UNIVERSITY
OF MACEDONIA

School of Economic Science

Intermediate program of postgraduate studies in Economic Science.

Master's Thesis

'' *The long term contribution of FDI and other interrelated factors to Growth* ''

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Submitted as required for the postgraduate degree in Economic Science in Applied Economics and Finance

October 2018

Acknowledgments

Abstract

By the end of WWII Foreign Direct Investments gained an important role in the International Economy. It is a real fact that FDI-related studies have contributed to the better understanding of the economic development. At the same time they are a part of the process of integrating many countries into the capitalistic system as they are a capital flow mechanism in the economy.

The aim of the present Master thesis is to analyze FDI at a theoretical level, also to study their effects on GDP. In the meanwhile, other variables are included in the model such as the financial sector, imports and exports. Afterwards, it used ARDL method to study the causative effect from the independent variables to the dependent one, more detailed conclusions are drawn for each country and finally the case of the basic model with GDP dependent variable is observed with the use of Wald test if the dependent variables are thought to be important for the model. Is GDP affected by FDI and the rest of the variables long-term and in the short –term? And how do GDP affected and are affected by rest them?

Key words: FDI, GDP, ARDL, long-term, short-term, causative effect

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Introduction

The reason why rich bibliography on FDI haw been developed is that they are considered to be important for each country's economy. Countries' ambition for FDI attraction is connected with the expectation that they will lead to out flow increase, production sector improvement, competitiveness and enterprise increase and consequently social and economical development.

This Master thesis deals with the long-term contribution of FDI and other variables in countries' financial development. More specific, two groups of developed and developing countries are studied, examining the influence of the independent variables to the dependent one and their impact for each country in detail. Finally, it is observed how independent variables are thought to essential for the model or not.

The first chapter consists of a theoretical approach to FDI. It starts with the internal and determinants of multinational activity. Then, the key determinants the definition and the forms of FDI follow. At the same time the Uppsala Internalization model other important FDI theories are analyzed. In the second part of this chapter there is a bibliographic review of FDI research.

The second chapter analyzes the methodology used in this project. More detailed, the study began with the use of Unit Root Test, method ARDL and Wald Test. In the third chapter there is information for the facts which have been used for this paper and its study. More clearly, two groups of countries were made developed countries and developing ones. The group of developed countries consists of 25 and this of developing of 19. The facts' frequency is yearly while the sample period is from 1970 to 2016. Needless to say that data was drawn by the World Bank. What is more in this chapter the analysis of the empirical study is presented. Initially, for each group, with the use of Unit Root test we find out for each variable whether it is $I(0)$ or $I(1)$ or both. In this case we see that the variables are $I(0)$ and $I(1)$, for the same reason the most suitable method for our study was ARDL. Later, with the use of Cross-Section Short Run Coefficient, the study focused on each country more detailed. Finally the use of Wald Test we are able to see how important is each variable for the model. Last, in the fourth chapter there are the conclusions of the study.

CHAPTER 1

Theory and Bibliographic Review

Part A: Theory

1.1.1 Internationalization of multinational activity

Papageorgiou and Chionis (2003), report that it is a fact that multinational activities are nowadays part of the main segments of global economic activity, directly influencing developments in globalization while being an integral part of modern economic activity. For example, it is a fact that today a significant number of products or consumed services provided in Europe are of American origin. Multinational activity can be discouraged by considering that part of these products is produced in European countries by US FDI. Alternatively, European demand could be covered by exports from American companies based in the United States or from the European industry (Krugman and Obstfeld, 1991).

According to Dunning (1993), multinational enterprise "is a company that carries out a FDI and owns or controls activities in more than one country. According to Papageorgiou and Chionis (2003), this definition gives two characteristics that distinguish the multinational from the national enterprise. In one case, multinational companies coordinate production in a different number of businesses, making it possible to internalize this coordination process. In the other case, a large proportion of financial transactions take place between different national borders.

In order to explain the phenomenon of the expansion of multinational enterprises, Papageorgiou and Chionis (2003) report that a series of factors are proposed in the bibliography of the International Finance. It is a fact that the development of organizational business models and technology has helped to expand and operate transnational.

More specifically, modern forms of administration, the development of communication technologies, and the cheaper and safer distribution networks have provided the opportunity for adequate coordination and internal integration of the different production segments, which are essential for the successful management of a multinational enterprise.

It is noteworthy that in many cases governments subsidize investments abroad, providing insurance coverage against some risks that may arise, and in many cases also subsidizing part of the investment. At the same time, the progressive

elimination of barriers to capital flow has significantly facilitated FDI. In the same context, the reduction in customs duties has led to more profitable production in a foreign country compared to exports, while standardization of the production process even in the case of products incorporating high rates of research and development has made it possible to transfer even in developing countries.

At this point, we will note the five different types of organization of a multinational in order to operate abroad:

1) **Vertical form**: The multinational makes a division of production in different parts of the world.

2) **Horizontal form**: Moves the same (integrated activity) producing similar goods in different countries.

3) **Form of the Group**: In this case the business activity is of interest to a large number of companies.

4) **Form of business partnerships**: In this case the various partners participate in the total share capital of a business.

5) **Form of Strategic Alliance**: In this case even between competing companies abroad it can be included among the capabilities of the Multinational Company.

1.1.2 The determinants of multinational activity.

According to Papageorgiou and Chionis (2003) multinational corporations which are legal persons, joint-stock companies in this case which develop productive activity in more than one country. They may take the form of a subsidiary or an affiliate or a simple participation in the share capital of another foreign company. At this point we will analyze the two most interesting and common forms of organization of affiliated companies abroad. The vertical form when the multinational company's activity may take the form of vertically integrated production and horizontal production.

- Vertical form: In the vertical category, the parent decides to produce certain inputs that are used at the final stage of production by another multinational company. In vertical form the administration is located only in the country where the parent company is located. The determining factor is the availability of the productive factors of the host country in relation to the productive factors in the country of destination. It is very common that countries with a significant labor

force surplus and therefore low wages receive labor-intensive investments. In this case, the subsidiary will take over that part of the production where it requires higher levels of labor intensity.

- Horizontal form: In the case of the horizontal form, multinationals transfer the similar production line to the rest of the world with the aim of producing final products and covering the internal market. Alternatively, in the horizontal form, the management and may alternatively be located in the home country of the parent company or in the country of destination of the subsidiary or both. As a rule, horizontal investments are made between countries with similarities in market size, consumer spending and demand structure as well as similarities in the availability of inputs. (Papageorgiou and Chionis, 2003)

The decisions the management of the company can take in relation to its development abroad characterizes the process of transforming the national into a multinational company:

- The first decision has to do with choosing between producing abroad or simply distributing the products.

- If it chooses the form of activity, the next decision has to do with the degree of independence of the multinational enterprise.

- The third decision relates to the possibility of exports of the subsidiary, so in addition to production the subsidiary can also export to a third country. (Papageorgiou and Chionis, 2003).

At the same time, there are several ways of assessing the multinational enterprise through a series of criteria that are linked to the company's specific characteristics:

- The number of subsidiaries.

- The number of countries in which it operates.

- The proportion of assets of income or profits derived from activity abroad compared to total assets, income or profits.

- The proportion of shareholders, owners or directors and employees coming from different countries.

- Conclusions can also be drawn for the characteristics of the activity abroad, if the subsidiaries also include research and development activities (R & D). (Papageorgiou and Chionis, 2003)

It is noteworthy that large companies have their headquarters mainly in developed countries. At the same time, many developing countries host a large number of affiliates compared to developed ones. Affiliates operating in developed countries tend to be larger and more volatile than their subsidiaries in the developing (Papageorgiou and Chionis, 2003).

According to Dunning (1993) companies assess their entry into the international market, taking into account both the costs and advantages associated with the company's specific characteristics, the ownership advantage, location advantage and the advantage of internalizing international activities, more detail:

- **The ownership advantage**: It is created both by the international experience of the company and by the ability to differentiate its products as well as the embedded technology. It is a fact that the multinational company has products that cannot easily be duplicated or possesses specialized know-how which allows it to easily enter a new market.

- **Location advantage:** is related both to the availability of the productive factors of a potential host country and to the potential and risks of the market. Although these capabilities are generally available for all businesses, some are more manageable and can exploit the benefits better than others.

- **The advantage of internalizing international activities:** resulting from the expansion of the company abroad by responding to the crucial issue of administrative control of the internationalization of activities as well as the cost of international transactions. In other words, the internalization of activities must give priority to a multinational enterprise in relation to foreign production policy, from a separate legal entity. The most important is the protection of know-how or a material or intangible asset that wants to keep control. Another reason is associated with lower transaction costs. The product or know-how developed in a subsidiary is often a production input for the production of another. Multinational companies exploiting economies of scale make it more profitable to carry out such transactions within the multinational organization. While experience has shown that internalization of work in

international activity reduces the fixed cost of international transactions. (Papageorgiou and Chionis, 2003)

Also, a significant part of the current multinationals is related to areas where research and technology are a basic production input, and often also the use of a large amount of specialized work and the promotion of the product is important. Research and development (R & D) are relatively easy to transport but are affected by market imperfections such as incomplete information, the inability to protect property rights and the asymmetry of information. When there are these market imperfections, the parent company is more likely to internalize international expansion.

The ownership advantage can be measured by a composite index containing six different variables:

- The size of the business and its experience.

- The differentiation of the product produced.

- The adaptability of the product.

- The international presence.

- The intensity of technology embedded in the product.

- The way the product is available.

The advantage of spatial selection can be measured as a composite marker containing four variables:

- Market Demand.

- Production cost.

- Cultural differences.

- Market infrastructures.

While the cost of internalization is difficult to quantify and evaluate. (Papageorgiou and Chionis, 2003)

1.1.3 Multinational companies and FDI

According to Papageorgiou and Chionis (2003), the International Finance bibliography does not mention a basic explanation of the multinational enterprises' activities where empirical regularities will emerge, but the

relationship between exports and FDI is explained. Thus, we see that the activity of multinational enterprises is directly linked to FDI and the cost of running a business abroad. An important component of both export and foreign production activity abroad is the total cost to be paid until the product reaches the final consumer. Export costs consist of insurance, transport, precautionary costs, exchange rate changes, customs duties, etc. Unlike the cost of exports, a company's decision to produce by supplying a foreign market is linked to the company's administrative costs abroad, the surpluses, as well as the cost of adaptation to the new institutional and legal framework. If a multinational subcontractor chooses to cooperate with domestic businesses some of this cost may be reduced. It is worth noting that the cost of operating the horizontal form of investment is significantly higher compared to the investment scheme.

On the other hand, the multinational company saves resources from transport costs and payment of duties to be paid in the case of exports. In addition to the economies of scale, the choice of the country of production is not only related to tariffs but also to the size of the market. In addition to the advantages of FDI over exports, it would be good to add a number of other features such as market guarantee, shorter delivery times and the ability of the company to respond more rapidly to changes in market preferences.

 One of the most important reasons in the single European market for FDI was the reduction of transaction costs. At the same time, the elimination of external barriers between Member States and the elimination of currency risk, creating a single market, making the choice to produce in the European market rather than import more profitable. The production of goods imported up to that time allowed, for example, Japanese and American companies to offer their products at a lower marginal cost, which means that their market share can be increased relative to competitors. This growing competition will lead to an increase in the surplus of the consumer but at the same time will reduce the profits of the neighboring enterprises (Papageorgiou and Chionis 2003).

 The analysis of the vertical form of FDI is based on the decision to differentiate parts of the production process from the production flows used, and since input prices vary from country to country, it may be profitable to separate production. This growing competition will lead to an increase in the surplus of the consumer but, at the same time, will reduce the profits of the neighboring enterprises.

It is a fact that in recent years there has been an increase in the activity of multinational enterprises where they have developed high technology or are active in an area where Research and Development (R & D) is a major

productive input. This is reasonable to happen as R & D can be relatively easily transferred at little or no cost between the different countries. Similar logic exists in the financial services sector, and here an important parameter is the easy and low-cost transfer of know-how to the rest of the world.

At the same time, the company's intangible assets are of utmost importance:

- Patents and trademarks.

- Administrative practices.

- Sales promotion practices.

Very important is the contribution of banking services to the activity of a multinational enterprise. In many cases when a bank works with a business many times it adapts banking products to its needs. In a nutshell, the expansion of a multinational can create a suitable ground for the parallel expansion of banks. This policy of expanding banks is called " following the customer ", (Papageorgiou and Chionis 2003).

Finally, the multinational activity of recent years is related to the expansion of multinationals in countries that are relatively similar in terms of availability of factor production, market size and culture. In this case, export trade is replaced by productive activity. According to a relatively large number of theoretical and empirical studies, it has been demonstrated that the hypothesis that the convergence of two economies in terms of GDP size, output availability, cost of production and research and technology tends to change ''national'' to multinational ''businesses'', (Papageorgiou and Chionis 2003).

1.2 Foreign Direct Investment

Foreign direct investment (FDI) is a key driver of international economic integration. With the right policy framework, FDI can provide financial stability, promote economic development and enhance the well being of societies. Reliable FDI statistics have always been essential for policy makers faced with the challenges of attracting and making the most of international investment

1.2.1 The definition of Foreign Direct Investment

Various definitions have been made of what the Foreign Direct Investment (FDI), is some of the most important are:

According to the OECD (OECD Benchmark definition of FDI, 2008 4TH edition), the accelerated and increasing competition among market participants

came from the evolution of financial markets in a global context of increased liberalization of foreign exchange controls and market access. This by extension has led to the introduction of new financial instruments which attracting investors from many economies. The cross-border financial flows was developed from the technological developments, data processing and innovations in production. The international market for economic integration which is a rapidly evolving and referred to as globalization, the FDI is a basic element which providing a means of creating direct stable and long-lasting links between, economies.

In appropriate policy environment, FDI can be used as an important factor in the development of local businesses helping to improve the competitive position of both the host economy and the home economy. Furthermore, the transfer of technology and know-how between economies is encouraged from FDI while at the same time giving the host country the opportunity to promote its goods more widely in the international markets. Also FDI could be an important source of funds for host and home economies having a positive impact on international trade development. The last decades the increase in the size and number of individual FDI and the growing diversification of businesses between economies and enterprises in the industrial sectors reflected in the significant increase in the level of FDI.

In recent years more and more small and medium-sized enterprises are participating in FDI but the major players in cross-border transactions are the large multinationals when this increase coincided with an increased tendency of multinationals to take part in foreign trade. International, reliable, harmonized and timely statistics contribute to estimate trends and development in FDI activities to help policymakers to address the challenges of the global market. Also, direct investment statistics depends on several quality parameters like:

a) Alignment with international standards
b) Avoiding inconsistencies between countries and reducing global discrepancies
c) Achieving consistent statistical series over time
d) Timeliness and
e) Allowing a meaningful exchange of data between partner countries

According to the World Bank (databank.worldbank.org), ''*the sum of equity capital of the reinvestment of earnings and other funds and relates to the flows of direct investment funds in the reference economy is the FDI. Also, FDI is a category of cross-border investment associated with a resident in one economy that has control of influence on the management of a multinational that is resident in another economy and the criterion for determining the existence of a direct investment relationship is that of 10 percent or more of ordinary shares of voting shares.''*

World Trade Organization (1996) support that, a way to increase the efficiency which the limited resources of the world are used are FDI which is a typical example is their role in efforts to boost economic growth in many countries in the world which are poorer. Many times FDI can be a source of new technologies and electronic components such as organizational and managerial skills and marketing networks. At the same time, they are an incentive for resource savings, competitiveness, innovation and capital creation as well as job creation and consequently economic growth

According to Kokkinou and Psycharis (2004), Foreign Direct Investment is a category of international investment including a long-term relationship reflecting control by a domestic entity in an economy. FDI relates both to the initial transaction between two companies as well as to the recent capital transactions between themselves and with other interconnected companies. The definition of Foreign Direct Investment may include the creation of an entirely new business (''greenfield'' investment) or, more typically, changing the ownership of existing enterprises (via mergers and acquisitions). FDI is also defined as other types of financial transactions between affiliated companies, such as reinvestment of foreign direct investment profits or other capital transfers. Individuals or business entities can take FDI. The benefits that investors expect to derive from direct investment are different from those of portfolio investors where they do not have a significant impact on business operations. Foreign direct investment investors can derive more than revenue benefits such as payroll opportunities, as opposed to portfolio investors that are primarily concerned with returns and capital protection.

The significant increase in FDI over the last decade has resulted in a parallel increase in research work on identifying factors and their effects on host economies. FDI enables the host country to increase total investment to a level greater than domestic savings allow. They are long-term capital flows that aim to buy new investment goods, such as fixed assets and other forms of physical capital. The difference with short-term capital flows, such as equity-traded shares or the purchase of corporate or government bonds, shows that the second category refers to organized capital markets in which equilibrium prices are shaped by a system of changes. On the other hand, Direct Foreign Investment does not enter a vibrant financial market but operates de-centrally without the existence of a central clearing system such as portfolio investment, and is mainly influenced by the real economy and host country characteristics. (Papageorgiou and Chionis, 2003).

1.2.2 Forms of Foreign Direct Investment

If enterprise that wants to make Direct Foreign Investments should initially choose a specific form of investment. Below are the forms of FDI as well as the advantages and disadvantages of each category.

1) **Wholly- Owned subsidiary**

The form of investment is encountered when an enterprise establishes a new business in a foreign country and is the unique shareholder. In this case, the subsidiary, that is, the established company could be a new firm (greenfield strategy) or a pre-existing firm that can be bought totally or partially, with the parent company having the administrative control. (Kokkinou and Psycharis, 2004)

Advantages:
- The parent firm having control of the subsidiary shapes the subsidiary's strategy.
- The subsidiary's total profits belong to the parent firm.
- The parent firm has the main advantage if it is able to differentiate the product.

- Economies of scale are achieved due to an increased total production of both parent and subsidiary companies.

Disadvantages:
- The parent firm is responsible for all risks if it is burdened with all the financial costs of the claim.
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  The classification of the subsidiary as "foreign" may have a negative impact on both society and the government.

2) **Joint Venture**
This form of investment describes the cooperation of one or more foreign companies with one or more local businesses to set up a new firm or to buy an already existing local firm. The joint venture process involves the connection of three parts: that of knowing-how, capital and human resources to partners. Typically, partners contribute the productive factor to the sector that overcomes the others. (Kokkinou and Psycharis, 2004)

Advantages:
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  The foreign company gaining access to new markets at the same time acquires a partner who knows the environment, the cultural characteristics of the country and the way the local market works.
- Due to co-production are created scale economies.
- New entrants are prevented from entering the market as they compete with each other as they fall short.
- Investigating the financial possibilities.
- They share the cost and business risk of the operation.

- Legislation in many countries gives significant financial incentives to the joint venture, with the result that the creation of a joint venture also entails lost profits.
- It helps to improve the co-operation results of the two partners.

Disadvantages:

- Many times companies participating in the joint venture due to differing views on issues such as goals, strategy, profit sharing, and administrative control can be dismantled.

3) **Partial Acquisition**

In the context of FDI, this form of investment is particularly widespread. It has to do with acquiring a share of a local business by a foreign. In this situation there is transference of knowing-how, executives, technology, etc. This form of investment presents more benefits than the other forms of FDI without presenting significant disadvantages.

The above forms are the basic forms used to identify Direct Foreign Investments. Below we will see the cases that are either a continuation of the basic forms or they do not often occur.

4) **Greenfield Strategy**

Greenfield investment is a type of direct foreign investment that sets its activities in a foreign country from scratch. It may include both the construction of new facilities and new office and apartment distribution nodes. In other words, the term ''greenfield investment'' is the case where a business builds its business from scratch. Compared with other methods, it is the case of FDI that provides the highest degree of control for the granting company. This type is completely different from indirect investments, such as the purchase of foreign securities, where in this case businesses may have little or no control over the operations of quality control, sales and training.(www.investopedia.com)

Advantages

- Developing countries tend to attract prospective companies with tax breaks, subsidies and other incentives to set green field investments. While these concessions may result in lower corporate tax revenues in the short term, economic benefits and enhancement of local human capital can deliver positive returns over the long term.

