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“THE RELATIONSHIP BETWEEN TRADE
OPENNESS AND ECONOMIC GROWTH”

By

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“THE RELATIONSHIP BETWEEN TRADE OPENNESS AND ECONOMIC GROWTH”

ABSTRACT

This master thesis re-examines the issue of the relationship between trade openness and economic growth. It aims to provide a review from theoretical and empirical literature of the most important studies and give a complete picture of what conclusions have been drawn up to now. This will help us to understand better why economic theory delivers an ambiguous message. Regarding the theoretical literature, classical and neoclassical theories are analyzed, as well as the heterodox aspect of international trade. It is referred to the governmental policies and instruments - tariff and non tariff barriers- that countries impose to trade, as well the arguments for and against protectionism policies. A selection of the most influential empirical studies on the subject is also presented. It consist an overview of what we know today about the direction and strength of the relationship between 'openness' and growth and the influence of other determinants. An empirical investigation is also development based on Pearson correlation.

Key words: economic growth, international trade, trade barriers, trade openness, Pearson correlation.

“Η ΣΧΕΣΗ ΜΕΤΑΞΥ ΤΟΥ ΑΝΟΙΓΜΑΤΟΣ ΤΟΥ ΕΜΠΟΡΙΟΥ ΚΑΙ ΤΗΣ ΟΙΚΟΝΟΜΙΚΗΣ ΑΝΑΠΤΥΞΗΣ”

ΠΕΡΙΛΗΨΗ

Αυτή η διπλωματική εργασία επανεξετάζει το θέμα της σχέσης μεταξύ του ανοίγματος του εμπορίου και της οικονομικής ανάπτυξης. Έχει ως στόχο να παρέχει μια ανασκόπηση της θεωρητικής και εμπειρικής βιβλιογραφίας των πιο σημαντικών ερευνών και να δώσει μία ολοκληρωμένη εικόνα των συμπερασμάτων που έχουν διαμορφωθεί μέχρι σήμερα. Αυτό θα μας βοηθήσει να κατανοήσουμε καλύτερα γιατί η οικονομική θεωρία παραδίδει ένα διφορούμενο μήνυμα. Όσο αναφορά τη θεωρητική βιβλιογραφία, αναλύεται η κλασική και νεοκλασική θεωρία, καθώς και οι ετερόδοξες απόψεις σχετικά με το διεθνές εμπόριο. Γίνεται αναφορά στις κυβερνητικές πολιτικές και τα μέσα-δασμοί και μη δασμολογικά εμπόδια-που οι χώρες επιβάλλουν στο εμπόριο, καθώς επίσης και στα επιχειρήματα υπέρ και κατά της προστατευτικής πολιτικής. Παρουσιάζεται επιπλέον, μια συλλογή από μελέτες με την μεγαλύτερη επιρροή πάνω στο θέμα. Αποτελεί μια ανασκόπηση του τι γνωρίζουμε σήμερα σχετικά με την κατεύθυνση και τη δύναμη της σχέσης μεταξύ του 'ανοίγματος' και της ανάπτυξης και την επιρροή άλλων καθοριστικών παραγόντων. Παράλληλα, μια εμπειρική έρευνα αναπτύσσεται βασισμένη στη συσχέτιση Pearson.

Λέξεις Κλειδιά: οικονομική ανάπτυξη, διεθνές εμπόριο, εμπορικά εμπόδια, άνοιγμα εμπορίου, συσχέτιση Pearson.

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INTRODUCTION

The relationship of trade openness and economic growth is a subject of much interest in international trade literature. Several studies find a positive relationship between openness to international trade and growth. Other studies do not find this relationship to be robust, while some studies find a negative correlation. It is a subject of controversy and this situation continues today. More specifically, the nature of this relationship is still a field of disagreement among economists. It is noteworthy that this controversial debate appears both in theoretical researches and in empirical literature. As a consequence, this issue is far from being resolved and further research seems to be required.

This master thesis re-examines the issue of the relationship between trade openness and economic growth. It aims to provide a review from theoretical and empirical literature of the most important studies and give a complete picture of what conclusions have been drawn up to now, as well as to investigate empirically this relationship. This will help us understand better why economic theory delivers an ambiguous message.

We try to understand and present the importance of the relationship between trade and economic growth by researching theories from the past - classical and neoclassical-and more recent theories - new trade theories, where economies of scale play a crucial role. Examining the causes of international trade and its importance on increasing the welfare not only for each country but also for the whole world, we realize that in reality the transport of goods and services confronts a great number of barriers. So, we refer to the governmental policies and instruments - tariff and non tariff barriers- that countries impose to trade. A crucial question that derives from this analysis is free trade or protectionism and which one of these two cases are the best choice for the increase of the volume of international trade and for the flourishing of economic growth.

Before we review the empirical literature on the relationship between trade openness and economic growth, we will try to clarify the difficult concept of trade openness. The term of 'openness' creates a crucial problem for researchers, as they

have difficulty in measuring it and this means that many different measures of trade openness and policy have been created and used in empirical analyses of this relationship. On empirical grounds, researchers are divided between those who support that trade openness lead to economic growth and those who believe that a country that has a strong economy can have easier engage in international trade.

In order to investigate empirically the relationship between trade openness and economic growth, we use the Pearson correlation to estimate the degree of linear dependence between three different combinations of four variables for 166 countries from 1980 up to 2013. The combinations are: annual Trade with the five-year GDP growth, the annual GDP with the five-year Trade Openness Change, and the five-year GDP growth with the five-year Trade Openness Change. We, also, estimate the Pearson correlation for three separations of these countries: large and small national economies according to GDP, closed and open economies according to percentage of Trade, and European Union countries. The conclusion of our investigation is that none of these four cases give us either positive or negative strong correlation between the variables.

Briefly, the master thesis is constructed as follows: Chapter 1 reviews the theoretical literature. Chapter 2 illustrates the barriers of international trade and trade policy. Chapter 3 gives the definition and measures to the concept of trade openness and provide a review of empirical literature. Chapter 4 investigates empirically the relationship between trade openness and economic growth. Chapter 5 gives the conclusions of all the analysis.

1. THE TRADITIONAL THEORY OF INTERNATIONAL TRADE: FROM CLASSICAL TO MODERN APPROACH

1.1 CLASSICAL THEORY: THE EARLY BEGGING OF FREE TRADE¹

1.1.1 THE COMPERATIVE ADVANTAGE - DAVID RICARDO

Adam Smith had initiated an originaive idea about the theory of international trade. The basic assumptions left to David Ricardo, who completed the argument of Smith with the theory of '*Comparative Advantage*'.² More specific, in his book "*The Principles of Political Economy and Taxation*" (1817), he tried to introduce a model which would be able to explain the beneficial gains of trade for countries through the doctrine of comparative advantage. He showed that these gains from trade are able to be far greater than Smith envisioned in the concept of absolute advantage. Moreover, he demonstrated that the specialization in production can be warranted if there is no absolute but only comparative advantage.

The reason that international trade causes increase of world production is that it allows each country to specialize in production of this product in which it has a comparative advantage. A country has a comparative advantage in a product if the *opportunity cost* of this product in terms of other products is lower in this country than it is in other countries or if its relative productivity for the production of this good (relative to other goods) is higher than it is in other countries. In a country of two products, for instance product A and product B, the opportunity cost of good A can be described as the number of units of B that the country must give up, i.e. not to produce, in order for the necessary resources to be released for the production of one more unit of A. Therefore, Ricardo's most important contribution lies to the fact that he was the first economist to link specialization with opportunity cost, which is the basis of modern trade theory.

As Krugman and Obstfeld (2006) argued in their book, trade between two countries can benefit both countries if each exports the goods in which it has a comparative advantage. G.D.A. MacDougall (1951-1952) stated that trade

¹ Before the emersion of the Classical trade theory the dominant economic system was *mercantilism*, look Appendix for further information.

² Adam Smith's contribution to International Trade and the introduction of the principle of '*absolute advantage*' are analyzed in the Appendix.

between the United States and the UK in 1937 followed Ricardo's prediction, when his theories were tested empirically.

In this theory Ricardo takes cross country *technology differences* in order to explain the patterns of international trade and provided a detailed analysis of the principle of comparative advantage. The necessary condition for the existence of international trade is a difference in comparative costs of production, which reflects the difference in techniques of production. These technological differences between countries are the determining factors in configuration of international division of labor and consumption and trade patterns.

The assumptions of the Ricardian model are mentioned below:

- two goods
- two countries (home and foreign)
- one factor of production (labor), homogeneous in both countries
- the two countries use different technologies in production
- the supply of factor of production is fixed and fully employed
- perfect competition, both in market of goods and factor of production
- labor is perfectly mobile between sectors within a country but immobile across countries
- Constant economies of scales
- There are no trade barriers, such as transportation costs or government-imposed obstacles to economic activity.

In order to illustrate the Ricardian theory we are going to present an example, based on the above assumptions, describing the effects that a close economy has when open up to international trade and exchanges its goods with the other country.

Suppose that there are two countries, for instance, Home (H) and Foreign (F) and both of them produce two commodities wheat and textile. According to Ricardo's theory about the value of goods the production cost is expressed in terms of *unit labor requirement*, the number of hours required to produce a unit of wheat or a

unit of textile. The table below presents the cost of production per unit in labor hours of the two goods in the two countries.

Table 1.1
Unit labor requirements for Ricardian example

Country	Wheat	Textiles	Domestic relations of exchange:
	Cost per unit in labor hours	Cost per unit in labor hours	
Home (H)	3	6	$6/3=2/1$
Foreign (F)	6	6	$6/6=1/1$
Comparative cost:	$3/6=1/2=0.5$	$6/6=1/1=1$	

Source: Adjustment from Πουρνάρης Ε.Α. (2004) - own elaboration

It is obvious from Table 1.1 that country H is superior than F in production of both commodities. According to the Ricardian model, even though, H has an absolute advantage in both goods, international trade takes place, since there is a difference between comparative costs. From Table 1.1 we can see that country's H opportunity cost is 2/1, which means that in order to produce 1 unit of textile it has to sacrifice 2 units of wheat. Similarly, in country F the opportunity cost is 1/1, that is, 1 unit of textile is 1 unit of wheat. Each country should concentrate its productive attempts in the commodity that it produces more efficient, that is, with lower cost, given up the production of the other commodity. This is possible to happen because of the fact that, assuming that there is trade between them, both countries can mutually benefit from the better utilization of the factor in production of the one good and import the other from the other country.

As for comparative advantage, since the opportunity cost of producing a unit of wheat is lower in country H than F, H has a comparative advantage in wheat and F possesses a comparative advantage in textiles.

The *pattern of trade* between the two countries is the common ratio of exchange between the two products. The pattern of trade ensures the balancing of supply and demand of the two products in marketplace. More specifically, country H, which exports wheat, will offer it in a ratio lower than 2wheat/1textile. On the other hand, country F desires a ratio of exchange greater than 1wheat/1textile. We

can conclude that the domestic ratios of exchange of two products are those that determine the common ratio of exchange, that is the pattern of trade.

From the analysis above we can conclude that specialization and trade can lead both countries to have *gains*. Krugman and Obstfeld (2006), in their book, stated that there are two alternative ways to prove this mutual gain. The first way is to think of trade as an indirect method of production. In our example, country H could produce textile directly, but trade with country F allows it to 'produce' textile by producing wheat and then trading the wheat for textile. This indirect method of 'producing' a unit of textile is a more efficient method than direct production. Another way to see mutual gains from trade is to examine how trade affects each country's possibilities for consumption. In the absence of trade, consumption possibilities are the same as production possibilities. In our example, once trade is allowed, each country can consume a different mix of wheat and textile from the mix it produces.

To sum up, however, the Ricardian model is the simplest model, it is generally agreed that the concept of comparative advantage is one of the most fundamental ideas in international trade theory. Ricardo argued that where comparative advantages exist, international trade will increase world output and benefit all trading economies. Many of its predictions are not realistic, but the primary prediction that countries have the tendency to export goods in which they have relatively high productivity has been confirmed by many economists.

1.2 NEOCLASSICAL THEORY OF INTERNATIONAL TRADE

1.2.1 HECKSCHER - OHLIN THEORY

Before 1920 and for a long time, Ricardian's model had been the leading international trade theory, until the two neoclassical economists Eli Heckscher (1919) and Bertil Ohlin (1933) developed a model. The H-O model was built on Ricardo's theory of comparative advantage, but in this, comparative advantage arose due to differences in countries' *resource endowments* and partially due to international differences in labor productivity. More specific, the H-O model identifies the differences in factor endowments as the cause of trade. Real world takes into account not just labor as a factor of production but also other factors such as land, capital, and mineral resources.

In H-O theorem the interaction between resources of a nation and the technology of production influences comparative advantage. When we refer to nations' resources we mean that the relative *abundance* of factors of production, and technology influences the relative *intensity* with which the different factors of production are used in the production of different goods. This means that there is interaction between abundance and intensity. Therefore, it is obvious that the basic principle of this theory is the interaction between those two proportions and that is why it is also known as *factor-proportions theory*.

In order to analyze the H-O theory we are going to present the assumptions of a model of a two-factor economy, which is also referred in bibliography as 2 x 2 x 2 model (two countries, two goods, two factors of production).

The assumptions of the H-O model are the below:

- two countries
 - two goods
 - two factor of production
 - perfect competition
 - labor is perfectly mobile between sectors within a country but immobile across countries
 - factors of production are fully employed
 - factors of production are of the same quality in both countries
 - the function of production of the same goods in different countries are the same
 - the production of different goods required different intensities of factors of production
- these are 3 assumptions
also used in classical
model
- these are 3 assumptions
used in H-O theorem

Hence, according to the last two assumptions of the H-O theorem the functions of production are different for different goods, but for the same good the function of production is the same in both countries.

Combination of factors of production

International differences in comparative costs of production are explained from the combination of different intensities of factors of production of different goods and from relative abundance of factors. More specifically, producers do not have the problem of choice in the use of inputs (as in Ricardian model). They can do alternative input combinations for a unit of output. The mix of inputs that producers will choose depends on the relative cost of land and labor. For example, if rents for land are high and wages are low, producers will choose a combination with less land and more labor in production, or if rents are low and wages are high, they will use more of land and less of labor. Therefore, the choice of inputs depends on ratio of these two factor prices, that is, the ratio wage/rent (w/r). The structure of *relative prices* of factors production can be determined, if it is known the relative abundance of them. Differences in the relative prices of the factors of production and the different proportions in which the factors are used determine the *comparative advantage*.

The supply of a factor in relation to supply of the rest factors has significant importance in defining its price. Differences in relative prices are determined by the relative scarcity of resources, so the relative price of a good produced with a *scarce resource* is more expensive than a good that is produced with *abundant resource* (Heckscher et al. 1991b, pp. 48). Hence, each country has an advantage to produce those goods which are intensive in the factors of production which are cheaper. This means that each country *exports* those goods and *imports* the goods which are relatively expensive to produce. In other words, countries tend to export goods that are intensive in the factors with which they are abundantly supplied.

Factor Prices and Good Prices

With the precondition that a country produces both goods, there is a one-to-one relationship between the relative prices of goods and the relative prices of factors used to produce the goods. This can have as a result a shift in distribution of income. More particular, a rise in the relative price of the labor-intensive good will lead to a rise in purchasing power of workers and to a decrease in the purchasing power of landowners by raising real wages and lowering real rents in

terms of both goods. It is a change from which the owners of the one factor win and the owners of the other lose.³

Resources and Outputs

The description of the relationship between goods prices, factor supplies and output completes the analysis of a two-factor economy. The assumption that the economy must fully employ its factors of production (its supplies of labor and land), determines the allocation of resources between the production of two goods and, therefore, the economy's output. This means that an increase in the supply of one factor of production expands *production possibilities in a strongly biased way*, namely, the output of the good, intensive in that factor, rises, while the output of the other good actually falls, at unchanged relative goods prices.⁴ Hence, according to Krugman and Obstfeld, an economy will tend to be relatively effective at producing goods that are intensive in the factors with which the country is relatively well endowed.

The Effects of International Trade Between Two-Factor Economies

In the H-O theorem major precondition is the existence of a free trade system. As Heckscher states the best commercial policy is free trade because “...it creates the possibility of maximum satisfaction of human wants” (Heckscher et al. 1991b, pp. 68).

Since we have defined the production structure of an economy with two factors, we can now analyze the effects of trade between two economies. Based on the

³ Wolfgang Stolper and Paul Samuelson (1941) in their paper, illustrate the relationship between goods prices and factor prices. More especially, a rise in the relative price of a product will rise the real return to the factor used intensively in that product, and decrease the real return to the other factor. This implies that trade has distributional consequences within the country, which make some people worse off and some others better off, even though the total result for the national economy is beneficial. This is known as the *Stolper-Samuelson theorem*.

⁴ The Polish economist T.M. Rybczynski in his paper "The Factor Endowments and Relative Commodity Prices" pointed out the biased effect of resource changes on production. More specifically, in his theorem he supports that in case that a factor of production for some reason was being increased in a country, it is going to occur proportional balancing, as it is going to be increased proportionally and the production of the good that uses this factor. This theorem is known as the *Rybczynski effect*.

assumptions of H-O theory that we mentioned above, we consider two countries, Home (H) and Foreign (F), which produce two goods, wheat and textiles, and for their production they use two factors, labor and land. Moreover, the two countries have identical demands for wheat and textiles when relative price of the two goods is the same, and also, technology is the same between them. The only difference that the two countries have is in their resources. We suppose that H has a higher ratio of labor to land than the F. This means that:

- country H is labor-abundant
- country F is land-abundant

Furthermore, we suppose that:

- wheat is labor-intensive good
- textiles is land-intensive good

Before the start of trade between the two countries, the facts below are happened:

- Country H, because of relative abundance in labor, will have a low price of this factor, which means that the marginal product of labor is low, given the relative scarcity in land factor. Because land is in scarcity, it will have high price.
- Country F, since it is relatively abundant in land, the marginal product of land will be low and, therefore, its price will be low. The price of labor, which is in relative scarcity will be high.

When trade between countries H and F begins, the prices of factors of production will change in different directions:

- In country H, demand for wheat will increase, because now it is added to the domestic demand and the demand of Foreign country. This leads to the increase of production of wheat and, therefore, to the increase of demand for factor of labor, as it will be used intensively in production of this good. The result is the increase of the price of labor in country H. Moreover, the specialization of country H in production of wheat, has as a consequence the decrease in relative scarcity of factor of land for two reasons:
 - a) the production of textiles within country H will decrease, because of the fact that domestic demand for this product is mainly being satisfied with imports from country F. This results in reduction of price of factor of land.

b) the rise in supply of textiles can be translated as a rise in supply of land in country H, although the real land cannot be transferred from country F to H. This happens due to the fact that, since land is embodied in textiles, the supply of textiles in country's H market in lower prices is equivalent to the rise of supply of land that is embodied in that.

The effect of international trade in country H is that the factor price of labor will increase, which is in relative abundance, while the factor price of land will decrease.

- Country F will specialize in production of textiles, as it is land-insensitive, in order to satisfy both internal and external demand of this good. Consequently, in a similar way to country H, the rise in textiles' demand will lead to rise of land's price in country F. On the other hand, the high price of factor of labor will decrease for two reasons:
 - a) with the specialization of country F in production of textiles, the demand for wheat, which is labor-intensive, will be satisfied with imports from country H, while F will quit of the production of wheat. This result in reduction in demand for factor of labor.
 - b) The supply of labor factor will rise with imports of wheat, as the supply of wheat is in lower price is equivalent to the supply of factor of labor which is embodied in wheat.

The effect of international trade in country F is that the factor price of land will increase, which is in relative abundance, while the factor price of labor will decrease.

One basic assumption of the H-O theorem is the immobility of factors of production between countries. If we had free trade the above changes would happen directly and not indirectly. But under this assumption, by mobility of goods, we have also the indirect mobility of factors of production, which are embodied in these goods. Hence, we can deduce that the international trade acts as *a substitute of free movement of factors of production* (Πουρναράκης Ε.Δ. 2004). According to Ohlin, if the above are valid, then there is a tendency toward *equalization of factor prices*. This means that in order to have equalization of

factor prices, we need to have free movement of goods and services and, therefore, the constraint of tariffs and other barriers to trade. The problem is that in real world factor prices are not equalized, because of wide differences in resources, barriers to trade and international differences in technology.

The Ricardian model and H-O model are two static trade theories in which although productivity efficiency and international competitiveness can be achieved, it is not clear whether and how international trade determines economic growth in the long run. Most economists, who are concerned in international trade theories, cannot regard the Ricardian model as their basic model of international trade, because it is too simply and limited. On the other hand, the Heckscher-Ohlin model, although it has occupied for a long time a central place in trade theory, empirical evidence is mixed. Many economists support that differences in resources alone are not able to explain the pattern of real world trade or world factor prices. Instead, differences in technology across countries have been contended by many recent empirical works that they are able to shed light on the issue. In spite of that fact, H-O model recommends a useful tool in understanding and analyzing the effects of trade on income distribution.

1.3 CRITICISM OF CLASSICAL AND NEOCLASSICAL THEORIES AND THE NEW EVOLUTION IN THE INTERNATIONAL TRADE THEORY

1.3.1 TESTING THE HECKSCHER - OHLIN - THE LEONTIEF PARADOX

As we mentioned above, the H-O theorem or factor-proportion theory of trade, while it was very significant for the evolution of international economics, constituted one of the most popular subjects for extensive empirical testing. The base for this criticism constituted the research of economist Wassily Leontief (1953). Leontief attempted to test the structure of foreign trade of United States, from the side of factor proportions that are used in the production. Until recently, the United States were one of the strongest economies in the world. It was a country that provided to its workers more capital per person than other countries of the same economic characteristics did. Even today, although some countries of Western Europe and Japan have catch up, US still have a higher ratio of capital-labor. From this somebody can expect that the US, as being a capital-abundant

country, it will export capital-intensive goods and import labor-intensive goods. Counter wise, Leontief in his research proved that the US tended to export goods that were less capital-intensive than their imports. This outcome comes in contrast to H-O theory and it is known as the '*Leontief Paradox*'.

How is the Leontief Paradox explained? Many economists attempted to give an expatiation to this paradox, but what seems to be more reasonable is that the US mainly produce goods that are technology-intensive. This means that in production more high educated people are required, e.g. scientists and engineers, to produce goods with innovative technologies. Hence, US export skilled labor-intensive and innovative goods and import heavily manufactured goods that required a large amount of capital.

1.4 NEW TRADE THEORIES

As we pointed out previously, the old trade theories argued that countries trade and specialize, firstly, because of differences in their resources or in technology, and secondly, because of economies of scale that give to each country the advantage to specialize in the production of a short variety of goods that they produce relatively well. So, classical and neo-classical trade theory support that the only reason for countries to trade between them is comparative advantage.

In reality the biggest part of international trade is not able to be explained by the old models of trade, and hence by the H-O theorem. It is required the abolition of the basic assumptions of the H-O model in order for a more realistic approach to be introduced. The assumptions that are being reviewed are the three below:

- a) the existence of constant economies of scale
- b) the existence of perfect competition
- c) the assumption of same technology

In this review of assumptions and mainly in the development of the new trade theory crucial role played Krugman (1979, 1980), who proved the inability of neoclassical theory to explain the empirical reality. He contended that the concepts of *imperfect competition* and *increasing returns to scale* are phenomena that the theories of comparative advantage are not able to explain due to the unavailability of theoretical tools (Kallioras D., 2007) The continuous debates in

economic cycles on the issue of inabilities of neoclassical theory brought to the surface theoretical models that are integrated in *new trade theory* and in *new economic geography*. In both theories the contribution of Krugman (1995) is remarkable.

1.4.1 ECONOMIES OF SCALE AND INTERNATIONAL TRADE

The term *economies of scale* characterizes a production process in which an increase in the number of units produced causes a decrease in the average cost of each unit. It is also called as *increasing returns to scale* as it refers to the situation in which the cost of producing an additional unit of output, which is the marginal cost of a product, decreases as the volume of its production increases. Therefore, the greater the scale will be, the more efficiency the production will also be. For instance, if we double the inputs to an industry, the industry's output will more than double, when there are economies of scale.

In our analysis up to now, we presented the old theories of international trade having as one of their basic assumptions that of *constant returns to scale*. This means that if the amount of factors of production were increased, the amount of the output would increase at the same percentage. For example, if we double the inputs to an industry, the industry's output will double as well. In real world, this assumption cannot be possible, since many industries are characterized, as we described above, by increasing returns to scale.

How economies to scale consist a motive for countries to engage in international trade? As Krugman and Obstfeld (2006) argue in their book, economies of scales give countries an incentive to specialize and produce a restricted range of goods without sacrificing variety in consumption and trade between them even in the absence of differences in resources or technology. In practice, if countries take advantage of economies of scales, they will specialize and produce a limited range of goods more efficiently than if they tried to produce everything for themselves, and international trade will be able to lead them to an increase in the variety of goods that are available for consumption.

Alfred Marshall in his book "*Principles of Economics*" (1890) made a distinction of economies of scale to external and internal. When we refer to *internal economies of scale* we mean that as a firm expands production, its per-unit costs decline. Hence, the cost depends on the size of the firm. On the other hand, external economies of scale occur as an industry expands production and the per-unit costs of production decline for every firm. In this case the cost depending on the size of the industry.

Economies of scale, internal or external, have different effects on the structure of the market. More especially, if internal economies of scale exist, a country that has large firms will have a cost advantage over small and lead to an imperfect competition. In contrast, if external economies exist, a country that has a large industry, consisting of small firms, will have no cost advantage over large firms and the market structure will be perfectly competitive. Consequently, internal and external economies of scale are two very significant causes able to lead to international trade.

1.4.2 IMPERFECT COMPETITION

The analysis of classical and neoclassical models, that we described previously, assume that markets are perfectly competitive and only then are able to produce the best possible outcomes for consumers and society. With the term of *perfect competition* we refer to an industry where competition is at its greatest possible level. This means that the industry consists of a relative large number of small firms whose product is considered to be homogeneous, and therefore, consumers are irrelevant as to which firm produces the product. Furthermore, due to the large number of firms and the small size of them, they are unable to influence the price of product, so they are characterized as *price takers*.

How realistic is that model? As we mentioned to an above section, in real world economies of scale take place and lead to a breakdown of perfect competition. For example, how homogeneous is the output of real firms, given that even the smallest of firms working in manufacturing or services try to differentiate their product. Hence, it is clear that a perfectly competitive market is a theoretical market and we need models of imperfect competition to analyze international trade.

Imperfect competition can be described of opposite characteristics in relation to those of the perfect competition. This means that firms under this model have the potentiality to influence the price of their products and by decreasing their price are able to increase their sales. It is a market structure model that exists either in industries with many producers selling a differentiated good or in industries consisting of only a few major producers. In that case in which sellers are able to decide the price of their product, they can be characterized as *price setters*. The most common forms of imperfect competition include: *monopolies*, *oligopolies* and *monopolistic competition*. The first economist who develop the theory of imperfect competition was Roy Harrod (1934). Nevertheless, it is important to point out that Cournot (1838), in his “*Researches into the Mathematical Principles of the Theory of Wealth*”, was the first to model this kind of markets.

1.4.3 MONOPOLOSTIC COMPETITION AND INTERNATIONAL TRADE

One of the most important models of imperfect competition is that of *monopolistic competition*. Monopolistic competition is characterized by a large number of producers and consumers and firms are not able to have total control over market price. A key feature of monopolistic competition is *product differentiation*. The output of each producer is a close but not identical substitute to that of every other firm which give the chance to consumer to choose to buy any product according to their taste and preference. Under this market structure a firm has the capability of forming a tiny monopoly within an industry because of product differentiation in the market and this can lead it to distinguish from competition. This means that some firms will have a significant level of influence on the prices they charge for their goods and services. Therefore, this is another feature of monopolistic competition. The firm can set its own price and does not have to 'take' it from the industry as a whole, though the industry price may be a guideline, or becomes a constraint. Then, a firm can be characterized as *price maker*.

Monopolistic competition model can help us to form a clear picture of the role that economies of scale play to international trade and come to significant conclusions about this issue. By trading, countries can create a larger market that is bigger than any individual national market. Each country can specialize in producing a limited range of goods and buy goods from other countries by

increasing in that way the variety of products that are available for consumption. The model of monopolistic competition can show how trade can offer mutual gains when there is no differences between countries neither to resources nor to technology.

Under monopolistic competitive circumstances, the size of the market is that which determining the number of firms and the prices of the products. An increase in the size of the market allow each firm, other things equal, to produce more and thus have *lower average cost* (Krugman & Obstfeld, 2006). It is obvious that in larger markets firms can be more in number and able to take advantage of larger scale of economies and therefore to produce at a lower cost and sell to a greater purchasing public, while consumers can enjoy a greater variety of goods offered to a lower price. Thus, both firms and consumers desire to be part of a larger market rather than a small one. The only way in order to be achieved a larger size of the market is countries to engage in international trade. International trade can create an *integrated market* in which the above gains can be obtained and everyone can be better off through this integration.

1.4.4 INTRA-INDUSTRY TRADE AND ECONOMIES OF SCALE

International trade is one of the key factors of macroeconomic prosperity for any country. The traditional trade theories, which were set out mainly by the Ricardian and the H-O model, tried to explain the occurrence of international trade used the idea of comparative advantage and based on assumptions of constant returns to scale, perfect competition and homogeneity of product. This kind of trade belongs to *different industries* and is defined as *inter-industry trade*. Another feature is that countries with similar relative amounts of factors of production are predicted to have inter-industry trade. An example of this kind of trade can be the trade of agricultural products of one country with technological devises of another country.

However, many economists presented the argument that the traditional trade models were incapable of explaining what happening in real trade relations. In real world as we referred previously, a big volume of trade is transacted by products of the *same industry*. Particularly, we have the exchange of *differentiated products* produced by the same sector. For instance, Italy produces cars that are

exported to France market and France produces cars that are exported to Italy market. This is the kind of trade that is defined as *intra-industry trade*.⁵

The question is, *why do countries at the same time import and export the products of the same industry, or import and export the same kinds of goods?*

The answer cannot be found within the framework of inter-industry specialization and trade, because countries with identical factor endowments would not trade and produce goods domestically. Hence, economists tried to find explanations in intra-industry trade. The most comprehensive and acceptable explanation is given by Krugman's 'New Trade Theory', who argues that countries specialize in order to take advantage of economies of scale and do not follow differences in regional endowments. Under the assumption of monopolistic competition, firms produce differentiated products and because of economies of scale, countries are able to produce a limited variety of production and not the full range without reducing the variety of goods available for consumption.

To make it clear we point out some important information:

- inter-industry trade is based on comparative advantage and the trade pattern is formed by a simple exchange of goods.
- intra-industry trade is based on increasing returns under monopolistic competition and allows countries to specialize in a small range of products which are differentiated and satisfy the consumers' demand with a greater variety of goods.
- The monopolistic competition model, may be consisted of both kinds of trade (Krugman & Obstfeld, 2006). An important issue here is the relative importance of inter-industry and intra-industry trade. This depends on the similarity of countries. For instance, if two countries are similar in their capital-labor ratios, this means that there will be mainly intra-industry trade based on economies of scale, while there will be little inter-industry trade. In contrast, if their capital-labor ratios are very different the

⁵ The measurement of Intra-industry Trade is cited in the Appendix, in which is given the index that measures the importance of intra-industry trade within an given a industry.

dominant kind of trade will be the inter-industry based on comparative advantage, while there will be no place for intra-industry trade.

To this point it is significant to notice that industries that shows high levels of intra-industry trade are those that tend to produce manufactured goods with high skill levels, such as innovative technology products and chemicals. This kind of goods are produced under important economies of scale and exported mainly by advanced economies. On the other hand, economies that present lower levels of intra-industry trade means that produce goods of traditional sectors, such as raw materials and textiles that are mostly labor-intensive goods. These goods are exported by less advanced countries, as they have a comparative advantage over advanced countries.

From all the above analysis we can support that intra-industry trade can be more beneficial than inter-industry trade for all the involved countries in international trade and that is the reason why it covers an important part of the world trade. The benefits that is offered to countries by intra-industry trade can be summarized into three points compared to inter-industry trade:

1. Countries engaging intra-industry trade can take advantage of the larger market that is offered to them, while in inter-industry trade is more limited.
2. Intra-industry trade allows countries to reduce the number of products they produce and increase the variety of goods available for consumption. In other words, countries will get more economic gains if they concentrate on producing specific types of products within specific range, according to their comparative advantages rather than producing all ranges of specific products. This happens because intra-industry trade allows countries to be benefited from economies of scale. Simultaneously, consumers are also benefited from the product differentiation as they have a larger range for choice. In contrast, in inter-industry trade each country exports products according to its comparative advantage.
3. Each country, by producing a smaller range of products, is able to produce not only at larger scale, but also with higher productivity and lower cost. On the other hand, inter-industry trade assumes constant returns to scale.

We can deduce that the gains from intra-industry trade can be large when economies of scale are strong and the products are highly differentiated, given that countries will be of the same level of economic development.

1.5 THE THEORY OF EXTERNAL ECONOMIES

We mentioned that when there are economies of scale could mean that either larger firms or a larger industry would be more efficient. Economies of scale could be either internal or external. Both of them play an important role in the development of international trade. *Internal economies of scale* occur when the cost per unit of output depends on *the size of the firm*. Under monopolistic competition, internal economies of scale give boost to international trade at the level of the firm. On the other hand, *external economies of scale* occur when cost per unit of output depends on *the size of the industry*. It has been observed the fact that the concentration of production of an industry in one or a few geographical areas decreases the cost of industry, even if the size of the individual firms of the industry remains small. For example, economies of scale can be achieved when an industry's operations expands due to the creation of a better transportation network, which has as a result the reduction in cost for a firm that works within that industry.⁶

Since Marshall (1890, 1930 [1879]) at least, economists have known that increasing returns can be an independent cause of trade and that the advantages deriving from large-scale production need not be confined within the boundaries of a firm (Grossman & Rossi-Hansberg, 2010).

According to Marshall, there are three main reasons why a cluster of firms may be more efficient than an firm located in an isolated area:

- a) Specialized suppliers
- b) Labor market pooling

⁶ Some of the most famous and modern examples of industries that present powerful external economies of scale are the investment banking industry in New York and the concentration of silicon chip manufactures and high technology companies in Silicon Valley in California.

c) Knowledge spillovers

a) *Specialized suppliers*

It is very significant for an industry whose production of goods and services require specialized equipments or services to be supplied from a large enough market as well to be located near to it. A cluster of firms concentrated in one location give the opportunity to the industry to have direct access to the specialized suppliers and decrease the cost of distance for searching out the required inputs. This means that this dense network gives to these firms a considerable advantage over other firms located in another distant area. Moreover, due to the fact that there are many firms competing between them, they provide the important factors of production in a lower price and more easily available leaving the firms to concentrate on what they do best.

b) *Labor market pooling*

Under the existence of external economies of scale, a cluster of firms could lead to the creation of a pooled market for high specialized skilled workers. Both firms and workers are benefited for such pooled market. The first one, because they have access to a source of manpower, so they are less likely to face a lack of labor, while the second one, because they are less likely to suffer from unemployment. This advantage makes firms to develop more rapidly and workers able to change employers more easily.

c) *Knowledge spillovers*

Many industries, especially these of highly innovative technologies, consider knowledge as one of the most important factors of production. The input of knowledge is so much crucial for these industries that they invest in order to obtain it. More specifically, innovative industries develop their own research and development units (R&D) so as to acquire the required technology. Furthermore, as they are located near to their competitors they can learn by studying their products. The concentration of firms in one specific location gives the opportunity to employees to associate between them and create social networks under which it can be promoted an informal diffusion of technical information. This is another source of technical know-how.

It is worthwhile to mention that the more important the external economies are, the more efficient a country with a large industry will be in that industry than a

country with a small industry. This means that external economies of scale give rise to increasing returns to scale at the level of *the national industry*. Hence, a large concentration of firms in an industry cannot be possible, unless country installs a large industry. In addition, we can say that the larger the industry, the lower the industry's cost, while leaving aside the possibility of imperfect competition, the larger the output of the industry, the lower the output's price that firms willing to sell.⁷

⁷ The effects of *international trade*, based on *external economies of scale* are mentioned and analyzed in the Appendix.

