Back to Furtado Via Kaldor and Thirlwall: Heterodox Theories of Growth as a Support for the Resumption of the Furtadian Focus of the Regional Issue

ABSTRACT:

This paper aims to present and compare the heterodox growth theories for open economies of Thirlwall and Kaldor to assess how they can contribute as an element of interpretation of the Brazilian heterodox regional economic literature. The hypothesis of the paper is that the lack of autonomy to formalize the internal borders between regions of a country does not constitute an obstacle for the trade effects between them to generate situations characterized by balance-of-payments-constraints, imposing limits to the expansion of their economies and in these processes unleashing polarization mechanisms regarding their growth rates. It is concluded that the literature below justifies the reestablishment of Furtado's perspective as a key to the interpretation and treatment of regional problems in Brazil.

KEY WORDS:

Regional Question. Celso Furtado. Heterodox Growth Theories. Kaldor. Thirlwall.

André Luís Cabral de Lourenço

- Associate Professor, Department of Economics, Federal University of Rio Grande do Norte (UFRN);;
- Member of the Group for Study and Research in Political Economy of Development (GE-EPD).

Márcia Maria de Oliveira Bezerra

- Associate Professor, Department of Economics UFRN;
- Member of GEEPD.

Marconi Gomes da Silva

- Associate Professor, Department of Economics UFRN;
- Member of GEEPD.

William Eufrásio Pereira

- Associate Professor, Department of Economics UFRN;
- Member of GEEPD.

1 – INTRODUCTION

The literature that focuses on the regional issue in Brazil is rela-tively wide. However, it seems there are no doubts as to the fact that the list of classic texts that focus on the theme is headed by the document of the Working Group for the Development of the Northeast (GTDN) entitled An economic development policy for the Northeast, written by Celso Furtado, and the work of Wilson Cano, called Regional concentration and regional imbalances in Brazil (1930-1995).

The text of GTDN (1997) presents an analysis of the "problem" faced by the Northeast in the context of national development and a set of recommendations in order to overcome it permanently. The analytical part of the referred document will be briefly addressed.

The GTDN states that the income disparity between the Northeast and the Mid-South[1] was itself "the most serious problem to be faced in the stage of national economic development." The differential growth rate in force was used to project that a further distance among the levels of income per capita between these regions was to occur due to the realization that economic processes of this nature have a "cumulative" character that is "hard to reverse". (GTDN, 1997, p. 387). We notice that the terminology itself reflects the influence of Myrdal and of the developmental literature of that time.

Furtado's approach to addressing the problem of regional disparities in the country favors the analysis of growth in the context of open economies, as is extracted from this statement, "it is misleading to present the Brazilian economy as a single system," due to inadequate "manpower mobility factor". (GTDN, 1997, p. 394). Hence the importance of verifying whether and to what extent the contemporary heterodox literature of growth in an open economy supports it.

Furtado believes that at that time, the Mid-South was in a very favorable position to sustain its growth due to the income level and the pace of growth achieved in recent years and the "level of diversification of its industrial park," with production of capital goods

reaching relative importance, generating "conditions to rely on itself to grow". (GTDN, 1997, p. 394). On the other hand, the prospects for the Northeast was quite different and it would not expect any change in its framework, if policies were not adopted aimed at reversing the scenario that was set up.

The differential pace of growth would be mainly resulting from the so-called "secular or deep-rooted causes." To the secular causes it would be added other causes arising particularly from policies related "to the very policy of country industrialization." (GTDN, 1997, p. 395). The focus rests on the question about the Northeast's exchange with other countries, the Mid-South, and indirectly with this region through foreign countries, with a view to capture the "transfer of resources". The text aims to show, by various mathematical exercises that in this exchange that the policy of protecting Brazilian industry eventually caused the transfer of resources from the Northeast to the Mid-South. Literally, it says:

> The way they were conducted in the last decade, economic relations of the Northeast with the Mid-South have been harmful to the resource-poorer and less developed region. As regards the transfer of income, the federal government's action has been limited to offset the trend of emigration of northeast private capital to the region that offers better opportunities. (GTDN, 1997, p. 399).

The text also focuses on the "dynamic elements of the Northeast economy," highlighting variables compatible with the contemporary heterodox theories of growth in open economies: exports (to abroad and the Mid-South) and governmental spending are the components of aggregate demand that lead the expansion of the regional economy.

Besides the diagnosis, GTDN proposes an "Action Plan" to boost development in the Northeast. Since there is no purpose of this article to focus on the normative part of that document, we highlight only its main components: a) Policy reform for the use of soil and groundwater in the semiarid region, b) Reorganization of the semiarid region's economy and opening of colonization fronts, c) Intensification of industrial investments; d) Solution to the problem of electricity supply; e) Utilization of recent technological achievements; f) Increase the supply of food in the

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[1] The Northeast includes the states from Piauí to Bahia and the Mid-South comprises the coastal states from Espírito Santo to Rio Grande do Sul, and the Mediterranean states, Minas Gerais, Mato Grosso and Goias.

industrial centers, and g) Technical assistance to state governments. The remarkable focus on overcoming the backwardness of the productive structures, again in line with contemporary heterodox literature, is thus the core of the project.

On the other hand, the mentioned work of Wilson Cano is one of the most important works on the regional issue in Brazil, which has the purpose of taking a critical approach to the literature that focuses on the topic. His critical stance appears summarized in the introduction of the work at hand, which is divided into three items: *Political and theoretical awareness of the regional issue; some misconceptions and myths on the regional issue; and compartmentalized and depoliticized visions.*

However, for purposes of this article, it is interesting to register the recognition by the author of the importance that ECLA-Economic Commission for Latin America had in order to increase political awareness on the issue of regional imbalances, and to emphasize his view of the inadequacy of this theoretical work to address this problem, when the regions in question are part of the same country. On this scheme of analysis, Cano (1998, p. 18-19) notes:

> Its main theoretical problem, with regard to attempts to apply it to regional dimension of a nation, is that the 'center-periphery' concept is valid only when applied to the relationship between Nation-States, not among regions of a same nation, in which the differentiation of internal borders can not be formalized by measures of exchange rate policy, tariff and others, except those related to regional policy incentives.

