

## Chapter 2

# Export Diversification, International Trade, and Economic Growth: A Survey of the Literature

*As it is by treaty, by barter, and by purchase, that we obtain from one another the greater part of those mutual good offices which we stand in need of, so it is this same trucking disposition which originally gives occasion to the division of labour.*

(Adam Smith, *The Wealth of Nations*, 1776).

*Without continual growth and progress, such words as improvement, achievement, and success have no meaning.*

(Benjamin Franklin, 1706–1790)

Since the very beginning of the 1990s, Colombian policy-makers introduced a new approach towards the national economic development: As stated by Ocampo and Villar (1992), the so-called “Modernization and Internationalization Program” was officially launched, encouraging national industries to face competition in the international markets. Just in the same direction of other developing nations, this initiative has been vigorously defended ever since, based on an expected positive correlation between economic growth and an increased openness of the country to foreign trade.

At first, the current chapter discusses in an introductory fashion the relationship between trade and economic growth, from the international trade theory and the growth theory perspectives. In Sect. 2.1, a survey of the academic literature and a number of relevant empirical studies is conducted. Section 2.2 focuses on the paramount theoretical issue considered within the whole dissertation, namely, how a process of export diversification may contribute to economic growth in a developing country like Colombia. The main theoretical and empirical approaches dealing with export diversification are analyzed here. Finally, conclusions are drawn, related to the possible impact that both international trade and export diversification could exert upon Colombia’s economic growth.

## 2.1 The Static and Dynamic Gains from Trade

### 2.1.1 *Trade and Economic Growth, from the Perspective of the International Trade Theory and the Growth Theory*

The relation between trade and economic growth has been thoroughly and extensively analyzed. As pointed out by Van den Berg and Lewer (2007), since Adam Smith's explanation of the concept of absolute advantage in the late eighteenth century, over the past 200 years the economic literature has built strong arguments to justify free trade policies. In the first place, the current section analyzes the relationship between trade and economic growth, at the light of the international trade theory.

Smith stated that increasing specialization and the division of labor, coupled with international exchange, would contribute to raise welfare and growth of a nation. It can be deduced that Smith saw international trade as a welfare-enhancing mechanism: the division of labor required people exchanging goods and services. Higher levels of trade would imply more specialization – division of labor- and by these means, economic growth would be enhanced. Specialization is considered by Smith both as a source of efficiency gains and continued technological progress, since it implies the development of new tools and mechanisms for undertaking the specialized tasks. When specialization is promoted, new gains from exchange could be expected, as countries exploit the gains from that specialization (Van den Berg and Lewer 2007). More specialization, induced by free trade, would reinforce the economy's growth path.

For Smith, as suggested by Van den Berg and Lewer (2007):

International trade has a very positive effect on economic growth. A sudden shift in trade policy that opens up new trade provides an immediate gain in real per capita income, which, in turn, accelerates technological progress and increases the rate of economic growth permanently. (p. 76)

Subsequently, it can be affirmed that the Smithian perspective associated trade both to gains in per capita output and increases in the rate of economic growth. An increase in productivity, derived from the lifting of restrictions on foreign trade, would generate a greater output for the given level of capital (Barkai 1969).

David Ricardo's two countries-two goods-one factor of production example proposes gains from trade and specialization for the countries involved, even when one of the countries is more efficient in the production of both goods. The Ricardian model explains trade as a sort of "win-win situation", where the two countries engaged are benefited, despite of their differences in terms of technology or wages. International trade originates in international differences in the productivity of labor. The pattern of trade, being determined by comparative advantage, increases welfare in both nations by means of improvements in production and consumption efficiency. Specialization turns out to be beneficial for the countries involved. Wages and incomes are also better off, after trade takes place. As stated

by Sen (2005), free trade was proposed by Smith and Ricardo as a route to achieve production efficiency at a global level.

Within the Ricardian model, trade welfare effects are considered from two different perspectives. The first one is associated to the rise in real wages for the workers in the two countries engaged in trade, as compared to their situation in autarky. A situation is depicted where, if both countries specialize in their comparative advantage goods and engage in free trade, then both countries could experience gains from trade (Suranovic 2009).

The second perspective is linked to the aggregate welfare effects of free trade, originated in increased production and consumption efficiency. Specialization and comparative advantage allow countries to achieve higher levels of aggregate utility, implying a rise in their national welfare. Trade allows consumers to reach a higher indifference curve and hence, a higher welfare level, than under autarky.

Producers and consumers are benefitted by free trade, since it increases the ranges of choice in both countries involved. World output can be augmented, if each country specializes in producing the good in which it has comparative advantage (Krugman and Obstfeld 2006).

Until this point, trade has been considered as a clearly beneficial process for all the parties involved. This is why the Specific Factors Model introduces an innovative idea: there are factors specific to particular industries, allowing to understand how trade affects income distribution. Feenstra and Taylor (2008) point out how the change in relative prices, due to the opening of trade, generates winners and losers. Some factors of production gain in real terms while other factors of production lose.

The standard Heckscher-Ohlin model proposes that trade enhances welfare for the nations engaged in trade, considering that countries realize higher levels of aggregated utility as compared to autarky. Countries resort to trade because of differences in terms of the availability of their factors of production. Aggregate welfare gains from free trade are classified into two distinct effects; namely, production efficiency gains and consumption efficiency gains (Suranovic 2009). But it is also clear that the shift from autarky to free trade entails some redistributive effects: the country's relatively abundant factor gains from trade, while the country's relatively scarce factor loses from it (Suranovic 2009). This is a noticeable difference with respect to former approaches: it is now shown that the benefits from trade will not necessarily be received by all individuals.

The increase in aggregate welfare leads to a situation where the gains will surpass the losses, but this does not imply that every single individual will gain from trade. Hence, the approach is oriented towards the gains derived from the country's abundant factor and the losses associated to the scarce factor, after it opens to trade. Krugman and Obstfeld (2006) highlight how in the short run, factors that are specific to industries that must compete with imports lose from trade. In the long run, a country's scarce factors lose from trade. As a consequence of that, a clear effect on income distribution can be expected. But in the end, the gains clearly outweigh the losses, and "overall" gains from trade should be expected.

Later on, an important shift in the international trade theory takes place. From models based on comparative advantage in terms of differences in endowment of

production factors, and sector-specific input requirements under perfect competition, a new theory explaining intra-industry trade -accompanied by product differentiation under monopolistic competition- is proposed (Tomiura 2006).

Based on a general equilibrium model with one single factor of production (labor) and economies of scale internal to the firm – imperfect competition, assuming  $n$  different goods and consumers' taste for variety- the so-called *New Trade Theory* shows trade as beneficial, since it increases market size (Krugman and Obstfeld 2006). Gains from trade could be expected, even when production takes place in imperfectly competitive industries with increasing returns to scale. As a result of specialization, an opportunity for mutual gain arises, even if countries are similar in terms of economic development or capital-labor ratios. A larger market leads to both lower average prices and the availability of a greater variety of goods. Welfare would be, therefore, increased: consumers get now bigger consumption possibilities.

Krugman and Obstfeld (2006) also state that:

In these circumstances the income distribution effects of trade will be small and there will be substantial extra gains from intra-industry trade. The result may be that despite the effects of trade in income distribution, everyone gains from trade. (p. 129)

Consequently, it is proposed that the resulting gains would be larger than the ones associated to comparative advantage. Gains from trade will arise “even between countries with identical tastes, technology, and factor endowments” (Krugman 1979b, p. 469). In brief, opening up to trade derives in a larger number of goods, the exploitation of economies of scale, and lower unit costs.

Further support to the notion of additional gains from trade has also been lent by other authors. Leibenstein (1966) proposes that the level of efficiency in the economy is influenced by the level of competition. This would imply that, holding all other factors equal, international trade reinforces competition and thus, a country's managerial and productive effort. It has also been proposed that the traditional trade models do not account for the costs of “rent seeking behavior by special interests seeking to influence trade policy” (Van den Berg and Lewer 2007, p. 19).

The most recent shift in the international trade theory is based on an extension of Krugman's model, which has been stimulated by the positive increase in data availability at the firm level (Neary 2009). The so-called *New New Trade Theory*, led by Melitz and Antras, differs in the sense that the unit of analysis is now transferred from the industry, to the firm (Tomiura 2006). Melitz (2003) brings forward a new gain from trade not accounted for by the trade theory so far. Within the framework of a dynamic industry model with heterogeneous firms, he shows how opening up to trade induces “only the more productive firms to enter the export market (while some less productive firms continue to produce only for the domestic market), simultaneously forcing the least productive to exit” (p. 1695). The aggregate industry productivity growth, proceeding from the reallocations, would contribute to a welfare gain. Hence, the exit of the least productive firms and the additional sales of the more productive ones, lead to a reallocation of market shares

towards the more productive firms, enhancing aggregate productivity (Melitz 2003, p. 1695). The existence of export market entry costs strongly influences the impact of trade across different types of firms. But despite of those costs, the welfare-enhancing nature of trade is highlighted. What exports costs do is to adjust the distribution of the gains from trade across firms (Melitz 2003). Nevertheless, it is also suggested that this reallocation process also entails some short-run costs. Further lines of research dealing with the possible impact of trade policy on inter-firm reallocations are suggested, for compensating these transitional costs.

As will be explained in a next section, the idea of additional or new sources of gains from trade has both advocates and opponents. At the first side of the debate, one interesting perspective concerning the welfare effects from trade is the one defended by Van den Berg and Lewer (2007). For them, the gains from trade cannot be merely linked to the static ones derived from comparative advantage. They suggest that the largest benefits are derived from long-term dynamic gains proceeding from the positive effect of trade on economic growth, through different channels such as technology transfer. They conclude by affirming that “combining trade theory and growth theory potentially leads to a strong case for free trade” (p. 253). On the other side of the discussion, authors like (Arkolakis, Costinot, and Rodríguez-Clare 2010) – as will be more clearly explained hereinafter – contest this proposal, affirming that “richer trade models do not entail larger gains from trade” (p. 1). They suggest that the new sources of gains from trade may change their composition, but not their total size.

At this point, a number of benefits associated to trade have been mentioned, all of them proposed by the international trade theory. The welfare-enhancing nature of trade has been stated by the different schools of thought, taking into account aspects such as production and consumption efficiency gains, productivity increases, greater output, and the rise of real wages. Besides that, the most recent contributions emphasize how trade increases market size, allowing for a larger variety of goods and lower prices. Finally, it has been proposed that trade could lead to an increased aggregate productivity growth at the industry level.

But the cause for free trade is not unanimously accepted. The debate has mainly developed along the arguments of the so-called “trade optimists” – supporters of free trade, and outward-looking development- and of the “trade pessimists” – advocates of greater protection, and inward-looking development (Todaro and Smith 2006). However, before addressing this discussion, it is important to analyze the possible linkages between trade and economic growth.

Establishing the linkage between trade and economic growth is not an easy task: this is certainly one of the most interesting and rich debates present in the economic literature. In addition to the different trade theories and models, a wide number of empirical and statistical studies are frequently cited, when supporting or countering the case for free trade. On the one hand, since the times of Adam Smith in the late eighteenth century, different schools of thought have advocated for free trade, placing a special emphasis on the gains derived from it. On the other hand, counter-arguments in the economic literature, and possible shortcomings of the empirical estimations, are frequently exposed by the sceptics of the free trade cause, as will be analyzed later.

As Van den Berg and Lewer (2007) observe, one important clarification in advance is that causality between trade and growth seems to have a bi-directional nature: at one side of the relationship, trade seems to enhance growth. On the other side, it is apparent that higher levels of development and better technologies lead to a larger degree of trade among economies. Another interesting aspect that should be considered within the debate is the one concerning the complexity of this relation, taking into account that many other variables- such as economic, social, and political factors- seem to exert an influence both on trade and growth.