Disadvantages

- Instead of a brownfield investment, where greenfield investments are driven by relatively low costs, greenfield investments forwarded by multinational corporations entail higher risks and higher costs associated with building new factories or manufacturing plants.
- As a long-term commitment, one of the greatest risks in green field investment is the relationship with the host country. Any circumstances or events that result in the company pulling out of a project at any time may be financially devastating.
- Smaller risks include overruns, problems with permitting, difficulties in accessing resources, and issues with local labor. Companies contemplating green field projects typically invest large sums of time and money in advance to determine feasibility and cost-effectiveness.

5) Brownfield Strategy

When a company or a state entity buys or leases existing production facilities to start a new production activity, we refer to Brownfield investment or ''brownfield'' and is a strategy which used in direct foreign investment. The term brown field refers to the fact that the land itself may have been contaminated by the previous activities that have taken place on the site, a side effect which may lead to the lack of vegetation on the property. This approach may be occupied and preferred as the structure is already present. This structure can not only result in cost savings for the investment but also in avoiding certain steps in order to build new facilities on empty lots, such as building permits and connecting utilities.

Brown field investment is common when a company looks towards a foreign-direct investment option. Often, a company considers facilities that either are no longer in use or are not running at full capacity as options for new or additional production.

This may often be more efficient than building a new facility from the ground up. This is especially true in cases where the previous use is similar to the new one. The addition of new equipment is still considered part of a brown field investment. But this does not happen with the addition of any new facilities to complete production which is not considered a brown field. Instead, new facilities are considered green field investing.(www.investopedia.com)

6) **Offshore company**

A parent company founds a new company in a foreign country and according to the law it operates exclusively in foreign countries that enjoy these particularities, particularly favorable tax arrangements or flexible regulations. The term ''offshore'' is used to describe foreign banks, companies, investments and deposits. Supporters of offshore claim that hat they improve the flow of capital and facilitate international trade. (www.investopedia.com)

Finally, the parent or multinational company as a direct investor can invest in a foreign country and through agreements involve the transfer of knowledge, technology and experience without the transfer of capital. Such are:

A)Licensing
In this case, the parent company has the right to use a patent or a specialized inflow that it owns. In other words, is defined as an international licensing agreement or allows foreign firms to market a product of the owner at a certain time on a specific market. In this case, a beneficiary in the country of origin has limited rights or resources available to the beneficiary in the host country. Licensing is a relatively flexible work agreement that can be customized to fit the needs and interests of both, licensor and licensee. (www.en.wikipedia.org)

B)Franchising

It is the sale of the right to use the trademark of the multinational company at local. This is done for a specific period and according to the instructions of the parent company. At the same time, both intermediate and complementary goods are provided to produce exactly the same product or service. In other words, a franchise is a type of license that a party (franchisee) acquires to allow them to have access to a business's (the franchiser) proprietary knowledge, processes, and trademarks in order to allow the party to sell a product or provide a service under the business's name. In exchange for gaining the franchise, the franchisee usually pays the franchisor an initial start-up and annual licensing fees. The franchiser is the original or existing business that sells the right to use its name and idea. When a business wants to increase its market share or increase its geographic reach at low cost, it can create a franchise for its product and brand name. Franchises are a very popular method for people to start a business. One of the biggest advantages of buying a franchise is that you have access to an established company's brand name; meaning that you do not need to spend more resources to get your name and product out to customers. (www.investopedia.com)

1.2.3   Impact of FDI on the home economy

According to Mpizenis (2014), the impact of international business activity in the country of origin may be as positive as well as negative. The research which concerns the international activity last years has developed a lot and many questions have arised questions, as the relationship between them is not clear and often the results to which they end up have different consequences. Some questions only concern the transnational enterprise, both for its relationship to a level of production in a host country and for its exports to that country or globally. At the same time, it may be related to the global production of the transnational enterprise and its relation to global exports. These issues have to do with the way the company chooses to serve its various markets globally, in short, with the company's strategy. Some other questions relate to the relationship between the productions of all domestic enterprises abroad, with domestic exports to the same industry or at different levels of employment and in these cases we take into account, the reactions of an enterprise to the movements of other businesses.

Lipsey (2004) supported that the results of the country of origin are summarized in the conclusions for countries of origin and the origin demand. FDI is a particular form of capital flow at international borders, creating a specific form of international assets for countries of origin and more specifically the value of participations in entities. Normally, they are controlled by a resident of the country of origin or in which a resident of the country of residence holds a certain percentage of voting rights. Of course, it is not always easy to draw conclusions on how the transnational enterprise affects the country of origin as a whole and how the others respond to similar moves or movements of the particular business.

What happens when a foreign direct investment is made? Lipsey (2004) explains this with an example. If the home country makes direct investment in the host country, there is an addition to the host country's physical capital and new production ability is created there. The home country investment enterprise will have chosen to use some funds in the host country instead of the home country. If the production is commercial, some production that can be done in the host country can replace the production that had previously taken place in the home country. Consequently,the investment enterprise may, therefore, have reduced production in the home country and possibly have the opportunities to close down or sell a production unit that can open in the host country to serve the same market. One other possibility is that when a home country business makes FDI in the host country the physical capital reserve and the level of production remains stable in both countries.

Mpizenis (2014), considers that, according to most investigations examining the relationship between the foreign production of a transnational enterprise or a branch and the exports of the business or its sector's, they have positive correlations. In particular it is believed that: FDI helps in the development as long as enterprises have the ability to exploit new opportunities in the market instead of choosing just the activity in the origin country. Lipsey (2004), supported that there is probably no universal relationship between foreign investment and exports in a country of origin and, to the extent that there is any

relationship, FDI is more often used to promote exports than to compete with them. He also supports that a function that foreign FDI seem to have played to the countries of origin is to maintain export markets for businesses even when economic changes in the country of origin such as exchange rate fluctuations, cost increases or other events threaten the company's competitiveness in the country of origin. An explanation for this might be that there is no global relationship between foreign production of a international enterprise or that of country 's of origin, with the exports of the enterprise or the country. There are cases where foreign production intensifies exports and cases where it limits them. As Markusen and Maskus (2001) argued, the results can be based on whether the subsidiary operates horizontally or vertically in relation to the parent company. FDI vertical typically support exports of the country of origin while horizontal ones lead to a reduction in exports of the country of origin since the transnational enterprise impedes production there and transports it to another country. In addition, in the case of horizontal activity, the country of origin is forced to import products that are produced abroad. However, it is not easy to classify FDI outflows in a particular category (Mpizenis, 2014).

Another criterion that affects the ranking of FDI outflows as to whether or not to be substituted the exports from the country of origin is whether foreign production regarding to products or services, is located in developing or developed countries, or in sectors characterized by economies of scale of plants or spectra (Mpizenis, 2014). According to the factual findings from the investigation that has been carried out, exports of the parent company or the country of origin are very little of an enterprise or industry's FDI. At the same time, trade is mainly determined by other factors such as the changing comparative advantages of production countries, while direct investment not only involves the placement of production but also ownership. When FDI takes place, there is a movement of intellectual capital or production techniques (characteristics that are difficult to measure) and not physical capital and productivity. Finally, the effects on the balance of payments have two directions. Supporters of complementarities believe that there is interaction between outflows of FDI and inward investment. At the outset, a negative impact will be recorded on the outflow of the investment head to the host state, but the increase in intermediate goods exports is likely to encourage domestic investment. In closing, the balance appears to be credited with the repayment of the profits of its home affiliates.

1.2.4 Impact of FDI on the host economy

According to Papageorgiou and Chionis (2003) the developmental impacts of FDI on the economy of the host country are an object that has long divided the scientific community. Particular references have been made to the developmental or non-developmental impacts of FDI in developing countries.

Supporters of the FDI contribution argue that multinational companies increase the overall productivity of the economy and directly affect the economic development of the host countries. FDI is a mechanism by which savings of surplus units or surplus countries are transferred to incomplete units. In addition, because multinationals invest through the creation of affiliates, they increase investment without burdening external debt. This basic theoretical approach also claims that FDI transfers important technology and knowledge that diffuses into the host country. This transfer creates significant external economies of scale for the joint ventures. Finally, if FDI is part of a host country's broader development strategy, then a subsidiary operating in the host country assists the country's integration by opening up export destinations which in other cases would not be available.

On the other hand, critics of multinational action and FDI claim that a number of factors directly linked to multinational activity undermine the economic development of developing countries. Instead of transferring savings to the developing country it transfers savings from the developed to the developed economy. Secured savings are reduced in two ways. First of all, the savings money collection through the capital market of the host country. In this case, FDI pushes domestic investments in spite of encouraging them. Secondly, it is argued that multinationals through oligopolistic structures many earn more than normal profits, and in later years they transfer these profits back to the parent company. In addition, consumers in the host country pay higher prices than normal for the purchase of goods with negative effects on savings. Thus, the total amount of savings that can finance the equity investment is diminishing. Critics also claim that the multinational has strong control over the technology employed, effectively hindering its transfer and diffusion into the host country. In the same context, management and management techniques are not transported and distributed in the host country. The main reason is that multinationals are not willing to work locally in high status. Finally, critics argue that FDI is driving out-of-market products by shrinking production. Subsidiaries of multinationals using the method of undercutting or using new technology may have the products at competitive prices in the market of the recipient country. In some cases, multinationals assemble the final product from different imported parts produced in different regions. The results of this policy are that the local suppliers are out of the market unless they are able to market their products.

Current experience shows that the ultimate effect of the multinationals' developmental impacts on the recipient country depends on a number of

factors. Experimental research can isolate these factors by responding to specific questions (Papageorgiou and Chionis, 2003).

Blomström and Kokko (1996), examining data on the implications of FDI in host countries and focusing on the transfer and dissemination of technology by foreign multinational companies in the host country, given that Multinational companies own and control much of the world's commercial technology. At the same time, they examine the impact of the impact of multinational enterprises on both commercial performance and the impact on competitiveness and industrial structures in the host countries. They come to a provisional conclusion that they can promote the economic development of the host country by contributing to the development of productivity and exports. At the same time, we believe that the relationship of multinational enterprises and infrastructures varies between industries and countries. They argued in the end that both the characteristics of the environment and the particularities of the host industry are decisive factors for the FDIs' net benefits.

According to Lipsey (2004), on the results of the host country discusses wages, productivity, exports, introduction of new industries and the rate of economic growth. He argues that FDI is a set of economic activities or operations carried out in a host country by wholly or partly controlled enterprises in another country. These activities include, for example, production, employment, sales, purchase and use of intermediate goods as well as fixed capital and research. Lipsey (2004), said that in the host countries it has been shown in many studies that companies abroad pay higher wages than domestic companies. Sometimes, but not always, higher wage levels can be related to the characteristics of affiliates such as size and capital intensity,where at this point the highest quality of work can be measured where it can represent, not always, the differences. He claims there is some evidence that foreign companies pay a higher price for work in the sense that they pay more for an employee given the corresponding quality of work they offer, sometimes the higher price level may be related to the characteristics of the subsidiaries such as the size of the capital intensity.

1.3 The Uppsala Internalization model

According to the Wiedesheim – Paul (1975), many businesses start their international activity when they are comparatively small and we are gradually seeing them spreading abroad. According to the studies done in the International Business by the University of Uppsala, it was observed that gradual internationalization, in relation to large enterprises, had spectacular

effects on foreign investment. This seems to be a feature of the internationalization of most of the Swedish companies, and it seems reasonable to believe that the same applies to many other enterprises in other countries.

A relative observation is that the rate of development in the early stages is important for the following pattern. Their basic prerequisite is that the company first develops into the domestic market and that internationalization is the result of a series of crucial choices. They also assume that the most important obstacles to internationalization are the lack of knowledge and resources. These barriers can be eliminated by developing decision and learning foreign markets. Constant internationalization is encouraged with the increase of the need to control sales and the increase of exposure to offers and requirements, while at the same time the perceived risk of investment on the market reduces. They do not try to explain why businesses are starting to export, but they assume that due to a lack of knowledge about foreign markets and to avoid uncertainty, businesses initially choose to export to neighbouring countries or countries that are relatively well known and practically similar to these. At the same time, they believe that for reasons of tied up resources the company starts selling abroad through independent representatives.

Taking into account the evolution of activities in individual countries with gradual expansion, it can be surely identified. Below we can see some types of steps and different stage numbers. The distinction is divided into four stages:

1) No regular export activities
2) Export via independent representatives (agent)
3) Sales subsidiary
4) Production manufacturing
    a) They differ in relation to the degree of involvement of the firm.
    b) They are often referred to by people in business.

We see that there are two aspects that are relevant to the degree of participation. In the four stages there are successive larger commitments on resources, leading to different stages of market intelligence and experience.

The first stage shows that the market has not committed to weave resources without simultaneously having a regular channel of information to and from the market. In the second stage, it appears that the company has an information channel on the market. In this way the company can get information about the factors affecting sales. At the same time, there is a specific commitment to the market at this stage. In the third stage the information is controlled, allowing the business to direct the type and amount of information flowing from the market to the business. At this stage the company also gains direct experience from the factors which affect the resources. At the fourth stage, there is even greater commitment to resources.

Of course, in the study of Johanson, Wiedesheim - Paul (1975), the issue has been simplified, overcoming the differences between the four steps. They

support that the concept of mental distance can be useful, considering the expansion of activities into new markets. This concept is defined by factors which obstruct and disrupt flows of information between businesses and markets. They also report that the size of the market is considered to be the most important factor in international activity.

'' The first activity phase of export designing, then is indentifying and measuring of market opportunity'', Johanson, Wiedesheim - Paul (1975).

In sum, they argued that we should expect that the size of the market is what influences decisions in the internationalization process. At the same time, they supported that the company starts its activities first in large markets or smaller ones if they are similar to domestic ones.

According to Johanson and Vahlne (1977), the internationalization of the business is a process in which companies gradually increase their international participation. They assume that in the context of business and economic factors, the characteristics of this process influence not only the pattern but also the pace of internationalization of the business. In their study, they developed a model of the process of a business of internationalization focusing on the development of a single enterprise, and especially on the process of acquiring, incorporating and using knowledge concerning foreign markets as well as growing commitment to foreign markets.

The basic assumptions of their model are that lack of knowledge is a major obstacle to the development of international activities as well as the acquisition of the necessary knowledge through working abroad. These apply to both directions, below:

1) The increasing participation of the company in each foreign country
2) Successive business creation in new countries.

At the same time their study focuses on the expansion of activities in new markets, incorporating in the model results from previous studies of international companies. They believe that internationalization is the product of a series of augmented decisions. At the same time, their aim is to identify the data related to the successive statements of decisions, by developing a standardization of internationalization, adding an explanatory value.

A few years later, again Johanson and Vehlne (2009), reconsider the Uppsala internationalization model in the light of changes in business practices and the theoretical advances that have been made since 1977. They consider the business environment to be a network of relationships rather than a neoclassical market with many independent suppliers and customers. Permanent root of uncertainty is the extroversion rather than the mental distance. In the revised model, the mechanisms of change are the same as the original version, although confidence building and knowledge creation are added, recognizing the development of new knowledge in relationships.

1.4 The eclectic paradigm of Dunning (1973, 1980, 1988)

We could say that Eclectic Paradigm still remains strong of examining theories such as Foreign Direct Investment and International Production. An important question that inspired Dunning is how the labor productivity is higher in one country than somewhere else. The difference of productivity is reflected in the indigenous resources of the economy or is due to the ability of managers to organize these resources (Dunning, 2001). The eclectic paradigm which was developed by Dunning is a mix of three different theories of Foreign Direct Investment (O.L.I). If affiliates did not record better production levels than the mother firm in the country it would at least be more effective than competitors abroad. This is what Dunning called the location, specific component of any productivity differential.

The economic space of a country could be viewed with two factors. The one was the value of domestic output produced independently of ownership's production. The other was the output which was produced by its own firm, including the part produced in abroad. In the context of business activity analysis across national borders, he extended the ''O'' and ''L'' advantages. He explained fully the pattern and extend of foreign added value of firms enterprise activities and also he had to explain why such firms wanted to produce or exploit their own advantages internally rather than acquire or sell these or their rights, through the open market. Those which were referred are the (I) internalization advantages and became the third leg of ownership, location and internalization (OLI) are a tripod which explains the scope and geography of value added activities by MNEs.

1) ''O'' from Ownership advantages:

This refer to intangible assets owned exclusively by firms, for a time period and could be transferred to low-cost transnational firms, either by lowering costs or by raising higher incomes, but its operations in other countries may include additional costs. So, in order for a company to enter in the foreign market and be successful, it should be sure both about the characteristics and the operating cost in a foreign market. These advantages are the property responsibilities and the firm which has its own monopoly advantage and which uses it abroad, is leaded to higher marginal profitability or lower marginal costs than its competitors (Dunning 1973, 1980, 1988).

Three types of specific advantages:

a) Monopoly advantages, through the ownership of limited natural resources in the form of privileged access to the market, trademarks, patents.
b) Technology, the knowledge that contains all forms of innovation activity and which is widely defined.
c) Large size economies, like economies of scale and scope economies of learning and greater access to financial capital.

2) ''L'' from Location:

Since the first condition is fulfilled, for the firms is the most advantageous option to use them for their own use than to rent them or sell them, to foreign firms. A key factor in determining which country will become a host country for the activities of transnational corporation are the advantages of ownership. These advantages of each country can be divided into three categories:

a)   The economic benefits are reflected, in both qualitative and quantitative factor such as cost of production, market size, telecommunications, cost of transports etc.
b)   Political advantages: FDI flows are affected by both common and specific policies.
c)   Social advantages, including the distance from home country to host country, the attitude towards foreigners, countries cultural diversity etc.

3)''I'' from internalization: Assuming that the above two conditions are fulfilled and it is profitable for the firm to use these advantages in conjunction with some factors outside the home country. (Dunning 1973,1980, 1988)

This third advantage offers an assessment framework. The firm could exploit in different ways its powers from the scale of goods and services in various agreements that could be signed between the firms. The firm will be more likely to participate in foreign production than to offer that right under a franchise license, as long as the advantages of the inta-corporate cross border market are higher. The eclectic (OLI) paradigm differs between firms and is influenced by framework that reflects the country's economic policy and social characteristics of the host country. The goals and strategies of each firm, as well as the way of production will depend on both challenges and opportunities offered by different types of country.

The key propositions of the eclectic Paradigm

It is important to explain the form of international production, in other words the production which was undertaken by MNEs and financed by FDI. The eclectic paradigm suggests that is determined by three set at any given moment of time:

1)   The (net) advantages which were held by firms of one nationality than those of another for the supply of any particular market or group of markets. These advantages could arise from the privileged ownership of firm or from access to income general assets or from their ability to coordinate these assets in relation to others beyond national borders.

This could be done in such way as to benefit them relative to competitors or the potential of competitors.

2) The rate to which firms could spot that is good to internalize the markets for production or to use the assets by acquiring additional value to them.

3) The rate to which firms could locate the adding value activities abroad.

The eclectic paradigm acknowledges that these advantages may differ between firms, industries and countries.

''No single theory of international trade can satisfactorily explain all forms of cross-border transactions in goods and services.''(Dunning, 1995)

He argued that eclectic paradigm could help to explain why the profile investment of two countries or firms may differ, in two time points. For these two points to be linked, we should introduce exogenous or endogenous variables and how this in turn affects the OLI including strategy.

1.5 The Internalisation Theory

The internalization theory tries to explain the growth of transnational firms and what were their motives for achieving Foreign Direct Investment. Initially the theory began in a national context by Coase (1973) and Hymer (1960). The theory was developed by Buckley and Canson in 1976 (Buckley and Casson 1976), provided another explanation of FDI by emphasising the intermediate inputs and technology shifting the focus of international investment from country-specific to determinants of FDI at industry and enterprise level (Henisz, 2003). His doctoral thesis, Hymer, identified two major factors of FDI. These were the withdrawal of competition and the advantages that certain firms have in a specific activity (Hymer, 1976). Buckley and Cansson analyzed MNCs within a abroad framework developed by Coase 1973, and became known as the theory of the internalization highlighting the creation of MNCs. The theory was articulated on the basis of three claims:

a) The profits are maximized by firms in an imperfect market.
b) When markets in intermediate products are imperfect then the creation of internal markets is an incentive to be activated.
c) The internalization of markets throughout the world leads to multinational companies.