Although Cano's work relates a set of arguments distributed over the three items mentioned above, in order to answer the wrong views that he thinks of the problem of regional imbalances in the country,[2] for this article's purposes, his citation is crucial because it gives rise to the existence of different perspectives

of those developed by Furtado in the treatment of the phenomenon of growing regional disparities in Brazil. The development of heterodox theories of regional growth in the last thirty years may help to clarify if criticism made by Cano, which is the inapplicability of the concept for the center-periphery approach, is well founded or if the ideas of Furtado find theoretical support in the field of heterodoxy, supporting his explanations of disparities in regional growth, even in the case of regions within a country.

This article aims to present and compare the heterodox theories of growth for open economies of Kaldor and Thirlwall - especially its impact on regional aspect - in order to assess if they can serve as a key of interpretation for the treatment given by Furtado and Cano to the growing regional disparities in Brazil. We hope that such theories provide analytical elements to clarify if the positions of Furtado, founded in the center-periphery vision, are supported by this literature, or if they recognize the impossibility asserted by Cano (1998, p. 18-19), who sees in the absence of formalized internal borders an unavoidable problem for the use of balance of payments to the investigation of expansive dynamic among regions within a country.

Our work hypothesis is that the lack of autonomy to the formalization of internal borders among regions of a country does not constitute an impediment for the purpose of exchange between them to generate characteristics configuration of payment balance restrictions, imposing limitations on the expansion of their economies and triggering mechanisms in this process of polarization between their growth rates.

2 – DAVIDSON AND THIRLWALL: FRUITFUL ELABORATIONS TO REGIONAL ECONOMIC ANALYSIS

The model of Thirlwall (1979) is possibly the best-known heterodox growth model, having been adopted by authors of different trends, including Davidson (1994). His starting hypotheses should be highlighted.

The first point to be considered is the common assumption by both authors, of the hypothesis of the validity of the Principle of Effective Demand (PED),

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2 Also as part of the criticism to GTDN, specifically in the case of its "Action Plan", it is considered an error the proposal to promote a "regional import substitution that would create an autonomous manufacturing ex-pansion center in the Northeast." The argument is that "since the 1930s, capital accumulation with the com-mand from São Paulo, was integrating the national market, conditioning it, therefore, to an inter-regional complementarity adjusted to the needs dictated by capital accumulation from that dominant center " and therefore had not existed a "real historic opportunity to create a '(Regional) Autonomous Centre of Manufac-turing Expansion'. "(CANO, 1998, p. 22).

even on the horizon of long-term macroeconomic scenario. In fact, this assumption can be interpreted as the rejection of the possibility that wage and price flexibility is able to automatically handle the economy at the level of potential output, as well as that might be an indication that the theoretical result of incorporating that hypothesis is that the process of economic growth, which goes in the opposite way of the neoclassical view, is led by demand and not by supply.

Although led by demand and, therefore, in principle, liable to be affected by all the traditional tools of economic policies, growth can find various types of restrictions in its path. Among these, the model in question puts all its focus on what is considered the most important constraints, namely the balance of payments.

Considering the balance of payments a potential constraint to the process of long-term economic growth - and not just one of several short term "attrition and friction", derived from various rigidities that impede the continuity of the optimal functioning of the economic system implies aligning the mercantilists, cepalinos and other heterodox currents, contrary to conventional thinking. This is because, for the latter, sooner or later, the forces that govern the functioning of price system would eventually automatically balance the balance of payments of countries and regions without causing permanent effects on their income levels.

Consider, as an illustration of the conventional reasoning, the case of two regions, say the Northeast and Southeast, which together maintain a fixed exchange rate regime, or even a single currency, both being initially in equilibrium in their balance of payments. Suppose the occurrence of an exogenous increase in demand in the Northeast for products made in the Southeast and that such shock, due to the presence of different strictness, can not be immediately compensated, so that the first region starts showing a trade deficit, which would have in return a surplus in the second.

Assuming unchanged the total amount of currency in circulation in the aggregate of the two regions, there would be a drainage of money from the Northeast to the Southeast. This would create an excess demand for money in the first and an oversupply in the latter, provided that there were no continuous sterilization processes of creation and destruction of currency. Would then operate the well-known argument of Hume (1983): the general level of prices in each region will act as the variable adjustment of balance of payments, as economic agents would seek to get rid of their excess money supply in the Southeast by buying goods, i.e., increasing aggregate demand, the reverse occurring in the Northeast.

Given the assumption of validity of Say's law in the long run, the perfect flexibility of prices and wages would make vertical the aggregate supply function in both regions. Thus, variations in aggregate demand would, in the long-term, exert effect only on prices and not on production and employment. Consequently, fluctuations in demand would make the general price levels rise in the Southeast and fall in the Northeast in order to devalue the real exchange rate in the Northeast and appreciate it in the Southeast. Assuming compliance to the Marshall-Lerner condition in the long run then it would follow an increase in net exports in the Northeast and a fall in the South East, a movement that would persist until the complete elimination of the balance of payments imbalances.

It follows that for the balance of payments to be able to effectively constrain economic growth in the long run, as in the growth model of Thirlwall (1979), the assumptions employed by orthodoxy should be abandoned in favor of contrary ideas. Thus, a second founding hypothesis of the growth theory of the author cited is the lack of mechanisms to promote the automatic balance of the balance of payments through the price system.

The adoption of this hypothesis, in turn, is anchored on the fol-lowing assumptions: 1) the money supply in aggregate of the two re-gions can not be considered "given" (exogenous), on the contrary, it is assumed endogenous independently the exchange rate regime adopted, which significantly reduces the linkage between the process of creation / destruction of the currency and the result of balance of payments, 2) the possibility of continued sterilization of monetary variations generated by the equilibrium of the balance of payments, at least in the case of countries / regions with surplus deepens the possibility of such detachment, 3) the prices are not determined by the Quantity Theory of Money (QTM), because: a)

the income velocity of circulation of money is not independent from the money supply or the level of actual production and b) since what matters is the principle of actual demand, the production is not independent of the aggregate demand (which means that the aggregate supply function is not vertical) and finally 4) the possible violation of the Marshall-Lerner condition (due to the abandonment of the axiom of gross substitution - (Davidson, 1994) - in general and in particular to the abandonment of the idea that the sum of absolute values of price elasticity of demand for exports and imports is always superior to unit in the long run). What emerges from the admission of that hypothesis is that the balance of payments among countries or regions does not tend to automatic equilibrium by means of relative prices, but that the possibility of equilibrium is related to the manifestation of the income effect.