Furthermore, it is important to recall the distinction between the static and dynamic gains from trade. The former result from the reallocation of resources from one sector to another -as increased specialization, based on comparative advantage, takes place. Dynamic gains from trade constantly shift outwards the production possibility frontier, provided that trade is associated with more investment and faster productivity growth based on scale economies, learning by doing and the acquisition of new knowledge from abroad, particularly through foreign direct investment (Thirlwall 2000, p. 6). And as stated before, different authors have suggested how understanding the possible linkage between exports and growth is possible by not only analyzing the international trade theory, but also the growth theory. This is why the focus of the analysis is now shifted to the approach offered by the principal schools of thought and theories related to the field of economic growth.

Exports have been considered as growth-enhancing within the traditional development literature, based on the suggested positive productivity spillovers from the tradable to the non-tradable sector (Madsen 2009; Edwards 1993). Its role of encouraging more efficient investment projects has also been proposed.

Due to Levine and Renelt (1992), the theoretical linkages between trade and growth have been formalized by prominent scholars such as Rivera-Batiz, Romer, Grossman, and Helpman. An interesting argument brought by the former two authors is that even though theoretical discussions frequently focus on the relationship between international trade and growth, empirical studies have traditionally only examined the relationship between exports and growth.

Coming back again to Adam Smith, this time from the economic growth perspective, it can be highlighted that this process is considered by him as welfare-enhancing, driven both by investment in capital and innovation. Afterwards, David Ricardo's theory of comparative advantage showed that under perfect competition and the full employment of resources, countries engaged in trade can obtain gains by specializing in the production of those goods with the lowest opportunity cost, and trading the surplus of production over domestic demand (Thirlwall 2000). These would essentially be static gains derived from the reallocation of resources from one sector to another, as increased specialization takes place (Thirlwall 2000). The classical school of thought has also considered technology as the mechanism that would help to solve the problem of diminishing returns, raising the production function. Following this line of reasoning, it is stated that an increased international trade would lead to an improved efficiency, aspect that would in turn spur technological progress.

Later on, within the Harrod-Domar (HD) model, an economy's growth rate is explained in terms of capital's level of saving and productivity. Economic growth is, therefore, attributed exclusively to capital accumulation. While it must be acknowledged that trade does not play an obvious role within the Harrod-Domar perspective, it does indeed enter in a subtle way, as stated by Van den Berg and Lewer (2007): it can influence how savings are invested. Some studies have found, for instance, that domestic prices in developing countries show to be distorted by trade restrictions, leading to a misallocation of resources. In contrary, in an open economy prices are supposed to be more accurate and to truly reflect opportunity costs, improving the allocation of resources.

Based on the Solow model, Baldwin (1992) analyzes the gains from trade: the economy's efficiency is augmented, by shifting the production function and hence, generating economic growth while the economy moves up to a higher steady state equilibrium level of capital and output (Van den Berg and Lewer 2007, p. 95). If the Solow model is extended (by including a variable for technology for given rates of savings and depreciation, as well as population growth), continuous economic growth can now be explained. A constant rate of technological progress continually raises the production function and thus, constantly increases the economy's steady state capital-labor ratio and per capita real output at the same rate (Van den Berg and Lewer 2007, p. 92). Hence, trade would encourage permanent growth as long as it is intertwined with technological progress. Taking into account the characteristics of technological progress, an open economy is likely to enjoy a faster rate of technological advance than a closed economy. The role of international trade as a promoter of technological transfer is, therefore, crucial.

The effect of trade on economic growth has also been extensively analyzed from the point of view of the foreign exchange generation. It has been affirmed that an increase of exports could be advantageous in terms of alleviating the foreign exchange constraint, ultimately exerting a positive effect on growth. As explained by Edwards (1993, p. 1385), an increase in imports of intermediate products permits to overcome bottlenecks, exerting an influence on output growth. Esfahani (1991, cited in Edwards 1993) points out that export-oriented policies would positively affect growth by supplying foreign exchange, alleviating import shortages, and supporting output expansion.

Moreover, endogenous growth theories place special emphasis on trade as the principal channel that allows knowledge to be transmitted internationally (Grossman and Helpman 1991). As stated by Madsen (2009, p. 398), the early endogenous growth models have been developed within the first generation endogenous growth framework, in which the level of research and development (R&D) activity and growth vary proportionally.

At this point, it is interesting to mention how the former argument has been quite recently moved from the export to the import perspective. As stated by Madsen (2009 p. 399), the recent endogenous growth literature focuses on the way that imports of knowledge enhance economic growth (Romer 1990a, 1992; Grossman and Helpman 1991; Rivera-Batiz and Romer 1991; Baldwin and Forslid 2000). By the same token, it has been suggested that imports give domestic producers access

to a wider variety of capital goods, thus enlarging the efficiency of production (Barro and Sala-i-Martin 1995).

Madsen (2009), citing Grossman and Helpman (1991), argues that the quality of intermediate goods positively influences the efficiency of production. The new technology incorporated in foreign intermediate goods makes imported products more productive, increasing labor productivity and total factor productivity (TFP). An interesting remark of Madsen is that trade will enhance growth only to the extent that a country trades with research-intensive economies. Developing economies trading with advanced economies would have a potential for catching up, considering that the costs of imitation are lower than the costs of innovation (Barro and Sala-i-Martin, 1995, cited in Madsen 2009). Studies conducted would provide support to the hypothesis that knowledge spillovers through imports exert a positive influence on growth. Madsen further states that “R&D intensity has permanent growth effects, in consistency with the predictions of Schumpeterian growth theories” (p. 411).

In his work, Edwards (1993) undertakes a thorough review of the modern literature on trade policy in developing countries: the underlying objective is to analyze if the results of empirical studies do support the policy view that the performance of open economies has surpassed the one of restrictive economies. Two types of investigations are examined, namely, multi-country studies of protectionist practices and liberalization episodes -such as the influential ones elaborated by Balassa (1971), Krueger (1978) and Bhagwati (1978) and Michaely et al. (1991)- and cross-country regression analyses on the relationship between exports growth and economic performance- e.g. Balassa (1985), Ram (1985, 1987), Gray and Singer (1988) and Esfahani (1991).

After asserting that many of the cross-country regressions “have been plagued by empirical and conceptual shortcomings” (p. 1389), and that the multi-country studies have not been successful at providing a fully convincing theoretical framework, Edwards (1993) proposes that the theory of endogenous growth provides a stringent answer to the question of how trade policy might influence economic growth. Different to the traditional neoclassical models where in long-run equilibrium the steady-state rate of growth is totally independent of national policies, within these new models it would be possible to establish a long-run equilibrium relationship between openness and economic growth (Edwards 1993). For instance, in Romer’s model of endogenous growth, an increased amount of resources assigned to research and development (R&D) would imply a larger availability of intermediate inputs, as well as a higher marginal product of capital. Open economies would have the opportunity to specialize in the production of some intermediate inputs, according to their comparative advantage (Edwards 1993). It is then suggested that openness would make it possible for a larger number of inputs to be available at lower cost, which in turn would result in a higher equilibrium growth. Openness would allow countries to overcome bottlenecks and to grow faster (Quah and Rauch 1990, cited in Edwards 1993).

The role of trade in the generation and diffusion of technological progress is also frequently analyzed. It has been proposed that more open regimes allow small



economies to absorb technology originated in the advanced nations at a quicker pace, permitting them to attain higher rates of growth. Openness, under certain conditions, would lead to faster growth even in the long run (Grossman and Helpman 1991; Edwards 1992, as cited in Edwards 1993). Edwards further states that microeconomic analysis, by means of studying aspects like the use of multiple intermediate inputs, the invention of designs, and the absorption of technological progress, could be helpful to get a better comprehension on the specific linkages between trade policy and growth.

As indicated by Van den Berg and Lewer (2007), not just international trade, but also accompanying activities such as international marketing, market research, product planning, and international travel contribute to the transfer of knowledge and technology. Hence, globalization would allow trade, under certain circumstances, to expand knowledge and ideas and by this means, to enhance economic growth. Logically, these “special circumstances” are related to an even spread of the benefits of innovation. It has also been argued that international trade can hasten the economic growth of small economies by facilitating the movement of technology, frequently embodied in products. Adopting existing technologies, rather than creating new ones, should be an easier process for countries. But this is, in turn, determined by other factors such as a country’s institutions (Lucas 2000).

Based on neoclassical production functions, some scholars propose that exports may contribute to economic growth by means of generating positive externalities on non-trading sectors, through more efficient management styles and better production techniques (Edwards 1993). Besides that, a productivity differential in favor of the exports sector would imply its expansion relative to the non-trading sector, leading to a positive effect on aggregate output. This phenomenon would also encourage the allocation of resources to more efficient investment projects. Feder (1983) divides the economy into an export sector and a non-export sector. The production function of the export sector is specified as:

$$X = g(K, L) \quad (2.1)$$

Where  $X$  is output in the export sector,  $K$  is the capital stock, and  $L$  is the labor force in the export sector. Feder’s proposition is that the export sector generates positive externalities for the rest of the economy (Feder 1983). He also explains the non-export sector production function as:

$$N = f(K, L, X) \quad (2.2)$$

As shown in Feder’s equation, here output in the non-export sector  $N$  is determined by the externalities generated from production  $X$  in the export sector as well as by the capital stock and the labor force (Feder 1983).

Feder also came up with the following regression equation:

$$G_Y = \alpha(I/Y) + \beta G_L + \delta(X/Y)G_X + \theta G_X \quad (2.3)$$

Where the coefficient  $\delta$  represents the growth effect of the export sector's higher relative productivity, while  $\theta$  captures the externalities of export production on the rest of the economy (Feder 1983). Average coefficients for the "trade" variable in a growth equation, from 99 cross-section and 116 time-series regressions using the Feder regression model, reported values of over 0.40, similar to those found by Feder in his own study (Van den Berg and Lewer 2007). These estimates would support the hypothesis of trade's positive effect on economic growth based on the positive externalities generated on the export sector, and transmitted to other parts of the economy, leading to an aggregated higher output. Based on the argument of substantial differences in marginal factor productivities between the export and non-export sectors, Feder suggests that economies which shift resources into exports will gain more than inward-oriented economies Feder (1983).

One interesting term that can also be found when the relationship between trade and growth is analyzed, is the one of "learning-by-trading". Besides Feder's arguments, it has been suggested that trade can potentially reduce the cost of capital goods, stimulating investment in an economy and hence, creating potential investment externalities (Lee 1995; Mazumdar 1996, as cited in Van den Berg and Lewer 2007). This gain of learning-by-trading is also supposed to be realized when an economy faces international competition.

In a seminal contribution, Frankel and Romer (1999) analyze the impact of international trade on income. They report that trade seems to raise income by stimulating the physical and human capital accumulation, and by increasing output (p. 394). The authors further remark that their results "bolster the case for the importance of trade and trade-promoting policies" (p. 395). As stated by Van den Berg and Lewer (2007), their results also suggest that international trade has a larger impact on productivity.

Furthermore, international trade seems to encourage the process of technology diffusion from the North to the South. Other leader-follower models propose that in the long run, countries will tend to grow at similar rates, provided that technology diffusion takes place. Lucas (2000) proposes, for instance, that if the liberalization of international trade or an improved capability of technology absorption in developing countries is accomplished, then a faster diffusion of technology would give the latter the opportunity to imitate rather than create new technologies.