To develop technology or input or process, requires a firm that will engage in research and development. Transaction costs may be considered too high by some firms or it may be difficult to transfer technology or sell inputs to other unrelated companies. To deal with this situation a firm may choose to internalize by using backward and forward integration. In other words, if

internalization leads firms to different countries then we will have Foreign Direct Investment.

Buckley and Casson prove that transactional firms organize their internal activities to develop specific advantages which they could then exploit. As we have seen above, the theory of internalization was also very important for Dunning, who used it in the eclectic theory, while arguing that this explains only a part of the flows of Foreign Direct Investment. Hennart (1982) was able to develop models that distinguish the vertical and horizontal integration and to explore in greater depth the alternatives of firm contracting versus market exchange. Hymer (1976) is the one who argued that a company of having these advantages of the company demonstrates that FDI only if the benefits from the exploitation of specific advantages of enterprise outweigh the relevant cost of transactions abroad. . The market imperfection leads to a deviation from perfect competition in the final product market and as a result it is the reason which MNE is emerging according to Hymer (1976). At the same time, it acknowledges that FDI is not an economic decision for the capital market but a strategic decision at company level, reaching the same conclusion that transnational firms face the adaptation costs when they invest abroad.

Part B

Bibliographic Review

Direct Foreign Investments are considered as a driving development vehicle, and so we see that rich literature have been developed over the last decades. As will be seen in the table below, studies from 1997 to 2017 are presented with data sources, authors, and study findings.

Table.1 Bibliographic Review

	Title	Author	Methodology	Data	Conclusions
1	Foreign Direct Investment, Technological Change and Economic Growth	Ray Barrel Nigel Pain (1997)	Panel Cointegration	In this paper are downloaded data from Pain and Walken (1996)	The empirical findings show that that there is a growing research into the interdependencies between investment, trade and economic growth in Europe. At the same time, they argued that FDI is capable of acting as

					an important factor in spreading ideas and new innovations even in the case of developed economies.
2	Foreign Direct Investment and Employm-ent: Home Country Experience in the United States and Sweden	Blomström Magnus, Fors Gunnar, Lipsey Robert (1997)	OLS (Ordinary Least Squares)	The study is based on US Department of Commerce from Industries Utredningsinstitut (IUI) of Stockholm	Their interpretation is that an indirect lower labor intensity of domestic production with the simultaneous presence of higher foreign production reflects a strategy of investment firms and in particular a part of their productive activity or the labor force intensity of the region in subsidiaries in low-wage countries.
3	How does Foreign Direct Investment affect economic Growth?	E. Borensztein, J. De Gregorio, J-W. Lee (1998)	S.U.R (Seemingly Unrelated Regression) Panel data	The sources for data are: I.M.F (International Monetary Fund), I.F.S (International Financial Statistics), Summers and Hansen (1993) and Barro and	The most robust finding of this paper is that the impact of Direct Foreign Investments on economic growth depends on the level of human capital available in the host economy. While at the same time FDI complements the investment

				Lee (1993)	
4	Do Domestic Firms Benefit from Direct Foreign Investment? Evidence from Venezuela.	Brian J.Aitken Ann E.Harrison (1999)	WLS(Weighted Least Squares)	The data which used for this paper come from Venezuela's Statistical Bureau, the Oficina Central de Estabistica e Informatika (OCEI)	Authors concluded that there are benefits from foreign investment but they seem to have been internalized by joint ventures. At the same time, they reported that there is no evidence to support the existence of technological developments by foreign firms in a domestic firm.
5	The Impact of Economic Integration on FDI and Exports: A Gravity Approach.	Francesca Di Mauro (2000)	Fixed-effects model, panel data GLS estimator.	Data sources are: OECD Direction of Trade Statistics, Yearbook (DOTSY), IMF, IFS, UNCTAD	The results show that that FDI is mainly horizontal. In addition, exports and FDI are positively affected by size similarity. At the same time exchange rate volatility and tariffs do not seem to affect the decision to invest abroad, while FDI and exports show that they are complementary.
6	The Effects of Direct Foreign Investment on Domestic Firms: Evidence from	Josef Konings (2000)	OLS (Ordinary Least Squares) GMM (General Methods of	Data are taken from EBRD (*European Bank for Reconstructi*	According the results FDI have no better performance than neighbors. At the same time, there are no indications of

				Moments) technique	*on and Development*)	positive effects but rather negative or no foreign investments in domestic firms.
7	Fiscal Incentives, European Integration and the Location of Foreign Direct Investment	Florence Hubert , Nigel Pain (2001)	Fixed-Effects Panel Data	The data which used in this paper come from Bundesbank, Kapitalverflechtung mit dem Ausland	The results reported here show the significant impacts from the fiscal instruments of the host country on the location of FDI within Europe. In addition, there has been a significant impact on corporate tax, agglomeration economies, competitiveness in European policies, governmental influences as well as direct benefits from tax incentives.
8	Multinational Firms Reconciling Theory and Evidence	James R. Markusen, Keith E. Maskus (2001)	WLS (Weighted Least Squares)	In this study are downloaded data from: International Financial Statistics (IFS) of International Monetary Fund, Yearbook of Labor Statistics	This paper suggests that the knowledge-based approach in the multinational determines the incentives for both horizontal and vertical multinational activity and predicts that the affiliate's activity should be related to variables such as relative performance

				published by International Labor Organization and World Competitiveness Report of the World Economic Forum.	differences and the size of a country
9	Foreign Direct Investment as Technology Transferred: Some Panel Evidence from the Transition Economies	Nauro F. Campos, Yuko Kinoshita (2002)	Fixed-Effects Panel Data	The data come from Campos and Coricelli	The main result is that the impact of FDI on the economic development of transition economies is positive, while FDI seems to be an extremely important variable for the development of transition economies.
10	Does Foreign Direct Investment Accelerate Economic Growth?	Maria Carkovic, Ross Levine (2002)	OLS (Ordinary Least Squares) GMM (General Methods of Moments) technique	The data used for this study come from: World Bank Database, Kraay , Loayza, Serven and Ventura, International Monetary Funds (IMF)	The results show that FDI inflows have an independent influence on economic growth, while sound policies can drive both development and FDI. The results also showed that FDI has a positive impact on growth independently of other determinants of growth.

11	Does inward Foreign Direct Investment Boost Productivity of Domestic Firms?	Jonathan E.Haskel, Sonia C.Pereira, Matthew J.Slaughter (2002)	OLS (Ordinary Least Squares) GMM (General Methods of Moments) technique	Details of data can be found in : Griffith 1999 Oulton 1997 Disney Haskel and Heden 2000, UK Office of National Statistics (ONS) and finally Feenstra Romalis and Schott 2002.	The major findings are firstly that productivity increases from domestic direct export units and secondly that the calculated prices appear to be lower than incentives per job.
12	An analysis of the long-run effects of foreign direct investment: The Spanish case, 1964-1997	Oscar Bajo-Rubio, Carmen Díaz-Roldán, Vicente Esteve (2003)	Cointegration Techniques	The sources which be taken the data are: Spanish National Accounts elaborated by the National Institute of Statistics Foundation BBVA 2003 Mas et all 1998 Spanish Balance of Payments elaborated	Their findings show us a positive role of stock of foreign capital on the evolution of labor productivity, directly as well as through its impact on human capital accumulation.

				by the Bank of Spain	
13	Multinational Enterprises, International Trade, and Productivity Growth: Firm-Level Evidence from the United States	Wolfgang Keller, Stephen R. Yeaple (2003)	OLS (Ordinary Least Squares)	The data sources are: Standard and Poor's Compustat database, NBER Productivity database, Bureau of labor Statistics, Buareau of Economic Anlysis (BEA), Feenstra 2002, Bartelsman and Grey 2001.	The results show us that FDI leads to a significant increase in productivity for domestic firms, while estimated successive pressures are stronger in relatively high technology to relatively low technology industries.
14	FDI and Economic Growth: The Role of Local Financial Markets	Laura Alfaro, Areendam Chanda, Sebnem Kalemli-Ozcan, Selin Sayek (2003)	OLS (Ordinary Least Squares)	The data from all variables are reliable from : World Development Indicators (WDI) Word Bank database.	They argued that only FDI plays an ambiguous role in the contribution of economic growth. At the same time, countries with developed financial markets are significantly gaining from FDI.
15	Regional	Dirk	OLS (Ordinary	The data	The results suggested

	Integration and Foreign Direct Investment in Developing Countries.	Willem te Velde, Dirk Bezemer (2004)	Least Squares) Panel data	which used in this paper come from Tevelde and Fahnbulleh (2003)	that while accession to an area may lead to further FDI inflows, it appears that both the type of region and the location of the countries of a region are important for attracting FDI.
16	The determinants of foreign direct investment into European transition economies	Alan A. Bevan, Saul Estrin (2004)	OLS (Ordinary Least Squares) Panel data	In this paper the data are downloaded from: OECD US Champer of Commerce , Central Statistical Offices in the Baltic States and Central Banks.	It was found that FDI had a positive impact on both the GDP of the country of origin and the GDP of the host country. FDI also refers to the distance between countries and the cost per product unit. In their analysis, membership in the European Union is important for FDI transition economies.
17	Impact of Foreign Direct Investment and Trade on Economic Growth	Shiva S. Makki, Agapi Somwaru (2004)	SUR (Seemingly Unrelated Regression) method, TSLS (Three Stage Least Squares)	Data from analysis are obtained from the World Developmen t Indicators (WDI) database.	The analysis show that FDI falling inflation, tax burden and public consumption contribute to the economic development of developing countries. Also, if the host country has a better human capital stock, the benefits of the investment will be

				greatly enhanced.
18	Does Foreign Direct Investment Increase the Productivity of Domestic Firms? In Search of Spillovers Through Backward Linkages	Beata Smarzynska Javorcik (2004)	OLS (Ordinary Least Squares) Fixed Effects.	The analysis is based on data from the annual enterprise survey conducted by, The Lithuanian Statistical Office (2001) IMF 2003 Word Bank 2003 OECD 2000	The empirical results show us that business productivity is positively correlated with the existence of multinational customers, but not with the presence of multinationals in the same industry or with the existence of multinational intermediary input suppliers.
19	Foreign Direct Investments and Productivity Spillovers in the Irish Manufacturing Industry: Evidence from Firm Level Panel Data	Frances Roane, Ali Adur (2005)	OLS (Ordinary Least Squares)	The data used in this paper are from the Irish Census of Industrial Production(CIP)	In this analysis shows that no evidence has been found to prove the existence of interactions with the foreign presence measurement model as well as labor productivity seems not to be higher in sectors with a foreign share of employment.
20	The impact of FDI on industry performance	Jurgen Bitzer, Holger Gorg (2005)	The estimations have been carried out using a feasible GLS	The data are from STAN database OECD ANBERD database,	The results show us that on average, FDI inflows have a positive relationship with domestic productivity at

			(FGLS) estimator.	IMF (International Financial Statistics) database.	industry level, and this relationship appears to be negative for outward-looking FDI and, as a result, there is a significant heterogeneity between countries.
21	Foreign Direct Investment and local Economic Developm-ent Beyond Productivity Spillovers	Holger Gorg, Eric Strobl (2005)	Fixed- Effect estimator	Data are available from Annual Survey of Irish Economy Expenditures Forfas(1999) Gorg and Strobl (2002a,2003)	This study show that indigenous businesses benefit from multinationals not only through technology exports but also by external economic agents. At the same time, multinational enterprises seem to be increasing the demand for intermediate products on the domestic market.
22	Foreign Direct Investment and Economic Growth: A Time-Series Approach	Atrayee Ghosh Roy, Hendrik F. Van den Berg (2006)	The estimated model use Three Stage Least Square (3SLS)	The data sources are: Bureau of the Economic Analysis (BEA),International Monetary Fund (IMF), International Financial Statistics	a technologically advanced country is drawn from FDI. They also showed that FDI profits in the long run are very important and that the sustainability of the US current account deficit is positively enhanced but undermined by income in the

				(IFS), Government Printing Office (Economic Report of the President), World Bank , Word, Development Indicators (WDI), Maddison 2003, Bureau of the Census, UNECE	elasticity of FDI.
23	Determinants of Foreign Direct Investments flows to developing countries: A Cross-Sectional Analysis	Erdal Demichan, MahmUt Masca (2008)	Cross-Sectional Analysis	All data are used in the study are taken from the World Bank and Word Tax database.	Accordinf to this analysis investors prefer to invest in developing economies instead of developed ones. They further argued that factors such as low inflation, low tax rates, opening up and better infrastructure are important factors in attracting FDI to developing countries, while factors such as political risk and low wages seem to be staying foreign investment.
24	Does Foreign	Feng Helen	Fixed-effects	Data are	Findings argued that

	Direct Investment Improve the Productivity of Domestic Firms? Technology Spillovers, Industry Linkages, and Firm Capabilities	Liang (2008)	Panel data	from National enterprise surveys and science and technology surveys by the National Burvau of Statistics of China.	the distance of Research and Development from the source of knowledge would affect the adoption of foreign technology.
25	International R&D Spillovers and Institutions	David T. Coe, Elhanan Helpman, Alexander W. Hoffmaister (2008)	Panel Cointegration techniques, Dynamic OLS	In this paper the data are downloaded from: World Bank, Oliveira Martius 2007, Park and Lippolat 2005, La Portaet (1999,2008), Coe and Helpman (2004), OECD, STAN database, Ministry of Science and Technology, Central Bureau and Statistics.	According to Coe, Helpman and Hoffmaiste there is robust evidence that total factor productivity domestic and foreign R&D capital are cointegrated and that both measures of R&D Capital significant determinants of TFP.
26	FDI, Productivity and Financial	Laura Alfaro, Sebnem	OLS (Ordinary Least Squares)	The data are from:	Their findings show that countries with well-developed

				International Financial Statistics (IFS), UNCTAD, OECD, Kingand Levine (1993 a,b), Levine and Zervos (1998), Levine (2000), World Bank Financial database, Bernanke and Gurkaynak (2001), World Development Indicators (WDI), Commercial Central Bank, World Bank, Barro and Lee (1996), International Country Risk Guide (ICRG)	financial markets benefit from FDI. FDI can also play an important role in economic growth, possibly by improving efficiency rather than capital accumulation. At the same time, local conditions can limit the extent to which the benefits of FDI are being realized.
	Developm-ent	Kalemli-Ozcan, Selin Sayek (2009)	Panel data		
27	Searching for Human Capital Determinants of FDI inflows	Ioan Talpos, Cosmin Enache,	Pooled EGLS	The data are from Eurostat (the official	Their estimation show that the quality of human capital matters in attracting FDI

				European Union Statistical database)	inflows.
28	Outward FDI and home country economic growth: a Malaysian case	Koi Nyen Wong (2010)	Granger Causality test VAR	The data which are used in this paper downloaded from International Financial Statistics	The results show that multinationals may be less inclined to create links with domestic firms.
29	Financial Development and Economic Activity in Advanced and Developing Open Economies: Evidence from Panel Cointegration	Georgios Chortareas, Georgios Magkonis, Demetrios Moschos, and Theodore Panagiotidis (2015)	Panel Cointegration	The data which used in this study are taken from the World Development Indicators (WDI) constructed by the World Bank and from Lane, Mile and Feretti (2007)	The findings suggest that a long run relationship between financial development and output does not exist.
30	Foreign Direct Investment in the Western Balkans: What role has it played during transition?	Saul Estrin, Milica Uvalic (2015)	Fixed-Effects Panel data	The data of this study are based on: Albanian Institute Statistics, Federation of Bosnia and	The main finding is that that there has been no deterioration in FDI in the manufacturing sector in the western Balkans between 2002 and 2012. At the same time, the

					Herzegovina, Croatian Bureau of Statistics, Macedonian Statistical Office, Serbian Statistical Office, European Commission, EBRD, World Bank, Vienna Institute for International, Economic Studies(WIIW) database	negative development of the FDI crisis by policy-makers should be offset.
31	Has the Foreign Direct Investment Boosted Economic Growth in the European Union Countries?	Donny Tang (2015)	OLS, 2SLS, GMM, FGLS	The data used in this paper come from : World Bank database, International Monetary Fund's (IMF) , International Financial Statistics, Organization for Economic Cooperation and	The study show us that markets offer greater funding for domestic investment that boosts growth due to the effects in the European Union and the euro. At the same time, the interaction of developing FDI with stock markets has led to the development of FDI.

			Development (OECD)	
32	A comparative analysis of Foreign Direct Investment Factores.	Algirdas Miškinis, Ilma Juozėnaitė (2015)	VAR model Granger Causality test	Data are collected from the : World Bank Organization for Economic Cooperation and Development database (OECD)	It was determined that only in the case of Greece the exchange rate had a significant impact on FDI. Whereas, in the case of Ireland, the exchange rate, trade, opening and inflation had little effect on FDI. In the case of the Netherlands GDP per capita, labor costs per product unit and inflation had little impact on FDI.
33	Foreign direct investment and human capital: evidence from developing countries	Muhamma d Azam, Saleem Khan, Zalina binti Zainal, Namasivay am Karuppiah, Farah Khan (2015)	Fixed-Effects model	The data for all variables are retrieved from: World Development, Indicators (WDI), World Bank database	The findings of the study suggest that policy makers will have to plan conductive and investment friendly policy to increase FDI in the host country.
34	The Impact of Migration on Foreign Direct Investments	Irene Fensore (2016)	PPML estimation (Poison pseudo-maximum Likelihood) estimator	Data were collected from: UNCTAD, World Bank	The results show that outgoing FDI stocks are positively affected by migration with host countries investing more in the countries from which migrants come. It also

				appears that the impact of investment affects more migrants with a high level of education
35	The relation between economic growth and foreign direct investment during the economic crisis in the European Union	Mihaela Simionescu (2016)	Bayesian linear regression, Bayesian random effects model, Panel (Vectors Autoregressive models)VAR model	The data used for this paper come from Eurostat and World Bank	The basic conclusion is that for the whole of the European Union, there has been a two-way relationship between economic development and FDI since the beginning of the crisis with a tendency to reduce inequality between countries in order to attract FDI.
36	Foreign Direct Investment and the Relation-ship Between the United Kingdom and the European Union	Randolph Bruno, Nauro Campos. Saul Estrin, Meng Tian (2016)	PPML, The Gravity model	The data for variables are retrieved from OECD FDI Statistics and World Bank Development Indicators	All result indicates that accession to the European Union generally increased FDI inflows by 30%, and at the same time show that a country leaving the European Union will face a reduction in FDI inflows by 22%, proving that the integration of a country into the European Union has a significant impact on FDI flows.
37	Scandinavian Foreign Direct	Agne Simelyte,	Bivariate Correlation	The study is based on	Their findings show that the Baltic States,

	Investment and Economic Growth of the Baltic States	Gitana Dudzeviciut, Aušra Liucvaitiene (2017)	analysis, Granger Causality test	National Statistics database.	and especially Latvia, depend on FDI and are competing with each other for FDI inflows from Scandinavian countries.

The empirical results of **Barell and Pain (1997)** show us that there is a growing research into the interdependencies between investment, trade and economic growth in Europe. At the same time, they argued that FDI is capable of acting as an important factor in spreading ideas and new innovations even in the case of developed economies.

Blostrom, Gunnar and Lipsey (1997) argued that an indirect lower labor intensity of domestic production with the simultaneous presence of higher foreign production reflects a strategy of investment firms and in particular a part of their productive activity or the labor force intensity of the region in subsidiaries in low-wage countries.

The most powerful finding of **Borensztein, De Gregorio and Lee (1998)** is the impact of Direct Foreign Investments on economic growth depends on the level of human capital available in the host economy. While at the same time FDI complements the investment. On the other hand **Aitken and Harrison (1999)** have claimed that there are benefits from foreign investment but they seem to have been internalized by joint ventures. At the same time, they reported that there is no evidence to support the existence of technological developments by foreign firms in a domestic firm.

Di Mauro (2000) showed that FDI is mainly horizontal. In addition, exports and FDI are positively affected by size similarity. At the same time exchange rate volatility and tariffs do not seem to affect the decision to invest abroad, while FDI and exports show that they are complementary.

According to **Konings (2000)** FDI have no better performance than neighbors. At the same time, there are no indications of positive effects but rather negative or no foreign investments in domestic firms. The results of **Hubert and Pain (2001)** show the significant impacts from the fiscal instruments of the host country on the location of FDI within Europe. In addition, there has been a significant impact on corporate tax, agglomeration economies, competitiveness

in European policies, governmental influences as well as direct benefits from tax incentives.

