



## **AN APPRAISAL OF THE IMPORT SUBSTITUTION STRATEGY FROM A STRUCTURAL ECONOMIC DYNAMIC APPROACH\***

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### **Abstract**

*This paper seeks to establish that a Structural Economic Dynamic (SED) approach toward understanding the Import Substitution Strategy (ISS) offers a superior method relative to the Neoclassical approach. It is argued that the latter fails to fully account for the role of demand and hence, the structural dynamics of underdeveloped economies, when considering the shortcomings of the ISS. Argued as relatively superior to the Neoclassical view, the SED approach considers the evolution of preferences as a variable driving change, shedding new light on main channels of North-South interdependence.*

**Keywords:** Structural Economic Dynamics, Uneven Development, Import Substitution Strategy, Technical Progress, Engel's Law

**JEL classification:** O19, F12

### **1. Introduction**

Relationships between international trade and economic growth have long been established as an important area of inquiry, especially connections between exports and economic growth. See, for example, Edwards (1993, 1997) and Cuadros, Orts, and Alguacil (2004). While the neoclassical view

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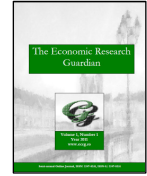
focuses on the supply side to explain the constraints to growth [Solow (1956)], the post-Keynesian approach departing from the seminal works of Kaldor (1978) and Harrod (1933) focuses largely on the demand side for explaining growth rates of output for countries with open economies. According to this view economic growth is a demand-oriented process in which both factor supplies and technical progress are largely endogenous to the growth of output.

From a Structural Economic Dynamic - SED hereafter - perspective this paper seeks to establish that development processes should be understood with a theoretical framework that considers the effects of supply and especially demand on rates of economic growth. Pasinetti (1981, 1993) refers to SED as an approach that provides insights into processes of economic development, offering a synthesis between traditional supply and demand views of economic growth, with the supply side characterized by technological progress and capital accumulation, and the demand side driven by the Engel's Law. International learning is the primary source of gains from international relations being the disparities of comparative costs and endowments only a secondary one.

If this view is true then why is it that the importance of international learning in generating economic growth, relative to comparative costs and factor endowments was recognized so late? A possible answer is that the Total Productivity of Factors - PTF hereafter - grows faster in more open economies. And, as Edwards (1997) suggests this finding could give rise to the spurious idea that international trade, and not what is derived from trade as learning, serves as the most import benefit to be gained from international intercourse.

The Neoclassical literature on growth and trade of the early 1950s was inadequate to deal with economic development and the suspicious that in the long term the situation for primary producing countries would worsen rather than improve, led some economists, who were mainly influenced by their knowledge of the Latin America economic experience – declining primary exports prices and worsening balance of payments etc. – to raise strong criticisms to the traditional trade theories. It was in this context that the essential ideas of ISS for Latin America have appeared in the works of Prebisch (1950, 1959, 1963) and his group at ECLA (Economic Commission for Latin America).

Convinced that the way forward lay in a transformation of the domestic economic structures via the development of the industrial sector, they developed a new body of theory designed to explain and justify the need for a new approach. The new theory emphasised both the economic structure of underdevelopment and the nature of these economies exposure to international trade as basic constraints to growth. According to this approach a country should attempt to reduce its foreign dependency through an active industrial policy, tariff and non-tariff barriers, and an overvalued exchange rate. Although the ISS has met considerably success in many countries it was increasingly challenged by a number of authors in the Neoclassical tradition. Their criticisms to ISS were based on a static notion of the comparative advantage principle and on a passive influence of demand-side factors in affecting international trade and patterns of specialization. It is important to remember that from the Neoclassical viewpoint the existence of different income elasticities in developed and underdeveloped countries is a consequence and not an explanation of different trade patterns since the elasticities are determined endogenously by technical progress according to the Solow's reading.