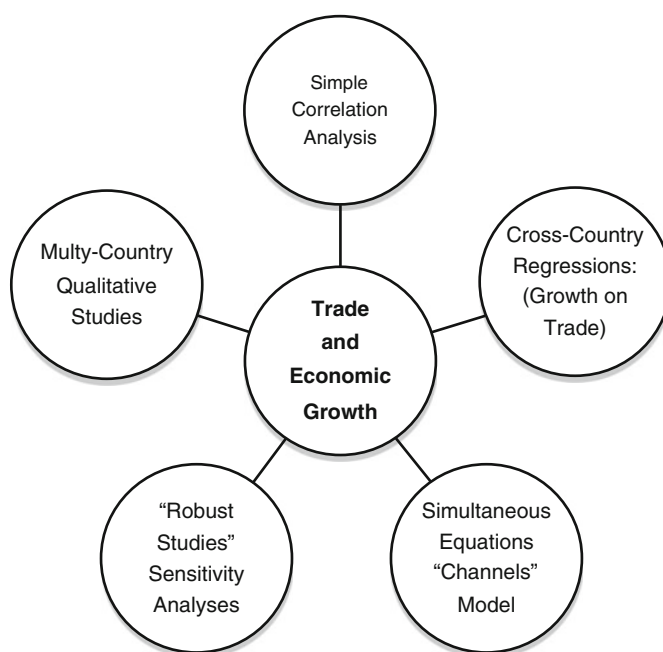
Within the endogenous growth theory, policies which embrace openness, competition, change and innovation are thought to encourage economic growth. Structural diversification may be considered by the interplay of innovation in developed countries and imitation in developing ones.

Hitherto, the possible linkage between trade and economic growth has been analyzed, taking into account a number of scholarly contributions in the fields of international trade and economic growth. In the next section the same relationship is evaluated, now from an empirical standpoint.

### 2.1.2 *The Empirical Assessment*

A vast number of empirical studies support the hypothesis that, all other things equal, countries open to international trade benefit their residents with higher incomes and higher rates of economic growth. But even though some of these studies have been confronted because of their apparent lack of stringent theoretical background, methodological shortcomings or omitted variable problems, the evidence is even clearer in its rejection of the alternative hypothesis that there could be a negative correlation between trade and economic growth (Van den Berg and Lewer 2007). As depicted in Fig. 2.1, different econometric and statistical methods have been applied by the authors of these studies, trying to capture the nexus between trade and economic growth. Likewise, Table A.1 in the appendix includes a classification of the same studies, based on the methodologies and data utilized.

As frequently reported in the scientific literature, early empirical studies testing the linkage between trade and growth were mostly based on correlation analysis, being the ones of Michaely (1977) and Balassa (1978b) two of the most known, where in both cases a positive relationship was founded. These studies testing the hypothesis that trade does exert an influence on growth were mostly based on linear econometric models derived from the neoclassical production function, like:



**Fig. 2.1** Radial diagram – empirical studies dealing with the trade and growth linkage (Source: own illustration, based on Levine and Renelt [1992])

$$G_{GDP} = a_0 + a_1G_k + a_2G_L + a_3TRADE + a_4Z + u \quad (2.4)$$

Being  $G_{GDP}$ ,  $G_k$ , and  $G_L$  the growth rates of real gross domestic product, capital stock, and labor force, respectively,  $TRADE$  the growth of trade,  $Z$  a set of other variables that are considered to explain economic growth, and  $u$  the standard error term (Van den Berg and Lewer 2007, p. 35). It is further supposed that output follows the Cobb-Douglas production function,

$$Y = AK^\alpha L^{1-\alpha}, \text{ in which } 0 < \alpha < 1. \quad (2.5)$$

Authors such as Feder (1983), Rivera-Batiz and Romer (1991), MacDonald (1994), Edwards (1998), Clerides et al. (1998), Bernard and Bradford Jensen (1999) and others have based their studies on this type of regression models. While these early empirical studies did encourage the discussion and were indeed influential upon policy-makers, many of them have been criticized on the grounds of different methodological limitations. It has been commonly argued that problems such as omitted variable bias, simultaneity or measurement errors were not properly considered. And these methodological limitations have precisely been one of the most important foundations for the arguments of the so-called “trade sceptical” strand of the literature.

In their work, Levine and Renelt (1992) conduct an extensive analysis of empirical studies concerning the relationship between long-run growth rates and a variety of economic policy, political, and institutional indicators. After clarifying that very few economic variables showed to be robustly correlated with cross-country growth rates or the ratio of investment expenditures to GDP, they report a positive and robust correlation between average growth rates and the average share of investment in GDP, as well as between the share of investment in GDP and the average share of trade in GDP. In their sample of 119 countries over the 1960–1989 period, they found that those economies that grew faster than average tended to have a higher share of exports in GDP, as well as a higher share of investment in GDP.

It is, though, important to mention that these were not the only common characteristics found: larger primary- and secondary-school enrolment rates, a lower black-market exchange-rate premium, and lower inflation rates were also evident. Consequently, Levine and Renelt’s study (1992) highlights two important arguments: first of all, that the relationship between trade and economic growth is a complex one, and that many other factors – besides exports or trade policy- should be also taken into account, not merely exports. Secondly, that the channel through which trade seems to enhance economic growth is related to investments. In other words, that an increased level of exports alone or a more outward oriented policy per se do not cause economic growth.

Due to Madsen (2009), knowledge spillovers through the channel of imports exert a positive influence on growth. He investigates if openness exerts an influence on total factor productivity (TFP) growth and per capita growth. Utilizing an annual

data set for a panel of 16 Organisation for Economic Cooperation and Development (OECD) countries over the 1870–2006 period, he examines the productivity growth and productivity level effects of trade barriers and import penetration. An important contribution of his study is that the proposition of openness influencing growth -by means of enabling countries to import knowledge produced in other countries- is tested. The latter argument has been suggested by the endogenous growth theory (Romer 1990a, 1992; Grossman and Helpman 1991; Rivera-Batiz and Romer 1991; Aghion and Howitt 1998; Baldwin and Forslid 2000). The empirical studies of Madsen provide evidence regarding a positive effect of knowledge spillovers for growth in all periods considered, which were accomplished through the channel of imports. Moreover, his empirical evidence provides support to the hypothesis that R&D intensity has permanent growth effects, “in consistency with the predictions of Schumpeterian growth theories” (p. 411).

The so called “learning-by-exporting hypothesis” has been also subject of analysis within the literature, when analyzing the relationship between trade and growth. The assumption has been carefully tested by Clerides et al. (1998), using data on individual exporting firms in Colombia, Mexico, and Morocco. This study reported a fall in the costs for exporting industries, which eventually took place through a self-selection process, where high-cost firms stopped exporting and low-cost firms increased their exports. This argument is exposed as evidence showing that international trade could contribute in a positive manner to economic growth, by spurring a process where inefficient firms are forced out while the efficient ones are rewarded. This type of micro-level studies is mainly oriented toward the analysis of the differences in productivity and economic behavior between exporting and non-exporting firms, hoping to resolve the issue of trade-growth causality issue in a more convincing manner (Wälde and Wood 2004).

Wacziarg (2001) considers six links between trade policy and economic growth, with the intention of identifying dynamic gains -or possible losses- from trade. The underlying assumption is that together, “these six channels adequately capture most of the effect of trade policy on growth” (p. 395). He further groups these channels in three broad categories, namely: government policy (macroeconomic policies, size of government), allocation and distribution (price distortion, factor accumulation), and technological transmissions (technology transmissions, foreign direct investment). In summary, Wacziarg provides evidence supporting the argument that there is a positive total effect of trade policy on growth, being investment apparently the most important channel, and government consumption the only negative channel. Technology transmission and macroeconomic policy quality are also suggested as significant channels of the effect of trade policy on growth.

The study carried by Wacziarg and Welch (2003) reports how countries that liberalized their trade regimes in the period 1950–1998 benefitted, on average, from an increase in their annual rate of growth of approximately 1.5% points, compared to pre-liberalization times. A link between the liberalization episodes and a post-liberalization increase in investment is also reported, suggesting a possible effect of liberalization on physical capital accumulation. Countries that showed negative or no effects of liberalization of growth were those were other constraining factors

were present, such as political instability, contractionary macroeconomic policies, or the protection of domestic sectors from necessary adjustments.

Despite of the different methodologies approached, the possible shortcomings associated to them and the different positions present in the literature, what does indeed appear to be clear is that trade's effect on economic growth is linked with many other influences on growth. In other words, that policy recommendations only addressing trade policies as a possible mechanism for enhancing growth should be very carefully considered, as the experience of many developing nations that have resorted to more "open" regimes has shown. Trade seems to positively influence growth, but if accompanied with other policies and mechanisms which are also of crucial importance for spurring economic development.

Until this point, the empirical studies surveyed provide evidence in favor of a positive relationship between trade and growth, which would take place through different channels, such as an increased level of investment or technology transmission. Moreover, different benefits associated to trade have been highlighted, such as the attainment of higher incomes and higher rates of growth, the increase of investments, and larger knowledge spillovers. But not all of the studies unanimously support this argument: as will be explained next, many of them have been criticized on the grounds of supposed methodological shortcomings, as well as the possible omission of variables that could eventually be more relevant for growth than trade by itself.

Wälde and Wood (2004) conduct a profound survey of the empirical and theoretical literature, in order to find out if it "unambiguously supports, from an efficiency perspective, the case for liberalization" (p. 276). They categorize the empirical studies surveyed according to the methodology used: cross-country OLS growth regressions, simultaneous equations, instrumental variables, and panel data models, Granger causality tests, and micro-studies. As far as OLS growth regressions are concerned, they suggest that these studies suffer from lack of robustness, and that the issue of causality between exports and growth is not straightforward. Regarding the other three methodologies, robustness concerns, as well as the lack of inclusion of policy variables as explanatory variables, are mentioned as important elements that seriously undermine the explanatory power of these studies.

Their most important conclusion remark is that the literature is "surprisingly quiet on the link between trade policy instruments and economic growth" (Wälde and Wood 2004, p. 289). Causality is also found to be a major issue to be defined, since it is not clear whether there is more growth because of more trade, or more trade because of more growth (causality may run in either direction). Taking into account the "lack of convincing evidence that trade or export policies can be used to generate higher growth rates" (Wälde and Wood 2004, p. 277); the authors affirm that no trade policy recommendations can be formulated.

One of the most important lines of the debate associated to the relationship between trade and economic growth is, for sure, the one related with causality, as defined by Edwards (1993):

Do countries with rapidly growing exports have a higher rate of aggregate growth, or is it that faster growing countries have a more dynamic export sector? Most studies have tended to ignore this issue, assuming that it is exports that drive aggregate GDP. There are, however, some nontrivial reasons why more rapid GDP growth could, in principle, result in faster growth of exports. Just dismissing the issue as being irrelevant, as a number of authors have done, does not seem to be fully justified. (p. 1388)

The first position defends the argument that increased trade enhances growth and industrialization. Other scholars believe that it is economic growth that permits the increase of trade. This is a very relevant question for developing countries since, as stated by Wälde and Wood, it goes in the direction of “whether the major sources of growth and industrialization are external -i.e. learning through trade- or internal -i.e., through human and physical capital investment and increased research and development-” (p. 276). Proponents of the first site of the debate suggest that East Asia’s impressive exports performance since the 1960s can be identified as the source of its industrialization and convergence. The contrary position refutes this argument, citing that some interventionist mechanisms of these nations (e.g. industrial, technology and human development policies) are the factors that truly explain their development path (Wälde and Wood 2004, p. 276).

The latter claim is quite near to the so-called “infant industry” argument, frequently defended by developing countries governments, who stress the necessity of temporarily protecting local firms until they move up their learning curves, realize production efficiency improvements, and finally “grow up” to compete in international markets. The answer to this question is of paramount importance for policy makers in developing nations: should these countries open themselves to trade and start this “engine of growth”? Or should they better focus on measures related to physical capital investment and human resource development?

Another line of the debate deals with the issue of export-led growth as a possible developmental strategy. Sachs (1987) has placed in doubt the idea that trade liberalization is a necessary component of a successful outward-oriented strategy. For the particular case of the East Asian nations, he underscores how these countries implemented different policies and mechanisms -such as the promotion of exports, macroeconomic stability or avoiding a complete liberalization of imports- that strongly contributed to their development path. Interventionist governmental policies were decisive, and not just merely the opening up to foreign trade. He has argued that the success of the East Asian countries was to a large extent due to an active role of government in promoting exports in an environment where imports had not been fully liberalized, and where macroeconomic (and especially fiscal) equilibrium was fostered.

