34. Thus, despite Lithuania's excellent growth, other nations have either grown at the same pace, or have and continue to remain above the country in terms of development and standard of living.

This points out an obvious link between the exact reason why despite the progress, Lithuania has been experiencing a net migration loss ever since its borders opened to allow for it. Local workers, particularly young professionals still see an opportunity for higher wages and a better standard of living by making a life elsewhere. This notion will be investigated further later.

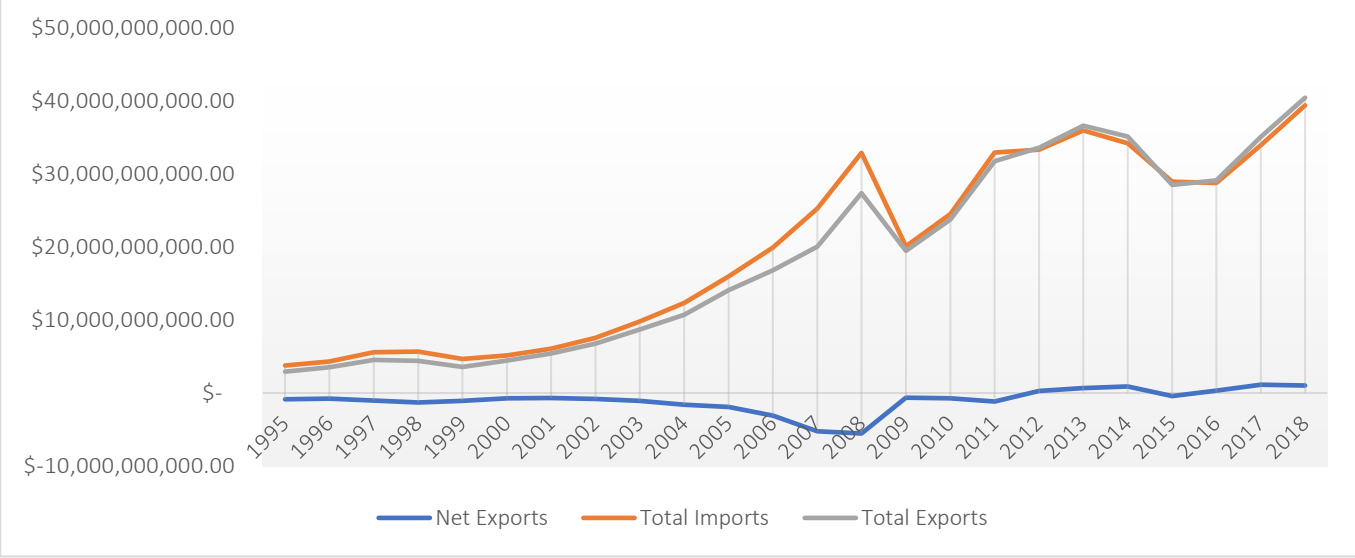
Trade Commodities

Lithuania's primary economic activities are centred around the secondary and tertiary sector. The country's industries include, but not limited to electric motors, household appliances and furniture, food processing and agricultural machinery, lasers, electronic components, computers, amber jewellery making, video game development, app/software creation, biotechnology and much more (Central Intelligence Agency, 2020).

Lithuania's main export commodities include fuel (refined), machinery, chemicals, textiles, food and plastics. The country is however a net importer, with primary import commodities including: oil, natural gas, transport equipment, textiles and clothing and metals. Main trade partners comprise of: Russia, Germany, Latvia, Estonia, Poland, Sweden, the Netherlands, Italy and much more.

According to 2017 estimates, 3.5% of Lithuania's GDP comes from agriculture, 29.4% from industry and 67.2% from services.

FIGURE: 2.1.4: Net Exports from Lithuania since 1995



Source: (The World Bank, 2020)

By calculating the Net Exports as a BoP, thus total exports take away total imports, it is evident that throughout the majority of years since 1995, Lithuania has been a net importer of goods and services.

While there aren't any inherent weaknesses in being a net importer, this will be rather important in studying the economic relationships present using traditional theory later on in this paper. It will be especially important in analysing the important of investment and FDI in Lithuania's present and future.

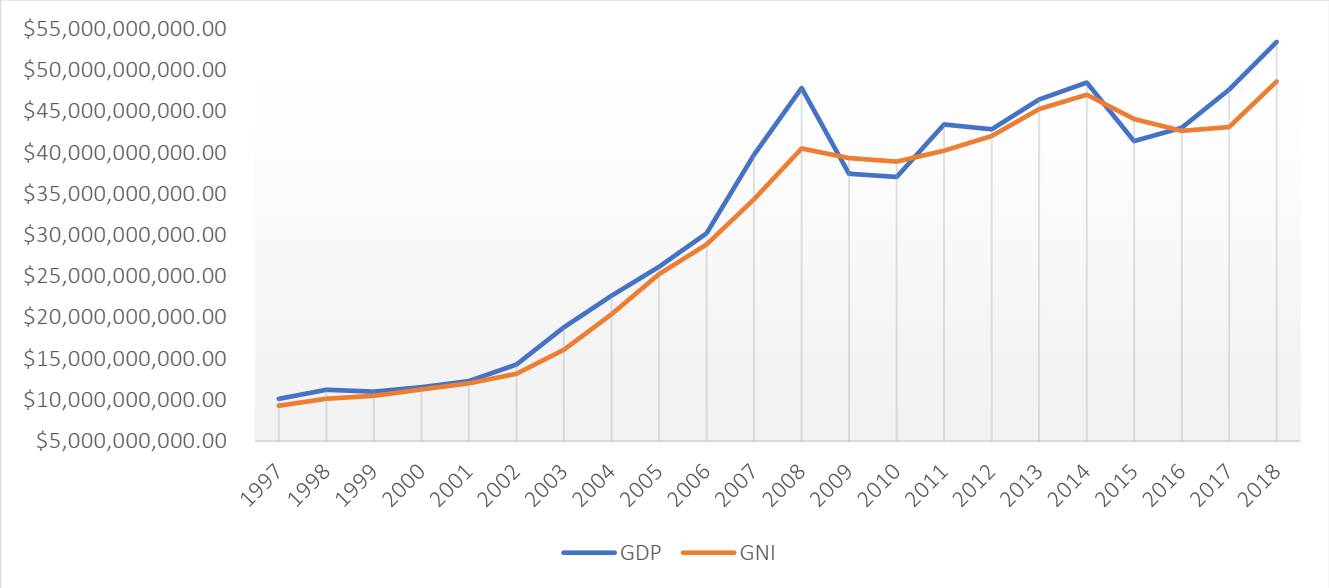
GNI

On top of analysing GDP, GDP per capita and HDI, another interesting figure to analyse, particularly in the face of analysing the true size of emerging economies (Amadeo, Gross National Income - What It Says About a Country, 2020). As GDP only places direct emphasis on what is produced domestically within a country (Chappelow, Gross National Income (GNI), 2020), GNI enables the aggregated value of all income originating from abroad to be included in the equation. This can include, foreign direct investment inflows, and perhaps most relevant in an example of nations that experience high levels of emigration, the sum of all remittance payments sent back to the home country.

Whilst GNI can have its own shortcomings that can potentially overvalue an economy if the income is predominantly that of foreign aid, in Lithuania's example where this isn't a particular concern, studying GNI can lead to potentially fruitful insights.

Since data about Lithuania suggests that a significant portion of emigrants are young, highly-educated individuals, we may expect therefore to see that GNI, perhaps even slightly, exceeds GDP. As demonstrated in the below graph however, this proves to not be the case.

FIGURE 2.1.5: A comparison between Lithuanian GDP and GNI since 1997



Source: (The World Bank, 2020)

As is normally expected in most economies, the displayed GDP and GNI relationship appears rather similar, but this suggests potentially problematic circumstances in the case of Lithuania. Whilst brain drain leads to a decrease in the size of the local workforce, some of the immediate benefits can be felt in the form of remittance payments that can positively influence the economy. The Philippines is a great example of this, as remittance payments have meant that the country's GNI is $110 billion dollars higher than its GDP. This same effect is not however visible amongst Lithuanians.

There are potential explanatory factors to this. The first and most obvious would simply be that emigrated Lithuanians don't remit income back home to their families. Alternatively (Hazans & Philips, 2010) make additional suggestions as to why Lithuanians, particularly in comparison their Baltic counterparts, appear to remit less per capita despite having the most emigrants. The first suggestion, though perhaps cynical, is that remittances occasionally take place in an informal nature, and thus are not accurately captured by statistics. Alternative suggestions describe that return-migration amongst Lithuanians also appears to be higher which offers the explanations that returning citizens will often bring money back themselves than remit them.

It is important to note that remittances alone are not the only explanatory variables that are incorporated in a GNI calculation that may be of interest in solving the question at hand. GNI by its very nature equates GDP against the net income from outside the country. Under such an understanding, it is a common characteristic amongst countries with higher GDPs than GNIs that the reasoning behind such a trend is the presence of foreign businesses who may repatriate profits to their country of origin. Whilst this does provide slightly extra explanatory power to the trends at hand, the GNI is not drastically lower than GDP as visualised from the graph above. The key takeaway however is that in spite of how much Lithuanians may be remitting back from abroad or overseas, it is questionable just how much it is contributing to the Lithuanian economy.

In conclusion, the study of GNI as a potential visualisation of some of the positive by-products of emigration and the accompanying brain drain doesn't seem to offer any promising signs in the form of supplying an indirect flow of funds to the country to support further economic development.

FDI

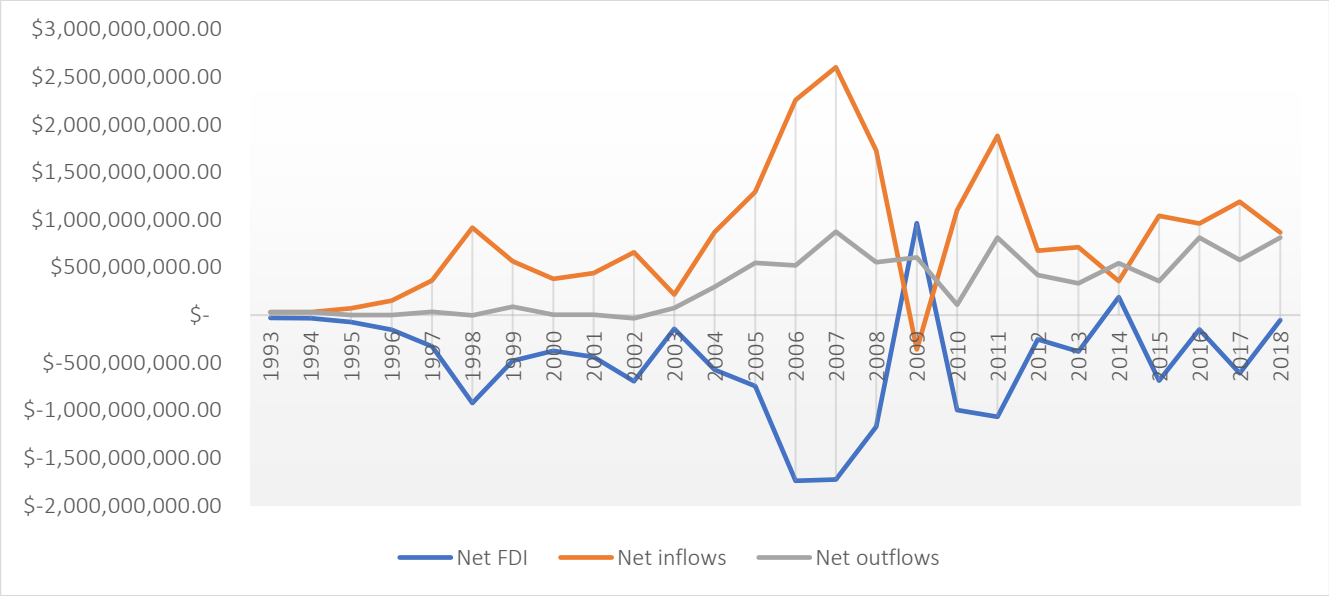
To take a slightly different approach to "modern day economic development", FDI poses an alternative source of capital flow into a nation. Amongst emerging economies, FDI is often seen as a positive and essential factor in economic growth (Tvaronavičienė & Grybaitė, 2007).

Scientific research on FDI, according to Tvaronavičienė & Grybaitė, have shown that the role of such investment in any host nation's development can be spread across various groups. Some authors imply that FDI is a critical source of capital, and with new capital comes the opportunity to create new jobs, enhance and leverage the transfer of technology, and thus potentially increase local exporting capabilities and volumes.

Balasubramanyam (Balasubramanyam, Salisu, & Sapsford, 1999) argues that the effects of FDI are most relevant in countries that are adopting strategies to raise their export capacity. The same cannot be said however for nations using an "import substitution" strategy. This is an interesting and potentially critical notion to keep in mind, as it has already been seen that Lithuania is in fact a net importer, which suggests a diminished relevance/reliance in obtaining FDI. It is also argued that the growth effects of FDI are more noticeable in countries of "higher institutional capability". This is measured by degree of "bureaucratic efficiency" within a nation. This potentially lends itself as a positive in Lithuania's favour, as the country ranks 11th in the annual "Ease of Doing Business" analysis, promoting some promise in this area (The World Bank, 2019).

A more in depth study of the effects of FDI in host nations will be conducted later in this paper, but it would serve beneficial to understand Lithuania's current position with regards to it.

FIGURE 2.1.6: FDI Flows in and out of Lithuania since 1993



Source: (The World Bank, 2020)

The first and most critical thing about how to interpret the above graph is that the Net FDI figures have been calculated in the form of BoP. This therefore means that although net figures appear as predominantly negative, this actually signifies a net inflow of foreign direct investment on most years, with the exception of 2009, supposedly as a result of the global financial crisis, and 2014.

Demographics

Introduction

As previously mentioned, current economic trends Lithuania are generally positive, and the study of any and all statistics compiled in the previous section were done to layout the ground work for more in depth theoretical analysis later in this paper.

The economics section was established as a means to answer sub-questions 1 and 2 in the introduction, which laid particular emphasis on understanding the economic trends that contributed to Lithuania's growth and how these trends can be cross-referenced with existing economic theory.

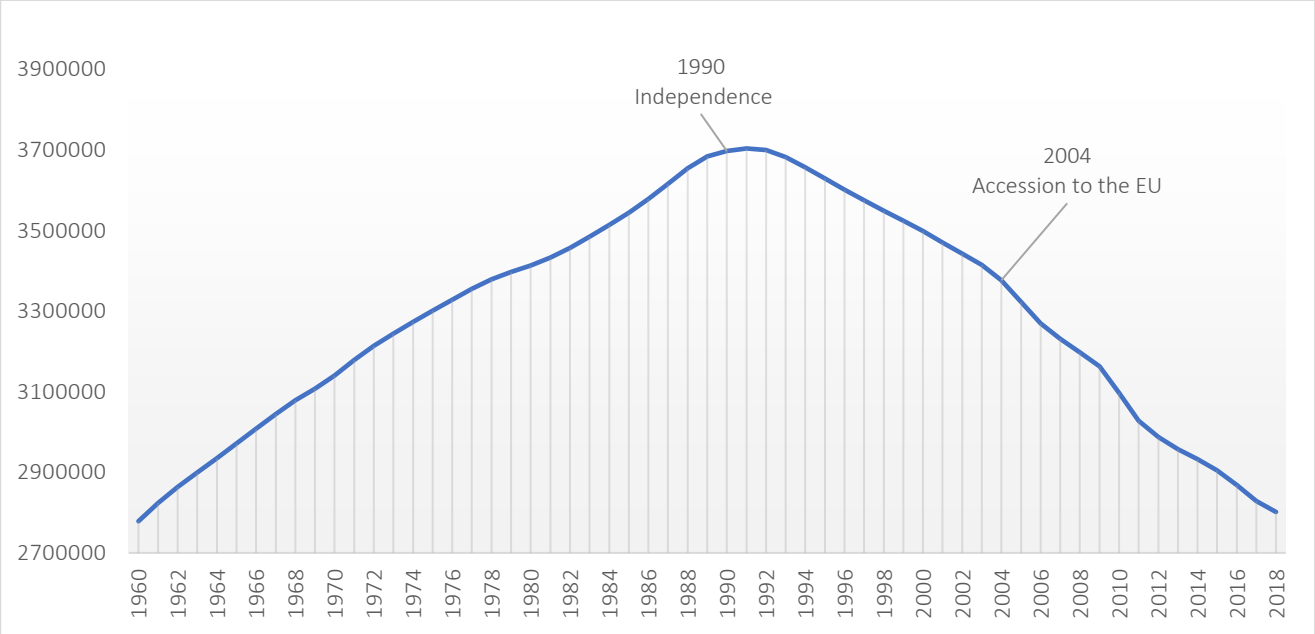
This section now aims to approach the other angle of the problem at hand, namely, the demographic challenges that have repeatedly been deemed as potential serious risks for the sustainability of Lithuanian economic success.

The following sections will lay particular focus on some of the demographic trends and characteristics noticed in Lithuania since independence, with occasional historic context when applicable to the pre-liberation era.

Population

Demographically, Lithuania is not a large country. As of 2018, Lithuania's population was roughly 2.8 million, making it the 7th smallest nation in the (The World Bank, 2020). The country's size however, is finding itself in a serious crisis. In 1991, Lithuania's population peaked at 3.7 million, and since gaining independence, the country has lost nearly 25% of its population less than 3 decades (Ubarevičienė & van Ham, 2017). Additionally, several regions experienced a loss of up to 50% of its inhabitants within the same period, causing serious socio-economic pressures to develop.

FIGURE 2.2.1: Lithuanian total population since 1960

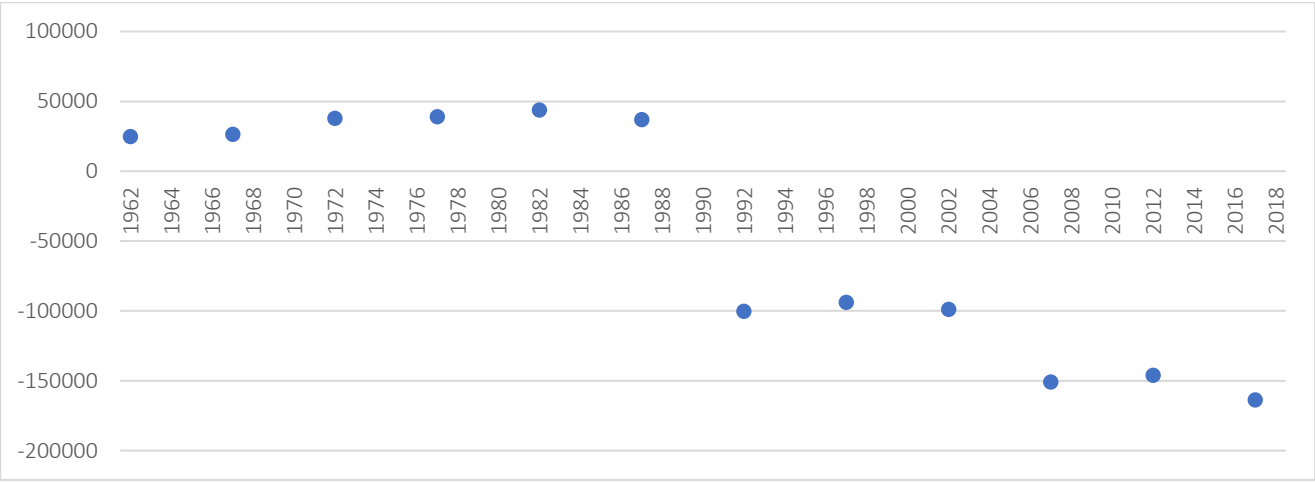


Source: (The World Bank, 2020)

Migration

One of the largest contributors to Lithuania's declining population is emigration, accounting for 80% of the total loss. In actual fact the country has amongst the highest emigration rates in all of the EU.

FIGURE 2.2.2: Lithuanian net migration since 1962 calculated every 4 years



Source: (The World Bank, 2020)

As this paper progresses, further emphasis will be placed upon exploring some of the key push and pull factors for emigration from Lithuania.

For now however, it will suffice to describe some of the key migration trends and explanatory takeaways that best describe what happened in the country during various key periods in its recent history.

Prior to the first declaration of independence, emigration from Lithuania was rampant during the 19th and 20th centuries (Thaut, 2009). Approximately 650,000 people, amounting to 20% of the country's population at the time migrated away from the country, with about a third of all emigrants moving to the United States (Kuzmickaite, 2003). During this period, locals primarily left to escape political and religious oppression as well as economic underdevelopment during the era under Tsarist Russia. During World War II, a further 30,000 Lithuanians migrated in an attempt to flee Soviet occupation. The majority of these migrants ended up in the US and Germany.

Once the Soviet Union had obtained complete control over the Baltic region, migration beyond the iron curtain ceased. During the initial period of Soviet control, the country actually experienced an era of net migratory inflow, as year on year, 6000 to 8000 Russians moved to the new Socialist Republic. At the latter part of the 1980s as harsh Stalinism in the USSR was increasingly reduced under new administrations, emigration to the West reignited in large numbers. When the Soviet Union eventually collapsed in the early 1990s, a wave of mass emigration was experienced across the Baltic countries, as a total of 215,000 Russian nationals returned to the newly established Russian Federation (Okolski, 1997).

During Lithuania's early years of independence, the country experienced periods of labour-related emigrations that swiftly followed the mass migration of Russian citizens. Between 1992 to 1995, 25% of all outward migration comprised of workers seeking jobs in manufacturing and construction (Romaniszyn, 1997). The first wave of post-independence emigration was also characterised by males who were young and highly educated, leading to some of the first examples of *brain drain* and *brain waste* amongst Lithuanian societies.

In comparison to historic destinations amongst Lithuanian migrants, post-independence information demonstrates that aside from the original receiving nations outlined previously, the UK, Denmark, Sweden, France, Czechia and Ireland served to be new hotpots. Poland, Germany, the Nordic countries and Israel also proved to be popular locations for permanent Lithuanian migrants.

The movement of communities and individuals away from Lithuania throughout the 1990s showed concepts that initially seemed paradoxical, however given the economic, political and social state of

affairs in the newly established republic, also proved understandable. Lithuania was finally a free nation, but as emphasised in the economic portion of the introduction to this paper, independence alone did not provide a solution to the amalgamation of the country's new problems. In essence, freedom was finally realised, but that concept was met with much confusion and limited understanding. The local economy was built on Soviet principles and remained stable that way. But whilst people no longer had the taste for employing such methods, the road to effectively understanding the processes necessary to build a fully functioning market economy, both from a collective and individual perspective, were much farther than anticipated. Societies grew impatient and concerned as the economy struggled and newly established or privatised businesses crumbled. The primary driver for emigration pre-2004 accession to the EU was uncertainty. As a result of the country trying to establish a foothold in its new economic model, unemployment was worryingly high. When this was coupled with low salaries, restrictive private business policies as well as fluctuating pension ages, emigration quickly became a solution for individuals and families alike to spread the risk in the event of a market failure (Kuzmickaite, 2003). Remittance money additionally provided the opportunity to raise capital that could be used to initiate or support any production activities back home.

