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A Formal Assessment of New-Developmentalist  
Theory and Policy

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# **A FORMAL ASSESSMENT OF NEW-DEVELOPMENTALIST THEORY AND POLICY<sup>1</sup>**

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**ABSTRACT:** We develop a formal framework that endogeneizes the productive structure of a small open peripheral economy as the outcome of a problem of technical choices. We subsequently examine the main theoretical theses and policy prescriptions of the New-Developmentalist approach to economic development. We argue that: a) not only does the pattern of specialization depend on technical conditions, but also on income distribution; b) in an economy without rents, the level of the money-wage nominal-exchange-rate ratio is univocally determined once the rate of profits is known, and shows an inverse relationship with it; c) if differential rents are considered, the level of the rate of profits can be set independently of the money-wage exchange-rate ratio; d) the level of the exchange rate that ensures normal profitability of the primary sector need not coincide with the current-account equilibrium rate; e) the effective exchange rate need not gravitate around any of these two former levels, which must be rather seen as minimum thresholds of the effective rate; e) the unpleasant distributive consequences of exchange-rate depreciation can be partially avoided by means of export duties that do not raise primary-commodities production costs.

**KEYWORDS:** DISTRIBUTIVE CONFLICT - DUTCH DISEASE - EXCHANGE RATE POLICY - NEW-DEVELOPMENTALISM – PATTERN OF SPECIALIZATION

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## I. INTRODUCTION

As is well known, the Neo-Developmentalist Position (henceforth, NDP), which has Professor Bresser Pereira<sup>4</sup> as its major proponent, views exchange-rate policy as the key variable for sustained economic growth in Latin American peripheral economies. Inspired in the seminal contribution by Lewis (1954), the NDP envisages a two-sector economy: on the one hand, there is a sector of primary goods (e.g. corn), or inputs of these goods (e.g. oil) -sector C-. Thanks to its «extremely favourable conditions», this sector is able to export its production to the global markets. On the other hand, there is an industrial sector of consumption goods -sector I-. Even though the latter is a potentially more dynamic industry, it is also a relatively backward sector that cannot profitably compete at international prices unless the exchange rate is sufficiently high, at its «industrial equilibrium» level. Without Government intervention, however, the effective exchange rate is argued to gravitate around a lower level, the «current-equilibrium exchange rate», which is the value that is assumed to simultaneously ensure the normal profitability of sector C and the equilibrium of the current account. Therefore, this dynamics sets an «exchange-rate trap» for industry that prevents its consolidation and future expansion, a problem known as «Dutch Disease». The solution, it is finally claimed, consists in introducing a tax on C-production that increases its normal average costs and therefore raises the current-equilibrium exchange rate up to the «industrial equilibrium» level. Although the solution causes the real wage to decrease in the short run, and hence may face the possible resistance of workers, it would be an unavoidable cost to boost the development of sector I, which would anyway compensate its initial negative consequences in the longer run, through higher job creation and average productivity growth.

The present article attempts to examine the scopes and limits of the NDP, and hence must be interpreted as a constructive criticism towards this approach. To this end, we develop a formal framework that endogenously determines the pattern of specialization of a small-open-peripheral economy as the outcome of a problem of technical choices. In the first place, this framework will allow us to properly incorporate the existence of differential rents in the primary sector and, in the second place, to examine its implications, which can be briefly anticipated in the following six propositions: a) not only does the pattern of

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<sup>4</sup> See Bresser (2008, 2012, 2016) among other contributions. See also Oreiro *et al.* (2015).

specialization of the economy depend on technical conditions but also on the distribution of income (the rate of profits); b) in an economy without rents, the level of the money wage-nominal exchange rate ratio is univocally determined once the rate of profits is known, and shows an inverse relationship with normal profitability; c) the moment differential rents are considered, an additional degree of freedom in the price system is gained, and hence the level of the rate of profits can be set independently of the money wage-exchange rate ratio; d) the level of the exchange rate that ensures C-normal profitability need not coincide with the current-account equilibrium rate; e) the effective exchange rate need not gravitate around any of these two former levels; which, for given levels of autonomous expenditures, must be rather seen as minimum thresholds of the effective rate; f) it is possible to avoid the unpleasant distributive consequences of exchange-rate depreciation by means of export duties that subtract a portion of the differential rent appropriated by landowners, but, differently from production taxes, do not raise C-production costs.

