An Analysis of the Economic and Non-economic Factors that Contribute to the Attraction of Foreign Direct Investment: A case Study in Ireland 1998-2018

Adriana Parada Morales

Research Dissertation Submitted as Partial Fulfilment of the Requirements for

MSc. in Finance at National College of Ireland

Submitted to the National College of Ireland,
August 2020

Abstract

Given the importance of Foreign Direct Investment (FDI) for Ireland's economic growth, the aim of this dissertation is to assess the driving sources behind Ireland's success of attracting inward investment and how the country has attracted and retained FDI over the years.

This paper examines different factors of foreign direct investment in Ireland. The factors being analysed have been divided into two categories: economic, and non-economic determinants which include market size, labour costs, infrastructure, inflation, corporate tax rate, education and unemployment. The period analysed goes from 1998 to 2018 where secondary data has been used and collected from main sources including the Central Statistics Office of Ireland, the World Bank's Development Indicators, The Office of the Revenue Commissioners, and the Organisation for Economic Co-operation and Development (OECD). By applying a multiple regression model, this study found some interesting and important results such as FDI inflows as a dependent variable negatively react to labour costs as there is enough evidence to suggest that there is an association between the variables. Moreover, when testing the Pearson's correlation coefficient, unemployment rate showed an unexpected small but positive correlation with FDI inflows, while variables such as market size, corporate tax rate, inflation, infrastructure and education showed the expected correlation that the author had anticipated. However, other than labour costs, the variables did not show any statistical significance that links them with FDI inflows. Arguably, all of these results and findings contribute to the existing knowledge and offer important implications, particularly for Irish government and relevant organizations in their attraction and retention of inward FDI into Ireland.

Keywords: FDI inflows, determinants, Ireland, GDP, Infrastructure, Corporate Tax, Education, Unemployment, Labour costs.

Declaration

Submission of Thesis and Dissertation

National College of Ireland

Research Students Declaration Form

(Thesis/Author Declaration Form)

Name: Adriana Parada Morales

Student Number: 17111935

Degree for which thesis is submitted: MSc in Finance

Title of Thesis: An Analysis of the Economic and Non-economic Factors that Contribute to the Attraction of Foreign Direct Investment: A case Study in Ireland 1998-2018

Date:19/08/2020

Material submitted for award

A. I declare that this work submitted has been composed by myself. ☐

B. I declare that all verbatim extracts contained in the thesis have been distinguished by quotation marks and the sources of information specifically acknowledged. ☐

C. I agree to my thesis being deposited in the NCI Library online open access repository NORMA. ☐

D. ***Either*** *I declare that no material contained in the thesis has been used in any other submission for an academic award.
Or *I declare that the following material contained in the thesis formed part of a submission for the award of
_____
(State the award and the awarding body and list the material below) ☐

Signature of research student:

Date: 19/08/2020

Submission of Thesis to Norma Smurfit Library
National College of Ireland

Student name: Adriana Parada Morales **Student number:** 17111935

School: School of Business **Course:** MSc in Finance

Degree to be awarded: MSc in Finance

Title of Thesis: An Analysis of the Economic and Non-economic Factors that Contribute to the Attraction of Foreign Direct Investment: A case Study in Ireland 1998-2018

One hard bound copy of your thesis will be lodged in the Norma Smurfit Library and will be available for consultation. The electronic copy will be accessible in TRAP (http://trap.ncirl.ie/), the National College of Ireland's Institutional Repository. In accordance with normal academic library practice all theses lodged in the National College of Ireland Institutional Repository (TRAP) are made available on open access.

I agree to a hard-bound copy of my thesis being available for consultation in the library. I also agree to an electronic copy of my thesis being made publicly available on the National College of Ireland's Institutional Repository TRAP.

Signature of Candidate:

For completion by the School:

The aforementioned thesis was received by_____
Date: _____

This signed form must be appended to all hard bound and electronic copies of your thesis submitted to your school

Acknowledgements

I would like to express my sincere gratitude to my supervisor, Dr. Yanyi Wang who provided advice and guidance throughout the research process, my lecturers, which had an important and formative influence on this research paper, and lastly to my husband, who supported me with love and understanding during my time at NCI.

Table of Contents

List of Tables

List of Figures

List of Appendices

List of Abbreviations

ARIMA - Autoregressive integrated moving average

CPI - Consumer Price Index

DBEI - Department of Business, Enterprise, and Innovation

EU - European Union

FDI - Foreign Direct Investment

GDP - Gross Domestic Product

IMD - Institute for Management Development

LC – Labour Costs

MNC - Multinational Corporation

MNE - Multinational Enterprise

OECD - Organisation for Economic Co-operation and Development

OLI - Ownership, Location, and Internalisation

OLS - Ordinary Least Squares

SEE - Southeast Europe

ULC - Unit Labour Costs

UNCTAD - United Nations Conference on Trade and Development

VIF - Variance Inflation Factor

Chapter 1: Introduction

1.1 Introduction

In its classic definition, Foreign Direct Investment (FDI) is the process whereby residents of a source country acquire ownership of assets for the purpose of controlling the production, distribution and other activities of a firm in a host country (Moosa, 2002). According to The United Nations *World Investment Report* (1999), FDI is considered as the investment made to acquire a long-lasting control over an enterprise operating outside of the investor's economy, and FDI net inflows are considered as the value of inward direct investment made by external investors in the reported country. Thus, the distinguishing feature of FDI, in comparison with other forms of international investment, is the element of control and ownership over management policy and decisions (Moosa, 2002).

The increasing globalization has captured the attention of not only entrepreneurs and business people but also government officials who are searching for international business advantages in an ever-changing world (Shenkar, et al., 2015). Therefore, FDI has an important and growing role in global investments. It gives the chance to businesses to a new market and market connections, cheaper production facilities, provides new technology, products, skills and financing. In other words, markets are moving towards international competition, and to progress, nations need to take advantage of the resources and opportunities available beyond their borders (Shenkar, et al., 2015).

1.2 FDI in Ireland

The term FDI has come to play a major role in the internationalisation of business in the past decades and it has been, and will continue to be, a key plank upon which Ireland's economy is built (Department of Business, Enterprise and Innovation, 2020). Despite the on-going economic challenges, Ireland has gained increased international recognition due to the progress made in addressing its economic challenges and in stimulating an export-led recovery (Grant Thornton, 2014). A critical aspect of Irish Government policy is the attraction of foreign direct investment through incentives to multinational companies to establish facilities in the country, in where nowadays US owned firms have a particularly strong presence in Ireland: over 400 such firms were employing over 50,000 people in the late 1990s (Gunnigle & McGuire, 2001). And according to Forfás Policy Statement on FDI in Ireland (2014), despite the global competition, Ireland is currently being home to over 1,200 overseas companies that provide employment to over 250,000 people directly.

While restrained by the global financial crisis from 2008, Ireland's investment activities of multinational enterprises (MNEs) resurged and achieved global FDI inflows rising by 9% between 2012 and 2013 to $1.45 trillion according to the 2014 World Investment Report (UNCTAD, 2014). Its contribution to the economy is far-reaching and it's estimated that 20% of all private sector employment in the State is directly or indirectly attributable to FDI. Foreign direct investment also contributes to the generation of commercial activity across the economy, a significant taxation revenue to the Exchequer and helps to drive investment in research and innovation (Department of Business, Enterprise and Innovation, 2020). This being said, FDI is important to the Irish economy in terms of employment, economic growth, industrial output, productivity growth and for the expansion and diversification of Irish exports, as it continues to play an important role in the recovery process of the Irish economy (Grant Thornton, 2014).

But which have been the economic and non-economic determinants that have influenced the attraction of Foreign Direct Investment into Ireland, for instance over the period between 1998-2018? This remains as a critical question that requires further investigation and analysis for a few reasons. Firstly, with a third of the population being under 25 and making it the youngest population in Europe, the country has been distinguished internationally by the abilities of its workforce and graduate output to attract a major influx of foreign firms, specifically the United States, which has become the biggest employer of people in Ireland (Central Statistics Office, 2016). Furthermore, Ireland has a capital city with a smart business and living environment that hosts a start-up community and some of the most respected corporations (Department of Business, Enterprise and Innovation, 2020). This sets out how the Government's vision for securing more investment from overseas companies has been achieved, hence, it's worth investigating the key factors that have contributed and made Ireland attractive to FDI, such as the present study.

1.3 Research Aim and Research Objectives

In light of these developments, the purpose of the present paper is to provide insights and identify which are the determinants that have the most influence in the attraction of FDI into Ireland. This research provides new empirical evidence on the impact of factors investigated such as market size, labour costs, taxation rates, infrastructure, inflation, education & unemployment in the attraction of FDI into Ireland over the researching period from 1998 to 2018[1].

[1] The availability of data and the presentation of the most recent information is one of the justifications behind choosing this period to study.

In order to achieve this, the following objectives are set:

- To explore the role of economic and non-economic determinants and their impact on the attractiveness of Foreign Direct Investment into Ireland from 1998-2018.
- To review and expand previous quantitative research on the factors that affect the attraction of FDI into Ireland.
- To contribute to previous research by suggesting some recommendations for other countries to attract FDI within their boundaries.

In order to identify and answer the research aim and objectives as set above by the author, a quantitative method of analysing secondary data will be applied. The author will be testing hypotheses through different correlation and multiple regression models. More details about the methodology applied are provided in Chapter Three.

1.4 Research Rationale

Many previous studies on the influence of FDI mainly focus on Ireland's tax regime as the main determinant (Barry, 2004, 2011; Gunnigle & McGuire, 2001; Rios-Morales & O'Donovan 2006; Wheeler & Mody 1992; IDA Ireland, 2017). And while this incentive has demonstrated to be effective in attracting FDI, there are many other economic and non-economic factors that can influence this attention and which might have not currently been investigated as possible factors.

For instance, quantitative analysis on the determinants of FDI attraction has not been extensive in past years. Baibekova & Nguyen (2010) presented a regression model including variables such as labour productivity, trade openness and GDP per capita, where the authors found a significant effect of those determinants on FDI inflows in Ireland. Cassidy (2012), concluded that a combination of other variables such as infrastructure, political stability and access to other markets, were some of the most significant determinants of FDI attraction in the country. However, there haven't been many studies encompassing the various factors such as market size, labour costs, infrastructure, inflation, education and unemployment, which are the variables selected for this study.

Therefore, the rationale for the variables chosen in this paper is based on the absence of prior research that presents a causal connection between FDI and the variables that the author will examine. This represents a gap for further investigation in where the author will be exploring the disparity that appears to exist in the current research and give a comprehensive quantitative review of the determinants considered in this investigation and their relationship with the FDI attraction into Ireland during a twenty-year period.

1.5 Research Structure

The present study attempts to investigate the impact of the variables chosen on FDI in the period from 1998 to 2018 in Ireland. The first chapter provides an introduction to the topic and outlines the context and rationale to the study. The second chapter focuses on the Literature review and prior theories and hypotheses in the field of the economic and non-economic factors that influence the attraction of FDI into Ireland. The third part of this study addresses the methodology applied including the description of the data sample, data collection and sources, different variables selected, model specifications, as well as the limitations of this research. Chapter four comprises the research results and discussion, and finally, chapter five draws the conclusion as well as providing recommendations for future researches in the topic.

In order to identify and answer the questions set by the author previously, a quantitative method will be applied, where the author will be testing hypotheses through different correlation and multiple regression models.

Chapter 2: Literature Review

2.1 Introduction

Over the past decades, Ireland has performed extraordinarily well and was among the first in the European Union to recover from the 2008 financial crisis. The country has been considered one of the strongest performing economies among the OECD countries; this, due to a combination of factors, including the low unemployment rates, stable economic and financial systems, by having one of the highest gross domestic product (GDP) and a high standard of living (Rios-Morales & Brennan, 2007).

From this perspective, this paper aims to evaluate and discuss the main theoretical aspects of existing literature on determinants that influence the attraction of FDI in the country, with a special emphasis to examine the role of economic and non-economic variables that attract MNEs into the region.

Based on the relevant theoretical and empirical literature, the first part of this chapter will chart FDI in Ireland, which demonstrates Ireland as an important research context of analysing FDI and reviews the existing factors influencing Ireland's attraction to FDI. This is then followed by a review on the academic theories that explain the conditions under why firms decide to engage in FDI activities, and finally, an analysis to the existing empirical evidence from several scholars and their position in regards on what they found in their studies to be the key drivers of FDI attraction into Ireland. For the purpose of this study the author has split these determinants in two categories, economic and non-economic.

2.2 Charting FDI in Ireland

Ireland has been considered by American multinationals as the most profitable location for FDI because of the low tax rate system and highly trained labour force (Durkan et al., 1999). Despite the country's small size, its development and growth strategy have been focusing on attracting high-value added FDI and by creating location advantages and global competitiveness. FDI has also created jobs in new sectors, raised investment and enhanced overall local productivity (UNCTAD, 2004). Barrel & Te Velde (1999) confirm this in their research of *Labour Productivity and convergence within Europe*, in where evidence found that the labour productivity in Ireland has been superior to other countries in the European Union, arguing that FDI has helped to transform a largely agricultural society into one of the fastest growing economies in Europe.

Many other authors have agreed that FDI has played an important role in the economic development of the Irish Republic (Barry 1999; Gunnigle & Mcguire 2001; O'Mahony 2005). One of the first studies on FDI determinants in Ireland was conducted by Barry and Bradley (1997) in where it was found that a highly educated and trained labour force, improvement of physical infrastructure, successful fiscal stabilisation and a move towards a more consensual wage bargaining, enhanced the attractiveness of Ireland as a base of inward FDI.

This development can be perceived in present years, where foreign-owned firms account for almost 50% of Irish manufacturing employment, a high percentage when compared with the 19% average for the other eleven EU member states. Therefore, FDI continues to be a driver of economic growth and job creation in where currently, there are more than a thousand foreign owned firms based in Ireland which employ approximately a quarter of a million people directly. (Department of Business, Enterprise and Innovation, 2020)

However, Ireland's ability to attract and retain FDI is the result of a number of factors and a consistent policy-making by the Government over many decades. This success is largely based on a combination of incentives for FDI, primarily low corporation tax, but also a noticeable emphasis on other factors such as the quality and education of its workforce, labour flexibility and talent (Wang, et al., 2018).

2.3 General theories of FDI

The most recent increase of FDI in global markets has led to various studies, theories and hypothesis that are used to explain FDI activities and behaviours. These studies and theories explore the main motivations to specific entry modes and locations. However, they do not capture the entire complexity of FDI and other forms of foreign direct investments, thereby, it is difficult to find a general framework, approach or theory that is accepted and can explain FDI (Bajrami & Zeqiri, 2019). These theoretical studies on FDI have led to a better understanding of the economic mechanism and the behaviour of economic agents, both at micro and macro level, allowing the exposure of new areas to study in economic theory (Denisia, 2010). This being said. there are numerous branches of FDI theory, which for the purpose of this research the author will review the most relevant.

2.3.1 The ownership theory

To compete with host country firms in their own markets, firms must possess superior assets and skills that can earn economic rents that are high enough to counter the higher cost of servicing these markets (Agarwal & Ramaswami, 1992). Therefore, an ownership-specific

advantage is referred to as a competitive advantage that a firm must have in the home country prior to shifting production abroad (Baibekova & Nguyen, 2010).

Dunning (1980) argues that ownership advantages are seen as peculiar to specific firms and they can detect the type of entry mode decisions made by multinational firms when entering foreign countries. The key idea is that firms are collections of assets, and that candidate MNEs possess higher-than average levels of assets having the character of internal public goods. Examples of these goods include managerial structures, product development, marketing skills and patents (Neary, 2009). According to Johnson (2005), ownership advantage can be transferred to a foreign country, as it can move between different locations. Hence, when a firm possesses the ability to develop differentiated products, it may run the risk of loss of long-term revenues if it shares this knowledge and decide to operate as a separate entity at a future date. Therefore, when the firm possesses these skills, higher control modes may be more efficient (Agarwal & Ramaswami, 1992).

2.3.2 The location theory

Nowadays, talking about FDI location-driven advantages is something common. FDI inflows are searching for locations with good infrastructure, natural resources, attractive business environment, qualified employees and so on (Popovici & Călin, 2014).