Markusen and Maskus (2001) argued that the knowledge-based approach in the multinational determines the incentives for both horizontal and vertical multinational activity and predicts that the affiliate's activity should be related to variables such as relative performance differences and the size of a country. The main results of the study of **Campos and Kinoshita (2002),** are that the impact of FDI on the economic development of transition economies is positive, while FDI seems to be an extremely important variable for the development of transition economies.

The results of the study of **Carkovic and Levine (2002)** have shown that FDI inflows have an independent influence on economic growth, while sound policies can drive both development and FDI. The results also showed that FDI has a positive impact on growth independently of other determinants of growth. The main conclusions of **Haskel, Pereira and Slaughter (2002)** it is first that productivity increases from domestic direct export units and secondly that the calculated prices appear to be lower than incentives per job.

Bajo-Rudio, Diaz-Roldan and Esteve (2008) Their findings show us a positive role of stock of foreign capital on the evolution of labor productivity, directly as well as through its impact on human capital accumulation. The results of study of **Keller and Yeaple (2003)** show that FDI leads to a significant increase in productivity for domestic firms, while estimated successive pressures are stronger in relatively high technology to relatively low technology industries.

Alfaro, Chanda, Kalemli-Ozcan and Sayek (2003) argued that only FDI plays an ambiguous role in the contribution of economic growth. At the same time, countries with developed financial markets are significantly gaining from FDI. **Velde and Bezemer (2004)** suggest that while accession to an area may lead to further FDI inflows, it appears that both the type of region and the location of the countries of a region are important for attracting FDI. Also, **Bevan and Estrin (2004)** claimed that FDI had a positive impact on both the GDP of the country of origin and the GDP of the host country. FDI also refers to the distance between countries and the cost per product unit. In their analysis, membership in the European Union is important for FDI transition economies.

The analysis of **Makki and Somwaru (2004)** shows that FDI falling inflation, tax burden and public consumption contribute to the economic development of

developing countries. Also, if the host country has a better human capital stock, the benefits of the investment will be greatly enhanced. The empirical results of **Javoric (2004)** showed that business productivity is positively correlated with the existence of multinational customers, but not with the presence of multinationals in the same industry or with the existence of multinational intermediary input suppliers.

In the case of the study of **Roane and Adur (2005)** show that no evidence has been found to prove the existence of interactions with the foreign presence measurement model as well as labor productivity seems not to be higher in sectors with a foreign share of employment. **Bitzer and Gorg (2005)** argued that, on average, FDI inflows have a positive relationship with domestic productivity at industry level, and this relationship appears to be negative for outward-looking FDI and, as a result, there is a significant heterogeneity between countries.

Gorg and Strobl (2005) have shown that indigenous businesses benefit from multinationals not only through technology exports but also by external economic agents. At the same time, multinational enterprises seem to be increasing the demand for intermediate products on the domestic market. According **to Roy and Van den Berg (2006)** a technologically advanced country is drawn from FDI. They also showed that FDI profits in the long run are very important and that the sustainability of the US current account deficit is positively enhanced but undermined by income in the elasticity of FDI.

According to **Demichan and Masca (2008)** investors prefer to invest in developing economies instead of developed ones. They further argued that factors such as low inflation, low tax rates, opening up and better infrastructure are important factors in attracting FDI to developing countries, while factors such as political risk and low wages seem to be staying foreign investment. **Liang (2008)** argued that the distance of Research and Development from the source of knowledge would affect the adoption of foreign technology.

Alfaro, Ozcan and Sayek (2009) have found that countries with well-developed financial markets benefit from FDI. FDI can also play an important role in economic growth, possibly by improving efficiency rather than capital accumulation. At the same time, local conditions can limit the extent to which the benefits of FDI are being realized. **Taplos and Enache (2010)** argue that the quality of human capital affects the attraction of Direct Investment. The research of **Wong (2010)** has shown that multinationals may be less inclined to create links with domestic firms.

Chortareas et al (2015), their findings showed that there is no long-term relationship between economic development and output. At the same time deeping and financial openness are more important for developed economies while the trade openness and financial deeping are more important for developing economies. The main conclusion of the study of **Estrin and Uvalic (2015)** is that there has been no deterioration in FDI in the manufacturing sector in the western Balkans between 2002 and 2012. At the same time, the negative development of the FDI crisis by policy-makers should be offset.

According to **Tang (2015)** markets offer greater funding for domestic investment that boosts growth due to the effects in the European Union and the euro. At the same time, the interaction of developing FDI with stock markets has led to the development of FDI. Furthermore, **Miskinis and Juozenaite (2015)** they found that only in the case of Greece the exchange rate had a significant impact on FDI. Whereas, in the case of Ireland, the exchange rate, trade, opening and inflation had little effect on FDI. In the case of the Netherlands GDP per capita, labor costs per product unit and inflation had little impact on FDI.

Fensore (2016) supported that outgoing FDI stocks are positively affected by migration with host countries investing more in the countries from which migrants come. It also appears that the impact of investment affects more migrants with a high level of education. **Azan et al (2015)** they argue that policy makers will have to plan conductive and investment friendly policy to increase FDI in the host country.

The main conclusion of the study of **Simionescu (2016)** is that for the whole of the European Union, there has been a two-way relationship between economic development and FDI since the beginning of the crisis with a tendency to reduce inequality between countries in order to attract FDI. **Bruno et al (2016)** supported that accession to the European Union generally increased FDI inflows by 30%, and at the same time show that a country leaving the European Union will face a reduction in FDI inflows by 22%, proving that the integration of a country into the European Union has a significant impact on FDI flows.

The results of study of **Simelyte, Dudzeviciut and Liucvaitiene (2017)** show that the Baltic States, and especially Latvia, depend on FDI and are competing with each other for FDI inflows from Scandinavian countries.

In conclusion, we observe from the majority of the above studies that there are interactions between FDI, trade and economic development. FDI is an

important factor in spreading ideas and new innovations. At the same time, they contribute to the economic emergence of transition economies with an impact both on host countries and on countries of origin. We also see that even technologically advanced countries benefit from FDI. In the case of investors, we see that they are proposing to invest in developing countries rather than in developed countries. Countries with developed financial markets benefit more from FDI. Finally, FDI plays an important role in economic development and is attracted by the quality of human capital.

CHAPTER 2

2.1 Methodology

2.1.1 Unit Root Tests

According to Barbieri (2005), over the last years, owning to the availability of new data where the time dimension and the cross-sectional dimension were of the same order, it seems that many researches on the unite roots have occurred and the cointegration of panel data with time series have been integrated. It is fact that new techniques are needed for a panel data analysis and two generations of tests have been developed in this context. The first one concerns Levin, Lin and Chu (2002), Im, Pesaran and Shin (2003) and test type Fisher where the base point is the entity of cross-sectoral independence for all units. The second one test rejects the hypothesis which referred to independence, isolating some basic approaches like constraints, covariance (where it was mainly adopted by Chang (2002, 2004)) and the structure of derivatives.

The methods which include panel data and use of cross-sectional data (from countries where they are grouped together) for which the range of time series data is insufficient and would therefore prevented the study of several interesting cases. Also, the panel data methods have another benefit is the better test quality which compared with time series methods.

In order to encounter with the panel data, the theory of econometric developed sufficiently extent for sets of data where the number of observations in time series (T) was small, for example four or five observations, but the number of cross-strains (N) was large. The theory of asymptotic statistics came up leaving $N \to \infty$ for fixed T, whereas in the case of time series where $\infty \to T$ for fixed N. Over the last years the data sets are created and one of their base characteristics

is that sometimes T and N are large and their size classes are similar. This is also a reason for the development of papers on unit roots, cointegration in panel data with integrated panel data.

2.1.1.1 Levin, Lin and Chu (LL) test

According to the study of Asterios (2006), Levin and Li in 1992 developed one of the first unit root test of panel data which Levin and Li first presented this test in a paper which created in 1992 and finally published in 2002 with Chu as a co-writer (Levin, Li and Chu (2002)). This abbreviation of this test is LL, is referred from the initials of their names of the first two authors. Also it is worth noting the event that Levin and Li adopted a test that can be regarded as an extension of DF unit root test. Below we can behold the model which has the following form:

$$\Delta Y_{i,t} = a_i + pY_{i,t-1} + \sum_{k-1}^{n} \quad \Phi_k \Delta Y_{i,t-k} + \delta_{i,t} + \theta_t + u_{i,t}$$

Two-way fixed effects allowed in this particular model, one derives from the term and the a_i other from the term θt. Therefore, are fixed unit-specific effects and time-related trends for that unit. These specifically fixed effects of the unit are a very important ingredient because they allow it heterogeneity and considering that the coefficient of hysteresis Y_i is limited to be homogeneous for all units in the table.

The test's null hypothesis is that: *H_0: p = o*

$$H_0: p < o$$

Additionally, according to Asterios (2006) ''*the LL test assumes that as many unique root tests as individual processes are cross-sectoral independent. According to this assumption, the test derives the conditions where the OLS estimator of p will follow a pattern of normal distribution under the zero hypotheses. Therefore, the test may be considered as a concentrated DF or ADF test.*''

2.1.1.2 The lm, Pesaran and Shin (IPS) test

In the study of Asterios (2006) it is referred that the LL test has a major disadvantage that it limits the p to be homogeneous for all i. The test is explanded by Im, Pesaran and Shin (1997), allowing for heterogeneity in the coefficient of $Y_{i,t-1}$ variable and as a main test is suggested the average of the individual unit-root test statistics. Simultaneously the IPS test has different estimates for each i section, where different specifications are allowed of the

parametric values, the residual variance and finally the lag lehgths. Bellow, the model is given by:

$$\Delta Y_{i,t} = a_i + p_i Y_{i,t-1} + \sum_{k-1}^{n} \Phi_k \Delta Y_{i,t-k} + \delta_{i,t} + u_{i,t}$$

Bellow, the null and alternative hypotheses are presented:

*Ho: p_i = 0 for all **i***

*Ho: p < 0 for at least one **i***

The zero hypothesis of this test is that all series are non-stationary processes under the alternative that a fraction of the series in the panel is assumed to be stationary which is considered an important difference from the test, while the LL test assumes that all series are stationary under the alternative hypothesis. The Im, Pesaran and Shin (1997) model was put forward under the limitative assumption that T should be the same for all cross sections, requiring a equilibrated panel to calculate the statistical test. Alongside noting that the average of the individual ADF t-statistics for testing is the statistic, that pi = 0 for all i which denoted by tpi.

$$\bar{t} = \frac{1}{N} \sum_{t=1}^{N} t_{pi}$$

Under special conditions t_{iT}, Im, Pesaran and Shin(1997) reported that there is a convergence in a statistic introduced as t_{iT} assuming it is iid having finite mean and variance. At the same time Asterios reports that *''the values for the average are then calculated $E\{(t_{iT}|p_i = 1)\}$ and for the variance $(Var\{t_{iT}|p_i = 1\})$ of the t_{iT} statistic for different values of N and lags included in the augmentation term of equation''*. Then they based on these prices, it was created the IPS statistic for testing for unit roots in panels and given by:

$$t_{IPS} = \frac{\sqrt{N}\bar{t} - 1/N \sum_{i=1}^{n} E(t_{iT}|p_i = 0)}{\sqrt{VAR(t_{iT}|p_i = 0)}}$$

Subsequently, Asterios (2006) mentioned that *'' it have been proved that follows the standard normal distribution as $T \to \infty$ followed by $N \to \infty$ sequentially. Im, Pesaran and Shin give in their paper the value of $E(t_{iT}|p_i = 0)$ and $VAR(t_{iT}|p_i = 0)$. Finally, they have also suggested a Lagrange multiplier test for testing panel unit roots, while at the same time they showed that*

Performing Monte Carlo simulations proved that both their LM and t statistics have better finite sample properties than the LL test.''

2.1.1.3 Fisher ADF and Fisher PP

Maddala and Wu then Choi proposed an alternative approach to unit control in data panels which be used Fisher results (1932) and combined the probability values of p-values of independent stagnation checks. In the case which the p-value of a unit root-layer test, then in the null hypothesis there is a single root for all N-layered patterns and asymptotically it follows that:

$$-2 \sum_{i=1}^{N} \log(\pi_i) \rightarrow X_{2N}^2$$

\Asterios (2006) said that *''Choi also proved that the SST follows the typical normal distribution Choi also proved that the SST follows the typical normal distribution'':*

$$Z = \frac{1}{\sqrt{N}} \sum_{i=1}^{N} \Phi^{-1}(\pi_i) \rightarrow N(0,1)$$

Where Φ^{-1} is the inverse distribution function of the standard normal distribution N (0,1).

Asymptotic determination of or by ADF control or PP unit root control there are in the results. Furthermore, the zero and alternative hypotheses are the same as the IPS control assumptions which were previously reported. Additionally, for both tests, the model's exogenous variables must be identified and include a constant term and time trend where the tendency not to always be necessary.

2.1.2 **ARDL Cointegration**

The ARDL Cointegration (Autoregressive Distributed Lag Model)
is a modern technique developed by Pesaran and Shin (1999), Pesaran Shin and Smit (2001). This method is extremely important as it is more advantageous in several places than other cointegration techniques. Key advantage of ARDL cointegration is the fact that it can be applied in cases where time series variables have a different order of integration. More specifically they are I(0) or I(1). Furthermore, this technique investigates the existence of cointegration through the estimation of an equation. As a result it manage and saving a large number of degrees of freedom, leading to more reliable conclusions especially in small samples. Let's that we have the model with the variables Y_t, X_t, Z_t in the first stage of ARDL an error correction type is estimated equation that is referred to as an unrestricted error correction model, and you calculate it with the help of the OLS least squares.

$$\Delta Y_t = \alpha_0 + \gamma_1 Y_{t-1} + \gamma_2 X_{t-1} + \gamma_3 Z_{t-1} + \sum_{i=1}^{n} a_{1,i} \Delta Y_{t-1} + \sum_{i=1}^{n} a_{2,i} \Delta \chi_{t-i} + \sum_{i=1}^{n} a_{3,i} \Delta Z_{t-i} + u_t$$

The term a_0 represents the constant term, also the terms γ_i and α_i represent the long-term and short-term coefficients, respectively. In addition, in the specific example, it is possible to include other determinant variables such as the time variable, various pseudo-variables and additional extraneous terms, with a certain number of time lags. Subsequently, the next statistical check follows:

$H_0{:}\gamma_1 = \gamma_2 = \gamma_3 = 0$

$H_1{:}\gamma_1 \neq 0$ or $\gamma_2 \neq 0$ or $\gamma_3 \neq 0$

In the case where in the above statistical control the null hypothesis is rejected, this lead us to the conclusion mean that there is a cointegration relation to the variables of the model, whereas, if we accept the null hypothesis, we accept that there is no cointegration. Also, F-statistic is used to perform the test, which is modified by Pesaran Shin and Smith in 2001. Furthermore, they calculated necessary critical values against the number of variables and also calculated the case where a constant term or time trend is included in the model. The critical values calculated are displayed in the form of a detailed interval. The lower end of the space is based on the fact that the variables are I(0), ie they have a zero order of completion while the upper end is based on the fact that the variables are I(1) ie are completed first degree. Therefore, three different cases can arise from F-statistics. The first case much arises is F-statistic to be smaller than the lower end then we accept the null hypothesis from which it implies that there is no coincidence. The second case that may occur is that F-statistic arises larger than the upper end and therefore the null hypothesis is rejected, so the result is that there is a coincidence. In the third and final case where the F statistic is between the two extremes, the fact that is reached requires a further investigation of the issue. The next step is to select the best ARDL model that is best suited to data based on specific criteria, such as the Akaike criterion, the Schwarz criterion, and the Hannan and Quinn criteria. In the next relationship we have the general form of an ARDL model $((p, q_1, q_2)$ with p, q_1, q_2 to declare time lags, so we have:

$$Y_t = \beta_0 + \sum_{i=1}^{p} \beta_{1,i} Y_{t-i} + \sum_{i=0}^{q_1} \beta_{2,i} X_{t-i} + \sum_{i=0}^{q_2} \beta_{3,i} Z_{t-i} + \varepsilon_t$$

Furthermore, the long-term coefficients are the following:

$$a_0 = \frac{\beta_0}{1 - \sum_{i=1}^{p} \beta_{1,i}}, \quad a_1 = \frac{\sum_{i=0}^{q_1} \beta_{2,i}}{1 - \sum_{i=1}^{p} \beta_{1,i}}, \quad a_2 = \frac{\sum_{i=0}^{q_2} \beta_{3,i}}{1 - \sum_{i=1}^{p} \beta_{1,i}}$$

With a_0, a_1, a_2 to represent long-term coefficients. Finally, we calculate the estimates of short-term coefficients by creating the appropriate error correction model as a function of the excellent ARDL model found previously, so the model will take the following form:

$$\Delta Y_t = \delta_0 + \sum_{i=1}^{p} \delta_{1,i} \Delta Y_{t-i} + \sum_{i=1}^{q1} \delta_{2,i} \Delta X_{t-i} + \sum_{i=1}^{q2} \delta_{3,i} \Delta Z_{t-i} + \xi ECT_{t-1} + e_t$$

The error correction term is represented by the ECT_{t-1} , and the coefficient ξ represents the adjustment factor in equilibrium after an exogenous shock.

Panel ARDL

When we have panel data, the standard ARDL regression method is problematic due to the bias between the average difference estimators and the error term, resulting from the correlation of the above estimators. This bias can be eliminated if we have samples with a large number of observations, while on the other hand if the laminar units participating in the panel grow, parity is not corrected. In solution to this problem was the generalized method of moments (GMM) proposed by **Arellano and Bond in 1991**. However, in cases with a large number of observations and at the same time a small number of layered units, the generalized method of torques was considered unsuitable. Then, to deal with this case, **Pesaran, Shin and Smith (1999)** developed the PMoled (Pooled Mean Group) method. The model takes the form of the simple ARDL model and transforms it for panel data, allowing short-term coefficients and cointegration conditions to differentiate across layers. Specifically, the PMG model takes the following form:

$$\Delta Y_{i,t} = \varphi_i EC_{i,t} + \sum_{j=0}^{q-1} \Delta X_{i,t-j}{}' \beta_{i,j} + \sum_{j=1}^{p-1} \lambda_{i,j}{}^* \Delta Y_{i,t-j} + \varepsilon_{i,t}$$

$$EC_{i,t} = Y_{i,t-1} - X'_{i,t} \theta$$

It is worth noting that in this model its basic assumption is that at the cross-sectional level both the dependent variable and the remaining regression variables have the same number of time lags. In addition, one more hypothesis of the model is that the variables represented as X they also have the same number of time lags at the transversal level, but this assumption is usually not considered essential and often omitted. The probability function is then evaluated and maximized bearing in mind both the long-term coefficients and

the adjustment factors φ, therefore the following probability function is obtained:

$$l_t(\varphi) = -\frac{T_i}{2}\sum_{i=1}^{N}log(2\pi\sigma_i^2) - \frac{1}{2}\sum_{i=1}^{N}\frac{1}{\sigma^2}(\Delta Y_i - \varphi_i EC_i)'H_i(\Delta Y_i - \varphi_i EC_i)$$

Where,

$$\Delta Y_i = (\Delta y_{i,1}, \Delta y_{i,2}, ..., \Delta y_{i,Ti})'$$

$$EC_i = (EC_{i,1}, EC_{i,2}, ..., EC_{i,Ti})'$$

$$H_i = (I_{Ti} - W_i(W_i'W_i)^{-1}W_i')^{-1}$$

$$W_i = (\Delta Y_{i,-1}, ..., \Delta Y_{i,-p+1}, \Delta X_i, \Delta X_{i,-1}, ..., \Delta X_{i,-q+1})$$

$$\Delta X_i = (\Delta X_{i,1}, \Delta X_{i,2}, ..., \Delta X_{i,Ti})'$$

The likelihood function can be maximized directly. However, PSS (Pesaran, Shin, Smith) introduces a different maximization method based on the first derivatives. In particular, they propose that the coefficients can be estimated by OLS (least squares) method according to the relationship $Y_t = \theta X_t$ and then these estimates are used to calculate the φ_i and σ_i^2 using first derivative relationships. These estimates will then be used again to find coefficients θ from the beginning and this algorithm will be repeated until convergence. Based on the latest estimate of the coefficients $\theta, \varphi_i, \sigma_i^2$ calculated the $\beta_{i,j}, \lambda_{i,j}$·.