Rodrik, Subramanian, and Trebbi (2004) also suggest that trade actually becomes an insignificant variable in a growth equation that includes explicit variables representing a number of institutional characteristics. Factors such as the rule of law, property rights, a consistent legal system, and many other institutions seem to be more relevant for growth than export-oriented policies. Within the same line of argumentation, Rigobon and Rodrik (2004) use an econometric method to offset the simultaneous effects of some variables, called identification through

heteroskedasticity. As cited by Van den Berg and Lewer (2007), their main finding is that when other institutional variables are present, the openness variable has a negative impact upon income levels. Lee et al. (2004) resort to the same method, finding that trade's influence on growth although still positive, is well below earlier estimates.

The position defended by Rodríguez and Rodrik (1999) and Rodrik, Subramanian, and Trebbi (2004) is, therefore, that the effects of trade policy on growth appear to be intertwined with the effects of other policies that usually are implemented simultaneously. Thus, it would be very difficult to determine which are exactly the effects of trade policy upon economic growth. It is also suggested that the empirical methods cannot exactly distinguish between trade's effects on economic growth and the effects of other variables and policies on growth (Van den Berg and Lewer 2007).

Rodríguez and Rodrik (1999) question the judgement based on empirical methods that find a positive relationship between openness and growth, such as the ones conducted by Dollar (1992), Ben-David (1993), Sachs et al. (1995), and Edwards (1998). Their basic argument is that this correlation is not robust to various measures of openness and important control variables. Additionally, Rodríguez and Rodrik express their concern that empirical analyses of trade and growth have been biased by omitting institutional variables correlated with international trade. One of the most important arguments brought by them is that many of the missing institutional variables are correlated with trade. As a result of that, omitted variable bias would cause in many studies the estimated coefficient of the "trade" variable to overstate trade's influence on growth. The experience of the East Asian "Tigers" would show how other factors such as macroeconomic stability, the rule of law, education, and the absence of social conflict have positively influenced their economic growth. Taking that into account, if just the "trade" variable is considered and other crucial variables are omitted, an improvement in total factor productivity would be incorrectly explained by trade, according to the standard empirical methods.

International trade policy, according to this position, is extremely intertwined with other economic policies, making it impossible to differentiate between the trade's effect on growth and the growth effects of those other policies. Rodríguez and Rodrik's proposal is therefore, that economic growth eventually depends more on "those other policies" than trade policy by itself. It is, though, important to clarify that Rodríguez and Rodrik's position does not support trade protection. The authors rather warn about "the tendency to greatly overstate the systematic evidence in favor of trade openness", that "has had a substantial influence on policy around the world", leading to high expectations and "crowding out" other institutional reforms with "potentially greater payoffs" Rodríguez and Rodrik, 1999, p. 62.

Trade liberalization, on "standard comparative advantage grounds", is not put into question. What Rodríguez and Rodrik effectively controvert is that integration to the global economy could substitute a development strategy. The idea behind this argument is not that trade is inimical to growth: the argument is rather that trade, by



itself, should not be considered as the unique source of economic growth. There are many other variables that do exert an influence, when it comes to raising the living standards of a society. In this same line of argumentation, human capital and institutions have increasingly drawn the attention of recent research, aspects considered of critical importance for a successful technology adoption.

Other scholars have proposed that the effect of trade on growth is relative, being also determined by the country's trade partners. Vamvakidis (1998) provides empirical evidence supporting the hypothesis that countries engaging in trade with "open, large, and more developed neighboring economies grow faster than those with closed, smaller, and less developed neighboring economies" (p. 251). Other authors like Schiff and Wang (2003), Keller (2000a, b), Schiff et al. (2002), and Venables (2003) have contributed with additional evidence showing that it would be more beneficial for developing countries to more actively engage in international trade with developed economies, taking into account the possible technology inflows that could be associated.

Several authors have examined whether inflows of foreign technology depend on who the country's trade partners are. Vamvakidis (1998) concluded that developing countries that trade freely with larger, more developed neighbors grow faster, all other things equal, than countries that trade more with other developing countries. Specifically, he notes that countries that joined regional trade blocks consisting only of other developing economies do not, on average, experience any acceleration of economic growth as a result of their regional economic integration. Schiff and Wang (2003) found that Mexico achieved a permanent rise in its total factor productivity after joining Canada and the United States in the North American Free Trade Area. Keller (2000a, b), Schiff et al. (2002), and Venables (2003) provide further evidence that developing countries gain more technology inflows by trading with developed countries than they do through trade with other developing countries.

Grossman and Helpman (1991) and Matsuyama (1992) also refer to other situations where trade could eventually not lead to the desired positive outcome of strengthening the development process: countries sufficiently far behind the technological frontier may, through imports, be driven toward production of traditional goods. This would lead to lower growth rates. In a similar manner, Howitt (2000) affirms that the host country needs a sufficiently high capacity to absorb the technology developed in the technologically more advanced countries.

Another interesting field of controversy is related to the extent of the gains derived from trade. (Arkolakis, Costinot, and Rodríguez-Clare 2010) examine the different reasons advocated by the theory, concerning the benefits of international trade. From a novel perspective, the authors pose the question if "new sources of gains from trade necessarily lead to larger gains from trade" (p. 1). Their most relevant finding is that within the different models analyzed, the total size of the gains is the same. What might actually change, according to the authors, is the composition of these gains. "Richer trade models", as they call them, would not imply additional gains from trade.

This is a position contrary to the one defended by Krugman and Obstfeld (2006), who suggests that when monopolistic competition and economies of scale are

considered, trade will be beneficial since it increases market size. As a result of specialization, an opportunity for mutual gains arises, even if countries are similar in terms of economic development or capital-labor ratios. A larger market leads to both lower average prices and the availability of a greater variety of goods. Welfare is increased: consumers may count now with bigger consumption possibilities. Krugman also states that “the income distribution effects of trade will be small and there will be substantial extra gains from intra-industry trade. The result may be that despite the effects of trade in income distribution, everyone gains from trade” (p. 129). The associated gains would, therefore, be above the ones associated to comparative advantage. Besides the increase in product variety, Melitz (2003, p. 1695), in turn, states that his model “shows how the aggregate industry productivity growth generated by the (inter-firm) reallocations, contributes to a welfare gain”, not addressed by the theory before. The reallocation of market shares toward more productive firms would generate an “aggregate productivity gain and an increase in welfare” (Melitz 2003, p. 1717).

Taylor (1988) bases his critique on a structuralist approach to development macroeconomics. It is interesting to notice that, as well as in the case of Rodriguez and Rodrik, he defends the idea that it is pointless to think about openness in general terms: each country’s (and the world’s) institutional and historical context should be considered, in order to take a stance. Based on the analysis of average trade proportions of GDP for a sample of 50 developing countries in the period 1980–1982 (with growth rates over the period 1964–1982), he suggests that “in contrast to mainstream assertions, export-led growth does not stand out”, and that “the ratio of industrial to primary exports is not correlated with growth rates, nor are overall export ratios higher in the high performance economies” (Taylor 1988, p. 8). He argues further that trade “does not seem to be closely related to the way economies perform”, and that “fast-growing countries are more or less open, have diverse patterns of specialization, and their success is not obviously led by exports” (Taylor 1988, p. 10).

The South Korean experience, according to Taylor, does not fit into a plausible explanation of openness as a source of economic growth: as other scholars already cited, Taylor underscores the influence of the interventionist policies implemented by the government of that nation, and that productivity growth is rather a result of those interventionist policies, as well as of a long history of industrialization and rigorous work norms. He finally comes to the conclusion that “the case for a positive association between trade liberalization and economic performance as measured by growth is *primie facie* difficult to make, and is not supported by cross-sectional or time-series evidence” (Taylor 1988, p. 32).

Taylor’s (1988) main concern is if trade liberalization is an optimal development strategy. He suggests that for developing nations, there were no great benefits in undertaking open trade and capital market strategies even in the well-favored decades of the 1960s and 1970s. It is therefore proposed that internal development strategies “may be a wise choice toward the century’s end”. However, such a path is not easy to follow (Taylor 1988, p. 66). He concludes by saying that in the

mid-1980s the trade liberalization strategy “is intellectually moribund”, kept alive by life support from the World Bank and International Monetary Fund.

Another line of discussion is related to the wide spectrum of development stages: are all developing countries, indistinctively speaking, going to profit from a more open trade regime? Or will the benefits mostly be realized by those economies with specific characteristics and possibilities? – e.g., the so-called “middle-income nations”? Arguments in favor of the first position can be found in studies such as the one conducted by Michaely (1977), who analyzed a sample of 41 countries for the 1950–1973 period and applied the Spearman rank coefficient to determine if the rate of growth of exports was associated with GDP growth. While the coefficient was significantly positive (0.308) for the whole sample, it was larger (0.523), for a subsample of 23 middle income countries. As Edwards (1993) points out, also Helleiner (1986) advocates that without a minimum level of development, the benefits of exports promotion will not be realized. Kavoussi (1984) and Ram (1985), cited in Edwards (1993), have also reported larger coefficients for middle-income economies.

As highlighted by Edwards (1993), the “homogeneity question” has also been addressed from a different perspective: instead of somehow arbitrarily classifying countries according to their income per capita, studies such as the one conducted by Kohli and Singh (1989) divide the sample according to a “minimum critical threshold” related to the trade structure itself. According to their typology of “outward oriented” and “non-outward-oriented” economies, they find that the coefficient of exports growth was significantly positive for both groups of countries. Nevertheless, it was significantly larger for the former group.

In summary, as Edwards points out:

Most studies have found that in GDP growth regressions the importance and significance of the exports growth coefficient varies across groups of countries, casting some doubt on the desirability of pooling all these nations together in the econometric analysis. (p. 1383)

The role of world market conditions has also been frequently considered. As reported by Edwards (1993), Balassa found clear “advantages of outward oriented policies for export performance and for economic growth in the face of external shocks,” and also, that the “reliance on export promotion in response to external shocks under an outward-oriented strategy favorably affected economic growth” (Balassa 1981, p. 189). Another perspective is the one offered by scholars that have classified countries between those who face “favorable” and “unfavorable” world demand. For the former group of economies, a positive correlation between exports growth and GDP growth has been reported. This would not be the case for countries confronting “below normal world demand” (Edwards 1993, p. 1384). Based on this argument, it would not be possible to establish a general policy recommendation for all developing economies.

It has also been stated that growth models do not properly address the issue of how international trade exerts different effects on different sectors of the economy, and how this process could affect the overall rate of growth (Van den Berg and Lewer 2007). According to this position, based on comparative advantage some

industries will grow and others would be displaced a result of free trade. Some of these contractions would negatively influence the economy's welfare. Situations like this could be present if the industries that expand generate few technology spillovers to the rest of the economy, or if the industries that grow face a declining world demand. The counterargument to this position is that international trade could indeed enhance growth, as long as it promotes the transfer of technology across borders.

Bhagwati (1958a, b) rejected the hypothesis that trade enhances growth, suggesting the possibility of immiserizing growth. He made reference to a situation where an open economy that experiences an expansion in its productive capacity - caused either by economic growth or technological progress- could become worse off if its terms of trade deteriorate sufficiently and offset the beneficial effects of economic growth. Chacholiades (1990, cited in Van den Berg and Lewer 2007) specifically suggested six conditions that would make immiserizing growth possible: (1) the exporting country's growth in productive capacity is concentrated in the sectors of the economy that export, (2) the price elasticity of demand for the export product is inelastic, (3) exports account for a large share of the country's GDP, (4) technological progress is minimal, (5) the export country supplies a large portion of total world output, and (6) the export country does not restrict trade (p. 210).