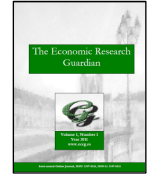
Here we consider that from a SED approach it is possible to incorporate a dynamic version of the principle of comparative advantage in which not only the differences in endowments play a role but also the possibility of learning. According to this reading, possibilities are that the static gains from trade come at the cost of dynamic gains, because international trade induces some countries to specialize in industries with relatively low grow potential. Hence our work also focuses on the conditions under which infant industry protection is justified by the learning-by-doing and learning-by-exporting externalities.

From the SED approach we point out that the failure of the ISS approach to take into account the role of changing preferences as economies structurally evolve. More specifically, although acknowledging the virtues of the ISS we criticize it for not giving adequate weight to the role of demand in facilitating learning and adoption of new technologies. A lot of this work focuses on the nature of growth and learning in multi-sectoral models, conditions under which infant industry protection is justified by the learning-by-doing and learning-by-exporting externalities, etc. Following these lines of investigation, we intend to show that the SED approach may be considered as a formal background to tackle some of the weaknesses and failures of the ISS as a strategy of economic growth. The paper stresses the importance of concepts such as technological distance and the capability to assimilate knowledge spillovers in the development process, but always conditioned to the economy's dynamic structures, as well as to evolving patterns of demand.

Here we intend to show that the main criticisms suffered by the ISS from a Neoclassical approach were based on a limited scope of a static version of the comparative advantage principle and other derived theories such as the Heckscher-Ohlin model. This led to the adoption of a number of alternative policies supported by the Washington Consensus and most of the prescriptions of the ISS were abandoned by developing countries in Latin America. However the results of such change of paradigms were not satisfactory deepening technological and per capita gaps with rich nations in the eighties and nineties. In the alternative reading presented in this paper the struggles of the ISS were the outcome of a wrong perception of the role of the demand that just a multi-sectoral model can highlight. In the next section we present the e main characteristics of the ISS and their struggles to be a successful strategy of economic growth in Latin America. Section 2 considers a review of the ISS and Section 3 intends to approach the weaknesses of the ISS from the SED approach. Section 4 concludes.

## **2. A Review of the Import Substitution Strategy**

Historically trade between the industrialized North and the less developed South has entailed exchange of capital-intensive and human-capital-intensive manufactures by the former region for the labour intensive manufactures and primary commodities of the latter. Southern economies are characterised for maintaining a rather traditional comparative advantage structure towards labour and resource intensive industries. The usual explanation for this phenomenon is Engel's law, which implies the difference in the income elasticity of demand for industrial and primary products, the latter typically exported by underdeveloped countries<sup>1</sup>. As long as underdeveloped economies



maintain these structures they will be incapable either of generating their own growth dynamics or of achieving economic development.

Prebisch (1950, 1959, and 1963), for instance, argues that the South typically exports primary products and the North industrial products. According to Davidson (1990-1991, p.301) “less developed nations (...) concentrate on the export of raw materials, and other basic commodities for which the Engel’s curves suggest that the developed world will have a low income elasticity of demand, while the LDCs have a high income elasticity for the manufactured products of the developed world.”

In order to overcome these shortcomings the main prescription of the ISS for underdeveloped economies was that the structure had to be changed in fundamental ways if they were to compete on equal terms in the world markets. The main aim was to catch up to the technological frontier through the protection of their infant industry and change of the structure. These strategies relied on the belief that the key to economic development was the creation of a strong domestic manufacturing sector, and that to accomplish this task it was necessary to protect domestic manufactures<sup>2</sup> from international competition. To close both technology and income per capita gaps may well require a temporary protection by a number of tariff and non-tariff barriers to trade and industrial policy with a variety of incentives, credit subsidies and price controls.

Another prescription of the Structuralist paradigm was that countries must not only change their structures, but should encourage domestic industry by limiting imports of manufactured goods and changing the structure of the economy through the application of ISS in order to build a strong capital goods sector. According to Hunt (1989, p. 50), “[o]nly government promotion of a steady process of structural transformation, focusing above all on the development of a diversified domestic industrial sector, including capital goods production can overcome these problems.”