(http://www.eviews.com/help)

2.1.3 Wald Test

The Wald test named after the statistician Abraham Wald and is a parametric statistical test which could be used to test the real value of the parameter based on the sample estimate when a relationship within or between data items can be mentioned as a statistical model with parameters to be estimated from a sample.

''The Wald statistic calculates how close the unrestricted estimates come to satisfying the restrictions under the null hypothesis and controls computes a test statistic based on the unrestricted regression.''

The restrictions are in fact true and then the unrestricted estimates should approach to satisfying the restrictions. For the calculation of Wald tests in EViews, we consider a Cobb-Douglas production function has been estimated in the form:

LogQ=A+alogL+βlogK+ε

Where Q denotes value-added output, K the inputs of capital and L labor. The hypothesis of constant returns to scale is then controlled by the restriction which is α+β=1.

(http://www.eviews.com/help)

CHAPTER 3

3. Data and Empirical Analysis

3.1 Data

Two groups of countries have been created. The first one consists of 25 developed countries and the second one consists of 19 developing ones. Below, there is a table in detail.

Table.2 Developed Countries

	GROUP 1	*GROUP 2*
1	Australia	Argentina
2	Austria	Brazil
3	Belgium	Chile
4	Canada	Colombia
5	Switzerland	Algeria
6	Germany	Egypt
7	Denmark	Ghana
8	Spain	India

9	Finland	Iran
10	France	Iraq
11	United Kingdom	Jamaica
12	Greece	Korea
13	Ireland	Mexico
14	Iceland	Malaysia
15	Israel	Pakistan
16	Italy	Peru
17	Japan	Philippines
18	Luxembourg	Thailand
19	Malta	Venezuela
20	Netherlands	South Africa
21	Norway	
22	New Zealand	
23	Portugal	
24	Sweden	
25	United States	

Furthermore, the model consists of four variables (**lgdp, lfin_dev, lfin_openness, trade_op**) with annual frequency from 1970 to 2016. The source of data is the ''World Bank'' database. For this study **EVIEWS** program was used. In the table below there are the variables in detail.

Table.3 Developing Countries

Name	Definition	Source
Lgdp	Log of GDP per capita (constant 2010 US$)	WDI- World Bank

lfin_dev	Log of Domestic credit provided by financial sector (% of GDP)	WDI- World Bank
Lfin_openness	Log of Foreign direct investment, net inflows (% of GDP)	WDI- World Bank
Trade_op	Log of exports + imports, of goods and services (% of GDP)	WDI- World Bank

More detail:

- **GDP:**
  (https://www.indexmundi.com/facts/indicators/NY.GDP.PCAP.KD)

  ''GDP is the sum of product taxes plus gross value added by all resident producers of the economy and minus subsidies which are not included in the value of the products. It is calculated without discounts for the devaluation of the processed assets or for the depletion or degradation of natural resources. Data is in constant US 2010 dollars.''

- **Financial   Development:**
  (https://www.indexmundi.com/facts/indicators/FS.AST.DOMS.GD.ZS)

  The local leasing provided by the financial sector, includes all credit to various sectors on a unmeasured basis, except for credit to a central government, which is net, provides all the credit opportunities. *''The stock markets include currency authorities and money-deposit banks where facts are available (including companies which do not accept transferable deposits. Other examples of financial companies include finance leases, finance companies, insurance companies, money lenders, pension funds and others.''*

- **Financial   Openness   (Foreign   direct   investment):**
  (https://www.indexmundi.com/facts/indicators/BX.KLT.DINV.WD.GD.ZS)

''FDI are net inflows for the constant management interest achievement, (percentage 10% or more voting shares) in a business different from this of the investor. It is the sum of the capital share, the profit reinvestment, the rest of the long-term capital and the short-term capital as it is shown in payment balance. This now presents the net inflows in the reporting economy from foreign investors and is divided by GDP.''

- **Trade Openness:** In this case, there is the log of sum of the imports and exports of goods and services as GDP percentage.

(https://stats.oecd.org/glossary/detail.asp?ID=1300) Goods added to the material resources stock of a country enters the economic territory are **imports of goods and services** (good trading)**.**

(https://stats.oecd.org/glossary/detail.asp?ID=919) Goods exported from the statistical territory of a country (whose definition is accordant to that of the country) are **exports of goods and services**.

Below are illustrated the diagrams of the four variables for each countries group:

Group1

LFIN_OP

LFIN_DEV

TRADE_OP

Group 2

LGDP

LFIN_OP

LFIN_DEV

TRADE_OP
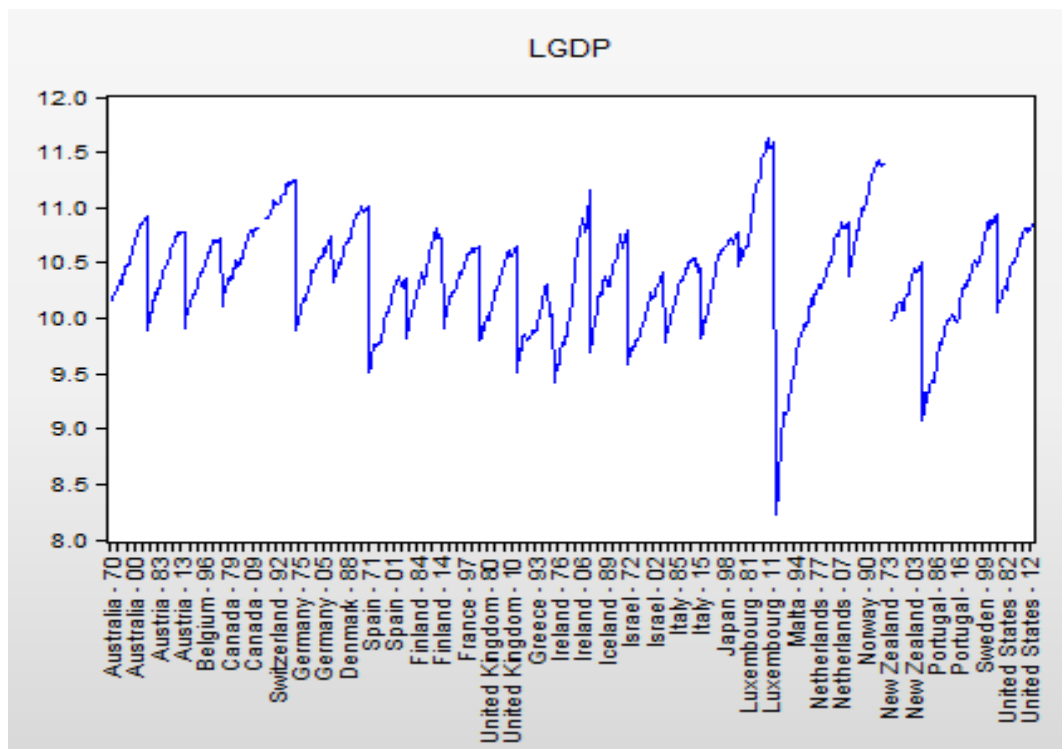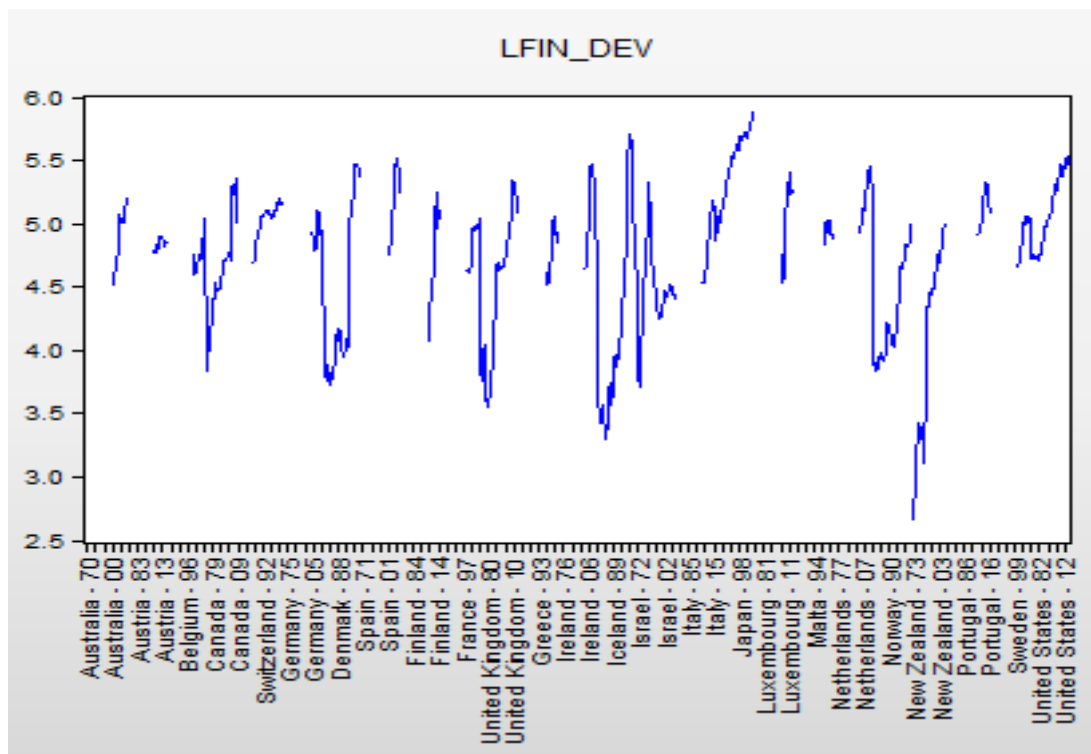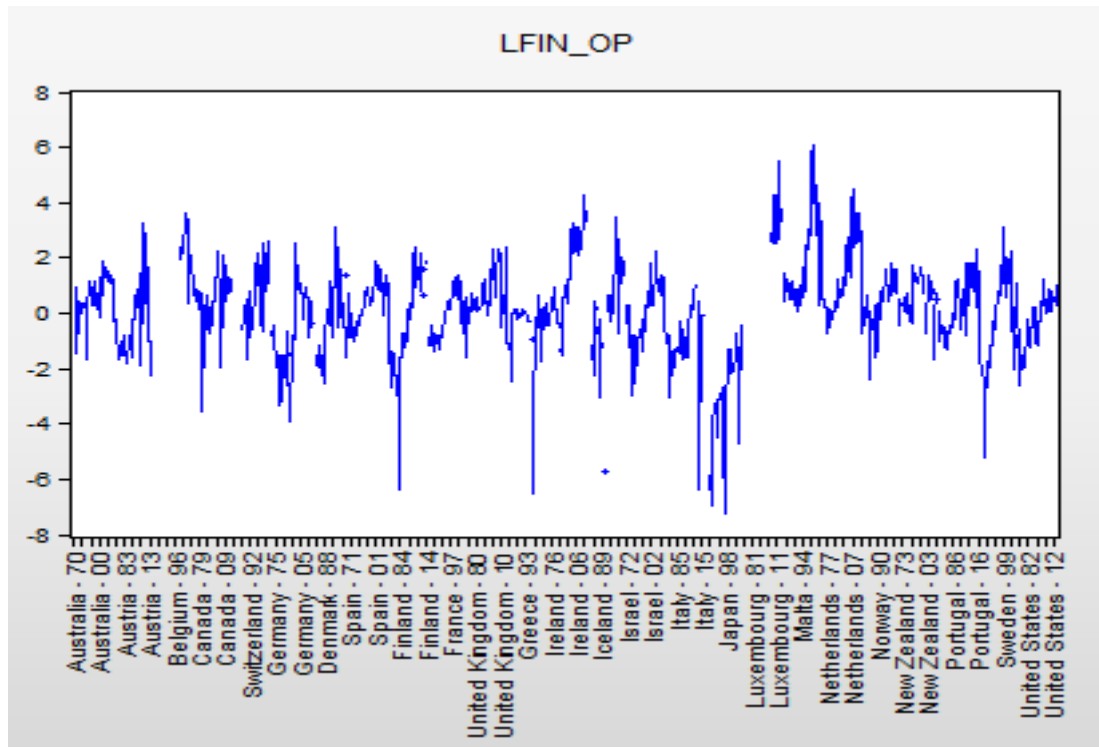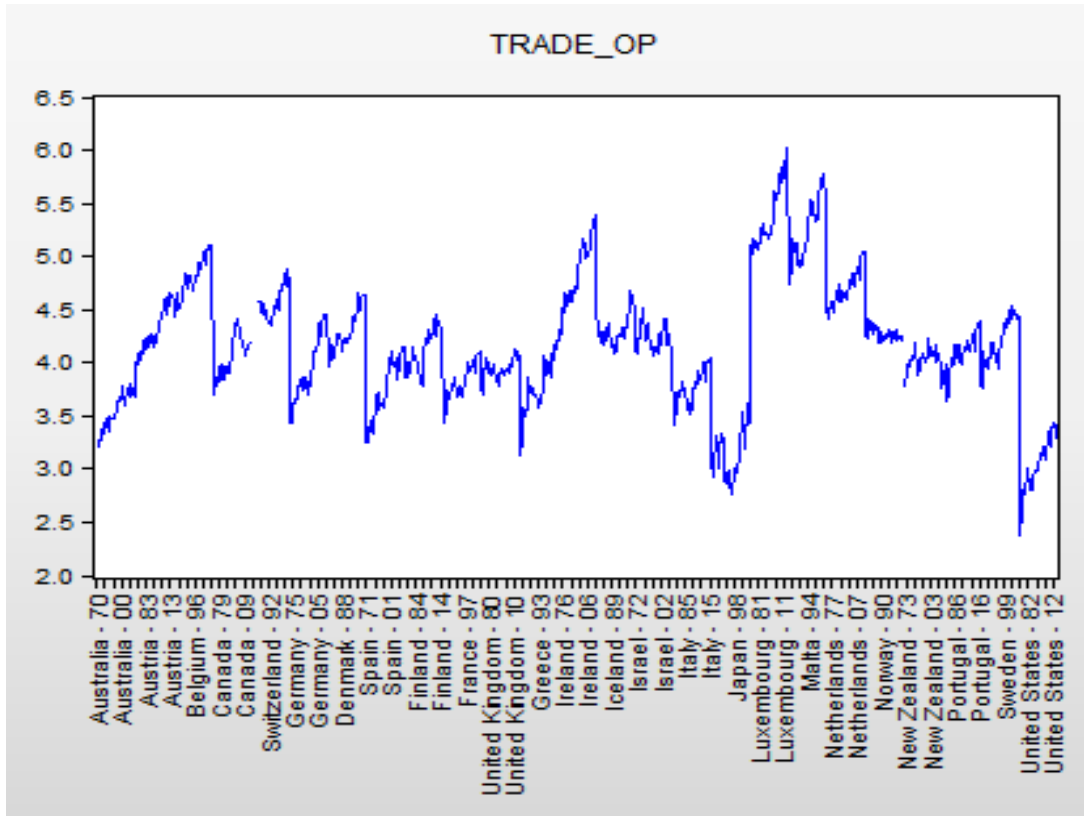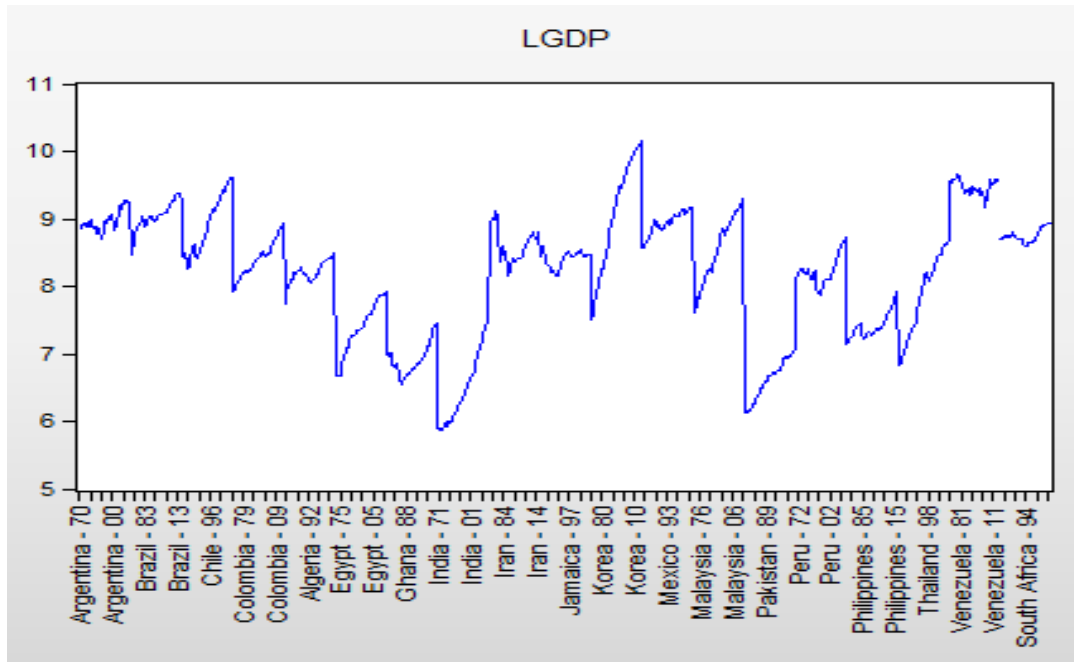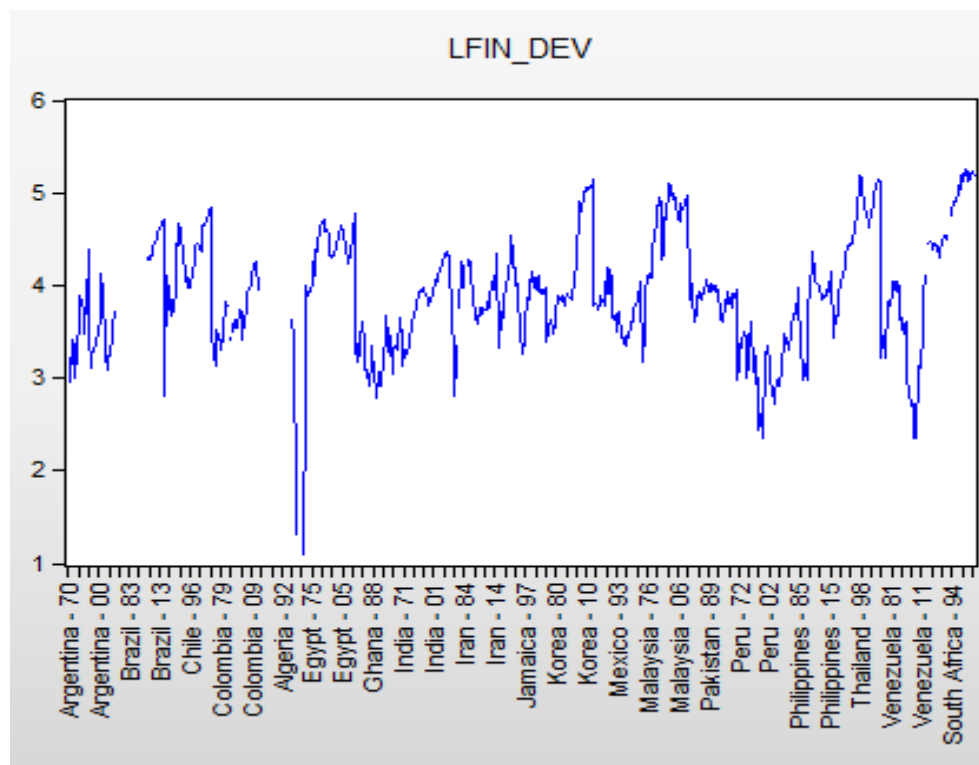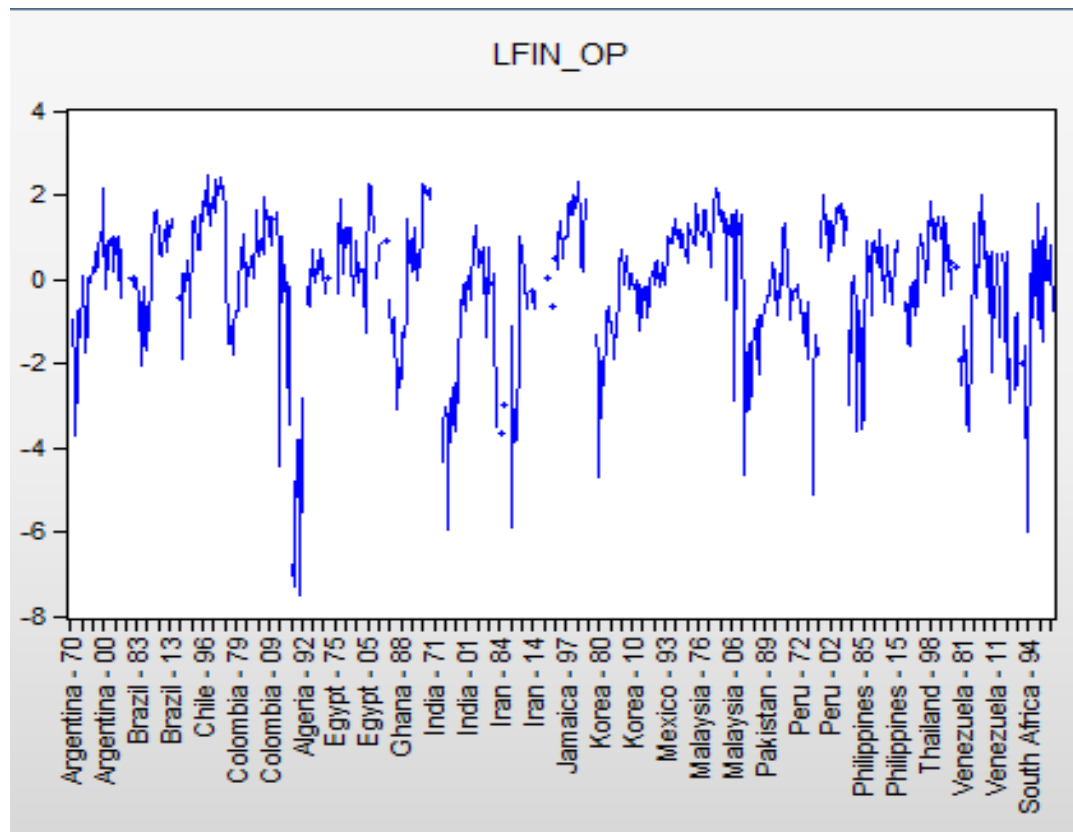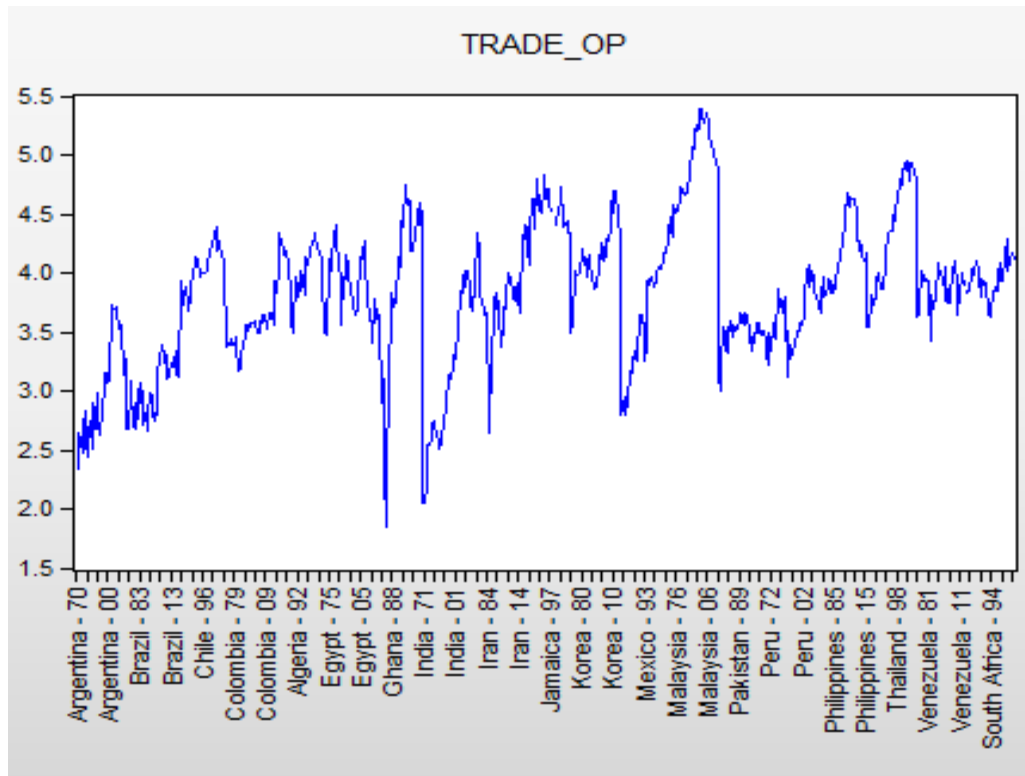
3.2 Results of Economic Analysis