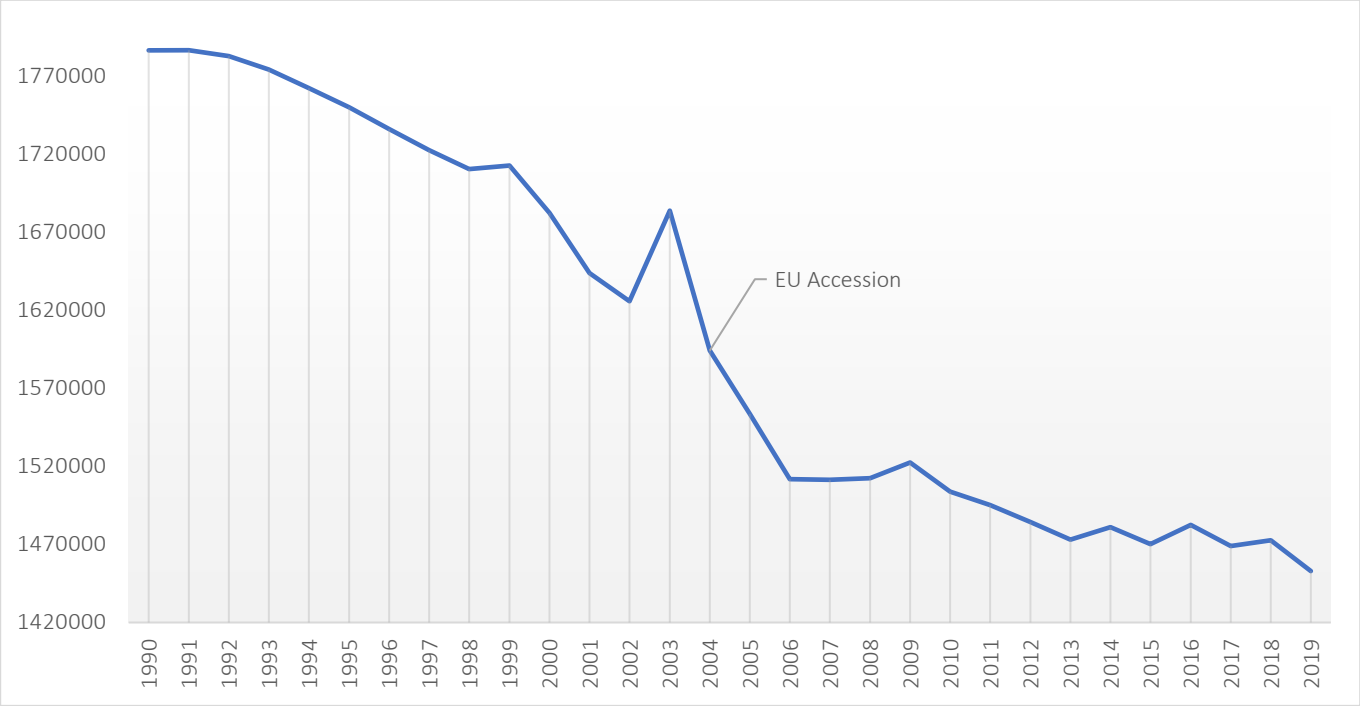
By the turn of the new millennium, Lithuania maintained its status as a "transition economy", but had managed to successfully implement the market reforms necessary to build a stable and fast growing economy (Thaut, 2009). That said, unemployment remained a serious issue.

In 2004, Lithuania's accession brought about a new dynamic to the country's relationship with constant emigration. As a member of the European Union, all Lithuanian citizens now became eligible to the right of free movement between all EU member states. The greater opportunity for mobility was naturally followed by greater levels of emigration compared to pre-accession trends. Though not overwhelmingly higher, the primary concern associated with the loss of potential labour is the fact that a greater proportion of young, highly-educated talent is leaving the nation in search of higher paying jobs abroad. These jobs include, but are not limited to the areas of IT, medicine, dentistry, engineering and management.

Labour Force

Taking population movements and migration trends into account, the next critical step would be to identify how these developments have impacted the size of the local labour force, which as mentioned before, is a critical factor of production in classic economic theory.

FIGURE 2.2.3: The Development in the size of the Lithuanian labour force since 1990

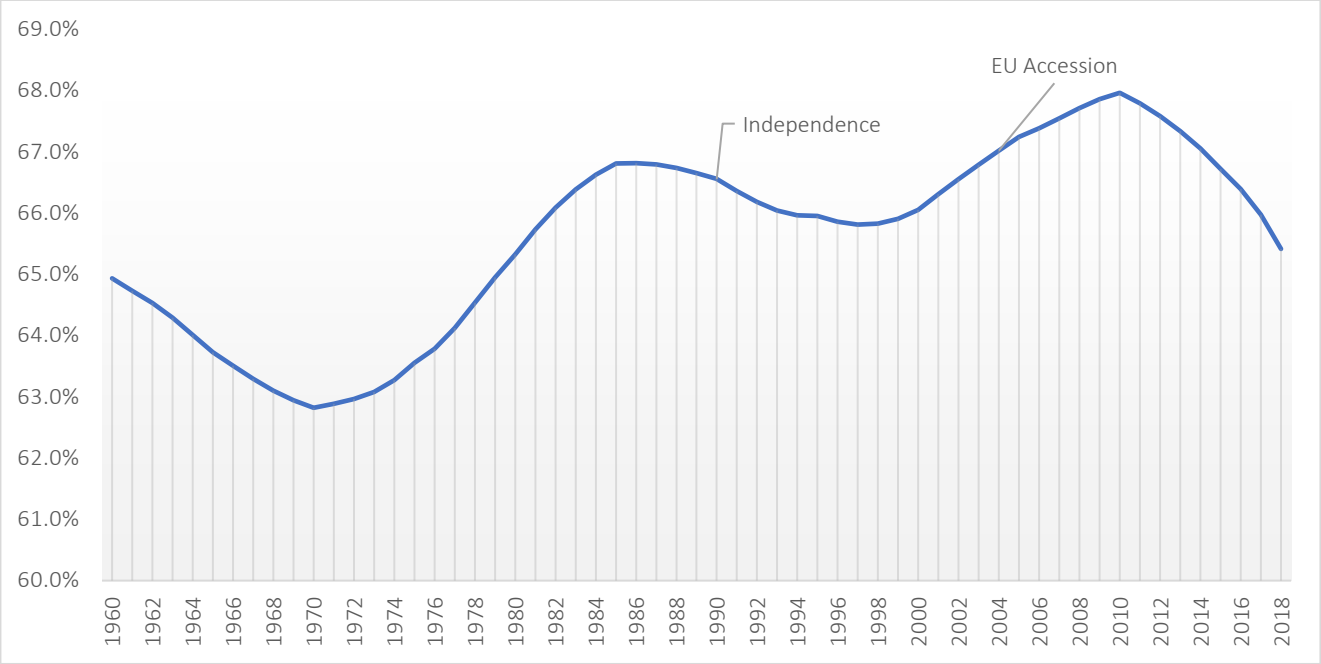


Source: (The World Bank, 2020)

In contrast to approximate 25% decrease in Lithuania's overall population since 1990, the reduction in Lithuania's actual labour force has not been as substantial, though still raises some cause for concern. From 1990 to 2019, Lithuania saw an actual decrease of 333,421 eligible working people, which accounts for a 19% loss over 29 years. It is important note that under the World Bank's criteria, the labour force incorporates all people aged 15 and older who are either currently employed or unemployed but actively seeking a job. Unpaid workers, family workers and students are not included.

Perhaps most intriguing about this development however, is understanding the impact of this loss on the proportions of the overall demographic mix and Lithuania, and what economic implications this may have.

FIGURE 2.2.4: The percentage share of Lithuanian population between the ages of 15-64



Source: (The World Bank, 2020)

What's most intriguing to take away from the above graph is the fact that despite the sharp decreases in population growth that have repeatedly been emphasised as a dangerous progression since Lithuanian independence, the actual proportion of the population that is of working age has remained relatively stable between 65 to 67%, with the most recent figure in 2018 far from being the historical low experienced in 1970.

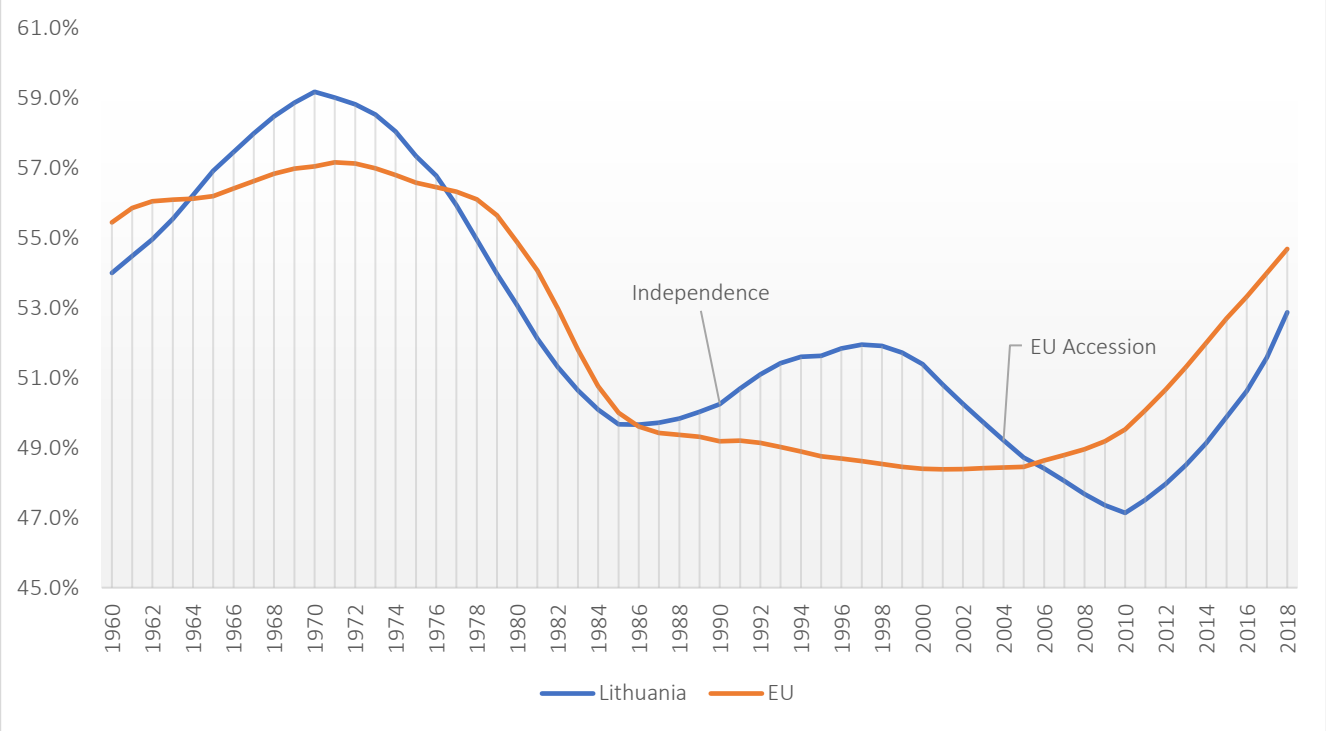
It's important to note that these results should be interpreted with caution for two reasons. Firstly, they are still percentage figures of the total population, therefore meaning that despite the proportions being stable, they are stable under conditions of a decreasing population size, hence 65% in 2018 does not necessarily imply a larger real value than the 63% of 1970. Secondly, these are still historic figures. Therefore, they don't necessarily give an accurate visualisation of how things are expected to unfold in the future given the continued emigration patterns, and the various ripple effects those might have in encouraging or hindering further migration out of Lithuania.

What these figures do enable however, is a hypothetical interpretation of the fact that despite the decrease in population since 1990, no direct effects have been noticed in terms of affecting the proportions of eligible labourers in Lithuania. This is an important assumption that would merit further

analysis later in this paper, as it would arguably give initial grounds to refute claims that the country is imminently suffering from a shortage of hands, posing a strain on the economy.

With results visualised in the previous graph, a next step to further expound upon the preliminary conclusions would be to cross-reference them with the concept of *dependency ratios*.

FIGURE 2.2.5: Dependency Ratios of Lithuania in comparison to the EU average



Source: (The World Bank, 2020)

Dependency ratios represent the percentage of a nation's population that is below and above working age. In other words, the proportion of the population that is dependent upon the current labour force to provide the means necessary to provide for them. The data encompassed in the above graph is a representation of the proportion of dependents per 100 people in the population.

Quite intriguingly, Lithuania does appear to have a slightly high dependency ratio, however it would appear that for the most part since EU accession, figures in Lithuania have actually been more favourable than the average amongst European Union counterparts. This doesn't necessarily imply that Lithuania's situation is less problematic, nonetheless the EU numbers do provide context to the fact that relatively aged populations are a common characteristic within the region, and at least up to now, Lithuania is by

no means an anomaly, nor among the most affected victims of the issue. This, raises further questions about the true justifiability of the concern of Lithuania's ageing population.

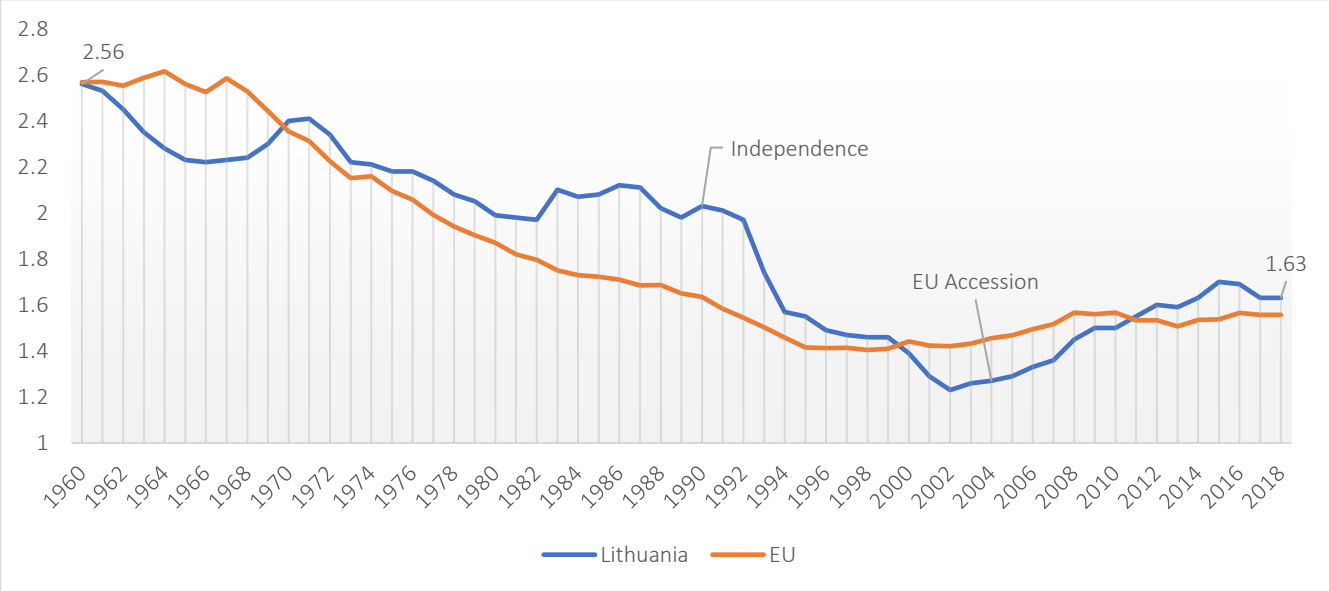
Fertility Rate

Despite the aforementioned insights that have raised some suspicion over the true nature of Lithuania's concerns of an unsustainable ageing population, it is important to note that all figures assessed so far are retrospective. Trends in the past may offer a degree of insight to the future, or a clearer view of historical progressions to the present day status quo, however there is admittedly a lack of projections considering some of the concerns raised by the brain drain and ageing declining population are forward-looking problems. Thus, in trying to obtain some hints and indications from a few indictors that may be considered more leading than lagging, fertility rate offers itself as a potential alternative.

Fertility rate is most generally defined as the number of children a woman in a given nation would be expected to have in all her expected childbearing years. It is an important factor in demographic growth studies as it closely links to the concept of *replacement rate*. A replacement rate is an exact figure which represents the minimum number of children necessary to be born per woman in order for a nation to at the very least sustain its current population size (Gietel-Basten & Scherbov, 2019).

Low fertility rates have additionally been considered one of the various factors that have contributed to Lithuania's declining population (Ubarevičienė & van Ham, 2017), and according to the data presented, it becomes evident to see why.

FIGURE 2.2.6: A comparison of Lithuanian fertility rates against the EU average



Source: (The World Bank, 2020)

The replacement rate typically represents a standard "ideal" fertility rate of 2.1. This would therefore mean that each woman would have two children who in effect would "replace" their parents.

As the graph demonstrates however, EU and Lithuanian fertility rates since 1960 have predominantly followed similar patterns, with Lithuanian trends in recent years even proving more favourable in recent years. On the contrary, despite rate in Lithuania being slightly higher than the EU average, it is still well below the standard replacement rate figure to keep population stable. A promising pattern does indicate that fertility rates have gradually been on the rise since Lithuania's accession to the EU, though the explanation as to whether the two events are related go beyond the scope of this paper. As a result it remains yet to be seen whether this gradual rise will remain for years to come, potentially achieving replacement rate fertility, or if it will be a cycle that eventually falls again with time. Demographic transition models would suggest that fertility will likely no longer rise as countries continuously develop, but more will be discussed on this later.

Gietel-Basten and Scherbov have argued however as to whether or not 2.1 is in fact an constant ideal amongst all nations, or if discrepancies lie between them (Gietel-Basten & Scherbov, 2019). These arguments would appear to have some backing, particularly in the case of Lithuania. EU average fertility rates may be low, but this is often offset in several member states by a steady flow of net positive migration. To illustrate this point, in a 2004 Labour Force Survey, 10% of Britain's working-age population were born outside the UK (Dustman & Fabri, 2005). In other words, the number of immigrants, nationals or not, generally exceed that of emigrants. Therefore the replacement fertility rate will not necessarily be required to be as high in order to maintain a steady population size, as population growth or maintenance is not exclusively managed by the total births within the country. As is known however, this is not the case in Lithuania, as emigration exceeds immigration and the country continually suffers not only from smaller family sizes, but a population that continuously leaves the country. Thus, it may be that Lithuania's true necessary replacement rate in order to offset not only an ageing population, but continuous emigration too, may actually need to be higher than the standard 2.1.

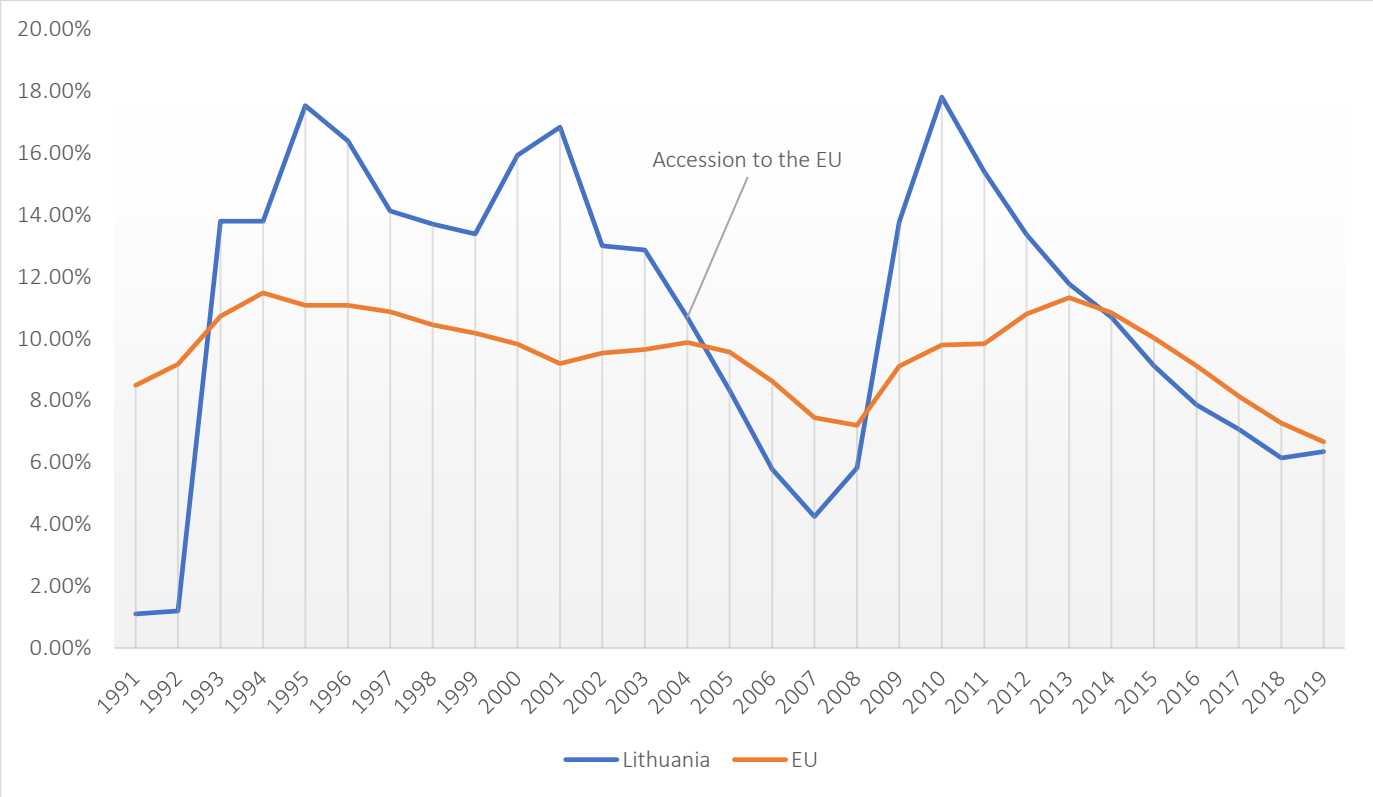
Unemployment

Having established a relatively comprehensive compilation of some of the key statistics and figures necessary for studying Lithuania's concerns from a demographic perspective, a final figure to consider prior to beginning analysis of theory would be to evaluate a statistic that serves as a strong demographic and economic indicator as well; namely, unemployment.

Unemployment is particularly relevant to study, not just in Lithuania, but amongst other nations experiencing similar trends to Lithuania, as it can often be considered as a push factor for a local national's decision to leave their home country. Approximately 85% of all Lithuanian emigrants were in actual fact unemployed for at least one year before finally emigrating (IOM, 2011), which emphasises the importance this figure makes on the problem at hand.

The unemployment rate, particularly in the context of the following figure is defined as the percentage of a country's current labour force that are not currently employed, but actively seeking for new jobs.

FIGURE 2.2.7: Unemployment rates in Lithuania and the EU since 1991



Source: (The World Bank, 2020)

Unemployment was a severe issue that arose very close to after the country became independent from the Soviet Union. As previously mentioned in this paper, the initial years were filled with tremendous uncertainty as Lithuania and its people grappled with embracing a free market society. Privatisation was encouraged, yet remained an unusual concept that saw the failure of many local businesses, regardless of size (Eidintas, Bumblauskas, Kulakauskas, & Tamosaistis, 2013). When mixed with low wages, the instability that ensued society became an easy direct motivator for citizens of the nation just reborn to seek more higher paying employment, or a more stable way of life elsewhere (Kuzmickaite, 2003).

The extent of Lithuania's unemployment woes can be clearly seen on the graph, particularly throughout the 1990s. The issue was undoubtedly severe. To put the extent of the problem into perspective, US unemployment following the 2008 financial crisis peaked at 10.2% in 2009 (Bureau of Labour Statistics, 2009). Lithuania's unemployment rates were almost double that on several occasions.

The country also experienced a second spike in unemployment rate also as a result of the 2008 financial crisis, peaking at 17.81%, the highest in the country's history since liberation.

Lithuania's decrease in unemployment rates over years however has in part been the result of several factors. Despite the turbulent early years of economic and social adjustment to a market economy, privatisation and market reforms proved to be mainly successful. This allowed for more stability in the general market, as well as overall economic growth (Thaut, 2009). That said, unemployment was not entirely solved exclusively by these successes. Perhaps rather ironically, a proportion of Lithuania's decrease in unemployment rates has in fact occurred as a result of emigration (Hazans & Philips, 2010). This was followed by another positive shift in the labour market, as bargaining power transitioned to be more in favour of employees.

Unemployment has been an interesting statistic to study in Lithuania's case, as it proves that despite the ensuing labour shortages that have been caused by emigration induced labour shortages in specific industries within the country, particularly within retail, catering, construction and health, the underlying issues of severe unemployment have in fact been addressed for the very same reason.

Literature and Theoretical Framework

Introduction

It appears more and more therefore that emigration, as with many other concepts, is presenting a unique set of benefits and shortcomings that are going to be studied from a more data-driven theoretical perspective in these coming sections. What can be concluded thus far however, is that there needs to be a careful level of cynicism towards the commonly considered adverse impacts of emigration on a country's economy, particularly Lithuania's. As with anything, context is key, and it may simply be necessary to understand the new norms that are being presented in Lithuania's example.

In analysing literature and theoretical framework, our aim is to expound upon the trends, data and figures presented in the previous sections, focusing directly on the economic and demographic implications of the problem at hand. The key takeaways, findings and suggestions of a compiled set of academic literature will be introduced in this next section as a means of outlining some of the perspectives that have been used to approach the current circumstances, and how these can contribute to the analysis of this paper as well. In order to maintain as much applicability as possible, most of the academic literature selected directly discusses the Lithuania's case and circumstances.