2. BARRIERS OF INTERNATIONAL TRADE AND TRADE POLICY

We have analyzed up to now the causes of international trade and its importance on increasing the welfare not only for each country but also for the whole world. The liberalization of trade led to the increase of the amount of goods that consumers can choose, the reduction of the production costs due to the increase of competition and the capability of industries to ship their products to other countries. Although beneficial free trade may seem to be for countries, in reality the transport of goods and services confronts a great number of barriers. This is a phenomenon which derived from the need of different countries to '*protect*' their economies from the outside competition. In this chapter we will examine the policies that are adopted from the different governments towards international trade and the instruments that these policies include. Such instruments are *tariffs* or *subsidies* on some international transactions and quotas on volume of particular imports as well, many other *non tariff* measures. Also, it will be analyzed the effects of these instruments and the important question: *protectionism or free trade?*

2.1 TARIFF PROTECTION

Countries in order to limit trade have put into application a variety of trade policies till today. The simplest and the oldest one is tariff, which had been used more frequently from countries in past. Tariff is a tax imposed on the imported goods, which means that the importer pays an extra charge over the cost of buying the product. The main objective of the imposition of a tariff is to *protect domestic producers* from the lower prices that may result due to the competition of the imported goods. Hence, the effect of a tariff on an imported good is to increase the price in which that good is offered to its domestic consumers.⁸

⁸ Tariff is divided in three categories: a) *ad valorem tariff*: is a tax that is measured as a percentage of the value of goods imported. b) *specific tariff*: is a tax that represents a fixed charge for each unit of the imported goods. c) *compound tariff*: is a tax that is levied both as a percentage and as a fixed charge for each unit of the imported goods. The effect in all cases is the increase of the good's cost that is shipped to a country.

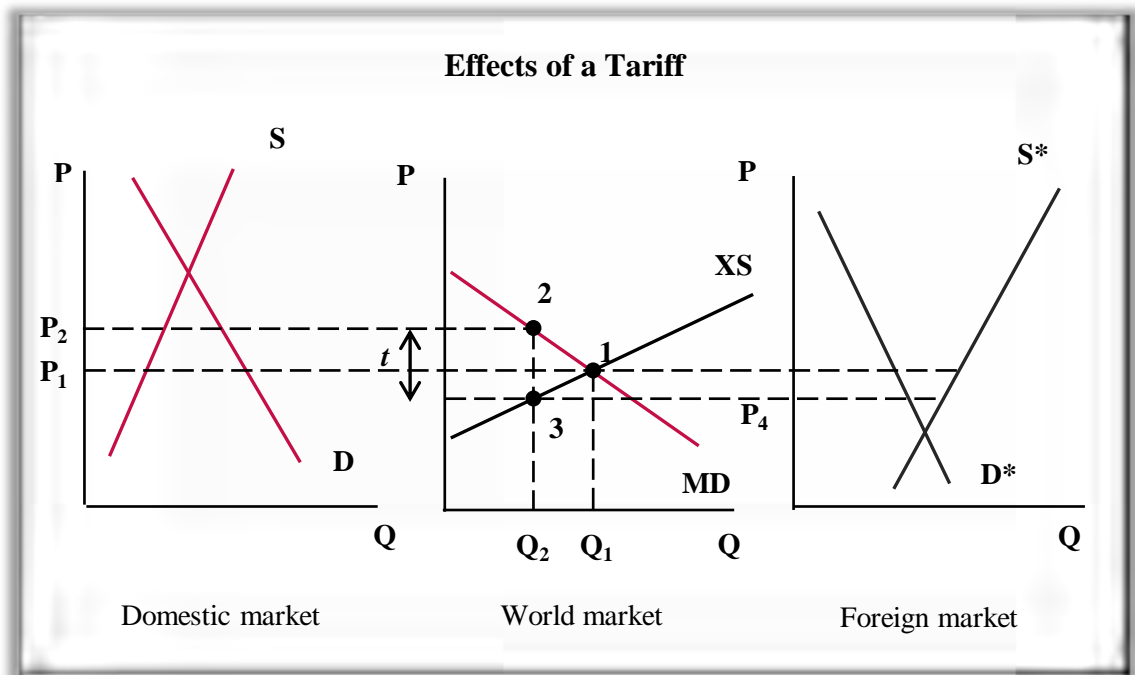
2.1.1 THE EFFECTS OF A TARIFF

The Figure 2.1 illustrates the effects of an imported tariff imposed by a country that can affect foreign export prices. Under the regime of free trade, the price of the product in domestic market is equal to the price in foreign market at the level of P_1 . At price P_1 , domestic import demand (MD curve) is equal to Foreign export supply (XS curve) and gives the equilibrium world price (point 1 in the middle panel of Figure 2.1).

The imposition of a tariff equal to t by the domestic market leads to a differentiation of the prices between the two markets. The tariff increases the price in domestic market to P_2 and decreases the price in foreign market to $P_4 = P_2 - t$. At this higher price P_2 , domestic producers supply more and domestic consumers demand less, and therefore, the imports that are demanded are fewer (moving from point 1 to point 2 on the MD curve). From the side of the foreign market, at the lower price P_4 occurs a fall in supply and a rise in demand, so that a less exports are supplied (moving from point 1 to point 3 on the XS curve). As a result of this, the volume of trade of the product is reduced from Q_1 to Q_2 . At quantity Q_2 (trade volume after tariff), import demand of domestic market equals to export supply of foreign market when $P_2 - P_4 = t$.

In the case of a small country, which is unable to affect the world prices, an introduction of a tariff on the imported good will lead to raise of the domestic price by the full amount of tariff. The detailed analysis of this case, is given below with the help of Figures 2.2 and Figure 2.3.

Figure 2.1
Effects of A Tariff



Source: Adjustment from Krugman and Obstfeld (2006) - own elaboration

Before we analyze the costs and benefits of a tariff, as well as the effects of a tariff in more details, it is useful to define the important concepts of *consumer surplus* and *producer surplus*. These two concepts help us compare the cost and benefits of a tariff and quantify them and calculate the total welfare of an economy.

Consumer Surplus

Consumer surplus is a measure of the welfare that people gain from consuming goods and services. It is an amount, which a consumer gains from a purchase, equals to the difference between the actual price he pays in market and the price he would have been willing to pay. In other words, if a consumer would be willing to pay more than the current asking price, then they are getting more benefit from the purchased product than they initially paid. Consumer surplus can be derived from the market demand curve. To define it graphically, it is equal to the area under the demand curve and above the price. When the price increases, the quantity demanded decreases as well as the consumer surplus.

Producer Surplus

Producer surplus is a measure of producer welfare. It measures the amount that a producer gains from a sale and it is equal to the difference between the price he actually receives and the price he would have been willing to sell at. Producer surplus can be derived from the market supply curve. The level of producer surplus is shown graphically by the area above the supply curve and below the price. When price increases, the quantity supplied increases as well as the producer surplus.

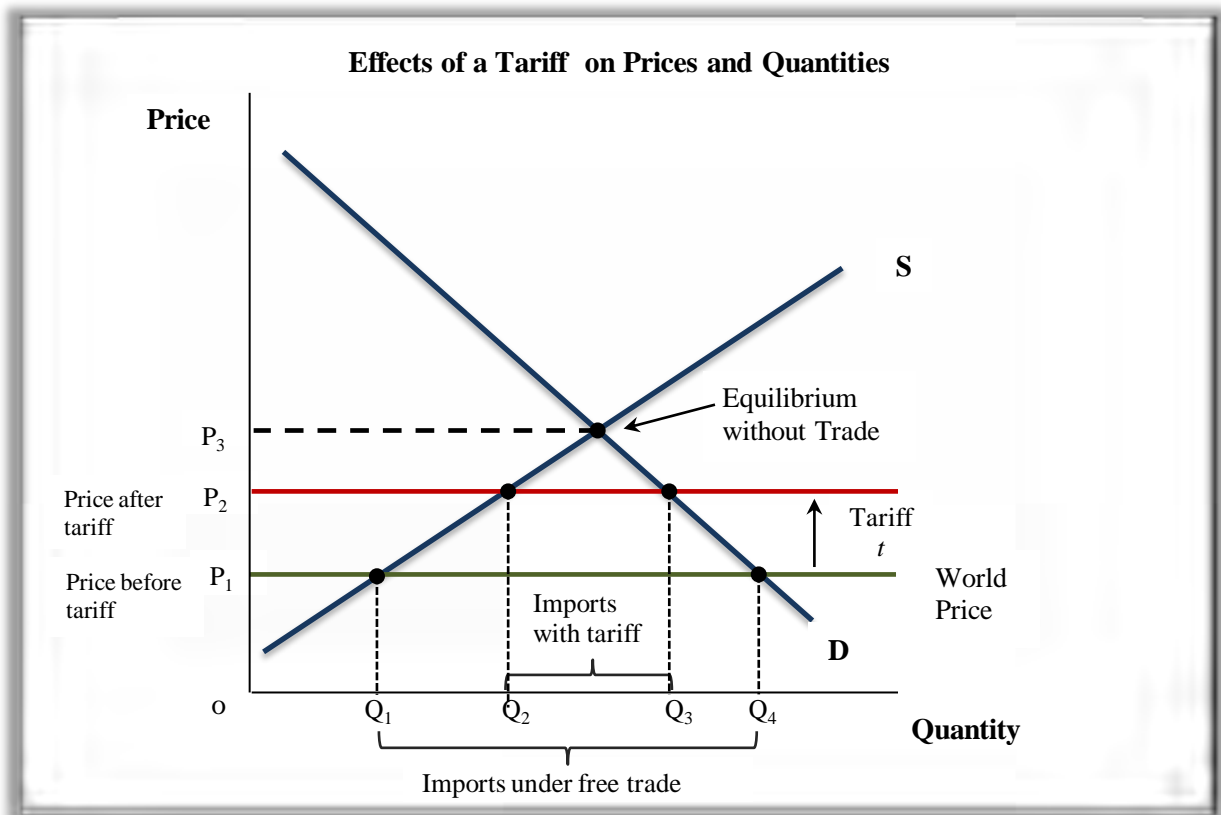
Effects of an imported tariff on a small country

We assume the case of a small country A which imports a product. When there is free trade the price of this product in country A will be the same with that of the world price and equal to P_1 . Country A *takes the terms of trade as given, due to its insignificant size to the world economy*.

In Figure 2.2, with given the demand and supply curves, D and S, country's A domestic production is OQ_1 and imports of the same product are Q_1Q_4 .

We suppose now that a tariff is imposed on imports and it is equal to t per unit. Because the size of the country is small, its share of the world market for the goods it imports is usually minor, and therefore, unable to affect the world (foreign export) price. Thus, the price of this product will raise by the full amount of the tariff and will be equal to $OP_2 = OP_1 + t$. This result in the increase on domestic supply and the decrease on domestic demand, which leads to the limitation of the volume of the imports from Q_1Q_4 to Q_2Q_3 .

Figure 2.2
Effects of a Tariff on Prices and Quantities



Source: Adjustment from Krugman and Obstfeld (2006) - own elaboration

More specific, the effects of the imported tariff can be categorized as follow:

a) Effects on Producers

The raise of the price makes possible the domestic production of the product from marginal industries that were not so competitive before the implementation of the tariff, so as to become sustainable. Particularly, the raise of price of P_1P_2 makes possible the rise of domestic production of Q_1Q_2 .

b) Effects on Consumers

As a result of the raise of the price, consumers decreases the consumption of the product from OQ_4 to OQ_3 . As price was raised, it will occur substitution of imports with domestic products, while some consumers will stop to consume this particular product.

c) Effects on Country's Government Revenues

Besides consumers and producers, tariff affects also government's revenues. The imposition of tariff results in the increase of public revenues, which are equal to tariff rate t times the volume the of imports ($t \times Q_2Q_3$).

d) Measuring the Costs and Benefits

Figure 2.3 illustrates the costs and benefits of a tariff for the small importing country.

Firstly, from the side of domestic producers, since they receive a higher price, they have a higher producer surplus. We can see in Figure 2.3, that before the imposition of tariff the producer surplus is equal to the area below the price P_1 but above the supply curve. With the increase of the price to P_2 , as a result of tariff, the producer surplus rises by the area labeled a . This means that *domestic producers gain from the tariff*.

Domestic consumers, as we referred above, confront a higher price, which means that they worse off. In Figure 2.3, we can see that consumer surplus before the tariff is shown by the area above the price P_1 and below the demand curve. Due to the increase in price from P_1 to P_2 , the consumer surplus decreases in area indicated by $a + b + c + d$. Therefore, it is obvious that *domestic consumers lose from the tariff*.

From the side of government, after the imposition of tariff, the state gains as it collects the revenues from tariff. This gain is equal to the tariff rate t times the volume of imports $Q_2Q_3 = OQ_3 - OQ_2$. Because $t = P_2 - P_1$, government's revenue is equal to the area c .

From the above analysis we can conclude that if a small country imposes a tariff on imports, then consumers lose and producers and government gain. At this point it is important to calculate the net effect of a tariff on welfare. The *net cost of a tariff* is equal to:

consumer loss - producer gain - government revenue,

or according to the Figure 2.3 these concepts are the areas:

$$(a + b + c + d) - a - c = b + d.$$

We can notice in Figure 2.3 that this sum, $b + d$, are two triangles whose areas measure loss for the whole country. Moreover, *net cost of a tariff* is equal to:

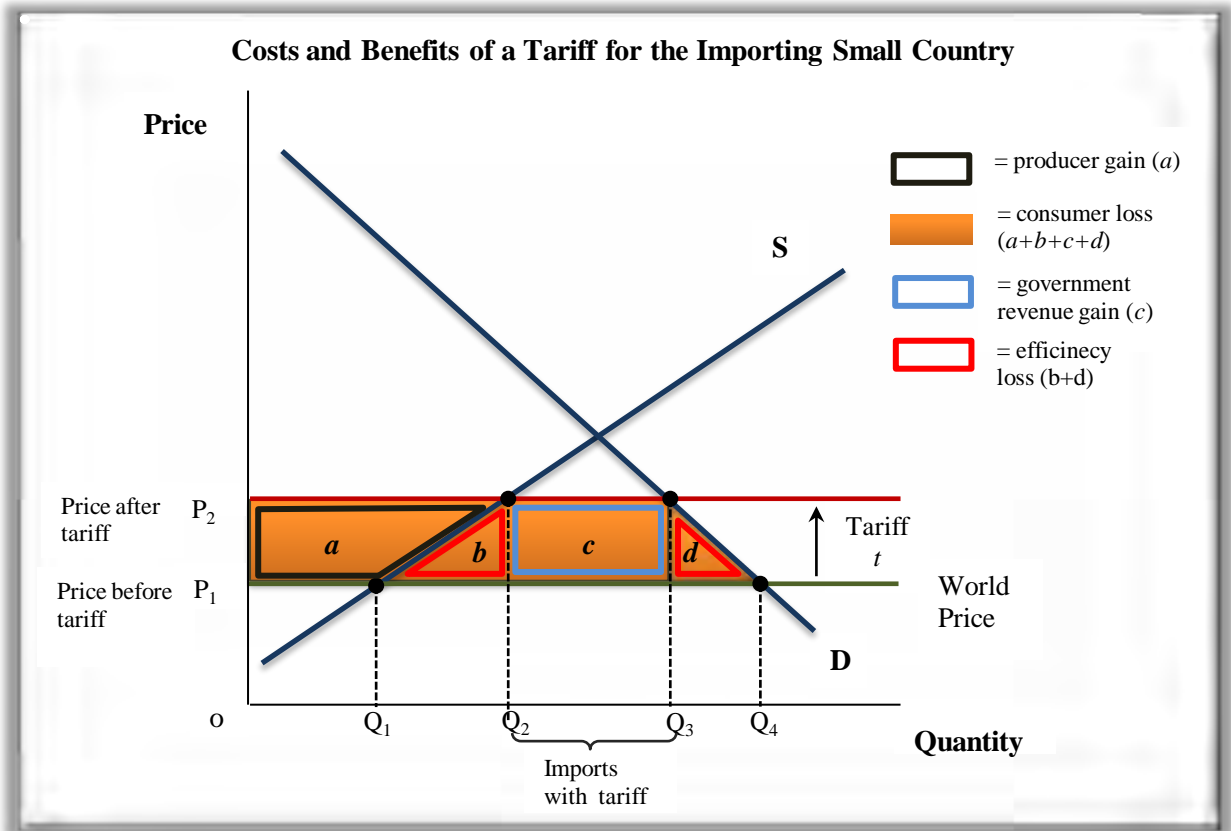
efficiency loss - terms of trade gain

The *efficiency loss* is represented by loss triangles and arises because a tariff distorts incentives to consume and produce. The *terms of trade gain* occur if country is large, which means that a tariff lowers foreign prices, improving the terms of trade (Krugman & Obstfeld 2006). Therefore, *in the case of a small a country the terms of trade gain are zero and it is clear that the tariff reduces welfare.*

To sum up, *the net welfare effects of a tariff* on a small country are represented by the negative effects of the two triangles b and d . The triangle b is a *production distortion loss*, resulting from the fact that the tariff leads domestic producers to produce too much of this good. The other one, the triangle d , is a *domestic consumption distortion loss*, resulting from the fact that a tariff leads consumers to consume too little of the good (Krugman & Obstfeld 2006). So, since a small country cannot affect foreign prices, there is a decrease in total surplus that is called the *deadweight loss* of the tariff.

Figure 2.3

Costs and Benefits of a Tariff for the Importing Small Country



Source: Adjustment from Krugman and Obstfeld (2006) - own elaboration

Effects of an imported tariff on a large country

The case of a large country, let it be B, that imposes a tariff on imported goods has a different story. Tariff has the opposite effects on the nations' welfare than that of a small country we examine previously. A *large country, because of its size, can have a substantial influence on foreign prices.*

Figure 2.4 illustrates the cost and benefits of a tariff for the importing large country.

As we can observe in Figure 2.4, the imposition of tariff raises the domestic price from P_1 to P_2 , but lowers the foreign export price from P_1 to P_4 (the explanation of the differentiation in prices is given to Figure 2.1). The quantity of goods that produced domestically increases from Q_1 to Q_2 , while domestic consumption decreases from Q_4 to Q_3 .

Measuring the Costs and Benefits

Similar to the small country, domestic producers have a higher producer surplus, because they receive a higher price. In Figure 2.4 is represented by the area labeled e . This means that, and in this case, producers gain from the tariff.

Furthermore, domestic consumers worse off, as they face a rise in price. This result in a reduction in consumer surplus given by the area $e + f + g + h$. Hence, consumers lose from the tariff, as happens and in a small country.

In the case of the large country, government gains are equal to the tariff t^* times the volume of imports $Q_2Q_3 = OQ_3 - OQ_2$. Therefore, the government's revenue, as $t^* = P_2 - P_4$, is equal to the sum of the two areas labeled $g + i$.

At this point we can calculate the net effect of tariff for the large country. According to the Figure 2.4, the *net cost of the tariff* is equal to:

$$(e + f + g + h) - e - (g + i) = f + h - i$$

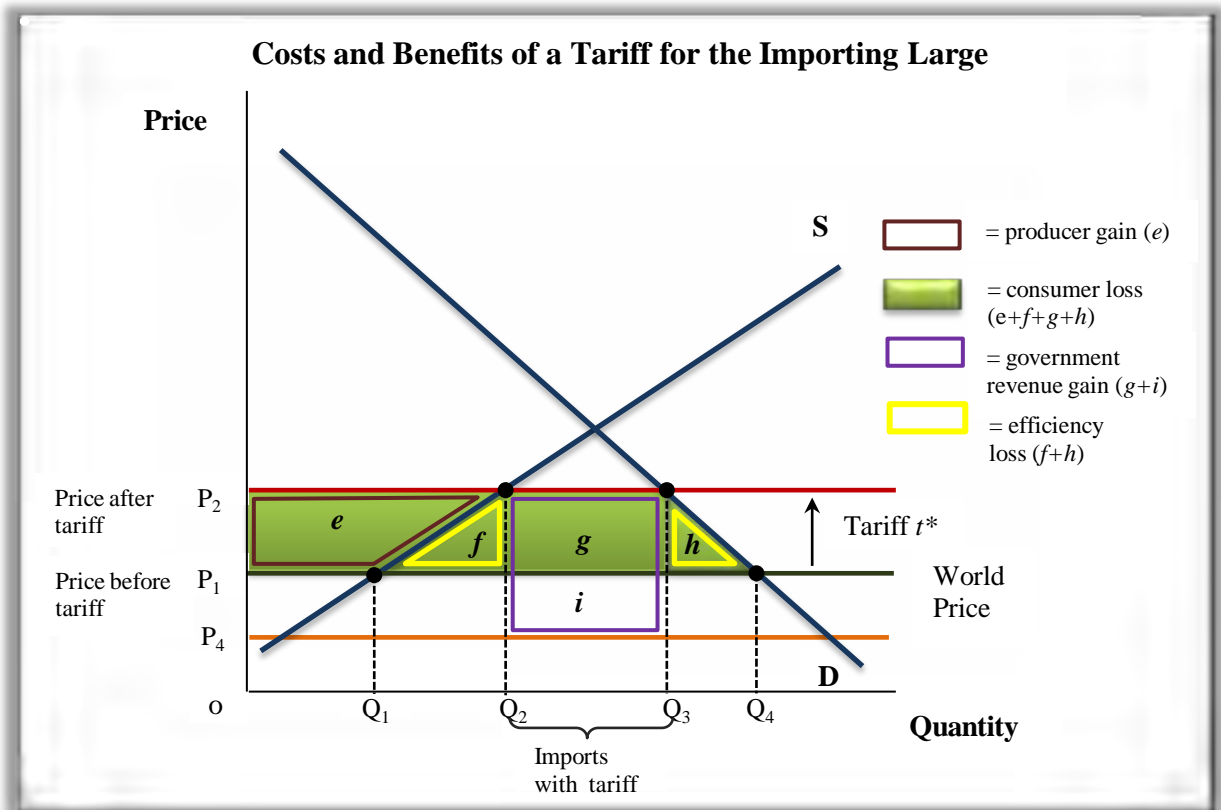
The two triangles $f + h$ represent the *efficiency loss*, while the rectangle i represents the *terms of trade gain*. From this contemplation it is clear that *the large country, in contrast to the small one, is able to reduce the foreign export prices and this can lead to the increase of the nation's welfare*.

So, *the net welfare effects of a tariff on a large country* are as follow: there are the negative effects represented by the two triangles f and h . The triangle f is a *production distortion loss* and the triangle h is a *consumption distortion loss*. Besides these two losses, we have the terms of trade gain measured by the rectangle i , which stems from the decrease of the foreign export price caused by a tariff. Consequently, there is an increase in total surplus, so that the benefits of the tariff exceed its costs.⁹

⁹ See Appendix for *Optimum Tariff* - the level of tariff that maximizes country's welfare. Also, in Appendix is given the definition and the way to calculate *the effective rate of protection*.

Figure 2.4

Costs and Benefits of a Tariff for the Importing Large Country



Source: Adjustment from Krugman and Obstfeld (2006) - own elaboration

Two very important concepts that we believe that they are very significant to be mentioned in the study are *Trade Creation* and *Trade Diversion*, as well as the concepts of *Static and Dynamic effects* of the creation of a Free Trade Area. The analysis of this part are cited to the Appendix.

2.2 NON - TARIFF BARRIERS

Until recently, tariffs have been one of the most common instruments of protection, due to the fact that they are the simplest trade policies. In modern world governments of industrial countries made great efforts to decrease tariffs. Although, they achieved significant results, the intervention in international trade began to take other forms, such as export subsidies, import quotas, voluntary export restraints, local content requirements and dumping. Consequently, non-tariff barriers are another form of restrictions to trade other than tariffs.

2.2.1 EXPORT SUBSIDIES

Export subsidy is a government policy that regards industries or individuals that export their products to other countries. Export subsidy takes the form of payment given by the government to domestic exporters, in order to encourage exports of goods and 'protect' domestic production from the foreign competition. When the government offers an export subsidy, shippers will export the good up to the point where the domestic price exceeds the foreign price by the amount of the subsidy (Krugman and Obstfeld, 2006).

In Figure 2.5 we can observe that the effects of the imposition of an export subsidy on prices are the reverse of those of a tariff. We assume that P_W is the world price. If government imposes an export subsidy on prices, in the exporting country the price increases from P_W to P_S . Moreover, due to the fact that the price in the importing country decreases from P_W to P_S^* , the increase in price is less than the subsidy. So, we can deduce the effects of this movement on the exporting country with the help of Figure 2.5:

Consumers lose and it is depicted by the area $a + b$.

Producers gain and the area that covers is $a + b + c$.

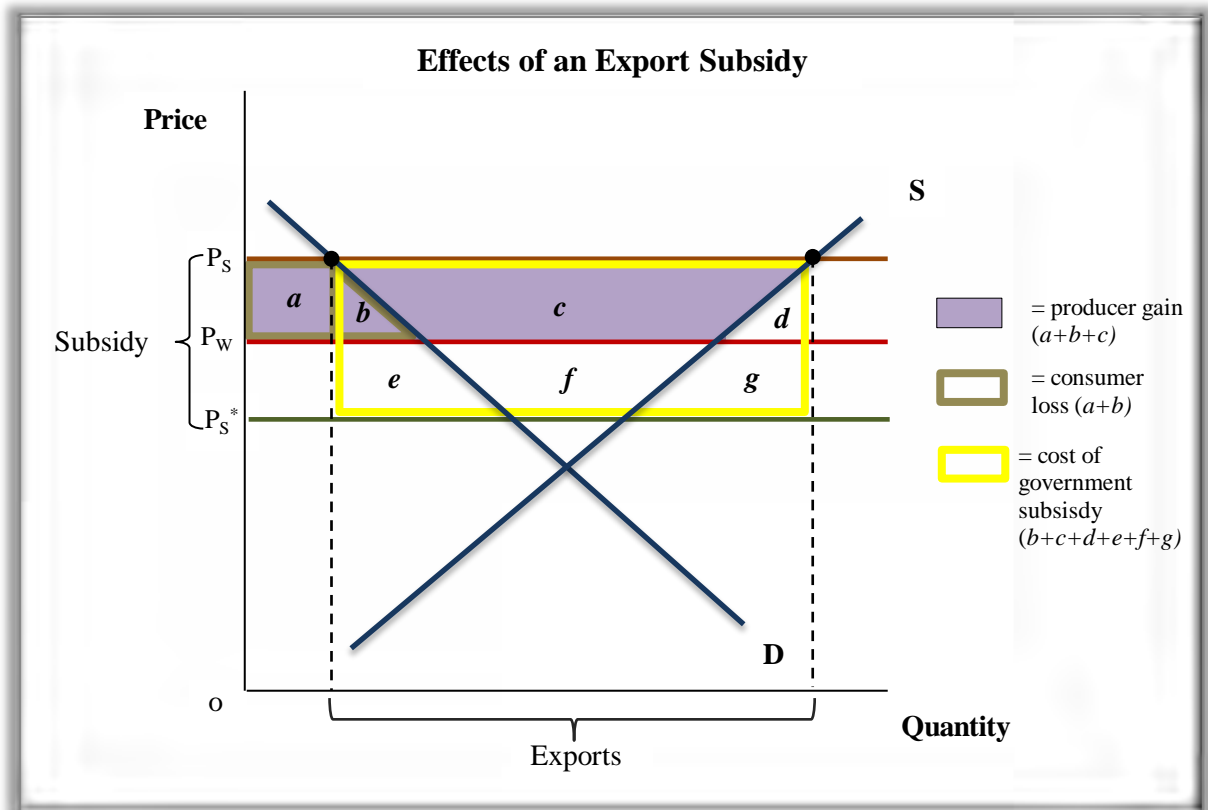
Government loses, because it pays for the subsidy and it is represented by the area $b + c + d + e + f + g$ (the amount of exports times the amount of the subsidy).

The net welfare loss is:

$$(a + b) + (b + c + d + e + f + g) - (a + b + c) = b + d + e + f + g.$$

We can conclude that the areas b and d , as in the case of tariff, represent consumption and production distortion losses. Furthermore, the imposition of the export subsidy leads to the fall of the price of the export in foreign market from P_W to P_S^* and this worsens the terms of trade, in contrast to a tariff. The area $e + f + g$ shows the additional loss of terms of trade. Consequently, the export subsidy results in national welfare loss, as its costs surpass its benefits.

Figure 2.5
Effects of an Export Subsidy



Source: Adjustment from Krugman and Obstfeld (2006) - own elaboration

2.2.2 IMPORT QUOTAS

An import quota is a government-imposed trade restriction that limits the quantity of some goods that may be imported. When the quota is completed, further import of the product that it is under the regime of the import quota, it is prohibited. Government usually restricts the amount of imports through licenses issued to some group of individuals and firms. The primary goal of import quotas is to reduce imports and increase domestic production of a good. The fact that the quantity of imports is restricted leads to the increase in price of imports, and therefore, it encourages domestic consumers to buy more of domestic production. It is important to be referred that the an import quota will finally raise the domestic price of the imported good. This happens because, as imports are restricted, the demand of the product at the initial price surpasses the domestic supply plus imports. This means that consumers face a 'double penalty', as the price rises and the quantity of the imports are fixed by government.

Although, both quotas and tariffs are protective measures imposed by governments to try to control trade between countries, there is a difference between them. With quota the government does not receive any revenue, in contrast to tariff. In the case of quota, the profits are received by license holders, who buy at the world price and sell at the higher domestic price. These profits are called *quota rents* and determine the costs and benefits of the import quota. Thus, the cost of an import quota is higher when the licenses to import are assigned to the government of the exporting country. In this case the quota rents go to foreigners.

2.2.3 VOLUNTARY EXPORT RESTRAINTS (VERs)

The Voluntary Export Restraint (VER) is a non-tariff barrier instrument that is used exclusively by the industrial countries. It is a variant on an import quota and it is a trade restriction that is imposed on the quantity of a good by an exporting country rather than an importing country. In other words, VERs are actions by foreign producers, often in conjunction with their governments, to limit export to certain international markets. Often VERs are joint declarations by exporting and importing countries negotiated as part of bilateral or multilateral agreements or understandings to control imports (McClenahan, 1991). Typically, VERs are a result of requests made by the importing country to provide a measure of protection for its domestic firms that produce substitute goods. As regards the economic side, a VER is exactly like an import quota, as the licenses are assigned to foreign governments, which means that costs for the importing country are very high.

Compared to a tariff on imports, a VER always costs more to the importing country for the same amount of imports. The difference is that what would have been revenue under a tariff becomes rents earned by foreigners under the VER, so that the VER clearly produces a loss for the importing country. As regard the national side, VERs are much more costly than tariffs, because the bulk of the cost represents a transfer of income rather than a loss of efficiency (Krugman and Obstfeld, 2006).¹⁰

¹⁰ It is worthwhile to be referred the example of VERs, where Japan imposed a VER on its auto exports into the US, as a result of American pressure in the 1980s. The VER

2.2.4 LOCAL CONTENT REQUIREMENTS

A local content requirement is a regulation that requires a certain percentage of intermediate goods, which are used in the production processes, to be sourced from local manufacturers. In other words, it is a regulation that requires that some fixed portions of a final good be produced locally. Many developing countries have applied local content laws in their attempt to shift their manufacturing base from the assembly stage into that of the intermediate goods.

The imposition of a local content requirement provides to the domestic producers of inputs the same protection as an import quota. On the other hand, the firms of a country, which are required to purchase domestic goods, face different effects. A local content requirement does not place a strict limit on imports, but allows firms to import more, if they purchase more from the domestic market. This means that the effective price of inputs to the firm is an average of the price of imported and domestically produced inputs.

It is notable to mention that the application of a local content requirement produces neither government revenues nor quota rents. Instead, the consumers are those who lose, as the final price is that which covers the difference between the prices of imports and the prices of domestic goods.

2.2.5 DUMPING

Another practice in order for countries to interfere in the operation of international market mechanisms is dumping. The term of dumping is related to price discrimination, as a firm charges different prices to different customers. More specifically, dumping in international trade can be defined as a pricing practice in which a country or a company sells a product at lower price to foreign market than the price charged in the domestic market. It is an economic instrument that in many cases some countries use in order to displace a competitor from the marketplace.

Two main conditions must coexist, so as dumping to take place. The first one is referred to the industry, that must be imperfectly competitive, in order for firms to

subsequently gave the US auto industry some protection against the great foreign competition.

be capable to set prices and not to take them as given. The second condition supports that markets must be segmented. The reason is that consumers of a country have to have difficulty in finding products that are intended for export (Helpman, 1982). Hence, it seems to be profitable for a monopolistic company, which qualifies these two conditions, to proceed with a practice of dumping.

Nevertheless, the dumping activity is disputed as an act of protectionism. The reason is that it is considered to be as an 'unfair' competitive practice with negative effects on international trade. In order to avoid the negative effects of dumping, it is subjected to special rules and penalties for the countries who apply such practices.

Reciprocal Dumping

It is supported that dumping is able to lead to the creation of international trade, as it is based on price discrimination. Brander (1981) argues that oligopolistic competition between firms would naturally give rise to *reciprocal dumping*.

We suppose that there are two monopolistic firms in two different countries, each producing the same good. These two firms have the same marginal cost and also there are some transport costs between the markets (if the firms charge the same price there will be no trade). With the introduction of dumping, there may emerge trade between the countries. This happens because each firm has an incentive to invade the other market, selling a few units at a price, that is net of transportation cost and lower than the domestic market price but still above marginal cost.

The creation of trade will occur, if both countries proceed to the above practice. The strange case here is that there will be a two-way trade in the same product, even though there is no initial difference in the price of the product in the two markets and in addition there are some costs of transportation. This situation is known as reciprocal dumping.

2.2.6 STRATEGIC TRADE POLICY

It is the newest addition to non-tariff barriers of liberalization of trade. The term is referred to a country's trade policy, aiming to create a comparative advantage to fields which are of strategic importance to the procedure of its economic development. These fields are usually identified to industries of high technology,

which are in need of government support, in order to develop and catch up with their foreign competitors. This support can be temporal and takes the form of subsidy, tax exemption etc. Strategic trade policy seems to be like the argument of infant industry, because both of them expect to come to economic fruition in future. But their main difference is that strategic trade policy involves industries with potentiality to economies of scale and use of methods of high technology.

Except for the above ways that governments use in order to influence international trade and protect their domestic production, there are some additional policies that they are referred to the Appendix.

2.3 FREE TRADE OR PROTECTIONISM?

We have analyzed up to now the terms of free trade and protectionism. Briefly, free trade is the trade of goods and services that take place unobstructed between countries with no restrictions on imports and exports by governments or international organizations. On the other hand, protectionism is defined as any measure designed to give to domestic producers of goods and services an advantage over a foreign competitor and finally to result in erecting barriers to international trade.

The crucial question is which one of these two cases are the best choice for the increase of the volume of international trade and for the flourishing of economic growth. Economists are divided on the issue, as there is no net consensus on their researches. An extensive argument has been developed from both sides.

2.3.1 ARGUMENTS FOR PROTECTIONISM

The arguments in favor of Protectionism are of great importance when analyzed on the base of national economy and aim to promote the national welfare. Since the time of Adam Smith and David Ricardo, economists have known that free trade is the best policy. But, as market globalization began to take great dimensions and industrialized and developing countries engaged to free trade, many inequalities have been emerged from the intense competition. Therefore, the advocates of protectionism believe that there is a legitimate need for government restrictions on free trade in order to protect their country's economy and its people's standard of living.

The most important arguments for protectionism are the below:

1. *Infant Industry Argument*: It is one of the most notable arguments for protection. It is based on the assumption that a country that produces a good for export, it would be able to produce it with lower enough cost, if it had more experience in production. But, given the lack of experience, country is unable to compete the other more experienced countries in the industry. Such a country would increase its long-term welfare, if government provided protection to its industry from foreign competition or encouraged the production of the good by a subsidy. This protection should be offered to industry temporally, until it could stand on its own feet.

The argument of infant industry became popular during the period from World War II until the 1970s, when many developing countries aimed to increase their development through advancing their manufacturing sector in local market. They tried to succeed this strategy by restricting the imports of manufactured goods by using tariffs or import quotas as temporary measures to foster industrialization. In other words, the infant industry argument supports that developing countries, having new manufacturing industries, have a *potential comparative advantage* in manufacturing, which are not able to exploit it effectively as they have difficulty in competing with well-established competitors in developed countries.

Although, the argument of infant industry have been supported by many governments and we have some loud examples having utilized this strategy, such as the United States, Germany and Japan, many economists draw attention to the way it is used, as it presents some drawbacks. According to Friedrich List (1841), the protection must be limited to industries of 'infant' age, which present potential economic development. This means that it is possible to occur protectionism abuse resulting in vain pending for the 'adulthood' of industry. Thus, governments should make cautious evaluation of conditions, so as to avoid misguided results.

Although, the argument of infant industry is disputed by many economists, there are fervor supporters who attempt to find a more convincing justification than that analyzed above. They maintained that there must exist some particular failures of market in order for the argument of protecting an new industry to take place. More specific, two markets failures have been

identified and can be accused of impeding the strong and rapid development of new industries. The first justification is *imperfect capital markets*. That is, a developing country lacks a set of financial institutions, such as efficient stock markets and banks, with result the investment activities are unable to provide to new industries the appropriate financial help in order to develop. The second usual justification is the problem of *appropriability*. This argument is referred to the social benefits that pioneering firms generate, such as knowledge, for which they will not pay back. This is a cost that prevents many new industries to enter the market, as in addition to the producing output, they produce intangible benefits for which they cannot establish property rights. That is, the expenses are greater than the benefits.