The rest of the paper is structured as follows: section II presents the basic analytical framework, while section III incorporates the problem of differential rent. Section IV examines the relation among the effective exchange rate, the level that ensures C-normal profitability and the current-account equilibrium rate. Section V addresses the problem of distributive conflict in general terms, while section VI studies how the issue manifests itself within the New-Developmentalist approach, namely as a by-product of the so-called *Dutch-Disease* problem, and examines its possible solutions. Section VII resumes the argument and presents the main conclusions of the paper.

## II. ANALYTICAL FRAMEWORK<sup>5</sup>

We conceive a small open economy with persistent unemployment and two productive sectors: an industrial sector (I) and a primary sector (C). The sectors distinguish themselves by two main features: i) the productive methods employed and ii) the destination of production.

Regarding the methods of production, it is assumed that sector I is produced by labour and an imported capital good, while C requires labour and a fixed factor, typically land.<sup>6</sup> Commodity prices can be represented by the following equations:

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<sup>5</sup> This framework heavily draws on Dvoskin and Feldman (2017a) and (2017b).

$$p_C^S = wl_C(1 + r) \quad [1]$$

$$p_I^S = (wl_I + kEp_K^*)(1 + r) \quad [2]$$

where  $p_C^S$  and  $p_I^S$  stand respectively, for the *supply prices* of commodities C and I, namely the minimum amount of money per unit of output that producers must receive to regularly (under «normal conditions») deliver each commodity on the market. Additionally,  $w$  stands for the nominal wage rate,  $r$  for the normal rate of profits,  $l_C$  and  $l_I$  are the unitary labour requirements of sectors C and I,  $k$  is the unitary requirement of the capital good K,  $p_K^*$  is its exogenously given price and  $E$  is the nominal exchange rate.

It is now convenient to introduce a second notion of price, which we shall denominate *demand* or *selling price*, and that represents the maximum amount of money that consumers are willing to pay for a commodity. Since the domestic economy takes the international prices of C ( $p_C^*$ ) and I ( $p_I^*$ ) as given, once the level of the exchange rate is fixed, demand prices are univocally determined. Therefore, demand prices for commodities C ( $p_C^d$ ) and I ( $p_I^d$ ) are, respectively:

$$p_C^d = Ep_C^* \quad [3]$$

$$p_I^d = Ep_I^* \quad [4]$$

The four equations have seven unknowns:  $E, r, w, p_A^S, p_I^S, p_A^d, p_I^d$ . If we take nominal wages as given:

$$w = \bar{w} \quad [5]$$

There are still two degrees of freedom left.

Furthermore, at the level of abstraction we are working with, we can safely assume free capital mobility across countries. This means that the rate of profits is determined by the international rate ( $r^*$ ):

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<sup>6</sup> For simplicity the analysis abstracts from absolute rent. The role of differential rent will be discussed in section III below.

$$r = r^* \quad [6]^7$$

There is still one degree of freedom left. Before we suggest how to eliminate it, let us consider the abovementioned feature ii) of the productive system, i.e. the destinations of production. Note that it is not possible to ascertain which productive sector will be internationally competitive *before* the relationship between demand and supply prices of each commodity is established. Hence, before income distribution is known. Therefore, the pattern of specialization of the economy will be regulated by the following conditions:

$$p_j^d \leq p_j^s \quad j = C, I \quad [7]$$

Commodity  $j$  is produced and (potentially) exported only if  $p_j^d = p_j^s$ . While if  $p_j^d < p_j^s$ , sector  $j$  will not be viable without protection<sup>8</sup>. Therefore, we can derive for each commodity  $j$  an  $E/w-r$  relation that determines, for each level of  $r$ , the minimum  $E/w$  ratio that allows sector  $j$  to be internationally competitive. (Alternatively, for each level of  $r$ , we can determine the *maximum* level of money wages in foreign currency,  $w/E$ , affordable by each sector. We will return to this second interpretation of the curve below).