Firms interested in servicing foreign markets are expected to use a selective strategy and favour entry into more attractive markets. Dunning (1980) considered location advantages as the second set of advantages that MNEs look for, before choosing their preferred host country. The reason behind is that their chances to obtain higher returns are better in such markets. Hence, the attractiveness of a market is characterised in terms of its market potential and investment risk (Agarwal & Ramaswami, 1992). Dunning has one of the first attempts to deepen the location advantages and makes a distinction between the supply-oriented location theory which explains that production takes place where the factor costs for production are the lowest (Dunning 1973). Reciprocally, demand-oriented theory asserts that the location of a firm is governed by the location of its market and competitors. In this respect, the existence of MNEs is explained through four location factors: the existence of raw materials, cheap labour force, unexploited and protected markets and transport costs (Kusluvan, 1988). Although this approach provided valuable insights as to geographical distributions of MNEs, Dunning argues that it fell short to explain how it was that foreign owned firms could outcompete domestic firms in supplying their own market (Dunning, 1973).

2.3.3 The internalisation theory

Internalisation is the activity in which an MNE internalizes its globally dispersed foreign operations through a unified governance structure and common ownership (Shenkar, et al., 2015). The main hypothesis of this theory is that FDI arises from the efforts by companies to replace market transactions with internal transactions. According to this theory, certain costs can be saved by internalisation of some processes (Bajrami & Zeqiri, 2019). In other words, this theory holds that the available external market fails to provide an efficient environment in which the firm can profit by using its technology or production resources. Therefore, the firm tends to produce an internal market via investment in multiple countries, this creates the needed market to achieve its objective and companies will undertake FDI only if the benefits of exploiting firm-specific advantages are higher than the relative costs of the operations abroad (Bajrami & Zeqiri, 2019).

There have been several attempts to explain the internalisation theory. Buckley and Casson (1976) demonstrated that transnational companies organise their internal activities so as to develop specific advantages, which then to be exploited. Eden and Miller (2004) argued that the theory should take into consideration information costs. The authors also discussed information costs for foreign companies with respect of local companies. Mork and Yeung (1992), went further and provided an empirical study in where the authors found that firms with characteristics suggesting the presence of information-based assets experience a significantly positive stock price reaction upon announcing a foreign acquisition. Hennart (1982) developed the idea of internalisation by developing models between the two types of integration: vertical and horizontal. However, the results led to the same conclusion: transnational companies face some adjustments costs when the investments are made abroad.

2.3.4 The eclectic theory or the OLI paradigm

Great debates are led in the scientific community about the determinants of foreign direct investment inflows (Petrović, et al., 2017). The eclectic theory developed by professor Dunning is a mix of three different theories of direct foreign investments (O-L-I). The paradigm offers a general framework for explaining international production. This paradigm includes three variables: ownership-specific (O), location-specific (L), and internalisation (I), (Shenkar, et al., 2015), all identified in earlier theories of trade and FDI. The main idea of the eclectic theory is the integration of the internalisation and location theories into one general framework (Bajrami & Zeqiri, 2019). Dunning (1993, 1988, and 1979) proposes an eclectic approach, which suggests that the firm-specific (ownership) advantages, internalisation efficiencies of hierarchical governance advantages, and host country location-specific advantages are three necessary and sufficient conditions for FDI. This theory presents a

synthesis based on the theory of industrial organisation, the theory of the firm, and the theory of economic location (Ardiyanto, 2012).

The eclectic theory is also referred as the “OLI paradigm”, which attempts to explain the international flows and FDI in terms of what is the motive rather than what should be the level and the structure of foreign investment (Bajrami & Zeqiri, 2019). According to the eclectic theory, “ownership (O) advantage” explains the "why" or motivation, of MNCs activities. Dunning & Lundan (2008) defined ownership advantages as the degree to which a company possesses sustainable ownership-specific advantages over other firms in the market. Some of these examples are the access to financial resources and innovative capacity. Another important advantage of eclectic theory is “location (L) advantage” that explains the "where", or location of the companies and which are specific to the country (Bayraktar & Sayek, 2017). Some of the examples are market structure, government legislation and policies, and the political, legal, and cultural environments in which FDI is undertaken (Shenkar, et al., 2015). Finally, internalisation refers to the firm’s inherent flexibility and capacity to produce a market through its own internal subsidiaries. According to Dunning (2008), the more ownership specific advantages a company has compared to competitors, the higher is the incentive to internalise their use (Bajrami & Zeqiri, 2019).

Eclectic paradigm shows overall that OLI parameters are different from firm to firm and depend on context and reflect the economic, political, and social characteristics of the host country. Therefore, the goals and strategies of the firms, the magnitude and the output pattern, will depend on the challenges and opportunities presented by different economies (Denisia, 2010).

2.3.5 Applying the OLI Paradigm in the Irish context

As previously discussed, OLI paradigm has been widely used by scholars in order to explain international trade and FDI behaviour. The advantages presented by Dunning provide the base for studying determinants of FDI attraction into a specific location (Baibekova & Nguyen, 2010). Therefore, in connection with the eclectic paradigm of Dunning, FDI in Ireland took place as these three types of advantages came together (Epperlein, 2004).

However, among the different possible existing determinants for these advantages, this study will mainly focus on the factors encompassing location-specific advantages given the aim of the research to analyse Ireland’s characteristics that attract FDI inflows. This is based on the fact that generally firms that use cost-leadership strategies will choose the location that minimizes total costs, in which Ireland’s known advantage of becoming a low-tax country for corporations in the mid-1990s, coincided with the rise of the internet giants. Hence, together

with the country's skilled labour force, competitive cost base, membership of the eurozone and being an English-speaking jurisdiction, there has been an important surge in inward investment in where several scholars have considered it nearly self-sustained (McCall, 2018).

2.4 Existing empirical evidence on factors attracting FDI

While FDI has been identified as one of the key drivers of Ireland's return to economic prosperity, there is not a definitive conclusion of the relationship of the different elements with the FDI attraction into the country. Extensive studies have investigated these factors. The studies illustrate a close relationship between the determinants of attracting FDI and the economic, technological, and infrastructure development level of the host country (Ozkan, 2011). However, while many countries have sought FDI as a method of economic growth, only a few of them have been successful in attracting foreign direct investment. (Addison & Heshmati, 2003)

Researchers have also placed great reliance on neo-classical investment models about determinants of FDI. Previous empirical studies on the determinants of FDI have emphasised the role of economic environment and liberalization policies to attract foreign investment (Amal, 2010). For example, a recent study by Slaughter (2003), found that the geographical proximity to the country of origin can be a significant determinant for the overall level of FDI attraction into Ireland. The author examined the determinants of US FDI by developing a cross-country study and also concluded that Ireland's EU membership played an important role for FDI specifically in financial services. Similarly, Barry (2003) argued that the EU membership was particularly significant for the attraction of financial services and manufacturing.

Having said this, there are several theories found regarding the FDI attraction factors, which for the purpose of this paper, will be divided into economic and non-economic theories. These theories attempt to explain the reasons for the formation of MNCs and the motives to move outside their country of operation, showing that there are many other factors that can influence a country's ability to attract foreign capital.

2.4.1 Economic Determinants for FDI attraction

A major part of the literature on FDI attraction has focused on applying mainstream theories on the economic factors that influence the attraction of FDI into a country, a range of determinants that go from infrastructure, currency exchange rate, GDP, trade openness and tax regime (Cassidy 2012; Barrel & Te Velde 1999; Kasapi et al. 2019; Barry 2004) allows us to pinpoint some key factors behind a country's success in attracting FDI. For example, Desai (2008), attributes Ireland's success at attracting foreign MNC activity to its "*low tax rates, an accommodating regulatory regime, proximity to major markets, and strong institutions*" (Dessai, 2008, p.16). However, there could be other determinants that play a key role in attracting FDI into the country.

Market size

Market size has been considered by the author as one of the factors identified for further investigation in this study as it is recognised as one of the most important determinants for horizontal market-seeking FDI. According to Chakrabarti (2001), market size has, by far, been the single most widely accepted significant determinant of foreign direct investment flows. Many authors agree that a rising market size (measured by GDP) could be a strong incentive for attracting FDI (Kasapi et al., 2019; Borensztein et al. 1998; Rios-Morales & O'Donovan 2006) where their studies generally find that a measure of FDI flows is positively related with per capita GDP growth or productivity.

Ho (2013) argued that market size directly affects investment return and profits and a larger market growth indicates potential for a larger product exchange and more promising prospects for products produced. In a study developed by Zhang (2001) the author found that FDI in China was positively related to the host country's market size and infrastructure, similar to Duanmu and Guney (2009) in where the authors concluded that India and China's FDI are attracted to locations with a large market size. Torrisi et al. (2008) applied a regression model in order to identify the determinants of FDI attraction in Central Europe, in where the authors found that market size was a critical factor or FDI inflows between 1989 and 2006. Beer & Cory (1996) also suggested that market size, labour costs and tariff barriers positively influence US foreign direct investment in the European Union. In addition, Quazi (2007) measured the market size by GDP per capita, in where the author concluded that the greater the market size, the more it attracted FDI into East Asia. Frenkel et al. (2004) went further and assessed the factors that influenced FDI inflow between five home countries and twenty-two emerging economies in Latin America, Asia, Central and Eastern Europe's GDP growth (which measures their respective market sizes). By employing data analysis, the study found that GDP growth is directly correlated to FDI inflow in those countries.

However, in a study made by Kimino et al. (2007) the authors did not find any relationship between FDI inflows and market size when measuring a developed country such as Japan, they concluded that in the case of Japan, the country actually attracts a disproportionately low level of inward FDI relative to other leading advanced nations. Similarly, Ozkan (2011) in her empirical analysis, results showed that the market size as an indicator of integration capacity is not an important determinant in attracting FDI in the EU-15 countries[2]

In the case of Ireland, there have not been many authors that have researched the link between market size and FDI inflows in the country. According to the Central Statistics Office (2020), while the GDP growth was 7.2% in 2018, inward FDI in Ireland decreased from €798bn in 2016 to €744bn in 2017. Thus, a negative relationship was found between the two variables during those years.

Considering the existing evidence presented above, this study aims to pursue whether Ireland's market size (measured by GDP) has a positive and significant effect in the attraction of Foreign Direct Investment into the country.

Labour costs

Labour costs (LC) are often seen as one of the main factors of FDI inflows, as low wages are considered an important advantage for foreign MNEs due to the reduction of production costs. Thus, it is another variable that has been selected for investigation in this study in order to test its influence on FDI inflows.

In recent years, MNEs in the global and host country labour markets has led to the discussion of the implications on labour market indicators, especially wages (Bayraktar & Sayek, 2017). Eckel (2003) argues that an important motive of foreign direct investment attraction focuses on labour costs as an incentive. Another argument is the flow of FDI from high-wage to low-wage countries (Eckel 2003; OECD 1993; Lemoine 1998). Stopford (1998), in his Multinational corporation's report, argues that labour costs are not the determining factor for MNEs deciding where to locate, however exploitation remains a problem. According to McNall & Margolin (1977), in their studies of *Comparative International Development*, the authors found that MNCs tend to cluster in two types of countries – those that are most developed and have a larger number of consumers, and those countries that have a specific mineral resource. The authors argue that MNCs do not go in search of cheap labour in order to provide for a larger surplus, but tries to increase its value by finding new markets for old commodities and cheap raw materials (McNall & Margolin, 1977).

[2] Early members of the EU

While there is empirical evidence that demonstrates the cost-seeking motives of FDI (Cheng Lai & Sarkar 2011; Wei 2000) there are still studies that do not find any robust evidence to suggest that there is a relationship between the two variables (Bellak et al. 2006; Dunning 1993). Several empirical studies such as Baldwin (2005) for OECD countries and Aitken et al. (1996) for Mexico, Venezuela and the U.S., have found a positive relationship between FDI and labour costs. Other researches have obtained significant results for the correlation between lower wages and FDI. Hayakawwa et al. (2013) use the average payment for manufacturing workers, Riedl (2010), uses real unit labour costs, while Mateev (2009) uses the percentage change in the overall cost of labour. These researches have concluded that indeed there is a predominantly negative relationship between labour costs and FDI, different from what other authors had previously stated.

Similarly, for Ireland and other developed economies, Barry et al. (2005) and Das (2002) have found evidence on the negative relationship on labour costs and FDI. However, Ruane and Ugur (2004) concluded that in the case of Ireland, LC is no higher when compared to domestically-owned manufacturing plants. Therefore, no significant correlation was found between the variables. Likewise, Bayraktar & Sayek, (2017) used a VAR approach under estimates for the period 1995-2009. The econometric evidence finds that a fall in the unit labour costs encourages FDI, which supports the cost seeking motive of FDI and the evidence race to the bottom hypothesis, which states that from a labour perspective, workers cannot enjoy the advantages of having a job and receiving a salary, due to the existent competitive advantage that their employers hold in regards of cheap labour. However, the authors also found that a rise in the compensation of labour induces higher FDI in the manufacturing sector, suggesting that compensation of labour supports the flow of FDI.

Given the mixed evidence presented by previous authors, the present study will examine the hypothesis that states that labour costs influence negatively FDI inflows into Ireland.

Infrastructure

Infrastructure is also a classical variable used in studying FDI and it is arguably an important precondition for efficiency seeking investment. It can also influence competitiveness through the reduction of costs to attract FDI as the quality of infrastructure can indicate a richer consumer base of the host country. Consequently, a host country with better infrastructure is commonly preferred by investors (Pung, 2016).

There have been a few empirical studies such as the one from Alam and Akram (2011) where the authors investigated how the developments of infrastructure affected the FDI inflows into Pakistan for the period between 1975-2008. The result of their analysis found that

infrastructure has a positive influence to attract FDI. Koyuncu and Unver (2016) similarly found that countries with higher infrastructure level (in the form of rail lines, mobile subscriptions, fixed telephone, broadband) experience a higher level of foreign direct investment and the results remained unaltered no matter which proxy was used to measure the infrastructure in their model. However, evidence obtained by Beer & Cory (1996) shows that infrastructure and pre-existing facilities are not regarded as significant determinants of the attraction of FDI from U.S. investors.

For Ireland, Barry & Bradley (1997) concluded that the performance of the Irish economy strength comes from a series of factors which include the large-scale improvement of the physical infrastructure, facilitated by EU regional aid. The authors argue that infrastructure is a key factor that has enhanced the attractiveness of Ireland as a base of inward FDI (Barry & Bradley, 1997) The impact of EU aid is often cited as the reason for Ireland's improved economic performance in the 1990s', in where the money was spent on roads and railways, telecommunications and in aid to industry, agriculture and tourism (Mattimoe, 2000).

Therefore, this paper will investigate the relationship between FDI and infrastructure, and testing the hypothesis on whether Ireland's government investment in Infrastructure has had a positive and significant effect in the attraction of Foreign Direct Investment into the country during the twenty years in investigation.

Inflation

Another macroeconomic factor that will be considered in this study and that has been considered to influence FDI inflows by other authors, is Inflation rate, which is meant to measure instability at the macro level, as when price level increases, it creates a reduction in buying power (Kersan-Skabic, 2013). A low inflation is considered to promote more investment, on the other hand, a high inflation rate could be a sign of internal economic tension and the inability of the government to control the growth of the money supply (Ardiyanto, 2012). There have been several researches that have obtained statistically significant results. Using annual data ranging from 1970 to 2012 in South Africa, Valli & Masih (2014) results indicated that there is a long-run theoretical relationship that exists between the level of inflation and the amount of FDI received by the country. Similarly, Kok and Ersoy (2009) state that inflation affects negatively FDI flows. Singhania and Gupta (2011) went further and examined the determinants of FDI in India for the period of 1991 to 2008. The authors used an autoregressive integrated moving average (ARIMA) econometric methodology and found that a high inflation rate had a significant effect on FDI inflows in India in that period. However, in a study made by Kersan-Skabic (2013) in SEE countries (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Montenegro, Romania and Serbia) found that the

sign of inflation is contrary to expectations, suggesting that macroeconomic instability leads to more FDI inflows.