Both of them consist two special cases that justify the interference of government into free trade based on the market failures. Even though, the argument have application to new industries and not to any industry, in reality the evaluation of which industry needs special treatment is a difficult task and in many cases the policy of infant industry does not succeed its purpose with result many industries be captured under protection and never grow-up.

Many less developed countries, by using the argument of infant industry as justification to intervene to free trade, have pursued policies of *import-substituting industrialization*, in which domestic industries develop under the protection of tariffs or import quotas. With these trade restrictions, country aims to encourage the replacement of imported manufactured goods by domestic products. These policies have not managed to succeed the expected benefits of economic growth and the standard of living, although they led developing countries to develop a domestic manufactured base. Many economists exerted severe criticism on the results of import substitution industry, as it became clear that developing countries failed to catch up with advanced countries and therefore, many of them lagged behind them, even if they succeeded in promoting manufacturing.

2. *National Security*: This argument is based on the necessity of a government to provide security to its nation and to ensure a minimum self-sufficiency limit in production of some products, which are considered to be very important for the survival of the country. Products like these can be the agricultural products, the energy production etc. Only when there is common

consensus for this purpose, is the intervention of the state acceptable. The problem here is to be defined the degree of the use of this argument, because in issues, like national security, the factor of subjectivity plays crucial role.

3. *The Increase in Employment Opportunities:* This is one of the most usual arguments in favor of protectionism, due to the fact that it allows for domestic production as well as employment of workforce. The counterargument here is how urgent is the need for protection, in order to increase the employment opportunities, at the expense of market efficiency and favorable treatment of the consumers.
4. *Improvement of terms of trade:* As we have previously analyzed, a country is able to improve its terms of trade with another country, and therefore its welfare, through optimal tariffs.

2.3.2 THE ARGUMENTS FOR FREE TRADE

From the era of Adam Smith and David Ricardo, free trade was regarded as the ideal policy in order for countries to achieve economic growth. Today, few countries approach the completely free trade without tariffs or import quotas. Economists, who are proponents of the idea of free trade, have developed the below arguments:

1. *Free Trade and Efficiency:* This argument is the reverse of the cost-benefit analysis of a tariff. This means that a restriction of trade, such as the imposition of a tariff, leads to production and consumption distortions. Instead, the case of free trade eliminates these distortions, that is, the efficiency losses are avoided, and results in increasing the national welfare.
2. *Additional Gains from Free Trade:* Beyond the elimination of distortions of production and consumption, free trade creates additional gain that includes economies of scale. The protectionism leads firms in limited domestic markets and this has as a result, the scale of production of each firm becomes inefficient. Another argument is that free trade gives incentives to firms to seek for new ways of exports or to compete with imports by having more opportunities for learning and innovation. Conversely, a system of protection, where government manages trade and has the control of the pattern of export and imports, firms do not have the same developing chances. These gains can

be defined as *dynamic gains*, because increased competition and innovation may need more time to take effect than the elimination production and consumption distortions. Furthermore, even among economists who consider that free trade is not the best policy, many of them support that it is a better policy than any other a government may follow.

3. *Political Argument for Free Trade:* This argument supports that government's intervention in the procedure of trade may sometimes dominated by special-interest politics rather than the consideration of national welfare. More especially, many economists maintain that although a combination of tariffs and export subsidies may seem to be beneficial for the increasing of national economic welfare, in reality the main purpose of their imposition is the service of other interests, involving the redistribution of income to specific sectors of economy. If a political strategy like this is able to take place, then the policy of free trade seems to be a better direction than protection.
4. *Geopolitical Interests for Free Trade:* This argument supports that a country pursues to engage to a free trade agreement not only to ensure economic welfare and improve its trade terms. Trade agreements are usually shaped by (geo)political considerations of all interested parties rather than pure trade interests (Manoli, 2013). This means that there are national security issues at the forefront of trade and economic agreements. Moreover, a country that aims at enhancing its political domination, protecting its territorial integrity, is able to achieve it by taking part in an economic agreement. In addition, energy issues (e.g. gas and oil) consist an important factor, able to lead countries to exploit the benefits that an economic agreement or a trade block may provide. The participation in a agreement or a union can give a country more political power as well as significant support in crucial (geo)political issues. Gilpin (1975, p. 43) has argued that there is a “reciprocal and dynamic interaction in international relations of the pursuit of wealth and the pursuit of power.” A representative example of this argument is European Union which provide to its member states not only economic growth, but also political and security stability through deepening integration and enlargement.

3. CONCEPTUAL ISSUES AND A BRIEF REVIEW OF EMPIRICAL LITERATURE

From the Ricardian trade theory of comparative advantage to the current debate of globalization¹¹, great attempts have been made to find an adequate answer to the relationship between trade openness and economic growth. For many economists in international trade theory this relationship has been an issue of much interest and controversy. Many studies suggest that performance of more outward-oriented economies is superior to countries pursuing more inward-looking trade practices (Santos-Paulino 2005). However, the evidence for this argument is doubtful. Some research does not find this relationship to be robust, yet other studies even find this relationship to be negative (Rodríguez and Rodrik 1999; Rodrik et al. 2002). Before we review the empirical literature on the relationship between trade openness and economic growth, we will try to clarify the difficult concept of trade openness.

3.1 DEFINITION AND MEASUREMENT OF OPENNESS

3.1.1 WHAT DOES IT REALLY MEAN THE CONCEPT OF TRADE OPENNESS?

Making a survey in the existing literature on openness and growth, we can support that there is not a clear definition of trade openness. This ambiguity of what we meaning by the term of 'openness' creates a crucial problem for researchers as they have difficulty in measuring it. Many economists consider trade openness as a trade policy orientation and they aim to estimate the effects having on economic growth. As Harrison (1996 p. 420) stated:

...the concept of openness, applied to trade policy, could be synonymous with the idea of neutrality. Neutrality means that incentives are neutral between saving a unit of foreign exchange through import substitution and earning a unit of foreign exchange through exports.

¹¹ The notion of 'globalization' is very important and we will consider useful to refer to it - see Appendix for more information.

Note that although trade liberalization is a close concept with trade openness, they are not identical. Trade liberalization includes policy measures in order to increase trade openness. Other economists support that trade openness is not so simple term and they include some additional policies of a country, such as macroeconomic policy and institutional policy, which cause to characterize a country as more or less outward oriented. Finally, another group of economists argue that the definition of trade openness can be given not only by policy factors but also by non-policy factors (geography, infrastructures etc.), that are able to influence trade and outward orientation of countries. This is referred to 'new economic geography' theory (NEG), which defines trade openness as the reduction of international trade cost, which means elimination of transport cost, tariffs and non-tariffs barriers to trade. According to Yanikkaya (2003) this definition has changed over time from one extreme to another and he mentions: "Recently, the meaning of 'openness' has become similar to the notion of 'free trade', that is a trade system where all trade distortions are eliminated." Krueger and Berg (2003 p. 5) give a theoretical definition to 'openness':

...the openness of an economy is the degree to which nationals and foreigners can transact without artificial (that is, governmentally imposed) costs (including delays and uncertainty) that are not imposed on transactions among domestic citizens.

3.1.2 MEASURES OF TRADE OPENNESS

International economists have long been interested in the way that trade openness and policy are measured, because of the fact that when an economy becoming 'open' has a great impact on the level of national output and national welfare. As we showed above the term of 'openness' is multidimensional and therefore unlikely to be adequately captured by single measures (Edwards, 1998). This explains the fact that empirical authors have used varied approaches to describe openness and capture the different sides of trade policy. Hence, many different measures of trade openness and policy have been created and used in empirical analyses of the relationship between openness and growth. Some noteworthy examples are these of Leamer (1988), Dollar (1992) and Sachs and Warner (1995), in which they have constructed indices that measure the degree one country exports and imports goods. Even today, new measures of openness,

methodologies and sample countries are introduced in literature in order to investigate the controversial relationship between trade openness and economic growth. Greenaway et al (2002) cited:

Even at the conceptual level, liberalization is not unambiguous. In the simple 2x2x2 trade model, one naturally thinks of it as tariff liberalization.

In a more sophisticated setting with instruments affecting the domestic prices of both importables and exportables, one can conceive of it as a move towards relative price neutrality. Finally, one can think of second best liberalization, i.e. the substitution of more efficient for less efficient instruments---typically tariffs for quotas. This ambiguity is reflected in the range of measures used empirically.

The most common and widely used measure of trade openness is trade shares or trade intensity, which is *the ratio of exports plus imports to GDP* and in most studies is referred as *openness*. The popularity of this measure stems from the data availability for many countries and the possibility of comparability across countries. It measures the trade volume which simply means that the higher the trade share for a country, the more open its economy is to trade benefits.

Even though, the measure of trade shares or openness is very popular, it has some difficulties that researchers should take into account. Firstly, the figures in ratio of openness are in current prices. This means that changes in the exchange rate or other relative price movements may cause divergence between the prices of international traded goods and services and domestic produced goods and services over time.¹² Secondly, the measure of trade shares is a measure of country size and integration into international markets rather than trade policy orientation. This means that a small country may have a high trade ratio not because it has low restrictions on trade with other countries, but may because it has resource endowments valuable to other countries or its domestic demand for foreign goods is high for some reason. Measure of trade shares cannot give an adequate interpretation when we referred to trade policy of a country. Trade is affected by many factors in addition to trade policy. Such factors are the size of a country, resource endowments, the level of economic development etc. Many attempts

¹² According to Alcalá and Ciccone (2004) due to this drawback of the nominal measure they proposed an alternative measure to which they refer to as *real openness*. Real openness is defined as imports plus exports in exchange rate US\$ relative to GDP in purchasing power parity US\$. Using real openness instead of openness as a measure of trade eliminates distortions due to cross-country differences in the relative price of non-tradable goods (Alcalá and Ciccone, 2004).

have been made in order to improve trade shares measures. Pritchett (1996), used 'structure adjusted trade intensity' measures to estimate the size of the reduction of the amount of economic activity that is traded, which is caused of the highly protectionist policies. These measures are the residuals from a regression of trade intensity on structural characteristics such as population, land area, level of per capita GDP, and transport costs. Frankel and Romer (1999) also try to improve the standard trade shares measure. They created a production function by using a number of geographic characteristics. However, they themselves admit that the measure is: ...“clearly an imperfect measure of economic interactions with other countries,...”.

Another category includes *measures of trade barriers*, such as average tariff rates, trade-weighted tariff averages, revenue from duties as a percentage of total trade, export taxes and indices of non-tariff barriers, which measures the trade restrictiveness of countries. Tariffs consider to be the most direct indicators of trade restrictions and their impact on economic growth is a an issue of controversy. The problem with these measures is that there is difficulty in gathering data, making the cross-country comparison a challenge task for researchers. We can state that tariff-based measures might work well in combination with other measures, but this has yet to be shown. Non-tariffs barriers as Edwards (1992) noted... “is likely to be one of the poorest indicator of trade orientation”, not only due to the limited availability of data but also of difficulty in quantifying them.

Moreover, *exchange rates* is another group of trade measures. They are price-based measures trying to estimate trade policy by seeking price distortions either in markets of goods, compared with international prices, or in currencies, especially through the black market premium. Black market premium is the most popular among these category of measures and is measured as the deviation of the black market exchange rate from the official exchange rate. The argument for using the black market premium as a measure of trade openness is that foreign exchange restrictions act as a barrier to trade. Nevertheless, Rodriguez and Rodrik (2001) were not in favor of this measure. They argued that it is a 'bad' measure, because it is most likely to reflect a wide range of policy failures, such as poor

macroeconomic policy, weak government, lack of rule of law, and corruption, as well macroeconomic and political crises.

Finally, the *composite indices* consist a group of measures that are constructed to evaluate trade barriers, structural characteristics, and institutional arrangements. In other words, they are constructed to examine the impact of trade openness to growth. Empirical researchers combine various indicators to develop their models which they consider important for their analysis. This means that this kind of measures gives the opportunity to combine multiple sides of trade policy, as well as other significant policies and structural characteristics, into a single measure. Notwithstanding these advantages, as with all measures that were referred above, there are concerns. There is the issue of subjectivity in the process of coding data uniformly across countries and problems arise in interpreting the results of the impacts of different types of policies in different countries.

A notable example of composite indices is the Sachs and Warner (1995) measure of openness. It is an index that examines the linkage between openness and economic growth for 79 countries over the period 1970-1989 by classifying countries, on one hand, into developed and developing countries and on the other hand, by ranking countries as close to trade or fully liberalized, according to five specific criteria. Although, the Sachs and Warner (SW) classification was criticized, due to the fact that the cross-sectional findings are sensitive to the period under consideration, Wacziarg and Welch (2003) used new data in order to extend SW's empirical results on outward orientation and growth to the 1990s.

3.2 THE RELATION BETWEEN TRADE OPENNESS AND ECONOMIC GROWTH: A REVIEW OF EMPIRICAL LITERATURE

In this section a presentation of the most influential empirical studies on the subject is made. They are studies that are widely cited in the subsequent literature dealing with trade and growth. This procedure will offer an overview of what we know today about the direction and strength of the relationship between openness and growth, as well as the influence of other determinants.

The question why countries trade among each other have been answered and explained by neoclassical trade theory and endogenous growth theory and we have analyzed in a previous chapter. Briefly, according to traditional neoclassical trade theories, countries can achieve a long run economic growth exogenously. A noteworthy example is Solow model (1957), which is based on the basic production function and assumes that economy operates under constant returns to scale. It also assumes diminishing returns on both labor and capital, and constant rate of growing for labor force and technological improvements. Solow's model explains economic growth by the accumulation of physical capital and labor. It also assumes that there is a steady state level of per capita incomes to which convergence can be achieved among low-income countries.

On the other hand endogenous growth theory, in order to explain the relationship between trade openness and growth uses mainly models of endogenous technological change. This means that trade can increase the rate of technological progress, and therefore productivity growth, either through an expansion of the market for output or through an expansion of the market for inputs (Dowrick and Golley, 2004). The expansion of the market of output allows domestic producers to exploit economies of scale and economies of specialization. As in Lucas model (1988), when productivity growth is induced by specialization through learning by doing, gains from trade may be dynamic rather than static (Lucas, 1988).

The principle difference between neoclassical and endogenous growth model is that trade liberalization increases the growth rate in the neoclassical model only temporally, during the transitional period, while in the endogenous growth model this effect may be permanent. The two models are in broad agreement that the accumulation of physical and human capital, and technological progress are the principal causes of economic growth (Budrauskaite et al., 2002).

3.2.1 WHAT IS THE EFFECT OF 'OPENNESS' ON ECONOMIC GROWTH?

On empirical grounds, different researchers, in order to examine the linkage between openness and economic growth, have used many different measures to

identify the direction and to estimate the effects and the degree of the impact on countries' welfare.

As we referred previously the problem that empirical literature of international trade faces is the lack of good measures of trade policy and this explains the plethora of different approaches through different trade measures and the contradictory results on this issue.

A great number of studies tend to find a positive relationship between openness and economic growth. The 'new theories of growth' pioneered by Romer (1986) and Lucas (1988) have provided persuasive evidence for the thesis that openness affects growth positively. Romer (1992), Grossman and Helpman (1991) and Barro and Sala-i-Martin (1995), among others, have argued that countries which are more open to the rest of the world have a greater ability to absorb technological advances generated in leading countries. More recently, the most influential studies, which find strongly positive growth effects, have been the case of Sachs and Warner (1995), Frankel and Romer (1999), and Dollar and Kraay (2003).

Sachs and Warner (1995) run cross-country growth regressions on composite indices of the stance of trade policy and find a strong and significant relationship both within the group of developed countries and the group of developing countries over the period 1970-1989. They, also, estimate that open economies grow, on average, 2.45 percentage points more than closed economies, which is a remarkably high annual per capita GDP growth. Furthermore, they attempt to resolve the widely discussed conundrum concerning economic convergence in the world economy by suggesting that:

...poorer countries should tend to grow more rapidly than richer countries and, therefore, should close the proportionate income gap over time..., as the poorer countries can import capital and modern technologies from the wealthier countries, and thereby reap the advantages and backwardness.
(Sachs and Warner 1995).

Harrison (1996) gathers and reviews as many different measures of openness as are available for a cross-section of developing countries and attempts to make a connection between openness and growth and test whether these measures yield the same results. She concludes that half of the presented measures do exhibit a

robust relationship with GDP growth, noting that greater openness is associated with higher growth.

Edwards (1998) investigates the relationship between openness and total factor productivity (TFP) growth by testing the robustness of different indexes of trade policy. He uses nine alternative indexes of trade policy to investigate whether the evidence supports the view that, with other things given, TFP growth is faster in more open economies (Edwards 1998). Briefly, his findings show that all the instrumental variables help dealing with endogeneity and he concludes that “...these results are quite remarkable, suggesting with tremendous consistency that there is a significantly positive relationship between openness and productivity growth” (Edwards 1998, pp. 391).

Frankel and Romer (1999) directly ask the question in their study: “Does trade cause growth?” They found it problematic to identify the causal direction between trade and income. Even though earlier regression analyses usually have found a positive relationship between trade and growth, they claim that this relationship not necessarily reflects an effect of trade on income, due to the endogeneity of trade share. Thus, they propose alternative instruments for trade by constructing geographic variables, which they claim to be powerful determinants of bilateral trade. By using geographical variables, such as the country size, the distance from each other, whether they share a boarder, and whether they are landlocked, as exogenous instruments, they attempted to overcome the problem of endogeneity. Their main finding is that there is no evidence that OLS estimates overstate the effects of trade. They argue that the effects of geography-based differences in trade are “at least suggestive about the effects of policy-induced differences” (Frankel and Romer 1999, pp. 395) and conclude that countries that trade more have higher per capita income.¹³

Dollar and Kraay (2003) investigate the partial effects of institutions and trade on growth. They use the Frankel and Romer measure of openness to analyze decadal

¹³ Rodriguez and Rodrik (2001) critique this paper and argue that the geographically constructed measure by Frankel and Romer may not be a valid instrumental variable, as well the geographical measure of Irwin and Tervio (2000). The reason is that geography is likely to be a determinant of income through many more channels than just trade. For example, distance from the equator affects public health and thus productivity through exposure to various diseases (Baldwin 2003).

growth of per-capita GDP. Their conclusion was that the results of their analysis “are suggestive of an important joint role for both trade and institutions in the very long run, but a relatively larger role for trade in the shorter run” (Dollar and Kraay 2003, pp. 161).

Rodriguez and Rodrik (2000) differentiate their position from the majority of empirical studies that find the growth rate of GDP to be positively related to the growth rate of trade openness. They review the studies of Dollar (1992), Ben-David (1993), Sachs and Warner (1995) and Edwards (1998) and try to find a satisfactory answer to the question: “Do countries with lower-induced barriers to international trade grow faster, once other relevant country characteristics are controlled for?”. They deduce that there is little evidence that open trade policies—in the sense of lower tariff and non-tariff barriers to trade—are significantly associated with economic growth. In their study they argue that in many cases, the indicators of openness used by researchers are poor measures of trade barriers or are highly correlated with other sources of bad economic performance. In other cases, the methods used to ascertain the link between trade policy and growth has serious shortcomings (Rodriguez and Rodrik 1999). The main point that attempt to highlight is that: “...they are skeptical that there is a strong negative relationship in the data between trade barriers and economic growth, at least for levels of trade restrictions observed in practice” (Rodriguez and Rodrik 1999, pp. 316).

Rodrik et al. (2002) aims to estimate the respective contributions of institutions, geography, and trade in determining income levels around the world, using recently developed instruments for institutions and trade. They criticize both Alcalá and Ciccone (2002) and Dollar and Kraay (2003) by demonstrating that the robust effect of trade on growth stems from the use as measure of openness the 'real openness', instead of the conventional measures of openness, which results in positive biased estimations of openness on growth.

As reference to the relation between openness and growth the majority of studies find it positive. Another issue that is also significant is if countries converge in income levels. On one hand, Sachs and Warner (1995) based on the factor price equalization theorem of Heckscher and Ohlin model, which implies convergence in income levels among the countries involved in trade. On the other hand,

Myrdal (1957) strongly criticized neoclassical theory, as he argues that in free trade inequalities increased between developing and developed countries.

Many studies agree on the subject that when countries taking part in economic integration tend to converge in the income levels. For instance, Dowrick and Ngyen (1989) found convergence among the OECD countries, and Barro and Sala-I-Martin (1992) found convergence among US states and Japanese prefectures. Ben-David (1993) found convergence among the members of the European Community (EC) and European Free Trade Association (EFTA). Nevertheless, in all these studies developing countries are not included.

Levine and Renelt (1992) test the convergence hypothesis among both developed and developing countries and find a negative and significant relationship between the convergence variable and growth. They also find that poor countries tend to grow faster than richer countries, and conclude that the convergence hypothesis is verified. But the convergence is *conditional*. This means that the relationship is negative and robust only as long as the human capital variable is included. Edwards (1997) supports these findings about conditional convergence and finds all the openness indicators to be negatively correlated with the convergence controller variable with significant effects.

3.2.2 THE IMPORTANCE OF ECONOMIC GROWTH BEFORE TRADE OPENNESS

The new growth theory is fraught with empirical analyses supporting that openness to the world trade is the main determinant that can lead countries to economic growth. Nevertheless, there are studies which investigate the differences in current levels of real income/output per capita, in contrast to differences in rates of growth, by defining successful economic development in terms of three groups of variables: *trade, institutional quality, and geography* (Dowrick and Golley, 2004). For instance, there are countries that when trade more observed to have higher incomes, while there are countries that have higher incomes and this lead them to have easier engage in international trade, as they can afford to improve their institutions according to contracts. Chang *et al.* (2005) make the observation in his study that although trade openness promotes economic growth on average, the aftermath of trade liberalization varies across

countries and depends on the structure of the economy and its institutional quality. Moreover, Rodrik *et al.* (2002), using in their analysis Frankel and Roemr's trade ratio and Acemoglu *et al.*'s mortality variable as instruments for trade and institutional quality, conclude that rates of growth are mainly explained by institutional quality.

Wacziarg and Welch (2003), investigating a small sample of 13 countries, find different growth rates after trade liberalization and they notice that *political stability* related positively to growth response after liberalization. This means that the quality of institutions and the *economic characteristics* play crucial role for a country that aims to engage international trade and competition, concerning the adjustment to the new conditions and the successful openness in terms of growth performance. According to Harris-Todaro model, a significant characteristic for a country to achieve successful openness to trade is the degree of *labor market flexibility*. Labor market distortions may affect the main sector of an economy and causes underemployment or/and underproduction. This means that a choice for liberalization of this economy may fail to improve its growth, in contrast to trade protection that is able to mitigate the problem. Consequently, labor market distortions have to be sufficiently small, in order for trade liberalization to increase unambiguously per capita income (Chang *et al.*, 2005).

Acemoglu and Zilibotti (2001) support that *human capital* is a determined factor of developing countries in the transition process. Only when developing countries upgrade their human capital, are they capable to improve their productivity through openness and have access to new technologies without obstacles. In addition, the '*absorptive capacity*' of a country is significant for the adoption of technology and is determined by *human capital* and *R&D investment*. As a result, the less developed countries, due to the lack of investment in human capital and R&D, have difficulty in exploiting technology transfers, hampering the productivity growth.

Banerjee and Newman (2004) mention the importance of *financial development* in the sectors of countries so as to succeed in trade openness. Particularly, poor countries are unable to support their unproductive sectors, as they lack of financial development, and this make them vulnerable to foreign competition.

According to Chow (1987), Newly Industrializing Countries (NICs) by developing their *manufacturing industries*, attempt to make these industries competitive and enhance their comparative advantage. This results in promoting the growth of exports and, therefore, in increasing their national income. Ballasa (1981) argues that the development of the manufacturing sector is a “part and parcel of the overall economic development.” This means that when developing countries become more advanced, they gradually shifts from primary industries to secondary industries and finally to tertiary industries. Hence, growth of manufacturing industries in the less developed countries can contribute to industrial development.

Studies that are referred to *growth-led exports (GLE)* (the causality direction flows from economic growth to exports growth) show that the increase in domestic levels of skilled-labor and technology causes gains in productivity that lead to the expansion of exports (Bhagwati, 1988; Krugman, 1984).¹⁴

Darity and Davis (2005) mention that successful *innovation* generates the 'blueprint' for a new intermediate good, which resulting in gains to diversity. They argue that: “... innovation is the engine of growth. *Knowledge spillovers* in the search sector free innovation from diminishing returns. The long-run rate of growth depends on the equilibrium allocation of resources to innovation.”

Finally, Rodrik (1997) proposes some specific preconditions in order for developing countries to foster long-run economic growth when they open to trade. These are: 1) the accumulation of human capital, 2) physical infrastructures, 3) macroeconomic stability, 4) private sector development and 4) the rule of law. Likewise, Darity and Davis (2005) conclude that in North-South models the relationship between trade and growth depends on a country's level of development, on the existence of surplus labor or an institutionally set subsistence

¹⁴ Awokuse (2007) refers in his study the example of many former socialist Central and Eastern Countries (CEEC), which after the collapse of central economic planning in the late 1980s experienced major economic crises. Several of these countries decided to become members of European Union (EU), which means that they had to sign the European Agreements. These agreements involve the adoption of economic reforms and market liberalization policies which have led to significant expansion in the export sector in several countries.

wage, on scale economies and market structure in the export sector, or on the sectoral composition of exports.

4. EMPIRICAL INVESTIGATION OF THE RELATIONSHIP BETWEEN TRADE OPENNESS AND ECONOMIC GROWTH

The purpose of this master thesis is to analyze the relationship between trade openness and economic growth. Apart from the review of theoretical theories and empirical studies that we have presented in previous chapters, we considered important to test the relationship between trade openness and economic growth by using the *Pearson correlation*¹⁵. We use data¹⁶ from the World Bank for 166 countries, with data available, of the variables of GDP (current US\$) and Trade (% of GDP) from the year 1980 up to 2013¹⁷. The procedure of the analysis is performed as follows: Firstly, we find from the data of annual GDP and Trade, the GDP growth and the Trade Openness Change, respectively, for all countries for every five year up to 2013. Secondly, we decide to use the *Pearson correlation* in order to estimate the degree of linear dependence between the variables of three different combinations. The correlations between variables are the following:

- a) the annual Trade with the five-year GDP growth
- b) the annual GDP with the five-year Trade Openness Change
- c) the five-year GDP growth with the five-year Trade Openness Change

Finally, we separate the countries to four categories in order to notice the strength of the correlation among countries belonging to the same group of specific characteristics. These four separations are the below:

- a) Countries with large national economies and small national economies according to GDP¹⁸.
- b) Countries with closed economies and open economies according to percentage of Trade¹⁹.
- c) European Union countries.
- d) Countries from all over the world.

¹⁵ *Pearson correlation* is a measure of the degree of linear dependence between two variables and it takes values between -1 and +1, where -1 is a total negative correlation, 0 is no correlation and 1 is total positive correlation.

¹⁶ Data are available upon request.

¹⁷ The year 2014 is excluded from our analysis, because of data unavailability from the World Bank.

¹⁸ The separation among countries became based on average of GDP for each five years.

¹⁹ The separation among countries became based on average of Trade for each five years.

4.1 RESULTS OF PEARSON CORRELATION²⁰

In this section we will present the results of Pearson correlation. The results will be presented in tables for each combination and for each category of countries.

Firstly, for countries with large and small national economies, Pearson correlation between:

- a) annual Trade and five-year GDP growth reveals a weak relationship between the two variables for small national economies, with the greater value to be 0.420 and the lower 0.015. For large national economies the relationship is also weak, apart from the year of 1984 where Pearson correlation approach the value of 0.518, which is a positive relation (Table 4.1).

Table 4.1

Pearson Correlation between annual TRADE and GDP growth for Small and Large National Economies

SMALL NATIONANAL ECONOMIES		LARGE NATIONANAL ECONOMIES	
YEAR	PEARSON between annual TRADE and GDP growth	YEAR	PEARSON between annual TRADE and GDP growth
1980	0,334	1980	-0,388
1981	0,308	1981	-0,421
1982	0,303	1982	-0,466
1983	0,294	1983	-0,484
1984	0,188	1984	-0,518
1985	0,400	1985	0,386
1986	0,391	1986	0,393
1987	0,346	1987	0,380
1988	0,310	1988	0,334
1989	0,261	1989	0,295
1990	0,317	1990	-0,169
1991	0,262	1991	-0,151
1992	0,199	1992	-0,317
1993	0,149	1993	-0,337
1994	0,079	1994	-0,312
1995	0,304	1995	-0,185
1996	0,420	1996	-0,136
1997	0,339	1997	-0,156
1998	0,404	1998	-0,231
1999	0,314	1999	-0,281
2000	0,224	2000	0,437
2001	0,265	2001	0,426
2002	0,210	2002	0,371

²⁰ At the Appendix there is a display of Figures for each case.

2003	0,180	2003	0,376
2004	0,128	2004	0,343
2005	-0,085	2005	-0,080
2006	-0,112	2006	-0,120
2007	-0,103	2007	-0,144
2008	-0,129	2008	-0,189
2009	-0,164	2009	-0,235
2010	0,015	2010	-0,067
2011	0,037	2011	-0,077
2012	0,025	2012	-0,117
2013	-0,018	2013	-0,156

b) annual GDP and five-year Trade Openness Change presents for both large and small national economies very weak correlation, as it is around the point of zero (Table 4.2).

Table 4.2

Pearson correlation between annual GDP and TRADE OPENNESS CHANGE for Small and Large National Economies

SMALL NATIONANL ECONOMIES		LARGE NATIONANL ECONOMIES	
YEAR	PEARSON between annual GDP and TRADE OPENNESS CHANGE	YEAR	PEARSON between annual GDP and TRADE OPENNESS CHANGE
1980	-0,135	1980	0,005
1981	-0,131	1981	0,037
1982	-0,061	1982	0,046
1983	-0,056	1983	0,057
1984	-0,055	1984	0,064
1985	-0,040	1985	-0,116
1986	-0,019	1986	-0,052
1987	-0,055	1987	-0,015
1988	-0,056	1988	0,002
1989	-0,060	1989	0,053
1990	0,007	1990	0,112
1991	0,009	1991	0,125
1992	0,034	1992	0,141
1993	0,036	1993	0,156
1994	0,052	1994	0,163
1995	-0,060	1995	0,219
1996	-0,058	1996	0,231
1997	-0,041	1997	0,248
1998	-0,028	1998	0,261
1999	-0,036	1999	0,260
2000	-0,119	2000	-0,018
2001	-0,114	2001	-0,014
2002	-0,088	2002	-0,003
2003	-0,056	2003	0,002
2004	-0,045	2004	0,002
2005	0,038	2005	-0,005
2006	0,050	2006	0,008
2007	0,060	2007	0,027
2008	0,069	2008	0,066

2009	0,077	2009	0,085
2010	-0,021	2010	0,080
2011	-0,012	2011	0,098
2012	-0,001	2012	0,118
2013	0,003	2013	0,132

- c) five-year GDP growth and five-year Trade Openness Change for small national economies is very weak, while for large national economies there is a strong positive relationship between the two variables with the greater value to be 0.685 (Table 4.3).

Table 4.3

Pearson correlation between GDP growth and TRADE OPENNESS CHANGE for Small and Large National Economies

SMALL NATIOANAL ECONOMIES		LARGE NATIOANAL ECONOMIES	
YEAR	PEARSON between GDP growth and TRADE OPENNESS CHANGE	YEAR	PEARSON between GDP growth and TRADE OPENNESS CHANGE
80-84	0,437	80-84	0,603
85-89	0,310	85-89	0,685
90-94	0,415	90-94	0,477
95-99	-0,076	95-99	0,635
00-04	0,284	00-04	0,508
05-09	0,231	05-09	0,557
10-13	0,263	10-13	0,537

Secondly, for countries with closed and open economies, Pearson correlation between:

- a) annual Trade with five-year GDP growth for closed economies presents no strong relation, while for open economies there is a tendency of becoming stronger and only in 1996 and 1998, we notice a strong positive correlation (0.591 and 0.622 respectively) (Table 4.4).

Table 4.4

Pearson correlation between annual TRADE and GDP growth for Closed and Open Economies

CLOSED ECONOMIES		OPEN ECONOMIES	
YEAR	PEARSON between annual TRADE and GDP growth	YEAR	PEARSON between annual TRADE and GDP growth
1980	-0,033	1980	0,491
1981	-0,082	1981	0,444
1982	-0,142	1982	0,457
1983	-0,191	1983	0,493
1984	-0,222	1984	0,255

1985	0,440	1985	0,293
1986	0,386	1986	0,303
1987	0,320	1987	0,241
1988	0,158	1988	0,234
1989	-0,004	1989	0,192
1990	0,184	1990	0,439
1991	0,108	1991	0,373
1992	0,056	1992	0,238
1993	0,053	1993	0,124
1994	-0,198	1994	0,115
1995	0,253	1995	0,415
1996	0,272	1996	0,591
1997	0,252	1997	0,488
1998	0,016	1998	0,622
1999	0,076	1999	0,477
2000	0,082	2000	0,288
2001	0,236	2001	0,298
2002	0,311	2002	0,116
2003	0,107	2003	0,165
2004	0,126	2004	0,040
2005	-0,040	2005	-0,021
2006	-0,145	2006	-0,043
2007	-0,196	2007	-0,016
2008	-0,250	2008	-0,053
2009	-0,281	2009	-0,105
2010	-0,029	2010	0,005
2011	0,036	2011	0,014
2012	0,040	2012	-0,031
2013	-0,034	2013	-0,058

b) annual GDP with five-year Trade Openness Change reveals no relationship between the two variables for both closed and open economies (Table 4.5).

Table 4.5

Pearson correlation between annual GDP and TRADE OPENNESS CHANGE for Closed and Opened Economies

CLOSED ECONOMIES		OPEN ECONOMIES	
YEAR	PEARSON between annual GDP and TRADE OPENNESS CHANGE	YEAR	PEARSON between annual GDP and TRADE OPENNESS CHANGE
1980	-0,092	1980	-0,160
1981	-0,079	1981	-0,145
1982	-0,073	1982	-0,075
1983	-0,065	1983	-0,074
1984	-0,059	1984	-0,075
1985	0,028	1985	0,006
1986	0,043	1986	0,024
1987	0,054	1987	0,025
1988	0,058	1988	0,027
1989	0,041	1989	0,012
1990	0,023	1990	0,023

1991	0,032	1991	0,024
1992	0,035	1992	0,046
1993	0,037	1993	0,048
1994	0,038	1994	0,063
1995	-0,097	1995	-0,060
1996	-0,096	1996	-0,057
1997	-0,086	1997	-0,044
1998	-0,078	1998	-0,040
1999	-0,075	1999	-0,047
2000	0,071	2000	-0,129
2001	0,070	2001	-0,120
2002	0,075	2002	-0,103
2003	0,081	2003	-0,073
2004	0,084	2004	-0,065
2005	-0,039	2005	-0,017
2006	-0,037	2006	-0,005
2007	-0,034	2007	0,003
2008	-0,025	2008	0,007
2009	-0,019	2009	0,011
2010	0,035	2010	-0,113
2011	0,041	2011	-0,108
2012	0,046	2012	-0,102
2013	0,051	2013	-0,099

c) five-year GDP growth and five-year Trade Openness Change shows for closed economies a weak relation, except for the five-year period of 1985-1989, where the value of Pearson correlation is 0.601. From the other side, open economies show a weak correlation too, apart from the quinquennium of 1980-1985 and 2000-2004, where the value of Pearson correlation is 0.561 and 0.566 respectively (Table 4.6).

Table 4.6

Pearson correlation between GDP growth and TRADE OPENNESS CHANGE for Closed and Open Economies

SMALL NATIONANAL ECONOMIES		OPEN ECONOMIES	
YEAR	PEARSON between TRADE OPENNESS CHANGE with GDP growth	YEAR	PEARSON between TRADE OPENNESS CHANGE with GDP growth
80-84	0,327	80-84	0,561
85-89	0,601	85-89	0,101
90-94	0,437	90-94	0,458
95-99	0,316	95-99	-0,198
00-04	-0,067	00-04	0,566
05-09	0,300	05-09	0,230
10-13	0,161	10-13	0,365

Thirdly, for European Union countries, Pearson correlation for all combinations of the variables reveals no strong relationship, except for the period of five years of 2005-2009, where variables of five-year GDP growth and five-year Trade Openness Change present a strong positive relation of degree of 0.538 Table 7 and Table 8).