Thus, in the view of heterodox authors treated here, the adjust-ment mechanism of the regional balance of payments works quite different from that shown above. By adapting the description of Davidson (1994, p. 244) in our illustration, we have at first that the Northeast deficit can be covered by the net assets of residents of this region, causing an outflow of cash from banks in the Northeast to those in the Southeast. In the absence of adjustment mechanisms provided by the neoclassical theory, the persistence of the deficit will generate a chronic loss of liquid assets. Eventually, these will be exhausted, giving rise to the increasing accumulation of debt and / or sale of Northeastern capital assets to residents in the Southeast. In any case, the deficit will be financed by a net inflow in the financial account, but the accounting counterpart will be the expansion of net foreign liabilities in the Northeast.

The burden generated by such liabilities as interest, remittance of profits and dividends etc., will press the income account, of which unfold two effects: a) a decrease in personal income available of residents of the Northeast, with contracting effect on consumption, aggregate demand, output and employment;[3] b) an

increase in the current account deficit, which further accelerates the expansion of net foreign liabilities, the income account and so on, in a process of disequilibrium with cumulative trends.

In the absence of countervailing government policies, the balance can be restored only when the contracting effects described in item "a" get sufficient size to promote a reduction in production /relative real income in the Northeast. This reduction should deepen until im-ports fall on the scale needed to re-equilibrium of the balance of pay-ments. In the Southeast, all the adjustment mechanism is shown in a similar manner, operating, however, in the opposite direction.

It follows that the factor that ultimately limits the growth for these authors is the lack of "hard currency", which means that the adjustment among countries or regions occurs asymmetrically, i.e., tends to impose greater burdens on those in deficit situation, so that, given the impossibility of the market providing growth with balance of the balance of payments, only economic policies are able to promote a reversal of the situation.

In particular, it is interesting to observe that also in the case of regions within a country, such adjustment mechanisms are present. Often, it is reasoned that there are no problems with balance of payments at regional level. As noted by McCombie and Thirlwall (1994, p. 467), of course, in this case there is not the need to balance exports and imports in the long run to preserve the value of national currency in foreign exchange markets, as in the case of nations. But that does not mean that there are no problems associated with the behavior of the regional balance of payments. These problems just manifest differently - low income, high unemployment. Therefore, the authors emphasize that regional economic problems are problems of balance of payments!

To the authors in question, moreover, the behavior of the balance of payments is dominated by long-term current account and this, in turn, is dominated by net exports of goods and non-factor services. Therefore, in order for economic growth of countries / regions in situations of external constraint not to cause imbalance in payments balance in the long run, it is necessary that the rate of export growth is at least equal to imports

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[3] One can also argue, as do Davidson (1994) and Dow (1986), that the process of expansion of net foreign liabilities will eventually find limits by the willingness of creditors to continue to expand their applications in the assets of the deficit region, causing the recession via credit crunch.

growth rate. From this reasoning it results that exports constitute the only autonomous component of demand as its growth is compatible with equilibrium in the balance of payments in the long term and, therefore, sustained growth is led by exports.

For these reasons, although references to the balance of payments constraint as a core element of the model of Thirlwall (1979) are extremely common, the fact is that the external constraint does not appear in the original model by this author as an overall constraint on the balance of payments properly said, but rather as a restriction of trade balance of goods and services. In fact, and in line with the heterodox vision of adjustment of balance of payments, the model exposure assumes that the maximum rate of GDP growth in line with the external constraint is generated from:

(1) $PX = eP^*M$,

where P is the price index of domestic exports, X is the quantity exported, "e" is the nominal exchange rate (amount of domestic currency needed to purchase one unit of foreign currency), P^* is the index of import prices and M is the amount imported.

The use of trade balance equilibrium, rather than the balance of the overall balance of payments, seems to suggest that the key factor in maintaining the external sustainability of growth is to avoid continued expansion of net foreign liabilities[4]. Implicitly, it seems to be assuming that whenever economic growth, driven by demand, exceeds the rate limit defined by the model (see below), the growth of net foreign liabilities in bankruptcy route, would promote, as in the description initiated earlier, the adjustment through recession.

Since this is a model of economic growth, it is more convenient to work with a previous version of the equation expressed in terms of growth rate, which is::

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4 However, in a more recent work (THIRLWALL, HUSSAIN, 1982), capital flows are introduced in the analysis (as exogenous variables), moving the concept of external constraint to the overall balance of the balance of payments, one does not know, strictly speaking, if the original treatment is considered by the author just a simplification or if in fact it reflects the intention that the net external liability is a central variable to be sta-bilized. The question remains in the exhibitions of the latest model - as in Thirlwall (1995) - in which both versions are commonly presented. More recently, Moreno-Brid (1999) proposed a different way of introduc-ing capital flows in the analysis, assuming that the current account balance should be a constant proportion of Gross Domestic Product (GDP).

(1') $\pi + x = \hat{e} + \pi^* + m$,

where the above variables represent the instantaneous rates of change, respectively: export prices, the quantities exported, the no-minal exchange rate, import prices, and quantities imported.