As pointed out by Krugman and Obstfeld (2006), the conditions that could make possible immiserizing growth to occur are extreme. Taking that into account, this situation is nowadays considered more as a theoretical standpoint, than a real-world situation (p. 103). Furthermore, as Van den Berg and Lewer point out, its occurrence would require another condition to be present: investment in factors of production used intensively in the export industry must go on, despite of the deterioration of the terms of trade, implying a decline in the returns to these factors (2007, p. 211). Such a situation is rare to be found.

Regarding the first two topics often defended by the "trade pessimists", the Prebisch-Singer hypothesis stated that there was a secular decline in the terms of trade of primary-commodity exporters, which could be explained by a combination of low income and price elasticities of demand (Todaro and Smith 2006). This transfer of income from developing to developed countries, according to this approach, could only be countered by protecting domestic manufacturing industries (through import-substitution industrialization – ISI). It would be the interest of developing countries to impose protective tariffs, so that they could industrialize. In the long run, ISI strategies were supposed to lead to greater domestic industrial diversification.

The experience of the ISI demonstrated to be largely unsuccessful, due to a number of undesirable results: as Todaro and Smith (2006) affirm, these were mainly related to the inefficiency of the protected industries, the fact that many of the most important beneficiaries were foreign companies that operated behind the tariff walls, and the negative impacts on the balance of payments. By contrast, the successful experience of some developing countries that promptly resorted to export-oriented industrialization and their impressive performances, – the Asian

Tigers -provided support to the case for outward-oriented trade policies. The evidence demonstrating that ISI just temporarily spurred growth, which was then followed by stagnation, also caused it to lose favor (Van den Berg and Lewer 2007). As Edwards (1993) explains:

The poor performance of the Latin American countries, most of which had followed with almost religious zeal the dictates of import substitution, offered a dramatic contrast to the rapidly growing East Asian countries that had aggressively implemented outward oriented strategies. Suddenly, this difference in performance which had been documented by the academic literature on trade orientation, became a fundamental topic in the public policy debate. (p. 1359)

It is also interesting to mention that the so-called “industrialization strategy approach” has appeared since the 1980s as another strand of the literature analyzing the relationship between trade and development. While it stands for outward-oriented and export-led development, it still proposes an active role for the government, by “influencing the type and sequencing of exports, as a country strives to produce more advanced products, adding higher value” (Todaro and Smith 2006, p. 641). The “industrialization strategy approach” argues that, in a large extent, the success of the export-oriented East Asian economies would be unthinkable without an active government intervention and the associated industrial policies. Besides, it is proposed that market failures in the transfer of technology from developed to developing countries would provide a justification for a governmental industrialization strategy that places special emphasis on technology absorption from abroad (Todaro and Smith 2006).

Nevertheless, it should also be mentioned that the so-called process of “picking winners” has been strongly criticized, putting in doubt the capacity of the government to get unbiased information about the future (Van den Berg and Lewer 2007). Another relevant aspect to be considered is the one of the World Trade Organization (WTO) legislation, since this type of policies could clearly violate internationally recognized commercial principles and legislations, implying the possibility of retaliation.

From a political economy perspective, Kohli (2009) defends “a prudent and effective state intervention and selective integration with the global economy” (p. 212). He argues that well constructed “developmental states”, like the ones of East Asia, contributed to a process of rapid industrialization. He further proposes that it is of the utmost importance to improve the quality of the state and other institutions, for accomplishing economic growth in many developing countries. He conveys the central message that “success or failure at economic development is associated more with the kind and less with the degree of state intervention” (p. 223).

Reservations have also been expressed regarding the possible productivity-export correlation. Based on micro-studies where the performance of firms both within the export and non-export sector is analyzed, some authors have come to the conclusion that firms “are first productive and then start exporting, rather than the other way around” (Wälde and Wood 2004, p. 285). This “self-selection” process would be the explanation for the increase of efficiency in the economy.

After having conducted the review of a number of influential and recognized empirical studies, it is now important to take a stance on the controversy concerning the relationship between trade and growth, and to critically appraise these arguments.

First of all, it should be noted that the empirical works and studies do not seem to be so opposite to each other, in the sense that it has not been demonstrated that trade could exert a negative influence on growth. Rather, it has been stated that the possible effects have been either overstated, or not properly measured. Despite of the observations made concerning the methodological shortcomings and the not straightforward causality issue, this does not imply that there is not a relationship between trade and growth. What is needed, as pointed out by different authors, are more sophisticated econometrical studies and techniques that would allow to fully estimate the extent of this relationship.

One very important aspect brought by the studies which are sceptical of the relationship between trade and growth, is the issue of the “omitted variables” problem. Certainly, both the theoretical framework and a number of influential works provide support to the argument that trade alone does not cause growth: besides trade, developing countries have to place special emphasis on other crucial factors, like physical and human capital formation. This is a reasoning of paramount importance, leading to the conclusion that trade policies should be coupled with other developmental strategies.

Additionally, it should be noted that not just the trade theory, but also the growth theory, allow to fully capture the extent of the linkage between trade and growth. As has been previously mentioned, the relationship between trade and growth seems to be developed through different channels, like investments and knowledge spillovers. Of the utmost importance is also the consideration that trade could be beneficial for a country, provided that some requirements have been realized: e.g. a good technology absorption capacity, a sound macroeconomic environment, political stability, and the required human capital formation, among others. Trade seems to positively influence growth, but coupled with other factors and characteristics of crucial importance.

Finally, a chief observation founded in some works is the one concerning the *relativity* of the gains derived from trade. In other words, for a developing country its trade basket, as well as its trade partners, could be of great relevance for reaping the desired gains from trade. As stated by Thirlwall (2000):

Given the predictions of trade theory and the facts, the important point to make in this introduction is that the issue for developing countries in general, and Africa in particular, is not so much whether to trade but in what to trade, and the terms on which trade should take place with the developed countries of the world (or between themselves). There can be no doubt that there are both static and dynamic gains from trade, and that trade provides a vent for surplus production (as stressed by Adam Smith). What is in dispute is whether the overall gains to developing countries could be greater if the pattern of trade was different from its present structure, and if the developed countries modified their policies towards the developing world. (p. 7)

All in all, this section has discussed the linkage between trade and economic growth from an empirical perspective. At this point, it is important now to address

the paramount question formulated within the whole research project: does export diversification contribute to economic growth? And if yes, how could this process be beneficial for a developing nation, such as Colombia?

## 2.2 Export Diversification and Economic Growth

The dependence on primary-product exports has been frequently mentioned as one of the main features of developing nations. As stated by Todaro and Smith (2006), less developed countries (LDCs) tend to specialize in the production of primary products, instead of secondary and tertiary activities. Consequently, exports of primary products play a very significant role in terms of foreign exchange generation in these countries, traditionally representing a significant share of their gross national product. Specially in the case of the non-mineral primary products exports, markets and prices are frequently unstable, leading to a high degree of exposure to risk and uncertainty for the countries that rely on them (Todaro and Smith 2006). Primary-products exports have been characterized by relatively low income elasticity of demand and inelastic price elasticity, being fuels, certain raw materials, and manufactured goods, some exceptions that exhibit relatively high income elasticity (Todaro and Smith 2006).

Taking these arguments into account, the cause for export diversification has been commonly supported based on the so-called “export instability argument”. Consequently, export diversification has been proposed as a policy mechanism seeking to stabilize export earnings, which would be especially required in those developing countries where the share of commodities in its export basket is particularly pronounced. This situation is additionally complicated by the fact that many of the LDCs have incurred in deficits on their balance of payments, due to their import demands of capital goods, intermediate goods, and consumer products that their industrial expansion requires. Furthermore, LDCs are usually more dependent on trade than developed nations, in terms of its share in national income.

In their work, Prebisch and Singer suggested the trend of prices of primary products to decline, which has been the matter of different discussions, concerning their secular or cyclical trend (Todaro and Smith 2006). Taking all these arguments into consideration, the problems of export earnings instability and terms of trade worsening for developing countries where primary products account for the bulk of their foreign sales, has been frequently discussed, as well as their negative effect on growth. This has led developing countries to consider the need of diversification of their export mix, based on a structural transformation of their economies, process that has been especially visible in the East Asian economies, China, and India (Todaro and Smith 2006). But it should be noted that despite of the diversification efforts, different empirical studies have also shown a declining trend for the prices of labor-intensive basic manufactures increasingly produced by some LDCs,

contrary to the rising tendency for the prices of the knowledge-intensive products exported by developed countries.

As stated by Ali et al. (1991), export diversification entails changing the composition of a country's export mix, being it "directly related to the structure of the economy and how it changes as development proceeds" (1991, p. 6). The underlying consideration behind export diversification as a possible developmental strategy is related to the expectation of achieving stability-oriented and growth-oriented policy objectives (Ali et al. 1991). A broader exports base, coupled with a special promotion of those commodities with positive price trends, should be beneficial for growth. Hence, the value-added export commodities would be stimulated, by means of additional processing and marketing activities (Ali et al. 1991). A country's degree of diversification is usually considered as dependent upon the number of commodities within its export mix, as well as on the distribution of their individual shares.

The United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) has stated that for small, low-income economies such as the least developed countries (LDCs), reasonable development goals cannot be limited to primary products exports. Diversification, both in terms of "non-traditional" and "traditional" commodities, is considered as an element of utmost importance for growth and development (ESCAP 2004). It has also been frequently stated that growth and export diversification may be linked. Besides structural changes of an economy, as Al-Marhubi (2000) points out, traditional development models propose that economic growth also implies a shift from dependence on primary exports towards diversified manufactured exports. Another interesting concept is linked to the so-called "graduation concept" addressed by empirical studies such as the ones conducted by Michaely (1977) and Moschos (1989). It suggests that the process of "graduation" from developing to developed status should be joined by a structural change of exports toward diversity (Amin Gutiérrez de Piñeres and Ferrantino 1997a, p. 376). This would suggest that the connection between exports and growth enters, when a certain level of development is attained.

At this point, a very important clarification to be made is that export diversification does not necessarily imply the export of manufactured goods. As stated by Agosin (2006), this process may also be carried out in the form of primary commodities that evolve into natural-resource-based industries, rather than into manufactures. Indeed, commodity exports should not be literally associated with export concentration. Additionally, diversification has usually been related to the production and export of goods with higher skill and knowledge intensity (Agosin 2006). As stated by Lederman and Maloney (2003):

Clearly, dependence on any one export, be it copper in Chile or potentially micro-chips in Costa Rica, can leave a country vulnerable to sharp declines in terms of trade. The presence of a single, very visible export may also give rise to a variety of political economy effects deleterious to growth. (p. 4)

The distinction between vertical and horizontal diversification is also of chief importance. The first category is related to the move between different categories of



goods – e.g. the shift from primary commodities to manufactures-, through value-added mechanisms. The second category implies expanding the export basket, by “diversifying into goods within the same broad category of goods” (Agosin 2006, p. 7). The latter would be the case of shifting, for example, from coffee for the mass market to gourmet coffee (Agosin 2006). Additionally, export diversification may be accomplished either by adjusting shares of commodities in the existing export mix, or by adding new commodities to it (Ali et al. 1991). It is important to mention that a number of measures have been constructed for calculating an economy’s export concentration, such as the ogive index, the entropy index, and the Gini-Hirschman index, among others (Ali et al. 1991).

Having said that, it is important to observe how export diversification might take different forms and relate to varied experiences. For the particular case of Latin America, Gutiérrez et al. (1997b) state that countries like Chile and Argentina have shifted from exporting a single primary product (such as copper, or beef) to a broadened export mix, being in Chile the emphasis placed on “non-traditional” agricultural products. On the other side, Mexico (with machinery, motor vehicles, and *maquiladoras*) and Brazil (with machinery, iron and steel, and transport equipment) opted for a type of diversification expressed in evolving from primary to manufactured goods. The Colombian case would be a mixture between the Chilean agricultural-based pattern, with an Asian-type increase in light manufactures. Finally, Venezuela has remained immersed in a pattern of export concentration, overwhelmingly dependent on the oil revenues (Amin Gutiérrez de Piñeres and Ferrantino 1997b).