Table 4.7

Pearson correlation between annual TRADE and GDP growth AND between annual GDP and TRADE OPENNESS CHANGE for EU Countries

EU COUNTRIES			
YEAR	PEARSON between annual TRADE and GDP growth	YEAR	PEARSON between annual GDP and TRADE OPENNESS CHANGE
1980	0,072	1980	0,026
1981	0,051	1981	0,033
1982	-0,012	1982	0,040
1983	-0,032	1983	0,047
1984	-0,045	1984	0,048
1985	0,028	1985	0,270
1986	-0,007	1986	0,265
1987	0,004	1987	0,275
1988	-0,022	1988	0,282
1989	-0,037	1989	0,286
1990	0,127	1990	0,197
1991	0,319	1991	0,228
1992	0,165	1992	0,231
1993	-0,018	1993	0,234
1994	0,105	1994	0,235
1995	0,242	1995	-0,005
1996	0,256	1996	0,002
1997	0,243	1997	0,012
1998	0,246	1998	0,014
1999	0,155	1999	0,014
2000	0,090	2000	0,101
2001	0,141	2001	0,103
2002	0,132	2002	0,107
2003	0,138	2003	0,112
2004	0,158	2004	0,114
2005	0,172	2005	-0,180
2006	0,163	2006	-0,180
2007	0,158	2007	-0,181
2008	0,130	2008	-0,175
2009	0,077	2009	-0,167
2010	0,357	2010	-0,066
2011	0,392	2011	-0,065
2012	0,399	2012	-0,063
2013	0,375	2013	-0,062

Table 4.8

Pearson correlation for EU Countries

EU COUNTRIES	
YEAR	PEARSON between GDP growth and TRADE OPENNESS CHANGE
80-84	0,417
85-89	0,444
90-94	0,052
95-99	0,174
00-04	-0,234
05-09	0,538
10-13	0,434

Fourthly, for all countries around the world with data available, Pearson correlation shows a weak relationship between the variables of the three combinations, with most of the cases to be around the point of zero, which means that there is no relationship at all (Table 4.9 and Table 4.10).

Table 4.9

Pearson correlation between annual TRADE and GDP growth AND between annual GDP and TRADE OPENNESS CHANGE for Countries of the World

COUNTRIES OF THE WORLD			
YEAR	PEARSON between annual TRADE and GDP growth	YEAR	PEARSON between annual GDP and TRADE OPENNESS CHANGE
1980	0,286	1980	-0,075
1981	0,187	1981	-0,067
1982	0,240	1982	-0,064
1983	0,236	1983	-0,059
1984	0,095	1984	-0,020
1985	0,293	1985	0,013
1986	0,301	1986	0,020
1987	0,261	1987	0,032
1988	0,229	1988	0,043
1989	0,183	1989	0,009
1990	0,268	1990	0,016
1991	0,220	1991	0,022
1992	0,152	1992	0,028
1993	0,107	1993	0,029
1994	0,044	1994	0,033
1995	0,295	1995	-0,031
1996	0,406	1996	-0,031
1997	0,327	1997	-0,026
1998	0,385	1998	-0,022
1999	0,298	1999	-0,021
2000	0,246	2000	0,010

2001	0,282	2001	0,010
2002	0,229	2002	0,013
2003	0,201	2003	0,016
2004	0,152	2004	0,017
2005	-0,036	2005	-0,040
2006	-0,066	2006	-0,038
2007	-0,060	2007	-0,036
2008	-0,088	2008	-0,031
2009	-0,121	2009	-0,026
2010	0,042	2010	-0,003
2011	0,060	2011	-0,001
2012	0,045	2012	0,002
2013	0,002	2013	0,004

Table 4.10

Pearson correlation between GDP growth and TRADE OPENNESS CHANGE for Countries of the World

COUNTRIES OF THE WORLD	
YEAR	PEARSON between GDP growth and TRADE OPENNESS CHANGE
80-84	0,437
85-89	0,321
90-94	0,410
95-99	-0,042
00-04	0,289
05-09	0,258
10-13	0,268

To this point it is important to introduce the graphic display of the three combinations of Pearson correlation that we have presented above for all countries of the world in order to notice the overtime fluctuation of the Pearson coefficient.

As we can see in Figure 4.1, Pearson correlation between annual TRADE and GDP growth for all Countries of the World overtime appear to have a weak relationship between the two variables with a tend to become stronger from 1996 up to 1998, but after 2000 the coefficient approaches the point of zero, which means that there is no relation between them.

Figure 4.1

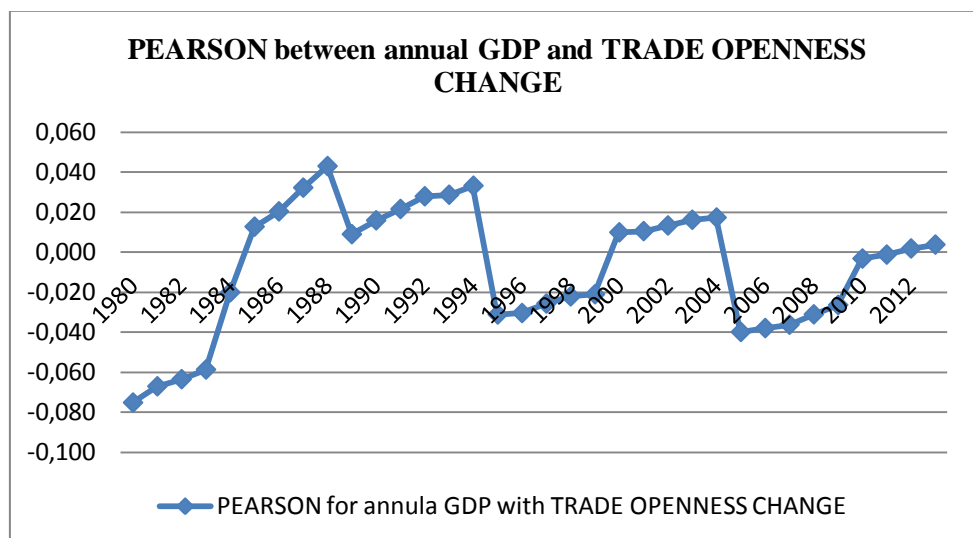
Pearson correlation between annual TRADE and GDP growth for Countries of the World



In Figure 4.2, Pearson correlation between annual GDP and TRADE OPENNESS CHANGE for Countries of the World shows that from 1980 there is a tend to approach a negative relationship, but from 1986 the coefficient fluctuates around zero. Thus, also in this case there is no relationship between the two variables.

Figure 4.2

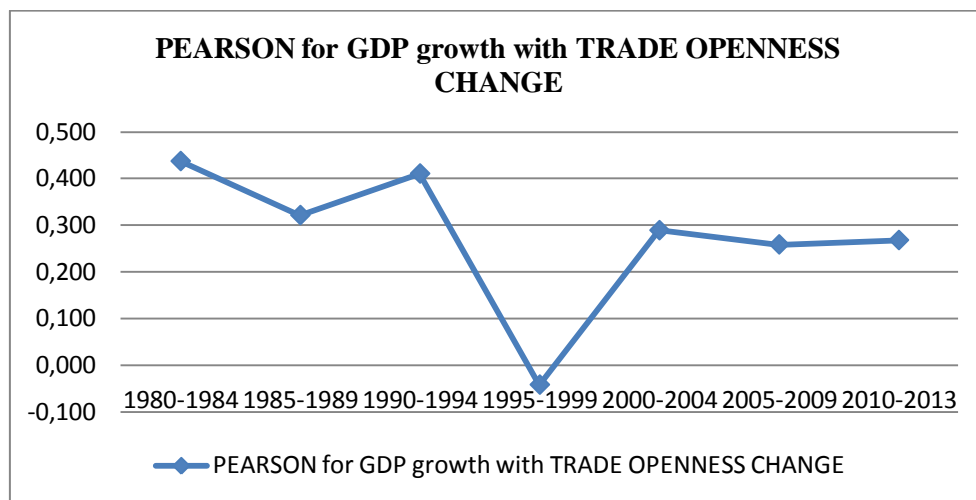
Pearson correlation between annual GDP and TRADE OPENNESS CHANGE for Countries of the World



Pearson correlation between GDP growth and TRADE OPENNESS CHANGE for all Countries of the World, as we can notice in Figure 4.3, seems to have the tendency from 1980 for a strong positive correlation, but after 1995 it takes negative values and again it fluctuates around the zero, with no relation between the two variables.

Figure 4.3

Pearson correlation between GDP growth and TRADE OPENNESS CHANGE for Countries of the World



It is worthwhile to refer some important points that we have noticed from the analysis. First of all, countries with the highest GDP overtime, like United States, Japan, Germany and United Kingdom, does not appear to have a very high percentage of Trade Openness Change. Moreover, these countries have some characteristics in common that make them to hold the first positions overtime. Particularly, these countries are characterized by high incomes, capital investment, technological innovation, a large productivity base, large population, moderate unemployment, high educated workforce, political and social stability. On the other hand, countries like Kiribati, Palau, Tonga and Comoros are the world poorest countries as they have the lowest GDP overtime. These countries are lagged behind the others unable to develop because they lack of natural resources, they have very small population, insignificant capital investment, demographic problems and low average income. However, these countries appear to have very high either positive or negative Trade Openness Change.

Countries, like Singapore, Equatorial Guinea, Hong Kong Sar, China, Behrain and Australia are characterized as economies with the highest percentage of trade overtime. All these countries have the freest economies in the world as they are based on extended trade. The economies of Singapore and Hong Kong attracts a large amount of foreign investment, because of its industrial policy with little import and export controls, the low percentages of corruption, the high skilled workforce, the low tax rates and the advanced infrastructure. They are among the most innovative, competitive and business-friendly countries of the world. Equatorial Guinea because of its large oil reserves, is one of the major exporters of crude petroleum and liquified hydrocarbons. Bahrain is also characterized as one of the freest economies in the world and the freest in the Middle East, homing a large number of multinational firms and construction proceeds on several major industrial projects. Petroleum products consists a large share of exports, while it imports crude oil and food products. Australia is, also, characterized as one of the countries that base its economy on trade, as it is a major exporter of agricultural products, wine and natural resources, such as iron-ore, gold and energy (liquified natural gas and coal).

Furthermore, countries with the greatest GDP growth overtime, like Uganda, Bostwana, Nicaragua, Liberia are among the world's poorest countries, because of wars, corruption and social instability. However, these countries have in their possession substantial natural resources, such as fertile soils, sizable mineral deposits, large reserves of crude oil and natural gas or mining industry, which they try to exploit by making, simultaneously, the appropriate governmental and economic reforms, in order to achieve an increase to their wealth. Consequently, these countries, because they start from the zero point, present greater levels of GDP growth.

5. CONCLUSIONS

This study investigates the relationship between trade openness and economic growth through a review of the theoretical and empirical literature and an empirical investigation of this relationship. It is an attempt to examine this controversial issue and present the most important results that have been drawn since the term of trade started to concern economists.

From all the above analysis of the theoretical framework of international trade we can conclude that classical and neoclassical theories follow the common comprehension that free trade is the solution for all countries for economic growth ('one size fits all'). The Ricardian model and the Heckscher-Ohlin model are static trade theories, while the new trade theory emphasizes that economies are dynamic and exposed to increasing returns. On the other hand, heterodox theories criticize the classical and neoclassical models and especially the concept of comparative advantage and the Factor price equalization theorem. The most known criticism against H-O theory is the '*Leontief Paradox*'. The inabilities of neoclassical theory brought to the surface theoretical models that are integrated in *new trade theory* and in *new economic geography*, with Krugman P. to play the most influential role in the development of these theories. The concepts of *imperfect competition* and *increasing returns to scale* are phenomena explained by the new trade theory. In contrast to classical and neoclassical models that assume perfectly competitive markets, new trade theory supports a most realistic model, that of *imperfect competition*, in which firms have the potentiality to influence the price of their products, and by decreasing their price are able to increase their sales. Another issue that make traditional models to be criticized is that they explain international trade only by the theory of *inter-industry trade*, which is based on comparative advantage and the trade pattern is formed by a simple exchange of goods. In real trade relations a big volume of trade is transacted by products of the *same industry*, where we have the exchange of *differentiated products* produced by the same sector. This consists the intra-industry trade, which is based on increasing returns under monopolistic competition and allows countries to specialize in a small range of products which are differentiated and satisfy the consumers' demand with a greater variety of goods. The monopolistic competition model,

may be consisted of both kinds of trade. From all the analysis we can support that intra-industry trade can be more beneficial than inter-industry trade for all the involved countries in international trade and that is the reason why it covers an important part of the world trade. The benefits that is offered to countries by intra-industry trade can be summarized into three points: 1) Countries engaging intra-industry trade can take advantage of the larger market that is offered to them, 2) Intra-industry trade allows countries to reduce the number of products they produce and increase the variety of goods available for consumption, 3) Each country, by producing a smaller range of products, is able to produce not only at larger scale, but also with higher productivity and lower cost. Internal and external economies of scale are two very significant causes able to lead to international trade, having different effects on the structure of the market. *Internal economies of scale* occur when the cost per unit of output depends on *the size of the firm*. Under monopolistic competition, internal economies of scale give boost to international trade at the level of the firm. On the other hand, *external economies of scale* occur when cost per unit of output depends on *the size of the industry*. According to Marshall, there are three main reasons why a cluster of firms may be more efficient than an firm located in an isolated area: a) Specialized suppliers, b) Labor market pooling, and c) Knowledge spillovers. It is worthwhile to mention that the more important the external economies are, the more efficient a country with a large industry will be in that industry than a country with a small industry. This means that external economies of scale give rise to increasing returns to scale at the level of *the national industry*.

Free trade seems to be very beneficial for all countries, however in real world the situation is more complicated than the theory. Developing countries have experiencing loses under the system of free trade, and thus protectionist trade policies are needed in order to increase abilities and compete on equal terms with developed countries. Policies, such as tariffs and non-tariffs barriers, and infant industry trade are used from many governments in order to protect their economy from intense competition, to become stronger or to gain more from the world market. The simplest and the oldest trade policy that limits trade is tariff. The main objective of the imposition of a tariff is to *protect domestic producers* from the lower prices that may result due to the competition of the imported goods. The

effects of an imported tariff are different on a small country than that on a large country. More specifically, a small country that imposes a tariff on imports, because of its size is unable to affect the world (foreign export) price and the price of this product will raise by the full amount of the tariff. This means that domestic consumers lose, and domestic producers and government gain. But, because that it is a small country the terms of trade gain are zero and it is clear that the tariff reduces welfare. On the other hand, a large country can affect foreign export prices and the imposition of an imported tariff is able to reduce the foreign export prices and this can lead to the increase of the nation's welfare. So, in the case of a large country producers gain, domestic consumers worse off and government gain. Consequently, there is an increase in total surplus, so that the benefits of the tariff exceed its costs. Regarding the non-tariffs barriers to trade, these are export subsidies, import quotas, voluntary export restraints, local content requirements and dumping. They are another form of restrictions to trade other than tariffs.

As we have analyzed both the terms of free trade and protectionism, the crucial question that derives, is which one of these two cases are the best choice for the increase of the volume of international trade and for the flourishing of economic growth. Economists are divided on the issue. Advocators of protectionism support that government should protect their country's economy and its people's standard of living based on arguments, such as *infant industry argument*, *national security*, *the increase in employment opportunities* and *improvement of terms of trade*. On the other side, economists, who are proponents of the idea of free trade, have developed the arguments, such as *free trade and efficiency*, *additional gains from free trade*, *political argument* and *geopolitical interests*.

Many countries recognized the necessity of the avoidance of restrictions to trade, as well, the requirement for markets enlargement and this led to policies that diminish protection and every form of intervention in international trade through international negotiations. This resulted in the creation of General Agreement on Tariffs and Trade (GATT). Many nations take part in Free Trade Agreements aiming to increase the economy's efficiency and welfare. However, today, few countries approach the completely free trade without tariffs or import quotas.

On the side of the empirical literature a large number of studies attempted to give an adequate answer to our research question. Before the review of the empirical literature on the relationship between trade openness and economic growth, we find that there is not a clear definition of trade openness. This ambiguity of what we meaning by the term of 'openness' creates a crucial problem for researchers as they have difficulty in measuring it. Although trade liberalization is a close concept with trade openness, they are not identical. Consequently, the term of 'openness' is multidimensional and therefore unlikely to be adequately captured by single measures. This explains the fact that empirical authors have used varied approaches to describe openness and capture the different sides of trade policy. Hence, many different measures of trade openness and policy have been created and used in empirical analyses of the relationship between openness and growth. The most common and widely used measure of trade openness is trade shares or trade intensity, which is *the ratio of exports plus imports to GDP* and in most studies is referred as *openness*. It measures the trade volume which simply means that the higher the trade share for a country, the more open its economy is to trade benefits. Even though, the measure of trade shares or openness is very popular, it has some difficulties that researchers should take into account. Many attempts have been made in order to improve trade shares measures. Another category includes *measures of trade barriers*, such as average tariff rates, trade-weighted tariff averages, revenue from duties as a percentage of total trade, export taxes and indices of non-tariff barriers, which measures the trade restrictiveness of countries. Moreover, *exchange rates* is another group of trade measures. They are price-based measures trying to estimate trade policy by seeking price distortions either in markets of goods, compared with international prices, or in currencies, especially through the black market premium. Finally, the *composite indices* consist a group of measures that are constructed to evaluate trade barriers, structural characteristics, and institutional arrangements.

The empirical literature of international trade faces the problem of the lack of good measures of trade policy and this explains the plethora of different approaches through different trade measures and the contradictory results on this issue. From the empirical review of the most influential studies we get a sufficient picture of what we know today about trade and growth, as well as other

determinants of growth. A great number of studies tend to find a positive relationship between openness and economic growth. The 'new theories of growth' pioneered by Romer (1986) and Lucas (1988) have provided persuasive evidence for the thesis that openness affects growth positively. More recently, the most influential studies, which find strongly positive growth effects, have been the case of Sachs and Warner (1995), Frankel and Romer (1999), and Dollar and Kraay (2003). Rodriguez and Rodrik (2000) differentiate their position from the majority of empirical studies that find the growth rate of GDP to be positively related to the growth rate of trade openness. They deduce that there is little evidence that open trade policies-in the sense of lower tariff and non-tariff barriers to trade-are significantly associated with economic growth. Another issue that is also significant is if countries converge in income levels. Many studies agree on the subject that when countries taking part in economic integration tend to converge in the income levels.

The new growth theory is fraught with empirical analyses supporting that openness to the world trade is the main determinant that can lead countries to economic growth. Nevertheless, there are studies which investigate the differences in current levels of real income/output per capita, in contrast to differences in rates of growth, by defining successful economic development in terms of three groups of variables: *trade, institutional quality, and geography*. These variables are related positively to growth response after liberalization. Furthermore, according to empirical studies other variables that play crucial role for a country that aims to engage international trade and competition, concerning the adjustment to the new conditions and the successful openness in terms of growth performance are *political stability, labor market flexibility, human capital and R&D investment, 'absorptive capacity', financial development, manufacturing industries, innovation and knowledge spillovers, physical infrastructures and the rule of law*. Studies that are referred to *growth-led exports (GLE)* (the causality direction flows from economic growth to exports growth) show that the increase in domestic levels of skilled-labor and technology causes gains in productivity that lead to the expansion of exports.

Regarding the empirical investigation of this master thesis we test the relationship between trade openness and economic growth by using the *Pearson correlation*.

The conclusion of the investigation is that Pearson correlation shows for all the combinations of the variables and for each separation of the 166 countries no strong positive or negative correlation.

To sum up, the literature appears to be inconclusive, regarding the impact of openness to international trade on growth. It is obvious that although an abundance of studies have investigated this relationship, further research seems to be required.

APPENDIX

1. MERCANTILISM

Before the emersion of the Classical trade theory the dominant economic system was mercantilism. This economic thought, that prevailed Western Europe during the period from 16th to 18th century, had as central view that the national prosperity and success depends mostly on the acquisition of precious metals such as gold and silver (specie). According to this principle, in order to accumulate specie, countries used to maximize exports and limit imports by imposing government regulation concerning all of the nation's commercial activities. In other words, the Mercantilists stressed the need to maintain an excess of exports over imports, that is, a *favorable balance of trade or positive trade balance*. This economic activity can be viewed as a *zero-sum game* in which one country's economic gain equals another country's economic loss.

By the late 18th century, ideas concerning international trade began to change when early Classical writers such as David Hume and Adam Smith challenged the basic doctrines of Mercantilism. One of the first that questioned Mercantilist thought was David Hume with his book "*Political Discourses*" (1752), in which he developed *the price-specie-flow mechanism*. He pointed out that it would not be possible for an economy to maintain a favorable balance of trade continuously, as it was advocated by many mercantilists. He argued that the accumulation of gold by means of a trade surplus would lead to an increase in the money supply and therefore to an increase in prices and wages. Simultaneously, the loss of gold in the deficit country would reduce its money supply, prices and wages, and increase its competitiveness. As a result, it is impossible for a nation to continuously maintain a positive balance of trade. The theory that Hume offer was that given sufficient time, an automatic trade balance adjustment would take place between a trade surplus country and a trade deficit country, where the value of exports and imports will be equalized.

A second attack on Mercantilist ideas was raised by Adam Smith, who is regarded as the father of liberalism and economical science. Smith confuted the idea that the wealth of a nation is measured by the amount of gold stock. He apprehended that a country's wealth was reflected in its productive capacity by producing final

goods and services and not in its holdings of precious metals. Adam Smith in his book "The Wealth of Nations" (1776), made severe criticism on mercantilism doctrine. He was a defender of laissez faire policy or liberalism (individuals are at the center of the attention stressing the role of socio-economic life and free to pursue their own activities within the bounds of law) and free market economics as the only best way to provide the environment for increasing a nation's wealth. It was obvious that the nature of economic activity and the notions about international trade began to change and at the same time it was generally considered that the publication of "The Wealth of Nations", marked the end of the mercantilist era.

2. THE ABSOLUTE ADVANTAGE - ADAM SMITH MODEL

As we mentioned above, Adam Smith's contribution to International Trade is considered to be very important, as he set the first steps in the process of free trade. His ideas about the International Trade were crucial because he built the theoretical foundation of classical trade theory on which the subsequent writers based their arguments and evolved free trade theory. For Smith free trade means that both countries that are involved in the exchange can be benefited and have gains. This means that only when there are mutual benefits does international exchange takes place. The introduction of the principle of '*absolute advantage*' in the context of international trade was first described by Smith. This term is referred to the lower absolute productive cost of a country, specializing in the production of a commodity, and it gives to this country the advantage over other countries to export this commodity (Πουρνάρακης, 2004). In other words, countries should specialize in and export those goods in which they have an absolute advantage and should import those goods in which the trading partner has an absolute advantage. Based on this term he argued that *specialization* in production and *labor division* are prerequisites in order to increase productivity. It is important here to refer that specialization depends on the size of the market, that is, from the existing demand of the product. Hence, the contemplation of Adam Smith is that since the increase of production depends on specialization and specialization depends on market, we have as a result the necessity of extension not only of the internal but also of the international market. The International

Trade would therefore constitute a dynamic force capable of intensifying the ability and skills of workers, of encouraging technical innovations and the accumulation of capital, of making it possible to overcome technical indivisibilities and, generally speaking, of giving participating countries the possibility of enjoying economic growth (Afonso Ó., 2001). But Smith's theory cannot satisfactorily explain the recent phenomenon in production specialization if, in fact, most firms are small relative to the global markets. The reason for this is that Smith failed to realize that division of labor is also intrinsically limited by the technology in production coordination (or, in modern language, coordination cost) (Yu Z., 2011).

3. THE MEASUREMENT OF INTRA - INDUSTRY TRADE

Intra-industry trade consists a significant part of world trade, which is referred to a two-way exchange among similar countries or very similar products, namely, products that belong to the same industry.

When we refer to inter-industry trade we mean the *net trade*, which is equal to difference between exports and imports. This difference will be positive when exports are greater than imports or negative when imports are greater than exports. On the other hand, concerning the calculation of the intra-industry trade, we do not take into consideration the net trade but the part that corresponds to equal imports and exports of the same product.

The index which measures the importance of intra-industry trade within an given a industry is:

$$I = 1 - \frac{|X - M|}{X + M}$$

It is known as *Grubel-Lloyd index*. It was developed by Herbert Grubel and Peter Lloyd in 1971 in order the two economists to measure the importance of intra-industry trade of 10 industrial countries in 1967.

Where X denotes exports and M denotes imports. The expression $|X - M|$ is the net trade and means the "absolute value of the trade balance". Where I denotes the intra-industry trade as percentage, which is equal to 100% minus the percentage of inter-industry trade. The value of I ranges between 0 and 1. If $I = 0$, we have the extreme case of a country that only exports or imports, not both. This means

that its economy based on comparative advantage and has only inter-industry trade. On the other side, if $I = 1$, a country's exports and imports are equal within an industry.

Vona (1990) in a research in 1987 measures the importance of intra-industry trade for industrial products, based on the above index, for 5 industrial countries (USA, Canada, W. Germany, France, UK). He found that the value of I was between 51% (for USA) and 72% (for France). Only Japan presented a lower percentage, equal to 22%, in relation to other countries.

4. EXTERNAL ECONOMIES AND INTERNATIONAL TRADE

Regarding *the pattern of trade*, we can mention that countries that are large producers in some industries from the their begging they remain large producers, even if there is another country able to produce in a lower price. This means that according to external economies, the pattern of international trade is determined at great level by history and accident.

The effects of *international trade*, based on external economies of scale, on *prosperity of a nation* are vague and ambiguous. There are two sides of the coin. The one says that with external economies the concentration of firms of certain industries can bring gains to the world economy. The other one supports that there is no warranty that the appropriate country will produce a good subject to external economies of scale and it is possible that trade based on economies of scale, in reality, to lead the country's economy to a situation worse than it would have been without trade. Although the external economies sometimes may create disadvantageous patterns of specialization and trade, *the world's economy* can be *more efficient* and therefore, *wealthier* due to the fact that international trade allows nations to specialize in different industries and earn the gains not only from the external economies but also from their comparative advantage.

We referred before to the phenomenon of knowledge spillovers as one of the most important external economies of scale. The accumulation of knowledge in an industry as a whole is able to lead to the reduction of the production cost of

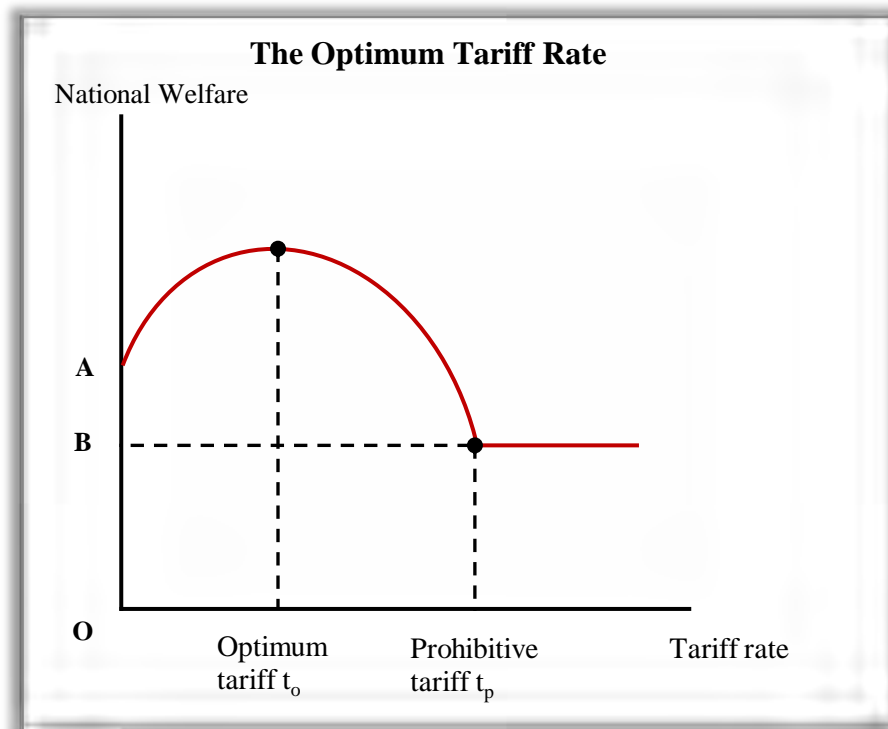
individual firms. It is worthwhile to refer the fact that the external economies that arise from the accumulation of knowledge and experience are different in some measure from the external economies in which the industry's cost depends on current output. When the industry's cost is reduced due to accumulation of production over time and not due to current level of output, this is known as *dynamic increasing returns*. A graphical representation of dynamic increasing returns is called a *learning curve* and shows the relation between the unit cost and the cumulative output.

5 THE OPTIMUM TARIFF

As we saw from the above analysis, the possibility of improving the welfare by imposing a tariff can be succeeded through the improvement of the terms of trade. This means that the improvement of national welfare can be possible only in case of a large country, since a small country is unable to affect the terms of trade and the imposition of a tariff has detrimental incidences for its welfare.

In Figure 2.A the distance OA gives the national welfare under free trade. The imposition of a tariff will influence the country's welfare. But the effects of this influence are depended on the tariff rate. This means that the tariff rate is of determining importance for the welfare of a large country. The challenge is country to choose such tariff that maximizes its welfare. That is, the *optimum tariff*.

Figure 1.A
The Optimum Tariff



Source: Adjustment from Krugman and Obstfeld (2006) - own elaboration

As we can see in Figure 1.A, to the tariff rate t_o national welfare is maximized. So, t_o is the optimum tariff. As the tariff rate is increased, the curve relating national welfare to the tariff rate turns down. When tariff rate increased at the level of t_p the costs outweighs the benefits and trade become prohibitive, as the country worse off compare to free trade (distance OB). Further increase in the tariff rate beyond t_p have no effect on national welfare, so the curve flattens out. Consequently, at small tariff rates a large country's welfare is higher than with free trade and by reaching the optimum tariff rate, it maximizes its welfare. But welfare decreases at higher levels than the optimum tariff rate. A so much high tariff rate that prohibits trade, it would eliminate all imports.

6. THE EFFECTIVE RATE OF PROTECTION

One of the main aims of tariff is to protect domestic industries from the foreign competition. The level of protection that provided to an industry is calculated as a percentage of industry's output. That is, the industry contributes to the

configuration of the final price of the product by participating in production. This contribution is the *added value* in the sector. The effective rate of protection is concerned with determining the net effect of a tariff structure on domestic value added relative to its probable pre protection counterpart (Humphrey, 1969, pp. 834). This means that the protection that provided in the domestic producer it is possible to be very different from the nominal tariff. The nominal tariff includes the cost of the raw materials and it is calculated to the final price of the product. The effective rate of protection is defined as a tariff expressed as a percentage only of the added value of the final product.

The calculation of the effective rate of protection is given by the formula:

$$g_j = \frac{V'_j - V_j}{V_j} \quad (1)$$

We use the symbolism of the literature, so where:

g_j denotes the effective rate of protection,

V_j is value added of the domestic producer to the product j before the imposition of the imported tariff,

V'_j is value added after the imposition of tariff,

$V_j = P_j - P_i$ and $V'_j = P'_j - P_j$,

where P_j and P'_j are the price of the product j before and after the imposition of tariff, respectively,

P_i and P'_i are the price of the imported factor of production i before and after the tariff, respectively.

t_j and t_i are the percentage of tariff on the product j and the factor of production i

a_{ij} denotes the coefficient proportionate share of inputs.

This equation shows that the effective rate of protection depends not only on size of t_j and t_i but also on size of value added V_j . The lower the value of V_j , the greater the effective rate of protection.

From the equation (1) we can deduce the above equation:

$$g_{j= \frac{t_j - a_{ij}t_i}{1 - a_{ij}}} \quad (2)$$

Some important points that we have to refer here are that the effective rate of protection is so greater, as greater is the nominal percentage of tariff on the price of product and as lower is tariff on imported inputs. If the imposed percentage of tariff on inputs is greater than that of final product, it is possible the effective rate of protection to be equal to 0 or to be negative. Furthermore, if the nominal percentage of tariff on the product is at the same level with that of the raw materials, then the effective rate of protection will be equal to nominal tariff.

7. TRADE CREATION AND TRADE DIVERSION

In this section we present an analysis of trade creation and trade diversion. These two concepts are used to show the difference between the effects of free trade or customs union formation that may benefit a country and those that harm it.

International trade is usually the first step in order for independent economies to linkage between them and exchange their products. This fact gives economies a strong incentive to process into integration. Trade refers to the actual exchange of goods and services (Farole, 2013, pp. 23). The process of integration regards mainly the economic field and is referred as economic integration, which indicates “a state of affairs or process which involves the amalgamation of separate economies into a larger free trade regions” (El-Agraa 2011, pp.1). According to the *Second Best Theory*, the best option is free trade, with free competition and no trade barriers. Free trade is treated as an idealistic option, and although realized within certain developed countries, economic integration has been thought of as the 'second best' option for global trade, where barriers to full trade exist.

There are several stages in the process of economic integration, from autarchy and preferential trade area to complete economic integration.

The degree of economic integration can be categorized into eight stages (Balassa, 1961):

Table 1.A

The Stages of Economic Integration categorized by increased degree


Stages of Integration	Interpretation
1. Autarchy	There is no integration between economies.
2. Preferential Trade Area (PTA)	Agreement made between some countries to eliminate tariff barriers on certain products and have free transactions (a first step towards the creation of a trading bloc) .
3. Free Trade Area (FTA)	Agreement made between some countries to eliminate tariff and non-tariff barriers on all products and have free transactions (e.g. NAFTA)
4. Customs Union (CU)	Free transactions by removing tariff and non-tariff barriers for all products and acceptance of a common external tariff barriers against non- members (creation of a single bloc to 3rd countries e.g. WTO).
5.Common Market (CM)	Free transactions by removing tariff and non-tariff barriers for all products, a common external tariff barriers to non-members (i.e. 3rd countries) and free movement in all economic resources (goods, services, capital, labor). The first significant step towards full economic integration (e.g. Common Agricultural Policy)
6. Economic Union (EU)/ Single Market (SM)	A trading bloc that has a Common Market (CM) and a common regulation of economic policy.
7. Economic and Monetary Union (EMU)	It involves a Single Economic Market, a common regulation of economic policy and a common monetary policy (i.e. common currency). It is a key stage towards complete integration (e.g. European Union).
8. Complete Economic Integration (CEI)	It involves a Single Economic Market, a common regulation of economic policy, a single currency, a common monetary policy and a single fiscal policy. It is a complete harmonization of all policies, rates and economic trade rules.

Source: own elaboration

We can cite that the reduction of tariff barriers is beneficial, because it raises the economy's efficiency. Nevertheless, this conclusion may be seem to be too

optimistic due to the fact that the participation of a country in a custom union, might harm its economic welfare.

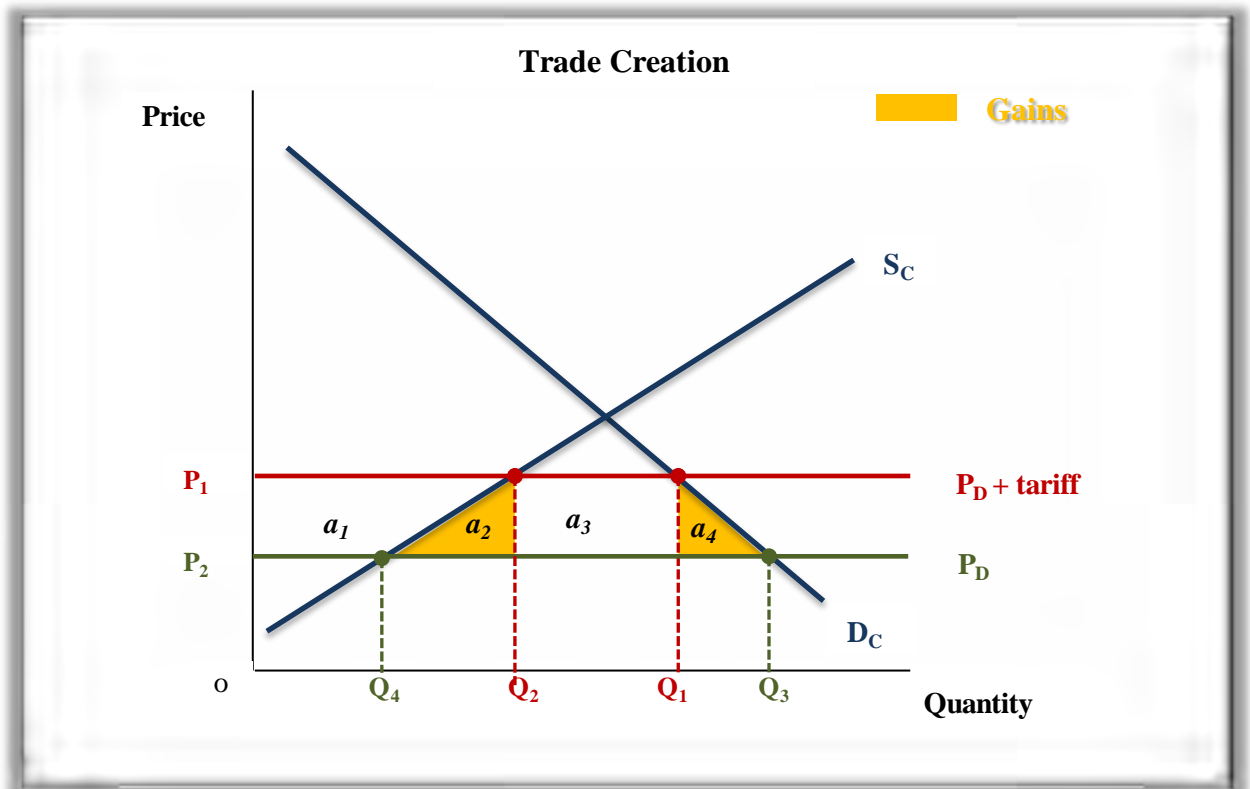
We will analyze the effects from the creation of a Free Trade Area (FTA) for the cases of trade creation and trade diversion. These two concepts firstly brought into discussion by Jacob Viner (1950).