The next step is to propose the adoption of specific forms for the export and import functions, which is the commonly employed multiplicative form, which generates constant elasticity:

(2) $X = X_0 \left(\dfrac{P}{eP^*} \right)^{\eta} Y^{*\varepsilon}$; and

(3) $M = M_0 \left(\dfrac{eP^*}{P} \right)^{\psi} Y^{\xi}$,

where $X_0, M_0 > 0$ are constants, ψ and $\eta < 0$ are respectively the price elasticity of demand for imports and exports, Y and Y^* are, respectively, the levels of real domestic output, and the rest of the world while ε and $\xi > 0$ are the income elasticity of demand, respectively, exports and imports. Therefore, it follows that the quantities exported are a direct function of the real income of the rest of the world and the real exchange rate, while the quantities imported are a direct function of real domestic income and inverse of the real exchange rate. Applying again the instantaneous rates of change we have:

(2') $x = \varepsilon g^* - \eta(\hat{e} + \pi^* - \pi)$; and

(3') $m = \xi g + \psi(\hat{e} + \pi^* - \pi)$,

where g and g^* are respectively the growth rates of real domestic output and the rest of the world.

It is important to highlight that these transformations generate results that are important to the conclusions of the model: a) the rate of export growth is a direct function of the real output growth rate from rest of the world and the rate of change of real exchange rate (and not the level of it), b) the imports growth rate is a direct function of the growth rate of real domestic output and reverse to the rate of change of real exchange rate (and, again, not of its level).

Before deepen in such discussions, however, we should replace equations (2 ') and (3') in (1 '). So, solving

the resulting equation for g and calling g_{BP} the maximum rate of growth of real domestic output consistent with the balance of payments constraint, i.e., with the balance of current account balance, we have

$$(4)\ g_{BP} = \frac{\varepsilon g^* - (1 + \eta + \psi)(\hat{e} + \pi^* - \pi)}{\xi},$$

that could be considered a general form of the "law of Thirlwall.".

The first important point to note is that, contrary to some interpre-tations, the formula in question does not determine the growth rate of GDP of countries and regions, but rather the maximum rate of growth consistent with equilibrium in the balance of payments, or better, trade balance and non-factor services. The author is quite explicit about the possibility that not all countries have all the time, the growth constrained by balance of payments: :

> Naturally, there should be an asymmetry in the system. While a country cannot grow faster than its consistent growth rate with equilibrium in the balance of payments for long time, unless it can finance an ever-growing deficit, there is little that prevents a country to grow more slowly and accumulate higher surpluses. This can occur particularly when the consistent growth rate with equilibrium in the balance of payments is so high that the country simply does not have the physical capacity to grow at that rate. (MCCOMBIE; THIRLWALL, 1994, p. 239).

Therefore, the model is perfectly compatible with situations in which: a) the rate g_{BP} is so high that in practice it never becomes an effective limitation b) countries / regions grow temporarily - sometimes for a period of reasonably long time - at rates higher than the g_{BP}. Thus, the balance of payments constraint should be construed as limiting potential and long-term growth and never as an effective determinant of growth in every moment. One can therefore express the determination of real effective growth rate of the GDP by the following expression:

$$(5)\ g = \min \{g_{BP};\ g_d;\ ...\},$$

i.e., the real effective growth rate g is determined by the lower growth rate of a number of factors, among which stand out g_d, which represents the growth rate of aggregate demand, and g_{BP}. The ellipses represent other possible growth-limiting rates.

Regarding the determinants of the demand growth rate, Thirlwall explicitly adopts it, while Davidson does so only implicitly by accepting the other's model,[5] that investment is determined by the super-multiplier (fully induced accelerator theory). According to this theory, investment is considered, similarly to consumption, as a direct function of the production / real income. As this level rises, along with the degree of capacity utilization and, moreover, it is expected that demand will continue rising, economic agents are urged to make additional investments, increasing the level of productive capacity and, thus expanding production and income of the economy. It is a theory of investment in which this variable is induced by income, so that it starts to multiply any additional income, whether it comes from the autonomous consumption, public spending or net exports. Therefore, it is a super-multiplier because the investment amplifies the income increases originating from the various components of the autonomous aggregate demand.

The adoption by the super-multiplier brings consequences: a) the demand growth rate g_d is determined by the growth rate of autonomous components of aggregate demand, b) that the growth rate of capital stock (g_K) is not a supply constraint in the long run, as the investment, according to the theory of super-multiplier would tend to promote the proper adjustment of the capital stock to aggregate demand ($g_d = g_K$, with the direction of causality established from the first rate to the second rate) .

It is true, therefore, that all components of aggregate demand cause changes in the levels of output and income. However it is important to highlight that modification to the product and income, given the propensities to export and import, impacts, at least in the long-term balance of payments.

Returning to the "general form of the law of Thirlwall" (equation 4), a second aspect to note is that if the absolute value of the sum of income-elasticity of exports and imports was greater than the unit($|\eta + \psi| > 1$), ethen Marshall-Lerner condition (established in terms of growth rate) would be obeyed

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5 It should be noted that this merger does not cease to be problematic given that the assumptions used in the theory of investment adopted by Davidson (1994) are notoriously averse to the throttle model.

and, therefore, gBP would be a direct function of the change rate of real exchange rate($\hat{e} + \pi^* - \pi$).

Two questions now become crucial to the warp of reasoning, which are: obedience or not to the Marshall-Lerner condition, and the validity or not of the hypothesis of Purchasing Power Parity (PPP), in its dynamic, relative or weak version($\hat{e} + \pi^* - \pi = 0$).

As to the Marshall-Lerner condition, there is a long tradition of unorthodox thinking, which refers to the mercantilists and ECLA, to consider that, at least in the context of underdeveloped countries, tariffs on exports and imports tend to be dominated by products that demand tends to show relatively low price elasticity even for extended periods of time ("pessimism of elasticity"). Such conditions would breach the Marshall-Lerner condition, which could make g_{BP} an inverse and not direct function of the change rate of real exchange rate.

It should be noted, however, that even if the Marshall-Lerner condition was obeyed, a single devaluation of the real exchange rate would not be able to continuously accelerate the growth of a country or region that was subjected to an external constraint. This is because gBP does not depend on the level of real exchange rate, but rather on its rate of change. It would be necessary, then, a continuous real depreciation of the exchange rate to allow faster growth. But would that be possible?