Bhaduri and Nayyar (1996, p.14) has summarised this view stating that “there is *no* historical case of successful late industrialisation, either in the nineteenth or in the twentieth century, which did not depend upon State support in the form of promotion of protection of domestic industry”. This view is confirmed by Baer (1972) who considers that all countries which have industrialized after the United Kingdom went through a stage of ISS in which the large part of investment in industry was directed to replace imports.

Chang (2002) went a step further by showing that all major developed countries has adopted the infant industry argument to promote industrialization and protected national industry. In the 1950s and early 1960s for instance, due to balance of payment – BOP hereafter – constraints, the after war trade strategy pursued by France and Japan<sup>3</sup>, for instance, were based on a vigorous protection of their home markets. In the same vein the USA and Germany also began their industrialization in the nineteenth century behind trade barriers with high tariff rates on manufacturing

As a strategy for encouraging growth of manufacturing in Latin America, ISS has clearly worked out initially. Some of these economies now generate almost as large a share of their output from manufacturing advanced countries. Besides, this strategy gave rise to important structural changes in



the economies where it was adopted since once the possibility of replacing consumer goods imports had been exhausted, these countries turned to the protection of intermediate goods.

As it is well known such development policy met considerable success in Latin America in the 1950's. Initially, output of domestically produced manufactured goods grew substantially, as did industrial employment. It seemed that peripheral capitalism had found a promising land – to be capable of developing the productive forces and thus to reduce both technological and income per capita gaps in relation to rich nations. However in most countries the structural changes imposed by the ISS were limited to a number of sectors mainly those related to consumer goods imports. Once the possibility of replacing these commodities had been exhausted some countries met considerably difficulties in creating a domestic capital goods sector.

Surely some of the problems identified above have been in fact the subject of some old debates, such as the passage from the 'easy' stage of import substitution to 'higher' stage, when capital goods were expected to be produced domestically. This view is confirmed by Eatwell (1987, p.737) who remind us that: "Later the policy fell into disrepute. It was argued that import substitution took place primarily in the 'soft' consumer goods industries, whereas investment goods continued to be imported". Hence, after a period of successful implementation of ISS recommended policies in Latin America, most of the countries in the region were unable to proceed towards the construction of a solid capital sector. Investment goods continued to be imported despite of a number of stimulus and controls and with few exceptions, such strategy also failed to reduce both income per capita and technological gaps between advanced and underdeveloped nations.

In the next section we will tackle some measures prescribed by the ISS by using a SED approach. For while it is useful to summarize some characteristics of the ISS that we consider as the most important ones to explain the failure of this theory according to the SED approach [See Palma (2003)]:

- (i) Almost entirely inward-looking;
- (ii) Its engine was the high propensity to consume, and the ever-growing diversification of consumption patterns of the high income groups;
- (iii) There was a remarkable neglect of primary commodity exports.

It is also important to consider that a tariff that reduces imports also necessarily reduces exports since by protecting infant industry, a country draws resources away from actual or potential export sectors. So a countries choice to seek to substitute for imports is also a choice to discourage export growth. According to Bruton (1998) this strategy halted somewhat the speed of the structural adjustment in the direction of more technologically advanced industries and technologies since it imposed more difficulties to the processes of diffusion and absorption of international learning. Their strategists have ignored that the diffusion of international learning represents gains for less developed countries if the order of priority in the expansion of demand is considered. Obviously, all countries cannot achieve an increasing share of exported commodities in the worldwide market at once.

This view is confirmed by Palma (2003, p. 127) who considers that "although IS[S] did deliver a manufacturing growth that had no precedent (or continuity) in Latin America – 6,5% annually in the



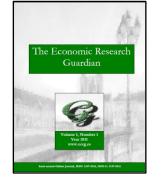
period 1950-81 – it became increasingly associated with cumbersome policies and foreign-currency shortages. These problems progressively led to constrained investment, lower capacity utilization, ‘stop-go’ cycles and eventually to excessive foreign borrowing. In sum, between 1950-81 IS[S] did deliver a growth rate in Latin America that was not only higher than in other developing regions, but also – and first time ever – higher than that of the OECD (4,2%)”.