Trade creation

In general, the term trade creation can be defined as a free trade area that creates trade that would not have existed otherwise. Thus, supply occurs from a more efficient producer of the product. More specifically, trade creation occurs when consumption shifts from a higher-cost producer to a lower-cost producer (Viner 1950; Lipsey 1960).

For a better comprehension of this case we will introduce an example of two countries, let it be C and D, together with a diagrammatic presentation. We suppose that country C is the most efficient producer of product W. In Figure 2.A we can notice that before the creation of the Free Trade Area (FTA) between the two countries, country D had to pay to country C the price P_1 , that is equal to price P_C plus the tariff t . Hence, at the price $P_C + t$, country D produced Q_2 , consumed Q_1 and imported $Q_1 - Q_2$. After the creation of FTA between the countries C and D, country D has to pay to C the price P_2 , that is equal to price P_C . At this level of price, country D produces Q_4 , consumes Q_3 and imports $Q_3 - Q_4$.

Figure 2.A
Trade Creation



Source: Adjustment from <http://www.revisionguru.co.uk/economics/creatdiver.htm> - own elaboration

The effects from the creation of a FTA between the two countries can be deduced with the help of Figure 2.A.

So, the area below the demand curve and above the price curve represents the increase in consumer surplus, which is depicted by the sum of areas $a_1 + a_2 + a_3 + a_4$.

The area above the supply curve and below the price curve shows the decrease in producer surplus of country's C producers of product W, which is depicted by the area a_1 .

Furthermore, government's revenues are reduced due to the elimination of tariff. This effect is depicted by the area a_3 .

The *net effect* is: $a_1 + a_2 + a_3 + a_4 - a_1 - a_3 = a_2 + a_4$.

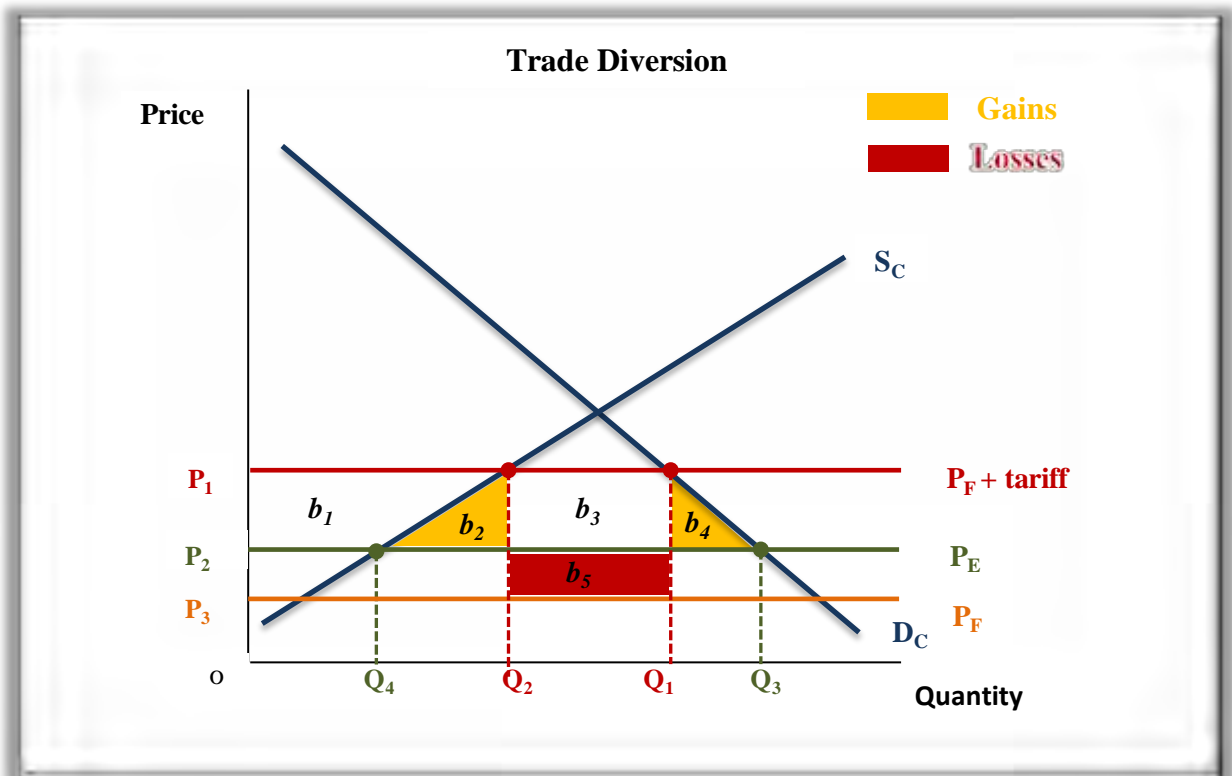
Consequently, this means that there is a gain in welfare stemming from the removal of tariff and due to the fact that the trade creation occurs from the participation of a country in a trading bloc.

Trade diversion

In general, the term trade diversion can be defined as a free trade area that diverts trade from a more efficient supplier outside the FTA towards a less efficient supplier within FTA. Particularly, trade diversion occurs when consumption shifts from a lower-cost producer to a higher-cost producer (Viner 1950; Lipsey 1960).

In this case we will assume an example of three countries, let it be C, E and F, together with a diagrammatic presentation. We suppose that country F is the most efficient producer in the world of product Z. In Figure 3.A we can notice that before the creation of the FTA between the countries C and E, country C has to pay to country F the price P_1 , that is equal to price P_F plus the tariff t . As a result, at the level of price $P_F + t$, country C produced Q_2 , consumed Q_1 and imported $Q_2 - Q_1$. After the creation of FTA between the countries C and E, country C has to pay to E the price P_2 , that is equal to P_E . At this level of price, country C produces Q_4 , consumes Q_3 and imports $Q_3 - Q_4$.

Figure 3.A
Trade Diversion



Source: Adjustment from <http://www.revisionguru.co.uk/economics/creatdiver.htm> - own elaboration

The effects from the creation of a FTA between the two countries can be deduced with the help of Figure 3.A

Therefore, the area below the demand curve and above the price curve shows the increase in consumer surplus and it is depicted in Figure 3.A by the sum of areas $b_1 + b_2 + b_3 + b_4$.

The area above the supply curve and below the price curve represents the reduction in producer surplus and it is depicted by the area b_1 .

Moreover, government's revenues are reduced due to the elimination of tariff. This effect is depicted by the areas $b_3 + b_5$.

The *net effect* is: $b_1 + b_2 + b_3 + b_4 - b_1 - b_3 - b_5 = b_2 + b_4 - b_5$.

Here, we have two cases:

- if $b_2 + b_4 > b_5$, this means that there is an increase of welfare.

- if $b_2 + b_4 < b_5$, this means that there is a decrease of welfare.

It is clear that in some occasions trade diversion will lead to a reduction of a country's welfare, but there are some other occasions where the welfare of a country could improve despite the trade diversion.

Static and Dynamic Effects

The creation of a Free Trade Area have two types of economic effects: static effects and dynamic effects (Balassa 1961).

Static effects include trade creation effect and trade diversion effect. That is, trade creating effect has a positive effect, while trade diverting effect may have a negative effect on country's welfare. In other words, they have short-term changes on a national economy.

Dynamic effects of the creation of a FTA firstly introduced by Balassa (1961) and they are less known but much more important than static effects. Dynamic effects describe the reaction of the economy over time as it responds to the changes. The phenomena that they include are enhancement of a comparative advantage, increase of competition between member countries, exploitation of economies of scale, knowledge transfer, rapid spread of technology etc. These effects are difficult to measure them and are characterized as dynamic effects because they have medium and long-term results on a country's welfare.

8. Other Trade Policies

Except for the above ways that governments use in order to influence international trade and protect their domestic production, there some additional policies that it is useful to be referred briefly.

Premiums

Premiums usually take the form of 'help' or 'facilitations' offered by government to a productive unit or a productive sector. The premiums can be either direct or indirect. When premiums are direct, this means that government pays the exporter the amount of money that is above the exporting price of the product and this is

not acceptable. On the other hand, in use of indirect premiums, government can supply help to technical sector (production) of a product or to financial sector or to sector of sales without to be circumvented the law. This means that the state interferes in procedure of setting the price of the product and ensures producer of having a higher price than that of market.

One of the most known examples is the support of agricultural products of European Union through the program of *Common Agricultural Policy (CAP)*. This program provided some billion dollars for supporting the agricultural sector.

National Procurement

The term of national procurement is referred to the practice in which government controls and directs the purchases of the public firms with the purpose to support the domestically produced goods, even if they are more expensive than the imports. A classical example is that of the telecommunications industry in Europe. The European phone companies that are public are required to purchase telecommunication equipment exclusively from European producers, although their prices may be higher than the suppliers of other countries.

Red-tape Barriers

It is a frequent phenomenon, governments, in order to ensure protection of their market from foreign competition, to place administrative obstacles with result the limitation of trade procedure. In other words, bureaucracy is able to set barriers in the normal flow of trade between countries.

9. THE INSTITUTIONAL FRAMEWORK OF INTERNATIONAL ECONOMIC ENVIROMENT

In modern international reality of trade, the implementation of protectionist policy constitutes a usual practice of every country, although the majority of economists express their objections. In addition, it has been observed that in periods of crisis the trend for measures for the protection of domestic production increases, and resulting in greater restriction of trade and in further intensity of economic crisis, without perspective of way out. After the World War II, the necessity of the avoidance of such deadlock situations as well as, the requirement for markets enlargement, led to policies that diminish protection and every form of

intervention in international trade through international negotiations. The direct consequence of the multilateral negotiations was the creation of General Agreement on Tariffs and Trade, also known as GATT. These international trade agreements and negotiations characterize the policy of international trade of all countries of the world for 48 years.

9.1 THE GENERAL AGREEMENT ON TARIFFS AND TRADE (GATT)

9.1.1 THE CREATION OF GATT

In a world of increasing globalization, the outset of the postwar era brought in touch delegations of different countries from around the world, who aimed to restore the system of international trade. Taking into account the devastating economic methods of the interwar period, in 1946 national delegates had been engaged in a series of conferences, under the auspices of United Nations Organization, being determined to delete all those general principles that regulated the international trade relations.

Before those meetings two important facts were preceded. Firstly, the conference of Bretton Woods in 1944 that led to the creation of *International Monetary Fund (IMF)* and to *International Bank for Reconstruction and Development (IBRD)*, known today as the *World Bank*. Secondly, in 1945 United States proposed a draft charter, repeating the previous British discussions, calling for an International Trade Organization (ITO).

As this organization delayed to take place, a group of 23 countries began trade negotiations under the provisional set of rules that became known as the *General Agreement on Tariffs and Trade (GATT)*. At first, GATT was part of ITO, but, because ITO never established, mainly for political reasons, GATT became a separate independent organization with less ambitious goals and much more limited jurisdictions. Officially GATT was an agreement signed by 23 countries in 1947.

The representative assembly called as 'contracting parties' are the countries participating in GATT and consisting the main body of decision making. The administrative activities of GATT, established in Geneva, are supported by a 'Secretariat' led by the GATT Director-General.

9.1.2 THE GOALS AND PRINCIPLES OF GATT

The GATT inherited a regime of high tariffs and quantitative restrictions of discriminatory treatment. Its primary goal for regulating the international trade was the reduction of tariffs and the complete elimination of quantitative restrictions. In addition, the GATT aimed to create a permanent framework that could ensure the stability and the durability of international exchanges, as well as the creation of a system of rules and principles, able to prevent the one-sided application of protectionist measures. Through these goals GATT would be able to liberalize the international trade and put on secure foundations, contributing to the economic growth and development of the nations of the world.

The multilateral trading system is based on some fundamental principles. These are the below:

- *The principle of non-discrimination*

This principle is the basic principle of GATT and involves the principle of *most-favored-nation (MFN)* and the principle of *national treatment*. It is that principle for which GATT imposes the most penalties to countries that are not abide by the agreement.

According to the principle of most-favored-nation (MFN), if a member of GATT proceeds to a favorable regulation with another member, then it is compelled to broaden this regulation in all member-states, that is, in all Contracting Parties. A country should not discriminate between its trading partners and should treat each country equally in order to be achieved the promotion of world liberalization of trade. One main exception of this principle is the possibility of creating transnational preferential agreements.

Concerning the principle of national treatment, every member is free to pursue whichever tax and regulatory policy it desires, as long as imported and domestic-produced goods are treated equally. It is obvious that this principle aims to prevent each discrimination that is related to domestic and imported goods.

The principle of MFN and that of national discrimination complement each other.

- *The principle of reciprocity*

This principle is referred to the fact that when some countries enjoy trade concessions, they ought to reciprocate with their own concessions. Based on this,

it is feasible to be prevented the cases where the reduction of protection can lead to the deterioration of a country's terms of trade and the disturbance of its balance of payments, as well as the comprehension by the general public for the benefits occurring from free trade. Note also, that if a country proceeds to a decrease of tariffs, it cannot suspend it without providing countervailing measures to countries that are negatively influenced by that withdrawal. From the principle of reciprocity have been excluded in some special cases the least developed countries (LDC's).

- *The prohibition of use of quotas and export subsidies (dumping)*

With this principle the protection that a country pursues to provide to its domestic production should be only by tariffs, as they are considered to be the most "fair" measures of protection to domestic production. From these regulations are excluded the agricultural products. Furthermore, it is provided suspension of these prohibitions in cases in which a country faces structural problems of the balance of payments and crucial problems in industries of national importance for it.

9.1.3 THE ROUNDS OF GATT

Throughout the 47 years, the GATT consisted the coordination body of repeated attempts for negotiations among a large group of countries aiming at reducing tariffs and trade barriers. These negotiations take place in big meetings of the delegates of the countries, which are of long duration and involve a big number of conferences periodically. These meetings are known as '*Rounds*'.

The Rounds of GATT are eight. The first five Rounds were short and the negotiations were of bilateral character and aimed exclusively at cut of tariffs. Especially, the first three Rounds succeeded significant reductions, while the next two are not of the same profitability.

The first round was the *Geneva Round* taking place in 1947 with driving force the USA and with primary goal the support of reconstruction of the destroyed West Europe through the liberalization of international trade.

Decisive boost in advancement of liberalization of international trade was given by the *Kennedy Round* (1964-1967). The main subject of this round consisted the decrease of tariff protection of industrial products that were exchanged mainly between the developed countries. The agreement ended up achieving reduction in tariffs of industrial products at 35% in relation to level that were in 1947.

Moreover, it led to the sign of anti-dumping agreement and introduced for first time rules against to other unfair practices.

The seventh round was the *Tokyo Round* (1973-1979). This round was of longer duration than the previous and of much more difficult. The difficulty of this round had to do with the fact that in the previous round (Kennedy Round), it was achieved significant reduction of tariffs, which means that there were narrow margins for further cut in tariffs. However, and in this field was made substantial progress. The main activity of this round was to occupy with non-tariffs barriers, which consisted the first attempt in that area. In addition, there were made significant agreements in the sector of agricultural products.

Both the Tokyo Round and the Kennedy Round recognize the need of least developed countries for preferential treatment in the subject of tariffs. The principle of reciprocity is off for these countries in the case of the reduction of tariffs, while the preferential treatment is also recognized for non-tariffs barriers.

Table 2.A

The Negotiating Rounds

The Negotiating Rounds			
Date	Name	Participation (number of countries)	Main subjects and achievements
1947	Geneva Round	23	✓ Reduction of tariffs: approximately from the initial average of 40% to about 10%.
1949	Annecy Round	13	
1951	Torquay Round	38	
1956	Geneva Round	26	
1960-1961	Dillon Round	26	
1962-1967	Kennedy Round	62	✓ Significant reduction of tariffs about 35%. ✓ Agreement on anti-dumping.
1973-1979	Round of Tokyo	99	✓ Reduction of tariffs 33%, non-tariffs protection: dumping, subsidies, government procurement.
1986-1993	Uruguay Round	125	✓ Reduction of tariffs 40%, non-tariffs protection. Cover new fields: agricultural, services, copyright, dispute resolution procedure.

Source: Adjustment from Pournarakis (2004) - own elaboration

9.1.4 THE CHRONIC WEAKNESSES OF GATT, OLD AND NEW PROBLEMS

The years that followed after the Tokyo Round, although there had been done great progress, concerning the liberalization of international trade, in the late 80s most of the industrial countries dominated by a protectionist behavior opposite to the spirit of successive negotiating rounds for the liberalization of trade. Furthermore, the constantly changing environment of the international economic life caused intense pressures to GATT, disclosing its weaknesses to respond to old chronic problems as well as to new economic developments. The GATT taking into consideration these inadequacies should impose readjustments to its administrative structure and also to the subjects that it covers. Hence, two types of adjustment measures was required to be taken. Firstly, monitoring and supervision measures of trade policy and general of the behavior of member-states. Secondly, adjustment measures of GATT in needs occurring from the new international changes in exchanges.

The most important old chronic problems that faced GATT are the below:

- The exception of agricultural products from the debates for the reduction of trade protectionism. Until the Tokyo Round the issue of agricultural products have consisted forbidden subject for debate among the Contracting Parties, although it caused distortions to prices, production, consumption and consequently to trade flows.
- The exclusion of trade in services from the jurisdictions of GATT. Trade in services was of major interest, not only to developed countries but also to least developed countries, the expansion of which caused further increases in world merchandise trade.
- The increased capacity of each country to circumvent the regulations of GATT with different types of non-tariffs measures. Such an example is the Voluntary Export Restraints (VER) that we referred previously in chapter 3. This is a system of quotas that GATT did not have the jurisdiction to control it, while it influenced big parts of the international trade.
- The creation of huge trade deficits of the least developed countries, which widened from the large number of non-tariffs measures that developed

countries imposed on special sectors for their growth, such as textiles, shipyard etc.

- The slow and cumbersome mechanism of GATT in decision making and policy implementation.
- The trend of creation free trade agreements, such as EU (European Union) in Europe, NAFTA (North American Free Trade Area) in America and a block among Japan, countries of the South East Asia and probably Australia. This had as a result, the approach of international trade problems to return to the level of bilateral or trilateral negotiations, which was away from the multilateral desired level.

Since the early 80s, in the above problems were added some new challenges for GATT. The most important problems that GATT had difficulty to deal with are the below:

- Trade Related Intellectual Property Rights (TRIP's).
The increasing number of new products introduced in markets and the incorporation of new technology in them creates intellectual property rights to their inventors, designers and the producers of the final products. Moreover, most of the produced technology consists a product able to move autonomous in markets. To this point GATT is called to intervene in order to adopt rules of exchange for the 'new' products.
- Trade Related Investment Measures (TRIM's).
The type of direct investment consists one of the most modern forms of trade and one of the most widespread forms of cooperation between the most and the least developed countries, with main goal the economic growth. However, there are confrontations of interests and oppositions between the cooperating parties. GATT should determine a set of general principles in order to provide solutions in arising problems, as it has not the capacity to impose absolutely homogeneous regulations because it may harm issues of national sovereignty.
- International Trade and Protection of Environment.
In all previous rounds there was no reference to connection between economic growth and protection of environment. One new problem is

whether it can be justified a discriminating treatment that comes from production processes that burden the environment. It is certain that the production with low impact to the environment leads to the increase of production cost, and therefore to the reduction of competitiveness of these products. This means that there are supporters of idea to be introduced restraint measures on imports which fail to meet the ecological standards of production. The issue here is that GATT faces the problem of the emergence of a new source of non-tariffs measures that are able to set new barriers to trade.

9.1.5 THE URUGUAY ROUND

These weaknesses of GATT lead to the need for undertaking of the eighth negotiating round, known as the Uruguay Round (1986-1993). This Round was the most ambitious round of multilateral negotiations of GATT with many innovations in relation to the previous rounds. Also, a great number of countries took part in the debates. The main subjects of this Round are mainly new fields that they have never before occupied the previous negotiations and are the below:

- The trade of services, including the TRIP's and TRIM's .

There were significant objections, mainly from developing countries, if services were a subject that GATT should have taken over under its jurisdiction. European Union was the main supporter of this issue, as services played a crucial role to its total exports.

- Agricultural Products.

Until the Tokyo Round the developed countries (USA, EU, Japan) made great effort in order to achieve through the application of different escape clauses their exception from the general rules of GATT, creating an exclusive protection for their agricultural production. In this Round the subject of agricultural products was one of the most crucial with many difficulties in the progress of negotiations.

- Textiles products.

In textile industry the main issue was the end of the Multi Fiber Agreement (MFA), which provide the existence of an extended system of quotas between the developing and developed countries.

In late 1993 the negotiations finally produced a document more than 450 pages in total. The 'Final Act' was signed in Marrakech in 1994, after bitter political

controversy in some cases and includes the results of the Uruguay Round. Briefly, we will present some of the most important points of the agreement.

- Further reduction in tariffs in about 1200 products, that is, around 1/3, and full abolishment for about 40% of the world imports.
- In agricultural sector all the protection measures must be transformed to tariffs and after must be reduced gradually around 36% during the period 1995-2000.
- In textile industry was agreed abolition of the quotas regime (Multi Fiber Agreement) gradually in a duration of 10 years together with the reduction tariffs.
- The negotiations in trade of services made little progress, as there was not made any agreement on rules for banks, insurance, telecommunications etc.
- Determined some measures for the abolition of the restraints that concerning the foreign investment.
- Achieved an agreement on patents, copyright, trademarks, while many subjects were left open for other negotiations.
- The agreement provided that from 1.1.1996 the establishment of World Trade Organization (WTO) with primary subject of activity, the monitoring of the agreements of the Uruguay Round.

It is certain that all these issues that were put for debate were complex and not easy to be solved in this Round. The Uruguay Round assigned some of the subjects that the agenda of the following Rounds will include, with first one the Doha Round.

Over these 47 years, although GATT was a provisional organization with a limited field for action, it cannot be disputed the success in promoting and securing the liberalization of much of world trade.

9.1.6 THE WORLD TRADE ORGANIZATION (WTO)

From 1947 to 1994, GATT provided those rules in order to promote the liberalization of trade and achieved higher growth rates in international commerce. Although, it was well-established, throughout the 47 years, it was a provisional agreement and organization. The evolution of GATT is the World

Trade Organization (WTO), which established in 1995 and the institutional framework of international trade of GATT has been incorporated in the rules of the new organization. The WTO operates as a permanent organization of trade for goods, services and intellectual property rights with common dispute settlement procedure.

One main difference with the past is that the charter of WTO provides a faster and more effective way to resolve the arising problems between the countries, while with GATT the procedure could last up to 10 years and most of the times with no final result for solving the problem. According to this approach, when WTO concludes that a country violates the rules and refuses to change its policy, then WTO gives the right to the country that complaining to retaliate.

In addition, WTO established a new agreement known as General Agreement on Trade in Services (GATS). The trade in services, such as insurance services, consulting and banking, because they are intangible things, they were never subjected under to an agreed set of rules. This was an important omission of GATT, as services consist the 60% of value product of developed countries.

9.1.7 THE DOHA ROUND

The Doha Round or Doha Development Agenda (DDA) is the latest and current round of trade negotiations among the members of WTO. This round began in November 2001 with 155 countries to take part in negotiations. Its primary goal is to achieve the improvement of trade of developing countries, making trade rules fairer for them, a fact which explains its name as Doha Development Agenda. Besides to this, it has also as main objectives the reduction of trade barriers around the world and the review of the rules of trade, so as to improve the international trade system through reformations. The Agenda covers about 20 areas of trade, among others the most important are agriculture, services and intellectual property rights, tariff and non-tariffs measures, labor standards, competition, investment, environment, transparency, patents etc. Since, 2008 negotiations on major issues were not very effective, as countries were divided and had difficulty to come to any agreement (US and India disputed about rules governing trade in agricultural goods). In 2013 it was adopted the Bali Ministerial Declaration with which it was the first time that were successfully addressed

bureaucratic barriers to commerce. The Round has not yet concluded, as the Bali Package was signed in 2013, aimed at lowering global trade barriers.

Most countries that take part in the negotiations believe that there is some economic benefit in adopting the agreement. However, there is considerable disagreement of how much benefit the agreement would actually produce. Several think tanks and public organizations assess that the conclusion of the Doha Round will result in a net gain, but as it is still in progress the future remain uncertain.

10. GLOBALIZATION

Globalization and liberalization of trade are two concepts that are closely related with the improvement of human welfare according to the majority view of the experts on the subject. According to IMF the term of economic 'globalization' is referred to: "...the increasing integration of economies around the world, particularly through the movement of goods, services, and capital across borders... the movement of people (labor) and knowledge (technology) across international borders. There are also broader cultural, political, and environmental dimensions of globalization."

Fischer (2003, pp. 3) defined economic globalization as the:

ongoing process of greater economic interdependence among countries reflected in the increasing amount of cross-border trade in goods and services, the increasing volume of international financial flows and increasing flows of labor.

The globalization movement accelerated especially in 1980s, when technological advances contributed to an easier and quicker way in order for transactions to take place. It is fact that a key element of globalization is the expansion of international trade through the reduction of barriers to trade. The international economic zone is becoming even more "open" and few countries insist on a closed and isolated model of economic growth. However, countries does not have the same degree of 'openness' to the world trade. This stems from the fact that countries with different socio political systems, as well different geographic characteristics and resource endowments, impose different economic and trade

policies. Nevertheless, no one country, regardless its size and the level of its economic growth, can be autarkic in all production factors so as to satisfy their residents' needs. Consequently, the international trade or the international economic exchange should be seen as the possibility of mitigating the human economic problem (inadequacy of factors of production). There are substantial evidence supporting that that nations and their citizens gain great benefits from their participation in international trade and foreign trade agreements. Such gains are the access to a wider variety of goods and services, lower prices, more capital, technology, cheaper imports, and larger export markets, more and better-paying jobs, improved health, and higher overall living standards. In addition, the growth in global markets is able to promote efficiency through competition and the division of labor (the specialization which allows people and economies to focus on what they do best).

Globalization and international trade is deeply controversial, however. There are proponents who argue that the expansion of international trade is able to benefit all the engaged nations, both developed and developing countries. On the other hand, there are opponents who claim that the creation of an unfettered international free market benefit, mainly, multinational corporations in the Western world at the expense of local enterprises, local cultures, and common people. They believe that international trade serves the rich economies to exploit the poor nations through the weakening national sovereignty and the transfer of domestic jobs overseas where labor is much cheaper. Furthermore, Krugman and Obstfeld (2006) cited:..."it is quite possible that international trade may hurt particular groups within nations-in other words, that international trade will have strong effects on the distribution of income".

Although, there are voices against international trade and integration in one market the majority of the theoretical and empirical analysts argue that trade allows the engaged countries to have almost mutual gains from the exchange. In other words, it helps developing countries to 'catch up' economically with industrialized countries much faster through the increased employment and technological advances.

11. DIAGRAMMATIC DISPLAY OF PEARSON CORRELATION

In this section we will present the figures indicative of each combination of variables for specific years of the period that we investigate and for each separation of the 166 countries.

1) Countries with large and small national economies according to GDP:

a) correlation between the annual GDP and the five-year Trade Openness Change:

Figure 4.A

SMALL NATIONAL ECONOMIES: GDP 1980-TRADE OPENNESS CHANGE 1980-1984

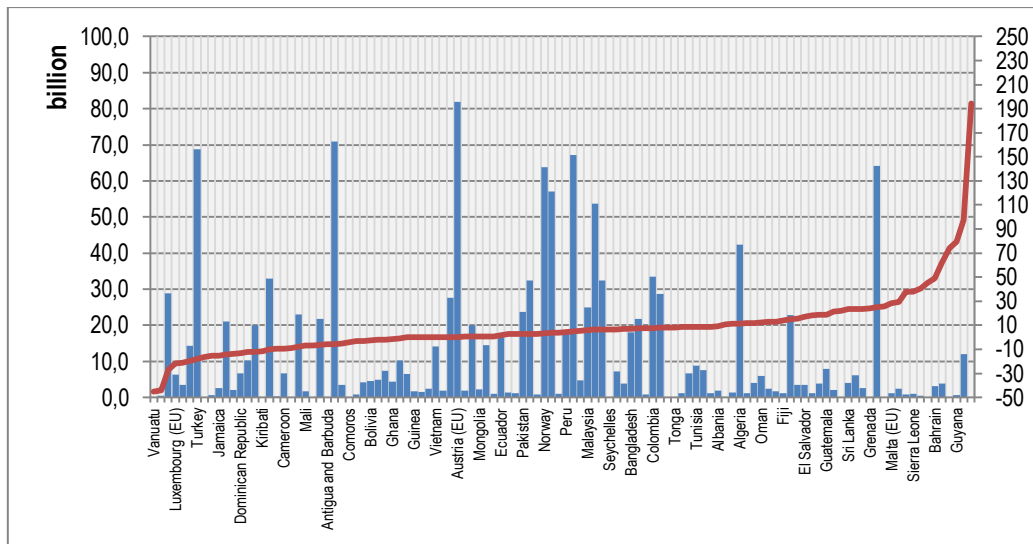


Figure 5.A

LARGE NATIONAL ECONOMIES: GDP 1980-TRADE OPENNESS CHANGE 1980-1984

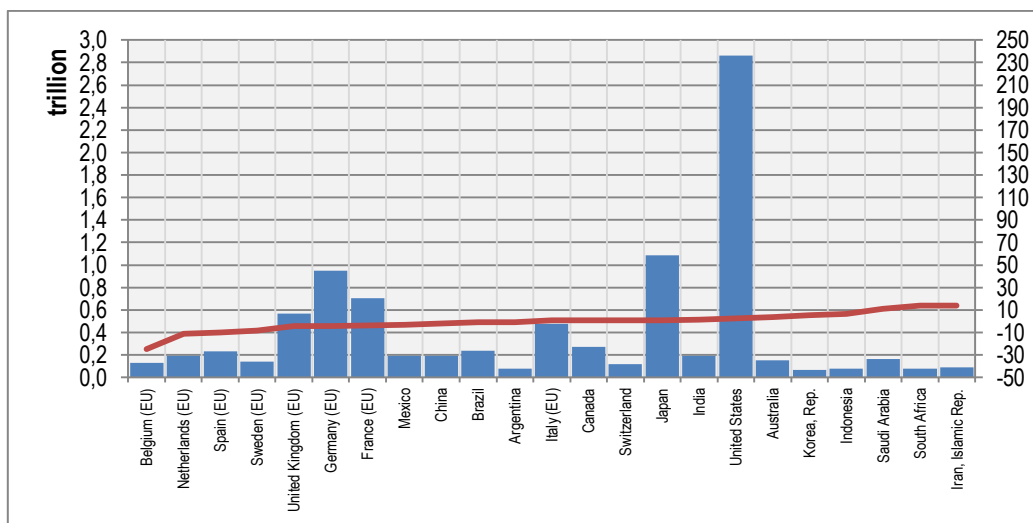


Figure 6.A

SMALL NATIONAL ECONOMIES: GDP 1990-TRADE OPENNESS CHANGE 1990-1994

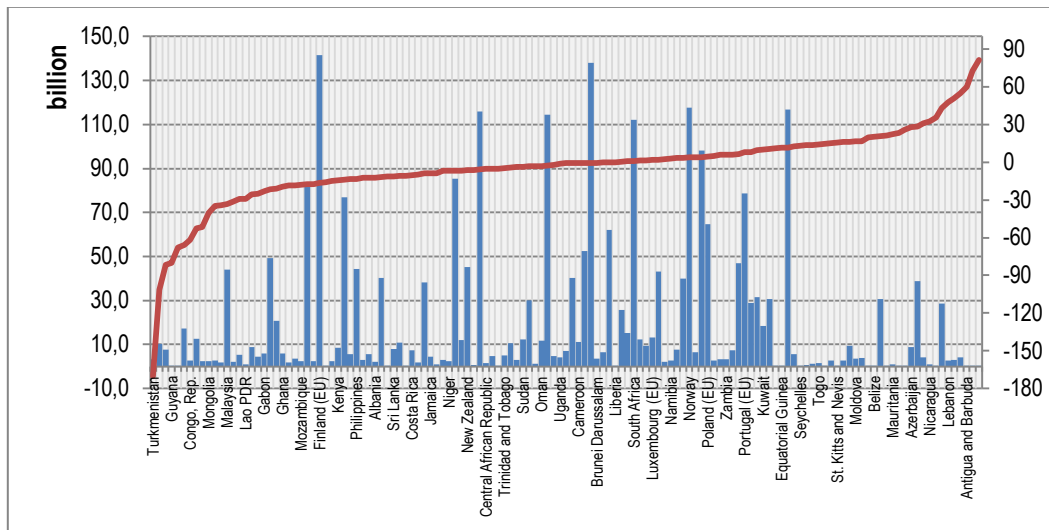


Figure 7.A

LARGE NATIONAL ECONOMIES: GDP 1990-TRADE OPENNESS CHANGE 1990-1994

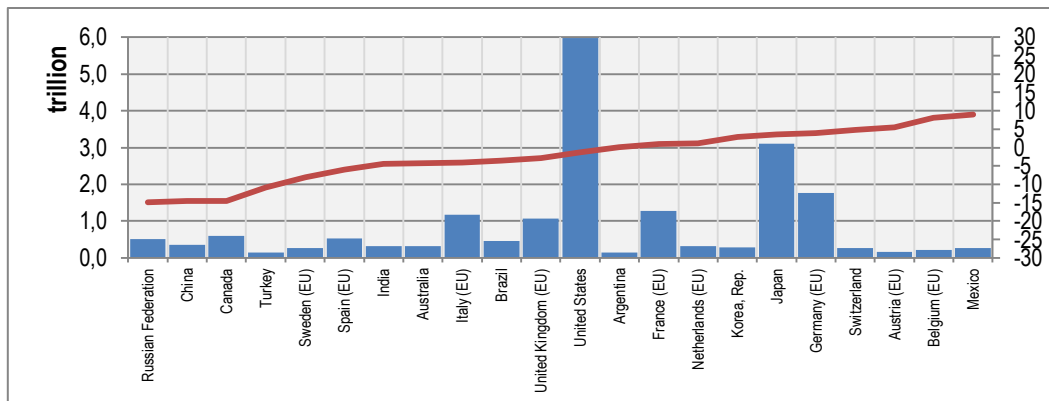


Figure 8.A

SMALL NATIONAL ECONOMIES: GDP 2000-TRADE OPENNESS CHANGE 2000-2004

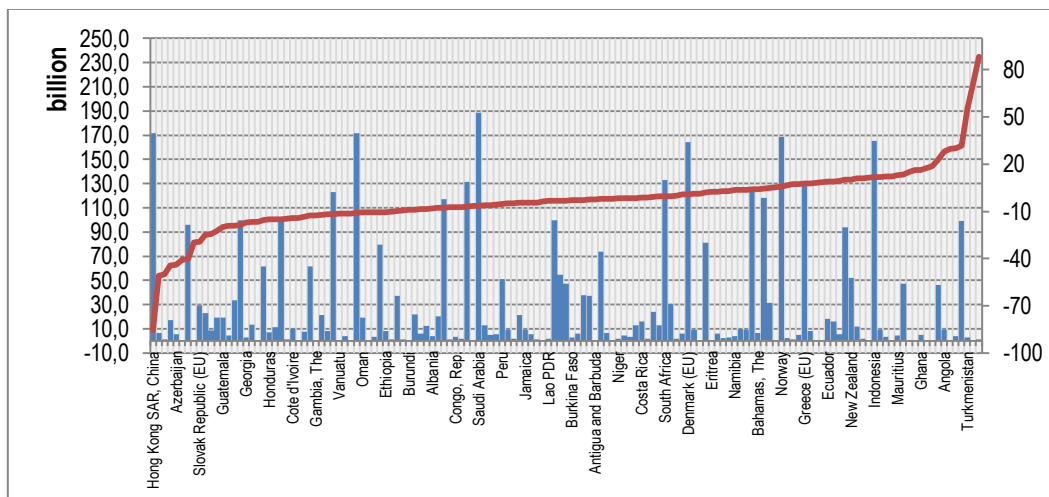


Figure 9.A

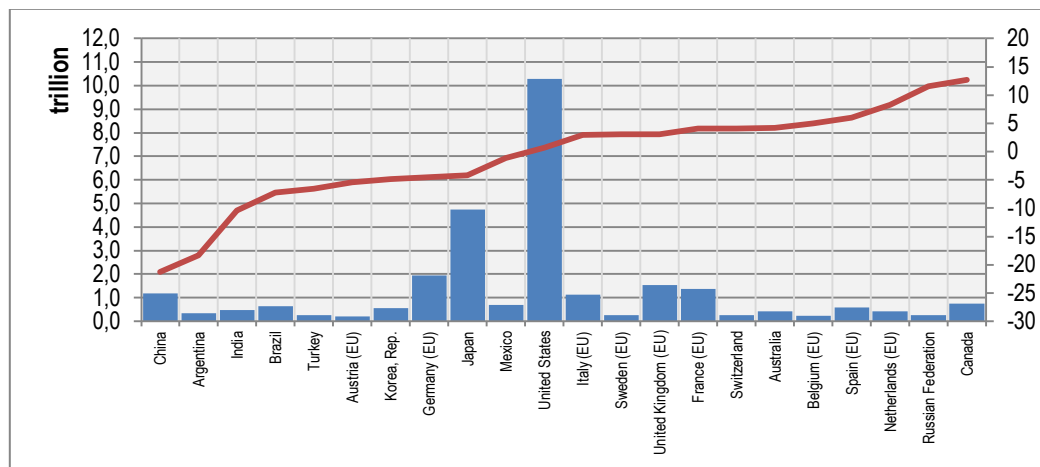
LARGE NATIONAL ECONOMIES: GDP 2000-TRADE OPENNESS CHANGE 2000-2004