Therefore, more important for the model than obedience or violation of the Marshall-Lerner condition is the adoption of the PPP hypothesis (dynamic/weak/relative version). According to this, it becomes impossible a continuous real depreciation of the exchange rate; any nominal devaluation would be followed, over longer periods by proportional increases in prices that would offset the gains in competitiveness initially obtained. Insistence on this way to accelerate growth would be not only innocuous, but also frankly deleterious and might exacerbate inflationary pressures and, at worst, trigger a hyperinflation.

Given the long controversy surrounding the Issue, the adoption of PPC was justified by Thirlwall (1979) rather superficially, making use of empirically observed rigidity in relative prices and with reference to theoretical models, which both under perfect

competition and under conditions of oligopoly would generate such a result. This adoption is even more paradoxical when it is intended that the author explicitly considered the law of one price - usually regarded as the microeconomic foundations of PPC - as devoid of empirical support. It's Davidson (1982), however, who best justifies such an adoption. Even though the tradable sector of the economy is relatively small, it is inevitable that nominal currency devaluation has some effect on prices, for example, through the channel of the cost of imported inputs. However, in a context of widespread use of wage contracts with indexation clauses, the price increase caused by the changing exchange rate increases nominal wages, feeding back the impact on prices. In short, in a context of widespread wage indexation, the exchange rate would become the only nominal anchor of the economy, which would cause their variations to transmit fully to prices, either directly or indirectly.[6]

Adopted the PPP in its dynamic /weak/relative version($\hat{e} + \pi^* - \pi = 0$), the general form of the Thirlwall law (equation 4) can be reduced to its specific form:

(6) $g_{BP} = \dfrac{\mathcal{E}g^*}{\xi}$,

which emphasizes the importance of income elasticity and eliminates that of the real exchange rate to the growth of countries subject to external restrictions. Given the growth rate of GDP of the rest of the world g^*, g_{BP} will be greater the higher the income elasticity of exports ($\mathcal{E}$) and lower imports (ξ).

The income elasticity depends crucially on the composition of export and import tariffs in the country / region. The explanation of the microeconomic behavior of this elasticity allows you to extend the model in order to transform it into a kind of center-periphery.

Returning to the common points between the theories of Davidson and Thirlwall, we can say that both defend the existence of income elasticity of import and export between countries and regions

6 Of course, one might question the generality of the hypothesis of wage indexation, especially in countries with relatively low inflation. A possible counterargument is that possibly continuous currency devaluation would raise the inflation rate beyond the "inflation barrier" (Robinson, 1988), causing exactly the emergence of the scenario of general wage indexation.

differentiated between rich and poor. The idea is that poor countries have comparative advantages in agricultural production (food or raw materials) or manufactured products with low added value, so that the elasticity of exports is relatively low, while delivering high elasticity of imports for industrial products of high added value. Thus, the result of the abandonment of economic growth and equilibrium of the balance of payment to the free play of market forces will inevitably be increasing inequality of income per capita between different countries or regions, meaning that the movement trend of relations between different spatial regions is polarization and not convergence. Therefore, the differences between the productive structures and elasticity for imports and exports make the asymmetry become a constant in the relationship between the rich and poor countries / regions.

For purposes of illustration, suppose that the Northeast region of our previous example specializes in the production of raw materials, primary commodities and even industrial goods with low added value and low technological content, usually in the final stage of the lifecycle of the product. Engels's law suggests that the Southeast demand for such goods will present income elasticity (ε) relatively low, which tends to reduce g_{BP} of the first region.

The Southeast region, in turn, would specialize in industrial products with higher added value, higher technology content and in early stages of their life cycles. In this case, the same law suggests that the demand for Northeast imports will be characterized by income elasticity (ξ) relatively high, which would tend to further reduce its $g_{BP.}$

Assuming that the Northeast faces an external constraint (so that $g = g_{BP}$), the impacts of such a pattern of interregional trade can best be realized by inspection of a slightly modified version of equation (6) above, namely:

$$(7) \quad \frac{g}{g*} = \frac{\varepsilon}{\xi}$$

In short, this equation shows that, in the absence of government policies aimed at reversing the trade pattern described above, the growth rate of the Northeast under conditions of free trade is necessarily

inferior to that of the other regions, if ε is relatively low and ξ is relatively high, then most likely $\varepsilon/\xi < 1$, resulting in $g / g * < 1$, or $g < g *$. The opposite would happen in the Southeast.

It sets up a cumulative vicious circle (MYRDAL, 1957) whose adverse impacts on the distribution of regional and national income are evident.

According to Davidson (1994), there is another mechanism for enhancing polarization. If the rate of population growth in the poor region is higher than that in the more prosperous region, then the differential in terms of rate of growth of income per capita is still higher than the differential rates of income growth, namely:

$$(8) \quad g - n << g* - n*,$$

where n is the rate of increase in domestic population and n *, the foreign one.

It is evident, therefore, the importance of governmental policies that, contrary to free trade, induce structural change in poor economies through: a) promotion of exports of goods with income elasticity relatively higher b) replacement of imports with income elasticity also higher for the domestic production of those goods.

In the case of regional economies, in which the use of these instruments are generally not available, the policies should identify activities with high income-elasticity of demand and encourage them to move to the backward areas through incentives and capital subsidies to labor. (MCCOMBIE; THIRLWALL, 1994).

Davidson (1994), in turn, notes that the national government should use fiscal policy to deliberately recycle income and money from surplus to deficit regions. Interregional transfers could be used to finance even the entire deficit and throughout the time period in which significant regional differences persist. Moreover, the central bank should provide additional bank reserves to the banks of the deficit regions, if necessary, by recycling them from the accumulation of bank reserves of the surplus regions. Davidson (1994) concludes by saying that national fiscal and monetary policies designed properly can improve the growth

of all regions, since a higher growth in the previously deficit regions overflows by increasing their imports from other regions beyond the regional boundaries, also accelerating the growth of previously surplus regions.