3.2.1 Panel Unit Root t Tests

In the first stage of this study, stagnation controls were applied. More specifically, the controls were as follows: **LL, IPS, ADF-Fisher, PP-Fisher**, whose theoretical base was analyzed in chapter 3. In the tables below we gathered the results for both group 1 and group 2 as well. The results of the stationary tests in panel data are presented below, in the table first at the levels and then for the first differences.

Group 1

Table.4   Results of Panel Unit Root test

		LLC (*p*-value)	IPS (*p*-value)	ADF-Fisher	PP-Fisher

				(p-value)	(p-value)
Lgdp	Level	-7.59247 **(0.0000)**	-0.70757 (0.2396)	58.2554 (0.1977)	131.058 **(0.0000)**
	1st difference	-15.2484 (0.0000)	-14.9848 **(0.0000)**	318.328 **(0.0000)**	372.481 (0.0000)
lfin_op	Level	-2.57172 **(0.0051)**	-3.04285 **(0.0000)**	92.0231 **(0.0003)**	170.778 **(0.0000)**
	1st difference	-17.0915 (0.0000)	-21.8934 (0.0000)	524.822 (0.0000)	820.351 (0.0000)
lfin_dev	Level	-3.22848 **(0.0006)**	-0.90671 (0.1823)	63.9842 (0.0883)	55.3465 (0.2800)
	1st difference	-5.36738 (0.0000)	-7.32343 **(0.0000)**	187.839 **(0.0000)**	314.313 **(0.0000)**
trade_op	Level	-2.97279 **(0.0015)**	-0.33775 (0.3678)	52.1267 (0.3912)	43.7785 (0.7199)
	1st difference	-22.6763 (0.0000)	-21.5935 **(0.0000)**	493.210 **(0.0000)**	738.026 **(0.0000)**

Group 2

Table.5 Results of Panel Unit Root test

		LLC (p-value)	IPS (p-value)	ADF-Fisher (p-value)	PP-Fisher (p-value)
Lgdp	Level	-1.44534 (0.0742)	2.61220 (0.9955)	32.1608 (0.7356)	29.4578 (0.8381)

	1st difference	-11.4094 **(0.0000)**	-12.1562 **(0.0000)**	221.157 **(0.0000)**	318.447 **(0.0000)**
Lfin_op	Level	-2.29865 **(0.0108)**	-2.73742 **(0.0031)**	64.7163 **(0.0044)**	94.7880 **(0.0000)**
	1st difference	-9.7200 (0.0000)	-19.4608 (0.0000)	381.821 (0.0000)	645.458 (0.0000)
Lfin_dev	Level	-0.81346 (0.2080)	-0.56015 (0.2877)	47.0892 (0.1481)	54.8952 **(0.0374)**
	1st difference	-13.0065 **(0.0000)**	-14.3816 **(0.0000)**	267.238 **(0.0000)**	433.935 (0.0000)
trade_op	Level	-4.18379 **(0.0000)**	-3.51371 **(0.0020)**	75.0933 **(0.0030)**	54.3121 **(0.0419)**
	1st difference	-15.6634 (0.0000)	-16.6019 (0.0000)	322.875 (0.0000)	501.563 (0.0000)

Listed below are the zero hypotheses and their alternatives to the static tests used.

1) **Levin, Li and Chu:**

   Null Hypothesis: Panel data has Unit Root

   Alternative Hypothesis: Panel data has not Unit Root (Stationary)

2) **Im, Pesaran and Shin:**

   Null Hypothesis: Panel data has Unit Root

   Alternative Hypothesis: Panel data has not Unit Root (Stationary)

3) **ADF-Fisher:**

   Null Hypothesis: Panel data has Unit Root

Alternative Hypothesis: Panel data has not Unit Root (Stationary)

4) **PP-Fisher:**

Null Hypothesis: Panel data has Unit Root

Alternative Hypothesis: Panel data has not Unit Root (Stationary)

For each variable in the above tables, it has been selected in the first case **level** and in the second **1ˢᵗ difference.** Also in both cases, the choice of **individual intercept** is included in the equation**.** In addition**,** the numbers in brackets express the exact **probability** value. By comparing the probability with the importance level 5%, we reject in each case the zero hypothesis of each unit root test or not.

As we have seen in the previous tests, to accept the zero condition (importance level 5%) probability should be higher than 0.005and the variable in this case will be non stationary. In the case of probability value is lower than 5%, the zero condition is rejected and the variable will be stationary. In such a case where a variable is stationary in value levels then the variable is I(0). If in levels is I(1)we continue testing the 1st difference. If it is again lower (lower the probability value) than 0.005 then the variable is I(0) while if it is higher then it will be I(1) non stationary.

In group 1, the variable **lgdp** is I(1) for IPS and ADF-Fisher test and I(0) for LL and PP-Fisher test. In equal terms, the variable **lfin_op** is I(0) in all cases. The variable **lfin_dev** is I(1) in all unit root tests except for LL test as well as the **trade_op** seem to be I(1) in all tests except for LL. While in group 2 the **lgdp** is I(1), **lfin_op and trade_op** are I(0) in all cases. The **lfin_dev** is I(1) except for PP-Fisher test. It is observed that the unit root tests' results are mixed and the variables are both I(0) and I(1).

Since the results of unit root test are mixed as it was shown above, we can move on our study by using the Panel ARDL method, which allows the presence of I(0) and I(1) variables but not I(2). As previously mentioned ARDL is a method of estimating an equation rather than a system, this method it was previously mentioned (Ch3). We will continue by estimating four different equations (one for each dependent variable) in order to test the long-term effects from and to each one.

3.2.2 ARDL

GROUP 1

Table.6a   Results of the ARDL (PMG) panel method, Long-term

Model	Dependent Variable	Independent Variables	Model of choice ARDL	Long term rates (*p*-value)		
1	**Lgdp**	lfin_op, lfin_dev, trade_op	(1,1,1,1)	-0.75621 (0.7542)	22.91784 (0.7417)	-27.07666 (0.7427)
2	**lfin_op**	lgdp, lfin_dev, trade_op	(1,1,1,1)	2.256768 (0.0000)*	-0.07444 (0.4960)	1.081024 (0.0008)*
3	**lfin_dev**	lgdp, lfin_op, trade_op	(1,1,1,1)	-0.19044 (0.0000)*	-0.00893 (0.0001)*	0.604009 (0.0000)*
4	trade_op	Lgdp, lfin_op, lfin_dev	(1,1,1,1)	-0.16221 (0.0999)	0.009277 (0.2832)	0.700040 (0.0000)*

* Indicates a statistically significant factor at a materiality level of 5%.

In the above table for developed countries, it is observed that for all four models it is selected the best one the (1,1,1,1) model for the ARDL procedure. Afterwards, in the first model with **lgdp** dependent variable we see that long term factors are not statistically important. In the second model with **lfin_op** dependent variable, long-term factors are all statistically significant except for lfin_dev. In the third model, with **lfin_dev** dependent variable, all long-term calculated factors are statistically significant. Whereas in the fourth model with **trade_op** dependent variable one of three long term coefficients is statistically significant which matches with lfin_dev variable.

GROUP 2

Table.6b   Results of the ARDL (PMG) panel method, Long-term

Model	Dependent Variable	Independent Variables	Model of choice ARDL	Long term rates (*p*-value)		
1	**Lgdp**	lfin_op, lfin_dev, trade_op	(1,1,1,1)	0.01497 (0.7889)	1.74976 **(0.0000)***	0.88699 **(0.0009)***
2	**lfin_op**	lgdp, lfin_dev, trade_op	(1,1,1,1)	1.71343 **(0.0000)***	-0.68400 **(0.0000)***	0.49602 **(0.0000)***
3	**lfin_dev**	lgdp, lfin_op, trade_op	(1,1,1,1)	0.826754 **(0.0000)***	0.03172 (0.3027)	-0.44856 **(0.0000)***
4	**trade_op**	Lgdp, lfin_op, lfin_dev	(1,1,1,1)	0.37583 **(0.0002)***	0.13036 **(0.0000)***	0.34345 **(0.0001)***

* Indicates a statistically significant factor at a materiality level of 5%.

In the above table for the developing countries' group it is observed that in all four models it is selected as the best one the (1,1,1,1) model for the ARDL procedure. In the first model with **lgdp** variable it is noted that the two out of three long-term factors are statistically significant. More specifically, it is not statistically significant the one which matches with lfin_op variable all of the long term factors are statistically important. In the second model with **lfin_op** dependent variable all of the long-term estimated coefficients are all statistically significant. In the third model, with **lfin_dev** dependent variable the long-term estimated coefficients are statistically significant except for the second one which matches with lfin_op. In the fourth model with **trade_op** dependent variable all of the factors are statistically significant.

GROUP 1

Table.7a ARDL Panel Process Results (PMG), Error Correction Terms

Model	Dependent Variable	Independent Variables	Error Correction Term (*p*-value)	Results
1	lgdp	lfin_op, lfin_dev, trade_op	0.002009 (0.0016)	No Existence of long-run causal relationships
2	Lfin_op	lgdp, lfin_dev, trade_op	**-0.888505 (0.0000)***	**Existence of long-run causal relationships**
3	lfin_dev	lgdp, lfin_op, trade_op	**-0.189979 (0.0011)***	**Existence of long-run causal relationships**
4	trade_op	lgdp,lfin_op, lfin_dev	**-0.191916 (0.0000)***	**Existence of long-run causal relationships**

* Indicates the statistically significant terms at a materiality level of 5%

For the study of the long-term causative effects between the variables, the error correction term should be negative and statistically significant. According to the above table (Table 7a), in the first model the error correction term was found to be positive and statistically significant. Therefore, there are not long-term causative effects from the independent to the dependent.

In the second model, the error correction term is negative and statistically significant (Table 7a) and according to Table 6a we can see that there are long-term causative effects from the independent variables lgdp and trade_op, as they are shown in Table 6a, the long-term coefficients are statistically

significant.

In the third model, the error correction term is negative and statistically significant (Table 7a) and at the same time as we can see in Table 6a) there are long-term causative effects from all independent variables to the dependent one.

In the fourth model, the error correction term is negative and statistically significant. In the same way, it seems to exist long-term causative effects from the lfin_dev independent variables to dependent one, because in Table 6a the corresponding long-term coefficient is statistically significant while the others are not.

GROUP 2

Table.7b ARDL Panel Process Results (PMG), Error Correction Terms

Model	Dependent Variable	Independent Variables	Error Correction Term (p-value)	Results
1	**lgdp**	lfin_op, lfin_dev, trade_op	0.016895 (0.1597)	No Existence of long-run causal relationships
2	**lfin_op**	lgdp, lfin_dev, trade_op	**-0.42430 (0.0000)***	**Existence of long-run causal relationships**
3	**lfin_dev**	lgdp, lfin_op, trade_op	**-0.187264 (0.0000)***	**Existence of long-run causal relationships**
4	**trade_op**	lgdp,lfin_op, lfin_dev	**-0.134374**	**Existence of long-run causal relationships**

			(0.0000)*	

* Indicates the statistically significant terms at a materiality level of 5%

According to the above table (Table 7b), in the first model it is noticed that the error term is positive and statistically insignificant, therefore there are not long-term causative effects from the independent variables to the dependent variable one.

In the second example, we can see that the error condition term is negative and statistically significant while in Table 6a all the long-term coefficients are statistically significant too. As a consequence there are long-term causative effects from all the independent variables to the dependent one.

In the third model (Table 7b) it is observed that the error correction term is negative and statistically significant, while in Table 6b we can say that there are long-term causative effects from the lgdp and trade_op variable to the dependent lfin_dev variable (table 6b).

In the fourth model (Table 7b) the error correction term is negative and statistically significant. At the same time, there are long-term causative effects from all the independent variables to the dependent ones (Table 6b) since all the long-term coefficients which match to the independent ones are statistically significant.

GROUP1

Table.8a Results of the ARDL (PMG) panel method, Short-term

Model	Dependent Variable	Independent Variables	Short-term rates (p-value)			Results
1	lgdp	lfin_op, lfin_dev, trade_op	**0.003642** **(0.0105)***	-0.00547 (0.8298)	**0.09437** **(0.0048)***	**Existence of short-term effects**
2	lfin_op	lgdp, lfin_dev,	15.05087	3.318694	-0.24644	No short-term

Model	Dependent Variable	Independent Variables	Short-term rates (p-value)			Results
		trade_op	(0.1117)	(0.1439)	(0.9075)	effects
3	**lfin_dev**	lgdp, lfin_op, trade_op	-0.34122 (0.4067)	-0.00167 (0.6500)	0.071048 (0.4859)	No short-term effects
4	**Trade_op**	lgdp, lfin_op, lfin_dev	**1.340518 (0.0000)***	0.006476 (0.1667)	-0.13177 (0.0733)	**Existence of short-term effects**

* Indicates the statistically significant coefficients at the materiality level of 5%

From Table 8a for Group 1, models are being studied in which there is a short-term causative effect. More specifically, in the first model is obvious that the trade_op and lfin_op variables are statistically significant and for this reason there are effects from them to lgdp. In the second and third model there is not short-term causative effect from the independent variables to the dependent one, because they are statistically insignificant. Finally, the fourth model shows the effect of lgdp to the trade_op dependent variable.

GROUP 2

Table.8b Results of the ARDL (PMG) panel method, Short-term

Model	Dependent Variable	Independent Variables	Short-term rates (p-value)			Results
1	**Lgdp**	lfin_op, lfin_dev, trade_op	0.00437 (0.2445)	-0.0348 (0.1099)	0.0340 (0.1400)	No short-term effects
2	**lfin_op**	lgdp, lfin_dev,	2.3310	0.45115	**1.51186**	Existence of short-term

		trade_op	(0.2151)	(0.1368)	**(0.0016)***	effects
3	**lfin_dev**	lgdp, lfin_op, trade_op	-0.3335 (0.1794)	-0.0707 (0.3265)	-6.1158 (0.4557)	No short-term effects
4	**trade_op**	lgdp, lfin_op, lfin_dev	0.41874 (0.0917)	0.01272 (0.2677)	-0.1219 (0.0924)	No short-term effects

* Indicates the statistically significant coefficients at the materiality level of 5%

In the above table 8b for group 2, it is being studied the existence of short-term causative effects for each model separately. Especially in the first, third and fourth one there is no short-term causative from the independent variables are statistically insignificant. On the other hand in the second model there is short-term causative effect from trade_op to the lfin_op dependent variable.

Table 9a and Table 9b below show the existence of short-term and long-term causative effect for each country, for all four models which have previously been examined.