Similar to the previously cited argument of Feder (1983), it has also been proposed that exports diversification could positively influence growth by means of generating positive externalities on non-trading sectors. These externalities would be associated to more efficient management styles and improved production techniques. Thus, economies with a diversified export structure would benefit from these externalities and the incentives for capital formation, leading to higher growth.

### ***2.2.1 The Gains and Losses Derived from Export Diversification: A Theoretical Analysis***

In addition to the hypothesis that openness leads to growth, the postulation that the pattern of economic development is linked to a structural change in exports and increased exports diversification has also been proposed. Nevertheless, as clarified by Amin Gutiérrez de Piñeres and Ferrantino (1997a), it should be said that the hypothesis of encouraging development through diversification is not exclusively associated with outward-orientation arguments. The infant industry argument, for instance, also defends the need of temporarily protecting some industries, which would eventually lead to a more diversified economic structure and thus, to diversification in exports.

As stated by Ben Hammouda et al. (2006), the starting works related to diversification focused on different elements considered essential for reinforcing the productive structure of developing economies, such as the need of channelling resources for investment, with the objective of diversifying economic structures and encouraging structural change. While some scholars defended the idea of balanced growth, others placed a very specific emphasis on some sectors that could imply a “cumulative role” for the whole economy. Some kind of consensus emerged, related to the need of “industrial development, and on its place on the transformation of traditional economies and the modernization of productive structures of developing countries” (Ben Hammouda et al. 2006, p. 21).

Within the economic development field, diversification has occupied an important position: a number of development strategies undertaken in the 1960s and the 1970s, considered it. Later on, the crisis that started at the end of the 1970s and the failure of import-substitution strategies in a number of developing countries brought about a dramatic change in the debate. Now export-led growth, macroeconomic stabilization, and international specialization would become the paramount topics (Ben Hammouda et al. 2006, p. 21). Accompanying the outward-oriented model, since the 1980s hypotheses related to structural changes in exports and augmented diversification of exports became more popular in the literature, since it was believed that they could lead to faster growth (ESCAP 2004).

The product-cycle literature (Vernon 1966; Krugman 1979a; Dollar 1986; Segerstrom et al. 1990; Grossman and Helpman 1991), has also suggested a link between export diversification and growth as cited by Amin Gutiérrez de Piñeres and Ferrantino (1997a). The process would operate in the following manner: innovation in developed economies would result in a larger variety of products. At the other side, imitation in the developing countries would also imply a larger diversity of products being produced and exported from these low-wage nations (Amin Gutiérrez de Piñeres and Ferrantino 1997a, p. 376). Within the new trade theory, the large volume of trade between similarly endowed developed countries has been explained in terms of product differentiation, usually associated with manufacturing (Amin Gutiérrez de Piñeres and Ferrantino 1997a, p. 376).

In recent times, export diversification has gained renewed importance in the economic literature. As Ben Hammouda et al. (2006) explain, reasons for that are the disappointing economic performances of a number of developing economies, as well as the fact that poor countries – especially in Africa- have not received the expected benefits from schemes of preferences granted by developed economies and groups of integration. Another strand of the literature is chiefly concerned with those determinants that would be needed for diversification to be successful. Among these factors, the level of income of an economy, its investment and productive capacity levels, the role of industrial policy, and its technology absorption capability, have been examined. As Ben Hammouda et al. (2006) point out:

Indeed, the countries which have succeeded in improving their position are those that maintained during the last three decades a high investment rate particularly in the industrial sector. This investment enabled them to access new technologies and improve productivity and competitiveness of their economies. These links have enabled these countries to increase their exports and improve their international integration. (p. 24)

Furthermore, Bebczuk and Berrettoni (2006) state that:

Richer economies tend to be economically and institutionally more stable, and such environment mitigates the business risks perceived by domestic producers, thus making diversification less imperative. Nevertheless, as these economies are characterized by higher total factor productivity and a better business climate, entrepreneurs may find it more appealing to broaden their productive mix. The access to credit, the quality of infrastructure, the gross investment ratio and the level of foreign direct investment are indicators of macroeconomic efficiency and strength that may likely enhance the growth prospects of firms, even though the implications for export diversification remain an open theoretical question. (p. 10)

Relatively new contributions on endogenous growth have placed a special emphasis on the importance of diversification. As stated by Ben Hammouda et al. (2006), the Romer model suggests a beneficial effect of diversification consistent of the availability of inputs within an economy, which could enhance labor productivity and human capital. Besides that, Romer (1990a) and Grossman and Helpman (1991) have suggested that productivity is boosted by increases in product variety (Feenstra et al. 1998).

In their work, Acemoglu and Zilibotti (1997) refer to a positive effect derived from increasing the number of sectors and therefore, augmenting investment opportunities and reducing investors' risks. Besides these observations, the possible effect of enhancing stabilization of export revenues has also been considered, situation that would lead to more stable paths of growth. A very interesting finding is the one suggested by Imbs and Wacziarg (2003), concerning a U-shaped pattern of sectoral concentration along the development path. As the authors state:

We provide new and robust evidence that economies grow through two stages of diversification. At first, sectoral diversification increases, but there exists a level of per capita income beyond which the sectoral distribution of economic activity starts concentrating again. In other words, sectoral concentration follows a U-shaped pattern in relation to per capita income. (p. 63)

The empirical investigation carried by Imbs and Wacziarg uses sectoral data to analyze the evolution of sectoral concentration over time and in relation to the development level, in a wide set of developed and developing countries. The evidence provides support to the hypothesis that "poor countries tend to diversify, and it is not until they have grown to relatively high levels of per capita income that incentives to specialize take over as the dominant economic force" (Imbs and Wacziarg 2003, p. 83). The reallocation of resources, according to the authors, seems to be motivated by the relation between economic growth and openness to trade. Bebczuk and Berrettoni (2006) examine if the macroeconomic environment fosters or inhibits export diversification. The results of their regressions for 56 countries over the 1970–2002 period support the hypothesis that "richer, more efficient, more stable and more open countries tend to focus rather than to diversify exports" (p. 11). This finding goes in line with the U-shaped pattern of sectoral concentration suggested by Imbs and Wacziarg.

At this point, it is important to observe how export diversification may initially seem to go against the comparative advantage concept (Ali et al. 1991). As is

widely known, specialization can imply greater efficiency, and countries engaging in international trade are expected to become specialized. But at the same time, it has been suggested that export earnings instability may result from export concentration. Taking that into account, export diversification would favor a country by stabilizing and/or increasing its foreign earnings. Arguments such as the ones provided by Imbs and Wacziarg (2003) have come to mediate in the discussion, proposing that specialization and diversification occur at different points in development.

The potential benefits of export diversification have been explained by Harding and Javorcik (2007):

Export diversification may be an important issue for developing countries for several reasons. First, a diversified bundle of export products provides a hedge towards price variations and shocks in specific product markets (Bertinelli et al. 2006; Levchenko and di Giovanni 2006). Second, the type of products exported might affect economic growth and the potential for structural change (Hausmann, Hwang, and Rodrik 2007). Third, export diversification in the direction of more sophisticated products may be beneficial for economic development. Given these potential benefits of export diversification, an important policy question is what a country can do to diversify its exports. (p. 1)

The first of the above mentioned benefits, namely that diversification would provide a hedge towards price variations, is defined in the literature as the “portfolio effect” (Agosin 2006). In the same manner that single company stock portfolios are linked to higher risk, an economy which is “over-dependent” in one or a few export products is considered to be vulnerable. Diversification is, therefore, considered as a possibility of lessening the earnings variance of the country’s “export portfolio” (Stanley and Bunnag 2001).

The underlying idea is that diversified economies are benefitted by a greater stability of export earnings, which is likely to be linked to lower variance of GDP growth (Agosin 2006). Especially for developing countries with imperfect access to international financial markets, diversification would be advantageous. It has also been suggested that countries where the trade basket is highly dependent upon a few products tend to show more volatile exchange rates than countries with diversified export structures. Volatility in the real exchange rate hinders investment in tradable goods or services. (Agosin 2006, p. 2) Foreign exchange earnings instability would also imply negative effects in terms of economic planning, import capacity, and foreign debt repayment (Stanley and Bunnag 2001). In this line of thought, it has for instance been proposed that the secular concentration of Latin American countries in primary products has been an obstacle for its development potential. Volatile terms of trade, sluggish productivity growth and low value added have been highlighted as some of the troubles derived from the region’s export mix (Bebczuk and Berrettoni 2006).

Concerning an evolution to more sophisticated export products-, the literature also refers to some dynamic benefits of diversification (Agosin 2006). The underlying idea is that countries that successfully experience a structural change and that accomplish to spur diversification of their economic structure, will acquire a comparative advantage in a larger number of goods. The increase of labor

productivity and human capital (Berthélemy and Söderling 1999), as well as the enlargement of investment opportunities and reduction of investors' risks (Acemoglu and Zilibotti 1997), have also been highlighted as possible benefits derived from diversification.

On the contrary, those countries with a comparative advantage in a limited number of goods, where a scarcity of skills or lack of complementary inputs is evident, would be affected by their inability to absorb foreign technologies. According to this hypothesis, as pointed out by Agosin (2006), those economies that successfully undertake a diversification process are then in a position of expanding their range of comparative advantage. A country's capability to absorb or adapt foreign technologies, is of paramount importance for that goal to be accomplished. It should be observed that diversification – both of output and exports- is a result of different factors associated to development, which have been addressed by the endogenous growth literature. Aspects such as “the accumulation of skills, learning by doing, positive pecuniary externalities that stem from the production of key non-traded inputs - e.g., infrastructure services-, positive technological externalities associated with skill creation, and technological innovation” are crucial for that diversification to take place. (Agosin 2006, p. 2).

When it comes to primary products exports, it is possible to find in the literature different approaches referring to issues such as the “natural resources curse”, the Dutch disease, and poverty traps. As stated by Lederman and Maloney (2003), different scholars have referred to the issue of how natural resource abundance – and more specifically, their dominant participation within a country's trade basket- could be inimical for growth. Some scholars suggest that Adam Smith made an association between natural resources and lower human and physical capital accumulation, lower productivity growth, and lesser spillovers. In a study conducted by the United Nations Economic Commission for Latin America (CEPAL), Prebisch (1950) argued that natural resources' terms of trade tended to show a secular decline over time. Sachs et al. (1995) stated that the Dutch disease conduces to concentration in resource exports, implying fewer possibilities for productivity growth. In this same line of argumentation, other claims have been exposed dealing with issues such as the institutional failures derived from the rents resulting from resource extraction (Easterly and Levine 2002, cited in Lederman and Maloney 2003) and over-borrowing in those countries experiencing commodity – price booms (Manzano and Rigobon 2001, cited in Lederman and Maloney 2003).

By comparison, other contributions and works highlight the positive contribution that primary products exports and resource abundance has had for growth, citing some successful experiences. Martin and Mitra (2001), as cited by Lederman and Maloney (2003), reported total factor productivity growth to be larger in agriculture than in manufactures in a large sample of advanced and developing countries. Mining has been suggested by Wright (2001) and Irwin (2000), cited in Lederman and Maloney (2003), as a crucial industry for the US, taking into account its dynamic and knowledge-intensive character. The same argument has been exposed for forestry in Scandinavia (Lederman and Maloney 2003; Blomstrom and Kokko 2001). The so-called “resource curse” view (Bebczuk and Berrettoni

2006), namely the negative linkage between natural resource abundance and growth, has also been challenged by Ng and Yeats (2005). Besides that, Blomstrom and Kokko (2001) propose that Sweden and Finland accomplished a more diversified economic structure by introducing technology into their natural resource-based production. The Chilean case has been invoked by Herzer and Nowak-Lehmann (2004) as an example of an export diversification based on natural resources that positively affected growth. It has also been stated how, nowadays, natural resources exhibit higher technology content, having the possibility to generate upstream and downstream activities (Bonaglia and Fukasaku 2003, Bebczuk and Berrettoni 2006).