3 – THE KALDORIAN MODEL: A PROPOSED ALTERNATIVE APPROACH

Another model of growth in open economies to be examined for the purposes of this paper is developed in Kaldor (1970). Inspired by the "principle of circular and cumulative causation" of Myrdal (1957), that author explains the mechanisms that trigger a vicious circle and promote the phenomenon of polarization between the growth rates of different regions - a concept broad enough, which may involve different countries, groups of countries or even different areas within a country. As done in the previous section, the kaldorian theory will be addressed through the recovery of the set of assumptions and conclusions that support it, including the formal model, as presented by Mc-Combie and Thirlwall (1994).

Initially deserves highlight the consideration that Kaldor (1970) makes about the activities that make up the production structure of economies, identifying differences in the aspects that characterize the operations in agriculture and industry, which then allows you to analyze international trade in circumstances where transactions are made only for agricultural countries, and the situation in which the participating countries have different levels of industrialization. This procedure unfolds in the cases when it comes to incorporating adjustments of their balance of payments of these countries. In the case of a world where there are only agricultural countries, the prices of traded commodities "rise and fall with changes in the balance between supply and demand" and the classical theory of international trade appears to be more" applicable "(KALDOR, 1970, p. 341) with mechanisms for automatic equilibrium of the balance of the payment being able to operate by relative prices.[7]

However, when dealing with international trade in the contemporary world, Kaldor notes that predominate sellers who are price setters rather than price takers, which leads him to adopt the hypothesis of sticky prices and wages. In this perspective, changes in demand have more impact on production levels of a country than on the prices it practices. It happens thus that no longer are the mechanisms by which the relative prices will solve the problems of disequilibrium in the balance of payment; the adjustment will take place essentially via income effect, i.e. by varying the production. Other conclusions can also be drawn from this statement, namely: i) economic growth of a country is constrained by the scarcity of foreign exchange, ii) it is possible to identify the existence of asymmetries: when considering the burden of adjustment of balance of payments, it rests mainly on the deficit countries, and iii) in the case of a deficit country, only economic policies can provide opportunities to reverse this situation.

In terms of the hypotheses that form the core of the Kaldor model for the contemporary world, it appears that there is precedence in terms of hierarchical assumption of the validity of the principle of effective demand, even in the long run. The adoption of this hypothesis implies that the growth of economies is led by demand.

The differences in adjustment that the model points above indicate that the degree of efficiency of the automatic mechanisms of equilibrium of balance of payments depends on the development level of the countries involved: when it comes to trade between countries predominantly agricultural, the mechanisms may operate by means of relative prices; and the more industrialized countries are participating in international trade, the more likely their balance of payment tends to equilibrate via income effect.

Henceforth, we will address just the "contemporary case" in which the adjustment of balance of payments also takes place through the income effect. Thus, one would expect, for the reasons stated in the previous section, the output growth could be constrained the by balance of payments. However, some authors, such as Blecker (2009) and Thirlwall and Dixon (1979) support

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7 Given the set of assumptions necessary for the operation of automatic mechanisms of balance of balance of payments only by changes in relative prices in the long run, described in previous items, it seems clear the in-adequacy of the assumption of a higher degree of price flexibility. It is necessary to assume, among other things already mentioned the validity of Say's law in the long run, if not fatally, at

least part of the adjustment will take through the income effect..

the idea that the model in question simply does not have a balance of payments constraint, with the rate of growth of income determined strictly by the growth rate of demand. Freitas (2003, 2009), however, will argue in the opposite direction.

The focus of this controversy revolves around the starting equation of the model and its economic significance. The equation in question is

(9) $g = \gamma x$,

where $\gamma > 0$ corresponds to the elasticity (constant) in output growth (g) in relation to export growth (x)[8] . The economic significance of the equation is simple: given the parameter γ, the higher the rate of export growth, the higher the growth in real output. It occurs, however, as noted by Medeiros and Serrano (2001), that exports can affect the growth of real output in two ways: a) through its impact on aggregate demand, b) through the relaxation of the external constraint.

Thirlwall and Dixon (1979) and Blecker (2009) argue that it is in the first sense where exports act as a favorable factor to growth in the Kaldor model, because, otherwise, any reference to the role of imports would have to be present in the formula of equation (9) above.[9]

It is convenient to discuss what are the components of demand that, in addition to export, can account for the growth of the economy in the kaldorian theory. Since the author adopts the hypothesis that the investment is determined by the accelerator theory / super multiplier, autonomous components are the active creators of demand, since they are not directly related to income. It follows that the rate of growth of aggregate demand would be determined by the rate of growth of their autonomous components: the autonomous portion of consumption, government spending, and exports. However, these authors have difficulty explaining why the model focuses on exports, leaving the other autonomous components. They seem to consider such absence a failure in the Kaldorian model, so that

Blecker (2009, p. 15) accepts the proposal of Cornwall and Setterfield (2002) to include such components, supposedly missing.[10]

Freitas (2003, 2009) presents an alternative explanation for the equation (9). It would involve a "combination of a growth model led by demand and an equilibrium condition of the balance of payments" (FREITAS, 2003, p. 2), i.e., according to the author, in the model exports, would affect the growth both via demand and the relaxation of the external constraint. The explanation for this dual role lies precisely in the absence of other autonomous components of aggregate demand equation. This is because Kaldor would have explained in footnotes (FREITAS, 2003) that for the equilibrium condition of the balance of payments be upheld, it was necessary that (a) the government budget was balanced and (b) that simultaneously saving and private sector investment to equalize. Freitas (2003) demonstrates, mathematically, that the imposition of such conditions implies a relation of type (10) $g_\mu = x - g_\mu$, where g is the rate of change of the coefficient for imports; this, in turn, is defined as $\mu = M / Y$. It can be seen that when the import coefficient remains constant, $g_\mu = 0$ and thus $g = x$; and that when it increases $g < x$, and vice versa

It is easy, then, from the expression (10) to get at equation (9) again. It is also easy to show that the parameter range and rate of change of the import coefficient are inversely related so that, when $g_\mu = 0$, $\gamma = 1$, when $g_\mu > 0$, $\gamma < 1$, and vice versa.[11] Economically speaking, the elasticity of response (γ)the rate of GDP growth (g) to the rate of growth of exports (x) tends to decrease when the import coefficient (μ) increases, and vice versa. In a model where the rate of growth of output is determined by the rate of demand growth, the logic is clear: the increase of the coefficient of imports both reduces the rate of growth of demand and makes it

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8 When exports represent a constant proportion of the product, $\gamma = 1$, a decreasing proportion is represented by $1 > \gamma > 0$; and, of course, an increasing proportion, for $\infty > \gamma > 1$.