For Ireland, Mattimoe (2000), argues that rapid reductions in the fiscal imbalance that were achieved from 1987, together with favourable international developments, have supported a decrease in the interest rates and inflation, which has helped to recommence the economic growth by attracting FDI inflows into the country.

Therefore, this paper attempts to examine whether a long-run theoretical relationship does exist between the level of inflation of the country and the FDI inflows, testing the hypothesis that a higher inflation rate has a negative effect in the attraction of FDI into Ireland.

Taxation rates

Generally, most governments are keen to attract foreign direct investment as it can generate new jobs, bring new technologies and more generally, promote employment and growth. Given these potential benefits, policy makers continually re-examine their tax rules to ensure they are attractive to inbound investment.

Previous studies examining cross-border flows suggest that on average, FDI decreases by 3.7% following a 1% increase in the tax rate on FDI. However, this variation partly reflects differences between the industries and countries being examined, or the time periods concerned (OECD, 2008).

Multinational corporations then, have an incentive to increase their after-tax profit by shifting taxable income from affiliates incorporated in high tax countries to subsidiaries in low-tax countries (Grubert & Mutti, 1991). This is because a country's tax policy towards foreign investment might have a tremendous impact on the profitability of foreign businesses. Interest in the effects of taxes on FDI has been considerable from both international and public economists.

A common hypothesis is that higher taxes discourage FDI into a country. Hartman (1984) tested this by examining behaviour of foreign affiliates in the United States through an empirical analysis in where he applied the method of regression in retained earnings on the host country (US) tax rate. The author found that retained earnings FDI responds significantly to the host country as it was previously hypothesized. Similarly, Beer & Cory (1996) believed that a well-developed infrastructure and a low tax regime might be also significant determinants of U.S. direct investment motivation. However, in their research the authors found that relative tax rates are negative and not significant when the dependent variable is U.S. FDI in manufacturing but positive and significant when the dependent variable is total

U.S. FDI in the EU. In a cross-sectional empirical analysis, Grubert and Mutti (1991) indicated that the observed pattern of reported profits in high and low-tax countries is consistent with income shifting behaviour and that FDI positively responds to the host country's effective tax rate. Different results were obtained by Devereux & Freeman (1995), where the authors estimated the impact of taxation on FDI using data between seven countries from 1984-1989 and a measure of the cost of capital. It was found in their analysis that FDI is not significantly affected by taxation but that taxation does affect the location of outward FDI. Auerbach & Hassett (1991) went beyond and examined this effect by developing a model of FDI, however, the empirical results of their analysis were mixed, there was evidence to believe that tax rates affect investment, but there was little robustness to such findings.

In the case of Ireland, Cassidy (2012) concluded that the most significant FDI attraction to Ireland was the low corporation tax rate, with Ireland's educated and skilled workforce following after. Similarly, KPMG (2020) states that Ireland has already a combination of highly educated, skilled and flexible workforce, benefits that have been strengthened by the country's long-term commitment to a 12.5% corporate tax rule.

This leaves us with the question on the effects of taxation rate on FDI attraction. As it has been implied above, some empirical approaches and data samples have differed, so that there are still significant questions about how much taxes affect FDI inflows. Therefore, the purpose of this research is to test whether Ireland's taxation rate had a positive and significant effect in the attraction of FDI during the years in investigation.

2.4.2 Non-economic factors for FDI attraction

Education

The relationship between FDI and economic development is well documented in the literature. FDI is an important factor of economic growth and the level of education in a country could strengthen the relationship between FDI and growth. While there have been many studies that have investigated the determinants of FDI inflows, few of them have focused on the role of education in attracting FDI (Miningou & Tapsoba, 2017).

The capacity of the education system has been considered as one of the drivers of the quality of human capital (Becker 1993 and Hanushek & Dennis 2000). This relationship has been tested and demonstrated in several empirical studies. Mouhoud (2013) stated that the efficiency of the education system and FDI inflows are related for several reasons. For example, foreign investors may be attracted by the quality and the expertise developed by the labour force in a given country. Also, it is well known that multinational firms are normally

interested in subcontracting their work force, especially in countries where the local force is highly qualified. Dunning (1998) and Caves (1996) stressed that the human resource development are increasing importance in the attraction of FDI. Brooks et al. (2010) demonstrated that education and human capital positively affects FDI inflows, and to promote a high and sustainable economic growth, governments need to support private investment by investing in education and infrastructure. Noorbakhsh and Paloni (2001) found similar results when the authors empirically tested the hypothesis that the level of human capital based on education in host countries may affect the attraction of FDI. In their report, the empirical findings were that education is a statistically significant determinant of FDI inflows in where human capital is one of the most important factors that has become increasingly greater through time.

However, other empirical findings revealed that there is no effect of education on FDI inflows. For instance, Root and Ahmed (1978) tested forty-four economic, social and political variables with respect to foreign investment attraction and found that human capital is not a determinant for FDI, the only significant variable found was the corporate tax level. Narula (1996) in an econometric model, pointed out that even though human capital appears to have a positive correlation in the model, it is not enough to be considered as a significant determinant of FDI attraction. More recently, Cleeve et al. (2015) found that there is no conclusive evidence of the importance of education for FDI in the same countries. Their findings show that although foreign investors are attracted by natural resources, they still mostly care about the tax regime in the host country.

In the case of Ireland, following the publication of the OECD 1966 report *Investment in Education*, free second level education was introduced into the country. According to Fitzgerald (1999), this policy change has been vital in explaining the great impact on the Irish economy and its labour market, in which the fruits of this consistent policy of investment became clear in the 1990s.This development indicated the start of a strategy of investing in education which has been followed consistently by governments since that date and has been a critical factor in FDI attraction. A recent study by Siedschlag and Koecklin (2019), showed the importance of the share of third level graduates in the population for the attraction to FDI to a country by using data on FDI in EU regions. The authors conclude that with a high share of graduates with a 3rd level education, Northern Ireland would have increased its probability of being selected for FDI rather than other countries such as the Republic of Ireland, in where there have been major long-term benefits from investing effectively in human capital.

Existing literature suggests that the level of human capital could affect the attractiveness of countries with respect to FDI. However, the evidence of the relationship between education

and FDI remains mixed. For this reason, this paper attempts to clarify the inconsistencies that exists and test the hypothesis whether education has a positive and significant influence in the attraction of FDI into Ireland.

Unemployment

An important human factor that is also a macroeconomic indicator is the unemployment rate. In theory, FDI is positively related to GDP, as foreign companies that establish in a particular country can provide more jobs, thus, the total unemployment rate will decrease. However, few have been the studies that investigate if there is an inverse relationship in which unemployment could have an impact on FDI inflows.

For instance, Jimenez et al. (2011) conducted a study based on data from Spain obtained from the World Bank. The authors expected to find a positive relationship between the two variables as they believed that unemployment was a signal of the possibility of contracting new employees. The evidence showed that low unemployment rates play a key role as determinants of foreign direct investment, in where high unemployment maintained a negative relationship with FDI. In addition, Pearson et al. (2012) conducted a regression model to measure the relationship between unemployment and FDI attraction in the U.S. The results showed an inverse relationship between the variables, this could be due to the fact that states with high unemployment rates are more prone to crime, and therefore deters risk-averse foreign investors from assuming a lasting interest in those places. Furthermore, using a simple partial equilibrium model of foreign direct investment in the U.S. and by pooling time-series and cross-sectional data, in where a sample of 1800 observations was tested for manufacturing industries, Ray (1989) provided evidence that high unemployment rate affects strongly and negatively FDI attraction. However, Billington (1999) noted that high unemployment encourages FDI inflows as the author takes it as a proxy for the availability of labour in the host country.

In Ireland, according to the CSO (2020) it is observed that after the global financial crisis and with an unemployment rate of 6.77% in 2009, and at its peak of 15.45% in 2012, Ireland kept receiving FDI inflows at a steady rate, reaching its peak at 57.8% of GDP. Thus, it is likely that there might be a correlation between the two variables. Hence, for the purpose of this research, the hypothesis of whether unemployment has a negative influence in the attraction of FDI into the country will be tested.

2.5 Conclusion on Literature

Summarising the results from the literature analysis, it is observed that many authors show a high focus on economic factors when investigating FDI attraction, as expected. However, only a few factors can claim to have a significant relationship with FDI. The most frequently mentioned by the authors is the market size determinant, from which regardless of the methodology used, showed a positive impact on FDI inflows. In terms of labour costs, some part of the literature argues that FDI activities occur the most in countries with lower wages, this, based on the cost seeking motive of MNEs, while another part of the literature claims the existence of negative relationship between labour costs and FDI. This variation on results could be the due to the use of different time frames, country samples, estimation techniques and theoretical framework. For instance, several authors found that for Ireland and other developed countries, there is evidence to suggest that higher labour costs have a negative impact on FDI, while others concluded that in developing countries such as Mexico and Venezuela, there is a positive relationship between the variables.

In regards of Corporate tax rates, after several studies done, many authors have come to the conclusion that there is a visible association between the two variables, and that Ireland's combination of skilled workforce and a its corporate tax rate, have influenced positively FDI inflows. However, other empirical approaches differ. Thus, there are still significant questions on how much FDI is affected by a country's corporate tax rate.

For variables such as education and infrastructure, most of the findings point to a strong and positive relationship between the variables and FDI inflows. Different from inflation and unemployment in where most of the authors found in their researches that high rates have a strong and negative relationship with FDI. Therefore, and due to mixed results from different authors, the aim of this study is to apply a measurement model in order to find an answer as currently there is not a definitive conclusion about the relationship between the variables selected for this study and Ireland's FDI inflows.

Chapter 3: Methodology

3.1 Introduction

This chapter will introduce the research methodology, philosophy and research approach based on the literature review. A description of the variables, data sources used and expected relationship will be presented, as well as the statistical method employed. Furthermore, this chapter will also address the ethical consideration and limitations of the research.

3.2 Research philosophy and approach

The present study adopts a positivist position as a research philosophy and uses existing theory to develop hypotheses, leading to the further development of theory which could possibly be tested for further research.

A positivist method is generally deductive, highly structured and the measurement is mostly quantitative, in where the hypotheses developed could lead to the gathering of facts that would provide the basis for subsequent hypothesis testing. By using this approach, the author will try to remain neutral in order to avoid influencing the findings (Saunders, et al., 2019). Hence, this research is mainly associated with observations based on numerical data collected, similarly to previous studies on the FDI attraction determinants, also by setting hypotheses and testing them through an empirical analysis to further come to a conclusion to reject or fail to reject the given hypotheses.

This paper also adopts a deductive approach, involving the development of a theory that will be then subjected to a rigorous test through a series of propositions. Hence, the author will proceed to form a set of general premises to a more specific conclusion, with the condition that the conclusion must follow analytically from the premises based on a mathematical model (Ketokivi & Mantere, 2010). There are several important characteristics for the deduction approach that have been selected. First, the author will study and explain causal relationship between the selected variables by collecting quantitative data from different public and reliable sources. Secondly, the research will use a highly structured methodology to facilitate replication in order to ensure reliability. Also, the variables will be measured in a quantitatively manner. And lastly, the final characteristic is generalisation, in where the researcher will select the sample carefully to be of sufficient size (Saunders, et al., 2019).

As a scientific approach that emphasises structure, quantification, generalisability and testable hypotheses, the deductive approach has been underpinned by the positivist research philosophy adopted. (Saunders, et al., 2019)

3.3 Research method

In order to answer the research questions from this paper, a quantitative analysis method will be adopted to measure the association between different factors which will be considered as independent variables (market size, labour costs, inflation, infrastructure, corporate tax rate, education & unemployment) and the FDI attraction into Ireland which will be this study's dependent variable.

The methodology selected for the proposed study will be extensively based on secondary data that has been collected from several reliable sources including The World Bank, Central Statistics Office and OECD statistics among others. A review of the existing documentation and case studies focusing on determinants for the FDI attraction into Ireland in the years between 1998-2018 will be analysed.

Given that the study is analytical in nature, the author depends on desk research. A prior review of the literature of the current theories and research from different scholars has shown a selection of multiple regression tests in order to determine the factors that influence FDI attraction in different countries. Therefore, to investigate the effect of the independent variables chosen on FDI, a multiple linear regression model using Ordinary Least Square (OLS) is deemed as appropriate for the present research development.

3.4 Research design

The present study intends to determine if the chosen independent variables have a significant effect with FDI inflows in Ireland. As determined within the literature review, there have been several studies that have tested different hypotheses and can provide a framework for this comparison between the selected factors. Therefore, the author has determined that this research will apply a quantitative method based on the statistical analysis of the data collected. The selection of a quantitative method will provide an answer to the research question stated by quantifying and analysing the variables based on numerical data and by using descriptive statistics techniques to identify possible relationships between them. All this, with the purpose to predict certain outcomes in the dependent variable from the independent variables that serve as the predictor (Creswell, 2003).

This quantitative methodology will be used to determine the relationship that exists between the variables selected and will be expressed by correlation coefficients ranging from +1.00 to -1.00, in which a higher correlation will indicate a stronger relationship between the variables. In addition to correlation, this research is considered experimental as it has a systemic approach to quantitative data collection involving mathematical models in the analyses (Apuke, 2017).

3.5 Research sample

The sample of data that has been obtained for this analysis will take credit on twenty years data on an annual basis. For the purpose of this research, secondary data has been obtained from The World Bank, Central Statistics Office of Ireland, Office of the Revenue Commissioners and the OECD, in where the author will be re-analysing, interpreting and reviewing past data. The presentation of these variables and the data collection method applied will be discussed in the following sections.

This paper will also follow several steps in order to conduct an empirical analysis. Firstly, the author will present the collection method, sources, and description of the dependent variable. It is then followed by the presentation of data collection method applied for the independent variables and their expected relationships with the dependent variable. The employment of a multiple regression model based on these variables will be explained and performed, and lastly, the presentation of the analysis and results obtained will be detailed and discussed in the following Chapter Four.

3.6 Variable description and data collection

In this section the author will present the description of the dependent and the independent variables that will be used to test the determinants of FDI attraction in Ireland. In addition, the secondary data collection method will be presented for each one of the dependent and independent variables selected for this study. As previously discussed, the author has decided to add several variables that have not been investigated in many previous studies plus some of the variables that represent the most commonly studied factors and that have showed significant results in previous research papers. This section ends with a table summarising explanatory variables and their expected relationship to FDI.

3.6.1 Foreign Direct Investment inflows

FDI net inflows are measured as the value of inward direct investment coming from external investors into the reporting economy, which include all liabilities and assets transferred between resident direct investment enterprises and their direct investors (The World Bank, 2020). Therefore, FDI is a key element in international economic integration as it creates links between economies and becomes an important channel for the transfer of technology between countries and promotion of international trade through access to foreign markets. (OECD, 2020).

In the present paper and as a first stage, the FDI inflows for the research period that comprehends 1998-2018 have been collected from data published annually from The World Bank and the OECD and it is presented as a percentage of GDP (See Appendix 8). Data on FDI net inflows is based on the Balance of Payments Manual reported by the International Monetary Fund (IMF) and then supplemented by the World Bank estimates using data from the United Nations Conference on Trade and Development (UNCTAD) and other official national sources (The World Bank, 2020). Six independent variables have been chosen among several factors. The researcher assumes that these variables have a significant association with FDI inflows in Ireland as previous authors have provided sufficient evidence. Therefore, the author will collect data for the independent variables from trusted sources and design an appropriate analysis in order to fulfil the objectives of this research.

3.6.2 Market size

As presented in the literature review, the effects of market size on FDI inflows has been widely accepted by researchers as the most significant determinant for measurement.

GDP is defined by the OECD as: *"The standard measure of the value added created through the production of goods and services in a country during a certain period"* (OECD, 2020, Gross Domestic Product). The higher GDP per capita (which measures the purchasing power of population and the standard of living in the country), the greater will be the demand for more advanced goods, which in turn leads to increased sales and gains from profit. According to many authors in the literature review section, the market size as expressed by GDP per capita has a strong and positive influence on FDI inflows in a country. Therefore, for the purposes of this research, GDP per capita (measured in USD) will be presented as a proxy for market size and the researcher expects the sign of coefficient to be positive and have a strong relationship on FDI. The data for Ireland's GDP per capita over the researching period of 1998 to 2018 has been gathered from The World Bank -World Development Indicators and OECD (see Appendix 8).