Likewise, Maloney (2002) considers the issue of resource-based industries, drawing a comparison between some successful experiences – like the American, Australian, Canadian or the Scandinavian cases- and the so-called “mineral underachievers” (natural resource abundant Latin American nations, according to Wright 2001). Some successful cases can be, though, also found in that region: Monterrey (Mexico), Medellín (Colombia), and Sao Paulo (Brazil) are presented as dynamic industrial centers based on mining and in the later two cases, coffee (Maloney, p. 2). Maloney’s main statement is that the poor performance of that region can be explained by the barriers to technological adoption and innovation, with deep historical roots, which could even be traced back to the times of the Spanish colonization. Deficient national “learning capacities”, coupled with faulty inward-looking development policies, also appear to be the main “culprits”. On the contrary, successful experiences such as the mining industry in the US, of the forest industry in Sweden, have strongly relied on learning dynamics boosted by alliances among world class universities, private and public think tanks, and the government.

One interesting line of the debate concerning export diversification is linked to its possible “spontaneous” or “deliberated” nature. As Agosin (2006) points out, in the particular case of some developing countries that experienced an important diversification in the post-war period – e.g. South Korea and Taiwan-, the process has been linked to different interventionist policies supporting rapid industrialization. The Chilean case, notwithstanding the belief that its success on export diversification was based on market-oriented reforms, partially resulted from intentional policies directed toward the production of new goods for international markets (Agosin 1999). On the other side, cases such as the one of the Scandinavian countries – that evolved from natural resource exporters, to producers and exporters of a wide array of manufactures- are considered to be driven mainly by market forces.

Equally important, the debate between import substitution industrialization (ISI) and export promotion (EP) developmental strategies is also related to export diversification. On one hand, advocates of the infant industry argument propose that the successful experience of some of the East Asian countries – e.g., South Korea- would be unthinkable without the temporary shelter offered to some of its industries, before entering international markets. In contrast, proponents of the EP strategy cite for instance the Chinese experience -where previous industrialization does not explain the successful export diversification- while FDI – either in the

form of multinational corporations (MNCs) or joint ventures- has played a very important role. The Chilean case is also considered here: while it is true that the government played a relevant role in supporting the country's diversification, this process has also been undertaken, as stated by Agosin (2006) "directly by exporting, especially when the first firms are fully or partly foreign-owned" (p. 4).

Finally, it is interesting to observe how the different nature of the response to crises has led to different experiences in terms of diversification: while East Asian nations encouraged accelerated investment and strengthened diversification, in Africa the response to the same crisis has been much less dynamic, resorting to concentration on a few commodity exports (UNECA 2007).

On the other side of the debate, findings like the ones of Stanley and Bunnag (2001) show that while diversification is supposed to stabilize export earnings and reduce the dependence on "volatile" primary products, in some cases, – e.g. Central America within the 1974–1995 period- precisely those countries that decided to specialize in established primary products and a few manufactures, outperformed the others. This is an interesting strand of the discussion, leading to the consideration that diversification by itself should not necessarily be beneficial for an economy. Of the utmost importance is that the "new" products, besides its novelty, should also offer lower instability levels. The "right mix" is found, as Stanley and Bunnag argue, only if the new products show low instability or negatively covariate with existing exports, lessening the variance. This does not necessarily imply a shift from natural resources to manufactures: some light manufactures, such as apparel, are also thought to be affected by volatility (Stanley and Bunnag 2001). The Latin American experience is also noteworthy: while most countries in the region diversified their export mix between the mid-1960s and the end of the 1990s, yet they did not accomplish considerable levels of GDP expansion. (Bebczuk and Berrettoni 2006, p. 2).

Furthermore, it has been stated that evaluating export diversification at the level of aggregated commodities does not permit to fully capture the extent of diversification within, as well as outside, the commodity sector (UNCTAD 1995). In other words, only an examination of the shift from commodities to manufactures would be possible under that approach. Thus, it has been proposed that the possibilities of export diversification should not be limited to the movement from primary products to manufactured goods: export diversification may also be the result of a "more vibrant" commodity sector (UNCTAD 1995). Besides that, export diversification into manufactures can be coupled with a diversification of the commodity sector.

Another important aspect addressed in the literature has been suggested by Cramer (1999): while it is commonly believed that greater benefits could be expected from diversifying into manufactures – like more stable and less "biased" price behavior-, this positive outcome should not be taken for granted: domestic conditions are also required, along with the diversification process. In brief, increasing levels of export diversification do not guarantee, by themselves, higher levels of growth (Bebczuk and Berrettoni 2006, p. 2). If there are, for instance, shortages of inputs, bad management practices or weak infrastructure in a country,

such conditions could outweigh the possible benefits from diversifying away from primary production (Love 1983).

Based on this type of consideration, the potential advantages of diversification in some African countries have been disputed. The relevance of domestic macroeconomic and general country conditions is also supported by the experience of those developing countries that, besides diversification, showed a good performance in these internal aspects (UNCTAD 1995). Summing up, different “determinants” of diversification – as Ben Hammouda et al. (2006) call them- have to be considered along with export diversification: the level of income, investment, technology absorption capability and even the possible role of trade and industrial policies, have been for instance proposed. Equally important is the analysis of different experiences in export diversification, which as Cramer (1999) proposes, could also be explained by the differences “in policy and technological progress, with a strong role for research and development and for close public/private cooperation in industrial upgrading” (p. 1252).

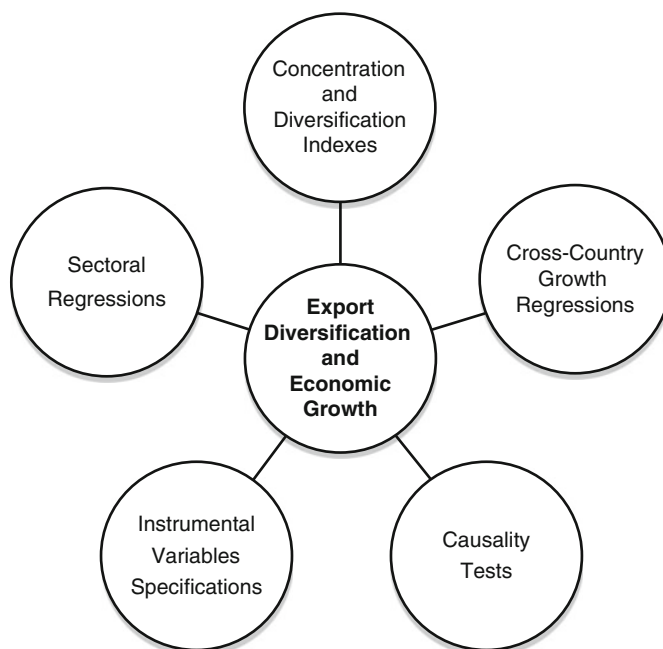
### ***2.2.2 Export Diversification and Growth: The Empirical Evidence***

Similar to the case of trade and economic growth, the relation between export diversification and economic growth has been analyzed in a wide number of empirical studies. Figure 2.2 depicts a diagram including different econometric and statistical methods that have been used for evaluating this possible linkage. Likewise, the most relevant methodologies and data used in these studies are briefly described in Table A.1.

Al-Marhubi (2000) conducts an empirical study of 91 countries, in the 1961–1988 period, to test the hypothesis of a possible link between export diversification and growth. He finds out that those economies with a larger number of export products experienced faster growth. Besides that, he argues that greater export diversification and lower export concentration is associated with faster growth. The relationship between export diversification and growth proved to be economically large. He also concludes that when export diversification occurs, growth in developing countries is positively influenced by stimulating the accumulation of capital.

Gutiérrez et al. (1997b) evaluate the experience of six Latin American countries – Argentina, Brazil, Chile, Colombia, Mexico, and Venezuela- in terms of export diversification and structural change in exports in the 1980s and the 1990s. They state that export diversification has been attempted both at times of import substitution (IS) and export promotion (EP) developmental models. Nevertheless, the export-oriented policy reforms introduced reinforced the export diversification process. Their most relevant findings are related to the fact that export diversification in the region – with the exception of Venezuela – is a long-run phenomenon. In general, the debt crisis of the 1980s was a factor that triggered export diversification in all countries. But in the case of Brazil, some of its diversification is attributed to





**Fig. 2.2** Radial diagram – empirical studies dealing with the trade and growth linkage (Source: own illustration, based on the list of studies surveyed, [see Table A.1])

the remnants of the IS strategies, and as the authors state, it is questioned whether some of its manufacturing exports “are the fruits of technological experience gained under import substitution, or are mere by-products of inefficient policy-induced resource allocation” (p. 476).

Hausmann et al. (2007) develop a general-equilibrium model with a modern sector producing a variety of goods and a traditional sector producing a single homogenous good, being labor the only factor of production. The model is used to analyze the determination of the production structure of an economy “in which the standard forces of comparative advantage play some role, but not the exclusive role” (p. 5). According to the authors, the underlying cost structure of the economy contributes to what a country will produce and ultimately, to its level of wealth. Afterwards, empirical estimations are conducted for a sample of countries, covering over 5.000 products for the years 1992–2003. One interesting contribution of their work is the suggestion that an economy may produce and export goods determined not only by its “fundamentals” (physical and human capital endowments, labor, natural resources, and the quality of its institutions, as the authors call them). The basket of goods could also be influenced by stimulating “the number of entrepreneurs to engage in cost discovery in the modern sectors of the economy” (Hausmann et al. 2006, p. 3).

Hence, the crucial issue to be considered by policy-makers would be that because of knowledge externalities, investment levels in cost discovery are sub-optimal. Consequently, it would be necessary for the government or the industry to intervene. The joint role of the so-called “fundamentals” of the economy, and the stimulus that could be offered to the entrepreneurs to engage in cost discovery in the modern sectors of the economy, would determine the goods that a country produces. For Hausmann et al., economies exporting goods associated with higher productivity levels experience higher rates of growth. Growth “is the result of transferring resources from lower-productivity activities to the higher-productivity goods identified by the entrepreneurial cost-discovery process” (Hausmann et al. 2006, p. 17).

The linkage between changes in export variety and the growth in total factor productivity (TFP) at a disaggregated level is examined by Feenstra et al. (1998) in 16 sectors, over the 1975–1991 period, for the cases of South Korea and Taiwan. Based on input–output tables, the sample is divided between primary industries – that basically rely on natural resources as inputs, and show weak upstream linkages to manufacturing – and secondary industries – with stronger upstream linkages, generally purchasing more from other supplying industries than from themselves (Feenstra et al. 1998, p. 13). The empirical evidence lends strong support to the argument that secondary industries would better fit the hypothesis of endogenous growth, taking into account both their differentiated inputs and outputs. The authors report that seven out of the nine industries in this group hint at a positive and significant impact of export variety on productivity. Likewise, five of these industries indicated a positive and significant impact of upstream export variety on productivity.