9 By definition of the variable γ, we note that it has no relation to imports.

10 Equation (9) above is replaced by $g = \lambda(\omega_x x + \omega_A a)$, where $\lambda > 0$ is a multiplier of expenses, "a" is the growth rate of other components of autonomous demand and ω_x and ω_A are the stakes , respectively, of exports and other autonomous components of demand, in real income. We note the significant difference between the economic significance of this equation and λ in this equation and of γ in equation (9) original.

11 As $g = \gamma x$ and $g = x - g_\mu$, then $\gamma x = x - g_\mu$, and $\gamma = 1 - (g_\mu/x)$. Thus, if $g_\mu = 0$, $\gamma = 1$; if $g_\mu > 0$, $\gamma < 1$; and if $g_\mu < 0$, $\gamma > 1$.

difficult to finance balance of payments, reducing for both reasons, the growth rate of real output, and vice versa. Contrary to what appeared, equation (9) includes a requirement to actually equilibrate the balance of payments - in effect, as shown in Freitas (2003), of balance of the balance of goods and non-factor services (see below).

From these considerations, an important result desired by the Kaldorian model is extracted, which can be expressed in the equation below:

(11) $g = g_{BP} = g_d = \gamma x$,

i.e., the rate of growth of the real product present in the model is simultaneously the rate of growth of aggregated demand and growth rate compatible with the external constraints.

Therefore, the equilibrium of the balance of payments will imply a hierarchy of autonomous components of demand that should be prioritized in the establishment of economic policies (to reverse a deficit situation or promote accumulation of reserves). His model seems to implicitly adopt the hypothesis that the given equilibrium corresponds to the current account balance, since the position of the balance of payments in the long run is determined by the situation of the current account, leaving the capital account in the background.[12] On the other hand, it seems to consider (also implicitly) that the current account is dominated by net exports of goods and non-factor services.[13]

The incorporation of these assumptions leads to the conclusion that exports are the only autonomous component of demand whose expansion is compatible with the equilibrium of balance of payments in the long run, which indicates that in such circumstances, growth is led solely and exclusively by exports.

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12 Whereas the sum of the balance of payments as a whole affects the international reserves, while the current account determines the net external liabilities, as explained in the previous section the long-run equilibrium would be associated with the current account balance.

13 The idea behind the adoption of this hypothesis is that the balance of income account (which corresponds to the balance of interest plus remittance of profits and dividends, etc..) depends on the size of net foreign liabilities assumed by the country, which in turn, is dominated by the current account balance. As seen in the previous section, it follows that the balance of the balance of trade and non-factor services ultimately determines the trajectory of net external liabilities.

The next step is to address the determinants of the level (X) and the rate of growth of exports (x). McCombie and Thirlwall (1994, p. 429) note that Kaldor does not provide a specific form for the function level of demand for exports, although his model, working with an equation for the rate of growth of exports equal to (2 '), suggests the use of a conventional multiplicative function. The authors then propose to describe this function as being virtually equal to the model previously exposed. Thus, we have equations (2) and (2 ') and they also apply to this model:

Substituting (2 ') to (9), one obtains

(12) $g = \gamma[\varepsilon g^* - \eta(\hat{e} + \pi^* - \pi)]$,

which is similar to equation (4). However, in addition to assuming $g = g_{BP}$, there is now an important difference: instead of accepting the hypothesis on PPC ($\hat{e} + \pi^* - \pi\pi = 0$), Kaldor's model prefers (implicitly) to put it away. It follows that the exchange rate policies that seek to continuously depreciate the real exchange rate through the also continuing devaluation of the nominal exchange rate are able to affect the growth rate of exports and therefore the rate of long-term growth of real output. It follows that they do not generate, by hypothesis, the same percentage increases in the inflation rate. Blecker (2009) comments that Kaldor's procedure probably was based on empirical tests then available, which tended to be more unfavorable to relative PPP in the long run than those presently available.

The hypothesis of non-validity of the PPC requires including in the model formalization of Kaldor, according to McCombie and Thirl-wall (1994) the process of formation of domestic prices (P), expressed by the following equation:

(13) $P = Z(W/A)$,

where W is the level of nominal wages, "A" represents the average product of labor and Z is equal to $1 + markup$ on unit labor cost (it can be seen therefore that the so-called "efficiency wage" is given by W/A). The rate of growth of domestic prices (inflation rate) can be obtained as follows:

(14) $\pi = w - a + z$,

where π is the rate of domestic inflation, w is the rate of nominal wage growth, "a" is the growth rate of labor productivity and z is a proxy for the rate of change of Z. It is noticed also that the effect of exchange rate changes on prices / inflation was completely disregarded.

An exogenous fall in the growth rate of efficiency wages (w - a) can be passed on to domestic inflation, reducing it. In a context in which the foreign inflation rate (π *) and the rate of change of nominal exchange rate (ê) are considered exogenous, this phenomenon results in the continuous devaluation of the real exchange rate. This movement in relative prices contributes to improving the competitiveness of exports and opens prospects for restoring the balance of payments and the acceleration of growth, as can be seen by substituting (14) in (12):

(15) $g = \gamma[\varepsilon g^* - \eta(\hat{e} + \pi^* - w + a - z)]$.

Recalling that $\eta < 0$, it is noticeable that similar effects of the falling rate of growth of efficiency wages can be triggered by a policy of continuous nominal depreciation of the exchange rate more than sufficient to offset the inflation differential internal and external, or under the above formula:

(16) $\hat{e} > w - a + z - \pi^*$

The growth of real output in countries where the weight of the industrial sector is significant triggers another effect: the functioning of the so-called "Verdoorn Law" ,[14] which, according to Thirlwall (1995, p. 44), manifests the existence of a "strong causal relationship between growth in manufacturing output and productivity growth in the manufacturing sector as a result of static and dynamic returns to scale." McCombie and Thirlwall (1994, p. 430) describe the association that the Kaldor model established between the growth rate of labor productivity and the growth rate of the product by the following equation, in which the law of Verdoorn features prominently:

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[14] Verdoorn's law was taken from an article published by the author in 1945 (Factors that regulate the de-velopment of labor productivity). Another study, which marked Kaldor was published by Allyn Young in 1928 (Increasing returns and economic progress), which in turn was inspired by the work of Smith, 1776 (The Wealth of Nations).