But compiling and understanding each of these pieces of literature, the final aim is to use a subsequent analysis that either expounds upon the findings of the literature, or contributes something new by applying alternative perspectives to what already has been done.

Understanding Brain Drain

Amongst the most important and applicable literature that can be sourced to provide a concrete background for studying the issue of brain drain, are works directly dedicated to studying the phenomenon.

The term *brain drain* is in actual fact a colloquial term that is used to describe a state in which a significant outward flow of people can be noticed on a national, industrial or even organisational level (Young, 2019). Commonly however, and with particular relevance to the topic of this paper, it deals with high levels of emigration from a particular country as local residents and/or citizens alike choose to relocate abroad. In general terms, brain drain is often perceived as an problematic issue, particularly when large amounts of emigrants are highly skilled, trained or educated individuals. By losing these people to other countries, the nation of origin experiences a loss of its own valuable assets, and potentially their

expertise, that could otherwise have been capitalised to contribute to the betterment of the local economy and/or society.

The causes for emigration are quite broad, and it may not necessarily be a single factor causing the inclination for locals to pursue a life and career in new lands. What is important to appreciate about the matter, is that an individual's choice to emigrate is a very personal one that involves substantial analysis that measures whether the benefits of leaving outweigh any risks or discomforts associated with it. It is evident that for many Lithuanians, such a measurement tends to land in favour of moving abroad.

By choosing to relocate, certain studies have found that some of the key motivators behind emigrating in peacetime are substantially economic or career driven. Amongst Lithuanian migrants, many move to seek "a new start" and the opportunity to earn a higher income in order to secure themselves for a stable future once they reach retirement age. For others, moving presents the chance to live in a different country with greater welfare standards, where the chance to exercise and develop their skills are more readily available, and if not, access to higher quality education also presents itself as an attractive alternative. There is additionally a growing number of emigrating families that are reunifying with members who may have left initially to lay the foundations for life in a new country (Lithuanian Free Market Institute, 2006) (Damuliene, 2013).

Emigration, and the decision to emigrate for that matter, is frequently characterised by the series of push and pull factors that either make leaving more attractive due to unfavourable local conditions, or make enticing external opportunities too enticing to ignore. In one particular study, such push and pull factors were classified into four distinct categories: economic, demographic, socio-cultural and political (World of Statistics, 2014).

Economic factors push factors have predominantly been characterised by low wages and high unemployment rates, something that strongly applies to the confirmed motivations of Lithuanian emigration. Economic pull factors generally include greater employment opportunities abroad, coupled with either wages and more favourable working conditions.

Demographic factors have been expressed as the effect of things such as population growth, density, fertility and birth rates on motivating people to seek a life elsewhere. It becomes apparent that in cases of excessive population growth leading to higher density and poorer qualities of life per capita, statistical evidence shows that emigration becomes an attractive option when human mobility is possible (European Asylum Support Office, 2016). It would serve to note that in the case of Lithuania however, such an issue as well as the reasoning behind it may not need to be given extensive consideration. This

is particularly true since the source supporting such claims was primarily focused on Asylum-motivated emigration, which most Lithuania doesn't experience.

Socio-cultural factors encompass highly individualised and personal reasons for choosing to emigrate. They are particularly common amongst the younger population who may be leaving to seek financial independence. Emigrants amongst this demographic tend to be allured by the higher quality of infrastructure in their target host nations, and in many cases may also seek to capitalise on the higher quality of education abroad as well.

Political factors for emigration are quite standard as they synonymous with symptoms of poor political health in a nation. Political instability, bureaucracy, corruption and unfavourable policy making are all reasons behind the choice of some people to emigrate.

Taking these considerations into account, and given the data addressed earlier in this paper that focused on various economic and social factors, whilst also understanding the history and context that provide explanatory power to them, it is safe to say that the prime motivators for Lithuanian emigration are economic and socio-cultural. A substantial proportion of Lithuanian migration is fuelled by unemployment, and particularly in the initial year of independence, the desperation to address economic uncertainty. Wages in foreign countries are also a strong enticing factor for prospective emigrants, with potential wages abroad being two to three times higher in purchasing power parity, even in the host nation where costs of living may be higher (IOM, 2011). In addition to addressing economic motives, socio-cultural factors are growing in their influence. According to the Institute of Migration in Lithuania, factors such as "social insecurity, the feeling of lack of justice and unsatisfactory treatment of employees by employers, coupled with better career opportunities abroad" have all contributed to a growing number of professionals and young people deciding to emigrate (IOM, 2011).

In a compilation of data from 2010, 55% of Lithuanian emigrants were between the ages of 20 and 35. A handsome portion of which would certainly perceived relocation as an opportunity to seek a higher quality of education. What has been noticed in some advanced economies however, is that a remarkable number students eventually opt to stay in the host countries as opposed to return to their country of origin (Creehan, 2001) (Florida, America's looming creativity crisis, 2004) (Florida, 2005). According to a study by Baruch, Budhwar and Khatri, there are a set of key factors that can be suggested to measure the likelihood in which a student will stay in the host country of their education, and establish a life and career there (Baruch, Budhwar, & Khatri, 2007). The most significant determinants for such behaviour include the ease in which the student is able to establish themselves in the host country, not just professionally but also from their academic days. The systems put in place to facilitate easier integration

are vital in assisting such people feel at home in their new country of residence, promoting the idea of staying. Secondly, the perceptions of the student for their job prospects characterised by the dynamics of the labour market in their country of origin play an equally a vital role in a young person's decision of where to relocate after their studies. Positive prospects may encourage student to emigrate back to their homelands, whilst poor prospects will have the opposite effects. Finally, the strength familial ties, either in the host or home nation of the student will have an influence on where a student decides to go post-studies, likely opting to be wherever their strongest ties tend to be.

In summary therefore, there are a range of different factors that can contribute to emigration and subsequently, a brain drain. Whether the prime motives are politically, demographically, economically or socio-culturally induced, the most important takeaway is that due to the ever increasing availability of mobility, the costs associated with migrating in certain parts of the world are decreasing. Home nations cannot call upon citizens to sit and wait until conditions locally improve, especially as the availability and greater ease of access to opportunities abroad only further tilt the scales in favour of pursuing a life away from their country of origin. What is beginning to emerge is the notion that labour is not only a factor competed for between organisations and firms, but increasingly between countries too. Baruch, Budhwar and Khatri for instance acknowledged that a limitation of their study was that it only considered the migration of people from lesser developed to more developed countries, particularly the US and UK (Baruch, Budhwar, & Khatri, 2007). What is evident however is that even between advanced countries, brain drain does exist, as studies have shown that highly developed nations like Canada, despite receiving large inflows of immigrants, are equally seeing problems of high outflows of locals to their neighbours in the United States (Kesselman, 2001). Countries cannot always compete by addressing the pull factors of other economies as this is vastly beyond their locus of control. That said, efforts and public policies can be made to ensure that the essential standards of living locally are attractive enough to not only entice nations to immigrate back to their homelands, but additionally to encourage immigration from other nations to offset any of the gaps in the labour force created by the loss of talent in the initial brain drain. In line with these assumptions, the state of Lithuania's current immigration policy will be discussed later on in this literature review.

Focusing on Economic Growth Drivers

So far in this section, a detailed introduction to two economic theories have contributed to a broad and generalised understanding of how economies grow and prosper. The Mundell-Fleming model detailed

some of these factors from the perspective of small open economies like that of our focus country in the short run, whilst the Solow Growth Model outlined the key factors for development, particularly in terms of raising standards of living in the very long run.

As this paper progresses into its analysis section to truly determine how the effects of brain drain will influence Lithuania's economy in the future, these theories will be reintroduced and applied to match some of the trends noted in the previous section that outlined the country's progress under various factors. What can be inferred so far is that based on the combined knowledge achieved from the two models, investment, the supply of real money balances, and technological progress are the most critical factors in any country that lead to prolonged and sustained growth, both in the short and long-run.

With these theories in mind, it would serve beneficial to as a subsequent step analyse what existing literature and studies, based upon some of these factors say and predict about the future of Lithuania and/or countries undergoing a similar phase to it.

Since investment has been outlined as a critical factor for development, some articles have been collected on the role of FDI in economic development, particularly for developing nations.

Remittances will also be studied, as these may serve to be a crucial positive by-product of emigration that can stimulate consumption and/or investment using incomes that have been acquired from abroad, thus further enhancing the progress of the economy.

But in comparison to analysing the supposed drivers of economic growth, it would be equally vital to study some of the possible hindrances to economic growth. When it comes to tackling brain drain from a focal country, it can be somewhat difficult to address any pull factors that encourage emigration, which in Lithuania's case was the prospect of higher paying jobs and greater employment stability in the outside world. However, what can be addressed are some of the push factors that have encouraged the emigration from Lithuania throughout the years, the most pressing of which being unemployment. Therefore, understanding theories around unemployment would possibly be useful in analysing how emigration has either contributed positively or negatively to the issue over time.

Other push factors for unemployment centred around economic instability as a result of the difficult transition from a planned to market economy. These will however not be specifically addressed, as the nature of that issue is beyond the scope of the primary objectives of this paper.

In addition to the aforementioned factors to be studied, a general compilation of some of the key articles specifically discussing the topic of brain drain in Lithuania will also be incorporated as a means of gaining any additional insights that have been overlook in previous sections.

The Role of FDI in Economic Development for Developing Nations

Investment can take various different forms in any economy particularly an open one. Within this sub-section, the goal will be to analyse the particular roles of FDI in the development of a country. FDI or foreign direct investment can be defined as the investment of a firm or stakeholder in one country into "business interests located in another country," (Chen, Foreign Direct Investment (FDI), 2020). FDI can take the form of a brownfield or greenfield investment. Essentially, an investment can only be considered an FDI if it involves the establishment of business assets in a foreign country, either by building them from scratch, or alternatively acquiring, merging or partnering with businesses or stakeholders already present locally. FDI is considered a major part in economic growth, particularly with respect to aiding emerging nations, as it typically eases the tension on reducing a country's savings-investment gap. This is particularly why FDI is of special interest in this paper. s

As summarised by Tvaronavičienė and Grybaitė in their analysis of the impact of FDI on the Lithuanian economy (Tvaronavičienė & Grybaitė, 2007), there is a plethora of existing literature that outline the potential positives and negatives FDI can have on an economy in development. As a starting point, the article acknowledges that in spite of some of the critical views towards FDI as a driver of economic growth, the general consensus amongst people is that the factor is a beneficial and somewhat critical driver of development. In summary, the authors quoted in the article generally find common ground in FDI's positive effects, as it is considered a strong source of additional capital that can complement domestic investment (Balasubramanyam, Salisu, & Sapsford, 1999) (Borensztein, De Gregorio, & Lee, 1998) (Olofsdotter, 1998) (Zhang, 2001) (Bengoa & Sanchez-Robles, 2003) (Basu, Chakraborty, & Reagle, 2003) (De Mello, 1997) (De Mello, 1999). Furthermore, FDI is seen as means of creating new job opportunities as well as promoting technology transfer, which under the Solow Model is a particularly strong benefit.

An additional study carried out by Karbasi, Mohamadi and Gohfrani created a production function, whereby the productivity of a country is dependent upon various factors in which FDI is one of them (Karbasi, Mohamadi, & Ghofrani, 2005). What was eventually concluded was that although FDI is an important determinant in economic development, other factors such as "human capital, domestic investment, trade and initial GDP per capita" are also necessary, and FDI alone cannot be the sole driver of growth.

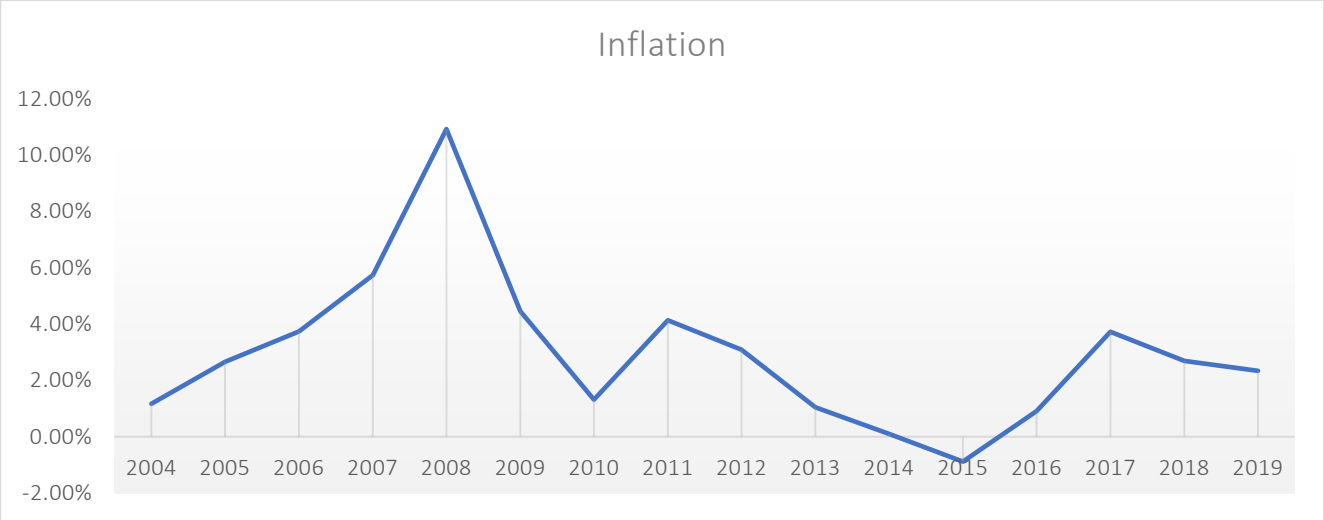
Contrary to this literature, there are some authors who have highlighted proposed negative impacts of FDI. Despite the array of positive contributions it can make in stimulating the local economy, several

articles have cited some negative externalities that may fuel second thoughts in policy makers seeking to attract vast amounts of foreign investment. Firstly, since FDI is often associated with foreign business and stakeholders installing assets and investing capital into the host/local economy, it can be expected that a substantial proportion of any profits by these said parties will eventually be repatriated back to their home nation (Bhagwati, 1973) (Singer, 1950) (Prebisch, 1968). This may diminish the true size of the host market, since although the economic activity fostered by foreign investment contributes to GDP, GNI will subsequently be lower in gross and per capita terms because of this repatriation. At present Lithuania's GNI is already lower than its GDP which hints to some element of truth within these assumptions.

Alongside the fears of repatriation of profits, additional literature on the negative impacts of FDI outlined a potentially harmful phenomenon the lurks in the background despite the immediately visible positive enhancements made to the economy. When FDI is transferred into a country, it raises the money supply of the receiving nation, thus raising the means available to stimulate private consumption. At first glance, this is a healthy externality for the economy, however the rate in which consumption is accelerated can pose an underlying risk by simultaneously triggering higher inflation as well as import growth (Drabek & Griffith-Jones, 2007). In doing so, FDI could in certain cases go as far as causing an increase in foreign debt as a result of descending into a negative trade balance, whilst additionally being able to borrow funds from abroad with greater ease (Brouthers, Werner, & Wilkinson, 1996).

To directly assess the nature of threats on the Lithuanian economy, figure displays the country's annual inflation rates since accession to the EU in 2004. This was done specifically to gain a clearer of the state of Lithuania's inflation in recent comparable times, as Lithuania's early years since liberation were severely affected by rampant inflation as the country struggled to stabilise the shocks imposed by the policy and geopolitical transitions.

FIGURE 3.1: Inflation Rates in Lithuania since EU accession in 2004



Source: (The World Bank, 2020)

Based on a basic assessment of the figures, inflation hasn't appeared to be a rampant issue that is threatening the country by most means. Most years, with the exception the early years of EU accession, and the period around the 2008 financial crisis, inflation has generally been around if not below the standard 2% that is often deemed healthy for an economy. Lithuania's most recent inflation rate in 2019 was 2.3%, which is not strikingly problematic as it stands. It may also serve to note that despite the highest inflation taking place in 2008, this was ironically the year FDI inflows into Lithuania were historically low since liberation, which suggests the negative externalities of FDI may not be harming the country as initially inferred.

Returning to the works of Tvaronavičienė and Grybaitė, the specific research carried out in their own literature specifically looked at the effects of FDI specifically in Lithuania, which provides invaluable insights into the true effects of foreign direct investment in the Baltic republic. The article took a slightly different approach to the other literature by investigating the efficacy of FDI in promoting GDP growth, depending upon the sector and class of activities the investment is contributing towards.

According to the study, a series of conclusions were drawn. Firstly, with consideration of all the positive and negative effects of FDI, it was concluded that a powerful correlation does seem to exist between the level of FDI in Lithuania and the country's overall GDP growth (Tvaronavičienė & Grybaitė, 2007). In placing additional emphasis upon the effect of FDI in various sectors, the paper found that FDI generally had a positive effect to the output and productivity of essentially all activities it contributed towards, though to varying degrees. The strongest correlations were found in so-called "attractive" sectors,

particularly: “financial intermediation, electricity, gas and water supply, mining, quarrying and manufacturing.” The final conclusions of the paper drew towards the fact that due to the higher returns found in the “attractive” set of activities, it has been a common trend that the predominant shares of FDI entering Lithuania are specifically sent towards those industries. While recognising the positive impacts they have on the economy, Tvaronavičienė and Grybaitė emphasise that the favourable externalities of FDI are much more easily visible in data, as the correlations between growth and FDI contributions are highly significant. On the contrary, they warn that less favourable effects due exist but more “tacitly”, citing caution over the fact that excessive FDI in the most attractive sectors in Lithuania may lead to local businesses being “crowded out”, unable to capitalise on the resources that should in fact be leveraged by the native community.

Remittances

A remittance is a term used to “refer to money that is sent or transferred to another party,” (Murphy, 2020). Remittances can take various forms. They can occasionally be used to complete payments or invoices to parties overseas, but generally, the term is commonly usually interpreted, and used to refer to the transfer of money from foreign workers to their families back in their home country.

As introduced in Kuman and Stauverman’s work on “exploring the effects of remittances on Lithuanian economic growth,” the amount of literature and research centring around the role of remittances in economic development and growth is increasing. This would evidently serve to justify some of the initial statements made in the introduction of this paper, highlighting how migration has become such an integral part of today’s societies, whether it be amongst citizens of lesser-developed or emerging markets, or even amongst the population of already advanced economies. Understanding the implications of migration and the benefits and threats it brings is crucial in order to comprehend and effectively manage economic growth under these new conditions. One of the many externalities migration brings comes in the form of remittances.

Remittances in academic literature have received mixed reviews in terms of their capability to foster or assist in economic growth. One might say that the general consensus is that remittances are surely a positive externality to migration, as despite the loss in labour, proportions of income are still being sent back to the home country which in turn raises the amount of money available for circulation within the economy. Several authors have argued remittances generally have a strong “welfare enhancing effect” (Kumar & Stauvermann, 2014), which is especially true when they can augment consumption, raise investment in capital, as well as assist in educational and human development, encourage

entrepreneurship and initiatives to reduce poverty (Ratha, 2007) (Buch & Kuckulenz, 2010) (Rao & & Hassan, 2012).

A hypothesis that remittances can lead an effort and initiatives to stimulate economic growth under the RLG has been inferred, but various studies that have tried to examine this under various circumstances have not shown consistency in their findings. Some studies of a range of various developing countries have seemingly found strong links between remittances and growth (Pradhan, Upadhyay, & Upadhyaya, 2002). These results were achieved by collecting panel data on 39 developing nations whilst applying a standard growth model. Conversely, other studies that have approached remittances from a different angle have found reason to be critical of the alternative source of income. One such study aimed to decipher a model that could link the altruistic motivations behind remittances to their subsequent impacts on economic activity (Chami, Fullenkamp, & Jahjah, 2003). The paper concluded that remittances in actual fact contributed negatively towards growth, as a result of so called "moral hazard problems." Contrary to previous beliefs, the study argued that unlike private capital flows, remittances don't necessarily harbour nor encourage the receiving parties of remittances to make wise decisions with regards to investing the money in such a way that it stimulates the local economy. Rather, foreign remittances can occasionally serve as a reason why receiving parties see no added benefit in being economically active in their own right, which in turn poses no benefit, and rather a hindrance to the home economy.

From a specifically Lithuanian perspective, literature detailing the precise effects of remittances on the home economy have been somewhat limited, nonetheless, have also produced varying outcomes with regards to concluding remarks. A study of the effect of remittances on the economic progress of both Poland and Lithuania (Kasnauskiene & Buzyte, Emigrant's Remittances and their impacts on the economy, 2011), found that remittances had noticeably positive influences on the Polish economy. In Lithuania however, the results suggested that a substantial portion of total remittances proved statistically insignificant, and that the consequence was predominantly negative on the growth of GDP per capita. According to another study by Kasnauskiene and Stumbryte, remittances only seem to contribute approximately 0.03% towards Lithuanian GDP, which seems vastly insignificant (Kasnauskiene & Stumbryte, 2012). Alternatively, a different study carried out by Damuliene in fact found a promising causal relationship between emigration and the total sum of remittances sent back to Lithuania, predicting that they would likely be key drivers in raising aggregate demand, thus consumption and finally stimulating GDP growth (Damuliene, 2013).

By applying an augmented Solow framework, results from Kuman and Stauverman have found that a notable positive effect on the development of output per worker (Kumar & Stauvermann, 2014). A causal relationship between the level of remittance and growth of output per worker served to prove that the study appears to confirm the RLG hypothesis. Overall, the study suggested that there is potential for strong economic growth in Lithuania which may perhaps ironically be aided by emigration, whilst supporting claims in alternative studies that implied that people who remained in the country in spite of emigration have benefited in their own right as a result of people relocating abroad.

It is also worth mentioning that among Lithuania's primary concerns is the loss of highly skilled labour, since a significant share of the total number of emigrants Lithuania has "lost" have been young, highly educated individuals (Hazans & Philips, 2010) (IOM, 2011). A study by Bollard, McKenzie, Morten and Rapoport however, seemingly confirmed a proposed hypothesis that on average, higher educated emigrants will tend to remit more than emigrants with lesser educational backgrounds (Bollard, McKenzie, Morten, & Rapoport, 2011). This promotes more positive impacts assuming there are no issues with brain drain, which has occasionally been noticed amongst the earlier batches of Lithuanian emigrants.

In summary, remittances generally present themselves as a variable with the potential to substantially assist in economic growth, but the data behind such claims have proven that high remittances don't guarantee a boost to the economy. What becomes apparent is the inconsistency between results from different studies and focus locations inevitably boil down to the fact that remittances are a generally a private matter, and thus unlike FDI, where clear objectives are set behind the transfer of funds and capital, remittances can, but do not guarantee greater stimulation of economically enhancing activities. This points to a potential blurred line between reality and theory with regards to remittances, as theories based on specific assumptions of the use of remittances in the economy can easily suggest positive outcomes. Conversely, when these assumptions are not met, the true value remittances bring to the economy of the home nation becomes vastly unclear.

An additional factor to note, particularly from a Lithuanian context, is the fact that concrete data about the true amount of remittances back to the country has been problematically unclear from a statistical perspective, the reasons for remain unknown (Hazans & Philips, 2010). In previous data collection efforts, it was found that in per capita terms, Lithuanian emigrants seem to remit less than their Latvian and Estonian Baltic counterparts. Proposals to explain this puzzling phenomenon have suggested that a part of the reason behind this could be blamed on the use of informal channels as a means of sending money back to family members. Alternatively, return migration brings additional explanations behind

why remittance rates are low, since Lithuanian nationals simply choose to bring their earnings back in person. The final explanation implied that generally speaking, the citizens of other Baltic countries, Estonia in particular, do in actual fact make more per capita since a substantial portion of their emigrants have settled in very high income countries like Finland. In summary, remittances provide strong potential for economic growth enhancing, but cannot be seen as a guaranteed explanatory variable or contributor in all cases.

Assessing Factors Concerning Net Migration

In the previous section, work was done in order to establish a clearer understanding and appreciation of some of the literature about special drivers of economic growth that are commonly found amongst developing economies: FDI and remittances. At this point, it may serve useful to point out that by certain definitions, Lithuania isn't entirely synonymous to some of the countries match the mould of a developing nation. With a GDP per capita of almost $20,000, an HDI of 0.869 in 2018, just to name a few key statistics commonly used in assessing the extent of development and advancement with regards to standards of living, the country can almost certainly be classified as a high income nation that is in fact highly developed. What sets Lithuania apart however is that although it is in many ways an advanced economy, because of its young age and standing compared to many other nations within the same region, the country still experiences trends and economic movements that are quite representative of developing economies in other parts of the world. Annual GDP growth rates in real terms are still higher than what one would typically expect in advanced economies, and the experience of losing portions of the labour force to emigration as a result of them seeking a "better life" elsewhere paints a very similar picture to what is observable in other emerging markets.