3.2.3 Cross-Section Short Run Coefficients.

Table 9a. Results of the ARDL panel (PMG) method by country of <u>Group1</u>

Country	Model	Error correction term (p −value)	Short-term effects (p −value)		
Australia	lgdp (lfin_op,	0.001048 (0.0000)	**0.007993 (0.0000)***	**0.095030 (0.0000)***	**0.014538 (0.0001)**

	lfin_dev, trade_op)				
	lfin_op (lgdp, lfin_dev, trade_op)	**-1.381939** **(0.0009)***	34.75822 (0.7295)	-1.58194 (0.5019)	0.047610 (0.9811)
	lfin_dev (lgdp, lfin_op, trade_op)	0.124714 (0.0003)*	7.382718 (0.1411)	**-0.05460** **(0.0000)***	**-0.193377** **(0.0423)***
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.289401** **(0.0001)***	4.136580 (0.4949)	**-0.06349** **(0.0000)***	**-0.458141** **(0.0000)***
Austria	lgdp (lfin_op, lfin_dev, trade_op)	0.001571 (0.0000)*	**-0.000316** **(0.0000)***	**-0.02016** **(0.0168)***	**0.275445** **(0.0000)***
	lfin_op (lgdp, lfin_dev, trade_op)	**-1.682649** **(0.0000)***	177.7379 (0.8779)	51.09976 (0.4023)	-37.39463 (0.7455)
	lfin_dev (lgdp, lfin_op,	-0.588446 (0.1721)	-0.109986 (0.9544)	**0.003602** **(0.0000)***	-0.467363 (0.2571)

	trade_op)				
	trade_op (lgdp, lfin_op, lfin_dev)	0.007922 (0.6623)	**2.673639** **(0.0005)***	**-0.00044** **(0.0000)***	-0.031007 (0.5966)
Belgium	lgdp (lfin_op, lfin_dev, trade_op)	**-0.001401** **(0.0000)***	**0.004041** **(0.0000)***	**-0.07667** **(0.0349)***	**0.182170** **(0.0011)***
	lfin_op (lgdp, lfin_dev, trade_op)	-1.325344 (0.2273)	1.093107 (0.9992)	6.132529 (0.9435)	1.022792 (0.9783)
	lfin_dev (lgdp, lfin_op, trade_op)	**-0.503940** **(0.0001)***	**-1.258758** **(0.0259)***	**0.013900** **(0.0000)***	**-0.148583** **(0.0037)***
	trade_op (lgdp, lfin_op, lfin_dev)	-0.110049 (0.7277)	2.681021 (0.0930)	**-0.00464** **(0.0052)***	-0.037071 (0.9371)
Canada	lgdp (lfin_op, lfin_dev, trade_op)	0.0001272 (0.0000)*	**0.002854** **(0.0000)***	**0.002633** **(0.0119)***	**0.113976** **(0.0001)***

	lfin_op (lgdp, lfin_dev, trade_op)	**-0.511858** **(0.0001)***	14.58542 (0.8146)	-0.42369 (0.7486)	3.819780 (0.6777)
	lfin_dev (lgdp, lfin_op, trade_op)	**-0.101786** **(0.0001)***	-0.481823 (0.7115)	**-0.01711** **(0.0000)***	-0.120617 (0.5637)
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.034786** **(0.0020)***	**1.210927** **(0.0050)***	**0.009572** **(0.0000)***	-0.000870 (0.8250)
Switzerland	Lgdp (lfin_op, lfin_dev, trade_op)	0.000622 (0.0000)*	**0.000745** **(0.0000)***	-0.04174 (0.3540)	**0.185366** **(0.0000)***
	lfin_op (lgdp, lfin_dev, trade_op)	**-0.964433** **(0.0004)***	4.6477531 (0.9736)	-1.70598 (0.9792)	-3.026408 (0.8563)
	lfin_dev (lgdp, lfin_op, trade_op)	**-0.1777758** **(0.0000)***	**-0.551594** **(0.0051)***	**0.000849** **(0.0000)***	**0.032830** **(0.0237)***

	trade_op (lgd, lfin_op, lfin_dev)	**-0.043986 (0.0013)***	**1.685388 (0.0028)***	**-0.00515 (0.0000)***	-0.061566 (0.5747)
Germany	lgdp (lfin_op, lfin_dev, trade_op)	0.01146 (0.0000)*	**-0.006240 (0.0000)***	**-0.01680 (0.0007)***	**0.414142 (0.0070)***
	lfin_op (lgdp, lfin_dev, trade_op)	**-0.503794 (0.0018)***	-26.41024 (0.8907)	-0.36541 (0.9171)	11.75162 (0.7815)
	lfin_dev (lgdp, lfin_op, trade_op)	**-0.313698 (0.0033)***	-2.507344 (0.5570)	0.002961 (0.0727)	1.407297 (0.1548)
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.075939 (0.0000)***	**1.979939 (0.0000)***	**0.010221 (0.0000)***	**0.049672 (0.0017)***
Denmark	lgdp (lfin_op, lfin_dev, trade_op)	0.000914 (0.0000)*	**-0.000717 (0.0000)***	**0.024701 (0.0000)***	**0.037340 (0.0019)***

	Variable				
	lfin_op (lgdp, lfin_dev, trade_op)	**-0.512928** **(0.0001)***	4.142493 (0.9414)	1.365305 (0.2543)	1.164469 (0.8831)
	lfin_dev (lgdp, lfin_op, trade_op)	0.031908 (0.0615)	0.585457 (0.7656)	**0.014095** **(0.0002)***	**0.985810** **(0.0154)***
	trade_op (lgdp, lfin_op, lfin_dev)	0.001117 (0.6169)	0.570193 (0.0897)	3.67E-05 (0.6940)	**0.123326** **(0.0001)***
Spain	Lgdp (lfin_op, lfin_dev, trade_op)	0.002924 (0.0000)*	**0.003916** **(0.0000)***	**0.16656** **(0.0050)***	**0.068766** **(0.0011)***
	lfin_op (lgdp, lfin_dev, trade_op)	**-0.743529** **(0.0033)***	5.665381 (0.7890)	0.262199 (0.8882)	2.283910 (0.6393)
	lfin_dev (lgdp, lfin_op, trade_op)	**-0.198006** **(0.0002)***	-1.285210 (0.3466)	0.002383 (0.1965)	0.144096 (0.3507)

	trade_op (lgdp, lfin_op, lfin_dev)	**-0.226654** **(0.0001)***	1.455534 (0.0555)	**0.04628** **(0.0000)***	**-0.064902** **(0.0402)***
Finland	lgdp (lfin_op, lfin_dev, trade_op)	0.001543 (0.0000)*	**0.00342** **(0.0000)***	**-0.04559** **(0.0001)***	**0.176565** **(0.0007)***
	lfin_op (lgdp, lfin_dev, trade_op)	**-1.925187** **(0.0000)***	-26.47936 (0.5480)	0.474444 (0.3775)	-4.995487 (0.2724)
	lfin_dev (lgdp, lfin_op, trade_op)	**-0.206161** **(0.0002)***	-2.976750 (0.5626)	**-0.15641** **(0.0034)***	0.608392 (0.4739)
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.064737** **(0.0031)***	1.626482 (0.0922)	**-0.01646** **(0.0000)***	**0.081753** **(0.0107)***
France	lgdp (lfin_op, lfin_dev, trade_op)	0.001717 (0.0000)*	**-0.000614** **(0.0000)***	**0.048245** **(0.0000)***	**0.189865** **(0.0000)***

	lfin_op (lgdp, lfin_dev, trade_op)	**-0.612156** **(0.0025)***	22.35744 (0.9694)	0.710655 (0.9660)	-0.784824 (0.9862)
	lfin_dev (lgdp, lfin_op, trade_op)	**-0.066408** **(0.0114)***	1.086650 (0.7791)	**-0.01083** **(0.0000)***	0.171023 (0.4601)
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.272633** **(0.0000)***	**2.974699** **(0.0010)***	**0.006293** **(0.0000)***	**-0.109973** **(0.0050)***
United Kingdom	Lgdp (lfin_op, lfin_dev, trade_op)	0.000365 (0.0000)*	**0.10958** **(0.0000)***	**0.045949** **(0.0000)***	**-0.028530** **(0.0017)***
	lfin_op (lgdp, lfin_dev, trade_op)	**-0.532119** **(0.0001)***	8.317807 (0.6160)	0.335794 (0.6869)	2.544701 (0.2634)
	lfin_dev (lgdp, lfin_op, trade_op)	0.001659 (0.0746)	0.891133 (0.1916)	**-0.00947** **(0.0004)***	0.082979 (0.2809)
	trade_op	**-0.032796**	-0.134622	**0.025496**	0.002166

	(lgdp, lfin_op, lfin_dev)	**(0.0000)***	(0.5235)	**(0.0000)***	(0.8160)
Greece	lgdp (lfin_op, lfin_dev, trade_op)	0.014450 (0.0050)*	**0.012602 (0.0000)***	**0.345667 (0.0001)***	**-0.152450 (0.0001)***
	lfin_op (lgdp, lfin_dev, trade_op)	**-0.539947 (0.0000)***	3.654466 (0.7868)	-7.26246 (0.1516)	2.137884 (0.1642)
	lfin_dev (lgdp, lfin_op, trade_op)	**-0.692765 (0.0003)***	**-1.472909 (0.0112)***	**-0.02092 (0.0000)***	**0.213768 (0.0025)***
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.936697 (0.0001)***	**1.412248 (0.0035)***	**-0.01349 (0.0000)***	**-0.387505 (0.0085)***
Ireland	Lgdp (lfin_op, lfin_dev, trade_op)	0.003056 (0.0001)*	**0.0192678 (0.0000)***	**-0.13870 (0.0021)***	-0.049201 (0.5147)

	lfin_op (lgdp, lfin_dev, trade_op)	**-1.636408** **(0.0001)***	1.840707 (0.6263)	0.036181 (0.9573)	-1.023423 (0.7383)
	lfin_dev (lgdp, lfin_op, trade_op)	-0.010667 (0.6779)	**-1.612779** **(0.0140)***	**0.020313** **(0.0023)***	-0.676320 (0.3052)
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.133191** **(0.0000)***	0.023680 (0.7712)	**0.003402** **(0.0015)***	**-0.231938** **(0.0002)***
Iceland	Lgdp (lfin_op, lfin_dev, trade_op)	0.000667 (0.0000)*	**0.006955** **(0.0000)***	**0.044660** **(0.0000)***	**-0.144227** **(0.0011)***
	lfin_op (lgdp, lfin_dev, trade_op)	**-0.322324** **(0.0012)***	7.869248 (0.8214)	1.037563 (0.4374)	5.100524 (0.7065)
	lfin_dev (lgdp, lfin_op, trade_op)	-0.005381 (0.0518)	0.859619 (0.5030)	**0.017576** **(0.0003)***	0.107884 (0.8081)

	trade_op (lgdp, lfin_op, lfin_dev)	**-0.040610** **(0.0000)***	**-0.337188** **(0.0297)***	**0.007512** **(0.0000)***	**-0.031144** **(0.0020)***
Israel	Lgdp (lfin_op, lfin_dev, trade_op)	0.000928 (0.0000)*	**0.001018** **(0.0000)***	**-0.06122** **(0.0000)***	-0.001511 (0.4180)
	lfin_op (lgdp, lfin_dev, trade_op)	**-0.319628** **(0.0001)***	1.860078 (0.9207)	-1.58505 (0.0986)	2.021905 (0.1827)
	lfin_dev (lgdp, lfin_op, trade_op)	**-0.147708** **(0.0000)***	**-1.840119** **(0.0182)***	**-0.03098** **(0.0000)***	**0.133280** **(0.0258)***
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.047330** **(0.0017)***	0.418420 (0.2752)	**0.029238** **(0.0000)***	**0.176335** **(0.0006)***
Italy	Lgdp (lfin_op, lfin_dev, trade_op)	0.001679 (0.0000)*	**-0.000676** **(0.0000)***	**-0.06859** **(0.0014)***	**0.189267** **(0.0000)***
	lfin_op	**-1.724786**	147.1895	5.477424	-17.35598

	(lgdp, lfin_dev, trade_op)	**(0.0000)***	(0.8110)	(0.9211)	(0.7370)
	lfin_dev (lgdp, lfin_op, trade_op)	**-0.096858** **(0.0000)***	-0.677700 (0.3415)	**-0.06615** **(0.0000)***	**0.523058** **(0.0020)***
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.205636** **(0.0000)***	**1.529892** **(0.0157)***	**0.000854** **(0.0000)***	**0.411144** **(0.0015)***
Japan	Lgdp (lfin_op, lfin_dev, trade_op)	0.000493 (0.0000)*	**-0.000669** **(0.0000)***	**0.110284** **(0.0093)***	**0.051291** **(0.0000)***
	lfin_op (lgdp, lfin_dev, trade_op)	**-0.613944** **(0.0001)***	-20.40114 (0.9029)	3.935864 (0.9607)	4.116702 (0.4060)
	lfin_dev (lgdp, lfin_op, trade_op)	**-0.044713** **(0.0000)***	**-0.461720** **(0.0048)***	**0.001869** **(0.0000)***	**-0.080440** **(0.0000)***
	trade_op (lgdp,	**-0.098446** **(0.0003)***	1.783737 (0.1117)	**0.024619** **(0.0000)***	-1.296425 (0.0624)

	lfin_op, lfin_dev)				
Luxembourg	Lgdp (lfin_op, lfin_dev, trade_op)	0.000662 (0.0000)*	**-0.007034 (0.0000)***	**0.071364 (0.0000)***	**0.265139 (0.0000)***
	lfin_op (lgdp, lfin_dev, trade_op)	**-1.314865 (0.0019)***	-23.12404 (0.9409)	0.249944 (0.9800)	7.5205290 (0.8446)
	lfin_dev (lgdp, lfin_op, trade_op)	**-0.118267 (0.0007)***	2.546104 (0.4976)	**0.034174 (0.0000)***	-0.438259 (0.3952)
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.070833 (0.0012)***	**2.377093 (0.0029)***	**0.013428 (0.0000)***	**-0.092147 (0.0108)***
Malta	Lgdp (lfin_op, lfin_dev, trade_op)	0.002379 (0.0002)*	**0.06776 (0.0000)***	**-0.10665 (0.0010)***	**-0.180609 (0.0006)***
	lfin_op (lgdp, lfin_dev,	**-0.796549 (0.0012)***	7.676059 (0.9751)	3.280667 (0.8829)	18.59911 (0.6216)

	trade_op)				
	lfin_dev (lgdp, lfin_op, trade_op)	**-1.200777** **(0.0000)***	**-0.901997** **(0.0000)***	**0.012339** **(0.0000)***	**-0.112213** **(0.0000)***
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.587309** **(0.0000)***	-0.003378 (0.9676)	**-0.00163** **(0.0001)***	-0.001978 (0.9185)
*Netherlands	Lgdp (lfin_op, lfin_dev, trade_op)	0.007600 (0.0008)*	**0.001151** **(0.0000)***	**0.126729** **(0.0000)***	**0.151022** **(0.0000)***
	lfin_op (lgdp, lfin_dev, trade_op)	**-0.606949** **(0.0006)***	14.70470 (0.8777)	0.876604 (0.8984)	2.775396 (0.7905)
	lfin_dev (lgdp, lfin_op, trade_op)	**-0.263241** **(0.0005)***	-1.554469 (0.1684)	**0.003650** **(0.0017)***	0.238367 (0.0987)
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.612944** **(0.0000)***	**1.752203** **(0.0004)***	**-0.00573** **(0.0000)***	**-0.459063** **(0.0000)***

Norway	Lgdp (lfin_op, lfin_dev, trade_op)	0.001535 (0.0000)*	**-0.000819 (0.0000)***	**0.030441 (0.0001)***	**0.072432 (0.0001)***
	lfin_op (lgdp, lfin_dev, trade_op)	**-0.704876 (0.0001)***	2.984557 (0.9426)	-1.25398 (0.6061)	1.997003 (0.7667)
	lfin_dev (lgdp, lfin_op, trade_op)	0.017137 (0.0010)*	0.114502 (0.8833)	**-0.01476 (0.0000)***	**-0.405426 (0.0114)***
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.058967 (0.0000)***	**1.035800 (0.0154)***	**0.10164 (0.0000)***	**-0.167705 (0.0003)***
New Zealand	Lgdp (lfin_op, lfin_dev, trade_op)	0.000123 (0.0000)*	**0.008259 (0.0000)***	**0.044549 (0.0000)***	**-0.990595 (0.0003)***
	lfin_op (lgdp, lfin_dev, trade_op)	**-0.531351 (0.0001)***	3.952124 (0.8740)	0.133739 (0.5195)	0.391044 (0.9061)
	lfin_dev	**-0.018009**	-2.653358	**-0.01039**	**-0.810581**

Country	Variable				
	(lgdp, lfin_op, trade_op)	(0.0035)*	(0.2402)	(0.0172)*	(0.0459)*
	trade_op (lgdp, lfin_op, lfin_dev)	-0.031375 (0.0000)*	-0.633916 (0.0926)	0.013864 (0.0000)*	-0.126725 (0.0001)*
Portugal	Lgdp (lfin_op, lfin_dev, trade_op)	0.004451 (0.0002)*	-0.005820 (0.0000)*	0.149266 (0.0001)*	0.698517 (0.0000)*
	lfin_op (lgdp, lfin_dev, trade_op)	-1.455459 (0.0000)*	-22.94540 (0.7126)	-2.04023 (0.7827)	6.392620 (0.3057)
	lfin_dev (lgdp, lfin_op, trade_op)	-0.068451 (0.0401)*	-0.327912 (0.7822)	0.006492 (0.0000)*	-0.061450 (0.4447)
	trade_op (lgdp, lfin_op, lfin_dev)	-0.467498 (0.0000)*	2.215135 (0.0046)*	0.09038 (0.0000)*	-0.572454 (0.0007)*
Sweden	Lgdp (lfin_op,	0.002050 (0.0000)*	0.002417 (0.0000)*	-0.38107 (0.0000)*	0.501494 (0.0000)*

	lfin_dev, trade_op)				
	lfin_op (lgdp, lfin_dev, trade_op)	**-0.630348** **(0.0004)***	24.24651 (0.9193)	24.14629 (0.6996)	-16.90891 (0.8742)
	lfin_dev (lgdp, lfin_op, trade_op)	**-0.093239** **(0.0001)***	**-1.421417** **(0.0019)***	**0.009869** **(0.0000)***	**0.857206** **(0.0004)***
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.167377** **(0.0014)***	**1.371436** **(0.0001)***	**-0.00374** **(0.0000)***	**0.602275** **(0.0001)***
United States	lgdp (lfin_op, lfin_dev, trade_op)	**-0.001768** **(0.0000)***	**0.021805** **(0.0000)***	**-0.02409** **(0.0193)***	**0.019313** **(0.0016)***
	lfin_op (lgdp, lfin_dev, trade_op)	**-0.319248** **(0.0002)***	6.318726 (0.4205)	-0.05094 (0.9801)	1.640959 (0.0959)
	lfin_dev (lgdp, lfin_op,	**-0.008613** **(0.0009)***	0.099140 (0.3418)	**0.002199** **(0.0020)***	**-0.215152** **(0.0001)***

	trade_op)				
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.197841** **(0.0000)***	-0.291998 (0.2456)	**0.066695** **(0.0000)***	**-0.610303** **(0.0006)***

* Indicates the statistically significant coefficients at the materiality level of 5%

In the above table (table 9a) in the first model with the lgdp, which is the one that examines the long-term and short-term economy effects, it was found that for all countries in group1 except Belgium and U.S.A there are not long-term causative effects. Also for the same model as well, in the general panel of the short-term period it is observed that there causative effect from all independent variables to the dependent variable in all countries except from U.S.A for lfin_op, Switzerland for lfin_dev and Ireland and Israel for the variable trade_op.

In the second model with lfin_op dependent variable which reflects Foreign Direct Investments, was found that there is a long-lasting causative effect in all countries of the group 1except from Belgium. What is more, as far as the short-term effect of panel it is concerned, it is remarkable that in all countries for group 1 there are not short-term effects from the independent variables to the dependent one.

In the third model with lfin_dev dependent variable, according to the results of the above table, it was found out that for the majority of the countries in the Group 1 there is a long-term causative effect except for: Australia, Austria, Denmark, U.K, Ireland, Iceland and Norway. In the same model in the short-term period it is observed that from three independent variables, the lfin_op which reflect the Foreign Direct Investments are ones which in most countries affects in short-term, follows the lgdp and then the trade_op.

In the fourth model with trade_op dependent variable, was found that for the most countries there is long-term causative effect except for: Belgium, Austria and Denmark. In the same model for the general panel in the short-term period it is observed that the variable lfin_op affects more the countries then follows the lfin_dev and finally the lgdp.

All in all, for the first model's majority of countries there is not long-term and there is short-term causative effect almost in all countries. However in the

second, third and fourth model there is long-term causative effect. At the same time, in the second model we can see that all independent variables do not affect in the short term in all countries. In the third model the independent variable lfin_op affects more the dependent lfin_dev comparing with the rest of the independents. Finally, in the fourth model again the lfin_op, follows the lf and in_dev then the lfgdp, affects the dependent in short-term.