Besides another shortcut of the ISS is their implicit reservation concerning static conceptions such as static allocative efficiency, static comparative advantage and related topics. The standard price and associated policies are not the most desirable mechanisms to allocate resources under severe balance of payments constraints and the necessity to proceed towards structural development and technological change. The ISS did not succeed to appreciate that the diffusion and absorption of international knowledge requires conditions that are particular to the structure of each economy, which is also conditioned to the role of demand. Besides, empirical evidence shows that some developing countries, such as India and Brazil, have to some extent escaped capital dependence and created their own capital goods producing sectors, but they failed to enjoy persistently strong rates of growth. In the next section by using a SED approach we intend to show formally how some of the ISS measures have ignored the role played by demand.

### **3. A Structural Economic Dynamic approach to Import Substitution Strategy**

In this section we intend to consider how an SED approach to issues raised by the Structuralist school may help to understand the struggles of this theory. By formally approaching the issues raised by the ISS we intend to show formally how the Engel’s Law may damage the prescriptions of the ISS. In some extensions and applications of the Pasinetti’s model to international economic relations, Araujo and Teixeira (2004) and Araujo and Lima (2007) have shown that the SED approach may shed light on the process of uneven development. The central idea is that the dynamic patterns of human needs and preferences give rise to entirely different compositions of consumer demand, and therefore different structures of production and employment in each country. In this vein the diffusion and absorption of technical progress is shown to be subject to different economic structures particular to advanced and underdeveloped countries<sup>3</sup>.

Besides, technology transfer to the underdeveloped country will not necessarily increase its growth rate, but it may reduce the rate of labour absorption, having negative impacts on the employment level. In order to examine this point let us consider that per capita demand of consumption goods in the underdeveloped country,  $U$ , is represented by a set of consumption coefficients: both  $a_{in}$  and  $a_{i\hat{n}}$  stand for the demand coefficients of final commodity  $i$ . The former refers to domestic and the latter to foreign demand. In the same vein,  $a_{ki,n}$  and  $a_{ki,\hat{n}}$  stand for the investment coefficients of capital goods  $k$ . The production coefficients of consumption and capital goods are respectively  $a_{ni}$  and  $a_{nki}$ . The family sector in country  $A$  is denoted by  $\hat{n}$  and the size of population in both countries



is related by the coefficient of proportionality  $\xi$ . Araujo and Teixeira (2003) have shown that the employment level,  $EL$ , in country  $U$  can be measured by the following expression<sup>3</sup>:

$$EL(t) = \sum_{i=1}^{n-1} (a_{in} + \xi a_{i\hat{n}}) a_{ni} + \sum_{i=1}^{n-1} (a_{ki,n} + \xi a_{ki,\hat{n}}) a_{nki} \quad (1)$$

The dynamic paths of the demand and technical coefficients are given below:

$$a_{in}(t) = a_{in}(0)e^{r_i t} \quad (2)$$

$$a_{i\hat{n}}(t) = a_{i\hat{n}}(0)e^{r_{\hat{i}} t} \quad (3)$$

$$a_{ki,n}(t) = (g + r_i) a_{in}(t) \quad (4)$$

$$a_{ki,\hat{n}}(t) = (g + r_{\hat{i}}) a_{i\hat{n}}(t) \quad (5)^4$$

$$a_{ni}(t) = a_{ni}(0)e^{-(\rho_i + \gamma_i \rho_{\hat{i}})t} \quad (6)$$

$$a_{nki}(t) = a_{nki}(0)e^{-(\rho_{ki} + \gamma_{ki} \rho_{\hat{k}_i})t} \quad (7)$$

where  $r_i$  is the growth rate of internal demand for commodity  $i$  and  $r_{\hat{i}}$  stands for the growth rate of foreign demand for good  $i$ . The rate of technical change for sector  $i$  is denoted by  $\rho_i$  while  $\rho_{ki}$  has the same meaning in relation to sector  $ki$ . Besides,  $\rho_{\hat{i}}$  and  $\rho_{\hat{k}_i}$  are the rate of change of productivity in the foreign sectors  $\hat{i}$  and  $\hat{k}_i$ , respectively. The symbols  $\gamma_i$  and  $\gamma_{ki}$  stand for the fraction of foreign technological progress that is captured through international learning,  $0 \leq \gamma_i \leq 1$  and  $0 \leq \gamma_{ki} \leq 1$ .