3.6.3 Labour costs

Labour costs, which will be represented in this study as Unit labour costs (ULC), show how much output an economy receives relative to wages, these also include the cost of employee benefits and payroll taxes paid by an employer (OECD, 2020).

As seen in the literature review, empirical findings have revealed that labour costs play a significant role in investigating the dynamic association between labour costs and FDI. Therefore, this indicator will be measured in terms of annual growth rates and indices. This data has been collected from the Central Statistics Office and the World development

Indicators database of the World Bank (see Appendix 8). Based on the literature review, the author expects to find a negative relationship between labour costs and FDI.

3.6.4 Infrastructure

The accessibility to infrastructure is one of the key elements for investment attraction as it has a vital role for economic development through promoting productivity, costs and trade. As a result, there is a tendency for enterprises to choose the country with the higher infrastructure (Baibekova & Nguyen, 2010).

According to several authors, infrastructure in a country can be measured by transportation, which includes railways & air transport, number of airports and seaports, telephone subscriptions, fixed broadband subscriptions, among others. For instance, in their study *FDI and Trade: The Irish Host-Country Experience*, Barry and Bradley (1997) found that an improved physical infrastructure had increased the attractiveness of Ireland as a base on inward foreign direct investment.

Therefore, and for the purpose of this research, this variable will be measured as a share of GDP for total inland investment in infrastructure, which encompasses road, rail, air, inland waterways and sea components. The coefficient for this variable is expected to have a strong and positive association with FDI inflows in Ireland for the twenty years on investigation. The data has been collected from the World Development Indicators database of the World Bank and OECD (see Appendix 8).

3.6.5 Inflation

As presented in the literature review, Foreign Direct Investment is considered as one of the most important determinants of the process of economic growth and development in a country. For that reason, empirically examining the causal relationship between inflation and FDI is important in order to examine the linkages between these variables. Several researches such as the one from Valli and Masih (2014) used a relative standard measure of inflation known as the consumer price indices or CPI. And according to the Citizens Information Board (2020) CPI is the official measure of inflation and it is designed to measure the change in the average level of prices paid for consumer goods and services by all private households and foreign visitors to Ireland (Citizens Information Board, 2020).

Therefore, for this determinant, the variable Consumer Price Index (CPI) has been chosen as a proxy of Inflation and will be measured as the percentage of annual growth rate. The data for this research paper has been collected from the Central Statistics Office and the World development indicators database of the World Bank (see Appendix 8), and the author expects to find a negative association between the variable and FDI inflows.

3.6.6 Education

As previously presented, the evidence of the relationship between education and FDI remains mixed. For instance, several authors such as Noorbakhsh et al. (2001) and Brooks et al. (2010) showed that a higher education level positively affects FDI inflows in a country, while Cleeve (2008) and Narula (1996) revealed that the relationship between the variables is not conclusive.

However, since education indicates the quality of the skilled labour in the country, population with access to higher education level can perform more complicated tasks in the market and provide a high quality of labour to foreign investors. Researches such as the one from Narula and Dunning (2010) measured the success from some countries in promoting FDI and growth based on the enrolment rate in tertiary education, while Cleeve (2008) measured the FDI attraction in Sub-Saharan Africa based in the total enrolment in secondary education as a proportion of the population of secondary school-age.

Therefore, for this determinant, the measure the author will adopt is the percentage of 25-34-year olds having completed tertiary education in Ireland and expects the coefficient of the education variable to have a positive and significant effect on foreign direct investment. Data used was collected from the World Bank's World Development Indicators database (see Appendix 8).

3.6.7 Unemployment

As discussed in a previous section of this research, an important human factor that is also a macroeconomic indicator is the unemployment rate. According to the Corporate Finance Institute (2020), unemployment refers to individuals who are employable and seeking a job but are unable to find it. In other words, it is those people in the workforce or pool of people who are available for work that do not have an appropriate job.

In order to measure the relationship between unemployment and FDI inflows, Pearson et al. (2012) used data from the Bureau of Labour Statistics to measure inward foreign direct investment based on unemployment rate in the U.S. from 1984 through 2007, while Jimenez et al. (2011) used unemployment rate data from the World Bank in order to analyse the impact of political risk variables in the location strategy of Spanish MNEs in Europe. Therefore, for the purpose of this research, this indicator will be measured in numbers of unemployed people as a percentage of the labour force on an annual basis.

As seen in the literature review, several authors have found a negative relationship between this variable and FDI. Accordingly, the author expects a strong negative correlation considering that higher unemployment rates may generate socio-economic issues. The data

has been collected from the World development indicators database of the World Bank (see Appendix 8).

3.6.8 Corporate Tax rate

Another factor that will be investigated in this paper is the corporate tax rate. As previously discussed in the literature review, most governments are interested in attracting FDI in order to promote the generation of new jobs and economic growth (Hartman 1984, Beer & Cory 1996, Grubert and Mutti 1991, Cassidy 2012). Due to these benefits, governments continuously re-examine their tax rules to ensure they attract FDI and at the same time ensuring that an appropriate share of domestic tax is collected from MNEs (OECD, 2020).

Therefore, this indicator will be measured as the annual corporate tax rate (%) in which the author expects to find a negative relationship between FDI and the independent variable and test the hypothesis that states that a higher corporate tax rate has a negative influence in the FDI inflows in Ireland. The data for this variable has been collected from the Office of the Revenue Commissioners.

A summary of the variables, definitions and expected relationship with FDI inflows are presented in Table 1 below.

Determinant	Measurement	Variable Definition	Data Source	Expected relation (+/-)
Dependent variable				
FDI	Measured in USD and as a share of GDP (%)	Value of cross-border transactions related to direct investment during a given period of time, usually a quarter or a year. OECD, 2020	OECD	
Independent variables				
Market size	GDP, Total USD/capita	GDP (gross domestic product) is an indicator for a nation´s economic situation. It reflects the total value of all goods and services produced less the value of goods and services used for intermediate consumption in their production. Eurostat, 2020	World Development Indicators	+
Labour costs	Unit labour costs, % change (previous period)	Average cost of of labour per unit of output produced. It is expressed as the ratio of total labour compensation per hour worked to output per hour worked. OECD, 2020	Central Statistics Office, OECD	-
Infrastructure	% of GDP for total inland investment (€)	Infrastructure investment covers spending on new transport construction and the improvement of the existing network (Road, rail, air, inland waterways and sea components) OECD, 2020	World Development Indicators	+
Inflation (CPI)	Annual growth rate (%)	Inflation as measured by the consumer price index (CPI) reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. World Development Indicators, 2020	Central Statistics Office, World Development Indicators	-
Education	25-34 year-olds with a 3rd level education (% in the same age group)	Population that has completed the highest level of education, by age group. This includes theoretical programs or high skilled professions. OECD, 2020	World Development Indicators, OECD	+
Unemployment	Total labour force (%)	Unemployment rate is the number of unemployed people as a percentage of the labour force, where the latter consists of the unemployed plus those in paid or self-employment. OECD	World Development Indicators	-
Corporate Tax rate	Annual Tax rate (%)	Direct tax imposed by a jurisdiction on the income or capital of corporations.	The Office of the Revenue Commissioners	-

Table 1 Variable definition and expected relation to FDI

3.7 Linear Regression with Ordinary Least Squares (OLS) Method

This study has adopted the OLS regression model in order to investigate the relationship between FDI inflows and the variables selected. This model has been selected based on prior studies by Baibekova & Nguye (2010), Torrisi et al. (2008), Hartman (1984), Pearson et al. (2012) presented in the literature review.

The multiple linear regression model and its estimation using ordinary least squares (OLS) is doubtless the most widely used tool in econometrics as it allows to estimate the association between a dependent variable and a set of explanatory variables. It is based on minimizing the sum of squares of the distances between each data point and the value predicted by the regression line (Hacıgüzeller, 2020).

This method is mostly used as an OLS linear regression procedure that builds a line of best fit and that serves as the most accurate way of depicting the spread of the data points with a single line. As previously mentioned, the least squares property states that the line fit in the OLS method will have the smallest value of the summed squared deviations of each data point from the line (Burton, 2020).

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Equation 1 Multiple Linear Regression Model

The above Equation 1 depicts the linear regression model that will be applied. In where Y is the dependent variable, represented by FDI inflows. α is the Y intercept when X's equals zero. X represents each one of the independent variables selected in this study and finally ε is the random variable also called the error term.

$$FDI = \alpha + \beta_1 Market\ Size + \beta_2 Labour\ Costs + \beta_3 Infrastructure + \beta_3 Inflation + Corp\ Tax\ Rate + \varepsilon$$

Equation 2 Multiple Linear Regression Model for FDI Inflows, Economic factors

$$FDI = \alpha + +\beta_3 Education + \beta_3 Unemployment + \varepsilon$$

Equation 3 Multiple Linear Regression Model for FDI Inflows, Non-Economic factors

For the empirical analysis presented in this research, different regression models were conducted: (i) testing FDI inflows as a dependent variable of market size, (ii) testing FDI inflows as a dependent variable of ULC, (iii) testing FDI as a dependent variable of Infrastructure, (iv) testing FDI as a dependent variable of inflation, (v) testing FDI as a dependent variable of education, (vi) testing FDI inflows as a dependent variable of

unemployment, testing FDI inflows as a dependent variable of corporate tax rate ,and finally (vii) testing FDI inflows as a dependent variable for economic and non-economic factors separately, Equation 2 and 3 respectively.

3.8 Ethical considerations

This study is based on secondary data which has been previously published by reliable sources such as the World Bank, OECD, Ireland's Central Statistics Office and The Office of the Revenue Commissioners. The research is desk based and does not involve obtaining information directly from people on the data collection process, therefore, the present study does not pose any ethical issues that need to be addressed.

3.9 Research Limitations

One of the main limitations of this paper is the analysis for the period that only covers twenty years of data. A selection of variables from the years 1998 through 2018 will be sampled in this research. The decision of the period used in this research depended essentially on the accessibility of data and the focus of the author to present the most recent information available. While several variables have been selected based on prior studies, for the purpose of this paper, other variables considered important to the author have been included in the model. It is important to note, that for the Infrastructure variable there was a limitation on the data availability from public sources, where only seven years of data were considered (2001-2007). Therefore, this research is not a comprehensive treatment of the link between FDI attraction into Ireland and all economic and non-economic variables, as the models are only based on limited indicators and a relatively moderate time period without considering other factors.

As previously discussed and due to limitations, such as the lack of sufficient data for the infrastructure variable, the author opted not to consider it in the multiple regression model for economic factors.

Another limitation on the use of multiple regression analysis is the problems that heteroskedasticity, serial correlation, and multicollinearity may cause in interpreting regression results leading to problems making inferences (DeFusco, et al., 2007).

Chapter 4: Results and discussion

4.1 Introduction

This chapter presents the results of correlation and regression of the variables and also discusses and interprets the results obtained and the connection with the literature review previously presented. The results of descriptive statistics are disclosed in the first section, followed by the correlation and regression models between the continuous variables selected in this study.

4.2 Descriptive Overview

The below Table 2 depicts the descriptive statistics for the variables selected in this research. For a general sample size of 20 observations, it is detected that for the dependent variable FDI inflows in Ireland from 1998 to 2018, the average as a percentage of GDP achieved 20.18% with a standard deviation of 16.63%; the independent variable with the highest range of error is the market size measured as GDP per capita, in where it was found that from 1998 to 2008, the average USD/capita was 44,756 with a standard deviation of 14,161 USD/capita. Possibly due to the data availability limitation, the Infrastructure variable had an average of 1.16 (% of GDP) and the lowest standard deviation of 0.06%

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
FDI	20	-5.47	80.79	20.1855	16.63800
GDP	20	25049.48	78211.41	44756.0695	14161.28798
LabourCosts	20	-15.26	8.16	.6145	5.55508
Infrastructure	7	1.08	1.23	1.1688	.05980
Inflation	20	-4.48	5.59	1.9870	2.46537
Education	20	27.65	53.47	41.6105	8.62960
Unemployment	20	4.18	15.51	8.3275	4.12145
CorpTaxRate	20	12.50	32.00	15.3750	5.87563
Valid N (listwise)	7				

Table 2 Descriptive Statistics of variables for the years 1998-2018

4.3 Correlation Analysis and Results

Based on the Pearson's correlation coefficient, the strength and direction of the linear relationship between the variables was examined. According to Watsham and Parramore (2002), the correlation coefficient ranges between -1 to +1. The larger the absolute value of the coefficient, the stronger the relationship is between the variables. The sign of the coefficient also indicates the direction of the relationship. This is, if both variables increase or decrease together, the coefficient is considered positive and the line that represents the

relationship plots on a straight ascending line. A correlation of -1 indicates that the data points in a scatter plot form a descending line, hence, the two variables are considered perfectly negatively related (Geert van den Berg, 2020).

Correlations

		FDI	GDP	LabourCosts	Infrastructure	Inflation	Education	Unemployment	CorpTaxRate
FDI	Pearson Correlation	1	.472*	-.708**	.408	-.316	.357	.187	-.129
	Sig. (2-tailed)		.036	.000	.363	.175	.123	.430	.588
	N	20	20	20	7	20	20	20	20
GDP	Pearson Correlation	.472*	1	-.484*	.249	-.428	.855**	.252	-.602**
	Sig. (2-tailed)	.036		.031	.591	.060	.000	.283	.005
	N	20	20	20	7	20	20	20	20
LabourCosts	Pearson Correlation	-.708**	-.484*	1	-.119	.655**	-.547*	-.558*	.292
	Sig. (2-tailed)	.000	.031		.800	.002	.013	.011	.211
	N	20	20	20	7	20	20	20	20
Infrastructure	Pearson Correlation	.408	.249	-.119	1	.632	.154	.618	-.140
	Sig. (2-tailed)	.363	.591	.800		.128	.742	.139	.765
	N	7	7	7	7	7	7	7	7
Inflation	Pearson Correlation	-.316	-.428	.655**	.632	1	-.580**	-.631**	.273
	Sig. (2-tailed)	.175	.060	.002	.128		.007	.003	.244
	N	20	20	20	7	20	20	20	20
Education	Pearson Correlation	.357	.855**	-.547*	.154	-.580**	1	.629**	-.768**
	Sig. (2-tailed)	.123	.000	.013	.742	.007		.003	.000
	N	20	20	20	7	20	20	20	20
Unemployment	Pearson Correlation	.187	.252	-.558*	.618	-.631**	.629**	1	-.305
	Sig. (2-tailed)	.430	.283	.011	.139	.003	.003		.191
	N	20	20	20	7	20	20	20	20
CorpTaxRate	Pearson Correlation	-.129	-.602**	.292	-.140	.273	-.768**	-.305	1
	Sig. (2-tailed)	.588	.005	.211	.765	.244	.000	.191	
	N	20	20	20	7	20	20	20	20

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 3 Correlation Matrix

The following and significant results were found from the above Table 3, Correlation matrix:

1. There is a moderate positive correlation between FDI and GDP (0.472), FDI and Infrastructure (0.408), and FDI and Education (0.357).
2. There is a weak positive correlation between FDI and unemployment (0.187)
3. There is a weak negative correlation between FDI inflows and inflation (-0.316)
4. There is a strong negative association between the variable Labour costs and FDI (-0.708).
5. There is a weak negative association between FDI and corporate tax rates (-0.129)

The correlation between most of the variables is considered moderate to weak, however, most of them turned out to be as what the author had predicted. Particularly, the correlation between FDI and Labour costs is strongly negative, supporting the evidence found by Barry et al. (2005) and Das (2002), where the authors found a strong negative relationship on labour costs and FDI when testing Ireland and other developed countries in the eurozone.

4.4 Regression Analysis and Results

For the purpose of this study, the statistical examinations will be divided into two main groups: single regression and multiple regression models. The first section will look at the single regression model for each one of the independent variables selected in order to analyse if there is an association with FDI inflows as dependent variable. The second part will comprise the economic and non-economic multiple regression models obtained along with the appropriate description and interpretations considering the results. The statistical tables for each model will be presented in the Appendix section of this research and the confidence level designated before examining the data will be of 95%.