Table 9b. Results of the ARDL panel (PMG) method by country of <u>Group 2</u>

Country	Model	Error correction term (p −value)	Short-term effects (p −value)		
Argentina	lgdp (lfin_op, lfin_dev, trade_op)	0.013376 (0.0000)	**-0.00523 (0.0000)***	**-0.039720 (0.0001)***	**-0.08439 (0.0010)***
	lfin_op (lgdp, lfin_dev, trade_op)	**-6.301791 (0.0001)***	-1.00882 (0.8123)	-0.296156 (0.2759)	0.837331 (0.1916)
	lfin_dev (lgdp, lfin_op, trade_op)	**-0.289703 (0.0000)***	**-1.16980 (0.0315)***	**-0.033232 (0.0002)***	**0.397997 (0.0018)***
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.098477 (0.0001)***	-0.52504 (0.0505)	**0.019838 (0.0002)***	**0.397997 (0.0018)***
Brazil	lgdp	0.215111	**0.044669**	0.616759	**0.128677**

	(lfin_op, lfin_dev, trade_op)	(0.0000)	(0.0000)*	(0.4887)	(0.0001)*
	lfin_op (lgdp, lfin_dev, trade_op)	-0.839705 (0.0029)*	-1.86479 (0.8781)	2.402427 (0.7603)	1.945667 (0.1779)
	lfin_dev (lgdp, lfin_op, trade_op)	-0.4386852 (0.0004)*	-0.98226 (0.0053)*	0.03384 (0.0000)*	-0.04672 (0.0102)*
	trade_op (lgdp, lfin_op, lfin_dev)	-0.318685 (0.0008)*	0.553000 (0.1738)	-0.009589 (0.0389)*	-1.21345 (0.0151)*
Chile	Lgdp (lfin_op, lfin_dev, trade_op)	0.025034 (0.0000)	0.002376 (0.0001)*	-0.199121 (0.0000)*	0.093978 (0.0004)*
	lfin_op (lgdp, lfin_dev,trade_op)	-0.622186 (0.0000)*	-1.97364 (0.7109)	-0.786391 (0.2065)	0.608612 (0.6082)
	lfin_dev (lgdp, lfin_op, trade_op)	-0.143799 (0.0000)*	-2.07059 (0.0004)*	-0.002315 (0.0314)*	0.207641 (0.0229)*
	trade_op (lgdp, lfin_op, lfin_dev)	-0.180274 (0.0000)*	0.635235 (0.0075)*	-0.013495 (0.0000)*	0.003342 (0.7401)

Colombia	Lgdp (lfin_op, lfin_dev, trade_op)	**-0.007580** **(0.0000)***	**0.602688** **(0.0000)***	**-0.033462** **(0.0000)***	**0.067381** **(0.0003)***
	lfin_op (lgdp, lfin_dev, trade_op)	**-0.120979** **(0.0005)***	0.555503 (0.9564)	0.611212 (0.1420)	-0.58804 (0.6822)
	lfin_dev (lgdp, lfin_op, trade_op)	**-0.345682** **(0.0002)***	-0.57120 (0.3987)	**0.025130** **(0.0005)***	**0.329214** **(0.0294)***
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.115142** **(0.0001)***	**0.658393** **(0.0241)***	**-0.023451** **(0.0000)***	0.015965 (0.0670)
Algeria	Lgdp (lfin_op, lfin_dev, trade_op)	**-0.000793** **(0.0000)***	**-0.04496** **(0.0000)***	**-0.001285** **(0.0000)***	**0.303464** **(0.0000)***
	lfin_op (lgdp, lfin_dev, trade_op)	0.037211 (0.0002)	**-22.0437** **(0.0339)***	**-0.622357** **(0.0004)***	**6.750361** **(0.0099)***
	lfin_dev (lgdp, lfin_op, trade_op)	**-0.673803** **(0.0305)***	2.291406 (0.9997)	-1.362493 (0.9233)	-2.64921 (0.9971)
	trade_op	0.004481	**2.872222**	**0.131676**	**-0.00026**

Country	Variable				
	(lgd, lfin_op, lfin_dev)	(0.0005)*	(0.0013)*	(0.0000)*	(0.0081)*
Egypt	Lgdp (lfin_op, lfin_dev, trade_op)	**-0.012274** **(0.0000)***	**-0.00187** **(0.0000)***	**-0.011413** **(0.0015)***	**-0.02155** **(0.0000)***
	lfin_op (lgdp, lfin_dev, trade_op)	**-0.313161** **(0.0003)***	3.212026 (0.9245)	0.542874 (0.6556)	1.133222 (0.1074)
	lfin_dev (lgdp, lfin_op, trade_op)	**-0.047575** **(0.0003)***	0.020611 (0.9774)	**0.017677** **(0.0001)***	-0.00167 (0.9113)
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.208667** **(0.0006)***	0.354160 (0.8247)	**0.042520** **(0.0000)***	**-0.19751** **(0.0389)***
Ghana	lgdp (lfin_op, lfin_dev, trade_op)	**-0.02485** **(0.0000)***	**0.010716** **(0.0000)***	**-0.028311** **(0.0002)***	**0.027650** **(0.0000)***
	lfin_op (lgdp, lfin_dev, trade_op)	**-0.217939** **(0.0001)***	4.629328 (0.5168)	0.873556 (0.1011)	**1.665902** **(0.0120)***
	lfin_dev (lgdp, lfin_op, trade_op)	**-0.101329** **(0.0005)***	0.446858 (0.4728)	**0.030803** **(0.0003)***	**0.199475** **(0.0004)***

Country	Variable				
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.143417** **(0.0001)***	2.441912 (0.1375)	**-0.069852** **(0.0002)***	**0.360673** **(0.0043)***
India	lgdp (lfin_op, lfin_dev, trade_op)	**-0.040157** **(0.0000)***	**-0.004888** **(0.0000)***	**-0.264896** **(0.0001)***	**-0.06597** **(0.0000)***
	lfin_op (lgdp, lfin_dev, trade_op)	**-0.232089** **(0.0004)***	0.599076 (0.9807)	2.691456 (0.7979)	1.410113 (0.5007)
	lfin_dev (lgdp, lfin_op, trade_op)	**-0.034252** **(0.0029)***	**-0.465091** **(0.0016)***	**0.004487** **(0.0000)***	**0.030352** **(0.0126)***
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.025437** **(0.0003)***	-0.300450 (0.4287)	**0.0128104** **(0.0000)***	0.131462 (0.4144)
Iran	Lgdp (lfin_op, lfin_dev, trade_op)	0.04498 (0.0077)	**0.01756** **(0.0000)***	**-0.169881** **(0.0001)***	-0.03379 (0.0971)
	lfin_op (lgdp, lfin_dev, trade_op)	**-0.387777** **(0.0001)***	5.710748 (0.4596)	2.148274 (0.2342)	4.085241 (0.2907)
	lfin_dev (lgdp, lfin_op,	**-0.094297** **(0.0014)***	**-0.972029** **(0.0066)***	**0.023880** **(0.0000)***	**-0.72617** **(0.0016)***

	trade_op)				
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.053279** **(0.0041)***	-0.085657 (0.3152)	**0.079701** **(0.0000)***	**-0.30101** **(0.0002)***
Jamaica	Lgdp (lfin_op, lfin_dev, trade_op)	0.022471 (0.0000)	**0.002309** **(0.0000)***	**-0.081775** **(0.0000)***	**-0.11934** **(0.0000)***
	lfin_op (lgdp, lfin_dev, trade_op)	**-0.236518** **(0.0005)***	**-0.741466** **(0.0005)***	0.962606 (0.1600)	**2.787805** **(0.0197)***
	lfin_dev (lgdp, lfin_op, trade_op)	**-0.228777** **(0.0001)***	-1.924431 (0.0523)	**0.056711** **(0.0001)***	**-0.24054** **(0.0239)***
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.068684** **(0.0017)***	**0.404937** **(0.0017)***	0.404937 (0.5127)	**0.112116** **(0.0000)***
Korea	Lgdp (lfin_op, lfin_dev, trade_op)	0.022471 (0.0000)	**0.002309** **(0.0000)***	**-0.081775** **(0.0000)***	**-0.11934** **(0.0000)***
	lfin_op (lgdp, lfin_dev, trade_op)	**-0.477971** **(0.0001)***	3.939172 (0.6729)	0.102255 (0.9224)	0.854145 (0.4972)
	lfin_dev	**-0.090289**	**-1.004061**	**-0.024512**	**-0.10489**

	(lgdp, lfin_op, trade_op)	**(0.0000)***	**(0.0125)***	**(0.0000)***	**(0.0357)***
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.215986** **(0.0000)***	**-1.385045** **(0.0034)***	**0.005153** **(0.0007)***	**-0.18553** **(0.0018)***
Mexico	Lgdp (lfin_op, lfin_dev, trade_op)	0.016751 (0.0000)	**0.005641** **(0.0000)***	**-0.024118** **(0.0004)***	**-0.68253** **(0.0000)***
	lfin_op (lgdp, lfin_dev, trade_op)	**-1.028659** **(0.0000)***	-2.820083 (0.1879)	**0.594673** **(0.0071)***	**0.612832** **(0.0226)***
	lfin_dev (lgdp, lfin_op, trade_op)	**-0.259592** **(0.0000)***	-0.803367 (0.0665)	**0.014476** **(0.0049)***	**0.205267** **(0.0074)***
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.035359** **(0.0000)***	**-1.066834** **(0.0106)***	**0.051894** **(0.0000)***	0.014782 (0.3498)
Malaysia	Lgdp (lfin_op, lfin_dev, trade_op)	0.015733 (0.0000)	**0.011660** **(0.0000)***	**-0.022853** **(0.0002)***	**0.082598** **(0.0005)***
	lfin_op (lgdp, lfin_dev, trade_op)	**-0.541896** **(0.0000)***	10.51290 (0.3704)	0.667437 (0.3443)	4.108643 (0.2445)

	lfin_dev (lgdp, lfin_op, trade_op)	**-0.217001** **(0.0000)***	-1.042037 (0.0736)	**-0.012264** **(0.0001)***	0.233237 (0.0937)
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.065963** **(0.0000)***	0.105262 (0.2793)	**0.007089** **(0.0000)***	**-0.07933** **(0.0003)***
Pakistan	Lgdp (lfin_op, lfin_dev, trade_op)	**-0.004590** **(0.0000)***	**0.005892** **(0.0000)***	**0.019249** **(0.0020)***	**-0.05014** **(0.0000)***
	lfin_op (lgdp, lfin_dev, trade_op)	**-0.504545** **(0.0000)***	8.022765 (0.7318)	-1.367682 (0.5180)	**3.430898** **(0.0469)***
	lfin_dev (lgdp, lfin_op, trade_op)	**-0.011793** **(0.0033)***	0.276556 (0.3877)	**-0.005405** **(0.0001)***	**0.189724** **(0.0014)***
	trade_op (lgdp, lfin_op, lfin_dev)	-0.015461 (0.5838)	**-0.438969** **(0.0000)***	-0.042236 (0.8921)	**0.022910** **(0.0000)***
Peru	Lgdp (lfin_op, lfin_dev, trade_op)	0.046813 (0.0000)	**0.019905** **(0.0000)***	**0.075220** **(0.0002)***	**0.086166** **(0.0004)***
	lfin_op (lgdp, lfin_dev,	**-0.268437** **(0.0000)***	4.385308 (0.1610)	-0.920940 (0.0536)	**-1.65219** **(0.0393)***

	trade_op)				
	lfin_dev (lgdp, lfin_op, trade_op)	**-0.173853** **(0.0002)***	-0.28367 (0.3535)	**-0.068401** **(0.0000)***	-0.12459 (0.0537)
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.150943** **(0.0001)***	**0.428369** **(0.0243)***	**-0.078589** **(0.0000)***	**-0.12939** **(0.0022)***
Philippines	Lgdp (lfin_op, lfin_dev, trade_op)	**-0.005271** **(0.0000)***	**0.003433** **(0.0000)***	**0.044085** **(0.0000)***	**0.024925** **(0.0130)***
	lfin_op (lgdp, lfin_dev, trade_op)	**-0.539056** **(0.0000)***	8.307879 (0.7064)	0.397316 (0.6889)	2.686473 (0.5148)
	lfin_dev (lgdp, lfin_op, trade_op)	**-0.072629** **(0.0002)***	1.008379 (0.1143)	**-0.007205** **(0.0006)***	**0.427109** **(0.0199)***
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.131180** **(0.0000)***	0.066969 (0.5567)	**0.007122** **(0.0000)***	**0.059439** **(0.0012)***
Thailand	Lgdp (lfin_op, lfin_dev, trade_op)	0.032764 (0.0000)	**0.00187** **(0.0001)***	**-0.016957** **(0.0383)***	**0.068081** **(0.0008)***
	lfin_op	**-0.466390**	0.612189	-0.827517	1.110648

	(lgdp, lfin_dev, trade_op)	**(0.0003)***	(0.9395)	(0.6122)	(0.5269)
	lfin_dev (lgdp, lfin_op, trade_op)	**-0.314798** **(0.0000)***	**-0.699432** **(0.0061)***	-0.000695 (0.0672)	**0.081773** **(0.0251)***
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.046467** **(0.0000)***	0.160757 (0.1908)	**0.007682** **(0.0001)***	**-0.17913** **(0.0086)***
Venezuela	Lgdp (lfin_op, lfin_dev, trade_op)	0.016064 (0.0000)	**0.007734** **(0.0000)***	**0.146046** **(0.0000)***	**0.051836** **(0.0020)***
	lfin_op (lgdp, lfin_dev, trade_op)	**-0.379443** **(0.0002)***	2.931796 (0.7693)	-1.819440 (0.1118)	-0.72230 (0.7039)
	lfin_dev (lgdp, lfin_op, trade_op)	-0.003564 (0.4098)	**1.313005** **(0.0221)***	**-0.046522** **(0.0000)***	**-0.30174** **(0.0118)***
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.198010** **(0.0016)***	0.486579 (0.0764)	**-0.008740** **(0.0003)***	**-0.17535** **(0.0013)***
South Africa	Lgdp (lfin_op, lfin_dev, trade_op)	**-0.012128** **(0.0000)***	**0.000674** **(0.0000)***	-0.000557 (0.7595)	**0.144375** **(0.0000)***

	lfin_op (lgdp, lfin_dev, trade_op)	**-0.619087** **(0.0000)***	21.32447 (0.9069)	2.618315 (0.8249)	0.331973 (0.9764)
	lfin_dev (lgdp, lfin_op, trade_op)	**-0.016589** **(0.0015)***	0.252987 (0.6646)	**0.010511** **(0.0000)***	**-0.30657** **(0.0012)***
	trade_op (lgdp, lfin_op, lfin_dev)	**-0.062654** **(0.0007)***	**2.193608** **(0.0111)***	**0.004903** **(0.0000)***	-0.35132 (0.0848)

* Indicates the statistically significant coefficients at the materiality level of 5%

According to Table 9b for the countries total of the second group, was found out that there is not long-term causative effect for 11out of 19 countries and there are: Argentina, Brazil, Chile, Iran, Jamaica, Korea, Mexico, Malaysia, Peru, Thailand and Venezuela, while for the rest of them, there is as far as the same model is concerned in general panel in short term period. It is observed that for the majority of the countries lfin_op, trade_op and lfin_den independent variables affect lgdp dependent variable in short term.

In the second model with the lfin_op dependent variable and lgdp, lfin_dev and trade_op independents, it is noted that there is for the most countries a long-term causative effect except for Algeria. In this model it is observed that for the most countries of group 2, none of the variables affect lfin_op in short term which reflects the Foreign Direct Investments. In few cases, where the independent will affect the dependent lfin_op first is the trade_op and then the rest of them.

In the third model with the lfin_dev dependent and the lgdp, lfin_op and trade_op independent variable, we found out that the most of the countries of the second group there is a long-term causative effect. Afterwards for the short-term period it is noticed that the lfin_op variable, affects the majority of countries in the short-term, the

independent variable lfin_dev and then follows the trade_op and lgdp.

In the fourth model with the trade_op dependent variable and lgdp, lfin_op and lfin_dev independent, there is long-term causative effect, with the exception of Algeria and Pakistan. Then is noticed that the lfin_op independent variable affects more the trade_op dependent one, in short-term while then is lfin_dev and finally lgdp.

To sum up, in the first model there is a long-term causative effect for 8 out of 19 countries while for the three other models there is the same effect (long-term) for the most countries. Also it is remarkable the fact that three independent variables affect the dependent. On the other hand for the second model in most cases, none of (the three) independent variables affect the dependent variable in a short-term period. In the third and fourth model we can notice that the lfin_op affects more each of the dependent variables.

3.2.4 Wald test

The Wald test is a parametric statistical test named after the statistician Abraham Wald. It could be used for testing the real value of the parameter based on the sample's estimation, when a relationship within or between data items can be expressed as a statistical model with parameters to be estimated by a sample.

The use is to show us if the explanatory variables which are used in our model, are important or not. How important is to add something to the model? On the other hand the variables that do not add anything to the model can be deleted without any essential impact.

At the same time the zero hypotheses is a parameter equal to a value. If this value is equal to zero, then the variable can be subtracted from the model if it should not be included. For this study, the zero case set by changing a different factor each time by changing a different factor to check its significance in the model. The model we have chosen is the one with lgdp dependent variable and lfin_op, lfin_dev and trade_op independents.

Group1

Table.10a Wald Test for Group 1

Cases	p-value	Acceptance or not of the NH
C1=0	0.7542	Acceptance
C2=0	0.7417	Acceptance
C3=0	0.7427	Acceptance

* Indicates a statistically significant factor at a materiality level of 5%.

In the above table we can see that only in all cases we accept the Null Hypothesis. Therefore the independent variables are not so important for the second's model with the variable dependent lgdp.

Group2

Table.10b Wald Test for Group 2

Cases	p-value	Acceptance or not of the NH
C1=0	0.7889	Acceptance
C2=0	0.0000	non acceptance
C3=0	0.0009	non acceptance

* Indicates a statistically significant factor at a materiality level of 5%.

In the second's group as in the first, we see that only in the first case which corresponds to lfin_op variable reflects FDI, we accept the Null Hypothesis, while in the other two cases we do not. Therefore the independent variable lfin_op is not important as the other two for the second's model with the variable dependent lgdp.

CHAPTER 4

Conclusion

According to the previous analysis, in both cases (Group 1 and Group 2), GDP is not affected by FDI in long-term and neither is by the financial sector, exports and imports. Similar conclusions were drawn in the Koning's case (2000) where there was not any evidence of effect in domestic economy. However Carcovic and Levine (2002) supported that FDI inflows affect financial development, independently from other essential development factors. As well as Bevan and Estrin (2004) have noted that FDI have a positive impact to GDP both in the host

and in the country of origin. In addition Gorg and Strobl (2005) supported that the domestic economy benefits from Multinational Enterprises. Makki and Somwaru (2004) said that FDI are contribute in financial development of the developing countries while, on the other hand Roame and Adur (2005) supported that there was no evidence which proves the presence of interactions in a measuring model of a stranger.

In the meanwhile, for developed countries, GDP and imports and exports have long-term causative effects on FDI. At the same time, for developing countries, financial sector affects the FDIs. This result is defined in some way to the point where financial sector has long-term causative impact on FDI, with Markusen and Maskus (2001) who supported that the subsidiary's activity is related to variables such as relative performance variations. At the same time, Alfaro, Chanda, Kalemli-Ozcan and Sayek (2003) supported that countries with developed financial markets benefit significantly from FDI.

Furthermore, in group 1, it is observed that all independent variables affect the financial sector. On the other hand, in the case of Group 2, all independent variables except FDIs affect long-term the financial sector. Finally, if the independent variable in the model is the sum of imports and exports, we notice that for group 2, all independent variables affect the dependent one and for group 1 only the lfin_dev independent variables affect the dependent one.

Finally, in the short-term, for the developing countries group, it seems that the variable which reflects the lfin_op and the sum of imports and export have a short-term effect on GDP and the GDP affects the trade openness. Also, in those developing countries, imports and exports have short term effects on FDI.

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