Figure 10.A

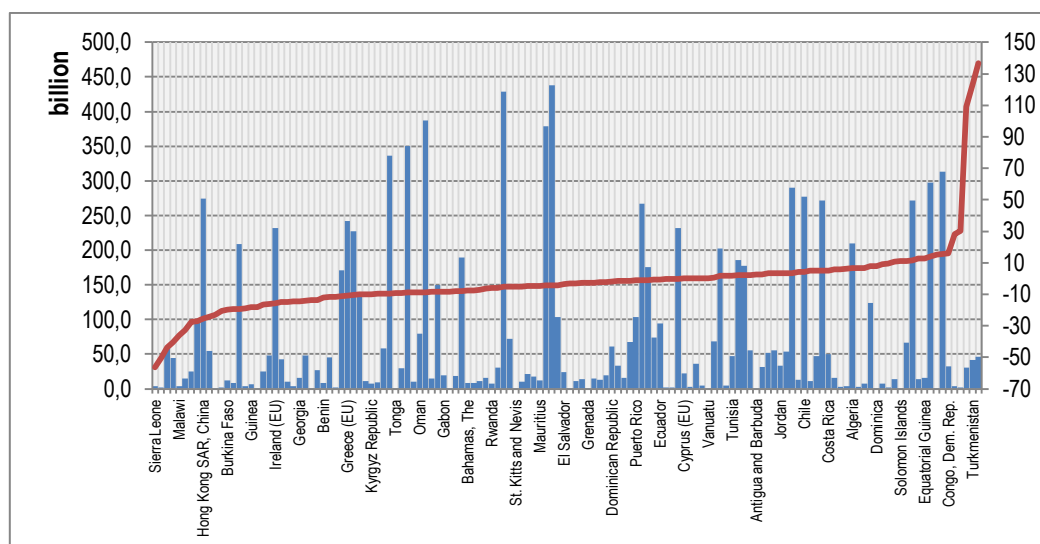
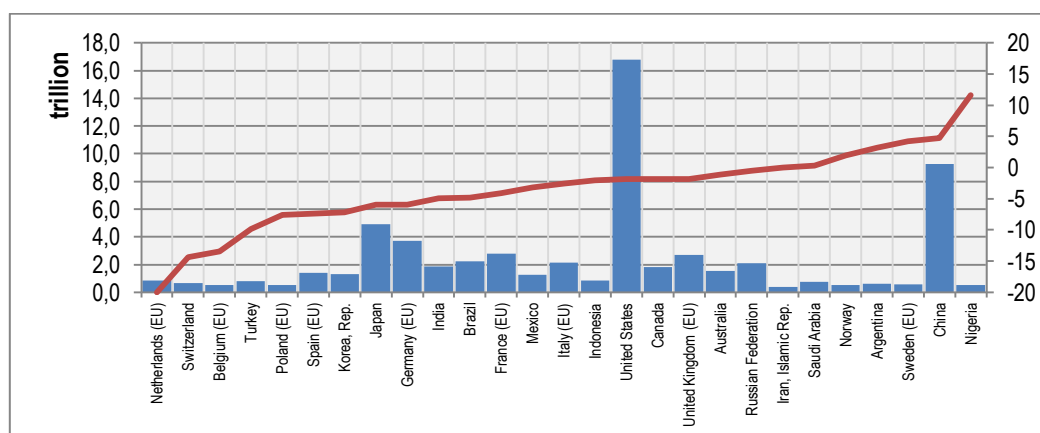
SMALL NATIONAL ECONOMIES: GDP 2013-TRADE OPENNESS CHANGE 2010-2013

Figure 11.A

LARGE NATIONAL ECONOMIES: GDP 2013-TRADE OPENNESS CHANGE 2010-2013

b) correlation between the annual Trade and the five-year GDP growth:

Figure 12.A

SMALL NATIONAL ECONOMIES: TRADE 1980-GDP growth 1980-1984

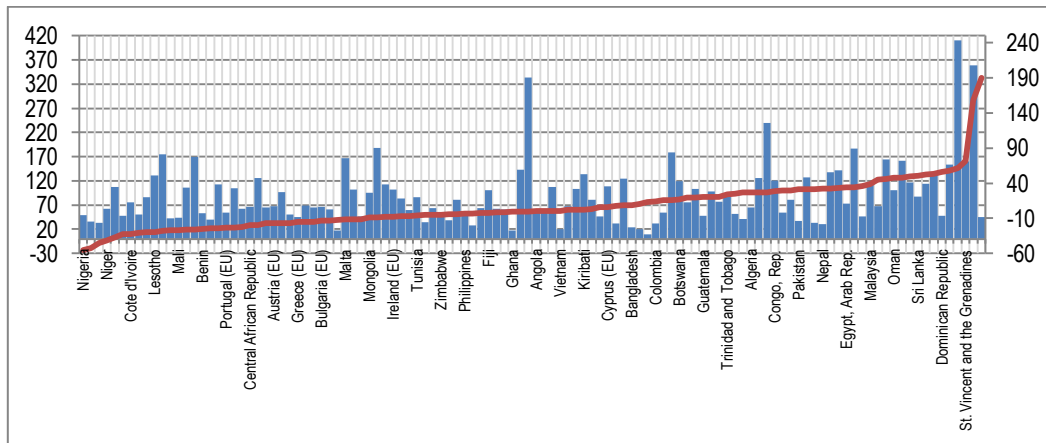


Figure 13.A

LARGE NATIONAL ECONOMIES: TRADE 1980-GDP growth 1980-1984

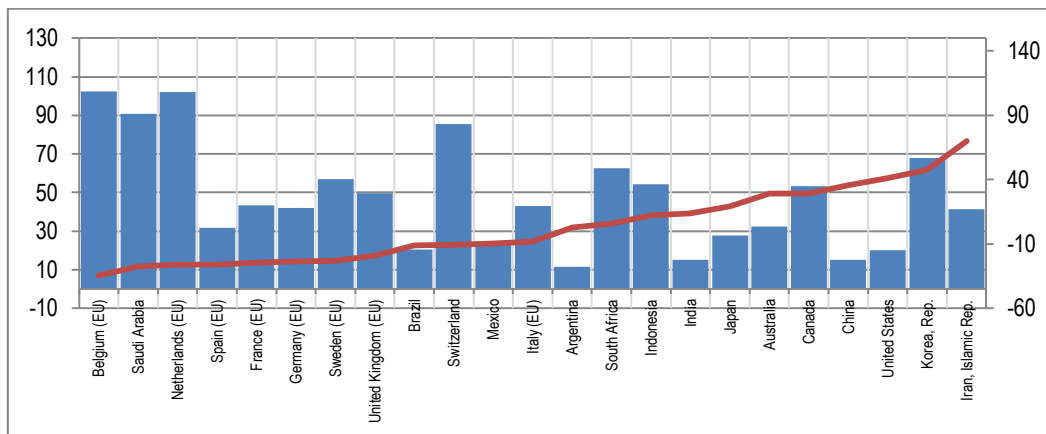


Figure 14.A

SMALL NATIONAL ECONOMIES: TRADE 1990-GDP growth 1990-1994

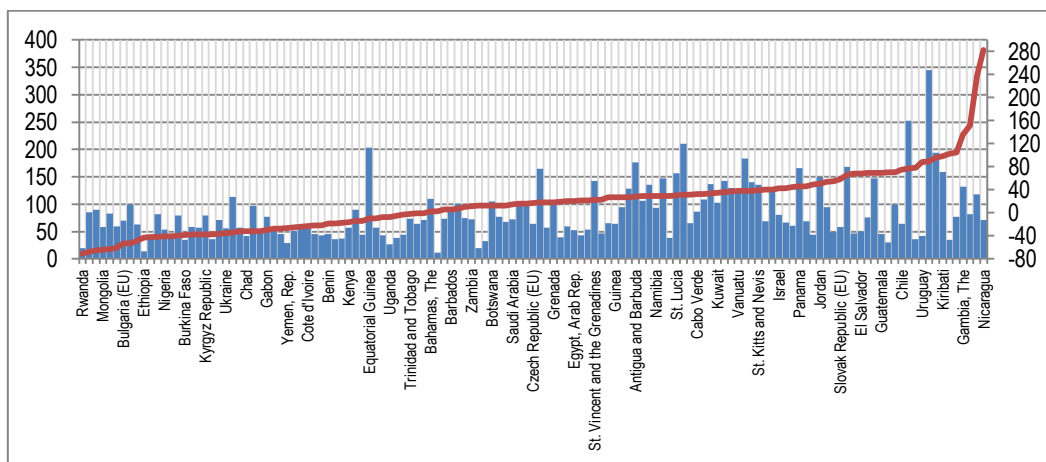


Figure 15.A

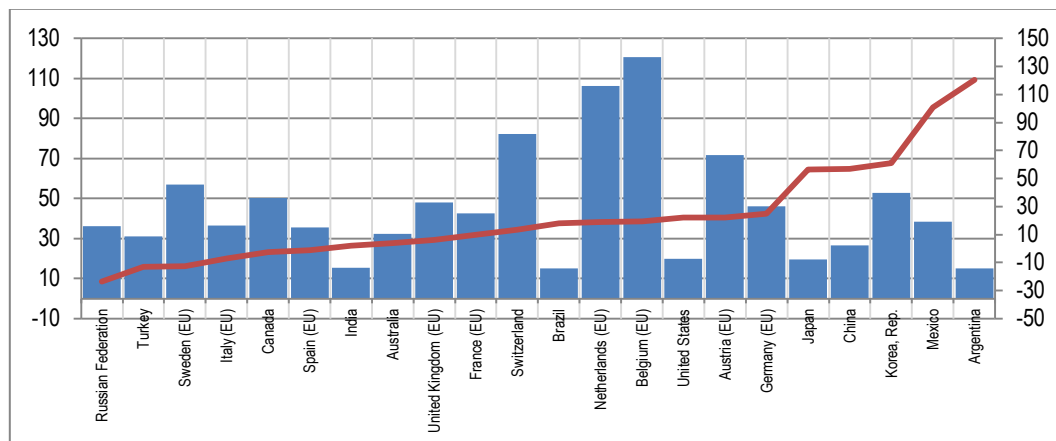
LARGE NATIONAL ECONOMIES: TRADE 1990-GDP growth 1990-1994

Figure 16.A

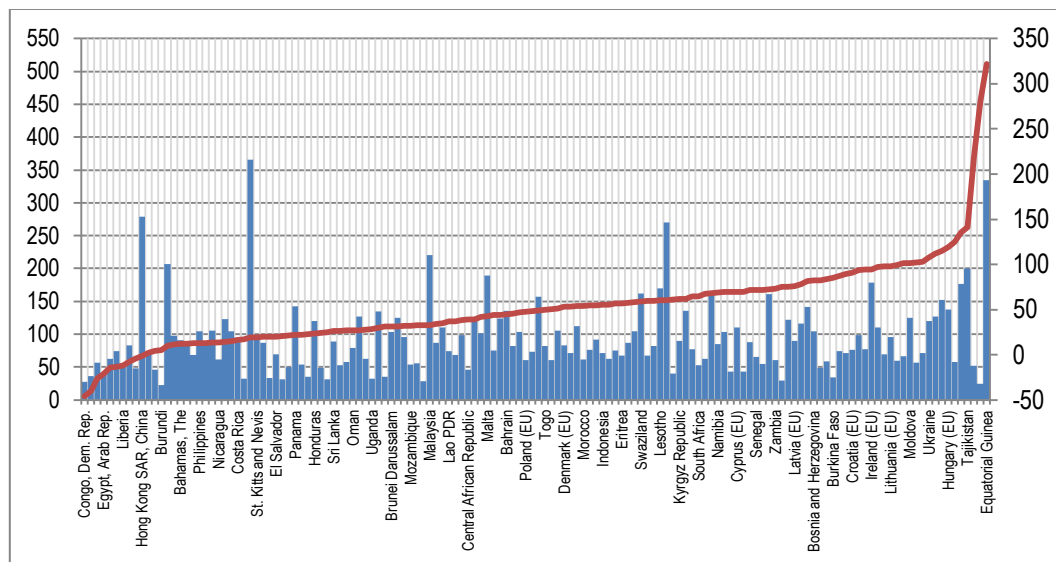
SMALL NATIONAL ECONOMIES: TRADE 2000-GDP growth 2000-2004

Figure 17.A

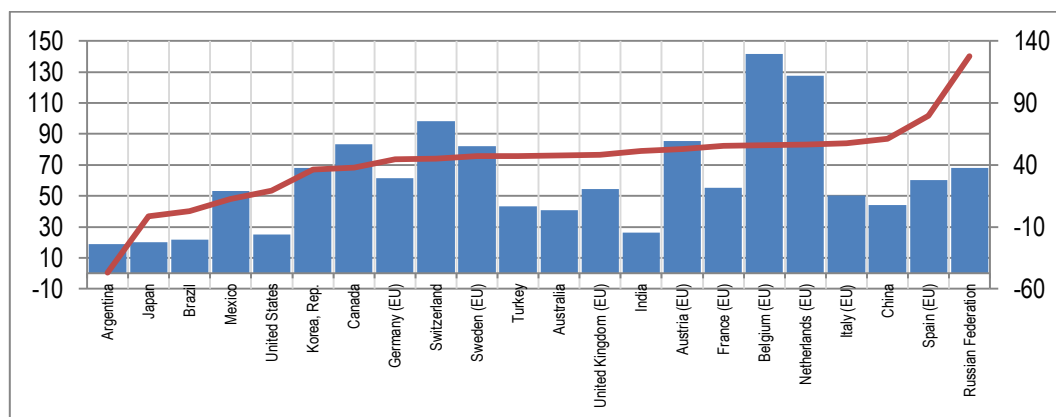
LARGE NATIONAL ECONOMIES: TRADE 2000-GDP growth 2000-2004

Figure 18.A

SMALL NATIONAL ECONOMIES: TRADE 2013-GDP growth 2010-2013

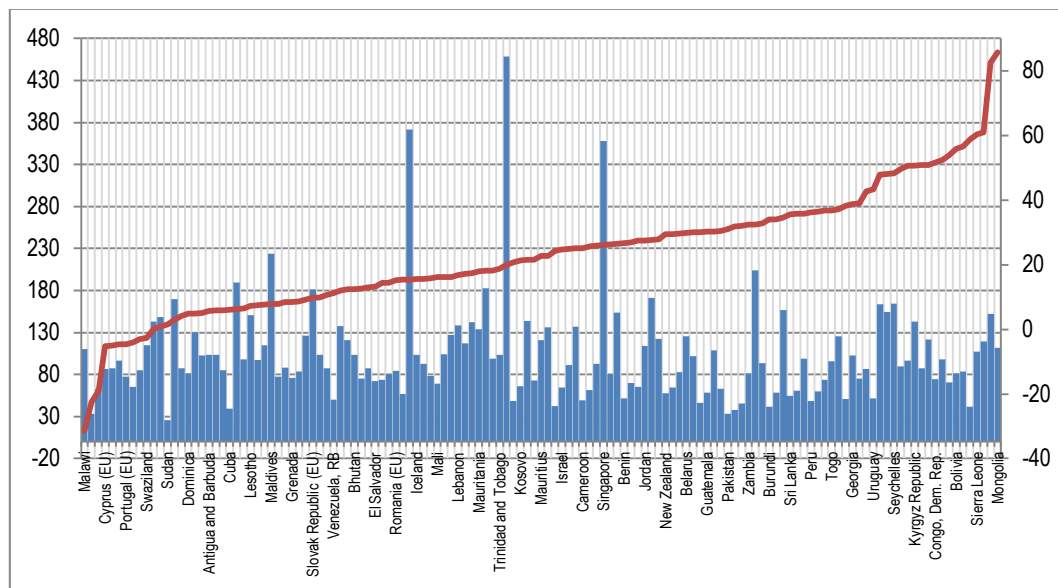
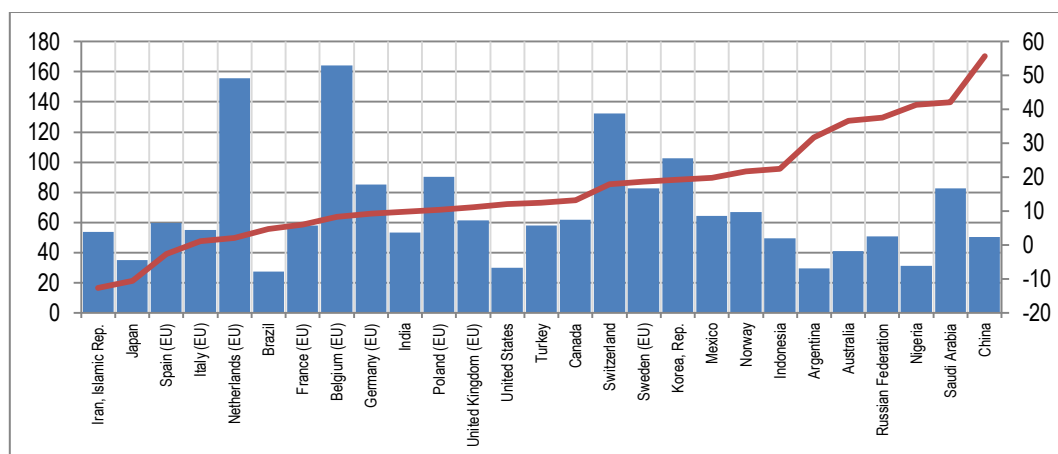


Figure 19.A

LARGE NATIONAL ECONOMIES: TRADE 2013-GDP growth 2010-2013



c) correlation between the five-year GDP growth and the five-year Trade Openness Change:

Figure 20.A

**SMALL NATIONAL ECONOMIES: GDP growth 1980-1984-TRADE OPENNESS
CHANGE 1980-1984**

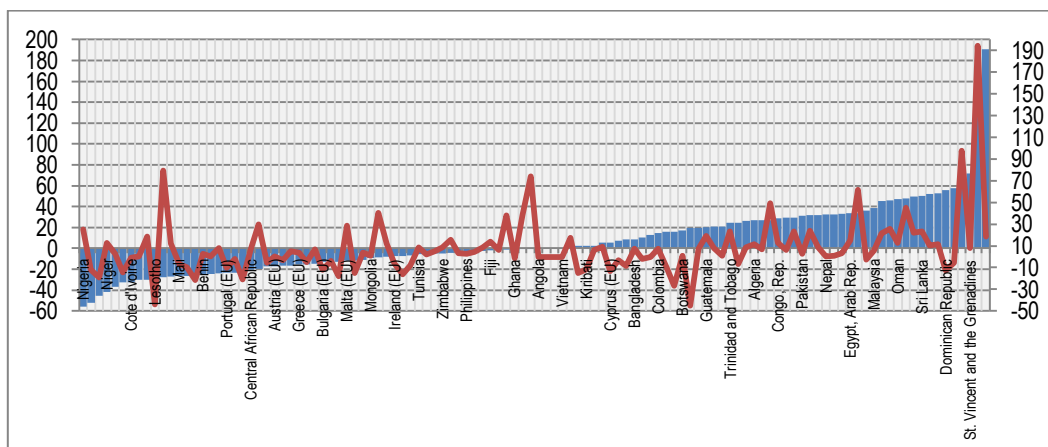


Figure 21.A

**SMALL NATIONAL ECONOMIES: GDP growth 1990-1994-TRADE OPENNESS
CHANGE 1990-1994**

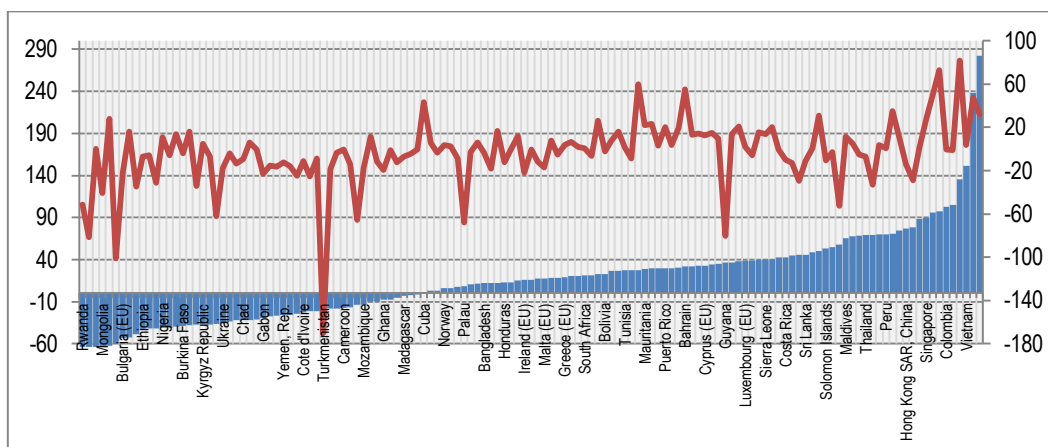


Figure 22.A

**LARGE NATIONAL ECONOMIES: GDP growth 1990-1994-TRADE OPENNESS
CHANGE 1990-1994**

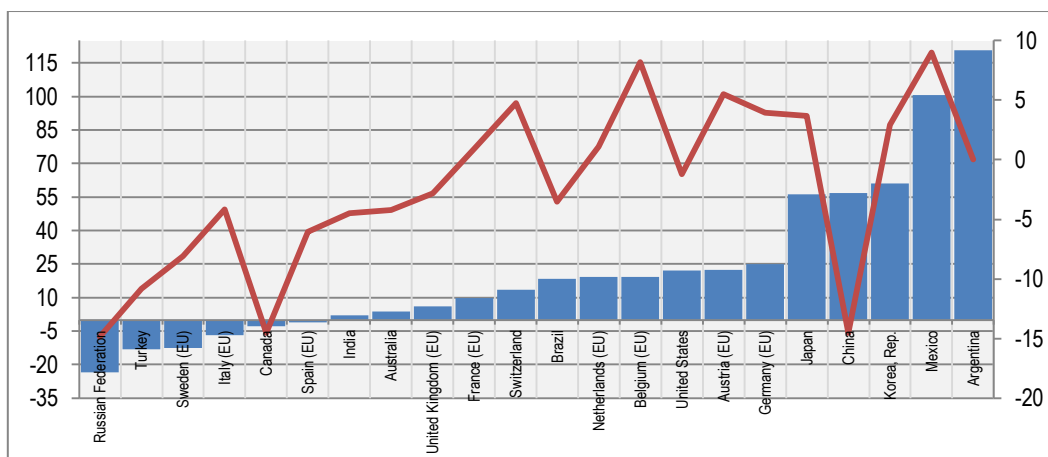


Figure 23.A

**SMALL NATIONAL ECONOMIES: GDP growth 2000-2004-TRADE OPENNESS
CHANGE 2000-2004**

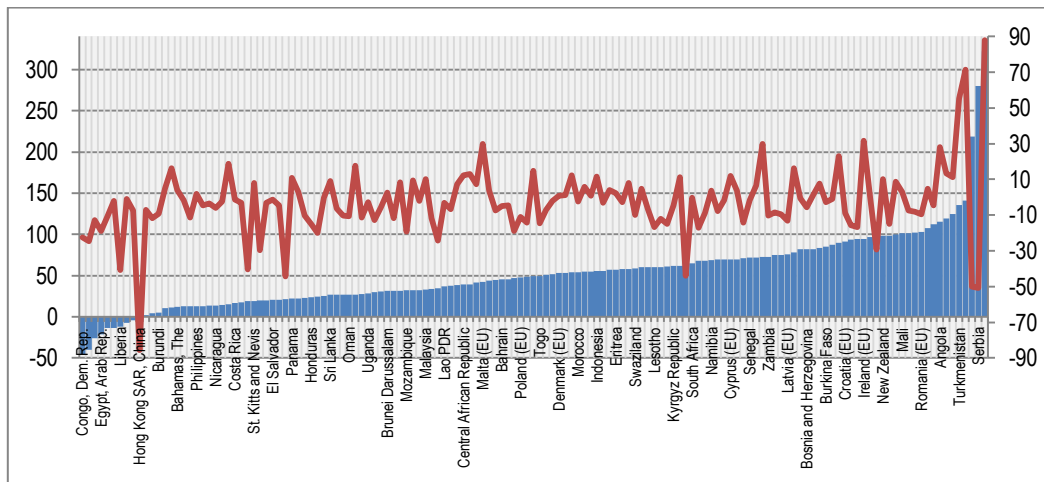


Figure 24.A

**LARGE NATIONAL ECONOMIES: GDP growth 2000-2004-TRADE OPENNESS
CHANGE 2000-2004**

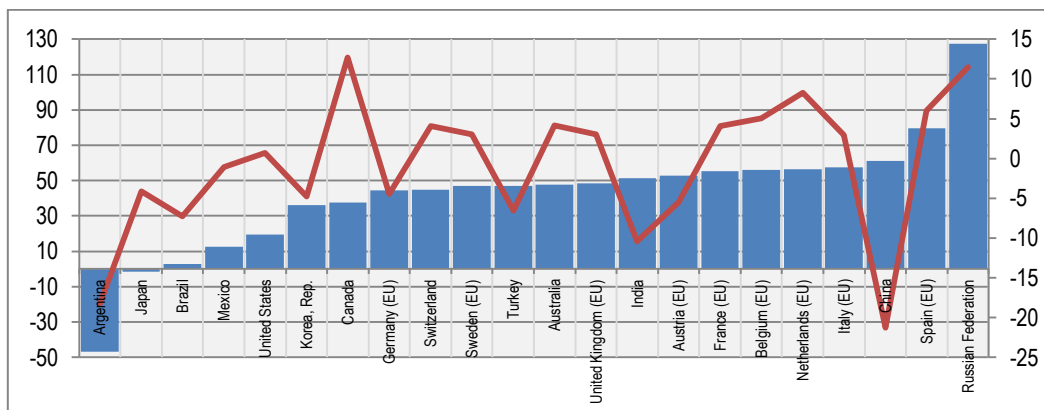


Figure 25.A

**SMALL NATIONAL ECONOMIES: GDP growth 2010-2013-TRADE OPENNESS
CHANGE 2010-2013**

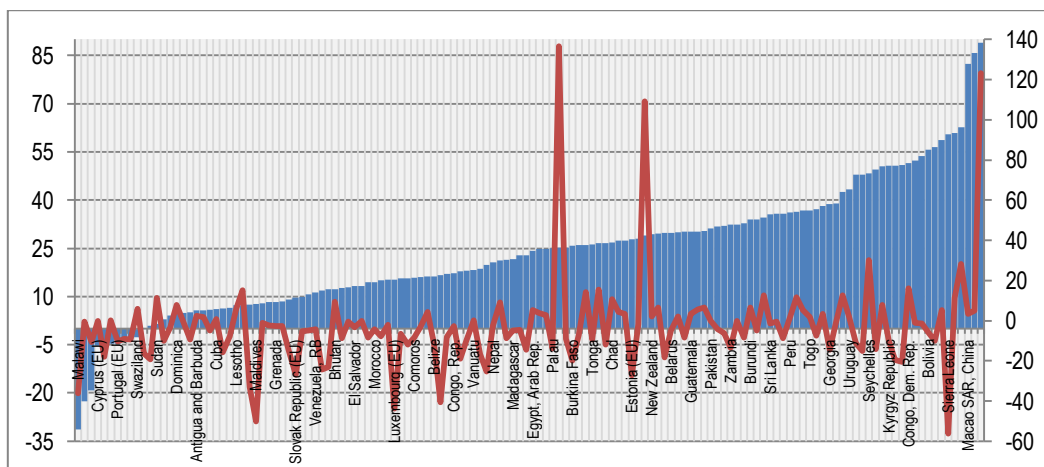
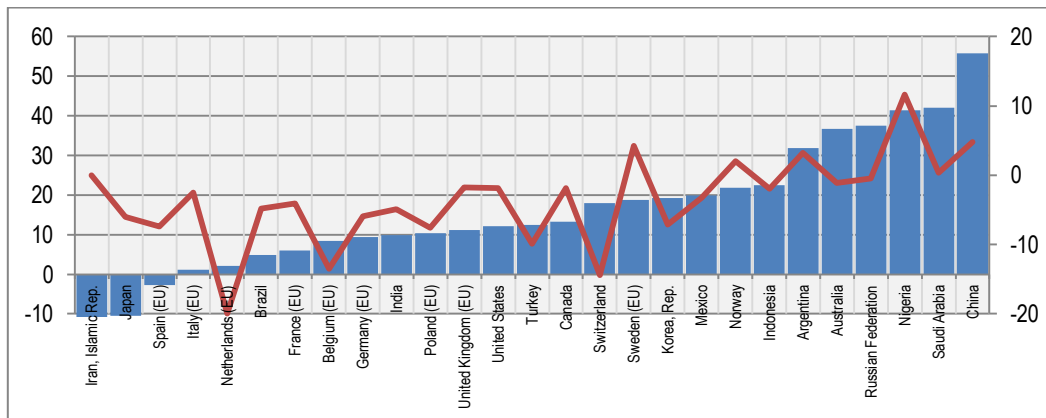


Figure 26.A

**LARGE NATIONAL ECONOMIES: GDP growth 2010-2013-TRADE OPENNESS
CHANGE 2010-2013**



2) Countries with closed and open economies according to percentage of Trade:

a) correlation between the annual GDP and the five-year Trade Openness Change:

Figure 27.A

CLOSED ECONOMIES: GDP 1980-TRADE OPENNESS CHANGE 1980-1984

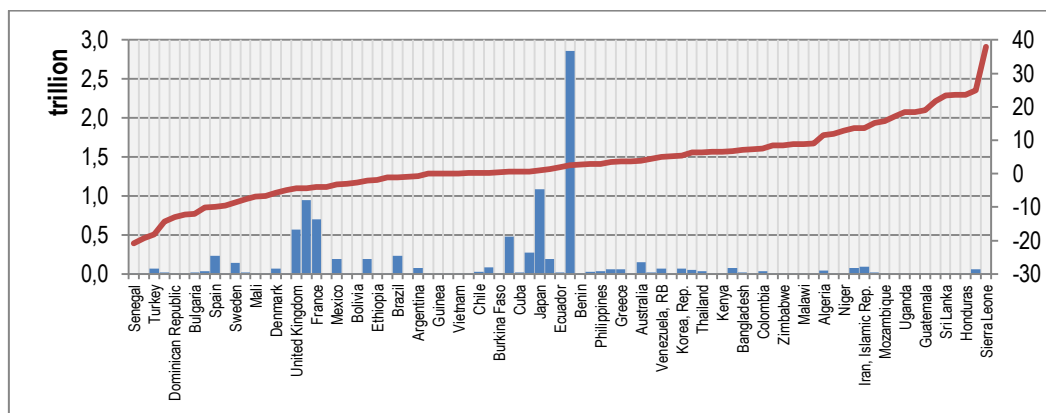


Figure 28.A

OPEN ECONOMIES: GDP 1980-TRADE OPENNESS CHANGE 1980-1984

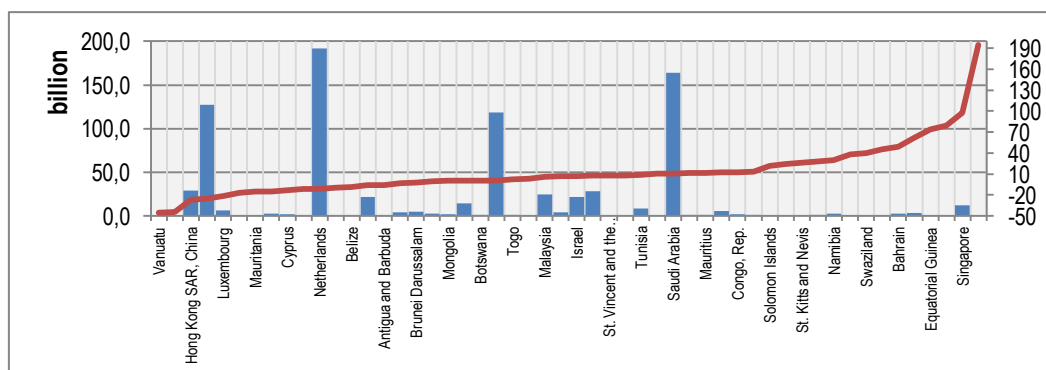


Figure 29.A

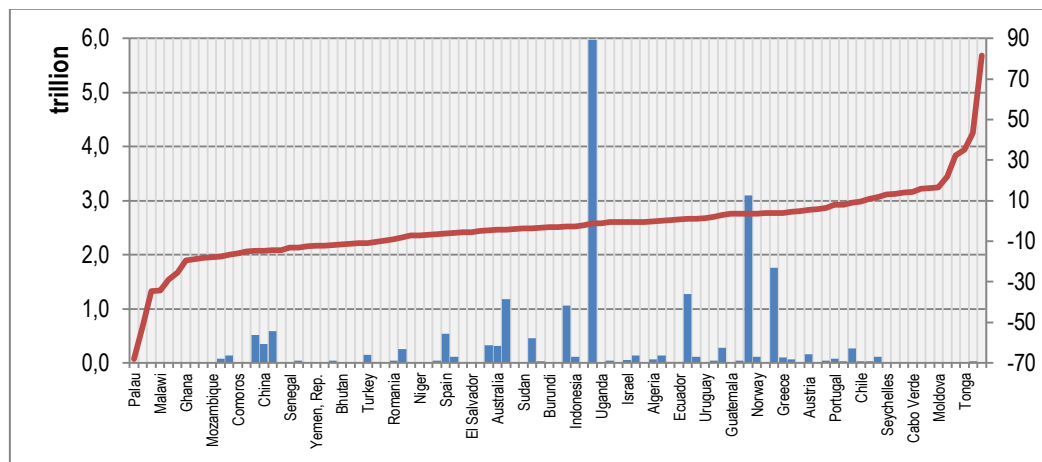
CLOSED ECONOMIES: GDP 1990-TRADE OPENNESS CHANGE 1990-1994

Figure 30.A

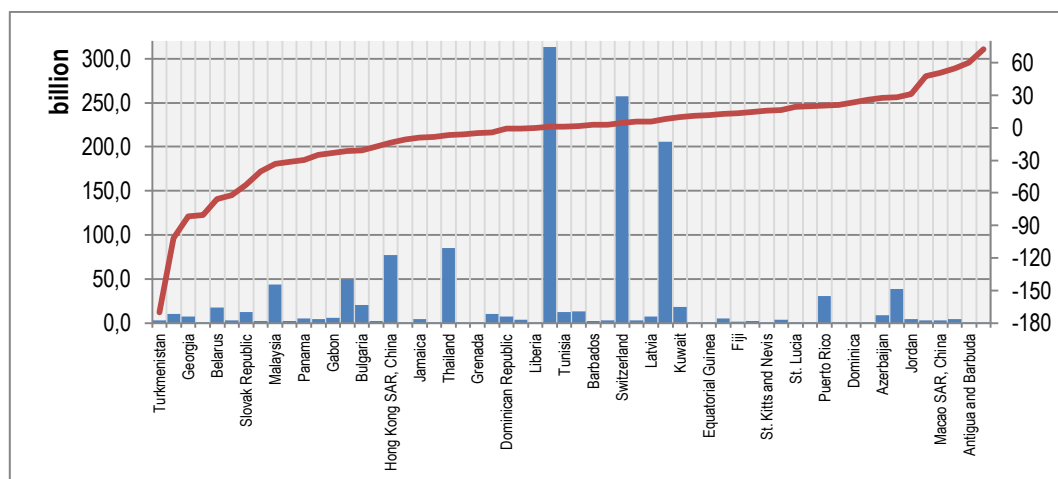
OPEN ECONOMIES: GDP 1990-TRADE OPENNESS CHANGE 1990-1994