(17) $a = a_a + \lambda g$,

where a_a is the rate of autonomous productivity growth (generated by independent sources of output growth) and $1 > \lambda > 0$ is called "Verdoorn coefficient," which expresses the effect of output growth on productivity growth (induced).

Substituting (17) in (15), we have::

(18) $g = \dfrac{\gamma[\varepsilon^* - \eta(\hat{e} + \pi^* - w + a_a - z)]}{1 + \eta\gamma\lambda}$,

where $0 > \eta\gamma\lambda > -1$ is the condition (reasonable since η and λ should be relatively small numbers, and γ should not be too far from 1) so that the model is not explosive that is, the rates of output growth cumulatively do not rise, but rather tend to a stationary value. Since as a result, the denominator of the fraction above is a number between zero and one, the law of Verdoorn causes an amplification of the effect of other variables on the growth of the product.

The law of Verdoorn therefore gives rise to a feedback mechanism that can be described as a circular chain, since, as noted by Thirlwall (1995, p. 54):

> [...] The faster the growth of production, the faster the productivity growth; and the faster the productivity growth, the slower the growth of labor costs per unit, hence the faster growth in exports and production.

The latter increase in production then would generate a further increase in productivity and so on. The feedback mechanism driven by exports can be described as a chain between the following variables: growth rate of the product $\rightarrow$ rate of productivity growth $\rightarrow$ inflation rate $\rightarrow$ change rate of real exchange rate $\rightarrow$ growth rate of exports $\rightarrow$ rate of output growth $\rightarrow$ etc., generating a key virtuous circle.

The circle described as cumulative configures itself virtuous for the country / region that has a larger industrial park; in contrast, it appears to be vicious to those countries or regions with less diversified production structures, with which it transacts. As observed by Kaldor (1970, p. 340), when dealing with the law of Verdoorn:

> One aspect of this is that as the communication between different regions becomes more intense (with improvements in transportation and sales

organization), the region that is initially more developed industrially may gain from the gradual opening of trade to the detriment of the less developed region whose development will be inhibited by it [...] in the case of opening up trade in industrial products, differences in comparative costs may be increased and not reduced as a result of trade; and trade can affect a region to the greatest benefit of another.

Thus, based on the model, it is possible to sustain the view that the difference in levels of industrialization of the countries / regions affects the degree to which the law of Verdoorn generates the feedback mechanism of the variables mentioned, operating as an additional factor of divergence (polarization) between the growth rates of these spatial cuts.

In the field of national policies to stimulate growth, the Kaldorian model supports: a) occasional devaluations of the real exchange rate, b) promotion of exports of goods of relatively high income elasticity, c) increase in the mobility of labor d) protectionism, although the actual exchange devaluations are preferred; e) subsidies to labor (preferably) and investment.

Regarding the applicability of the model at the regional (sub na-tional) level, Kaldor does not impose any restrictions - apart, of course, the fact that there are no exchange devaluations between regions of the country.[15] Therefore, it is implicit in Kaldor's view the idea that the balance of payment restrictions also operates - albeit in different ways (see below) - at the regional level.

However, Kaldor identifies two mechanisms that at the regional level, would tend to dampen the trend toward polarization, which are: a) increased mobility of labor which is the case internationally, b) the existence of regional automatic fiscal stabilizers, i.e., responses of public finances to changes in exports and income, which would occur in order to counterbalance such variations.

The latter mechanism is one of the main reasons for which a decline in exports would not cause, at the regional level, reduced level of income sufficient to

rebalance the balance of payments. That is considered by Kaldor (1970) the main reason why there would not be a counterpart to the problem (formal) of national balance of payments at the regional level.

4 – FINAL CONSIDERATIONS

Considering that::

- Kaldor-Thirlwall literature puts the determinants of demand growth and, in particular the situation of the balance of payments as key elements to explain the disparities of regional growth;

- Furtado's work / GTDN emphasizes, in his explanation of the northeastern backwardness virtually the same features found in the literature of economic growth for open economies of the Kaldor-Thirlwall strain;

- Kaldor-Thirlwall's literature presents reasons why their models are also applicable to the regional (sub national) level or, more accurately, to any geographical cutout;

- the dynamics predicted by the models in the Kaldor-Thirlwall line for growth among different regions acquires characteristics in-herently cumulative a la ECLA Myrdal-style, typical of the center-periphery models

- the proposed policies in line with Kaldor-Thirlwall, to face the picture in question, go through government policies similar to those originally designed by Furtado and implemented in GTDN;

It seems inevitable then to conclude that: :

- the furtadian theses about the economy of the Northeast conform to the contemporary heterodox theory of growth proposed for open economies, be they nations, regions or other geographical cutout where we seriously consider the space issue;

- in the light of this literature, Cano's hypothesis seems to mistakenly mix different aspects of regional themes, namely: a) the absence of a formal regional restriction of balance of payments, with no adverse and cumulative

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15 Kaldor (1970, p. 347) refers, however, to the possibility to fight the tendency to polarization through sub-sidies by labor, so that a tax mechanism was able to emulate the operation of an exchange rate between the regions of a country..

ef-fects of an unbalanced regional balance of payments; b) the impossibility of adopting policies at the regional level that emulate the effects of national protectionist policies, with the impossibility (inconvenience?) to carry out policies to promote specific activities aimed at reducing regional disparities.

Therefore, it seems that, behind their behavioral equations, the modern heterodox theory of economic growth supports the rich furtadiana perspective of the regional question, with what is expected to resume its deserved position as a central reference of the regional debate in Brazil.

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