For each commodity  $j=C,I$ , the level of  $E$  that is implied by the  $E/w$  ratio is obtained by equalizing the respective supply and demand prices. We thus consider conditions [1] and [3] for sector C and obtain:

$$E_C = \frac{wl_C(1+r)}{p_C^*} \quad [8]$$

The level of  $E_C$  is what new-developmentalists authors denominate the «current equilibrium» exchange rate (Bresser, 2008, pp 53-55).<sup>9</sup>

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<sup>7</sup> One can of course rationalize the assumption of a given rate of profits through other distributive closures. See for instance, Bresser et al. (2014), which highlights the connection between the domestic rate of profits and an exogenously given mark-up.

<sup>8</sup> There is a third possibility, that  $p_j^d > p_j^s$ , which is fulfilled under the presence of differential rent. This third case will be explored in section III below.

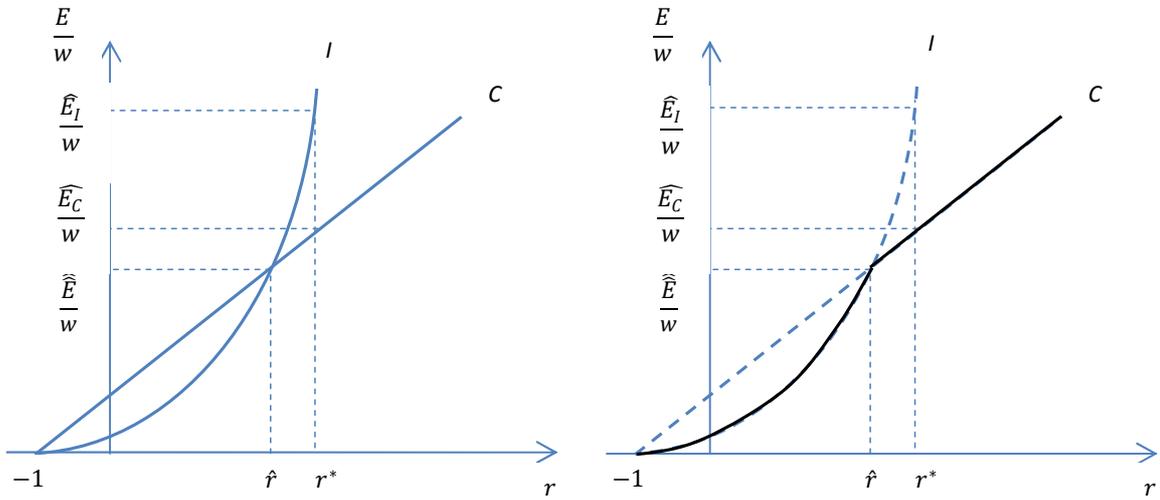
<sup>9</sup> Bresser (2008, p. 55) formally defines the value  $E_C$  as the ratio between what he denominates the «market price» of C (which is determined by “the marginal cost of the least efficient producer”, and hence coincides

Analogously, for sector I we consider conditions [2] and [4]:

$$E_I = \frac{wl_I(1+r)}{p_I^* - kp_K^*(1+r)} \quad [9]$$

Where the level  $E_I$  is what ND authors call the «industrial equilibrium» exchange rate (Bresser, 2008, p. 53-55)<sup>10</sup>. Figure 1 (left-hand side) represents the shape of these curves:

**FIGURE 1:  $E/w - r$  CURVE**



The curves have two intersections. The first one is at  $r = -1$ , while the second one is at:

$$(1 + \hat{r}) = \frac{p_I^*}{kp_K^*} - \frac{p_C^* l_I}{kp_K^* l_C} \quad [10]$$

with  $p_C^S$  of equation [1] and the international price of C. It is therefore equivalent to the level of  $E$  obtained from [8].

<sup>10</sup> Bresser does not offer a formal definition of  $E_I$ , but he does define the “necessary price” of a generic industrial good as “the price that makes economically profitable to produce other tradables [other than C] using technology in the state-of-the-art.” It therefore coincides with  $p_I^S$  in equation [2]. And “The ‘industrial’ equilibrium exchange rate [is] the one that enables the production of tradables in the country without the need of duties and subsidies... the exchange rate that, on average, allows companies using state-of-the-art technology to be profitable or competitive” (Bresser, 2008, p. 54). This is, in other words, the level of  $E$  that arises from condition [9].