Figure 31.A

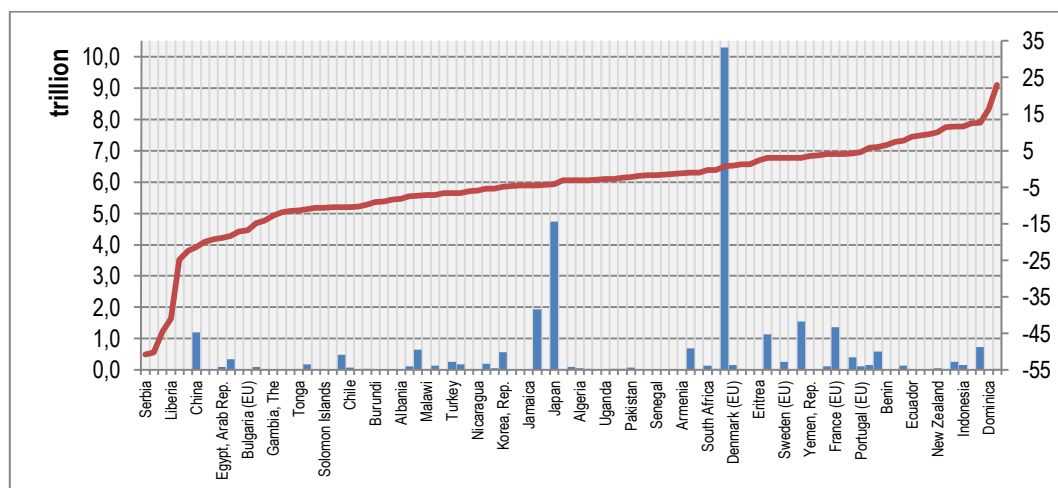
CLOSED ECONOMIES: GDP 2000-TRADE OPENNESS CHANGE 2000-2004

Figure 32.A

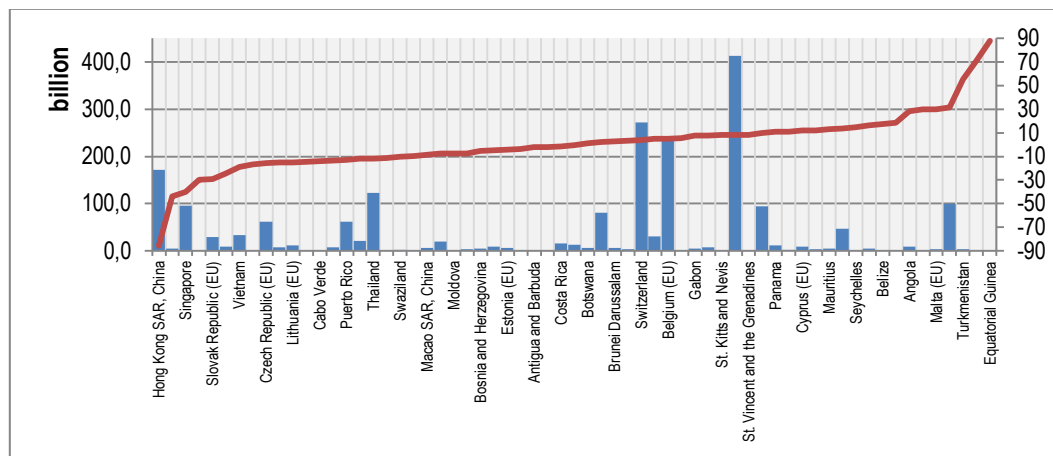
OPEN ECONOMIES: GDP 2000-TRADE OPENNESS CHANGE 2000-2004

Figure 33.A

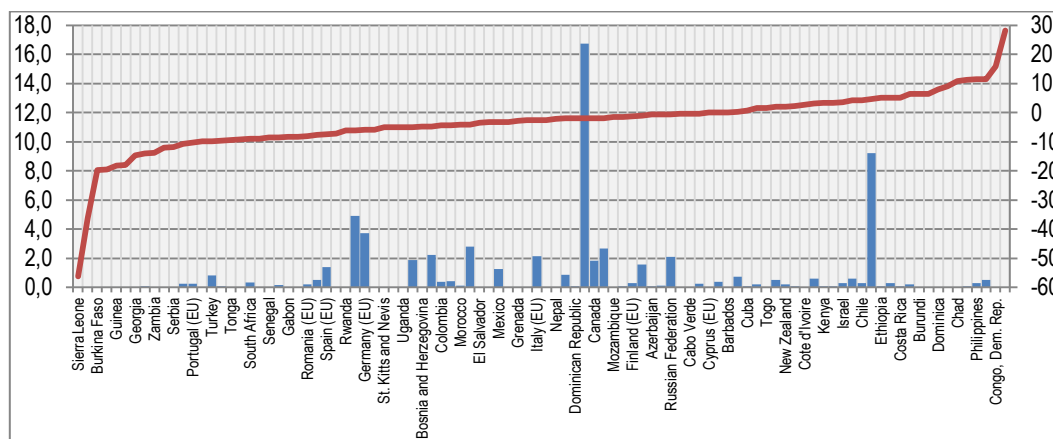
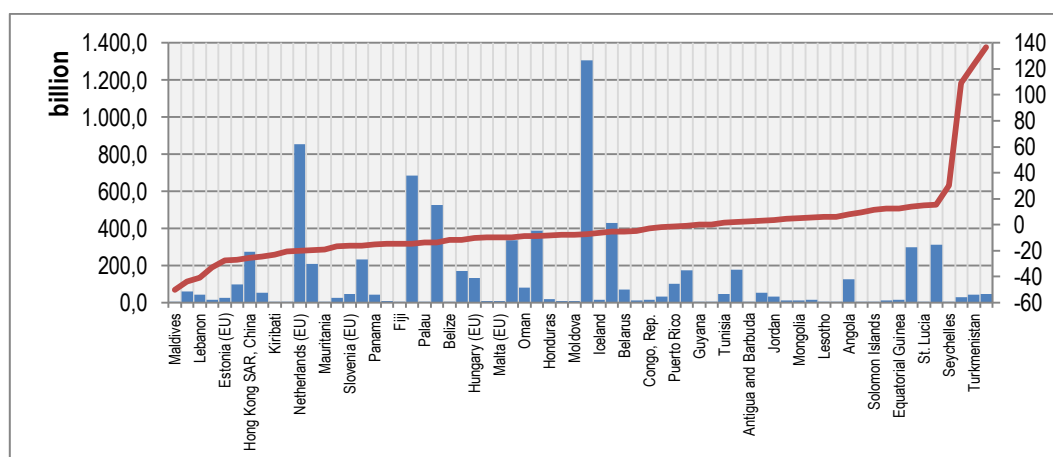
CLOSED ECONOMIES: GDP 2013-TRADE OPENNESS CHANGE 2010-2013

Figure 34.A

OPEN ECONOMIES: GDP 2013-TRADE OPENNESS CHANGE 2010-2013

b) correlation between the annual Trade and the five-year GDP growth:

Figure 35.A

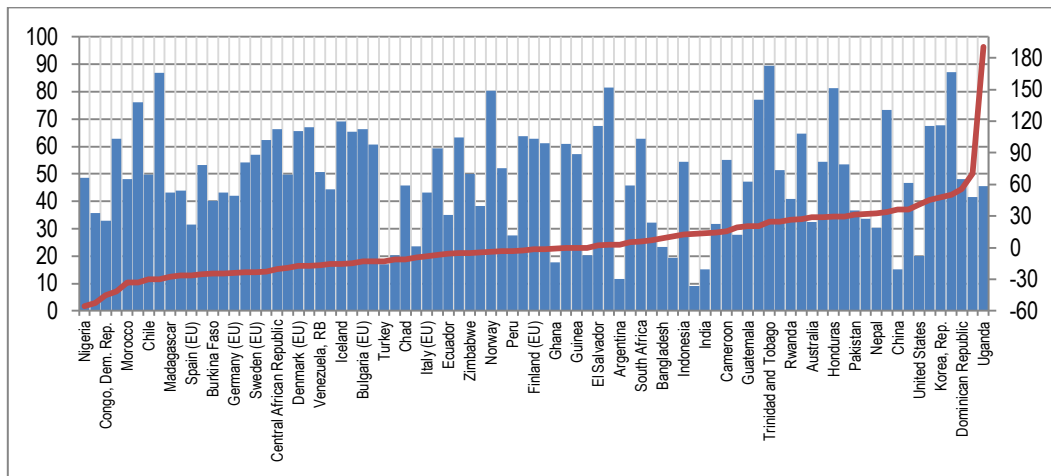
CLOSED ECONOMIES: TRADE 1980-GDP growth 1980-1984

Figure 35.A

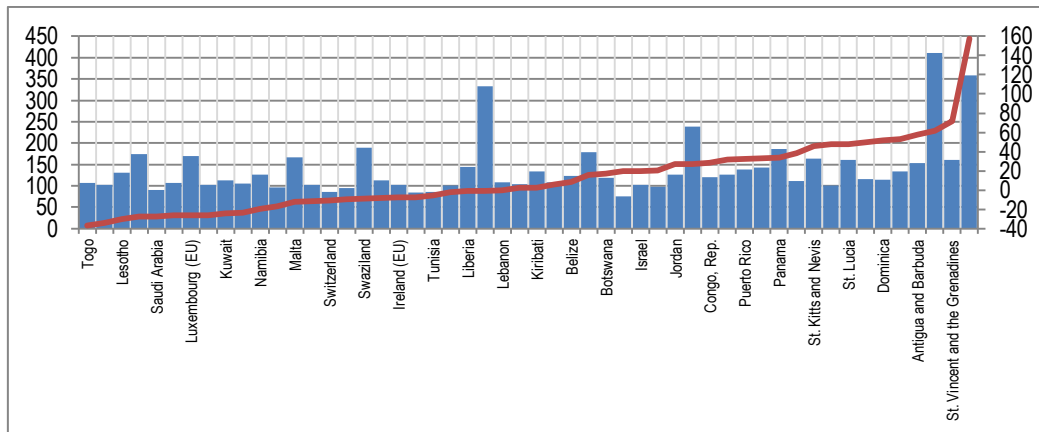
OPEN ECONOMIES: TRADE 1980-GDP growth 1980-1984

Figure 36.A

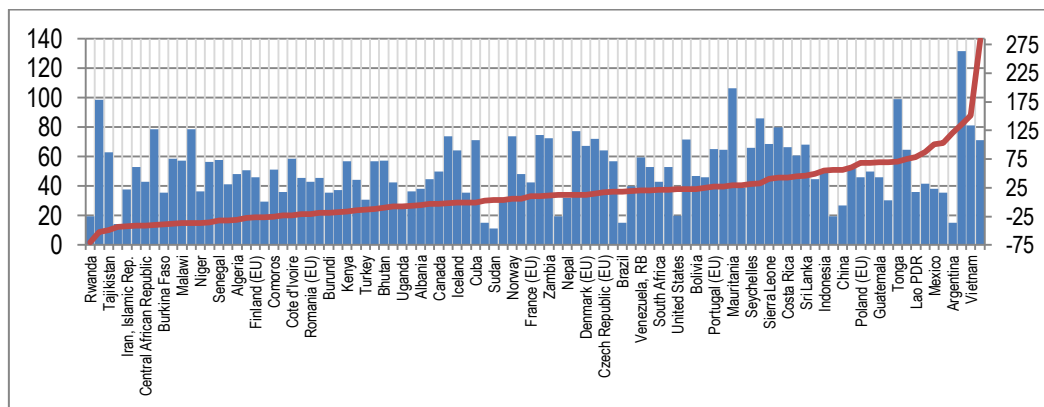
CLOSED ECONOMIES: TRADE 1990-GDP growth 1990-1994

Figure 37.A

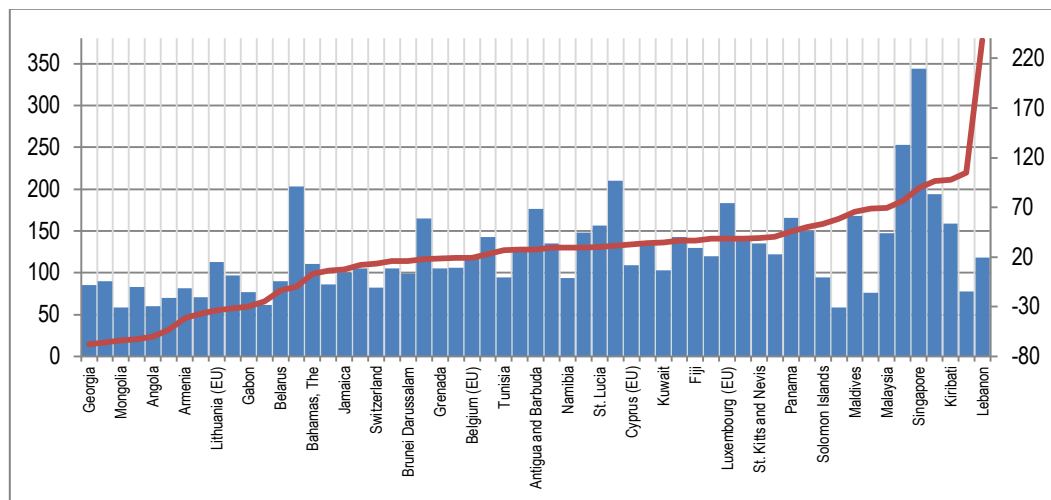
OPEN ECONOMIES: TRADE 1990-GDP growth 1990-1994

Figure 38.A

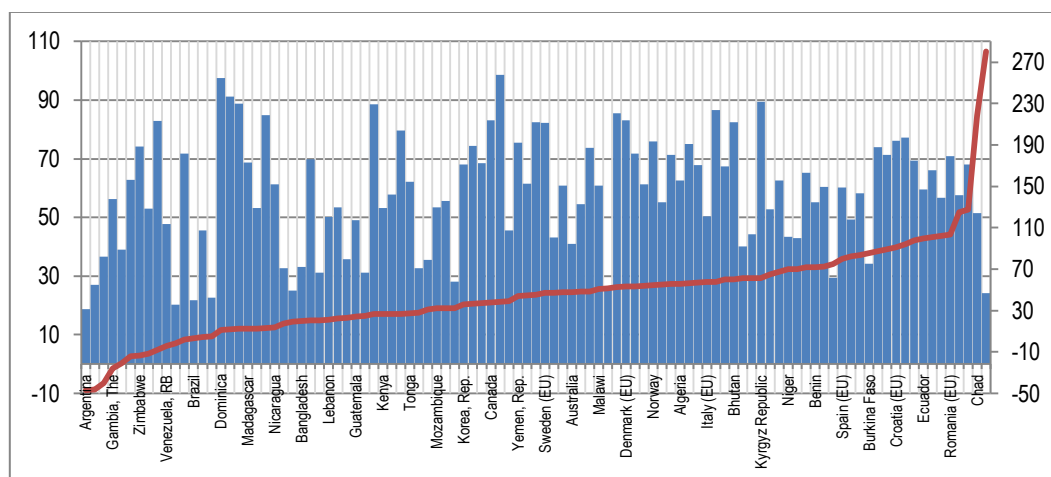
CLOSED ECONOMIES: TRADE 2000-GDP growth 2000-2004

Figure 39.A

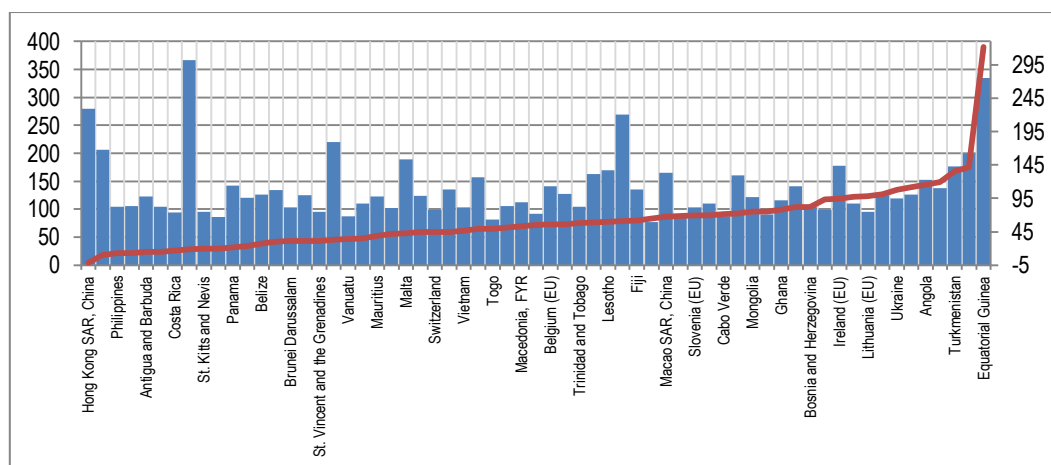
OPEN ECONOMIES: TRADE 2000-GDP growth 2000-2004

Figure 40.A

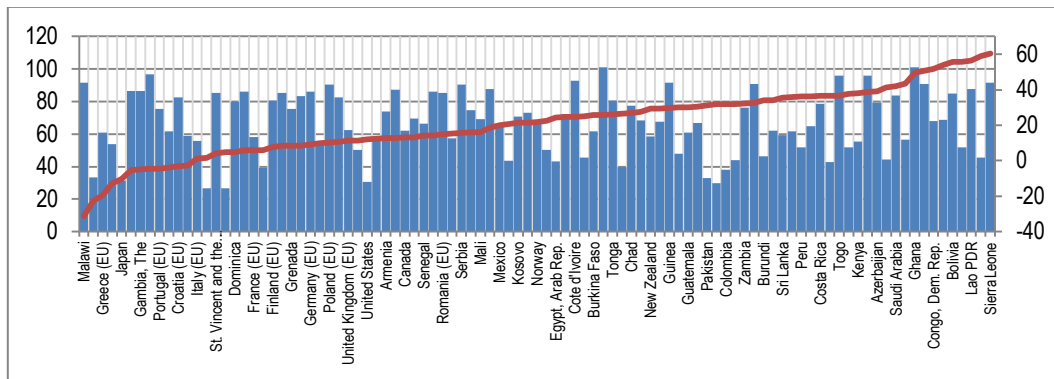
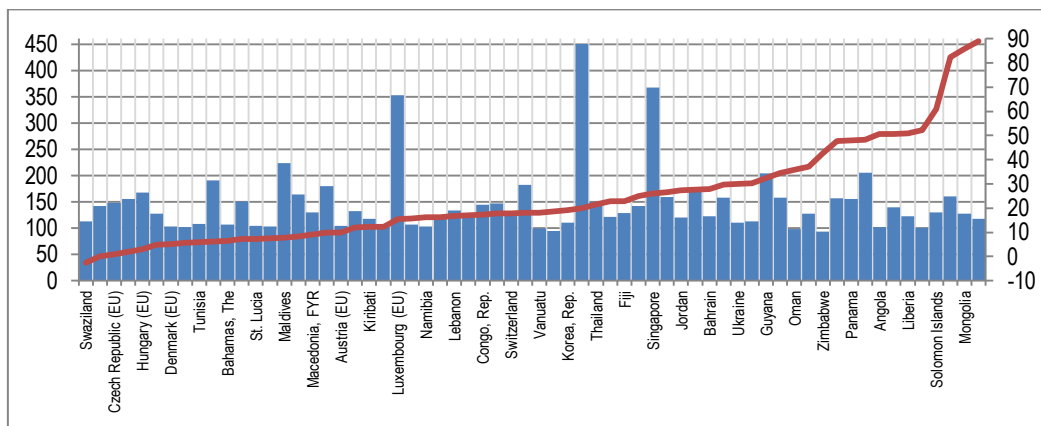
CLOSED ECONOMIES: TRADE 2013-GDP growth 2010-2013

Figure 41.A

OPEN ECONOMIES: TRADE 2013-GDP growth 2010-2013

c) correlation between the five-year GDP growth and the five-year Trade Openness Change:

Figure 42.A

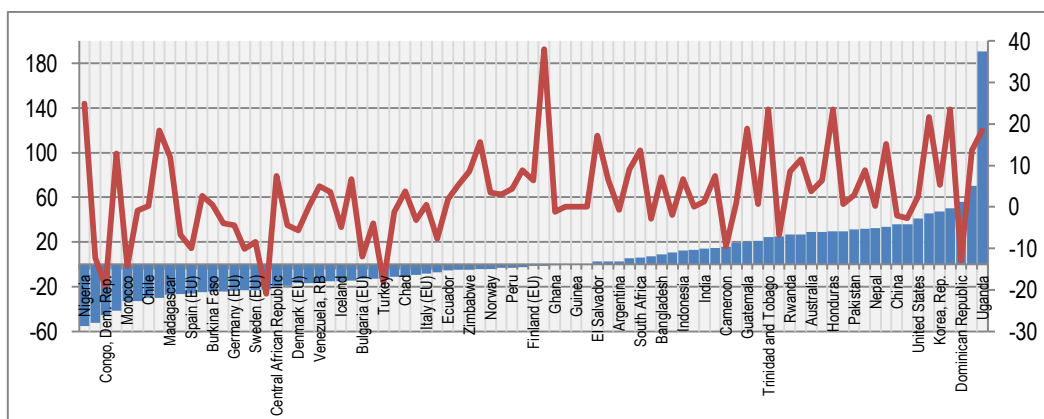
CLOSED ECONOMIES: GDP growth 1980-1984-TRADE OPENNESS CHANGE 1980-1984

Figure 43.A

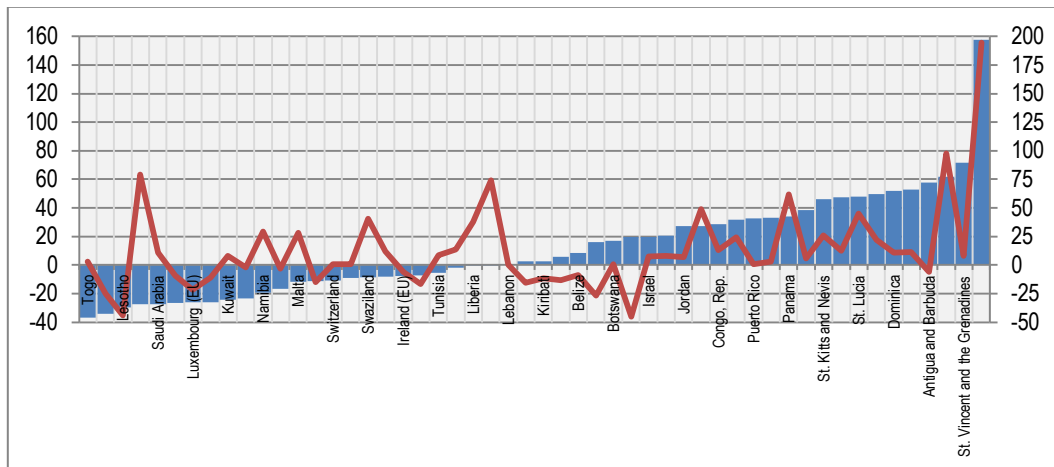
OPEN ECONOMIES: GDP growth 1980-1984-TRADE OPENNESS CHANGE 1980-1984

Figure 44.A

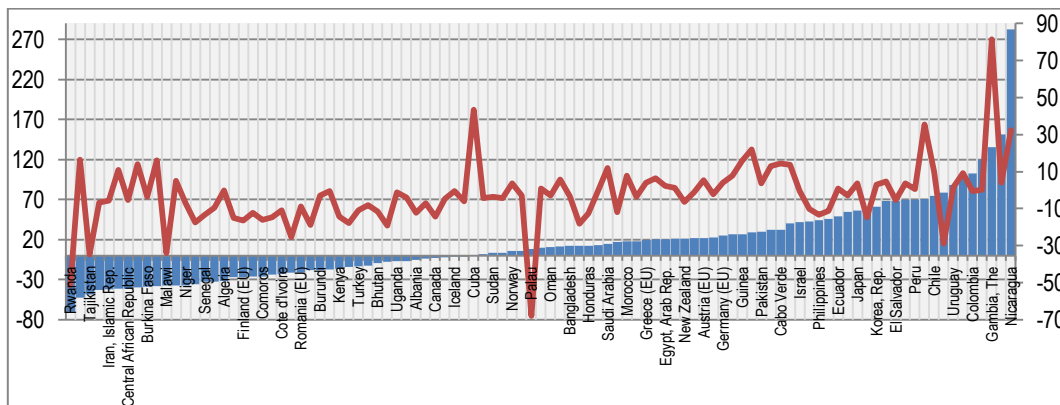
CLOSED ECONOMIES: GDP growth 1990-1994-TRADE OPENNESS CHANGE 1990-1994

Figure 45.A

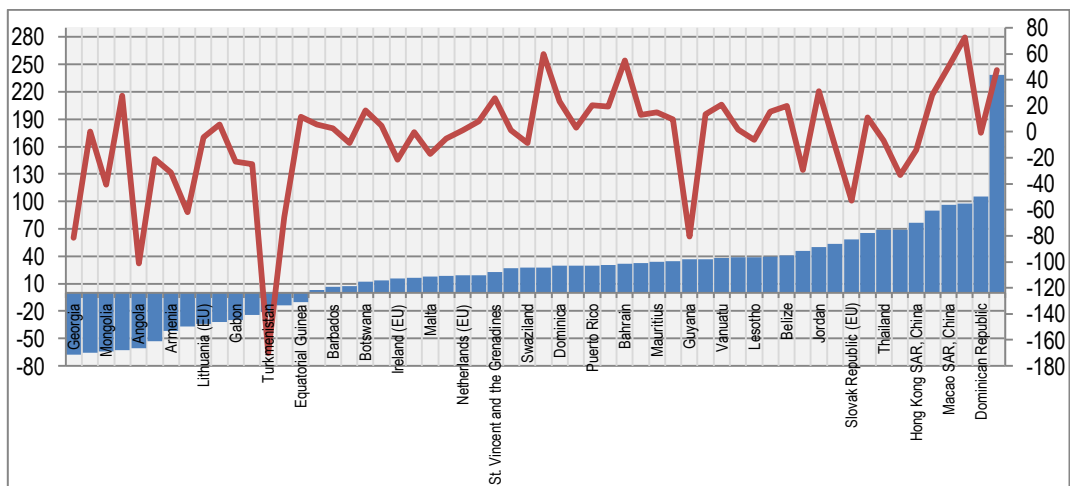
OPEN ECONOMIES: GDP growth 1990-1994-TRADE OPENNESS CHANGE 1990-1994

Figure 46.A

CLOSED ECONOMIES: GDP growth 2000-2004-TRADE OPENNESS CHANGE 2000-2004

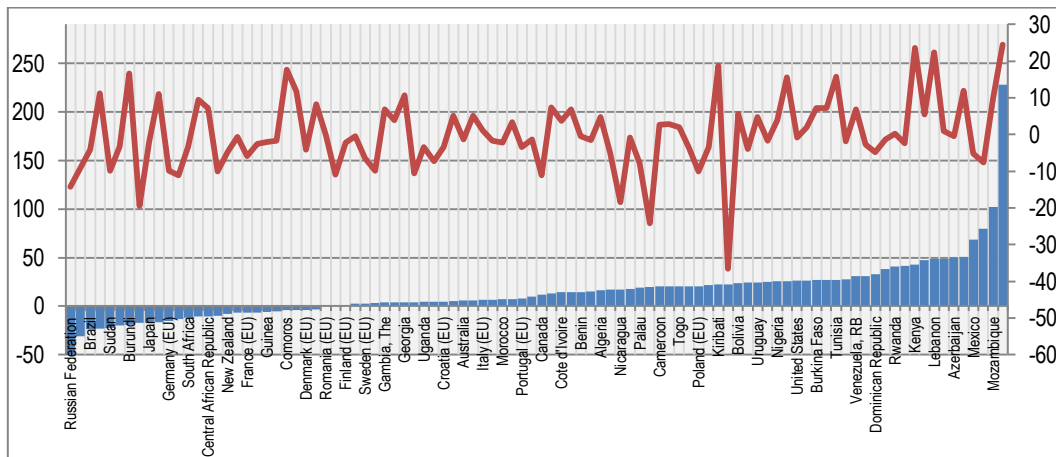


Figure 47.A

OPEN ECONOMIES: GDP growth 2000-2004-TRADE OPENNESS CHANGE 2000-2004

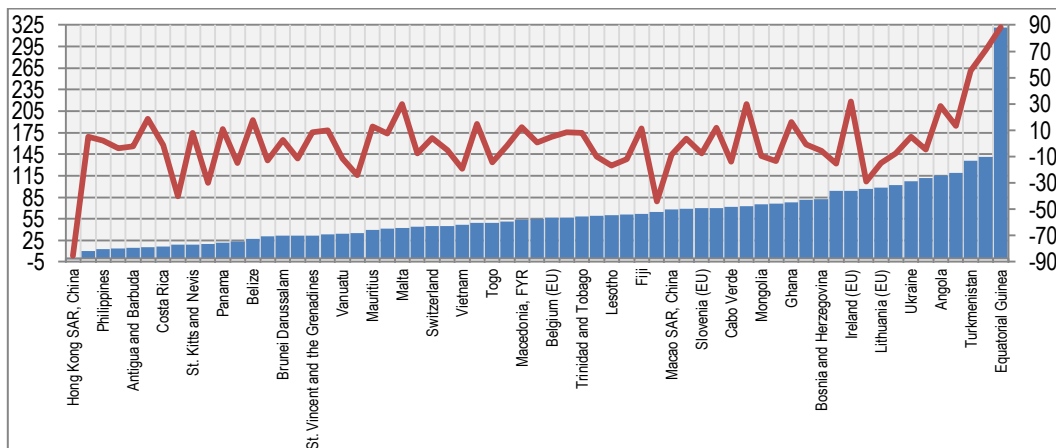


Figure 48.A

CLOSED ECONOMIES: GDP growth 2010-2013-TRADE OPENNESS CHANGE 2010-2013

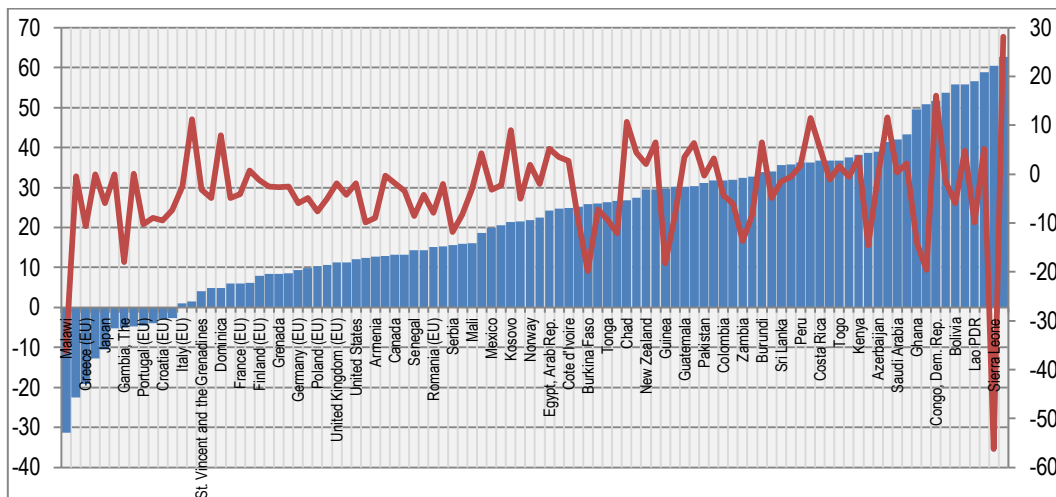
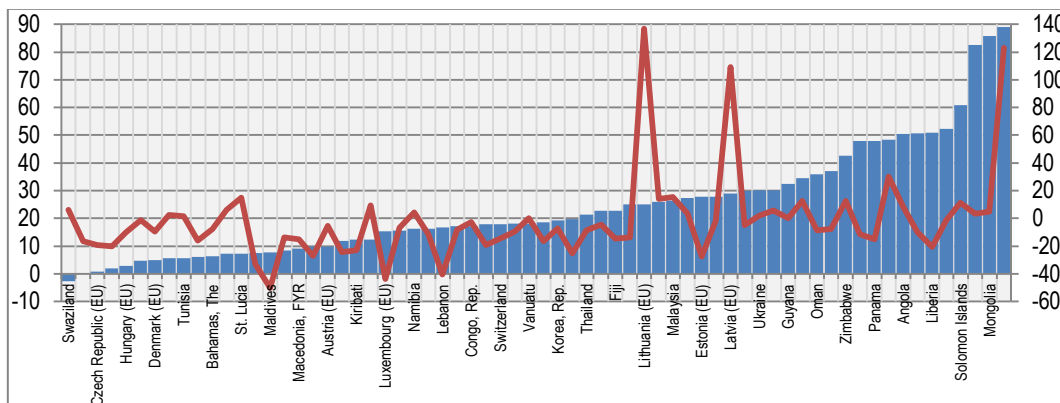


Figure 49.A

OPEN ECONOMIES: GDP growth 2010-2013-TRADE OPENNESS CHANGE 2010-2013

3) EU Countries:

a) correlation between the annual GDP and the five-year Trade Openness Change:

Figure 50.A

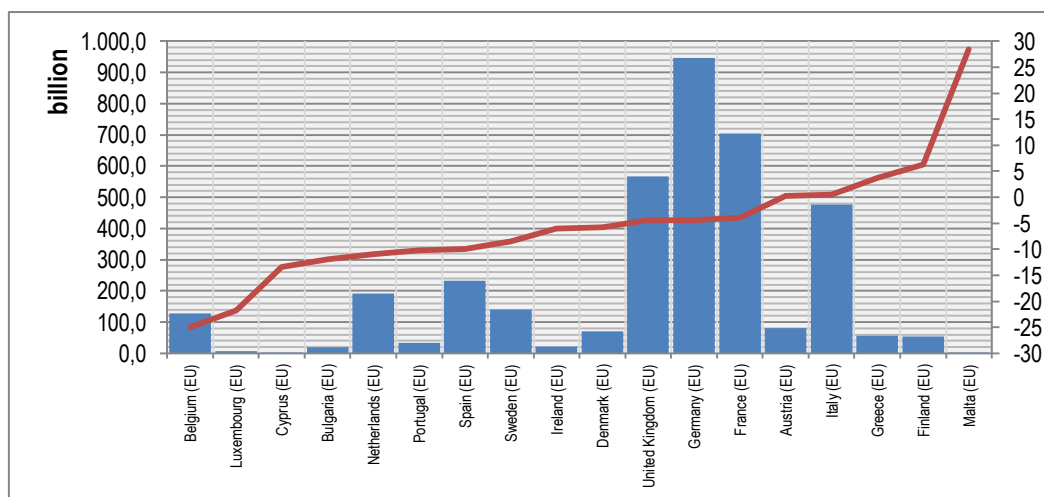
EU COUNTRIES: GDP 1980-TRADE OPENNESS CHANGE 1980-1984

Figure 51.A

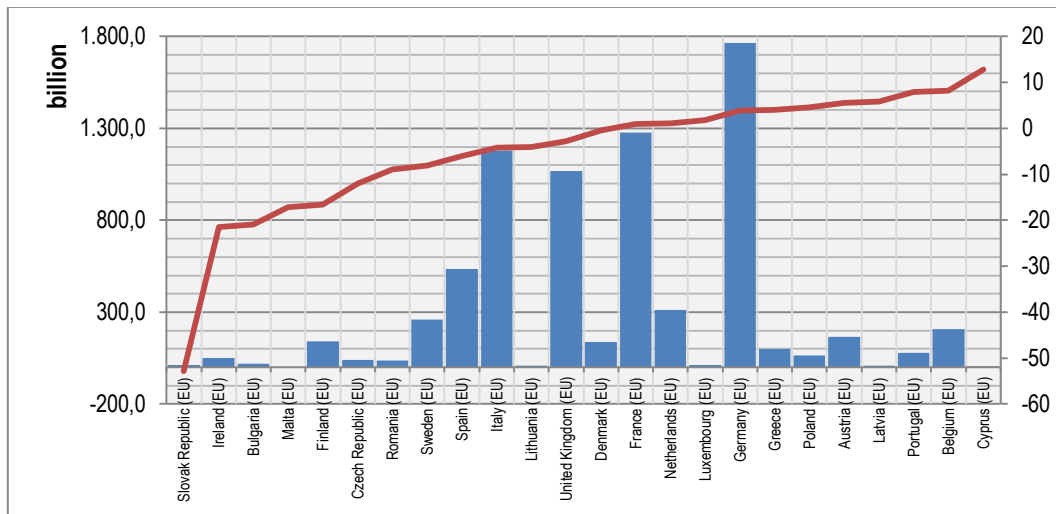
EU COUNTRIES: GDP 1990-TRADE OPENNESS CHANGE 1990-1994