As previously mentioned, from the perspective of the home nation, it can be rather difficult to effectively manage some of the pull factors of emigration. What can be addressed, however, are some of the push factors of emigration that are causing locals to consider staying a less favourable option, in spite of the risks associated with moving abroad. According to Kumpikaite and Zickute, the key drivers of emigration in Lithuania have been unemployment and unfavourable scores in the Gini index, which signifies a problematic distribution of income and wealth (Kumpikaite & Zickute, 2013).

This section will therefore aim to promote greater understanding of the theoretical constructs behind unemployment, as most trends and lessons identified about unemployment in Lithuania have already been mentioned in earlier portions of this paper.

Unemployment

Approximately 85% of all Lithuania emigrants were said to have been unemployed for at least one year prior to them finally emigrating (IOM, 2011). As a result, exploring theory behind unemployment will be instrumental in providing a background for future analysis to see how unemployed may have been ameliorated or worsened due to emigration.

An individual counts as being unemployed when they are without work, but actively searching for employment (Chappelow, 2020). The general unemployment rate of any given country can be found by simply dividing the number of people known to be currently unemployed by the total size of the labour force. Note, that in certain cases, the labour force is quite specific and doesn't exclusively refer to the number of people of working age, but the number of actual active workers in the economy. Hence, students and other variable are not included.

Unemployment can take one of three forms: cyclical, structural or institutional employment. Cyclical unemployment derives its name from the fact it is the number of unemployed workers that can be identified as a result of economic booms and recessions. Naturally, unemployment rises during recessions, not necessarily due to the fault of the employee, but rather out of the necessity for organisations to tighten their belts during periods of strain. Structural unemployment occurs when specific jobs and functions are made redundant as a result advancements in technology that essentially "replace" these workers. Institutional unemployment is the result of various economic and government policy that can have long-run effects on the overall business environment. Institutional unemployment exists as a result of various policies put in place by governments or institutions to raise benefits for individual workers; but in turn reducing the total number of employees a firm may be willing to take on as a result of the added costs. Such policies may include higher minimum wages, but unionisation can also be a contributory factor.

In addition to the three types of unemployment just discussed, one more type of employment exists that lies differs slightly in that instead of being caused by "macro" forces, hence, businesses, governments, or economic conditions, it lies more within the locus of control of the individual. This final type is called frictional employment, which is the result of the time it takes for an unemployed worker to become employed again (Mankiw & Taylor, 2014). Frictional unemployment makes affordances for some of the realities of unemployment. It understands that the ideal jobs for different individuals will not always be available, and even if they were to be, there are limitations to the extent knowledge of these vacancies will reach them. Frictional unemployment can be caused by any of the three previously mentioned "instigators" of unemployment. Each of which can and will have varying impacts on the length of

frictional unemployment for various individuals. Structural unemployment can be especially impactful, as it will often require that workers re-educate and gain new skills as *sectoral shifts* in the economy have started to look upon these abilities with less favour, or pure redundancy. This can, however, be an incredibly arduous and time-consuming process that may leave people unemployed for longer if they don't decide to leave the local workforce altogether.

The difficult reality about unemployment is that almost regardless of the type that is currently affecting the economy, solving the issue to reduce the rate of people without work is never an easy task. Even though the inherent solutions to various types of unemployment are seemingly simple, the implementation of them is highly complicated (Mankiw & Taylor, 2014). Ideally, improving the flow of information to streamline the process of attaining successful job searches would be a crucial step in combatting unemployment, but this is again easier said than done. Further on in this section, the concept of real wage and how it is essential in balancing labour demand and supply will also be introduced. However, real wage is equally as complicated to manage and adjust to achieve such an equilibrium. As with anything in economics, adjusting real wage will always improve some aspects of the issue whilst worsening others, emphasising the role of opportunity cost in these types of decisions.

The Natural Rate of Unemployment

The natural rate of unemployment can be described as the average rate of unemployment an economy will tend to fluctuate around in the long-term (Mankiw & Taylor, 2014) (Hall, 1979). For various reasons, unemployment can never be perfectly zero, even in the most efficient economies. The rationale behind this lies in the fact that the exchange and availability of ideal job vacancies are not always efficient in reaching the right individuals. Additionally, sectoral shifts will always create a sense of imbalance between skills demanded and skills available in the current workforce. Though somewhat problematic, this shift can also be a positive signal that an economy is advancing in its needs for more advanced capabilities amongst its workforce. Alternatively, an unemployment rate of 0 can also be considered more dangerous than ideal, as it would be an obvious symptom of an overheated economy (Amadeo, 2020) (Chen, 2019).

In order to calculate the natural rate of unemployment in a country, consideration must be given to two variables: the rate of job separation, s, and the rate of job finding, f. These represent the portions of employees in a given month that both lose/leave and land a new job respectively. The steady-state rate of unemployment $\frac{U}{L}$, is given by:

$$\frac{U}{L} = \frac{s}{s+f}$$

$$\begin{aligned} U &= Number\ of\ unemployed\ workers \\ L &= Total\ size\ of\ the\ labour\ force \\ \frac{U}{L} &= Unemployment\ rate \\ s &= Rate\ of\ job\ separation\ per\ month \\ f &= Rate\ of\ job\ finding\ per\ month \end{aligned}$$

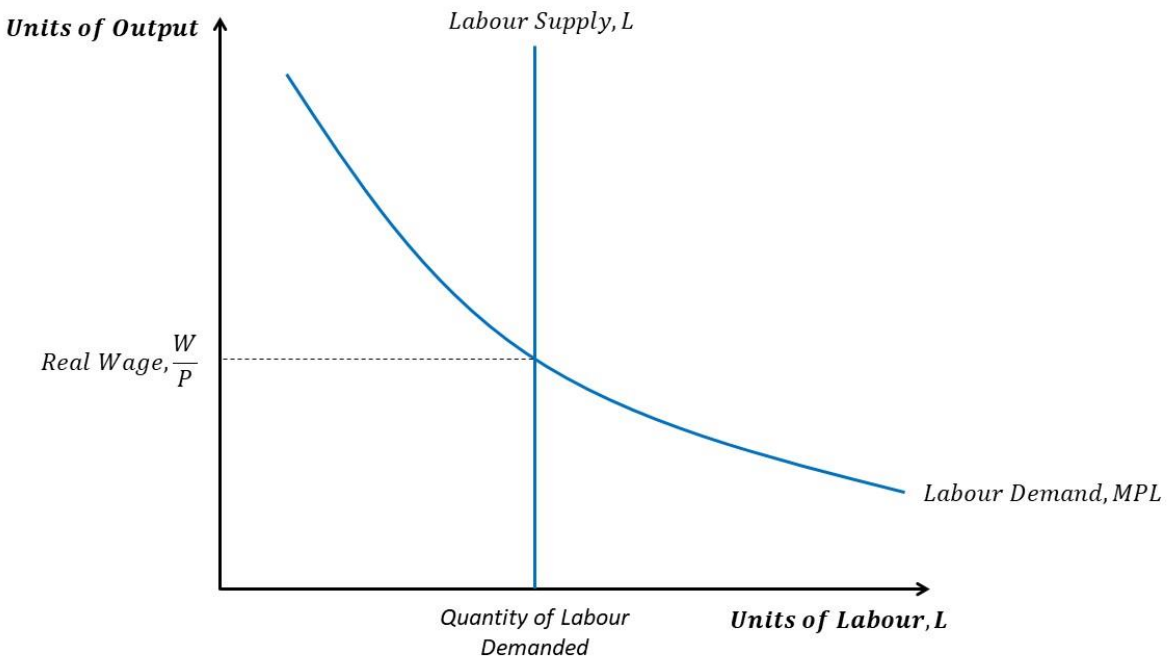
Equating Labour Demand and Labour Supply

An important part of understanding unemployment can also come from understanding the relationships and rationale behind equating labour demand and supply, and how real wage assists in maintaining balance and equilibrium (Mankiw & Taylor, 2014).

Real wage, $\frac{W}{P}$, describes compensation given to labour expressed in units of output, rather than in nominal salary or wage terms. According to neoclassical theory, the ideal outcome is to maintain a real wage that at its very minimum is equal to the marginal product of labour (MPL). To understand this logic, employers will continually find an incentive to take on additional workers so long as the MPL exceeds the real wage.

Labour demand, given by MPL therefore is highly dependent on the real wage, which is somewhat endogenous, to balance with labour supply which is more of an exogenous variable.

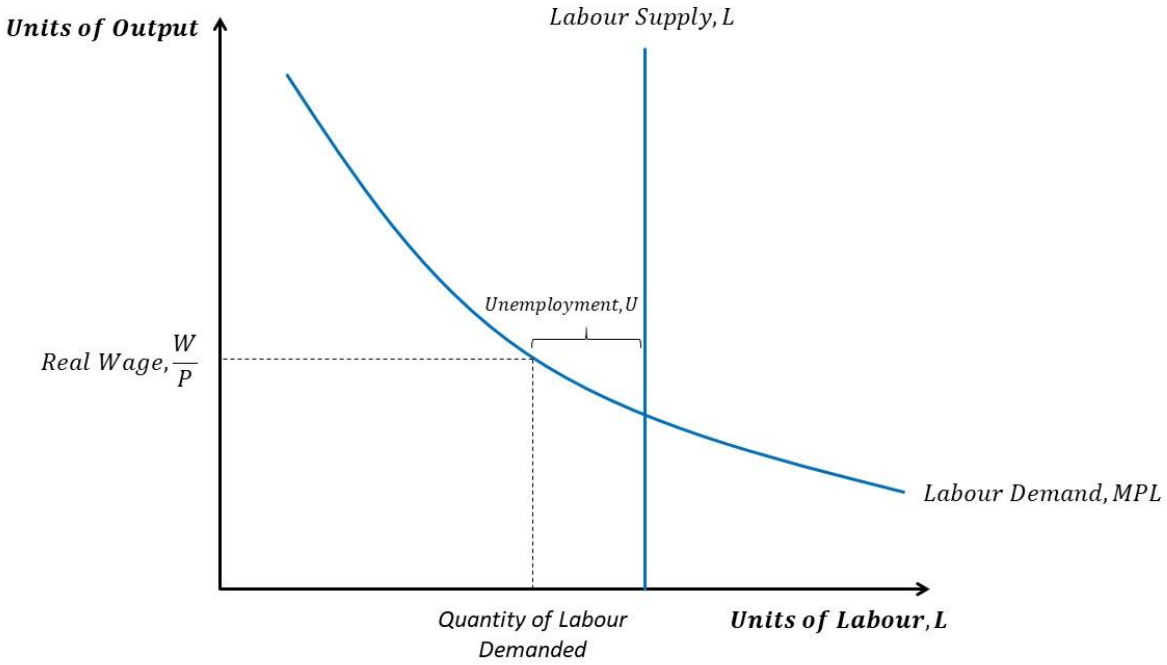
FIGURE 3.2: The theoretical modelling of labour demand and labour supply



Source: (Mankiw & Taylor, 2014)

With this logic in mind, it can be inferred and understood why rigidities to real-wage in the form of minimum wages or other policies can potentially lead to unemployment in an economy by removing some of the endogeneity of real-wage as a variable. This is not necessarily a critique against policies that cause such rigidities, as they most certainly put in place to ensure employers supply their labour force with a realistic wage that can promote a decent standard of living for their employees, in the event that MPL isn't particularly high yet.

FIGURE 3.3: A visualisation of the effects of real wage rigidity in causing unemployment



Further analysis of nature of unemployment in Lithuania will be discussed further later in this paper, as well as key lessons and takeaways presented by theory. What this section has opted to do is to provide a preliminary introduction to some of the explanatory factors behind drivers of unemployment, as well as introduce the concept of the natural rate of unemployment as a measurement of the health of the matter that has been a remarkably strong driver of emigration in Lithuania.

Immigration Policies

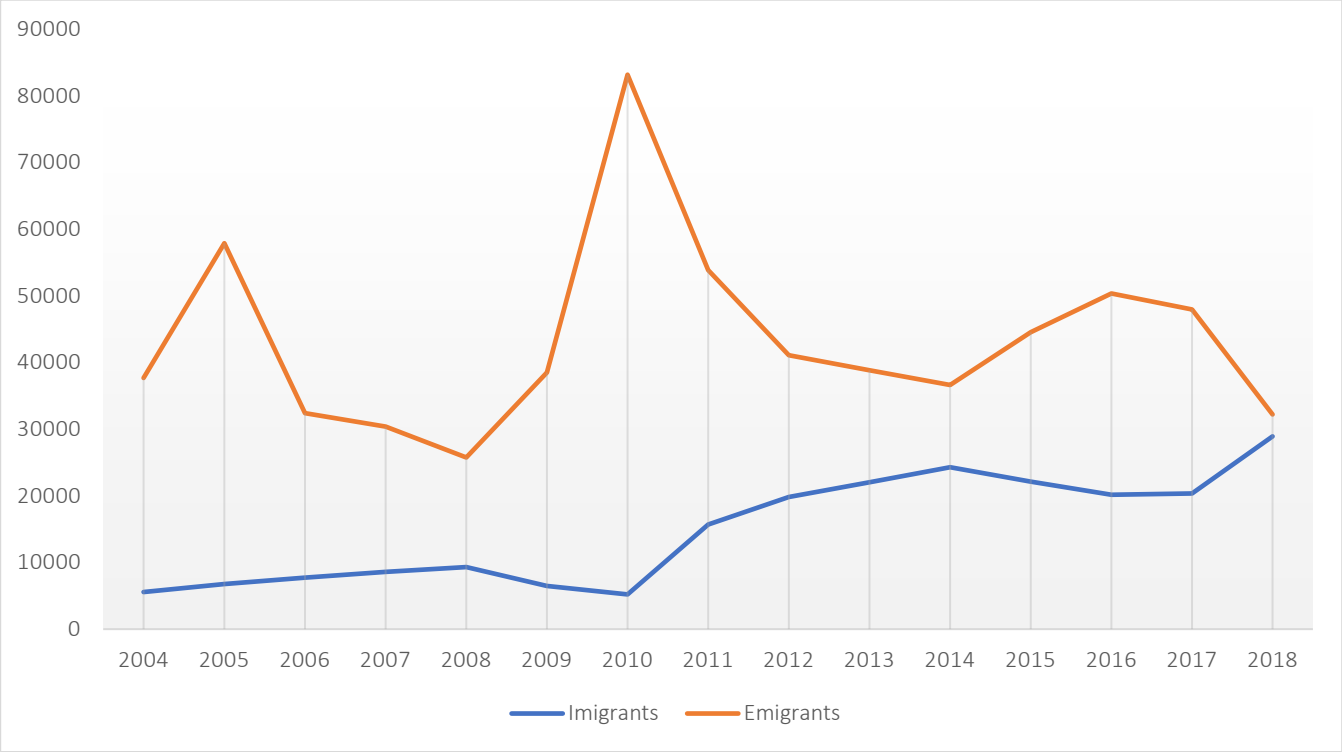
Lithuania will certainly not be the only country seeing a portion of its local population emigrate in search of greater opportunities. With the greater ease in human and labour mobility that has materialised over the years, particularly within Europe under the establishment of the Schengen Agreement and the right of free movement as part of the principles of the European Union, nationals of both the most advanced and lesser advanced countries within the continent are experiencing some form of labour migration to varying degrees. As already introduced in the section directly discussing literature on brain drain, the phenomenon of skilled labour emigration is not exclusively unique to developing nations, but is also experienced in advanced economies as well (Kesselman, 2001).

In the European ecosystem however, in spite of any high skilled or ethnic emigration losses, all but 6 EU nations still experience positive net migration. The remaining 6 being: Poland, Bulgaria, Italy, Lithuania, Latvia, Romania and Croatia (Eurostat, 2019).

As was visualised in the presentation of key demographic data about Lithuania, net negative migration has been a constant issue for Lithuania essentially since gaining independence in 1990.

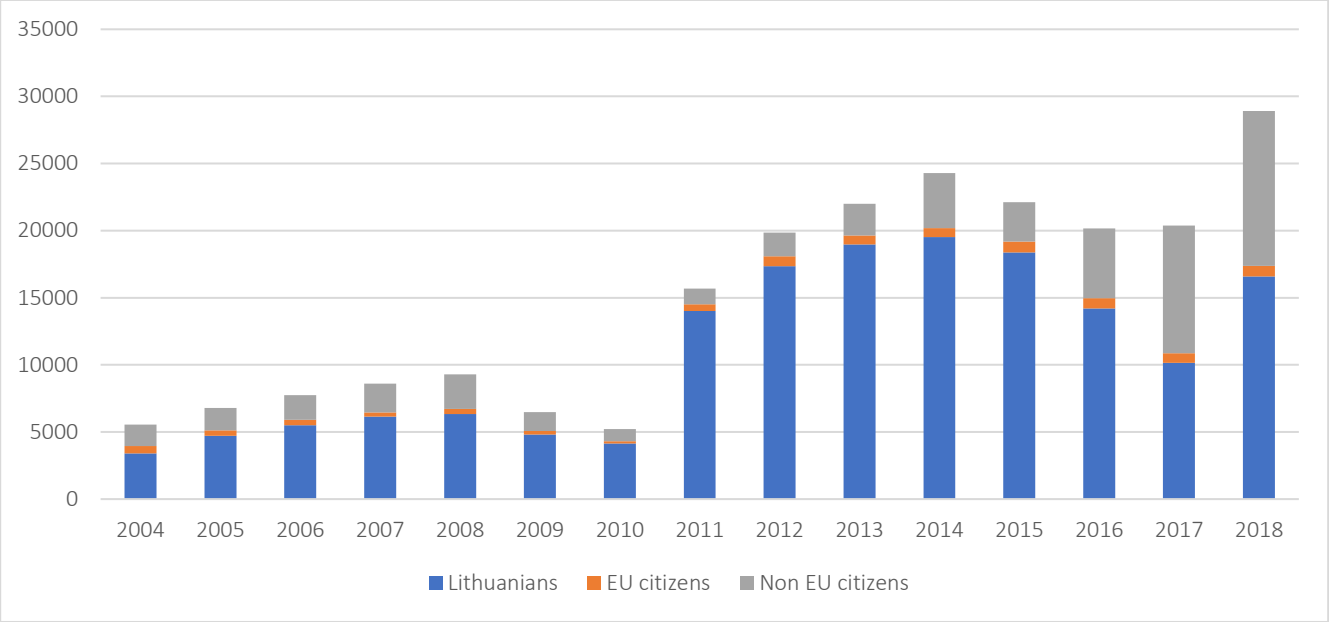
Figure 3.4 demonstrates the overall flows of emigration and immigration in Lithuania since joining the European Union in 2004.

FIGURE 3.4: Lithuanian emigration and immigration since EU Accession in 2004



Source: (Statistics Lithuania, 2019)

FIGURE 3.5: The origins of immigrants in Lithuania per year since 2004



Source: (Statistics Lithuania, 2019)

The data presents two notable takeaways. The first being that immigration is in fact on the rise in Lithuania. A part of this can be explained by a recent change in legislature in Lithuania that streamlined procedures and relaxed conditions necessary for work visas granted on the basis of labour shortage (Sipaviciene, 2018). It is the success of such initiatives that is believed to have contributed to accelerated rate of immigration since the initiatives were launched in 2017. It is worth mentioning, however, that the types of jobs have been satisfied by such an initiative have predominantly been relatively low-waged blue collar work. Subsequently, in 2018, the five most common professions fulfilled by immigrants: 87% or a staggering 12616 migrants were long-distance truck drivers, with the remaining proportion including bricklayers, ship hull assemblers, plasterers, welders or others (Lithuanian Labour Exchange, 2019).

Lithuania's approach towards immigration, and thus the policies that have followed this mentality, has primarily been driven towards an attempt to entice emigrated Lithuanians to return (Sipaviciene, 2018). This has however proven to be unfruitful, and although a large share of immigrants year-on-year tend to be composed of returning Lithuanians, the actual size of such migration is not significant enough to offset the labour challenges the country is already facing. Different organisations are already seeing a rising level of demand yet shortage for both skilled and unskilled labour. As a result, the necessity of raising the rates of immigration of non-Lithuanians has been on the rise. Aside from returning citizens, a substantially growing proportion of Lithuania's immigrants are comprised of TCNs, which is rather

intriguing considering that the system is built to only resort to the admission of TCNs when there is a lack of Lithuanian or EU citizens to offset essential labour shortages. This perhaps makes sense to some extent however, since the obvious immediate demand of labour in Lithuania was far lesser skilled classes of work. The TCNs represented in Lithuania are mainly comprised of Belarussians, Russians, Ukrainians and Moldovans.

The size of Lithuania's immigrant workforce is growing, but as of 2018 only made up a mere 2.29% of the total workforce, not nearly enough to tack the ensuing threats of labour shortage due to Lithuanian emigration.

What is strikingly clear as well is that while the country has had certain measures of success in attracting lower skilled labour from predominantly East-European non-EU backgrounds, Lithuania has struggled to entice the interests of higher skilled labourers, which is particularly problematic considering that it is this class of worker that comprises a substantial share of emigrating locals.

In an attempt to address this issue, Lithuania has made efforts to ease legislative requirements for highly qualified non-EU professionals to apply for a TRP under an EU Blue card. Relaxed requirements on the qualifications necessary for one to merit a Blue card have enabled a steady increase in the flow of this class of labour. That said, up to this point only around 200-300 blue cards are issued each year, which is still a very low figure compared to the thousands of migrants leaving Lithuania within the same time frame.

In addition to the rules concerning EU Blue cards, Lithuania is also making setting up individual initiatives to try and encourage and facilitate technology transfers from abroad and the introduction of new and innovative ideas in the country by issuing special "start-up" visas, whereby someone can may be granted a one-year extendable residence permit. By encouraging the establishment of small innovative businesses, it is the hope of policy makers that such enterprises may contribute positively to the advanced professional and technological offerings that local businesses can offer, not just domestically but potentially internationally. The start-up visa went into effect in 2017 where a total of 12 visas were granted, highlighting the long way such initiatives still have to before they prove fruitful.

In summary, it is clear that Lithuania is both in dire need and striving to make amendments to its policies to greater encourage immigration to offset the loss of labour to emigration. That said, the country still has much work to do before initiatives will bear any fruit for the economy, and it is critical that Lithuania is capable of attracting adequate amounts of skilled labour on top of unskilled labour to not only satisfy

local labour demands, but equally to accelerate knowledge transfers from abroad to further enhance the innovative ecosystem.

Analysis

Throughout the existing course of this paper, a vast array of information has been compiled in order to establish a concrete understanding of both key statistics and data about Lithuania. On top of the country-specific data, a further summation and compilation of some of the existing literature discussing both brain drain in a general, as well as Lithuanian context were investigated, taking into account not just the phenomenon itself, but also some of the factors that can contribute to brain drain, or alternatively reduce if not circumvent the negative effects it poses. Some economic literature was also taken into account to understand the importance of various factors such as FDI in the development of nations, whilst additionally investigating the role remittances can potentially play in accelerating a country's economic activity.

Now that a solid foundation of information has been built, and an appreciation of existing perceptions towards the problem and its accompanying elements has been reached, the next step would be to carry out a unique analysis of all the information uncovered to derive conclusions of our own.

In order to drive this analysis, this paper will turn to several key economic models for studying economic development. Each model will present its own set of unique capabilities that can assist in understanding the situation in as holistic an approach as possible. As such, it is hoped that the amalgamation of various may contribute complementary explanatory power for one another, whilst making up for each other's limitations in scope.

Understanding Economic Theory

Introducing the Economic Models

Before engaging with the models to directly assess the problem at hand, it would prove highly useful to first explain the mechanics behind each one. This allows for a more in depth understanding of the conclusions that will be drawn through the use of each framework.

Classic economic theory in its most simple form is composed of two key elements, the **supply** and **demand** for goods and services.