Figure 1 illustrates the case of  $\hat{r} > 0$ . This implies that:

$$\frac{l_C}{l_I} > \frac{p_C^*}{p_I^* - k p_K^*} \quad [11]$$

(We shall interpret below what happens if condition [11] does not hold)

These curves can be used to determine the pattern of specialization of the economy. To see this, let us first define the real wage  $\omega$  for a given consumption basket  $(c_C; c_I)$  as:

$$\omega = \frac{w}{P}, \text{ with } P = E \sum_{j=C,I} c_j p_j^* \quad [12]$$

Therefore, the real wage  $\omega$  is univocally determined once the level of  $E/w$  is known, and shows an inverse relationship with the latter. According to a well-known result of choice of techniques (see Kurz and Salvadori, 1995, ch. 5), all this means that the economy will fully specialize in the sector that, given the rate of profits  $r^*$ , can afford the lowest  $E/w$  ratio, which is none other than the sector that can pay the *highest*  $\omega$ . Therefore, if  $r > \hat{r}$  ( $r < \hat{r}$ ) the economy will fully specialize in the production of industrial goods (primary goods). While, the coexistence of the sectors will occur only by a fluke, at  $r = \hat{r}$ <sup>11</sup>.

The outer envelope of the curve (black line of the right-hand side of Figure 1) illustrates the economically relevant  $E/w$ - $r$  configuration. Formally, this relationship is represented by the following condition:

$$E/w = \begin{cases} E_I/w & r^* < \hat{r} \\ \hat{E}/w & \text{if } r^* = \hat{r} \\ E_C/w & r^* > \hat{r} \end{cases} \quad [13]$$

From conditions [10] and [11] it can be seen that, given the terms of trade, the size of the interval  $[0; \hat{r}]$  (the range of full specialization in I) will be smaller the higher is i) the import

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<sup>11</sup> Note that when the production of more than two commodities is considered, in general there will be no level of  $r$  that will allow the coexistence of all sectors. On this point, see Steedman (1999, p. 272) and Baldone (2001).

coefficient of the industrial sector (k) and ii) the higher the labor productivity of the primary sector vis-à-vis labour productivity in the industrial sector. On the other hand, given technical conditions, this range will be smaller the higher are the terms of trade in favour of the primary sector. (Notice incidentally that, if condition [11] does not hold, then  $\hat{r} \leq 0$  . This means that there will be no positive value of the rate of profits that would induce the economy to fully specialize in the production of the industrial good). For Latin American countries in recent decades, these conditions suggest that, *if any*, the interval  $[0; \hat{r}]$  will be small, and hence, without protection the economy will fully specialize in the production of commodity C. In fact, this is the kind of productive structure envisaged by ND authors, and can be easily represented in terms of our model if, given the rate of profits,  $E$  (the «market exchange rate», as the ND authors call it), is endogenously determined by the «lower branch» of condition [13], i.e. at the level  $E = E_C$ . This is how the last degree of freedom is eliminated. Then, equations [1]-[2]-[3]-[4]-[5]-[6]-[13] are enough to determine the following variables:

$$\{p_I^s, p_C^s, p_I^d, p_C^d, w, r, E, \}$$

We finish this section with the following remark: while the NDP assumes a plausible productive structure for LA countries, the proponents of this approach seem to conceive this configuration as a purely technical aspect of the economies under consideration, while our framework has revealed that this outcome will generally depend on income distribution (except under the special case in which  $\hat{r} < 0$ ). It is in other words perfectly conceivable that the condition  $0 < r^* < \hat{r}$  holds, and that it is therefore convenient for the economy to specialize in the production of industrial goods.