One relevant argument proposed by Hausmann et al., is that an economy’s specialization is crucial for its development path, and that this specialization can be influenced or “pushed up” the product scale. Countries have the possibility to overcome the limitations imposed by their cost discovery and go further than what their “fundamentals” allow them to. Again, the stimulus given to the entrepreneurs is of the utmost importance. As the authors indicate:

There are economically meaningful differences in the specialization patterns of otherwise similar countries. We have captured these differences by developing an index that measures the “quality” of countries’ export baskets. We provided evidence that shows that countries that latch on to a set of goods that are placed higher on this quality spectrum tend to perform better. The clear implication is that the gains from globalization depend on the ability of countries to appropriately position themselves along this spectrum. (p. 13)

Other studies, such as the one conducted by Lederman and Maloney (2003), analyze the empirical relationship between trade structure and economic growth, focusing on the influence of natural resource abundance, export concentration and intra-industry trade. The authors utilize panel data of 5 year periods going from 1975 to 1999, being the core data set that of Summers and Heston (1991), updated to 2000. The *Herfindahl* index, as well as the share of natural resources exports in total exports, are used to determine the degree of concentration. Furthermore, the *Grubel-Lloyd* (1975) index of intra-industry trade is calculated. One of the most

interesting findings reported is that the assertion of resource abundance adversely affecting growth (e.g. Sachs and Warner 1995), is not found to be robust. Thus, it is suggested that the common belief about natural resources being inimical to growth should be reevaluated, and further research is advised “on the channels through which they may have a positive effect, possibly, through introducing higher productivity growth” (Lederman and Maloney 2003, p. 15). Furthermore, the study concludes that export concentration per se is detrimental for growth, be it on natural resources or manufactures. As the authors argue:

In contrast to much of the recent literature, natural resource abundance appears to have a positive effect on growth whereas export concentration hampers growth, even after controlling for physical and human capital accumulation, among other factors (Lederman and Maloney, p. 1).

Finally, intra-industry trade provides evidence of beneficial impacts on growth.

Agosin (2006) refers to some stylized facts derived from a cross-country comparison of the Hirschmann-Herfindahl (HH) index between Asian countries and Latin American and Caribbean countries. The author notes how the former countries have been approaching HH indexes similar to those of developed economies. For the latter countries, it is evident that some of them – e.g. Mexico, Colombia, and Chile – have been partially successful in diversifying their exports. However, exports are still much more concentrated than those of the Asian countries.

In addition to this, Agosin’s study (2006) further investigates whether export diversification has any explanatory power in a standard empirical model of growth. Cross-sectional data in the 1980–2003 period is considered, for a sample of Asian and Latin American countries. It is suggested that export growth by itself does not appear to be relevant for growth, while *export growth together with diversification* appears to be relevant. This argument is supported by the fact that the interactive variable (measuring diversification and export growth) showed the expected sign and was highly significant, providing the strongest explanatory power. Export diversification is supposed to contribute to growth through two different channels, namely, the “portfolio effect” – less export volatility- and the widening of comparative advantages, as a result of a more diversified economy.

As mentioned before, Stanley and Bunnag (2001) analyze the performance of four Central American countries – Costa Rica, El Salvador, Guatemala, and Honduras- that underwent diversification processes. Based on panel data for the 1974–1995 period, they analyze how diversification has impacted the countries’ earnings instability. The study comes to the conclusion that diversification by itself is not the answer to any country’s problems associated to foreign earnings volatility. Besides their novel character, these products should also be characterized by low instability or negatively covariate with existing exports, lessening the variance. Consequently, support is given to the argument that besides diversification, other accompanying factors are needed for stabilizing foreign earnings, like political and economic stability. It is also suggested that even though “manufacturing products offer the greatest opportunity to reduce instability” (p. 1380), the stabilization of

some important traditional sectors of the economy – such as coffee in El Salvador – should be considered as important as diversification.

The possible influence of export diversification on growth is also examined by Amin Gutiérrez de Piñeres and Ferrantino (1997a), by analyzing the Chilean experience within the period 1962–1991. They study the possible link between diversification, export growth and aggregate development, by constructing different measures of diversification and structural change in exports. These measures are afterward used to test different relationships among the structure of exports and export growth. Two different interesting findings are reported: first of all, a link between the domestic economic performance and diversification is reported, suggesting that diversification in Chile has taken place mostly during times of internal crisis or external shock. Secondly, that the new products most successfully introduced in that country were mainly primary products (such as tobacco, coffee and tea, and dairy products) while a number of manufactures (like plastics, manufactured fertilizers, electrical and non-electrical machinery) have shown less dynamism. As highlighted by the authors, “the most striking source of diversification has been the emergence of new agricultural exports under the stimulus of real exchange rate depreciation” (Amin Gutiérrez de Piñeres and Ferrantino 1997a, p. 389). It is also proposed that export diversification, in the long run, has boosted Chilean growth performance. As mentioned in a previous section of this chapter, export diversification should not automatically be associated with value-added manufactures, as the Chilean and other experiences show. In addition, these empirical studies lend further support to the argument that natural resources and primary products exports can also enhance growth.

For Krishna and Levchenko (2009), the focus of the analysis is placed on analyzing the sources of higher output volatility in less developed countries, which could be related to their pattern of specialization. By examining industry-level data of 459 manufacturing sectors for the period 1970–1997, they suggest that openness to international trade leads to specialization in more volatile sectors in poorer countries. Less developed countries have relatively higher export shares in goods with low product complexity –being complexity measured as the number of intermediates required for production in each sector (Levchenko 2007). On the contrary, wealthier and more developed economies tend to specialize in more complex goods (Krishna and Levchenko 2009). Empirical evidence is provided, supporting the hypothesis that less complex goods are characterized by greater volatility. A strong negative relationship between complexity and volatility is founded. “Comparative advantage in less complex goods, that could arise from institutional quality or productivity differences, drives specialization in more volatile industries by developing countries” (Krishna and Levchenko 2009, p. 17).

As far as developmental strategies are concerned, Ben Hammouda et al. (2006) conduct statistical and econometric estimations, with the aim of examining if diversification can be envisioned as a framework to formulate strategies in Africa. Analyzing a panel data sample of 18 African countries in the 1996–2001 period, the authors report that investment shows to be determinant for a country to diversify. Furthermore, the income level shows a positive and significant link

with diversification: as income per capita increases, countries tend to become more diversified, result that lends further support to Imbs and Wacziarg's (2003) empirical evidence. Furthermore, macroeconomic stability is found to be one of the most important explanatory factors of diversification. On the contrary, trade openness does not show to necessarily lead to diversification: this quite surprising finding is explained suggesting that, at a specific stage in the diversification process, "the portfolio motive for diversification ceases to dominate the comparative advantage considerations" (Ben Hammouda et al. 2006, p. 72). This finding would go in line with the Ricardian trade theory, which predicts that open economies become more specialized and produce a specific array of goods. Finally, institutions are reported to show a significant and positive relation with diversification.

An investigation carried out by the ESCAP (2004), dealing with the empirical estimation of the relationship between GDP growth rates and exports and export diversification, tested the so-called "export-led growth hypothesis" in three Asian LDCs (Bangladesh, Nepal and Myanmar). Comparisons are drawn with the diversification experience of Malaysia. The analysis of diversification and structural changes in exports is carried out based on different measures, namely: the commodity-specific cumulative export experience function, commodity-specific traditionality index (CSTI), the variance of CSTI, the concentration ratio of export earnings, and the aggregate specialization index. The analysis of these measures is done for the above mentioned countries along the period 1972–2000. Besides that, econometric estimations of the impact of the export diversification on export growth, as well as of the impact of total exports on growth, are performed.

The empirical results obtained provide support to the hypothesis that export growth could accelerate the development process of the three countries analyzed. But it is also stated that to accomplish higher rates of export growth, both horizontal and vertical diversification should be pursued, as shown by the Malaysian experience (ESCAP 2004). The experience of this country is cited as a successful case: for enhancing economic growth, Malaysia undertook both a vertical diversification of its "non-traditional" commodities – producing goods with some value-added, like electric appliances- and simultaneously diversified its "traditional" exports (horizontal diversification) toward commodities such as palm oil, rubber and tin (ESCAP 2004, p. 55).

On the contrary, some studies conducted reject the idea of the possible beneficial effects that export diversification could have upon economic growth. Among the opponents, Love's (1983) position is important to be taken into account. In his work, he states that moving from primary products into manufactures should not be always considered as the best developmental strategy for developing economies. Some characteristics, like recurring shortages of raw materials, capital equipment, spare parts and skilled labor, would seriously limit the capacity of many developing countries to efficiently produce manufactures. Coupled with that, Love refers to empirical evidence demonstrating that some manufactured goods actually experience more volatility and price variations than some "traditional" exports. In some cases, "increased shares of non-traditional exports have been accompanied by relatively greater increases in their instability" (Love 1983, p. 791). According to

this evidence, policies leading to export diversification would not necessarily result in a positive effect for growth in some developing countries.

Following the same line of thinking, Ali et al. (1991) provide empirical evidence contrary to the argument that an increased level of export diversification would lead to more stable export earnings. The authors warn about the risk of considering diversification as a “panacea”, because of the trade-offs between growth and stability of export earnings. They conduct statistical estimations for three African countries that have been seriously affected by instability and downward trend in export earnings, namely Malawi, Tanzania and Zimbabwe, over the period 1961–1987. For the particular case of these countries, despite of the fall in international prices of some of their most important commodities, it is proposed that augmenting and stabilizing the agricultural production would be the best way to accomplish export earnings growth and/or stability (Ali et al. 1991, p. 33). It is also reported that no clear relationship between the degree of export diversification and export performance could be established, when considering the experience of these three countries. Finally, it is also stated that export diversification is difficult in these economies, considering the lack of technological expertise, infrastructure and support services (Ali et al. 1991, p. 36). Tackling the issue of unstable domestic production, in turn explained by elements such as political disruptions and poor macroeconomic measures, is suggested as a factor of paramount importance before thinking about diversification.

## 2.3 Concluding Remarks

The relationship between trade and economic growth is, for sure, one of the richest and more interesting intellectual puzzles present in the economic literature. This question has been tackled several times, based on an ample number of theoretical models and empirical studies. While it is true that the debate is still open, and that the controversy is far from being resolved, it has not been demonstrated that trade could exert a negative influence on growth. Rather, the possible effects have been either overstated, or not properly measured. As pointed out by different scholars, the possible effects of trade upon economic growth seem to take place through different channels. Coupled with that, more sophisticated econometrical studies and techniques are needed, that would allow to appraise the extent of this linkage. Finally, not just the static gains from trade, but also the long-term dynamic ones should be considered, when analyzing the benefits derived from trade for a country's economic growth.

Export diversification has been proposed as a possible instrument that could enhance economic growth. Similarly to the relation between trade and economic growth, this argument has both advocates and opponents. The first group bases its position on the expectation of achieving stability-oriented and growth-oriented policy objectives, the possible linkage between economic growth and structural change, the modernization of productive structures, the augmentation of investment

opportunities, and the reduction of investors' risks, among other claims. The endogenous growth literature highlights how diversification – both of output and exports- is a result of different factors associated to development. In contrast, skeptics argue that diversification *by itself* should not necessarily be beneficial for an economy, since the “new” products, could also be affected by volatility. Furthermore, aspects such as the futility of promoting export diversification without meeting the required previous conditions for it to be successful, have also been discussed.

As well as in the case of the nexus between trade and economic growth, the proposal of this chapter is that there is no clear or stringent evidence of possible detrimental effects of export diversification per se on economic growth. Both the theoretical framework and the empirical studies surveyed mostly converge on the hypothesis that export diversification may contribute to economic growth. Greater export diversification and lower export concentration has been associated with faster growth. As has been reported, export expansion coupled with diversification has shown in empirical studies to be relevant for economic growth. Plausibly, this instrument should be coupled with other initiatives: finding the right “export mix”, and guaranteeing the required domestic conditions – such as the availability of the infrastructure, inputs, or skills needed-, are other factors of paramount importance. In a next chapter, an analysis of the current situation and perspectives in Colombia is carried out, trying precisely to determine if the country is prepared to successfully embark on a process of a structural change of exports towards diversity.

Finally, one interesting lesson derived from the survey is that export diversification should be decoupled from the notion that just industrial products and services should be promoted for a country to successfully evolve in economic terms. As in the case of positive experiences like the Chilean, Canadian, American, and the Scandinavian ones, natural resources exports could continue playing an important role for Colombia's economic development. The promotion of natural resource-based industries should therefore continue to be encouraged, but taking into account the necessary introduction of larger skills and knowledge intensities. Hence export diversification, considered on the whole as the evolution towards more sophisticated products, seems to exert a positive effect upon economic growth.

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Mejía, J.F.

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