The supply of goods and services is dependent, and therefore represented by an economy's production function, that incorporates an amalgamation of the relationship between vital factors of production (Mankiw & Taylor, 2014).

$$Y = F(K, L)$$

$$where:$$

$$\begin{aligned} Y &= Output \\ K &= Capital \\ L &= Labour \end{aligned}$$

An important characteristics of many production functions is the concept of constant returns to scale. This implies that an equivalent increase in all factors of production will lead to the same equivalent increase in total output. This can be denoted as:

$$zY = F(zK, zL)$$

$$where$$
$$z = proportional\ increase/decrease$$

For an economy to be in equilibrium however, supply must balance with demand, which therefore means that the demand function is equally as important to understand, and is often commonly used as a measure of overall GDP. The demand for goods and services in a closed economy is expressed as follows:

$$Y = C(Y - T) + I(r) + G$$

$$where$$

$$\begin{aligned} C(Y - T) &= Consumption\ as\ a\ function\ of\ income - tax \\ I(r) &= Investment\ as\ a\ function\ of\ the\ real\ interest\ rate \\ G &= Government\ Spending \end{aligned}$$

By expounding upon these very basic concepts, two additional models will be introduced, the Mundell-Fleming Model and the Solow Model. Each of which presents a series of assumptions and characteristics that prove invaluable in studying the conundrum at hand.

Introducing the Mundell-Fleming Model

The Mundell-Fleming model is an expansion upon the commonly used IS-LM model that measures the aggregate demand of a particular economy. Synonymous with the standard IS-LM model, the Mundell-Fleming Model measures aggregate demand of the economy in the relative short term by analysing the interaction between market for goods and for money (Mankiw & Taylor, 2014). The difference, however, is that the latter is specifically attuned to studying the aggregate demands of small open economies, a description that matches Lithuania quite seamlessly.

In addition to incorporating the effects international trade and financial activities in its analysis, the Mundell-Fleming model requires one key assumption to be fulfilled in order to be applicable for use, specifically, that the small open economy in focus has perfect capital mobility. This is an essential prerequisite for study, as it therefore means that the economy's ability to borrow and lend in international financial markets is predetermined by the world interest rate.

Given therefore the aforementioned assumptions, the IS* (investment and savings) curve of the Mundell-Fleming model can be expressed as follows:

$$Y = C(Y - T) + I(r^*) + G + NX(e)$$

For the most part, the function is very much identical to the previously introduced demand function, with two key differences.

First, the investment function is not represented as being directly impacted by r^* which represents the international real interest rate. This is an important concept to note, as it implied that generally speaking, regardless of fiscal or monetary policy alterations made domestically, the value of r will not be able to change to adjust for equilibrium.

The second key difference is the incorporation of the term $NX(e)$ which represents the total value of net exports within the economy as a function of the nominal exchange rate. It is expected that the lower the nominal exchange rate, the greater the value of total net exports and vice versa. This is because of the fact that countries with "weaker" currencies tend to be more favourable locations to buy goods from internationally, as stronger currencies can exchange a greater value of goods per unit of their own currency by buying from that nation.

With this in mind, it becomes easy to identify that the Mundell-Fleming model can be a good tool in the analysis of the effects of various currency/exchange rate policies and systems on international trade. In Lithuania's case, a fixed exchange rate policy is introduced, since as of 2015, Lithuania adopted the euro

as its currency to replace the former litas, which was formerly pegged to the US dollar (Eidintas, Bumblauskas, Kulakauskas, & Tamosaistis, 2013).

This paper will not specifically focus on the effects of Lithuania's chosen exchange rate policy on its economy, but it will however take into account the important roles of investments and net exports in an open economic context to analyse how these factors can influence the country's economic growth in spite of the current demographic conundrum.

In addition to the IS* function for representing the goods market in a small open economy, the LM* function represents the money market. The equation therefore, for real money balances is given as follows:

$$\frac{M}{P} = L(r^*, Y)$$

$$\begin{aligned}
\frac{M}{P} &= \textit{The supply of real money balances} \\
L(r^*, Y) &= \textit{The demand for real money balance} \\
M &= \textit{Money supply} \\
P &= \textit{Price level} \\
r^* &= \textit{International real interest rate} \\
Y &= \textit{Income}
\end{aligned}$$

In terms of the money market, several assumptions are made. In general terms, the demand for real money balances correlate negatively with the interest rate, but positively with income. Additionally, the money supply and price level are exogenously fixed. This is because the money supply is directly controlled by a central bank, and since the Mundell-Fleming model is specifically designed to measure any fluctuations in the short-term, the price level is also fixed.

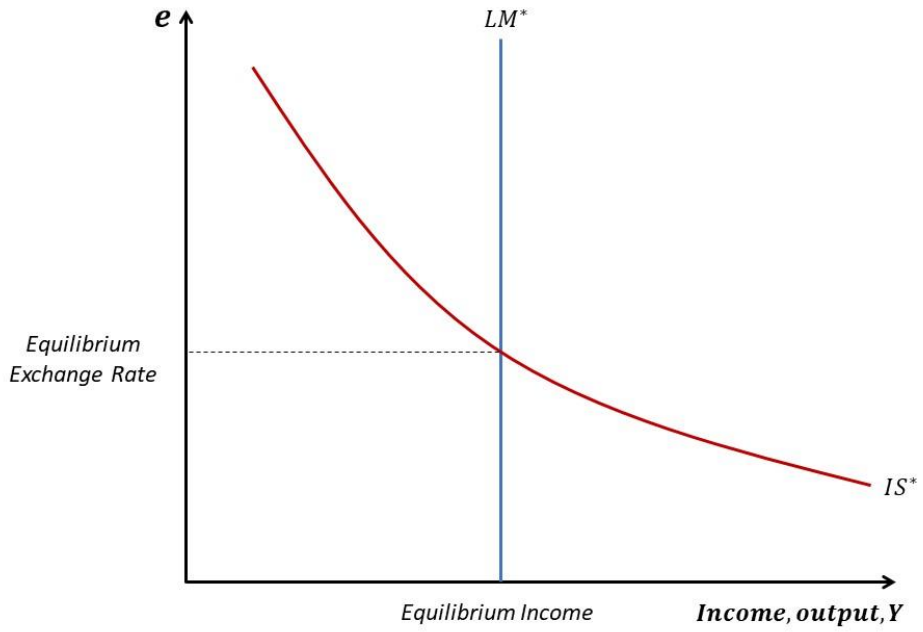
In order to visualise the model on a coordinate plane, the y-axis is represented by the nominal exchange rate, e, instead of the standard real interest rate, r, that is often used in the standard IS-LM model for closed economies. This is once again because of the fact that the real interest rate is kept constant, thus the nominal exchange rate is the only adjustable factor that can influence actual expenditure in the economy by impacting net exports, NX. Conversely, the x-axis is expressed by income or output, Y.

Continuing from this logic, the IS^* curve is negatively sloped. This is because the IS^* equation is negatively impacted by a higher nominal exchange rate, which reduces net exports, and hence total output.

The LM^* curve on the other hand is directly vertical in a Mundell-Fleming model, instead of being positively sloped in a standard IS-LM model. This is specifically because unlike in a regular IS-LM model, the LM^* curve is not influenced by the nominal exchange rate, even though this is what is placed on the y-axis.

With all this information, a standard Mundell-Fleming model therefore looks like this:

FIGURE 4.1.1: The Standard Mundell-Fleming Model



What immediately becomes apparent from a Mundell-Fleming model is that in a short-run analysis of economic fluctuations, general changes to fiscal policy instigated by the national government will in actual fact have no role in increasing output or income within a country. Increasing consumption, investment, government spending or net exports, which would all individually lead to a rise in the IS^* curve, would leave equilibrium income unchanged so long as the LM^* curve, hence demand and supply of real money balances stays unmoved.

The key takeaway therefore from the Mundell-Fleming model therefore is that a rise in income and output is dependent upon the movement of the LM^* curve and the factors that govern its value.

Introducing the Solow Growth Model

Thus far, the Mundell-Fleming model has been useful in understanding fluctuations and trends in small open economies, defining what factors are instrumental in actually raising the income and output of a country at least in the short-run.

Although the model is incredibly useful in considering the factors of international trade, business, flow of goods and services, especially finance, because it is short-sighted in nature, it does not incorporate demographic developments that can also have an influence on an economy in the much longer term.

It is in such a scenario, that the Solow Growth Model becomes highly effective in useful in determining the effects of saving, population growth and technological advancement affects the output of any particular nation or economy over time (Mankiw & Taylor, 2014). As such compared to the generally static natures of previous economic models that analyse economies in the short term, the Solow Growth Model allows for a more dynamic analysis of economic progress, as varying factors influence productivity over time.

According to the model, the development of three key factors are prescribed as the main areas of focus that contribute to the total output of goods and services of any economy. These are:

1. The growth of capital stock
2. The growth in labour force
3. Advances in technology

The interaction of each of these forces are described to be the key influences that can drive economic growth.

Supply and Demand for Goods under the Solow Model

The logic behind the supply of goods in the Solow model comes from the basic form of the production function. This is that total supply can be expressed as the interaction between capital and labour.

The Solow model makes an effort to not let the actual size of an economy interfere with analysis, and therefore measures factors in per unit of labour terms.

With the regular assumption with regards to production functions deeming *constant returns to scale*, what the Solow model reveals is that essentially, the level of output per worker is generally defined by the level of capital that can be attributed per worker. This is denoted as:

$$y = f(k)$$

In contrast to the supply of goods which is expressed by the production function, the demand for goods is influenced by consumption and investment.

An interesting and important thing to take note of in the Solow model, particularly with regards to the demand of goods is that unlike the consumption functions previously seen in the Mundell-Fleming model, or even in common IS models, the Solow model doesn't include government spending, G. The Solow model, perhaps rather unfortunately given the nature of our example, also views an economy as if it were closed, and hence net exports, NX, are additionally not included in this function.

Given these assumptions, the overall consumption and investment function in the Solow model in per unit of labour terms is expressed as follows:

$$y = (1 - s)y + i$$

The consumption portion of this formula is prescribed as $(1 - s)y$ which implies that the model assumes that each individual saves a proportion of their total income, which is denoted by s. This differs from the previous version of consumption $C(Y - T)$, which described consumption exclusively as income takeaway any payments in the form of tax.

By rearranging the formula, what soon becomes evident is that savings are in fact equivalent to investment, which is an important concept to remember, as it deals with the accumulation of capital stock.

$$sy = i$$

Understanding Capital Stock

Capital stock and the growth thereof is considered to be an essential element in the overall output of an economy. The total value of capital of stock can however change over time due to two factors: investment, which causes an increase in capital stock, and depreciation, which has the opposite effect.

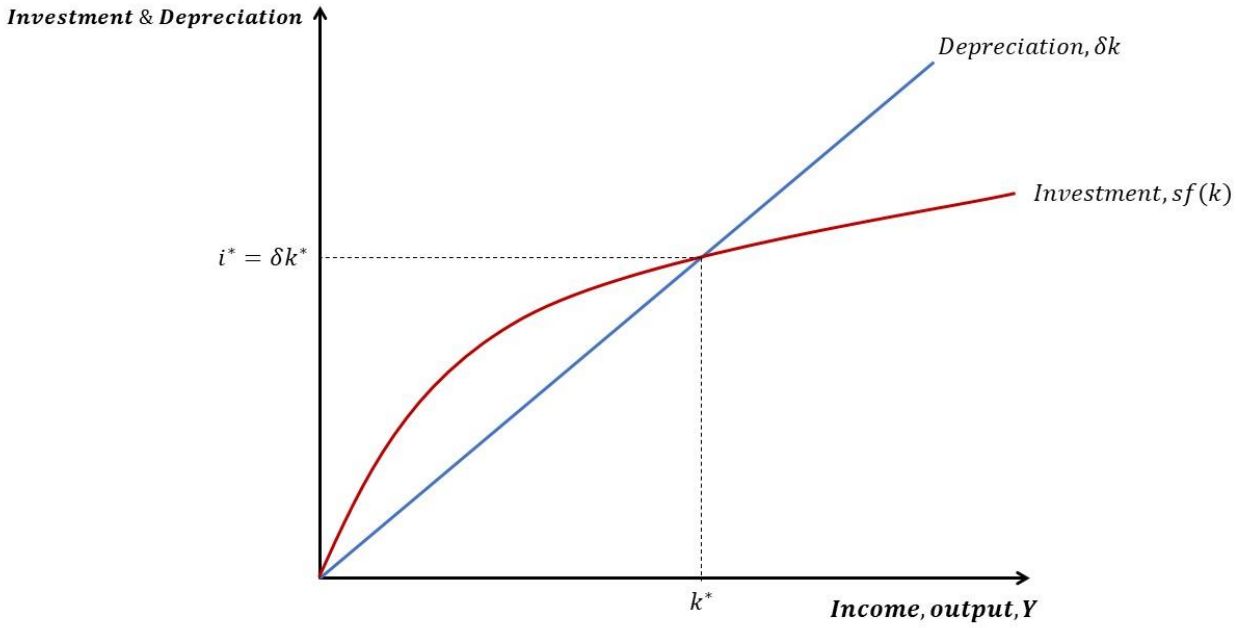
With specific consideration to the fact that output per unit of labour is equivalent to capital per unit of labour, and with respect to the notion that savings are equivalent to investment, also in per unit of labour terms, the overall change in capital stock can be denoted as:

$$\Delta k = sf(k) - \delta k$$

In simple terms, this refers to the change in capital stock being the difference between total investment in capital as a function of the level of savings per unit of labour, take away the total value of depreciation per unit of capital.

The relationship between the accumulation of capital stock, and the loss of its value due to depreciation can be visualised through the following graph:

FIGURE 4.1.2: The relationship between investment and depreciation



The point of intersection between the investment curve and the depreciation function marks an important concept in the Solow Growth Model, known as the *steady state*.

The steady state can be considered, as described by Mankiw and Taylor as the "long-run equilibrium of the economy." In essence, an economy that currently doesn't find itself in the steady will eventually make its way there. The capital stock will continuously increase at any point before k^* since investment

exceeds the rate of depreciation that decreases the value of it. Additionally, any further investment in k beyond k^* would not be efficient, since depreciation would outpace it, leaving no useful returns.

According to the model by Robert Solow, and as described in Mankiw and Taylor as well, any economy that has finally achieved the steady state will stay there.

What is important to note thus far however, is that when we assume the rate of depreciation to be constant, the key factor for raising income and output in the long-run lies in the investment curve, which is given by the level of saving within a nation. Increasing savings raises the investment curve, which in turn increases the steady state k^*.

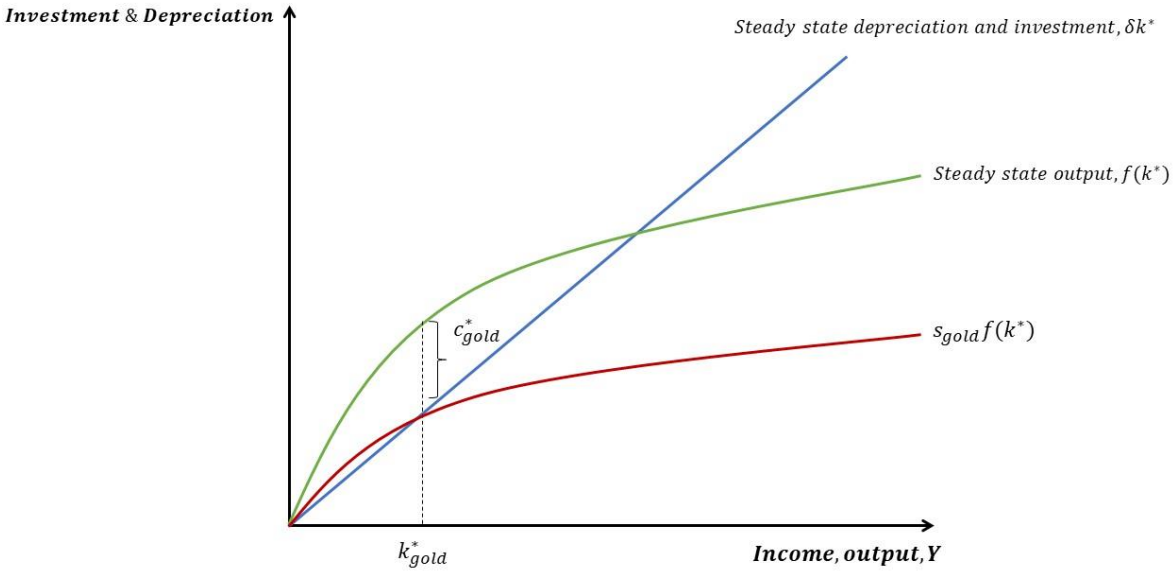
That said, increasing savings indefinitely is not only unrealistic, it is also unsustainable, since the more people save, the less they actually which doesn't actually benefit the economy. Consumers need to avail of goods and services, which is precisely why they work to earn an income in the first place. Thus, the Solow Model needs to make affordances for this reality, by introducing a second steady state value, k^*_{gold}, known as the *golden rule level of capital*. This represents the level of k that not only raises income, but also maximises consumption.

Steady state consumption represents the difference between steady state output and depreciation:

$$c^* = f(k^*) - \delta k^*$$

The aim of the golden rule is to obtain the actual level of k^* that maximises this, assuming that all output $f(k^*)$ is used for either consumption or investment. To visualise this, consult figure 4.1.3.

FIGURE: 4.1.3: The Golder Rule level of investment



By shifting the savings rate, the policy makers can obtain a certain level of control in the economy, which would enable the shift down to the golden rule level of capital that enables the maximisation of consumption.

Incorporating Population Growth and Technological Change

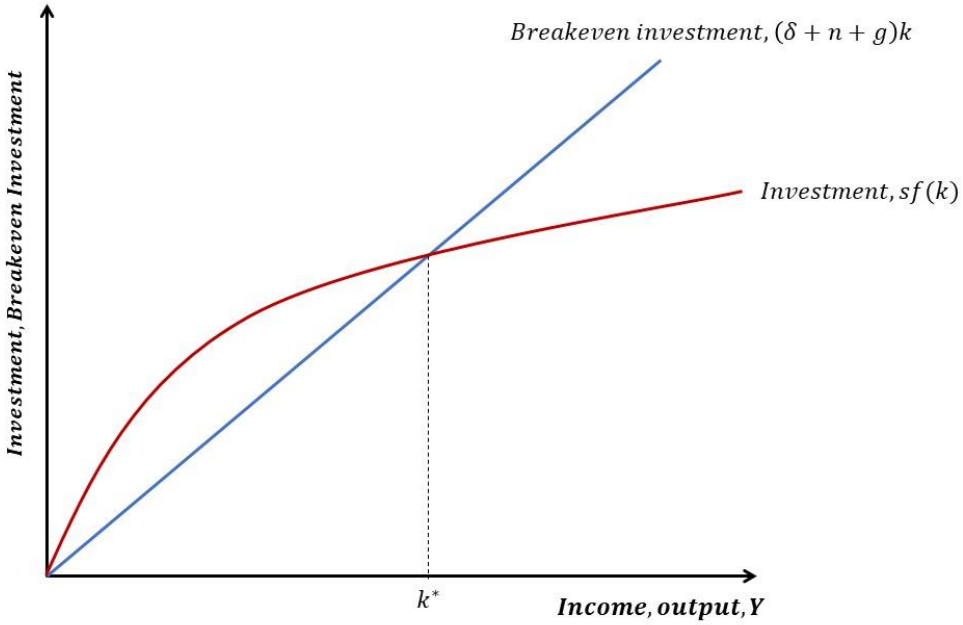
Up to this point, only the movement of capital in relation to output in the long-run has been considered, but two more variables need to be addressed in order to complete the Solow Model: population growth and technological advancement.

The concept of the accumulation of capital is one that is very important in the Solow model which is the prime reason why a handful of pages in this report are used to describe the mechanics behind it.

Initially, it was demonstrated that the Solow model is built upon the relationship of savings, thus investment, against the level of "break-even" investment required in order to sustain a growth or steady-state of capital stock in the economy (Mankiw & Taylor, 2014). Introducing population growth technological advancement into the model demonstrates greater capital stock is necessary to account

for the additional labour available in the country, as well as the introduction/expansion of the total number of "effective" labour too. What this means, therefore, is that the prime area these two variables contribute to is in the depreciation function, which is now renamed accordingly to be "break-even investment."

FIGURE 4.1.4: The complete Solow Growth Model



What figure 4.1.4 demonstrates is that investments, which are still defined as $sf(k)$ must now offset, not just depreciation, but also the rising number of labour, n. The variable g represents "labour-augmenting technological progress" (Mankiw & Taylor, 2014). The higher the rate of g the more efficient each unit of labour is.

What is critical to recognise however is that the effects of g do not necessarily imply a growing level of productivity and efficiency per unit of labour amongst the entire population. The variable n reflects the growth of the general labour force, traditionally expressed as L. Technological progress, g however, influences its own "class" of workers which are called "effective workers", expressed as $L \times E$, where E expresses the added efficiency per individual unit of labour.

Summarising the Key Takeaways of the Solow Model

The Solow Growth Model is a highly useful, yet occasionally debated framework that has been contested amongst economists. That said, some of the key lessons, assumptions and predicted outcomes outlined by the Solow Model have been backed up remarkably by global data relating to economic and developmental trends in different countries (Mankiw & Taylor, 2014).

As was previously emphasised, economies will always seek to achieve and maintain the steady state, whether that's by the golden rule or in general terms of breaking-even against all necessary all the factors that decrease the value of capital stock per worker over time.

Once the steady state is achieved, the economy is in long-term equilibrium, but what does this say about economic growth in the long term? A more in depth analysis of this will be done later in this paper, specifically incorporating the lessons and trends from Lithuania, but for now, some initial conclusions can be drawn by strictly analysing in general terms what the Solow Growth Model has to say are the key determinants for growth in the long-term once equilibrium is achieved.

In the steady state, the capital and thus output per effective worker are maintained constant. In the long-run total output in aggregate terms, which breaks the predominant scope the Solow Model uses which is predominantly in per worker terms, can be achieved by increasing the total size of the labour force, as well as increasing the rate of labour-augmenting technological progress $n + g$. However, perhaps the most important takeaway from the Solow Growth Model, is that sustained growth, and a continual rise in living standards can only be achieved through greater technological progress g (Mankiw & Taylor, 2014).

Applying Economic Theory to Interpret Lithuania's Situation

Now that a solid understanding of the mechanics of each theoretical model has been established, the paper can now proceed to analysing some of the key concerns associated with brain drain, and the potential long and short term effects they pose on the sustained growth of the Lithuanian economy. Through analysing and deducing the complications into 4 key questions, they can be tackled and explained individually. With the aim of leading more in depth discussions and reasoning behind the examination of each question, it is thus hoped that strong conclusions can be drawn to each query.

After compressing the statistics and literature from previous sections, the following four questions have been singled out for clear cut analysis:

5) What threats do declining populations pose upon the future of the Lithuanian economy?
6) What economic factors are most important to prioritise to ensure economic growth?
7) To what extent can remittances aid the development of the Lithuanian economy?
8) How can economic theory explain the difficulties with regards to Lithuanian unemployment, considering it is a highly influential push factor for emigration?

The Effects of Declining and Ageing Population

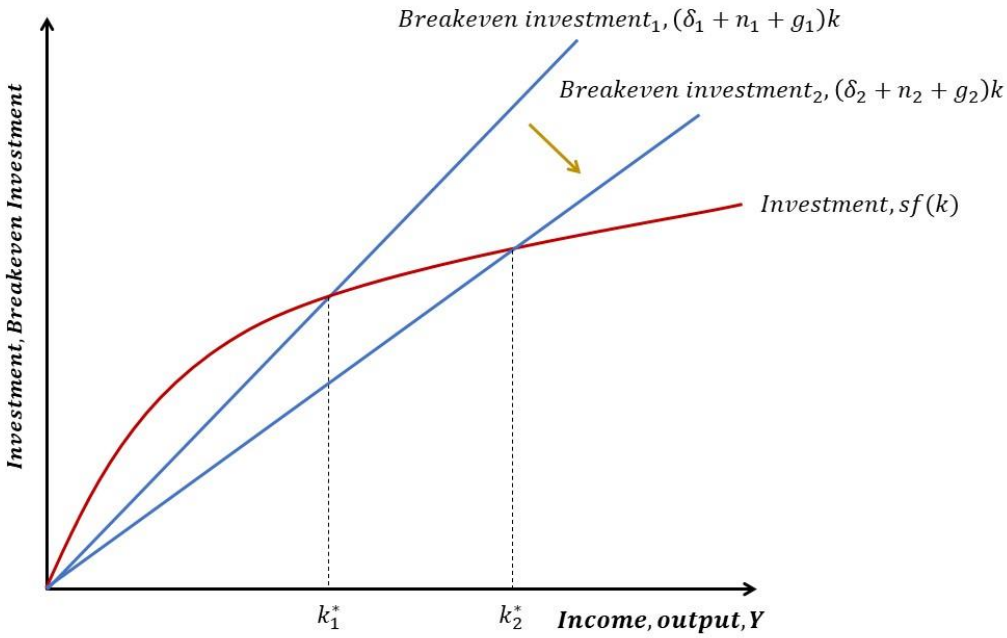
In analysing the effects of a declining and/or ageing population on the economy, the most effective framework to use would be the Solow Growth Model, as it is the model with the longest frame of reference that specifically takes population growth trends into account.