4.4.1 Analysis of single regression models

Model 1. FDI net inflows as a dependent variable of Market size

The below Figure 1 examines the relationship between FDI as the dependent variable and Market size measured by GDP. As per the scatterplot presented, it is observed that the relationship shows a positive correlation between the variables with an upward sloping curve. A R^2 or coefficient of determination of 0.141, indicates that 14.1% of the variance in FDI inflows can be predicted from GDP. It is important to note that this measure only provides the strength of the association between these two variables, hence, this does not reflect the extent of which FDI is associated when including other factors.

The model also shows a standard error of estimate or root mean square of 15.43, which in simple terms is the standard deviation of the error term. With a significance level of 0.05, the model shows an F-value of 3.114 and a p-value of 0.94, hence, this indicates that the independent variable GDP does not show a statistically significant relationship with FDI.

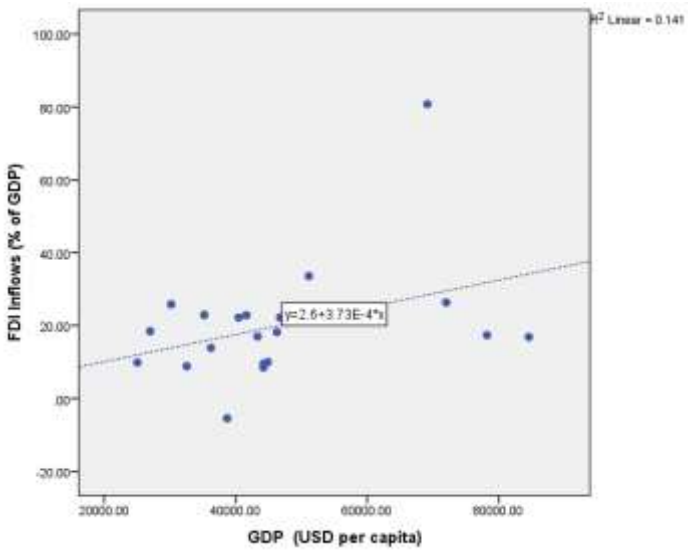

Figure 1 Regression model of FDI vs GDP

The positive correlation obtained is in line with the empirical findings of Ho (2013), Zhang (2001) and Duanmu & Gunet (2009), in where the authors argue that market size directly affects foreign investment, suggesting that FDI is attracted to locations with a large market size when using GDP as a proxy. However, the present model does not show a statistically significant relationship between the variables, confirming the findings of Kimino et al. (2007), in where the authors did not find any statistical relationship between FDI inflows and market size when measuring a developed country such as Japan, or Ozkan (2011) who concluded that GDP as an indicator is not an important determinant in attracting FDI to EU-15 countries.

The author assumes that this difference mainly depends on the period under review, as well as different countries would have obtained different results when analysing the association between their GDP and FDI inflows.

Hence, based on the regression analysis of the relationship between FDI and GDP in Ireland, this study demonstrates that there is no evidence to suggest that the two variables are statistically associated, however, the study revealed a positive relationship between market size (GDP as a proxy) and FDI. This could be explained by the assumption that investor's intention to increase profits, influences the improvement of the economic standards by governments to be able to attract FDI into their country.

Hypothesis 1	**Reject/Fail to reject**
H_0: There is no association between FDI inflows in Ireland and Market size	Fail to reject
H_1: There is a positive association between FDI inflows in Ireland and Market size.	Reject

Model 2. FDI net inflows as a dependent variable of Labour Costs

The below Figure 2 depicts the relationship between FDI and Unit labour costs, in which the line that best fits is a downward-sloping curve, showing that the relationship between the variables is strongly negative. This indicates that a higher unit labour cost from the years in review decreased FDI inflows in Ireland.

The model's p-value is very small at 0.000, hence, compared to the model's alpha of 0.05 it can be concluded that there is enough evidence to suggest that labour costs could predict FDI inflows. The model's R^2 shows a similar result, in where 48.3% of the proportion of variance in FDI inflows can be predicted by labour costs. This outcome is important as it indicates that labour costs have a significant correlation on FDI in Ireland according to this single regression model.

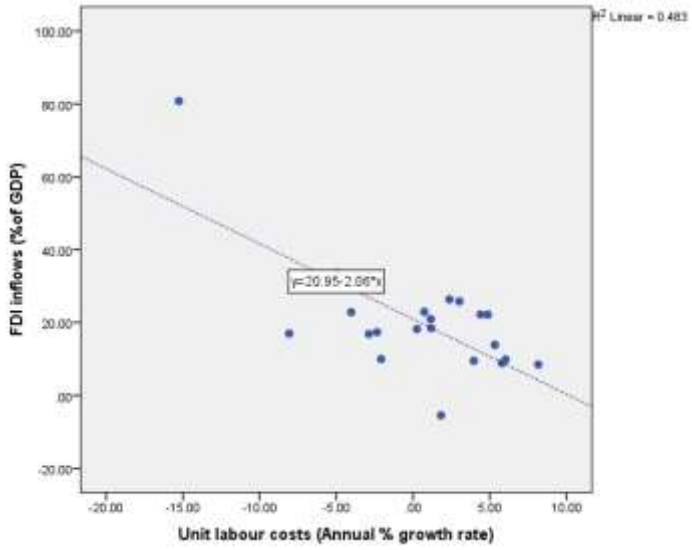

Figure 2 Regression model FDI vs Labour costs

Overall, these findings are in accordance with the findings reported by Riedl (2010), Mateev (2009), Wei (2000); Barry et al. (2005) and Das (2002), as their research results suggest that higher unit labour costs as well as higher total labour costs affect FDI negatively. This supports the author's choice of unit labour costs as the proper measure in the regression model. Therefore, as the p-value is less than 0.05, we reject the null hypothesis that there's no difference between the means and conclude that a significant difference does exist.

Hypothesis 2	**Reject/Fail to reject**
H_0: There is no association between FDI inflows in Ireland and Labour costs	Reject
H_1: There is a negative association between FDI inflows in Ireland and Labour costs.	Fail to reject

However, as observed in Figure 2, there is an outlier in the single regression model that can influence the explanatory power of the variable. Nevertheless, according to the Central Statistics Office (2016), the labour compensation per employee increased at a much faster rate than the output relative to total employment, and it also had a major increase at a rate of two percent from 2014 to 2015.

In interpreting these results, it could be argued that the "race to the bottom" hypothesis is relevant when testing it with a developed country such as Ireland, in where the evidence suggests that labour costs have a significant and negative impact on the flow of FDI as it is seen that a high labour costs discourage FDI inflows to the country.

Model 3. FDI net inflows as a dependent variable of Infrastructure

Model 3, represented by the below Figure 3, shows the link between the variables Infrastructure (measured as a percentage of GDP for total inland investment) and FDI Inflows (% of GDP). It is observed that the relationship is positive in this single regression model. The higher the investment in Infrastructure leads to a higher FDI inflow. A R^2 or coefficient of determination of 0.167 indicates that only 16.7% of the variance in FDI inflows can be predicted from the investment in infrastructure. However, it is worth taking into account that these results measure the strength of the association between these variables without taking into account other factors.

With a p-value of 0.363 which is greater than the alpha of 0.05, shows that the independent variable Infrastructure does not show a statistically significant relationship with the dependent variable FDI inflows. As a result, changes in the dependent variable are not related to the changes in the independent variable according to this model.

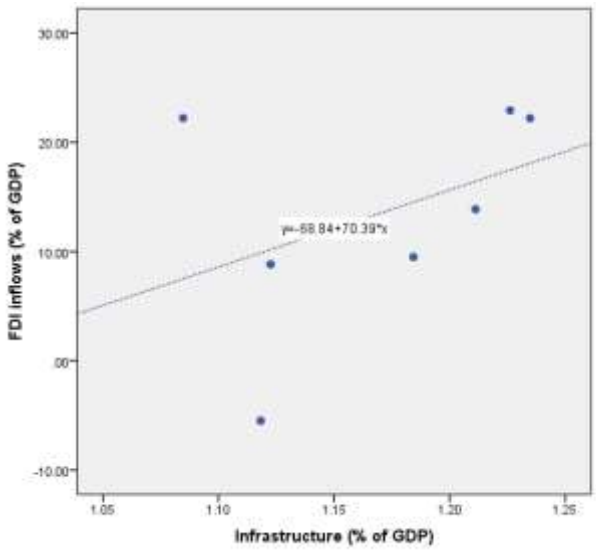

Figure 3 Regression model of FDI vs Infrastructure

Contrary to the findings of Barry & Bradley (1997), this model did not show a significant correlation between the variables. The authors had concluded that the performance of the Irish economy strength comes directly from the improvement of physical infrastructure that had been facilitated by EU regional aid, and also found that infrastructure is a key factor that enhanced the attractiveness of the country to FDI.

Therefore, and based on the model results, with a p-value larger than 0.05, we cannot conclude that a significant difference exists between the means.

Hypothesis 3	**Reject/Fail to reject**
H_0: There is no association between FDI inflows in Ireland and Infrastructure	Fail to reject
H_1: There is a positive association between FDI inflows in Ireland and Infrastructure	Reject

However, the approach utilised in the present study suffers from time period constraint, as only a relatively small period was covered due to the lack of limited public data available, hence, only seven years were considered for the model, which can impact the estimation of the regression analysis and the results could be imprecise. This is confirmed by the model's standard error, a value of 10.31 which is not an ignorable amount given the scale of the variables. Also, based on the scatterplot presented as Figure 2, it appears that the spots are diffused and do not form a clear pattern, therefore heteroskedasticity problems occur which could be explained by the dataset having a large range between the largest and smallest observed values.

Model 4. FDI net inflows as a dependent variable of Inflation

The below Figure 4 represents the regression model for the variables FDI and Inflation, in where a downward-sloping curve is observed between these variables. With an adjusted R^2 of 0.046 and R^2 of 0.094, this implies that the linear regression only explains 9.4% of the variance in the data.

The linear regression's F-test has the null hypothesis that the model explains zero variance in the independent variable ($R^2 = 0$). The F-test in the model is 1.975 and the p-value associated with this F value is 0.176. Hence, when compared to the alpha level of 0.05 it can be concluded that there is not enough evidence to suggest that the variable Inflation can reliably predict the dependent variable FDI inflows.

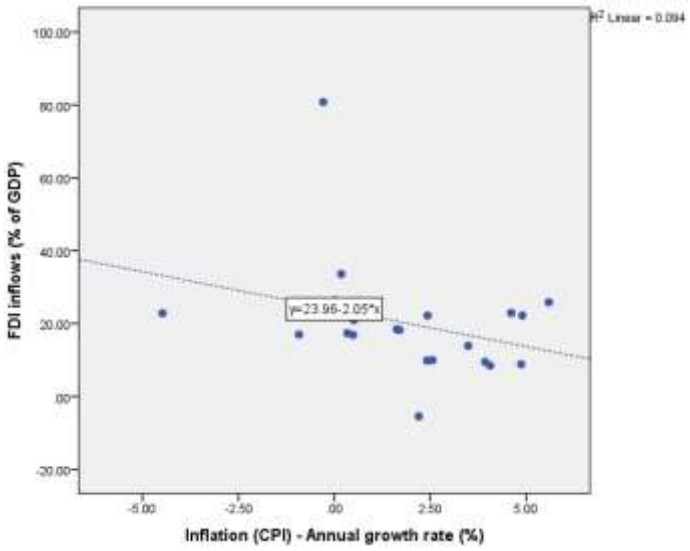

Figure 4 Regression model FDI vs Inflation

Even though this model does not provide enough evidence to demonstrate that the two variables are correlated, it is important to note that a small but negative association can be perceived. These findings are in accordance with the ones reported by Kok and Ersoy (2009) and Mattimoe (2000), which indicated a negative relationship between the level of inflation and the amount of FDI inflows in a country.

Hypothesis 4	Reject/Fail to reject
H_0: There is no association between FDI inflows in Ireland and Inflation	Fail to reject
H_1: There is a negative association between FDI inflows in Ireland and Inflation	Reject

However, it must be highlighted that their models included countries in South Africa that have shown signs of economic tension, therefore, the different results obtained in the present paper

might be due to the fact that Ireland's Inflation rate has been considered stable through the years in investigation.

Model 5. FDI net inflows as a dependent variable of Education

A single linear regression was calculated to predict FDI inflows based on Education (using 25-34-year olds with a 3rd level education as a proxy). The relationship shows a positive association which is represented in the regression model from Figure 5. A R^2 value of 0.101 shows that the proportion of variance in the dependent variable (FDI inflows) which can be predicted from the independent variable (Education) is that of 10.1% with a standard error of the estimate or the root mean square error of 15.79.

An F-value that yields F=2.129 which has an associated p-value of 0.161, shows a greater level when compared to the alpha level of 0.05. Hence, it can be concluded that the independent variable Education does not show a statistically significant relationship with the dependent variable FDI inflows, in other words, Education does not reliably predict the dependent variable in this model.

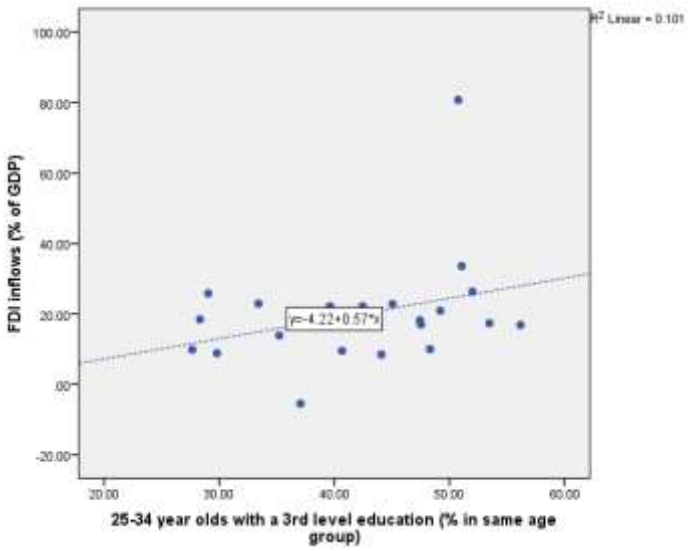

Figure 5 Regression model FDI vs Education

Even though the author was expecting to find a positive and strong association between the two variables, according to the model presented in this study, there is not enough evidence to suggest that there is indeed an association. Therefore, the present results are consistent with the findings from Root and Ahmed (1978), Narula (1996), where regardless education and human capital appears to have a positive correlation in the authors models, it is not enough to be considered as a significant factor of FDI attraction. Hence, the author cannot conclude that a significant difference exists, therefore we fail to reject the null hypothesis.

Hypothesis 5	Reject/Fail to reject
H_0: There is no association between FDI inflows in Ireland and Education	Fail to reject
H_1: There is a positive association between FDI inflows in Ireland and Education	Reject

It is important to highlight the fact that the model only used 3rd level education on 25-35-year olds as a proxy, and that this does not take into account the quality of education that has been provided throughout the years on investigation. Therefore, more research devoted to measuring the quality of the third level education could explain these results in a better form.

Model 6. FDI net inflows as a dependent variable of Unemployment

The below Figure 6 examines the connection between the dependent variable FDI inflows and the independent variable unemployment. The relationship is positive as it is observed in this single regression model. The R^2 value of 0.037 indicates that only 3.7% of the variation from FDI inflows can be explained by unemployment, which is a very small percentage. A p-value of 0.406 indicates that the regression model does not statistically predict the outcome variable. Therefore, the independent variable Unemployment does not have a major impact on changes in FDI inflows according to this model and as a result, the author fails to reject the null hypothesis.