Figure 52.A

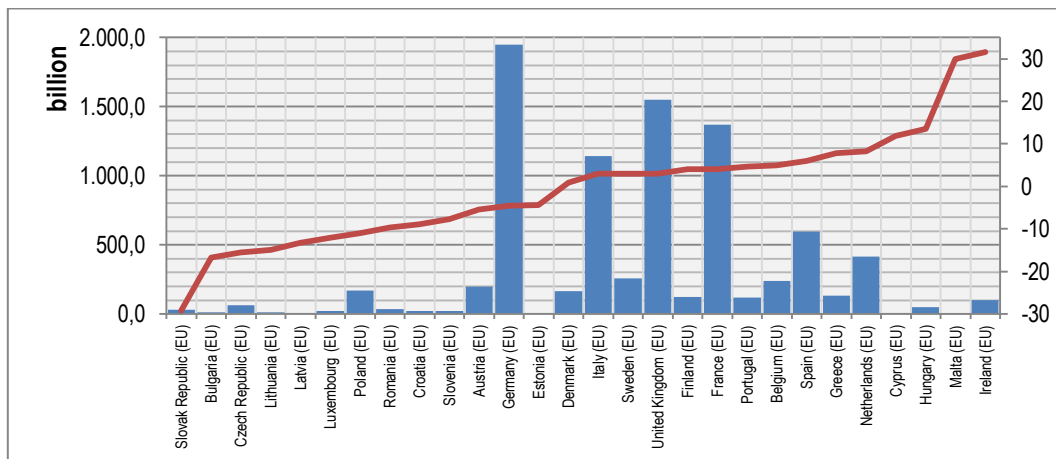
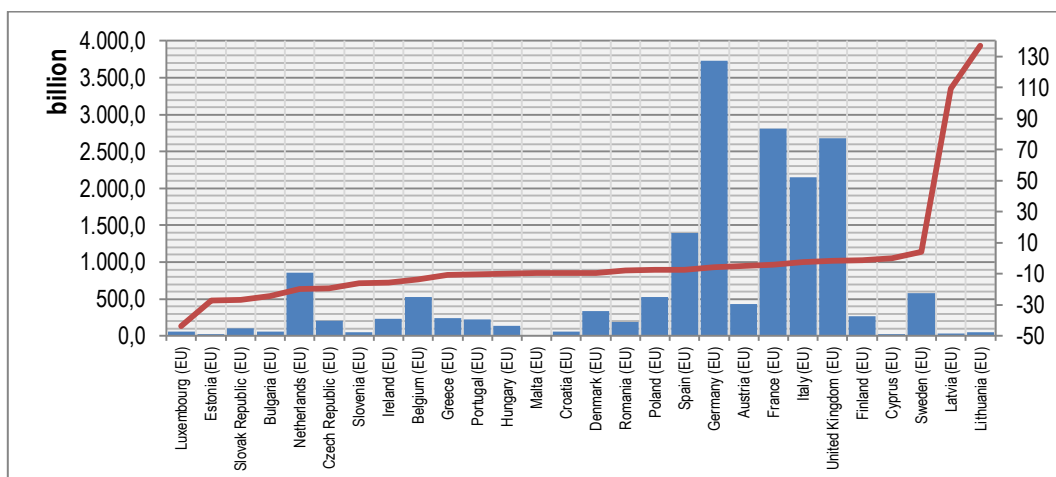
EU COUNTRIES: GDP 2000-TRADE OPENNESS CHANGE 2000-2004

Figure 53.A

EU COUNTRIES: GDP 2013-TRADE OPENNESS CHANGE 2010-2013

b) correlation between the annual Trade and the five-year GDP growth:

Figure 54.A

EU COUNTRIES: TRADE 1980-GDP growth 1980-1984

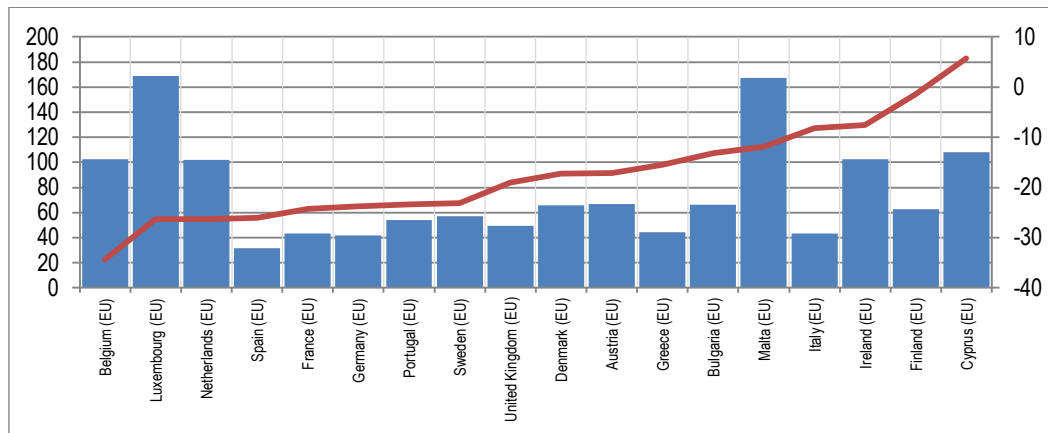


Figure 55.A

EU COUNTRIES: TRADE 1990-GDP growth 1990-1994

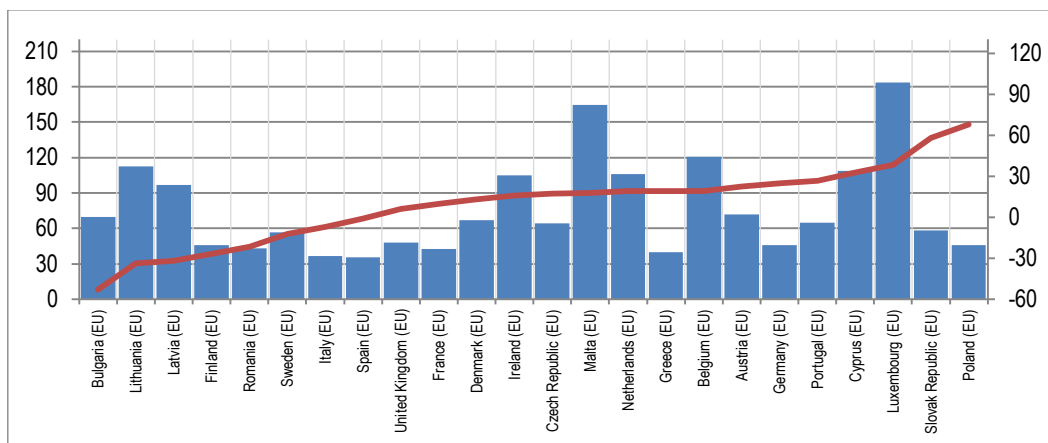


Figure 56.A

EU COUNTRIES: TRADE 2000-GDP growth 2000-2004

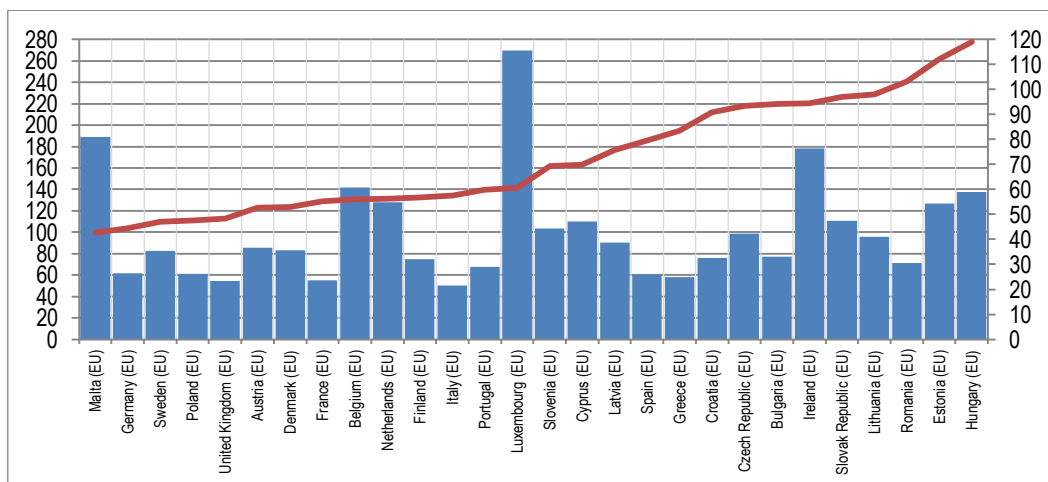
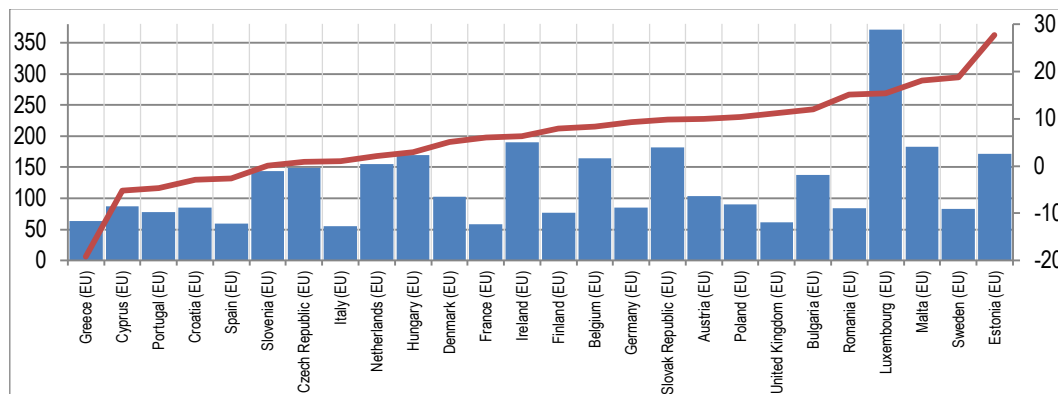


Figure 57.A

EU COUNTRIES: TRADE 2013-GDP growth 2010-2013

c) correlation between the five-year GDP growth and the five-year Trade Openness Change:

Figure 58.A

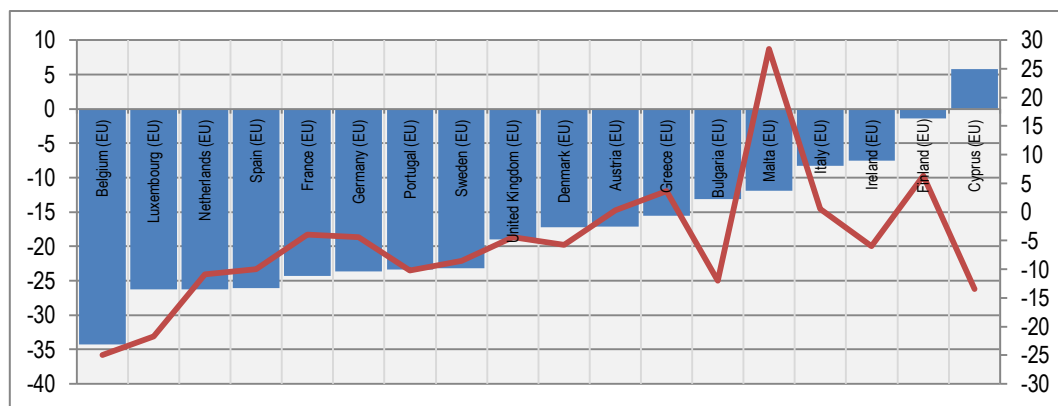
EU COUNTRIES: GDP growth 1980-1984-TRADE OPENNESS CHANGE 1980-1984

Figure 59.A

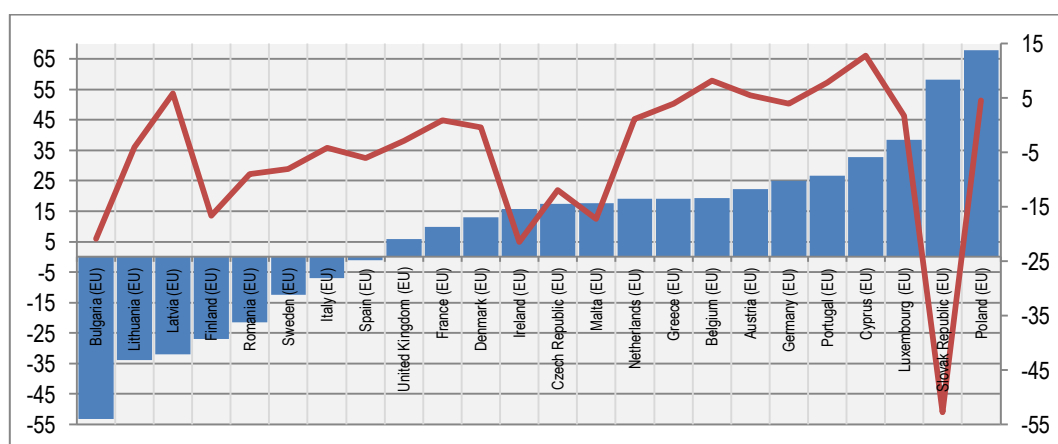
EU COUNTRIES: GDP growth 1990-1994-TRADE OPENNESS CHANGE 1990-1994

Figure 60.A

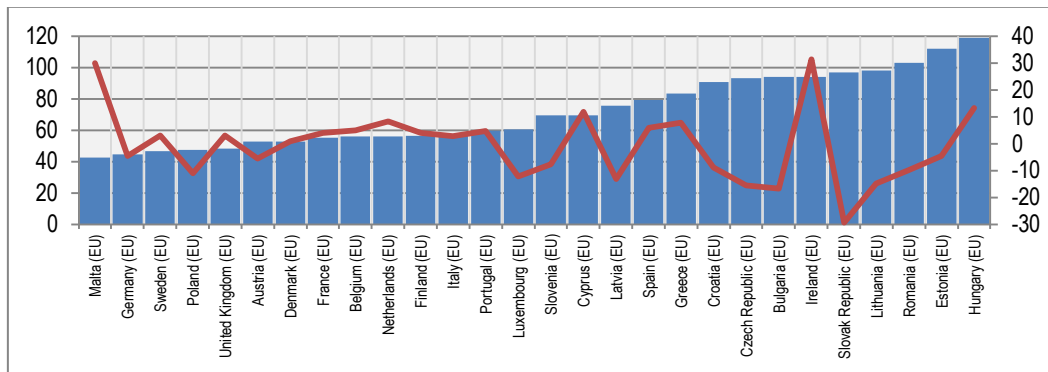
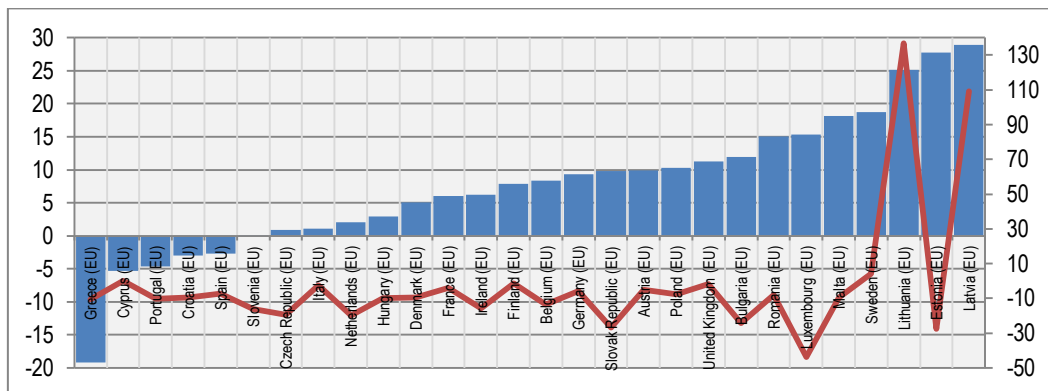
EU COUNTRIES: GDP growth 2000-2004-TRADE OPENNESS CHANGE 2000-2004

Figure 61.A

EU COUNTRIES: GDP growth 2010-2013-TRADE OPENNESS CHANGE 2010-2013

4) Countries from all over the world:

a) correlation between the annual GDP and the five-year Trade Openness Change:

Figure 62.A

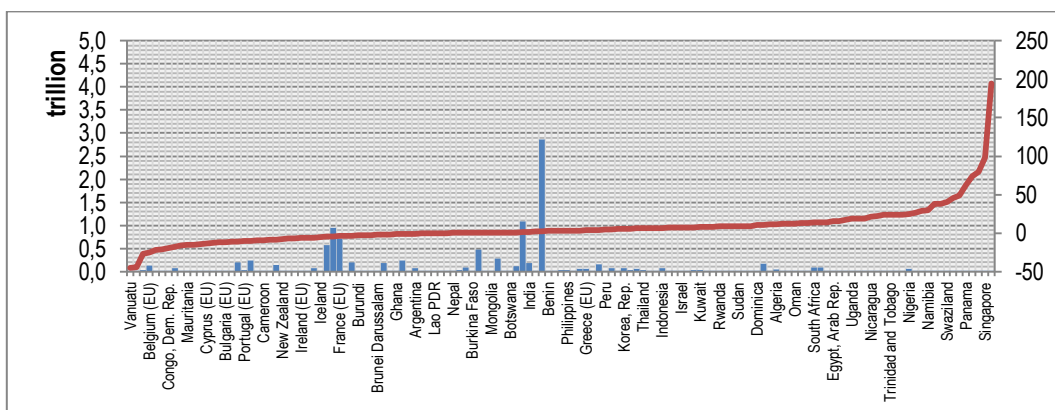
ALL COUNTRIES: GDP 1980-TRADE OPENNESS CHANGE 1980-1984

Figure 63.A

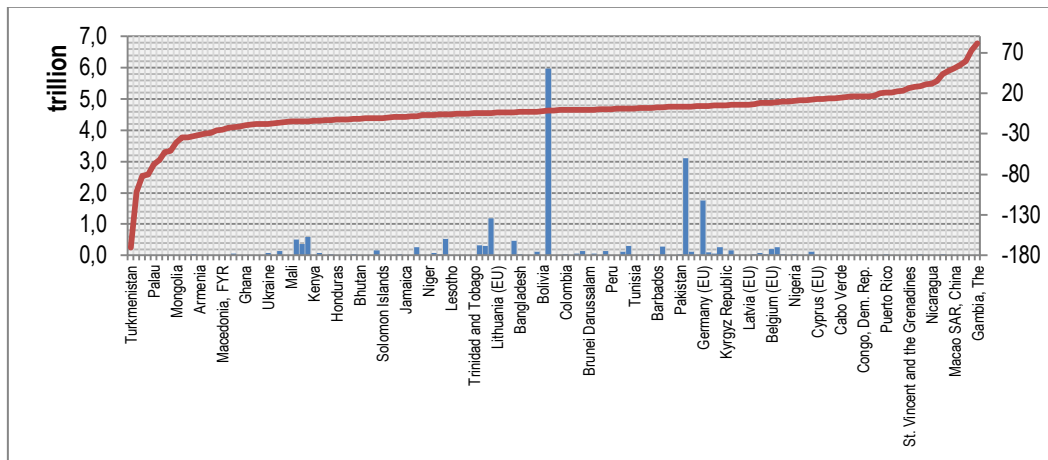
ALL COUNTRIES: GDP 1990-TRADE OPENNESS CHANGE 1990-1994

Figure 64.A

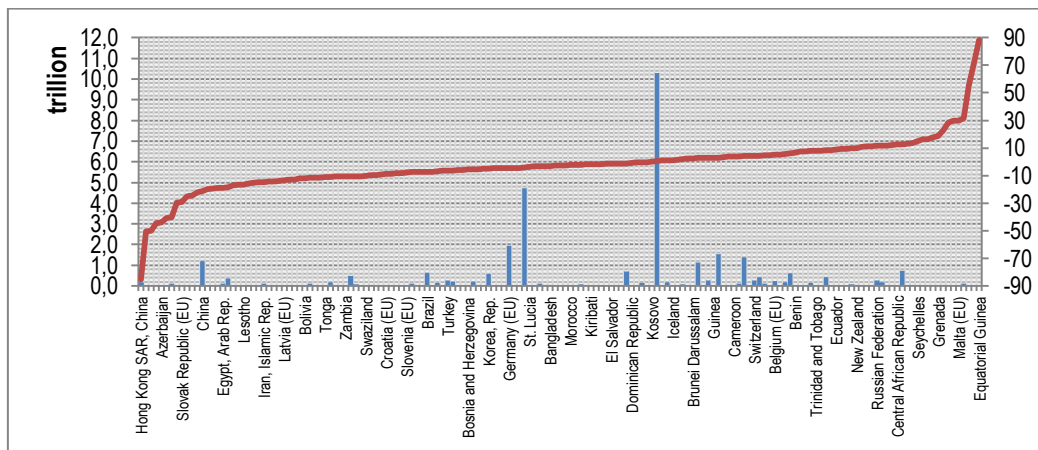
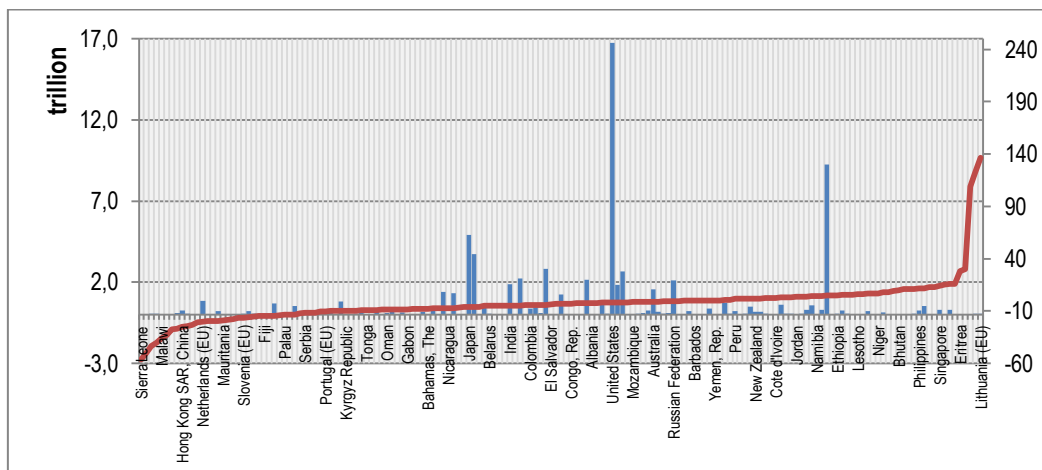
ALL COUNTRIES: GDP 2000-TRADE OPENNESS CHANGE 2000-2004

Figure 65.A

ALL COUNTRIES: GDP 2013-TRADE OPENNESS CHANGE 2010-2013

b) correlation between the annual Trade and the five-year GDP growth:

Figure 66.A

ALL COUNTRIES: TRADE 1980-GDP growth 1980-1984

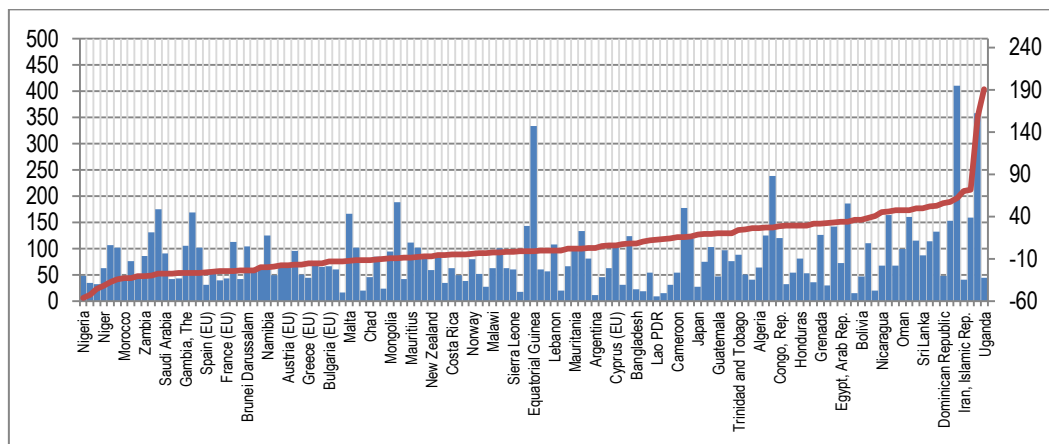


Figure 67.A

ALL COUNTRIES: TRADE 1990-GDP growth 1990-1994

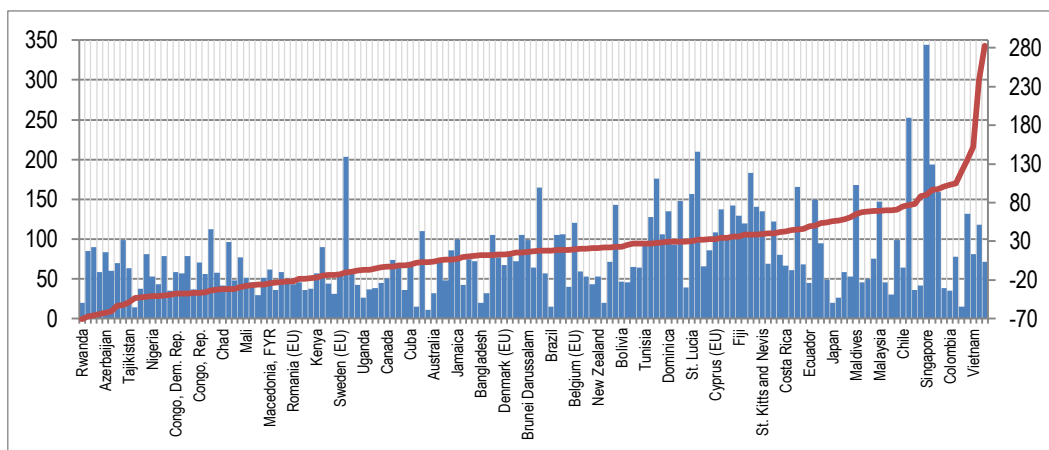


Figure 68.A

ALL COUNTRIES: TRADE 2000-GDP growth 2000-2004

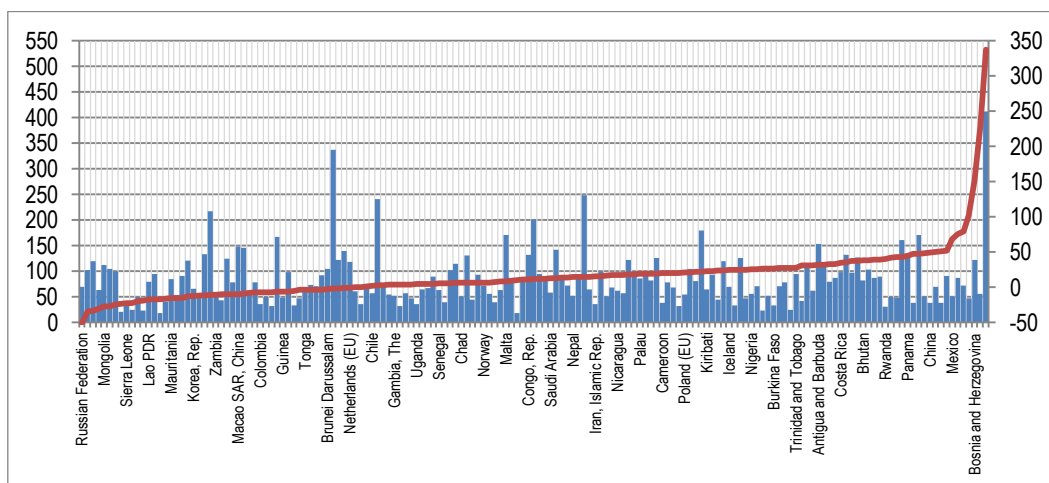
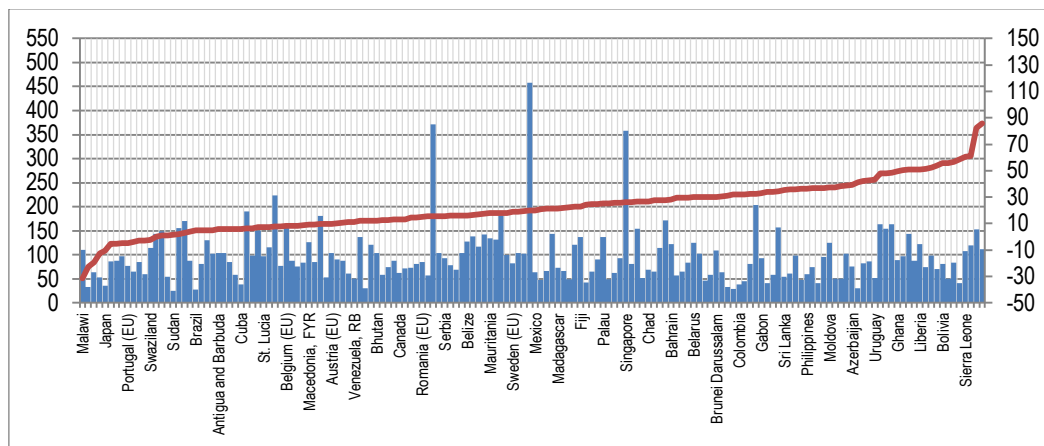


Figure 69.A

ALL COUNTRIES: TRADE 2013-GDP growth 2010-2013



c) correlation between the five-year GDP growth and the five-year Trade Openness Change:

Figure 70.A

ALL COUNTRIES: GDP growth 1980-1984-TRADE OPENNESS CHANGE 1980-1984

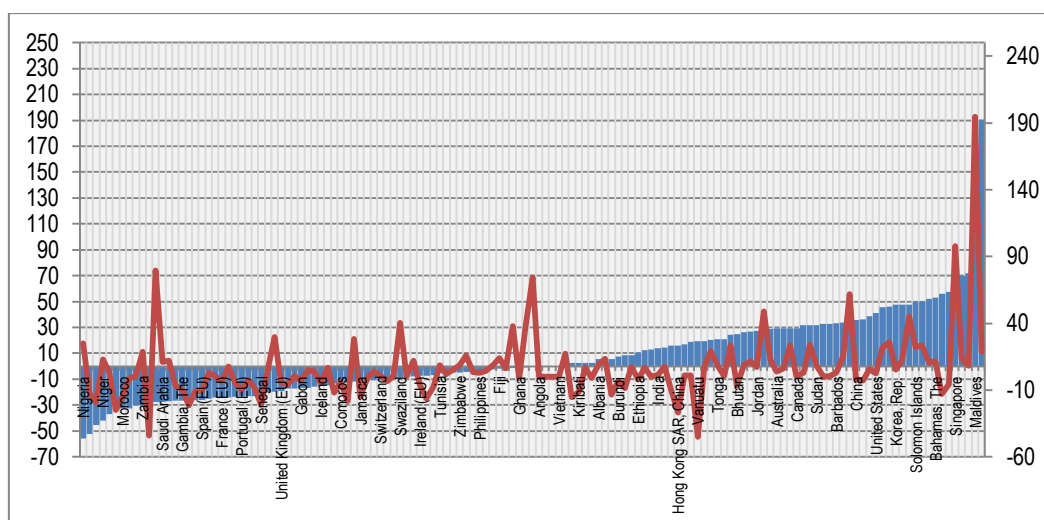


Figure 71.A

ALL COUNTRIES: GDP growth 1990-1994-TRADE OPENNESS CHANGE 1990-1994

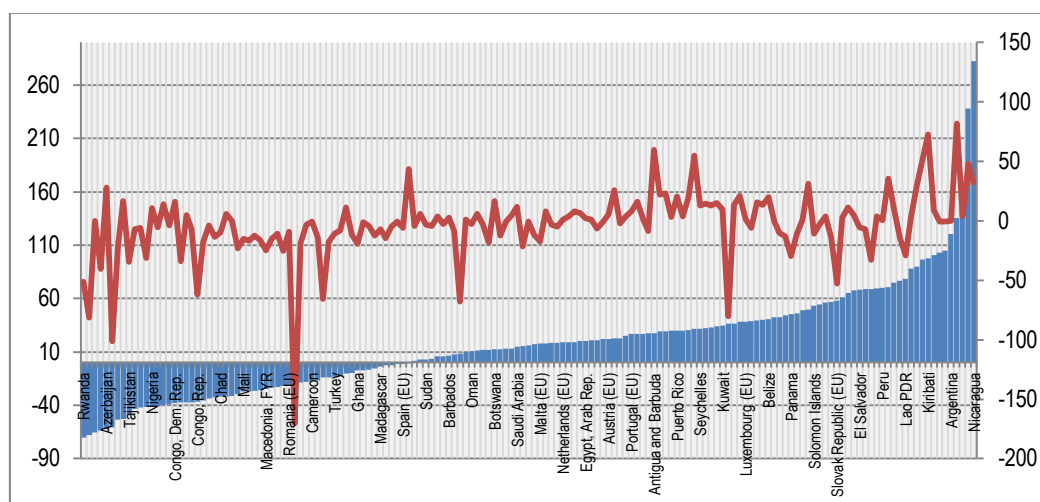


Figure 72.A

ALL COUNTRIES: GDP growth 2000-2004-TRADE OPENNESS CHANGE 2000-2004

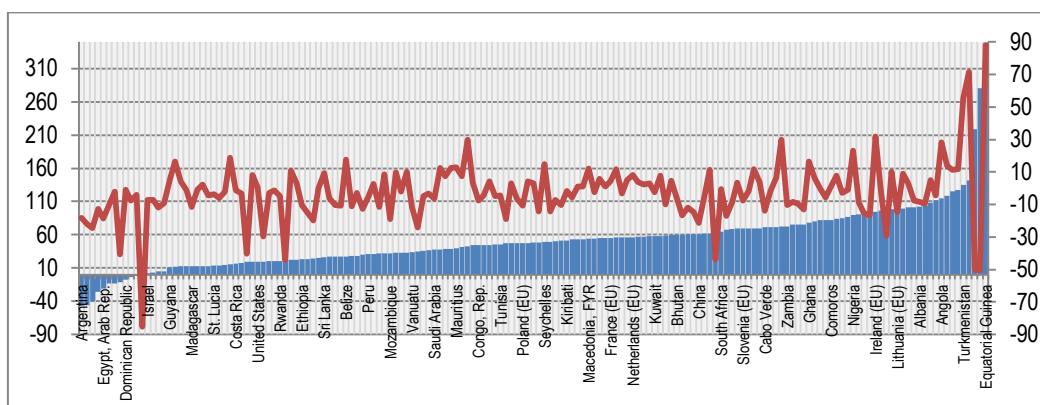
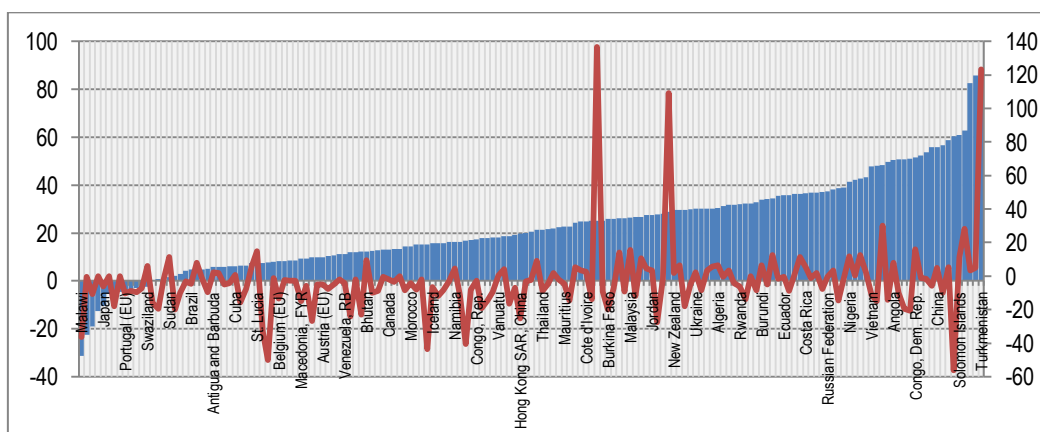


Figure 73.A

ALL COUNTRIES: GDP growth 2010-2013-TRADE OPENNESS CHANGE 2010-2013



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