According to the Solow Growth Model, the state of the economy is defined by the relationship of total investment, given by the function $sf(k)$, with the level of investment required to "break-even" against the capital stock reducing factors of depreciation, population growth, and effective labour growth, $(\delta + n + g)k$.

It is also equally important to recall that output per unit of labour, y is given as a direct function of the level of capital stock in the economy available per worker $f(k)$.

With this in mind, figure 4.2.1 demonstrates the proposed effects of a decreasing population size on the total level of capital stock available per worker, and hence the effect on total output per worker.

FIGURE 4.2.1: The effects of population decline on the Solow Growth Model



What figure 4.2.1 demonstrates is that due to population decline, assuming everything else remains equal, the level of investment required to break-even against factors that deplete capital stock is reduced, causing the slope of the linear function to slightly flatten.

The flattening of this function in turn raises the amount of capital stock available in per workers terms which is demonstrated as $k_1^* < k_2^*$. Since capital stock is directly related to the level of output per worker, as clearly defined with $y = f(k)$, and increase in k leads to an increase in y, meaning that productivity and output per individual actually increases so long as the total level of capital stock in the country remains unchanged at the very minimum.

This initial conclusion seems rather contradictory to the initial assumptions made about a declining population, which were purely based on the assumptions that productivity in aggregate terms are given by a function of the total level of capital and labour in any given economy. Thus a decrease in one factor, in this case labour, L, would surely cause a decrease in total output, Y.

What these initial assumptions neglect however is the notion that output cannot simply be put aggregated capital and labour terms. In reality, additional concepts apply, such as the marginal product of labour and the marginal product of capital. These concepts are fuelled by the theory of diminishing

marginal returns, and that for every additional unit of capital or labour added to the equation, the less output can be produced. This therefore challenges the idea that indefinitely accelerating the size of the labour force or capital stock will always lead to productivity growth.

The idea that lower population sizes can yield higher returns per worker may seem somewhat difficult to grasp, but Mankiw and Taylor demonstrate in a scatterplot, containing a compilation of vast amounts of country data, a seemingly causal relationship between lower population sizes and higher GDP per capita (Mankiw & Taylor, 2014). In spite of potentially lower aggregate GDP, the truer measure of social and economic welfare for each individual in an economy is how much income can be afforded to them by the total level of output achieved by the country as a whole.

Thus preliminary suggestions based strictly on theory, though somewhat backed up by real-life examples using country data, indicate that a decreasing population size doesn't pose any immediate threats to the health of the Lithuanian economy. Such an explanation using the Solow Model would also make sense of the fact that despite losing a quarter of its population in the last 30 years, Lithuania's GDP and GDP per capita have still continually risen at rates that have generally been quicker than most of its EU counterparts. The question lies however to what extent Lithuania can continually lose its labour force, particularly its value adding effective labour (denoted as $L \times E$) before the effect becomes noticeable in the economy. Such a measurement is difficult to calculate, and unfortunately is beyond the scope of this paper. Nonetheless, it should be noted that as far as research for this paper has been carried out, no previous cases of such a scenario have been found to take place, even amongst the countries experiencing the quickest rates of population decline.

Accelerating Economic Development in the Long Term

In answering the question of the effects of population decline on the economy, it was concluded that according to the Solow Model, such a recession in demographic size wouldn't necessarily be a threat, but rather a positive outcome promoting greater productivity and hence income in per capita terms.

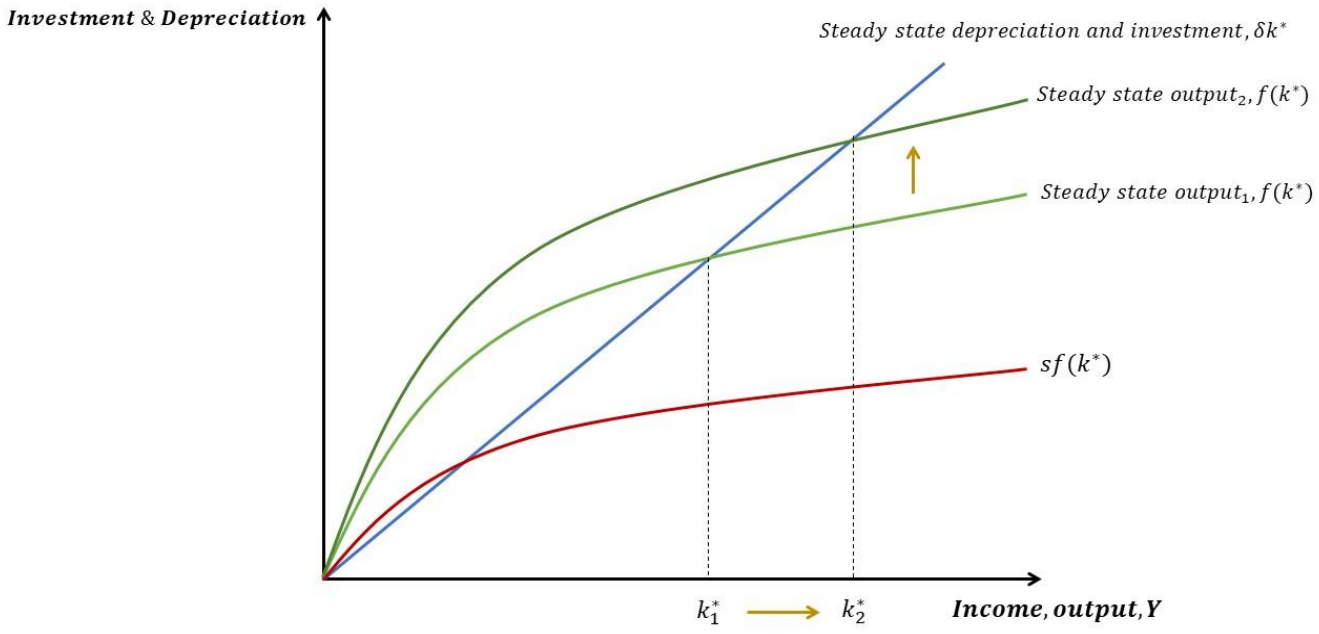
As previously stated, the level of output y is determined strongly by the level of capital stock that is available per worker in the economy. Under such a logic, continuously investing in capital stock therefore would yield indefinitely higher output per worker. This however doesn't satisfy conditions in real life, as output per additional unit of capital stock follows the law of diminishing marginal returns, deriving a certain level of MPK.

As was first discussed about the Solow Model, the economy in the long-run will always regulate itself to achieve the steady-state level of capital per worker, k^*. For any level of investment that exceeds the break-even function, more capital can be added until it reaches the steady state level. Alternatively, investment beyond the steady state will gradually recede back to the steady state level since depreciation and other pressure factors will reduce the value of capital stock.

In summary, capital stock alone cannot explain the acceleration in the productive capacity of a country, since capital stock has diminishing marginal returns for ever additional unit purchased. What accelerates economies therefore is not the level of capital stock but how stock can be transformed into additional income for every additional unit. In other words, how can the MPK be accelerated to provide more output and efficiency per resource.

The key defining factor here is the rate of technological development, g that allows for more value to be added for every unit of capital invested. Accelerating g therefore, at least according to the Solow model is the key to unlocking greater economic efficiency and hence productivity.

FIGURE 4.2.2: A demonstration of the effects of accelerate g on the Solow Growth Model



The rate in which g can be increased however is quite a complex topic. Technological progress stems from innovation that is derived by skilled, and potentially often highly skilled individuals. It may be

facilitated locally, but often, particularly in the case of developing nations, it can hopefully be gained by exposure to outside ideas and breakthroughs that have already been achieved in the outside world. The hope is that such breakthroughs may be applicable and hence transferrable in a local setting, and the key is attracting such holders of this technology of the incentives of bringing such a capability to the country in question. It's no doubt that Lithuania's efforts to attract such ideas through the issuance of "start-up" visas are directly related to the hopes of facilitating such exchanges.

It could be inferred that the relevance of technological advancement also plays a major role in explaining the process of industrialisation within a country. The gradual increase of more sophisticated and "labour-augmenting" technology into the economy allows for transitions from a primary sector dependent economies to ones that can incorporate a secondary and eventually tertiary and potentially quaternary sector as well with time. This would also explain why many advanced economies, with some exceptions, tend to have the majority of their labour force and subsequently their GDPs engaged with the tertiary sectors. Today, 67.2% of Lithuania's GDP composition is from the tertiary sector (Central Intelligence Agency, 2020).

Precisely how governments can adopt policies that encourage technological development, hasn't entirely been covered in academic literature without focusing specifically on certain types of industries. What may be inferred, however is the need to facilitate and attract FDI from stakeholders that is specifically targeted at developing the technological knowledge base within the country. This can be achieved by setting the foundations for such types of stakeholders through the development of relevant infrastructure, as well as the implementation of legislation supported by well-organised institutions to facilitate such legislation.

With some regard, Lithuania is already setting its sights towards a few key interest areas. The country, for instance, has deliberately and quite successfully set its sights on becoming a new European Hub for IT and digital solutions, particularly in FinTech (Fawthorp, 2019). To make such an endeavour possible, Lithuania set out designing infrastructure specifically geared for making the country as attractive as possible for global FinTech companies. It brought down the time necessary for companies to obtain E-money and payment licenses to be 2-3 times faster than any other EU country, promoted the development of an innovation "sandbox" where ideas could be tested under the supervision of the Bank of Lithuania, and reduced the minimum capital requirement for start-ups substantially (Invest Lithuania, 2019). On top of being a new hub for FinTech within the European Union, particularly after the exit of the United Kingdom which was the previous EU hotspot for such technology, Lithuania has also set its sights on other IT endeavours. In 2011, Lithuania boasted the fastest internet download speeds in the

entire world, and is second only to South Korea in terms of consumer upload speeds (Invest Lithuania, Ookla, 2011).

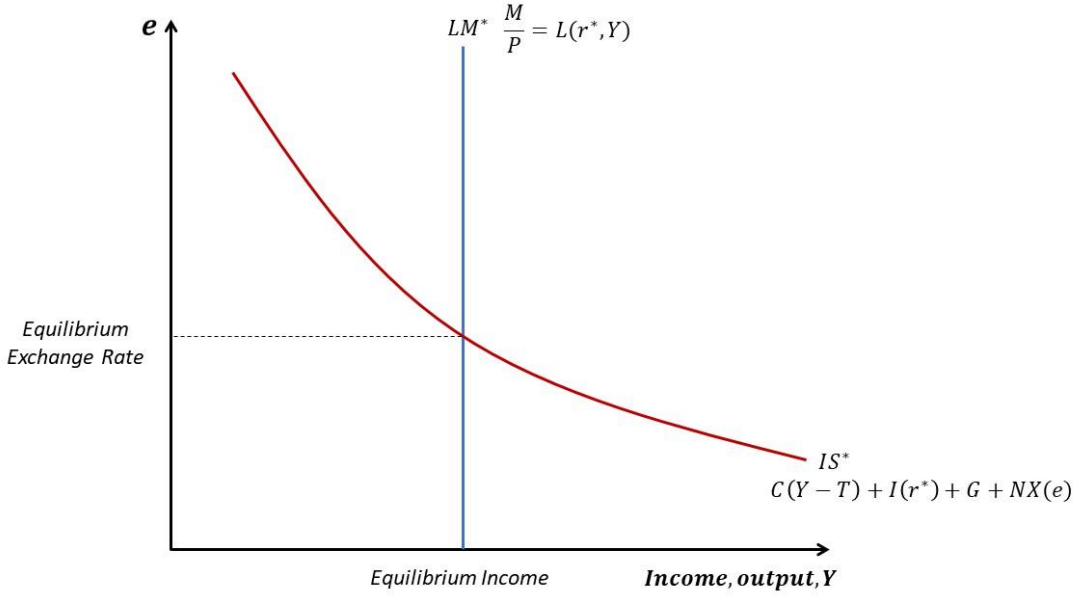
In summary, an essential strategy to ensuring sustained economic growth is through the adoption and development of labour-augmenting technological advancements. With the development of relevant infrastructure already yielding strong results, it would appear Lithuania has picked up on this important economic ideal, and made substantial efforts to capitalise on gaps identified in the modernising European markets.

The Role of Remittances in Development

Varying pieces of academic literature have long debated the true efficacy and benefits of remittances, particularly those from emigrant family members, to the receiving economy. This section aims to approach the issue from a strictly theoretical perspective. Contrary to the approach used to answer the first two questions, this particular issue will be answered with the Mundell-Fleming model.

To recall the constructs of the Mundell-Fleming model, the framework serves to understand the relationship between investment, savings and the supply of real money balances in a small open economy.

FIGURE 4.2.3: The Complete Mundell-Fleming Model

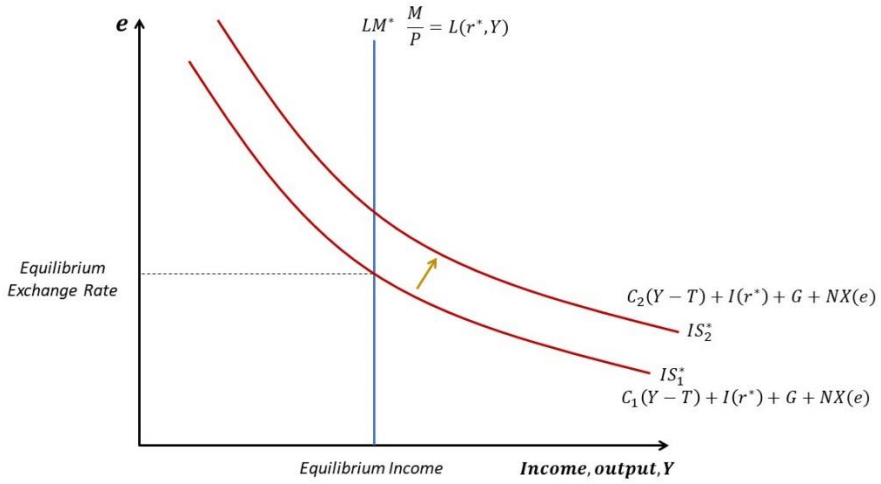


The conclusions of the Mundell-Fleming model are highly dependent upon the exchange rate regimes employed in individual focus countries. In Lithuania's case, and additionally for any member of the Eurozone, matters get rather complicated since the money supply is not entirely dictated by individual countries, but by the ECB. This somewhat deems individual exchange rate policy null and void for individual economies, particularly those of Lithuania's size. Previously, one of the assumptions behind the Mundell-Fleming model suggest that individual open economies that are not large enough to influence a global economic shift on their own take the real interest rate as exogenously fixed. The same can now be said for the exchange rate policy, regardless of what regime is actually taken in reality. The assumption will have to be that each individual country, particularly those similar to Lithuania's size will not be able to influence the fluctuation of the exchange rates on their own, and it is the aggregated results of all Eurozone members that will eventually define the outcomes. With this logic established, no necessary changes need to be made to the figure above, however we cannot make any changes to the equilibrium exchange rate, as these are not realistic.

Some pieces of literature that were included in the literature review of this paper suggested two possible reasons why remittances could possibly fuel economic growth in a country. The first would be the availability of additional income to fuel higher consumption (Ratha, 2007) (Buch & Kuckulenz, 2010) (Rao & & Hassan, 2012). Second, would be the general increase in money supply to the economy (Drabek & Griffith-Jones, 2007).

Figure 4.2.4 demonstrates the first scenario where consumption is accelerated due to remittance money.

FIGURE 4.2.4: The effects of expansionary fiscal policy on the Mundell-Fleming Model

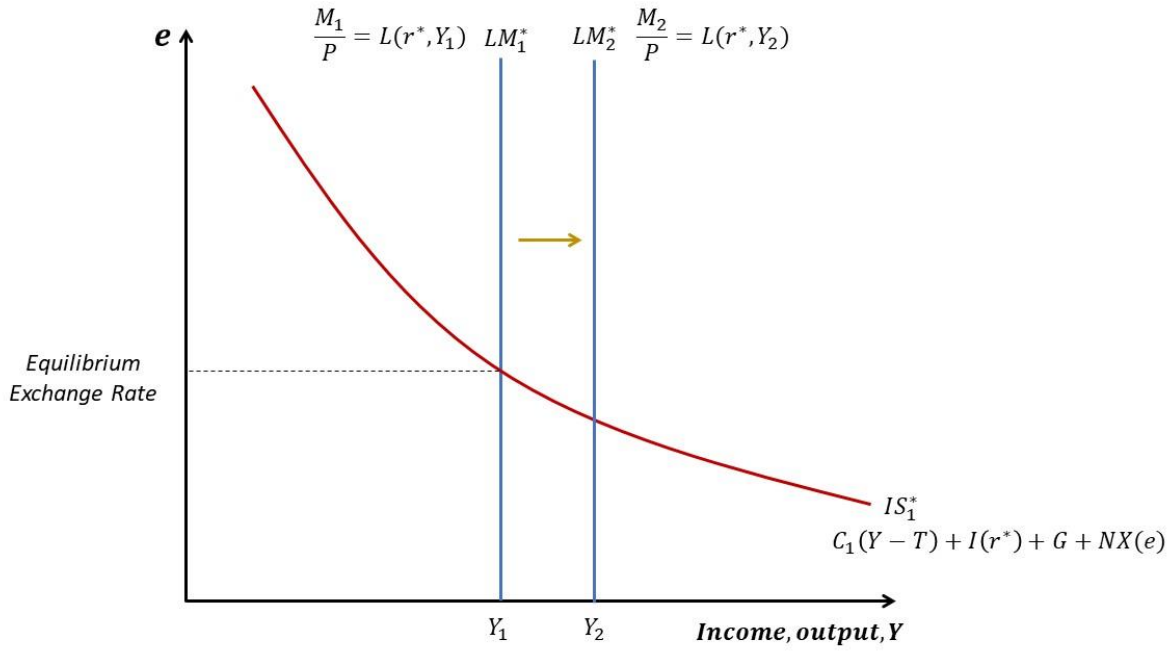


As visualised, increased consumption under the Mundell-Fleming model leads to an upper right shift of the IS* curve. Under a floating exchange rate, this would raise the nominal exchange rate, however output and therefore income would in actual fact remain unchanged, since any increases to the nominal exchange rate would reduce net exports.

Therefore under the Mundell-Fleming model, the assumption that increased consumption in the economy, fuelled by remittances can result in growth in income does not hold.

What would happen however in the second scenario, as remittances are deemed to be expand the money supply, $\frac{M}{P}$ in the home country.

FIGURE 4.2.5: The Effects of Expansionary Monetary Policy on the Mundell-Fleming Model



According to the Mundell-Fleming model, the rise in real money balances in the economy, thus leading to a form of monetary expansion specifically within the Lithuanian economy does theoretically yield to an increase in output and overall income to some extent.

It would be important to note however that overall remittances back to Lithuania haven't in real data terms been that significant in size. At the very most peaking at 4.6% of total GDP in the years since 2001 (Central Bank of the Republic of Lithuania, 2019).

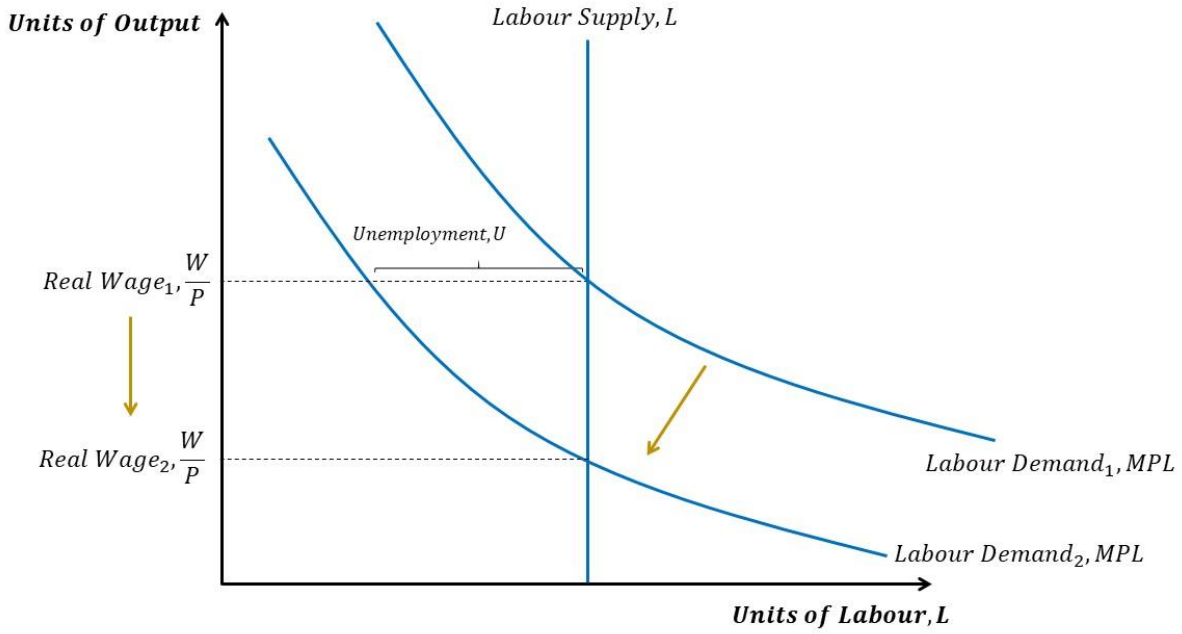
Analysing the Labour Market in Lithuania

The study and understanding of labour trends may be considered one of the most critical factors to be studied, particularly considering that high unemployment in Lithuania has been the prime motivator of so many emigrants leaving their homeland.

Unlike the way the previous questions were analysed, this particular problem will be investigated temporally, thereby taking historical backgrounds and combining them with theory to explain some of the visible trends noticeable today.

During the earlier stages of Lithuania's regained independence, particularly throughout the first waves of encouraged privatisation, many businesses and organisations alike failed, leaving countless individuals unemployed (Eidintas, Bumblauskas, Kulakauskas, & Tamosaistis, 2013). The effect this had on the economy was a substantial reduction in labour demand which is visualised in figure 4.2.6.

Figure 4.2.6: The effects of a negative demand shock on real wage and unemployment

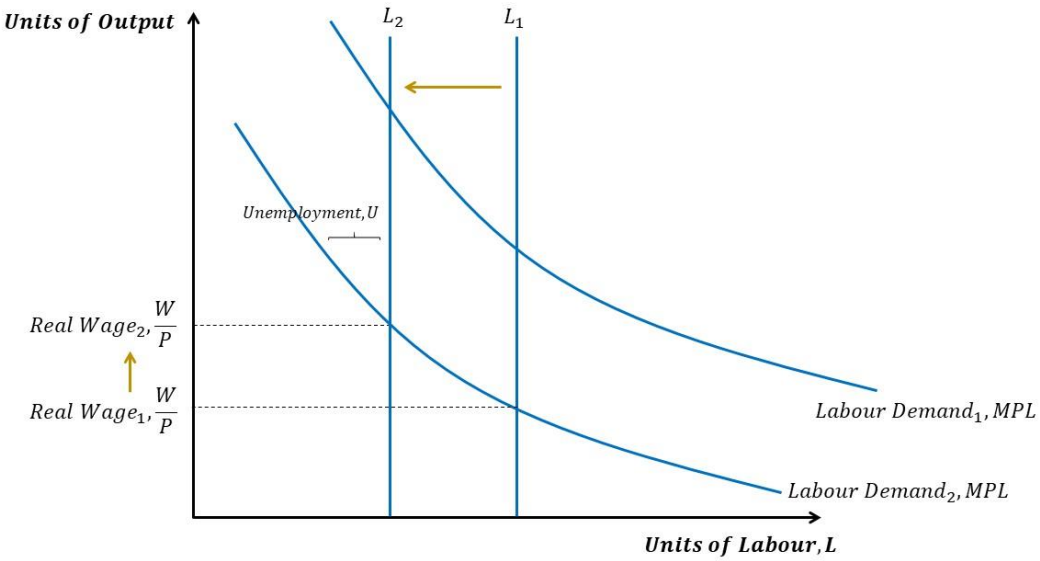


The drop in labour demand causes downward pressure against real wage, which ideally would need to adjust in order re-balance labour supply and demand. The sheer size of this drop in real wage however can be problematic, as wages following the shrinkage in labour demand would potentially be unsustainably small. This proved to be the reality for many Lithuanians who feared the economic

downturn experienced in the country and turned to the outside as a chance to restore balance and stability to their own private finances.