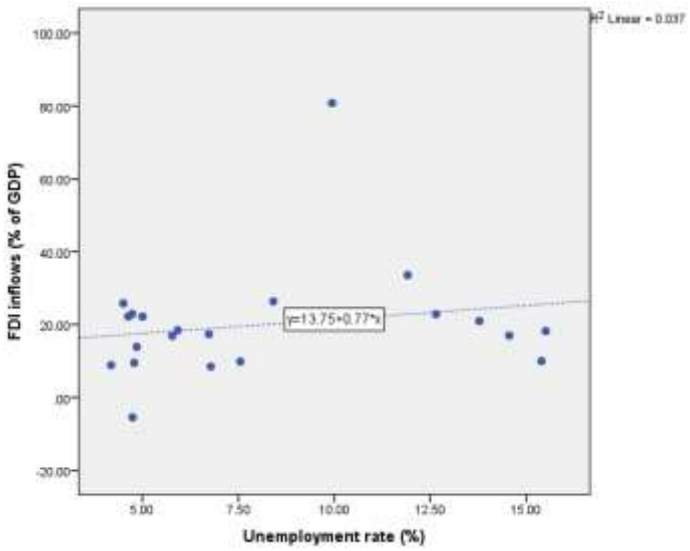

Figure 6 Regression model FDI vs Unemployment

These findings are opposed to the notion that FDI is negatively influenced by unemployment, as presented by Jimenez et. al (2011), Pearson et. al (2012) and Ray (1989), where the authors provided evidence that demonstrate that unemployment rate in

a country affects negatively FDI inflows, which could be due to the fact that generally, a country's high unemployment rates discourage risk-averse foreign investors as they assume it brings a high rate of crime.

However, according to data from CSO (2020), it was observed that despite the financial crisis and the loss of jobs in Ireland during its peak in 2012, the country kept receiving FDI inflows at a steady rate, hence, this supports the results obtained in the model in where a positive correlation has been perceived. Nevertheless, there is not sufficient evidence in this model to suggest that the two variables are statistically significantly associated.

Hypothesis 6	**Reject/Fail to reject**
H_0: There is no association between FDI inflows in Ireland and Unemployment rate.	Fail to reject
H_1: There is a negative association between FDI inflows in Ireland and unemployment rate.	Reject

Model 7. FDI net inflows as a dependent variable of Corporate Tax

The below figure 7 represents the relationship between the dependent variable Corporate tax rate and FDI inflows in a single regression equation. It is observed that there is a downward-sloping curve between the variables in where it is possible that a higher corporate tax rate decreases the FDI inflows. The R^2 value is 0.15, which shows that changes in corporate tax can predict a 15% change in FDI inflows.

In this single regression model, an F-value that yields F=0.292 which has an associated p-value of 0.595 shows a greater level when compared to the alpha level of 0.05. As a result, this model shows that the changes in the independent variable Corporate tax there is not a statistically significant relationship between the variables, in other words, there is not enough evidence to indicate that FDI inflows are correlated to the independent variable Corporate Tax, rejecting the alternative hypothesis at the 5% level of significance.

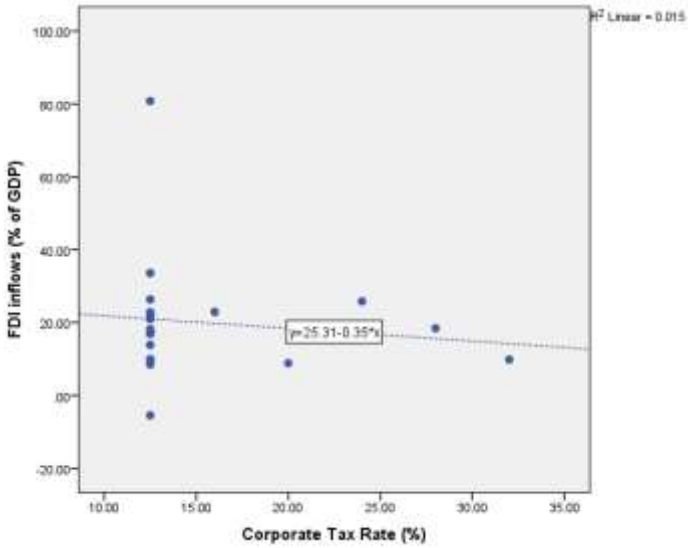

Figure 7 Regression model FDI vs Corporate Tax rate

Hypothesis 7	Reject/Fail to reject
H_0: There is no association between FDI inflows in Ireland and Corporate Tax Rate	Fail to reject
H_1: There is a negative association between FDI inflows in Ireland and Corporate Tax rate	Reject

These findings are consistent with research from Devereux & Freeman (1995), and Auerbach & Hassett (1991), with empirical results that FDI is not significantly affected by taxation, and while some tests indicated that tax is negatively correlated to FDI, there was little robustness to such findings. However, when comparing our results to those of older studies, it must be pointed out that the authors used different sample sizes from different countries as well as a different period of time. This is particularly important as a popular explanation of FDI inflows in Ireland is that of the association that the variable has with a low corporate tax rate that was introduced in the mid-1990s, as confirmed by Cassidy (2012), in where the author concluded that the most significant FDI attraction factor to Ireland is the low corporation tax rate.

4.4.2 Analysis of multiple regression model

In this section, two multiple linear regression models were conducted in order to predict FDI inflows based on the economic and non-economic variables. The statistical tables for each model will be presented at the end of this paper and the confidence level designated before examining the data will be of 95%.

Model 8. FDI net inflows as a dependent variable of Economic Factors (Corporate tax rate, Inflation, GDP and Labour costs)

Determining model fit:

Table 4 depicts the multiple linear regression model that was calculated in order to predict FDI inflows based on the economic independent variables GDP per capita, Unit labour costs, Inflation and Corporate tax rate. The table provides the *R*, R^2, adjusted R^2, and the standard error of the estimate, which can be used to determine how well the regression model fits the data (Dhakal, 2019).

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.781[a]	.610	.505	11.70132	.610	5.853	4	15	.005

a. Predictors: (Constant), CorpTaxRate, Inflation, GDP, LabourCosts

Table 4 Multiple regression Model, Economic variables

The multiple correlation coefficient R measures the quality of the prediction of the dependent variable; in this case, FDI inflows. A value of 0.781 indicates a good level of prediction. R^2 with a value of 0.610, indicates that 61% of the proportion of variance in the dependent variable can be explained by the independent variables. Hence, 39% (100%-61%) of the variation is caused by factors other than the variables included in this model.

However, when looking at the adjusted R^2, there is a discrepancy observed between the values of R-squared (0.610) and adjusted R^2(0.505), which indicates a moderately good fit of the model. From this, it can be seen that the number of observations in this model is small compared to the large number of predictors. Therefore, a larger number of observations or any useful variable added in the model would turn the model a better fit.

This is consistent with the standard error of the model fit, which measures the precision of the model. In this case, the standard deviation of the residuals has a value of 11.70, these results suggest that the average distance of the data points from the fitted line is about 11.7%, which is considered a high amount.

Statistical significance of the model:

The F-ratio in the ANOVA (Table 5) tests whether the overall regression model is a good fit of the data (Dhakal, 2019). The below table shows that the independent variables statistically significantly predict the dependent variable FDI inflows,

$$F\ (4,15) = 5.853,\ p\ value(0.005) < 0.05$$

Therefore, the below regression model is a good fit of the data as there was a statistically significant difference observed between groups as determined by the one-way ANOVA.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3205.823	4	801.456	5.853	.005[b]
	Residual	2053.813	15	136.921		
	Total	5259.636	19			

a. Dependent Variable: FDI

b. Predictors: (Constant), CorpTaxRate, Inflation, GDP, LabourCosts

Table 5 ANOVA

Statistical significance of the independent variables:

The statistical significance of each of the independent variables tests whether the unstandardized coefficients are equal to zero in the population. Therefore, if p<0.05, the coefficients are statistically significant to 0 (Dhakal, 2019).

The below table 6 depicts the model coefficients. The t-value and corresponding p-value are in the "t" and "Sig." columns respectively, in which the results demonstrate that only Labour costs $p(0.003) < 0.05$ is significant, while GDP $p(0.133) > 0.05$, Inflation $p(0.196) > 0.05$ and Corporate tax rate $p(0.259) > 0.05$ are not significant. From these results it is clear that only the variable labour costs add a substantial contribution explaining FDI inflows.

This is consistent when looking at the standard error of the coefficient, as it is observed that relative to the coefficient -2.392 of Labour costs, its standard error 0.67 is small.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	-11.227	18.720		-.600	.558	-51.128	28.675		
	GDP	.000	.000	.354	1.590	.133	.000	.001	.525	1.905
	LabourCosts	-2.392	.670	-.799	-3.570	.003	-3.819	-.964	.520	1.921
	Inflation	1.979	1.462	.293	1.354	.196	-1.136	5.095	.555	1.802
	CorpTaxRate	.672	.572	.237	1.174	.259	-.548	1.892	.637	1.570

a. Dependent Variable: FDI

Table 6 Multiple regression model: FDI prediction based on economic factors

Estimated model coefficients:

The general form of the equation to predict FDI inflows from the economic independent variables would be the below:

$$FDI\ Inflows = -11.227 + .000(GDP) - 2.392(Labour\ costs) + 1.979(Inflation) + .672(Corp.Tax\ rate)$$

A constant (y-intercept) of -11.227, is the predicted value for the dependent variable (FDI inflows) if all independent variables were equal to zero. For this reason, this is only a meaningful interpretation if its reasonable that the variables can take the value of zero, which is unlikely.

Referring to the coefficients (Table 6) above, the unstandardized coefficient for labour costs is -2.392, hence, for every unit increase in labour costs, there is -2.392 reduction in FDI inflows. However, for every unit increase in Corporate tax rate, there is a 0.672 increase in FDI inflows.

Accordingly, standardized coefficients are called beta weights, given in the "beta" column. This measures how much the outcome variable increases (in Std. dev.) when the independent variable is increased by one standard deviation assuming other variables remain constant (Dhakal, 2019). Therefore, in this specific model, labour costs is the highest contributing (-0.799) variable to explain FDI inflows, followed by GDP (0.354).

This study also performs a VIF test to determine whether a multi-collinearity issue exists in the regression model. Multi-collinearity can be determined by using a metric known as the Variance Inflation Factor (VIF) test, which measures the correlation and strength of correlation between the independent variables in the regression model. The results show that the values indicate a moderate correlation between the independent variables (GDP =1.905, Labour costs= 1.921, Inflation=1.802, Corp. Tax rate= 1.570). These results show that none of the VIF values for the independent variables in this regression model are greater than 5, which indicates that multicollinearity will not be a problem when fitting and interpreting the model.

Model 9. FDI net inflows as a dependent variable of Non-economic factors (Education and Unemployment)

Table 7 depicts the multiple linear regression model that was calculated in order to predict FDI inflows based on the non-economic independent variables Unemployment and Education. The table provides the R, R^2, adjusted R^2, and the standard error of the estimate, which can be used to determine how well the regression model fits the data.

Determining model fit:

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.360[a]	.129	.027	16.41192	.129	1.264	2	17	.308

a. Predictors: (Constant), Unemployment, Education

Table 7 Multiple regression Model, Non-economic variables

The multiple correlation coefficient R measures the quality of the prediction of the dependent variable; in this case, FDI inflows. A value of 0.360 indicates a low level of prediction. R^2 with a value of 0.129, indicates that 12.9% of the proportion of variance in the dependent variable can be explained by the independent variables. Hence, 87.1% (100%-12.9%) of the variation is caused by factors other than the variables included in this model.

However, when looking at the adjusted R^2, there is a high discrepancy observed between the values of R-squared (.129) and adjusted R^2(.027), which indicates a poor fit of the model. From this, it can be seen that the number of observations in this model is small compared to the number of predictors. Therefore, a larger number of observations or any useful variable added in the model would turn the model a better fit as the value of R-square and adjusted R-square would be much closer as the ratio will approach 1.

This is consistent with the standard error of the model. In this case, the standard deviation of the residuals has a value of 16.41, these results suggest that the average distance of the data points from the fitted line is about 16.41%, which is considered a high amount, hence, adding a larger number of observations will cause R^2 to increase and the standard error will decrease.

Statistical significance of the model:

The F-ratio in the ANOVA (Table 8) tests whether the overall regression model is a good fit of the data (Dhakal, 2019). The below table shows if the independent variables statistically significantly predict the dependent variable FDI inflows.

$$F\ (2{,}17) = 1.264,\ p\ value(0.308) > 0.05$$

Based on this, it can be concluded that the below regression model is not a good fit of the data as there is no statistically significant difference between the variable means.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	680.669	2	340.335	1.264	.308[b]
	Residual	4578.966	17	269.351		
	Total	5259.636	19			

a. Dependent Variable: FDI

b. Predictors: (Constant), Unemployment, Education

Table 8 ANOVA

Statistical significance of the independent variables:

The statistical significance of each of the independent variables tests whether the unstandardized coefficients are equal to zero in the population. Therefore, if p<0.05, the coefficients are statistically significant to 0 (Dhakal, 2019).

The below table 9 depicts the model coefficients. The t-value and corresponding p-value are in the "t" and "Sig." columns respectively, in which the results demonstrate that none of the two variables are significant, Education $p(0.192) > 0.05$, and for unemployment $p(0.835) > 0.05$

These results now provide evidence to demonstrate that none of these two independent variables add a substantial contribution when explaining FDI inflows.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	-9.456	19.160		-.494	.628	-49.880	30.969		
	Education	.762	.561	.395	1.358	.192	-.422	1.946	.604	1.655
	Unemployment	-.249	1.175	-.062	-.212	.835	-2.728	2.231	.604	1.655

a. Dependent Variable: FDI

Table 9 Multiple regression model: FDI prediction based on non-economic factors

Estimated model coefficients:

The general form of the equation to predict FDI inflows from the non-economic independent variables would be the below:

$$FDI\ Inflows = -9.456 + .762(Education) + .249(Unemployment)$$

A constant (y-intercept) of -9.456, is the predicted value for the dependent variable (FDI inflows) if all independent variables were equal to zero. For this reason, this is only a

meaningful interpretation if its reasonable that the variables can take the value of zero, which is unlikely.

Referring to the coefficients (Table 9) above, the unstandardized coefficient for education is 0.762, hence, for every unit increase in education, there is a .762 increase in FDI inflows. However, each unit increase in Unemployment causes a reduction in FDI inflows by -.249.

Accordingly, standardized coefficients for the model were found as follows: Education is considered as the highest contributing (.395) variable to explain FDI inflows, followed by unemployment (-.062).

In regards of VIF test, the results show that the values indicate a moderate correlation between the independent variables (Education =1.655, Unemployment= 1.655). These results show that none of the VIF values for the independent variables in this regression model are greater than 5, which indicates that multicollinearity will not be a problem when fitting and interpreting the model.

4.5 Conclusion on Results

Based on the analysis performed on the two research groups and with the help of the below Table 11 (Variable definition and expected relation to FDI), the following observations have been identified regarding the correlation coefficients obtained from the models:

After analysing the Multiple regression model for economic variables and considering coefficients of explanatory variables, only Labour costs show statistically significant results in this multiple regression model ($p(0.003) < 0.05$), which indicates that it is the only variable that could be considered as a significant determinant of FDI inflows. As previously discussed, the given observation supports the findings of Eckel (2003), Lemoine (1998), Bayraktar & Sayek (2017), and Stopford (1998) and goes in line with the theory of factors of FDI by presented by Dunning (1993).

Moreover, when analysing the Multiple regression model for non-economic variables, and considering coefficients of explanatory variables, none of the variables showed statistical significance ($Education\ p(0.192) > 0.05$, Unemployment $p(0.406) > 0.05$) which indicates that the two non-economic variables selected in this model and for the given years do not show an effect to FDI inflows in Ireland during the same period. Therefore, the given observation supports the findings of Narula (1996) and Cleeve et al. (2015), where the authors pointed out that even though education appeared to have a positive correlation in their models, it was not enough to be considered as significant. Contrary to the findings of Jimenez et al. (2011) and

Pearson et al. (2012) in regards of unemployment, the results show that there is a positive correlation between the variables, however, there is not enough evidence to suggest that unemployment plays a key role as a determinant of FDI inflows.

It is important to highlight that the correlation obtained from most of the variable coefficients turned out as it was predicted by the author (except for unemployment), nevertheless, their significance level did not go in line with the expectations.