By replacing the dynamic path of coefficients, captured by expressions (2) to (7), into the expression (1), allows us to conclude that the employment level ( $EL$ ) may be smaller due to patterns of foreign trade and the absorption of technical progress. This result is demonstrated by Pasinetti (1981) for a closed economy and Araujo and Teixeira (2003a) have verified it to the case of an open economic system. It is important to mention that a flexible labour legislation and the ability of workers to adjust rapidly to a changing environment may compensate the employment losses due to technical change. This is not the scenario found in most developing countries, where a considerable fraction of the labour force is unskilled, the labour legislation is rigid and there are few institutional mechanisms that allow a prompt labour mobility. These facts reinforce the mismatch among the skills of the labour force and those required by the new methods of production.



The balance of payment constraint is another issue that may spring from particular structures of developed and underdeveloped countries that may also affect the capability of an underdeveloped country to absorb international knowledge.

In order to further evaluate the effects of elasticities on the balance of payment performance and economic growth Araujo and Lima (2007) has derived the Thirlwall's Law<sup>5</sup> in a multi-sector set up departing from the Pasinetti's framework and show that even in the case in which the sectoral elasticities are constants changes in the growth rate of output are possible due to the structural changes that accrue from the evolution of tastes and preferences according to the Engel's law.

$$\sigma_y^U = \frac{\sum_{i=1}^{n-1} \xi \beta_i a_{in} a_{ni}}{\left( \sum_{i=1}^{n-1} \phi_i a_{in} a_{ni} \right) \left( \sum_{i=1}^{n-1} \beta_i \right)} \sum_{i=1}^{n-1} \frac{\dot{a}_{in}}{a_{in}} \quad (8)$$

Expression (9) is nothing but a multi-sectoral version of what Thirlwall (1979) called the balance-of-payments equilibrium growth rate. It asserts that the growth rate of per capita income in country  $U$ ,

that is  $\frac{\dot{y}_U}{y_U} = \sigma_y^U$  is directly proportional to the growth rate of its exports. The coefficient of

proportionality shows that a country will benefit the more from an increase in foreign demand, and thereby experience higher rates of growth that are consistent with balance of payments equilibrium, the lower its sectoral income elasticities of demand for imports, given by  $\phi_i$ , and the higher its sectoral income elasticities of demand for exports, given by  $\beta_i$ .

Expression (9) shows essentially that the growth performance relies heavily upon on the ability to export, which is evidence that any growth strategy that focuses heavily on internal markets would fail. Besides what matters in the determination of the growth rates is not only the elasticities but also the weigh that these goods have in the economy. By neglecting the exports of primary goods the ISI has neglected that the share of these commodities in the exports is high, which may have compensated the small elasticity of demand. One of the consequences of neglecting the exports of commodities is that the trade deficit in manufactures did not drop fast enough to compensate for declining commodity trade surpluses.

Besides, an outward oriented view would create demand for goods with a high income elasticity of demand, which would produce structural changes in the economy that would give a higher share to these more sophisticated goods. In terms of learning, ISS is justified by the learning by doing externalities related to it. But this strategy by limiting its focus on internal market has narrowed the scope for the externalities that arise from learning-by-exporting or learning-by-trading. In this way, ISS and export-led growth were never mutually exclusive alternatives for the New Industrializing Countries: ISS was simply a platform and source of finance for their export drive. In turn, export orientation forced levels of investment, productivity and product quality that a purely inward-oriented ISI could never deliver. [Palma (2003, p. 137)].