What followed in Lithuania was a series of years of almost constant emigration which in turn reduced the total size of labour supply.

Figure 4.2.7: The effects of a decrease in labour supply on real wage and unemployment



While fears over the decrease in labour supply have expressed concerns over the level of output the country can produce, a concept that was already discussed using the Solow model, what the decrease in labour supply actually brought Lithuania was a lower level of total unemployment and higher wages in real terms for workers who opted to stay. These trends have been visualised throughout some of the data and literature already discussed in this paper.

It is difficult to measure precisely what Lithuania's natural rate of unemployment is considering that it has seen drastic fluctuations over the years. What is promising however is that emigration, although deemed somewhat problematic has in actual fact presented a form of self-regulation in balancing the needs and demands of the Lithuanian labour market at the time, compared to what was in supply.

The key for Lithuania moving forward however is to raise the real wage to match levels in other European countries such as to reduce the appeal of needing to move abroad in order to obtain a higher standard of living. This is not an easy task however, as it will entail undergoing certain levels of economic development to stimulate demand for labour in the market once again.

Conclusions and Practical Implications

At the very beginning of this paper, a quote was introduced: *"If you want a more productive economy, you need to invest in the skills of our workforce." – Jeremy Corbyn.*

What have the outcomes of this paper taught us about the level of truth to this statement?

In summary, Jeremy Corbyn is somewhat correct in saying that higher skilled workforces tend to yield higher productivity per person. This however, does not tell the full story. The reality of the world today dictates that countries as well as organisations and firms are in a constant battle for the best and brightest minds and skills to enhance the local economy. Therefore, the more productive economy is a true statement, but under certain parenthesis that dictate that it may not be the same economy one was born in or that one was educated in.

Countries, as do firms need to provide enticing incentives for people to choose to work there, and with the growing mobility of labour in today's world, the alternatives on offer, should the current offerings be subpar wherever an individual may be, are increasingly reachable. There will be gainers and losers in the geopolitical battle for labour, but what do some of these implications mean for the future of countries like Lithuania, where net negative migration is almost an annual reality.

In terms of addressing the first concerns of a declining population, there is currently little theoretical evidence given the models used to study the issue, that suggest that smaller population sizes and labour force will compromise economic development. On the contrary, economic data and theories tend to suggest that the opposite is highly plausible.

The reality is that unemployment, lower wages and less favourable working conditions with reference to the offerings of the outside world are amongst the main drivers of outgoing migration from Lithuania. Until such time that these issues can be solved, the continued loss of local workers can be expected to be experienced.

Ameliorating labour conditions, raising wages and reducing unemployment are all problems that can only really be solved in the long term and will likely be improved alongside greater economic development. What therefore can be said to be the key drivers of economic development?

According to the models studied, the key to ensuring sustained income growth per capita is the continuous improvement of technological capabilities in any given country that are labour-augmenting. Thus, through greater levels of labour-augmenting technology, the marginal product of capital per

worker increases, improving the productivity of individual workers, particularly effective ones, and raising the total output possible.

The secret to Lithuania's long term economic growth, even in spite of its woes with emigration, will come in the form of attracting and facilitating knowledge and technology exchanges with the outside world. This can either be through the effective attraction of foreign direct investment, which as discussed in the paper, has been particularly effective with the establishment of infrastructure for FinTech companies, or alternatively by attracting effective labour immigration. As demonstrated in this paper however, advancements and breakthroughs on labour immigration have been relatively low in their efficacy to attract highly qualified labour from abroad. The reasons behind this are unclear, and could range from lack of awareness to a lack of clear incentives for highly qualified individuals to consider relocating and working in Lithuania.

In summary, Lithuania's concerns over emigration are understandable but need not be placed extensive attention so long as the country is able to successfully take economic countermeasures to offset the loss of effective labour. By ensuring a continual improvement in the overall level of technology advancement, whilst potentially engaging with the chance to attract foreign effective labour to offset local losses, the prospects for Lithuania's continued growth still look promising.

References

Amadeo, K. (2020, April 6). *Gross National Income - What It Says About a Country*. Retrieved from The Balance Web site: https://www.thebalance.com/gross-national-income-4020738

Amadeo, K. (2020, March 20). *Natural Rate of Unemployment, Its Components, and Recent Trends*. Retrieved from The Balance Web site: https://www.thebalance.com/natural-rate-of-unemployment-definition-and-trends-3305950

Balasubramanyam, V. N., Salisu, M., & Sapsford, D. (1999). Foreign direct investment as an engine of growth. *Journal of International Trade & Economic Development*, 27.

Baruch, Y., Budhwar, P. S., & Khatri, N. (2007). Brain drain: Inclination to stay abroad after studies. *Journal of World Business, 42*, 99–112.

Basu, P., Chakraborty, C., & Reagle, D. (2003). Liberalization. FDI, and growth in developing countries: A panel cointegration approach. *Economic Inquiry, 41*(3), 510–516.

Bengoa, M., & Sanchez-Robles, B. (2003). Foreign direct investment, economic freedom and growth: new evidence from Latin America. *European Journal of Political Economy, 19*, 529–545.

Bhagwati, J. N. (1973). The theory of immiserizing growth: Further applications. In M. B. Connolly and A. K. Swoboda, eds. *International Trade and Money*, 45–54.

Bollard, A., McKenzie, D., Morten, M., & Rapoport, H. (2011). Remittances and the Brain Drain Revisited: The Microdata Show That More EducatedMigrants Remit More. *The World Bank Economic Review, 25*(1), 132-156.

Bondarenko, P. (2017, September 1). *Gross national income*. Retrieved from Encyclopædia Britannica Web site: https://www.britannica.com/topic/gross-national-income

Borensztein, E., De Gregorio, J., & Lee, J. W. (1998). How does foreign direct investment affect economic growth. *Journal of International Economics, 45*, 115– 135.

Brouthers, L. E., Werner, S., & Wilkinson, T. (1996). The aggregate impact of firms' FDI strategies on the trade balances of home countries. *Journal of International Business Studies, 27*(2), 359–373.

Buch, M. C., & Kuckulenz, A. (2010). Worker Remittances and Capital Flows to Developing Countries. *International Migration, 48*(5), 89–117.

Bureau of Labour Statistics. (2009). *The Employment Situation - October 2009.* Washington D.C.: U.S. Department of Labor.

Central Bank of the Republic of Lithuania. (2019, November 14). *Migration in numbers*. Retrieved from Europos migracijos tinklas Web site: https://123.emn.lt/en/#chart-19-desc

Central Intelligence Agency. (2020, April 6). *The World Factbook - Europe :: Lithuania*. Retrieved from Central Intelligence Agency Web site: https://www.cia.gov/library/publications/the-world-factbook/geos/lh.html

Chami, R., Fullenkamp, C., & Jahjah, S. (2003). Are Immigrant Remittance Flows a Source of Capital for Development? *IMF Working Paper*.

Chappelow, J. (2020, April 6). *Gross National Income (GNI)*. Retrieved from Investopedia Web site: https://www.investopedia.com/terms/g/gross-national-income-gni.asp

Chappelow, J. (2020, April 3). *What is Unemployment?* Retrieved from Investopedia Web site: https://www.investopedia.com/terms/u/unemployment.asp

Chen, J. (2019, May 24). *Overheated Economy*. Retrieved from Investopedia Web site: https://www.investopedia.com/terms/o/overheated_economy.asp

Chen, J. (2020, February 24). *Foreign Direct Investment (FDI)*. Retrieved from Investopedia Web site: https://www.investopedia.com/terms/f/fdi.asp

Corbyn, J. (2020). *Workforce Quotes*. Retrieved from Brainy Quote Web site: https://www.brainyquote.com/quotes/jeremy_corbyn_733631?src=t_workforce

Creehan, S. (2001). Brain strain. *Harvard International Review, 23*(2), 6-7.

Damuliene, A. (2013). Migration problem in Lithuania and its impact on the economy. *Business Systems & Economics, 3*(1), 106–118.

De Mello, L. R. (1997). Foreign direct investment in developing countries and growth: a selective survey. *Journal of Development Studies, 34*(1), 1–34.

De Mello, L. R. (1999). Foreign direct investment-led growth: evidence from time series and panel data. *Oxford Economic Papers, 51*, 133–151.

Drabek, Z., & Griffith-Jones, S. (2007). *Managing capital flows in transition economies with a case study of central and eastern europe.* World trade organization – economic research and analysis division.

Dustman, C., & Fabri, F. (2005). Immigrants In The British Labour Market. *Fiscal Studies, 26*(4), 423-470.

Eidintas, A., Bumblauskas, A., Kulakauskas, A., & Tamosaistis, M. (2013). *The History of Lithuania.* Retrieved from Lithuanian Ministry of Foreign Affairs Web site: http://urm.lt/uploads/default/documents/Travel_Residence/history_of_lithuania_new.pdf

Embassy of the Republic of Lithuania to the State of Israel. (2014, October 8). *Lithuania in the Schengen area* . Retrieved from Embassy of the Republic of Lithuania to the State of Israel Web site: https://web.archive.org/web/20180111191923/https://il.mfa.lt/il/en/travel-and-residence/coming-to-lithuania/lithuania-in-the-schengen-area

European Asylum Support Office. (2016). *The Push and Pull Factors of Asylum-Related Migration. A Literature Review.* European Asylum Support Office.

European Commission. (n.d.). *How the Economic and Monetary Union works*. Retrieved May 10, 2020, from European Commission Web site: https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/economic-and-monetary-union/how-economic-and-monetary-union-works_en

Eurostat. (2019, November 13). *Migration trends*. Retrieved from Europos migracijos tinklas Web site: https://123.emn.lt/en/#chart-8-desc

Fawthorp, A. (2019, June 24). *Exploring Lithuania's fintech scene: How a tiny country began punching above its weight*. Retrieved from NS Banking Web site: https://www.nsbanking.com/analysis/fintech-lithuania/

Florida, R. (2004). America's looming creativity crisis. *Harvard Business Review, 82*(10), 122-136.

Florida, R. (2005). *The flight of the creative class: The new global competition for talent.* New York: Harper Business.

Gietel-Basten, S., & Scherbov, S. (2019). Exploring the 'True Value' of Replacement Rate Fertility. *Population Research and Policy Review*.

Grønhøj, A., & Bergenholtz, C. (2016). *Qualitative Methods: Philosophy of Science.* Oxford University Press.

Hall, R. E. (1979). A Theory of the Natural Rate of Unemployment and the Duration of Unemployment. *Journal of Monetary Economics, 5*, 153-169.

Hazans, M., & Philips, K. (2010). The Post-Enlargement Migration Experience in the Baltic Labor Markets. In M. Kahanec, & K. F. Zimmermann, *EU Labor Markets After Post-Enlargement Migration* (pp. 255-304). Bonn: Springer.

Invest Lithuania. (2019, November 26). *Fintech*. Retrieved from Invest Lithuania Web site: https://investlithuania.com/key-sectors/technology/fintech/#lg=1&slide=0

Invest Lithuania, Ookla. (2011, November 7). *Internet in Lithuania is Fastest in the World*. Retrieved from Consulate General of the Republic of Lithuania in New York: http://urm.lt/niujorkas/en/news/internet-in-lithuania-is-fastest-in-the-world_1

IOM. (2011). *Country Profile: Lithuania, Mission in Lithuania.* Vilnius: International Organization for Migration.

Isozaki, N. (2019). Education, Development, and Politics in South Korea. In K. Tsunekawa, & Y. Todo, *Emerging States at Crossroads* (pp. 209-229). Singapore: Springer.

Karbasi, A., Mohamadi, E., & Ghofrani, S. (2005). Impact of foreign direct investment and trade on economic growth - 12th annual conference. Cairo: Economic Research Forum.

Kasnauskiene, G., & Buzyte, L. (2011). Emigrant's Remittances and their impacts on the economy. *Monetary Studies, 15*(1), 31–47.

Kasnauskiene, G., & Stumbryte, S. (2012). Emigration and Remittance impact on Lithuania Labour Market and Economic Development. *Bulletin of the University of Kiev, 140*, p. 53.

Kesselman, J. R. (2001). Policies to stem the brain drain-without Americanizing Canada. *Canadian Public Policy, 27*(1), 77-93.

Kumar, R. R., & Stauvermann, P. J. (2014). Exploring the Effects of Remittances on Lithuanian Economic Growth. *Engineering Economics, 25*(3), 250–260.

Kumpikaite, V., & Zickute, I. (2013). Regression Analysis of Economic Factors Influencing Emigration Rate in Lithuania. *Social and Behavioral Sciences, 92*, 457-461.

Kuzmickaite, D. (2003). Between Two Worlds: Recent Lithuanian Immigrants in Chicago 1988–2000. *Vilnius Versus Aureus*, 30-31.

Lithuanian Free Market Institute. (2006). *Migration: the main causes and guidelines for changes.* Lithuanian Free Market Institute.

Lithuanian Labour Exchange. (2019, November 19). *Migration in numbers*. Retrieved from Europos migracijos tinklas: https://123.emn.lt/en/#chart-19-desc

Mankiw, N. G., & Taylor, M. P. (2014). *Macroeconomics.* New York: Worth Publishers.

Murphy, C. B. (2020, April 28). *Remittance*. Retrieved from Investopedia Web site: https://www.investopedia.com/terms/r/remittance.asp

Okolski, M. (1997). New migration trends in Central and Eastern Europe in the 1990s.

Olofsdotter, K. (1998). Foreign direct investment, country capabilities and economic growth. *Weltwirtschaftliches Archiv, 134*(3), 534–547.

Pradhan, G., Upadhyay, M., & Upadhyaya, K. (2002). Remittances and economic growth in developing countries. *The European Journal of Development Research, 20*(3), 497–506.

Prebisch, R. (1968). Development problems of the peripheral countries and the terms of trade. In James D. Theberge,ed. *Economics of Trade and Development*.

Rao, B. B., & & Hassan, G. H. (2012). Are the Direct and Indirect Growth Effects of Remittances Significant? *World Economy, 35*(3), 351–372.

Ratha, D. (2007). *Leveraging Remittances for Development.* Washington DC: Migration Policy Institute, World Bank.

Romaniszyn, K. (1997). Current migration in central and eastern Europe: peculiar or integrating into European migration system?

Singer, H. W. (1950). The distribution of gains between investing and borrowing countries. *American Economic Review, 40*, 473–480.

Sipaviciene, A. (2018). *Recent Developments in International Migration and Migration Policy in Lithuania, 2017.* Vilnius: OECD.

Statistics Lithuania. (2019, November 13). *Migration trends*. Retrieved from Europos migracijos tinklas: https://123.emn.lt/en/#chart-8-desc

Thaut, L. (2009). EU Integration & Emigration Consequences: The Case of Lithuania. *International Migration, 47*(1), 191-233. doi:10.1111/j.1468-2435.2008.00501.x

The World Bank. (2019). *Ease of Doing Business rankings*. Retrieved from The World Bank Web site: https://www.doingbusiness.org/en/rankings

The World Bank. (2020, May 5). *Age dependency ratio (% of working-age population) - Lithuania*. Retrieved from The World Bank Web site: https://data.worldbank.org/indicator/SP.POP.DPND?locations=LT

The World Bank. (2020, May 7). *Age dependency ratio (% of working-age population) - Lithuania, European Union*. Retrieved from The World Bank Web site: Age dependency ratio (% of working-age population) - Lithuania, European Union

The World Bank. (2020, May 4). *Exports of goods and services (current US$) - Lithuania*. Retrieved from The World Bank Web site: https://data.worldbank.org/indicator/NE.EXP.GNFS.CD?locations=LT

The World Bank. (2020, May 7). *Fertility rate, total (births per woman) - Lithuania, European Union*. Retrieved from The World Bank Web site: https://data.worldbank.org/indicator/SP.DYN.TFRT.IN?locations=LT-EU

The World Bank. (2020, May 4). *Foreign direct investment, net inflows (BoP, current US$) - Lithuania*. Retrieved from The World Bank Web site: https://data.worldbank.org/indicator/BX.KLT.DINV.CD.WD?locations=LT

The World Bank. (2020, May 4). *Foreign direct investment, net outflows (BoP, current US$) - Lithuania*. Retrieved from The World Bank Web site: https://data.worldbank.org/indicator/BM.KLT.DINV.CD.WD?locations=LT

The World Bank. (2020, April 27). *GDP (current US$) - *. Retrieved from The World Bank Web site: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=LT

The World Bank. (2020, April 25). *GDP growth (annual %) - Lithuania*. Retrieved from The World Bank Web site: https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=LT

The World Bank. (2020, April 27). *GDP per capita (current US$) - Lithuania*. Retrieved from The World Bank Web site: https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=LT

The World Bank. (2020, May 4). *GNI, Atlas method (current US$) - Lithuania*. Retrieved from The World Bank Web site: https://data.worldbank.org/indicator/NY.GNP.ATLS.CD?locations=LT

The World Bank. (2020, May 4). *Imports of goods and services (current US$) - Lithuania*. Retrieved from The World Bank Web site: https://data.worldbank.org/indicator/NE.IMP.GNFS.CD?locations=LT

The World Bank. (2020, May 12). *Inflation, consumer prices (annual %) - Lithuania*. Retrieved from The World Bank Web site: https://data.worldbank.org/indicator/FP.CPI.TOTL.ZG?locations=LT

The World Bank. (2020, May 5). *Labor force, total - Lithuania*. Retrieved from The World Bank Web site: https://data.worldbank.org/indicator/SL.TLF.TOTL.IN?locations=LT

The World Bank. (2020, April 29). *Net migration - Lithuania*. Retrieved from The World Bank Web site: https://data.worldbank.org/indicator/SM.POP.NETM?locations=LT&most_recent_value_desc=false

The World Bank. (2020, May 5). *Population ages 15-64 (% of total population) - Lithuania*. Retrieved from The World Bank Web site: https://data.worldbank.org/indicator/SP.POP.1564.TO.ZS?locations=LT

The World Bank. (2020, April 29). *Population, total - Lithuania*. Retrieved from The World Bank Web site: https://data.worldbank.org/indicator/SP.POP.TOTL?locations=LT

The World Bank. (2020, May 8). *Unemployment, total (% of total labor force) (modeled ILO estimate)*. Retrieved from The World Bank Web site: https://data.worldbank.org/indicator/SL.UEM.TOTL.ZS

Tvaronavičienė, M., & Grybaitė, V. (2007). Impact of FDI on Lithuanian Economy: Insight into Development of Main Economic Activities. *Journal of Business Economics and Management*, 285-290.

Ubarevičienė, R., & van Ham, M. (2017). Population decline in Lithuania: who lives in declining regions and who leaves? *Regional Studies, Regional Science*, 57-79.

United Nations Development Programme. (2018). *Human Development Data (1990-2018)*. Retrieved from United Nations Development Programme Web site: http://hdr.undp.org/en/data#

World of Statistics. (2014). *Push and Pull factors of migration: a case study in the urban area of Monywa township, Myanmar.* World of Statistics.

Young, J. (2019, April 17). *Brain Drain*. Retrieved from Investopedia Web site: https://www.investopedia.com/terms/b/brain_drain.asp

Zhang, K. H. (2001). Does foreign direct investment promote economic growth. *Evidence from East Asia and Latin America. Contemporary Economic Policy, 19*(2), 175–185.

List of Figures

FIGURE 1: A Summary of the History of Lithuania since gaining Independence
FIGURE 2.1.1: Lithuanian GDP in current USD since 1995
FIGURE 2.1.2: A visualisation of the GDP per capita and HDI scores of all former Soviet Republics in 2018
FIGURE 2.1.3: A visualisation of the GDP per capita and HDI scores of all EU members in 2018
FIGURE: 2.1.4: Net Exports from Lithuania since 1995
FIGURE 2.1.5: A comparison between Lithuanian GDP and GNI since 1997
FIGURE 2.1.6: FDI Flows in and out of Lithuania since 1993
FIGURE 2.2.1: Lithuanian total population since 1960
FIGURE 2.2.2: Lithuanian net migration since 1962 calculated every 4 years
FIGURE 2.2.3: The Development in the size of the Lithuanian labour force since 1990
FIGURE 2.2.4: The percentage share of Lithuanian population between the ages of 15-64
FIGURE 2.2.5: Dependency Ratios of Lithuania in comparison to the EU average
FIGURE 2.2.6: A comparison of Lithuanian fertility rates against the EU average
FIGURE 2.2.7: Unemployment rates in Lithuania and the EU since 1991
FIGURE 3.1: Inflation Rates in Lithuania since EU accession in 2004
FIGURE 3.2: The theoretical modelling of labour demand and labour supply
FIGURE 3.3: A visualisation of the effects of real wage rigidity in causing unemployment
FIGURE 3.4: Lithuanian emigration and immigration since EU Accession in 2004
FIGURE 3.5: The origins of immigrants in Lithuania per year since 2004
FIGURE 4.1.1: The Standard Mundell-Fleming Model
FIGURE 4.1.2: The relationship between investment and depreciation
FIGURE: 4.1.3: The Golder Rule level of investment
FIGURE 4.1.4: The complete Solow Growth Model
FIGURE 4.2.1: The effects of population decline on the Solow Growth Model
FIGURE 4.2.2: A demonstration of the effects of accelerate g on the Solow Growth Model
FIGURE 4.2.3: The Complete Mundell-Fleming Model
FIGURE 4.2.4: The effects of expansionary fiscal policy on the Mundell-Fleming Model
FIGURE 4.2.5: The Effects of Expansionary Monetary Policy on the Mundell-Fleming Model
Figure 4.2.6: The effects of a negative demand shock on real wage and unemployment
Figure 4.2.7: The effects of a decrease in labour supply on real wage and unemployment

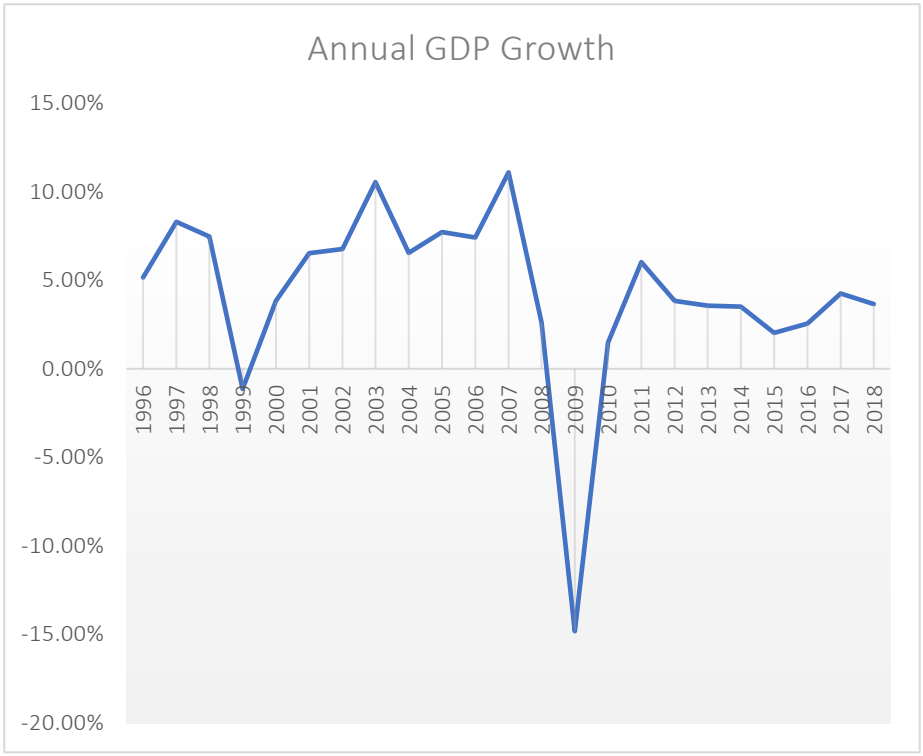
Appendices

Appendix 1 Lithuanian Gross Domestic Product

YEAR	LITHUANIAN GDP (CURRENT USD)	
1995	$	7,870,782,260.52
1996	$	8,385,109,020.28
1997	$	10,120,274,492.88
1998	$	11,240,360,897.71
1999	$	10,972,878,636.17
2000	$	11,539,211,480.36
2001	$	12,252,498,921.02
2002	$	14,278,357,283.74
2003	$	18,802,576,988.16
2004	$	22,649,930,576.25
2005	$	26,125,575,942.28
2006	$	30,216,060,233.40
2007	$	39,738,180,076.63
2008	$	47,850,551,148.84
2009	$	37,440,673,477.90
2010	$	37,024,718,364.55
2011	$	43,419,061,504.44
2012	$	42,826,586,829.82
2013	$	46,450,990,764.25
2014	$	48,485,169,331.37
2015	$	41,392,396,557.63
2016	$	43,021,972,484.83
2017	$	47,632,961,168.41
2018	$	53,429,066,429.13