Determinant	Measurement	Expected relation (+/-)	Correlation obtained from model
Dependent variable			
FDI	Measured in USD and as a share of GDP (%)		
Independent variables			
Market size	GDP, Total USD/capita	+	+
Labour costs	Unit labour costs, % change (previous period)	-	-
Infrastructure	% of GDP for total inland investment (€)	+	+
Inflation (CPI)	Annual growth rate (%)	-	-
Education	25-34 year-olds with a 3rd level education (% in the same age group)	+	+
Unemployment	Total labour force (%)	-	+
Corporate Tax rate	Annual Tax rate (%)	-	-

Table 10 Variable's expected correlation vs model results

Chapter 5: Conclusion

5.1 Dissertation Conclusion

Ireland's success in attracting FDI during the past two decades can be attributed to a range of different factors. While some part of the literature suggests that only tax incentives influence the attraction of FDI into Ireland, other part of the literature argues that there are more elements that have influenced FDI into the country. Therefore, this research aimed to identify which have been the most significant determinants that have prompted FDI inflows into Ireland from the period 1998 through 2018. Based on a quantitative analysis of secondary data collected from reliable sources and by constructing multiple regression models for economic and non-economic factors, it can be concluded that although factors such GDP, Infrastructure, Inflation, Education, unemployment and corporate Tax rate have a visible correlation with FDI, only Labour costs showed significant results that statistically associate this variable to the dependent variable of FDI inflows. These results indicate that for the past two decades, the cost of labour in Ireland has had a negative influence in FDI inflows, supporting the theory that foreign investment activities are discouraged by increases in labour costs based on the cost seeking motive of MNEs.

The findings of the paper could be summarized as follows. An overall of nine linear models were applied in order to test FDI inflows on explanatory variables and the Pearson's correlation coefficient was applied in order to measure the association between the variables and FDI inflows in Ireland. As for market size, Infrastructure and education, the econometric evidence shows that there is a moderate positive correlation between the variables and FDI inflows. However, the results from the regression model imply that there is not enough evidence that demonstrates that the variables were significant factors of FDI during the years in investigation. Regarding unemployment, a weak positive correlation was found, yet, the regression model confirmed no statistical significance with FDI inflows. When looking at Inflation, there was a weak negative correlation which follows the general theory that a country with high inflation normally affects FDI negatively. Nevertheless, the linear regression model did not show sufficient evidence to confirm this. Similar results were found when analysing corporate tax rate, the correlation test showed a negative association, however, the evidence in the regression model showed no statistical relationship between the variable and FDI inflows. This reveals that the relationship between the variables is not conclusive and goes against the perspective that countries with lower tax rates attract greater levels of foreign investment.

On the other hand, an increase in the labour costs (measured as unit labour costs), induced a decrease in FDI through the years in investigation. Therefore, this suggests that labour market

regulatory burdens have a negative impact on FDI. However, it is important to note that the reduction of unit labour costs could cause a shrink in the purchasing demand for the population, hence, while this factor showed significant evidence in the model that links it to FDI inflows, there author finds important to highlight that there could be other ways for an economy to compete by increasing productivity or improving technology, rather than weakening employee's labour rights.

5.2 Contribution and Implications

One of the main contributions of this research is that this regression model can also be tested when analysing determinants from other countries as it is not limited to Ireland. The model could contribute to identify different economic and non-economic factors that can be statistically significant to attract FDI into different economic areas, all based on the correlation and regression results and hypothesis testing. Once the factors have been identified as statistically significant, policy-makers and institutional actors of the country being analysed, could focus on the development of those specific elements in order to attract FDI within their boundaries.

This study also provides valuable information and implications for Irish policy-makers, as the research highlights the impact of the different elements analysed and their relationship with FDI attraction. For example, labour costs, which according to the model have had an important role on FDI inflows. As previously mentioned, rising labour costs can have an impact on companies as this could create barriers to investment, simultaneously, the unit labour costs associated with regulatory burdens in the labour market can block the flow of FDI, which could then lead to a reduction in the compensation of labour. Therefore, government and policy-makers in the country should evaluate and carefully critique the different outcomes when trying to influence these variables in order to attract more FDI into Ireland.

5.3 Research Limitation and Recommendations for future research

As discussed, the aim of this research was to analyse which are Ireland's economic and non-economic characteristics that attract FDI. However, one of the major limitations of this study was the small selection of independent variables that could influence this attraction as well as the time constraint, in which only twenty years of data were analysed. Consequently, the results presented in this paper may not be adequate as there might be other important determinants that were not included in the model as well as a longer period to be investigated.

Therefore, there is scope for future research. For further studies, it is suggested to analyse a different period of time, for example prior and early years of the Celtic Tiger and possibly include other economic and non-economic variables in the regression models in order to obtain more valuable results.

Moreover, it would be suggested to test the causality effect between FDI inflows and the independent variables selected for this study in order to determine if on the contrary, FDI inflows significantly affect the variables and should be treated as an independent variable in the model.

Finally, it would be valuable to analyse how FDI determinants in Ireland have changed through the years.

References

Addison, T. & Heshmati, A., 2003. *The New Global Determinants of FDI Flows to Developing Countries,* Helsinki: World Institute for Development Economics Research.

Agarwal, S. & Ramaswami, S., 1992. Choice of foreign market entry mode: Impact of ownership, location and internalization factors. *Journal of International Business*, pp. 1-27.

Aitken, B. J., Harrison, A. E. & Lipsey, R. E., 1996. Wages and foreign ownership: A comparative study of Mexico, Venezuela and United States. *Journal of International economics,* Issue 40, pp. 345-371.

Amal, M., 2010. *Determinants of Foreign Direct Investment in Latin America,* Blumenau: Universidade Regional de Blumenau.

Apuke, O. D., 2017. Quantitative research methods: a synopsis approach. *Arabian Journal of Business and Management review,* 6(10), pp. 40-47.

Ardiyanto, 2012. *Foreign Direct Investment and Corruption,* Fort Collins: Colorado State University.

Baibekova, K. & Nguyen, A., 2010. *Determinants of Foreign Direct Investment in Ireland,* Jönköping: Jönköping International Business School.

Bajrami, H. & Zeqiri, N., 2019. Theories of foreign direct investment and the significance of human capital. *International Journal of Business and Management* , VII(1), pp. 11-24.

Barrel, R. & te Velde, D. W., 1999. *Labour Productivity and convergence within Europe: East German and Irish experience,* London: National Institute of Economic and Social Research.

Barry, F., 2004. Export-platform foreign direct investment: the Irish experience. *EIB Papers,* IX(2), pp. 8-37.

Barry, F., 2011. *Foreign Investment and the Politics of Export Profits Tax Relief 1956,* Dublin: Trinity College Dublin.

Barry, F. & Bradley, J., 1997. FDI and Trade: the Irish Host-Country experience. *The Economic Journal,* 107(11), pp. 1798-1811.

Barry, F., Görg, H. & Strobl, E., 2005. *Foreign Direct Investment and Wages in Domestic Firms: Productivity Spillovers vs Labour-Market Crowding Out,* s.l.: International Journal of the Economics of Business.

Bayraktar, B. & Sayek, S., 2017. *Labor costs and Foreign direct investment: A panel VAR approach,* Ankara: Hacettepe University.

Beer, F. M. & Cory, S. N., 1996. The locational determinants of U.S Foreign Direct Investment in the European Union. *Journal Of Financial And Strategic Decisions,* IX(2), pp. 43-51.

Bellak, C., Leibrecht, M. & Riedl, A., 2007. *Labour costs and FDI flows into Central and Eastern European Countries: A survey of the literature and empirical evidence,* Vienna: Structural Change and Economic Dynamics.

Bennet, R., 2005. *Theory and evidence: The Determinants of FDI in Sub-Saharan Africa.,* New York: New York University.

Billington, N., 1999. The Location of Foreign Direct Investment: An Empirical Analysis. *Applied Economics,* 31(12), pp. 65-76.

Brooks, H., 2010. Closing Development Gaps: Challenges and Policy Options. *Asian Development Review,* 27(2), pp. 1-28.

Buckley, P. & Casson, M., 1976. *The future of the Multinational Enterprise,* London: Homes & Meier.

Burton, A. L., 2020. *OLS Linear Regression,* Cincinnati: University of Cincinnati.

Cassidy, J., 2012. *Is corporate tax the most significant determinant for FDI in Ireland by ICT companies from the US?,* Letterkeny: Letterkenny Institute of Technology.

Central Statistics Office, 2016. *Productivity in Ireland 2016.* [Online]
Available at: https://www.cso.ie/en/releasesandpublications/ep/p-pii/productivityinireland2016/ulc/
[Accessed 1 August 2020].

Chakrabati, A., 2001. The Determinants of Foreign Direct Investment: Sensitivity Analyses of Cross-Country. *International Review for Social Sciences,* 54(1), pp. 89-114.

Cheng Lai, Y. & Sarkar, S., 2011. Labour Cost & foreign direct investment-Evidence from India. *The Indian Journal of Industrial Relations,* 46(3), pp. 396-409.

Citizens Information Board, 2020. *Consumer Price Index.* [Online]
Available at:
https://www.citizensinformation.ie/en/consumer_affairs/consumer_protection/pricing/consu

mer_price_index.html#:~:text=The%20CPI%20is%20the%20official,an%20ongoing%20basis%20every%20month.
[Accessed 21 June 2020].

Cleeve, A., Debrah, E. & Tiheyis, Z., 2015. *Human Capital and FDI Inflow: An Assesment of the African Case,* s.l.: World Development.

Cleeve, E., 2008. How effective are fiscal incentives to attract FDI to Sub-Saharan Africa?. *Journal of Developing Areas,* 42(1), pp. 135-153.

Corporate Finance Institute, 2020. *What is Unemployment?.* [Online]
Available at:
https://corporatefinanceinstitute.com/resources/knowledge/economics/unemployment/
[Accessed 21 June 2020].

Creswell, J. W., 2003. *Research Design: Qualitative, quantitative and mixed methods approaches.* 1st ed. Thousand Oaks: Sage Publications, Inc.

DeFusco, R. A., McLeavey, D. W. & Pinto, J. E., 2007. *Quantitative Investment Analysis.* 2nd ed. Hoboken: John Wiley & Sons, Inc.

Denisia, V., 2010. Foreign Direct Investment Theories: An overview of the Main FDI Theories. *European Journal of Interdisciplinary Studies,* pp. 53-59.

Department of Business, Enterprise and Innovation, 2020. *Foreign Direct Investment (FDI).* [Online]
Available at: https://dbei.gov.ie/en/What-We-Do/Trade-Investment/Foreign-Direct-Investment-FDI-/
[Accessed 25 May 2020].

Desai, M. A., 2008. *The Decentering of the Global Firm,* Cambridge: Harvard University and NBER.

Dhakal, C., 2019. Interpreting the Basic Outputs (SPSS) of Multiple Linear Regression. *International Journal of Science and Research (IJSR),* VIII(6), pp. 1448-1452.

Dunning, J., 1993. *Multinational Enterprises and the global economy.* Boston: Addison-Wesley Publishing Company.

Dunning, J. H., 1973. The determinants of international production. *Oxford,* Issue 25, pp. 289-335.

Dunning, J. & Lundan, S., 2008. *Multinational enterprises and the global economy.* Massachusetts: Edward Elgar Publishing Limited.

Eckel, C., 2003. Fragmentation, efficiency-seeking FDI, and employment. *Review of International Economics,* Issue 11, pp. 317-331.

Epperlein, A., 2004. *Foreign Direct Investment in Ireland under consideration of the Financial Services sector,* Hamburg: German National Library.

Fitzgerald, J., 1999. *Understanding Ireland's Economic Success,* Dublin: The Economic and Social Research Institute.

Frenkel, M., Funke, K. & Stadman, G., 2004. A panel analysis of bilateral flows to emerging economies. *Economic Systems,* 28(3), pp. 281-300.

Geert van den Berg, R., 2020. *Pearson Correlations - Quick Introduction.* [Online] Available at: https://www.spss-tutorials.com/pearson-correlation-coefficient/ [Accessed 19 July 2020].

Graham, J. & Spaulding, B., 2012. *Foreign Direct Investment: Albanian case.* [Online] Available at: http://orintonlawfirm.com/index.php?option=com_content&view=article&id=143:understanding-foreign-direct-investment-fdi&catid=30&Itemid=389 [Accessed 7 June 2020].

Grant Thornton, 2014. *Foreign Direct Investment in Ireland,* Dublin: Grant Thornton.

Grubert, H. & Mutti, J., 1991. Taxes, tariffs and transfer pricing in multinational corporate decision making. *The Review of Economics and Statistics,* 73(2), pp. 285-293.

Gunnigle, P. & McGuire, D., 2001. Why Ireland? A Qualitative Review of the Factors Influencing the Location of US Multinationals in Ireland. *The Economic and Social Review,* 32(1), pp. 43-67.

Hacıgüzeller, P., 2020. *Archaeological spatial analysis : a methodological guide,* New York: Gillings.

Hartman, D. G., 1984. *Tax Policy and Foreign Direct Investment,* Cambridge: National Bureau of Economic Research.

Hennart, J., 1982. *A theory of multinational enterprise,* Ann Arbor: University of Michigan Press.

Jimenez, A., Duran, J. J. & De la Fuente, J. M., 2011. Political risk as a determinant of investment by Spanish multinational firms in Europe. *Applied Economics Letters,* pp. 789-793.

Kasapi, K. et al., 2019. The Impact of Macroeconomic Factors on FDI Attractiveness: Romania, Slovakia and Greece in Comparison. In: P. Dobrescu, ed. *Development in Turbulent Times.* Patras: University of Patras, pp. 133-151.

Kersan-Skabic, 2013. Institutional development as a determinant of FDI attractiveness in Southeast Europe. *Drustveja Istraživanja – Journal of General Social Issues,* 22(12), pp. 215-235.

Ketokivi, M. & Mantere, S., 2010. Two strategies for inductive reasoning in organizational research. *Academy of Management Review,* 35(2), pp. 315-333.

Kimino, S., Saal, D. S. & Driffield, N., 2007. Macro Determinants of FDI Inflows to Japan: An Analysis of Source Country Characteristics. *The World Economy,* 30(3), pp. 446-469.

Kok, R. & Ersoy, B., 2009. Analyses of FDI determinants in developing countries. *International Journal of Social Economics,* Volume 36, pp. 105-123.

Koyuncu, C. & Unver, M., 2016. *The Impact of Infrastructure on FDI Inflows: A Panel Data Analysis,* Bilecik: International Osmaneli Social Sciences Congress.

Kusluvan, S., 1988. *A Review of Theories of Multinational Enterprises,,* Istanbul: D.E.Ü.İ.İ.B.F. Dergisi .

Lemoine, F., 1998. *Integrating Central and Eastern Europe in the European Trade and Production Network,* Berkeley: Berkeley publications.

Mattimoe, R., 2000. A Historical Profile of the Irish Economy and Irish Government Economic Policies with regard to the Enterprise Sector. *International New Enterprise Developments,* II(2), pp. 79-108.

McCall, B., 2018. *Sustaining the foreign direct investment pipeline.* [Online] Available at: https://www.irishtimes.com/special-reports/american-thanksgiving/sustaining-the-foreign-direct-investment-pipeline-1.3702978 [Accessed 27 July 2020].

McNall, S. G. & Margolin, S. O., 1977. Multinational Corporations in Latin America: The Search for Consumers and Raw Materials. *Studies In Comparative International Development,* XII(3), pp. 65-85.

Miningou, E. & Tapsoba, S., 2017. *Education Systems and Foreign Direct Investment: Does External Efficiency Matter? ,* s.l.: International Monetary Fund.

Moosa, I., 2002. *Foreign Direct Investment Theory, Evidence and Practice,* Melbourne: RMIT University.

Mork, R. & Yeung, B., 1992. Internalization: An event study test. *Journal of International Economics,* pp. 41-46.

Mun, H.-C., 2016. *Foreign Direct Investment: A Global Perspective.* 1st ed. Singapore: World Scientific Publishing Co..

Narula, R., 2010. *Multinational Enterprises, Development and Globalization: Some Clarifications and a Research Agenda,* Oxford: Oxford Development Studies.

Neary, P. J., 2009. *Foreign Direct Investment: The OLI Framework,* Oxford: University of Oxford.

Noorbakhsh, F. & Paloni, A., 2001. Human Capital and FDI Inflows to Developing Countries: New Empirical Evidence. *World Development,* 29(9), pp. 1593-1610.

OECD, 1993. *Absolute levels of Cost-Competitiveness: Methodological Aspects and Preliminary estimates,* Paris: OECD.