### III. «RICARDIAN RENTS» IN THE BASIC FRAMEWORK

At this point of the exposition we should note that the inverse relationship between  $r$  and  $w/E$  that emerges from the canonical model is modified once we recall that, according to the NDP, good C is produced by employing a fixed factor whose exploitation under «conditions of extraordinary productivity» allows the sector to earn «Ricardian rents»

(Bresser, 2008, p. 50). If we assume full employment of the fixed factor<sup>12</sup>, these rents will not be eliminated by the action of competition, and will eventually be appropriated by the owners of the respective natural resources. The magnitude of this unitary rent ( $\rho$ ) is determined by:

$$\rho = Ep_C^* - p_C^S(r^*) \quad [14]$$

The most relevant implication in terms of the basic model is that it is now possible to fix the exchange rate *independently* of the value of the rate of profits. Put it differently, it is now possible to set both  $r$  (by its international level) and  $w/E$  exogenously, being the rent the endogenous distributive variable of the system<sup>13</sup>. Within this modified framework, there is a linear inverse relationship between the magnitude of rent in terms of commodity  $C$  ( $\rho_C$ ) and the real wage measured in terms of this commodity ( $\omega_C = \frac{w}{Ep_C^*}$ ). This new definition of the real wage will prove useful in sections V and VI since, unlike the industrial good, commodity  $C$  can be seen as a *necessary* consumption good («food»), and hence will play a central role when we address the potential distributive limits of devaluation policy.

If we divide equation [14] by  $Ep_C^*$  we obtain:

$$\rho_C = 1 - \omega_C l_C (1 + r) \quad [15]$$

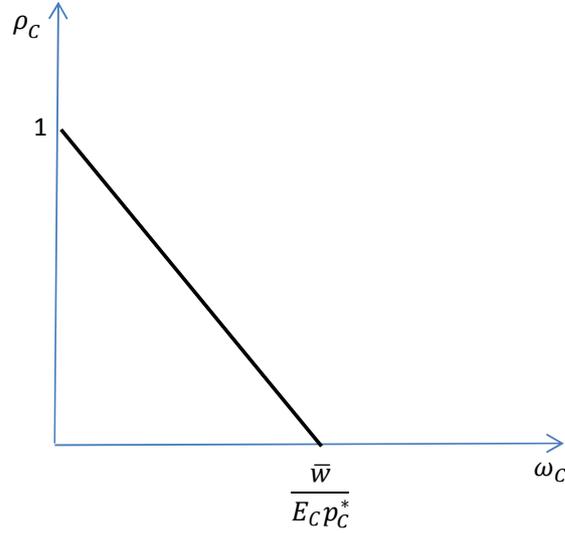
Figure 2 illustrates this relationship.

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<sup>12</sup> It is not necessary to assume the full employment of the whole stock of land. It is sufficient to assume that the land of «best quality» is fully employed. For our purposes, however, it is enough to assume that land is homogeneous and fully employed.

<sup>13</sup> This does not imply denying the possibility of a direct relationship between  $E$  and  $r$ . But such relationship will lack the same degree of generality that would be observed in the absence of rent. For instance, one could assume in a rather *ad-hoc* way that *devaluation expectations* can influence the level of the rate of profits. In this case, the equation that connects the domestic rate of profits with the international rate should adopt the following alternative form:  $r = r^* + \mu(E)$ . Where not only does  $\mu(E)$  represent the *specific risks* of investing in the domestic economy, but it is also postulated that those risks increase with  $E$ , given the potential positive effect of devaluation on the perceptions on the future evolution of the exchange rate. That is,  $\mu'(E) > 0$ . It is clear, anyway, that being based on purely subjective elements, and thus, subject to the influence of a potentially infinite variety of factors, this relationship lacks *general* validity. It is conceivable, in fact, that  $\mu'(E) < 0$ .

**FIGURE 2: RENT AND WAGES**



The rent is maximum when  $\omega_C$  is equal to zero, and it disappears when the real wage is the highest compatible with the existence of sector C at the level  $r^*$ , which occurs when  $E = E_C$ .

Before stressing the second implication, notice that at the level  $E = E_C$  commodity I cannot be profitably produced when its international price is  $p_I^*$ . Therefore, its production can only be sold in the domestic market, provided that there exists some kind of extra-economic measure that forbids imports of competing goods from abroad and/or tariffs that increase the selling price of the foreign commodity<sup>14</sup>. Then, the additional degree of freedom of the price system allows setting the exchange rate at the level  $E_I$  to allow the international competitiveness of the industrial sector. Formally, this means that  $E$  is determined at the level  $E_I$  in [13]. We thus have 8 equations ([1]-[2]-[3]-[4]-[5]-[6]-[13]-[14]) in the following variables:

$$\{p_I^s, p_C^s, p_I^d, p_C^d, w, r, E, \rho\}$$

<sup>14</sup> In formal terms, the tariff ( $\theta$ ) is endogenously determined by the following condition:  $E_C p_I^*(1 + \theta) = p_I^s$ .