Capital accumulation also plays an important role in the diffusion of technologies and, if importation of capital goods is prevented by an intertemporal BOP constraint, then the process of technological absorption may be negatively affected in underdeveloped countries<sup>6</sup>. This is particularly true if, for an underdeveloped country, only exportation of primary products, with low foreign demand elasticities is available.

Hence the composition of demand also plays an important role in the allocation of capital goods and this fact was somehow ignored by the ISS. In order to formally illustrate this point let us adopt an extended version of the Feldman-Mahalanobis (1928, 1953) model, F-M model hereafter, considered as one of the theoretical backgrounds to support the creation of a heavy domestic industrial sector. F-M model inverted the accelerator-type relation in a market economy, i.e. the increase in consumers' goods was linked/derived to an increase in capital goods investment. This violates the logic of market/export-led growth, where consumers' demand transmits to the rest of the economy, including capital goods. This model is claimed of not taking into consideration the role played by demand into determination of the rate of investment allocation that may increase the overall growth rate. As pointed out by Halevi (1996, p.170), "The Marx-Feldman-Mahalanobis two-sector model cannot possibly take into account the composition of consumption demand because it contains only one consumption good. Any increase in per capita income is transformed into a higher level of consumption of the same commodity."

In order to mitigate the limitations of F-M model in relation to the passive role of per capita consumption demand, Araujo and Teixeira (2003b) have shown that it can be treated as a particular case of Pasinetti's (1981) model of structural change. From this standpoint, it is possible to carry out the analysis of investment allocation in a framework where demand and productivity change at particular rates. Considering that  $r^n$  and  $r^s$  represent the rates of change of demand of the Northern and Southern consumption goods, respectively, and assuming that the global growth rate of population is equal to  $g$ , it is possible to establish the growth rate of demand for the commodity of each region, which is equal to the growth rate of demand of the correspondent capital goods in every time period:

$$\frac{\dot{X}_k^n}{X_k^n} = \frac{\dot{X}^n}{X^n} = g + r^n \quad (9)$$

$$\frac{\dot{X}_k^s}{X_k^s} = \frac{\dot{X}^s}{X^s} = g + r^s \quad (10)$$

where  $\frac{\dot{X}_k^n}{X_k^n}$  is the growth rate of the Northern capital goods sector,  $\frac{\dot{X}^n}{X^n}$  is the growth rate of the

Northern consumption goods sector and  $g$  is the overall growth rate of population.  $\frac{\dot{X}_k^s}{X_k^s}$  stands for



the growth rate of the Southern capital goods sector and  $\frac{\dot{X}^s}{X^s}$  is the growth rate of the Southern consumption goods. Expressions (9) and (10) express the growth rates that have to be observed in order to fulfil the demand requirements particular to each region in each point of time. Expressions (11) and (12) below give the feasible growth rates of production:

$$\frac{\dot{X}_k^n}{X_k^n} = \lim_{t \rightarrow \infty} \frac{\dot{X}^n}{X^n} = \frac{\mu^n}{v_k^n} \quad (11)$$

$$\frac{\dot{X}_k^s}{X_k^s} = \lim_{t \rightarrow \infty} \frac{\dot{X}^s}{X^s} = \frac{\mu^s}{v_k^s} \quad (12)$$

Hence, by equalising (11) to (9) and (12) to (10) we obtain the values of  $\mu^n$  and  $\mu^s$ , the rate of capital goods allocation in the North and South respectively, that give the warranted growth rate of investment compatible with the growth path of demand of each commodity in each of the countries:

$$\mu^n = (g + r^n)v_k^n \quad (13)$$

$$\mu^s = (g + r^s)v_k^s \quad (14)$$

Such expressions introduce a normative criterion for Feldman's model: capital goods have to be allocated according to (13) and (14) in each region to allow the fulfilment of the corresponding capital accumulation condition, given the hierarchical order in which the production of consumption goods ought to proceed. Note that if  $r^n > r^s$ , then the North country grows faster than the South one in the long run and the per capita income gap between the two regions grow indefinitely. Hence it is possible to conclude that countries with a higher elasticity of demand will grow faster in the long run by allocating higher proportions of capital goods to the capital goods sector which feeds upon itself. This fact shows that the allocation of capital goods is also conditioned to the active role that demand play in the determination of the stage of the economic growth of each nation. Of course, this approach requires a view on how poor nations have to reorganise their economic structure in order to promote development.