OECD, 2008. *Tax Effects on Foreign Direct Investment,* s.l.: Organisation for Economic Co-operation and Development.

OECD, 2020. *Foreign Direct Investment (FDI).* [Online]
Available at: https://www.oecd-ilibrary.org/finance-and-investment/foreign-direct-investment-fdi/indicator-group/english_9a523b18-en
[Accessed 20 June 2020].

Ozkan, N. E., 2011. Determinants of FDI Inflows and Policy Implications: A Comparative Study for the Enlarged EU and Candidate Countries. *Emerging Markets Finance and Trade,* 47(4), pp. 71-85.

Pearson, D., Nyonna, D. & Kim, K.-J., 2012. The Relationship between Economic Freedom, State Growth and Foreign Direct Investment in US States. *International Journal of Economics and Finance,* IV(10), pp. 140-146.

Petrović, M., Janković, V. & Kostadinović, I., 2017. Market size as a determinant of the foreign direct investment inflows in the western balkans countries. *Economics and Organization*, XIV(2), pp. 93-107.

Poonam, R., 2018. *The Relationship Between Foreign Direct Investment and Tertiary Education in Developing Countries,* Georgetown : Georgetown University.

Popovici, O. C. & Călin, A., 2014. FDI theories. A location-based approach. *The Romanian Economic Journal*, XVII(53).

Pung, H., 2016. *Determinants of FDI into Developing Countries,* Bloomington: Illinois Wesleyan University.

Quazi, R., 2007. Economic Freedom and Foreign Direct Investment in East Asia. *Journal of the Asia Pacific*, XII(3), pp. 329-344.

Ray, E. J., 1989. The determinandts of foreign direct investment in the United States. *University of Chicago: Trade Policies for International Competitiveness,* pp. 53-84.

Rios-Morales, R. & Brennan, L., 2007. *Ireland's Foreign Direct Investment Competitive Advantage and Japanese Outward Foreign Direct Investment,* s.l.: Asia Pacific Business Review.

Root, F. & Ahmed, A., 1978. *The influence of policy instruments on manufacturing Direct Foreign investment in developing countries,* s.l.: Journal of International Business Studies.

Ruane, F. & Ugur, A., 2002. *Foreign direct investment and productivity spillovers in the Irish manufacturing industry: Evidence from firm level panel data,* Dublin: Department of Economics, Trinity College Dublin.

Satya, D., 2002. *Foreign direct investment and the relative wage in a developing economy,* s.l.: Journal of Development Economics.

Saunders, M. N., Lewis, P. & Thornhill, A., 2019. *Research Methods for business students.* 8th ed. Harlow: Pearson Education Limited.

Shenkar, O., Luo, Y. & Chi, T., 2015. Foreign Direct Investment: theory and application. In: *International Business.* 3rd ed. London: Taylor & Francis Ltd, pp. 59-91.

Siedschlag, I. & Koecklin, M., 2019. *The Impact of the UK's EU Exit on the Attractiveness of Northern Ireland to FDI and Associated Job Creation Effects,* Dublin: Economic and Social Research Institute Dublin, Department of Economics, Trinity College Dublin.

Singhania, M. & Gupta, A., 2011. Determinants of foreign Direct investment in India. *Journal of International Trade Law and Policy,* 10(1), pp. 64-82.

Sultan, M., Pandurengan, M. & Kalam, K., 2019. Foreign Direct Investment Determinants in Malaysia. *British Journal of Business Design & Education,* 11(1).

The World Bank, 2020. *What is the difference between Foreign Direct Investment net inflows and net outflows?.* [Online]
Available at: https://datahelpdesk.worldbank.org/knowledgebase/articles/114954-what-is-the-difference-between-foreign-direct-inve
[Accessed 8 July 2020].

Torrisi, C., Delaunay, C. J., Kocia, A. & Lubiencka, M., 2008. FDI in Central Europe: Determinants and Policy Implication. *Journal of International Finance and Economics,* VIII(4), pp. 136-147.

UNCTAD, 2004. *World Investment Report: The Shift Towards Services,* New York: United Nations Conference on Trade and Development.

Valli, M. & Masih, M., 2014. *Is there a causality between inflation and FDI in an 'inflation targeting' regime? Evidence from South Africa,* Munich: Munich Personal RePEc Archive.

Wang, Y., Gunnigle, P. & Lavelle, J., 2018. *Chinese firms in Ireland: Profile, motives and impact of human resource and industrial relations factors,* s.l.: European Journal of International Management.

Watsham, T. & Parramore, K., 2002. *Quantitative methods in Finance.* London: Thomson Learning.

Wei, S.-J., 2000. How taxing is corruption on International Business. *Review of Economics and Statistics,* pp. 1-11.

Appendix

Model 1. FDI inflows as a dependent variable of Market Size

$$FDI = \alpha + \beta_1 Market\ Size + \varepsilon$$

Descriptive Statistics

	Mean	Std. Deviation	N
FDI	20.0271	16.23294	20
GDP	46652.2300	16310.08556	20

Correlations

		FDI	GDP
Pearson Correlation	FDI	1.000	.375
	GDP	.375	1.000
Sig. (1-tailed)	FDI		.047
	GDP	.047	
N	FDI	20	20
	GDP	20	20

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	GDP[b]		Enter

a. Dependent Variable: FDI

b. All requested variables entered.

Model Summary[b]

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.375[a]	.141	.096	15.43772	.141	3.114	1	19	.094

a. Predictors: (Constant), GDP

b. Dependent Variable: FDI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	742.026	1	742.026	3.114	.094[b]
	Residual	4528.142	19	238.323		
	Total	5270.168	20			

a. Dependent Variable: FDI

b. Predictors: (Constant), GDP

Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Correlations		
Model		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part
1	(Constant)	2.605	10.433		.250	.806	-19.231	24.440			
	GDP	.000	.000	.375	1.765	.094	.000	.001	.375	.375	.375

a. Dependent Variable: FDI

Appendix 1 Regression Analysis FDI as a dependent variable of Market Size

Model 2. FDI inflows as a dependent variable of Labour Costs

$$FDI = \alpha + \beta_1 Labour\ Costs + \varepsilon$$

Descriptive Statistics

	Mean	Std. Deviation	N
FDI	20.0271	16.23294	20
LabourCosts	.4481	5.46786	20

Correlations

		FDI	LabourCosts
Pearson Correlation	FDI	1.000	-.695
	LabourCosts	-.695	1.000
Sig. (1-tailed)	FDI		.000
	LabourCosts	.000	
N	FDI	20	20
	LabourCosts	20	20

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	LabourCosts[b]		Enter

a. Dependent Variable: FDI

b. All requested variables entered.

Model Summary[b]

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.695[a]	.483	.455	11.98072	.483	17.716	1	19	.000

a. Predictors: (Constant), LabourCosts

b. Dependent Variable: FDI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2542.954	1	2542.954	17.716	.000[b]
	Residual	2727.214	19	143.538		
	Total	5270.168	20			

a. Dependent Variable: FDI

b. Predictors: (Constant), LabourCosts

Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Correlations		
Model		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part
1	(Constant)	20.951	2.624		7.986	.000	15.460	26.442			
	LabourCosts	-2.062	.490	-.695	-4.209	.000	-3.088	-1.037	-.695	-.695	-.695

a. Dependent Variable: FDI

Appendix 2 Regression Analysis FDI as a dependent variable of Labour Costs

Model 3. FDI inflows as a dependent variable of Infrastructure

$$FDI = \alpha + \beta_1 Infrastructure + \varepsilon$$

Descriptive Statistics

	Mean	Std. Deviation	N
FDI	13.4400	10.31099	7
Infrastructure	1.1688	.05980	7

Correlations

		FDI	Infrastructure
Pearson Correlation	FDI	1.000	.408
	Infrastructure	.408	1.000
Sig. (1-tailed)	FDI		.182
	Infrastructure	.182	
N	FDI	7	7
	Infrastructure	7	7

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Infrastructure[b]		Enter

a. Dependent Variable: FDI

b. All requested variables entered.

Model Summary[b]

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.408[a]	.167	.000	10.31083	.167	1.000	1	5	.363

a. Predictors: (Constant), Infrastructure

b. Dependent Variable: FDI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	106.332	1	106.332	1.000	.363[b]
	Residual	531.566	5	106.313		
	Total	637.899	6			

a. Dependent Variable: FDI

b. Predictors: (Constant), Infrastructure

Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Correlations		
Model		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part
1	(Constant)	-68.839	82.363		-.836	.441	-280.560	142.883			
	Infrastructure	70.393	70.387	.408	1.000	.363	-110.542	251.328	.408	.408	.408

a. Dependent Variable: FDI

Appendix 3 Regression Analysis FDI as a dependent variable of Infrastructure

Model 4. FDI inflows as a dependent variable of Inflation

$$FDI = \alpha + \beta_1 Inflation + \varepsilon$$

Descriptive Statistics

	Mean	Std. Deviation	N
FDI	20.0271	16.23294	20
Inflation	1.9157	2.42505	20

Correlations

		FDI	Inflation
Pearson Correlation	FDI	1.000	-.307
	Inflation	-.307	1.000
Sig. (1-tailed)	FDI		.088
	Inflation	.088	
N	FDI	20	20
	Inflation	20	20

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Inflation[b]		Enter

a. Dependent Variable: FDI

b. All requested variables entered.

Model Summary[b]

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.307[a]	.094	.046	15.85104	.094	1.975	1	19	.176

a. Predictors: (Constant), Inflation

b. Dependent Variable: FDI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	496.313	1	496.313	1.975	.176[b]
	Residual	4773.855	19	251.256		
	Total	5270.168	20			

a. Dependent Variable: FDI

b. Predictors: (Constant), Inflation

Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Correlations		
Model		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part
1	(Constant)	23.962	4.450		5.385	.000	14.648	33.277			
	Inflation	-2.054	1.462	-.307	-1.405	.176	-5.113	1.005	-.307	-.307	-.307

a. Dependent Variable: FDI

Appendix 4 Regression Analysis FDI as a dependent variable of Inflation

Model 5. FDI inflows as a dependent variable of Education

$$FDI = \alpha + \beta_1 Education + \varepsilon$$

Descriptive Statistics

	Mean	Std. Deviation	N
FDI	20.0271	16.23294	20
Education	42.3038	8.99115	20

Correlations

		FDI	Education
Pearson Correlation	FDI	1.000	.317
	Education	.317	1.000
Sig. (1-tailed)	FDI		.080
	Education	.080	
N	FDI	20	20
	Education	20	20

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Education[b]		Enter

a. Dependent Variable: FDI

b. All requested variables entered.

Model Summary[b]

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.317[a]	.101	.053	15.79342	.101	2.129	1	19	.161

a. Predictors: (Constant), Education

b. Dependent Variable: FDI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	530.960	1	530.960	2.129	.161[b]
	Residual	4739.208	19	249.432		
	Total	5270.168	20			

a. Dependent Variable: FDI

b. Predictors: (Constant), Education

Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Correlations		
Model		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part
1	(Constant)	-4.216	16.970		-.248	.806	-39.733	31.302			
	Education	.573	.393	.317	1.459	.161	-.249	1.395	.317	.317	.317

a. Dependent Variable: FDI

Appendix 5 Regression Analysis FDI as a dependent variable of Education

Model 6. FDI inflows as a dependent variable of Unemployment

$$FDI = \alpha + \beta_1 Unemployment + \varepsilon$$

Descriptive Statistics

	Mean	Std. Deviation	N
FDI	20.0271	16.23294	20
Unemployment	8.2057	4.05567	20

Correlations

		FDI	Unemployment
Pearson Correlation	FDI	1.000	.191
	Unemployment	.191	1.000
Sig. (1-tailed)	FDI		.203
	Unemployment	.203	
N	FDI	20	20
	Unemployment	20	20

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Unemployment[b]		Enter

a. Dependent Variable: FDI

b. All requested variables entered.

Model Summary[b]

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.191[a]	.037	-.014	16.34730	.037	.721	1	19	.406

a. Predictors: (Constant), Unemployment

b. Dependent Variable: FDI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	192.720	1	192.720	.721	.406[b]
	Residual	5077.448	19	267.234		
	Total	5270.168	20			

a. Dependent Variable: FDI

b. Predictors: (Constant), Unemployment

Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Correlations		
Model		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part
1	(Constant)	13.747	8.211		1.674	.110	-3.440	30.933			
	Unemployment	.765	.901	.191	.849	.406	-1.121	2.652	.191	.191	.191

a. Dependent Variable: FDI

Appendix 6 Regression Analysis FDI as a dependent variable of Unemployment

Model 7. FDI inflows as a dependent variable of Corporate Tax rate

$$FDI = \alpha + \beta_1 Corporate\ Tax\ Rate + \varepsilon$$

Descriptive Statistics

	Mean	Std. Deviation	N
FDI	20.0271	16.23294	20
CorpTaxRate	15.2381	5.76112	20

Correlations

		FDI	CorpTaxRate
Pearson Correlation	FDI	1.000	-.123
	CorpTaxRate	-.123	1.000
Sig. (1-tailed)	FDI		.297
	CorpTaxRate	.297	
N	FDI	20	20
	CorpTaxRate	20	20

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	CorpTaxRate[b]		Enter

a. Dependent Variable: FDI

b. All requested variables entered.

Model Summary[b]

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.123[a]	.015	-.037	16.52797	.015	.292	1	19	.595

a. Predictors: (Constant), CorpTaxRate

b. Dependent Variable: FDI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	79.869	1	79.869	.292	.595[b]
	Residual	5190.299	19	273.174		
	Total	5270.168	20			

a. Dependent Variable: FDI

b. Predictors: (Constant), CorpTaxRate

Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Correlations		
Model		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part
1	(Constant)	25.313	10.419		2.429	.025	3.505	47.121			
	CorpTaxRate	-.347	.642	-.123	-.541	.595	-1.690	.996	-.123	-.123	-.123

a. Dependent Variable: FDI

Appendix 7 Regression Analysis FDI as a dependent variable of Corp. Tax rate

Year	FDI net Inflows (% of GDP)	Market Size USDperCapita	Unit Labour costs, % change, previous period	Infrastructure (% of GDP)	Inflation (CPI) - Annual growth rate (%)	Education 25-34 year olds with a 3rd level education (% in same age group)	Unemployment rate (% of Total labour force)	Corporate Tax rate (%)
1998	9.84	25049.48	6.03	-	2.42	27.65	7.55	32.0
1999	18.45	26995.53	1.17	-	1.63	28.32	5.92	28.0
2000	25.82	30192.31	3.02	-	5.59	29.05	4.50	24.0
2001	8.84	32566.89	5.79	1.122529519	4.87	29.80	4.18	20.0
2002	22.92	35212.95	0.74	1.226143175	4.61	33.41	4.73	16.0
2003	13.87	36234.04	5.33	1.211212586	3.49	35.21	4.85	12.5
2004	-5.47	38697.38	1.82	1.118204486	2.20	37.06	4.74	12.5
2005	22.21	40437.08	4.40	1.084680429	2.43	39.63	4.63	12.5
2006	9.51	44236.51	3.96	1.184353908	3.93	40.67	4.78	12.5
2007	22.20	46743.14	4.87	1.234776129	4.90	42.46	5.00	12.5
2008	8.47	44219.78	8.16	-	4.06	44.09	6.78	12.5
2009	22.84	41618.63	-4.03	-	-4.48	45.06	12.65	12.5
2010	16.99	43331.07	-8.07	-	-0.92	47.53	14.56	12.5
2011	9.98	44870.46	-2.08	-	2.56	48.32	15.40	12.5
2012	18.20	46277.63	0.25	-	1.70	47.43	15.51	12.5
2013	20.95	47936.39	1.15	-	0.51	49.21	13.78	12.5
2014	33.58	51125.92	-4.98	-	0.18	51.07	11.91	12.5
2015	80.79	69147.03	-15.26	-	-0.29	50.77	9.94	12.5
2016	26.35	72017.76	2.37	-	0.01	52.00	8.41	12.5
2017	17.37	78211.41	-2.35	-	0.34	53.47	6.73	12.5
2018	16.86	84575.44	-2.88	-	0.49	56.17	5.77	12.5

Appendix 8 Variable's data presented as annual rate