Appendix 2 Lithuanian Annual GDP Growth

YEAR	ANNUAL GDP GROWTH
1996	5.15%
1997	8.29%
1998	7.47%
1999	-1.13%
2000	3.83%
2001	6.52%
2002	6.76%
2003	10.54%
2004	6.55%
2005	7.73%
2006	7.41%
2007	11.09%
2008	2.63%
2009	-14.81%
2010	1.48%
2011	6.03%
2012	3.83%
2013	3.56%
2014	3.51%
2015	2.03%
2016	2.56%
2017	4.25%
2018	3.64%



Appendix 3 Lithuanian Gross Domestic Product vs. Gross National Income

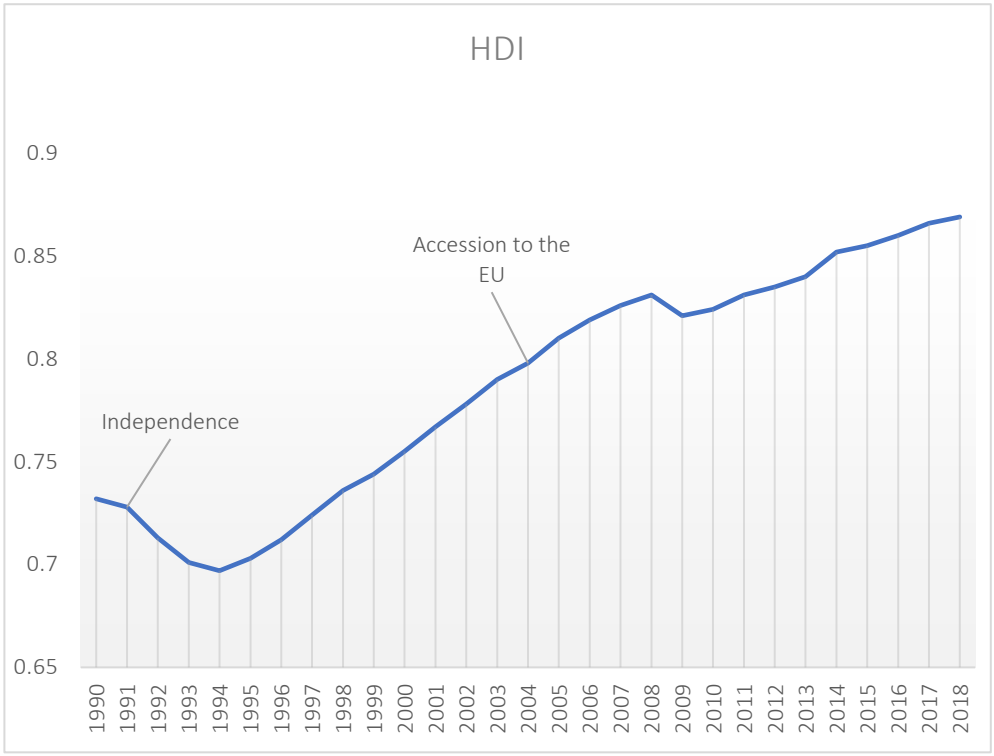
YEAR	GDP	GNI
1997	$ 10,120,274,492.88	$ 9,280,062,618.51
1998	$ 11,240,360,897.71	$ 10,139,038,101.71
1999	$ 10,972,878,636.17	$ 10,497,337,467.34
2000	$ 11,539,211,480.36	$ 11,246,476,845.41
2001	$ 12,252,498,921.02	$ 12,007,414,574.96
2002	$ 14,278,357,283.74	$ 13,171,730,882.95
2003	$ 18,802,576,988.16	$ 16,058,115,777.04
2004	$ 22,649,930,576.25	$ 20,392,516,120.46
2005	$ 26,125,575,942.28	$ 25,238,606,716.89
2006	$ 30,216,060,233.40	$ 28,848,443,170.99
2007	$ 39,738,180,076.63	$ 34,328,692,882.74
2008	$ 47,850,551,148.84	$ 40,482,737,751.76
2009	$ 37,440,673,477.90	$ 39,316,436,130.68
2010	$ 37,024,718,364.55	$ 38,897,661,848.69
2011	$ 43,419,061,504.44	$ 40,238,977,937.23
2012	$ 42,826,586,829.82	$ 42,023,842,693.25
2013	$ 46,450,990,764.25	$ 45,263,222,008.87
2014	$ 48,485,169,331.37	$ 47,032,380,388.08
2015	$ 41,392,396,557.63	$ 44,058,095,953.48
2016	$ 43,021,972,484.83	$ 42,644,519,375.23
2017	$ 47,632,961,168.41	$ 43,115,580,628.55
2018	$ 53,429,066,429.13	$ 48,634,196,073.51

Appendix 4 Lithuanian Population

Year	Lithuanian Population	Year	Lithuanian Population
1960	2778550	1990	3697838
1961	2823550	1991	3704134
1962	2863350	1992	3700114
1963	2898950	1993	3682613
1964	2935200	1994	3657144
1965	2971450	1995	3629102
1966	3008050	1996	3601613
1967	3044400	1997	3575137
1968	3078850	1998	3549331
1969	3107321	1999	3524238
1970	3139689	2000	3499536
1971	3179041	2001	3470818
1972	3213622	2002	3443067
1973	3244438	2003	3415213
1974	3273894	2004	3377075
1975	3301652	2005	3322528
1976	3328664	2006	3269909
1977	3355036	2007	3231294
1978	3379514	2008	3198231
1979	3397842	2009	3162916
1980	3413202	2010	3097282
1981	3432947	2011	3028115
1982	3457179	2012	2987773
1983	3485192	2013	2957689
1984	3514205	2014	2932367
1985	3544543	2015	2904910
1986	3578914	2016	2868231
1987	3616367	2017	2828403
1988	3655049	2018	2801543
1989	3684255		

Appendix 5 Lithuanian HDI Scores

YEAR	HDI
1990	0.732
1991	0.728
1992	0.713
1993	0.701
1994	0.697
1995	0.703
1996	0.712
1997	0.724
1998	0.736
1999	0.744
2000	0.755
2001	0.767
2002	0.778
2003	0.79
2004	0.798
2005	0.81
2006	0.819
2007	0.826
2008	0.831
2009	0.821
2010	0.824
2011	0.831
2012	0.835
2013	0.84
2014	0.852
2015	0.855
2016	0.86
2017	0.866
2018	0.869



Appendix 6 Lithuanian Net Migration

YEAR	NET MIGRATION
1962	24715
1967	26314
1972	37782
1977	38815
1982	43804
1987	36863
1992	-100301
1997	-93925
2002	-99104
2007	-150930
2012	-146217
2017	-163902

Appendix 7 Lithuanian Fertility Rates

Year	Fertility Rate	Year	Fertility Rate
1960	2.56	1990	2.03
1961	2.53	1991	2.01
1962	2.45	1992	1.97
1963	2.35	1993	1.74
1964	2.28	1994	1.57
1965	2.23	1995	1.55
1966	2.22	1996	1.49
1967	2.23	1997	1.47
1968	2.24	1998	1.46
1969	2.3	1999	1.46
1970	2.4	2000	1.39
1971	2.41	2001	1.29
1972	2.34	2002	1.23
1973	2.22	2003	1.26
1974	2.21	2004	1.27
1975	2.18	2005	1.29
1976	2.18	2006	1.33
1977	2.14	2007	1.36
1978	2.08	2008	1.45
1979	2.05	2009	1.5
1980	1.99	2010	1.5
1981	1.98	2011	1.55
1982	1.97	2012	1.6
1983	2.1	2013	1.59
1984	2.07	2014	1.63
1985	2.08	2015	1.7
1986	2.12	2016	1.69
1987	2.11	2017	1.63
1988	2.02	2018	1.63
1989	1.98		

Appendix 8 Net FDI in Lithuania, featuring inflows and outflows

YEAR	NET FDI	NET INFLOWS	NET OUTFLOWS
1992		$ 10,000,000.00	$ 10,000,000.00
1993	$ -30,175,186.84	$ 30,175,186.84	$ 31,240,360.40
1994	$ -31,304,837.64	$ 31,304,837.64	$ 31,339,325.00
1995	$ -71,555,000.00	$ 72,557,500.00	$ 1,002,500.00
1996	$ -152,275,000.00	$ 152,400,000.00	$ 125,000.00
1997	$ -327,600,000.00	$ 362,287,500.00	$ 34,687,500.00
1998	$ -921,325,000.00	$ 918,775,000.00	$ -2,550,000.00
1999	$ -477,837,500.00	$ 564,537,500.00	$ 86,700,000.00
2000	$ -375,175,000.00	$ 380,272,500.00	$ 5,097,500.00
2001	$ -438,725,000.00	$ 442,400,000.00	$ 3,675,000.00
2002	$ -694,779,014.95	$ 660,790,497.92	$ -33,988,517.03
2003	$ -141,984,430.91	$ 217,398,839.89	$ 75,414,408.98
2004	$ -573,797,297.95	$ 871,636,185.31	$ 297,838,887.36
2005	$ -745,042,690.33	$ 1,292,673,341.92	$ 547,630,651.59
2006	$ -1,739,140,505.97	$ 2,259,320,966.19	$ 520,180,460.23
2007	$ -1,726,422,760.44	$ 2,601,625,489.59	$ 875,202,729.15
2008	$ -1,172,815,519.77	$ 1,727,660,745.67	$ 554,845,225.90
2009	$ 964,842,800.93	$ -360,225,678.65	$ 604,617,122.28
2010	$ -995,966,019.06	$ 1,102,761,171.53	$ 106,795,152.47
2011	$ -1,066,347,616.61	$ 1,881,321,392.61	$ 814,973,776.01
2012	$ -255,478,863.05	$ 676,639,240.90	$ 421,160,377.85
2013	$ -382,160,212.42	$ 714,214,806.66	$ 332,054,594.24
2014	$ 188,451,153.70	$ 356,531,512.74	$ 544,982,666.44
2015	$ -687,165,363.21	$ 1,043,676,603.79	$ 356,511,240.59
2016	$ -150,381,362.70	$ 962,458,735.89	$ 812,077,373.19
2017	$ -612,045,599.81	$ 1,191,438,300.52	$ 579,392,700.71
2018	$ -54,306,068.36	$ 867,654,602.34	$ 813,348,533.97

Appendix 9 Net Lithuanian Exports, featuring exports and imports of goods & services

YEAR	NET EXPORTS	TOTAL IMPORTS	TOTAL EXPORTS
1995	$ -836,480,486.57	$ 3,760,052,306.13	$ 2,923,571,819.56
1996	$ -779,269,054.81	$ 4,296,020,112.21	$ 3,516,751,057.40
1997	$ -1,019,707,034.96	$ 5,570,465,170.48	$ 4,550,758,135.52
1998	$ -1,281,657,401.81	$ 5,679,422,097.54	$ 4,397,764,695.73
1999	$ -1,095,532,412.60	$ 4,652,317,911.09	$ 3,556,785,498.49
2000	$ -713,467,328.44	$ 5,161,332,153.65	$ 4,447,864,825.21
2001	$ -669,586,793.27	$ 6,065,910,832.97	$ 5,396,324,039.71
2002	$ -810,391,471.78	$ 7,570,066,967.22	$ 6,759,675,495.44
2003	$ -1,088,013,761.99	$ 9,769,110,547.10	$ 8,681,096,785.11
2004	$ -1,593,931,693.99	$ 12,317,922,131.15	$ 10,723,990,437.16
2005	$ -1,889,522,950.62	$ 15,956,117,551.93	$ 14,066,594,601.32
2006	$ -3,101,271,050.32	$ 19,907,525,661.94	$ 16,806,254,611.62
2007	$ -5,215,561,986.86	$ 25,227,037,082.65	$ 20,011,475,095.79
2008	$ -5,536,981,121.03	$ 32,878,310,405.39	$ 27,341,329,284.36
2009	$ -629,072,004.45	$ 20,075,458,020.57	$ 19,446,386,016.12
2010	$ -743,564,338.15	$ 24,484,526,850.06	$ 23,740,962,511.91
2011	$ -1,169,003,904.23	$ 32,897,789,070.51	$ 31,728,785,166.28
2012	$ 261,898,722.58	$ 33,318,801,995.71	$ 33,580,700,718.28
2013	$ 674,754,437.37	$ 35,924,555,860.34	$ 36,599,310,297.71
2014	$ 882,928,833.31	$ 34,192,553,447.19	$ 35,075,482,280.50
2015	$ -412,961,015.02	$ 28,899,884,666.56	$ 28,486,923,651.54
2016	$ 335,340,951.50	$ 28,738,662,024.01	$ 29,074,002,975.52
2017	$ 1,135,398,837.15	$ 33,925,216,914.46	$ 35,060,615,751.61
2018	$ 1,037,587,513.18	$ 39,365,954,336.85	$ 40,403,541,850.02

Appendix 10 Lithuanian Unemployment Rates compared to the EU Average

Year	Lithuania	EU	Year	Lithuania	EU
1960	54.0%	55.5%	1989	50.0%	49.3%
1961	54.5%	55.9%	1990	50.2%	49.2%

1962	55.0%	56.1%	**1991**	50.7%	49.2%
1963	55.5%	56.1%	**1992**	51.1%	49.1%
1964	56.2%	56.1%	**1993**	51.4%	49.0%
1965	56.9%	56.2%	**1994**	51.6%	48.9%
1966	57.5%	56.4%	**1995**	51.6%	48.8%
1967	58.0%	56.6%	**1996**	51.8%	48.7%
1968	58.5%	56.8%	**1997**	51.9%	48.6%
1969	58.9%	57.0%	**1998**	51.9%	48.5%
1970	59.2%	57.1%	**1999**	51.7%	48.5%
1971	59.0%	57.2%	**2000**	51.4%	48.4%
1972	58.8%	57.1%	**2001**	50.8%	48.4%
1973	58.5%	57.0%	**2002**	50.3%	48.4%
1974	58.0%	56.8%	**2003**	49.7%	48.4%
1975	57.3%	56.6%	**2004**	49.2%	48.4%
1976	56.8%	56.5%	**2005**	48.7%	48.5%
1977	55.9%	56.3%	**2006**	48.4%	48.6%
1978	55.0%	56.1%	**2007**	48.1%	48.8%
1979	54.0%	55.6%	**2008**	47.7%	49.0%
1980	53.1%	54.9%	**2009**	47.4%	49.2%
1981	52.1%	54.1%	**2010**	47.1%	49.5%
1982	51.3%	53.0%	**2011**	47.5%	50.1%
1983	50.6%	51.8%	**2012**	48.0%	50.7%
1984	50.1%	50.8%	**2013**	48.5%	51.3%
1985	49.7%	50.0%	**2014**	49.1%	52.0%
1986	49.7%	49.6%	**2015**	49.9%	52.7%
1987	49.7%	49.4%	**2016**	50.6%	53.3%
1988	49.8%	49.4%	**2017**	51.6%	54.0%
			2018	52.9%	54.7%

Appendix 11 Lithuanian Labour Force Size

YEAR	LABOUR FORCE SIZE
1990	1786373
1991	1786538
1992	1782768
1993	1774179
1994	1762191
1995	1750001
1996	1735999
1997	1722522
1998	1710316
1999	1712631
2000	1682389
2001	1643876
2002	1625857
2003	1683861
2004	1594105
2005	1553567
2006	1511787
2007	1511349
2008	1512398
2009	1522430
2010	1503825
2011	1495263
2012	1484350
2013	1473110
2014	1481145
2015	1470309
2016	1482451
2017	1468938
2018	1472661
2019	1452952

Appendix 12 Percentage of Lithuanian Population between age 15-64

Year	% of population aged 15-64	Year	% of population aged 15-64
1960	64.9%	1990	66.6%
1961	64.7%	1991	66.4%
1962	64.5%	1992	66.2%
1963	64.3%	1993	66.0%
1964	64.0%	1994	66.0%
1965	63.7%	1995	66.0%
1966	63.5%	1996	65.9%
1967	63.3%	1997	65.8%
1968	63.1%	1998	65.8%
1969	62.9%	1999	65.9%
1970	62.8%	2000	66.1%
1971	62.9%	2001	66.3%
1972	63.0%	2002	66.6%
1973	63.1%	2003	66.8%
1974	63.3%	2004	67.0%
1975	63.6%	2005	67.2%
1976	63.8%	2006	67.4%
1977	64.1%	2007	67.5%
1978	64.5%	2008	67.7%
1979	64.9%	2009	67.9%
1980	65.3%	2010	68.0%
1981	65.7%	2011	67.8%
1982	66.1%	2012	67.6%
1983	66.4%	2013	67.3%
1984	66.6%	2014	67.1%
1985	66.8%	2015	66.7%
1986	66.8%	2016	66.4%
1987	66.8%	2017	66.0%
1988	66.7%	2018	65.4%
1989	66.7%		

Appendix 13 Lithuanian Inflation Rates

YEAR	INFLATION
1992	1020.62%
1993	410.45%
1994	72.25%
1995	39.65%
1996	24.63%
1997	8.88%
1998	5.07%
1999	0.73%
2000	0.98%
2001	1.37%
2002	0.28%
2003	-1.13%
2004	1.16%
2005	2.66%
2006	3.74%
2007	5.74%
2008	10.93%
2009	4.45%
2010	1.32%
2011	4.13%
2012	3.09%
2013	1.05%
2014	0.10%
2015	-0.88%
2016	0.91%
2017	3.72%
2018	2.70%
2019	2.33%

Appendix 14 Lithuanian Dependency Ratio

Year	Dependency Ratio	Year	Dependency Ratio
1960	54.0%	1990	50.2%
1961	54.5%	1991	50.7%
1962	55.0%	1992	51.1%
1963	55.5%	1993	51.4%
1964	56.2%	1994	51.6%
1965	56.9%	1995	51.6%
1966	57.5%	1996	51.8%
1967	58.0%	1997	51.9%
1968	58.5%	1998	51.9%
1969	58.9%	1999	51.7%
1970	59.2%	2000	51.4%
1971	59.0%	2001	50.8%
1972	58.8%	2002	50.3%
1973	58.5%	2003	49.7%
1974	58.0%	2004	49.2%
1975	57.3%	2005	48.7%
1976	56.8%	2006	48.4%
1977	55.9%	2007	48.1%
1978	55.0%	2008	47.7%
1979	54.0%	2009	47.4%
1980	53.1%	2010	47.1%
1981	52.1%	2011	47.5%
1982	51.3%	2012	48.0%
1983	50.6%	2013	48.5%
1984	50.1%	2014	49.1%
1985	49.7%	2015	49.9%
1986	49.7%	2016	50.6%
1987	49.7%	2017	51.6%
1988	49.8%	2018	52.9%
1989	50.0%		

Appendix 15 Correlation Analysis of GDP per capita and HDI amongst former Soviet Republics

COUNTRY NAME	HDI	GDP PER CAPITA
ARMENIA	0.760	$ 4,212.07
AZERBAIJAN	0.754	$ 4,721.18
BELARUS	0.817	$ 6,289.94
ESTONIA	0.882	$ 23,266.35
GEORGIA	0.786	$ 4,717.14
KAZAKHSTAN	0.817	$ 9,812.60
KYRGYZ REPUBLIC	0.674	$ 1,281.36
LITHUANIA	0.869	$ 19,153.41
LATVIA	0.854	$ 17,860.62
MOLDOVA	0.711	$ 3,227.31
RUSSIAN FEDERATION	0.824	$ 11,288.88
TAJIKISTAN	0.656	$ 826.62
TURKMENISTAN	0.710	$ 6,966.64
UKRAINE	0.750	$ 3,095.17
UZBEKISTAN	0.710	$ 1,532.37

Appendix 16 Correlation Analysis of GDP per capita and HDI amongst EU Member States (excluding Malta and Luxembourg)

COUNTRY NAME	HDI	GDP PER CAPITA
AUSTRIA	0.914	$ 51,462.00
BELGIUM	0.919	$ 47,518.60
BULGARIA	0.816	$ 9,272.60
CROATIA	0.837	$ 14,909.70
CYPRUS	0.873	$ 28,689.70
CZECH REPUBLIC	0.891	$ 23,078.60
DENMARK	0.930	$ 61,350.30
ESTONIA	0.882	$ 23,266.30
FINLAND	0.925	$ 50,152.30
FRANCE	0.891	$ 41,463.60
GERMANY	0.939	$ 47,603.00
GREECE	0.872	$ 20,324.30
HUNGARY	0.845	$ 16,162.00
IRELAND	0.942	$ 78,806.40
ITALY	0.883	$ 34,483.20
LATVIA	0.854	$ 17,860.60
LITHUANIA	0.869	$ 19,153.40
NETHERLANDS	0.934	$ 53,024.10
POLAND	0.872	$ 15,420.90
PORTUGAL	0.850	$ 23,407.90
ROMANIA	0.816	$ 12,301.20
SLOVAKIA	0.857	$ 19,442.70
SLOVENIA	0.902	$ 26,124.00
SPAIN	0.893	$ 30,370.90
SWEDEN	0.937	$ 54,608.40
UK	0.920	$ 42,943.90
EU AVERAGE	0.887	$ 33,200.02

Appendix 17 Total Proportion of Lithuanian Immigrants per year since EU accession

YEAR	LITHUANIANS	EU CITIZENS	NON-EU CITIZENS
2004	3397	555	1601
2005	4705	411	1673
2006	5508	396	1841
2007	6141	315	2153
2008	6337	376	2584
2009	4821	261	1405
2010	4153	149	911
2011	14012	503	1170
2012	17357	738	1748
2013	18975	671	2365
2014	19528	658	4108
2015	18383	813	2934
2016	14207	751	5204
2017	10155	700	9513
2018	16592	771	11551

Appendix 18 Total Number of Immigrants and Emigrants in Lithuania since EU Accession

YEARS	IMMIGRANTS	EMIGRANTS
2004	5553	37691
2005	6789	57885
2006	7745	32390
2007	8609	30383
2008	9297	25750
2009	6487	38500
2010	5213	83157
2011	15685	53863
2012	19843	41100
2013	22011	38818
2014	24294	36621
2015	22130	44533
2016	20162	50333
2017	20368	47925
2018	28914	32206

Appendix 19 Net Migration in all EU countries per 1000 residents in 2018

COUNTRY	NET MIGRATION PER 1000 RESIDENTS
MALTA	35.3
LUXEMBOURG	16.3
CYPRUS	9.3
IRELAND	9
SWEDEN	8.5
SLOVENIA	7.2
SPAIN	7.1
BELGIUM	5.4
ESTONIA	5.3
NETHERLANDS	5
GERMANY	4.8
AUSTRIA	4
UNITED KINGDOM	3.9
CZECH REPUBLIC	3.6
HUNGARY	3.3
DENMARK	3.2
FINLAND	2.1
GREECE	1.4
FRANCE	1.4
PORTUGAL	1.1
SLOVAKIA	0.7
POLAND	0.6
BULGARIA	-0.5
ITALY	-0.6
LITHUANIA	-1.2
LATVIA	-2.5
ROMANIA	-3
CROATIA	-3.3

Appendix 20 Most Popular Jobs Among Immigrants in Lithuania in 2018

PROFESSION	NUMBER OF PERSONS
LONG DISTANCE DRIVER	12616
BRICKLAYER	192
SHIP HULL ASSEMBLER	337
PLASTERER	172
WELDER	507
OTHER	549