#### 4. Concluding Remarks

In this paper we have focused on one of the main strategic policies of economic development adopted by a number of countries with the aim of reducing the widening gap both in technology and income per capita among advanced and less advanced nations. It was pointed out that ISS failed



because in most of the historical circumstances they were applied, they created an environment that discouraged learning, which is the first source of gains from international relations.

Besides, the ISS paradigm in Latin America has ignored that the structural changes and economic dynamics of their economies were conditioned firstly to the evolving patterns of actual and prospective demands (domestic and foreigner) for consumer and investment goods, and not to policy makers' intentions. Here it is stressed that the relative failure of this approach to reduce the gap between the North and the South is due to the fact that it has ignored to some extent the role played by the structural economic dynamics according to the particular evolving patterns of demand and productivity growth in developed and underdeveloped economies.

The syntheses of the analysis presented here is that the structural economic dynamics of the systems should be considered as the stand point for the creation of a proper environment for international learning in underdeveloped countries. We acknowledge that more than one policy strategy follows from an understanding of the obstacles to diffusion and absorption of technical progress posed by Engel's law. A possible conclusion is that poor regions need to induce structural changes in their economies that encourage the expansion of export oriented manufacturing industries, producing commodities with higher elasticities of demand than those for primary products. This is not a novelty. However, the present paper throw a new light upon the nature of the main problem actually found in ISS framework - it failed to recognise to some extent the role of demand both in the diffusion and absorption of technological progress.

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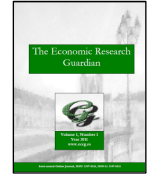
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## Endnote

1. The Neoclassical explanation for this pattern of specialization and trade is widely known to be provided by the Heckscher-Ohlin model, which emphasizes differences in endowments.
2. The recognition of the importance of manufacturing has a long tradition in Economic Growth and Kaldor's flywheel of growth (1972) captures the image of the capital goods sector as a motor of sustainable development through output, employment, trade, investment performance and the sector's potential for productivity growth and technical progress.
3. This view is supported by McCombie (1997, pp. 368–369) who states that “However, it should be emphasized that Japan cannot be viewed as a good example of conventional ‘export-led growth’, at least through the working solely of Harrod foreign-trade multiplier, if only because of the relatively low share of exports in GDP. In 1952, exports, in current prices, were less than 5 percent of Japan’s GDP and, although export growth rapidly outstripped the growth of output, forty years later its share had only doubled to 10 percent.”Of course there is some reciprocity, that is, the technological absorption is determined by the structure of the economy but when technological change is effectively added to the productivity process it affects the structure of the economy as will be shown in the next sections.
4. Expressions (4) and (5) represent capital accumulation conditions.
5. Thirlwall (1994, 1997) argues that the effective constraint to long-term growth is the long-run rate of growth of exports, combined with the long run elasticity of demand for imports in relation to the national income (output). His BOP constrained growth model, the so-called Thirlwall’s Law, has been found to make empirical sense for many countries’ experience. The Journal of Post Keynesian Economics, vol. 19, No.3, Spring 1997, provides a “Minisymposium on Thirlwall’s Law and Economic Growth in an Open-Economy Context”.
6. As pointed out by Oda (1999, p. 208) “learning new techniques without importing any capital goods is also meaningless unless all the capital goods that are directly or indirectly necessary for using the learnt techniques can be produced at home. The importation of advanced capital goods is not the origin of acquisition of new techniques, but the latter is almost inevitably accompanied by the former.”