#### IV. THE LEVEL OF THE EXCHANGE RATE AND THE BEHAVIOUR OF THE CURRENT ACCOUNT

In our basic framework, the level of  $E$  that the economy tends to realize ( $\bar{E}$ ), the «market rate» as Bresser calls it, is the outcome of a problem of technical choices. In the absence of rents, given the rate of profits and the relevant conditions of production, we have argued that it was plausible to assume that this level would gravitate around  $E_C$  for Latin American countries (see conditions [10] and [11] in section II). While it could be set at higher levels (including the level  $E_I$ ) when differential rents were considered (section III). For ND authors, on the contrary, in these economies the action of market forces causes the effective exchange rate to *necessarily* gravitate around the level  $E_C$ . The reason is that this is the *only* level that ensures the equilibrium of the current account:

The ‘current’ equilibrium exchange rate [is] the one that balances intertemporally a country’s current account and that is therefore also the market rate, the rate on which the market shall converge. (Bresser, 2008, p. 53).

We should note at this point that the previous claim combines three different statements: The first two are rather straightforward: a) that the minimum level of the exchange rate that ensures viability of sector C,  $E_C$ , is also the level that ensures current account equilibrium, say  $E_{Eq}$ ; b) that neither current account deficits nor surpluses can be sustained in the long run. And finally, c) it is also implicitly argued that the balance of payments can be brought into equilibrium *only* by adjustments in income distribution (in the  $w/E$  ratio).

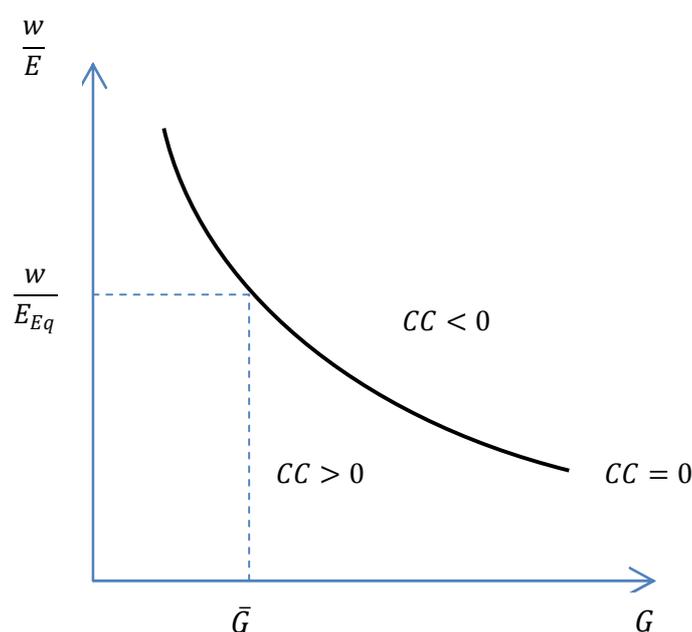
To assess the validity of each of these three statements, let us suppose that the behaviour of the current account (CC) can be described by the following condition:

$$CC = p_C^* X_C - p_I^* M_I \left( \underset{+}{G}; PC \left( \underset{+}{\frac{w}{E}} \right) \right) \quad [16]$$

Where  $X_C$  is the level of exports of the primary good, assumed to be autonomous, and  $M_I$  is the level of imports of commodity I, which in turn depends on the given level of public

expenditures ( $G$ ), and on private consumption ( $PC$ ), which is a positive function of the real wage and, therefore, of the  $w/E$  ratio. For simplicity the equation abstracts from the flow of financial services. Notice moreover that it is implicitly assumed that the economy fully specializes in the production of  $C$ , while it imports all its consumption of commodity I. By setting  $CC = 0$  in [16] we can derive all the possible  $w/E - G$  configurations that equilibrate the current account. This is shown in Figure 3.

**FIGURE 3: CURRENT ACCOUNT EQUILIBRIUM**



The curve is negatively sloped since a rise in the real wage increases  $PC$  and hence imports. For a given level of exports, equilibrium in the current account needs a decrease in the level of  $G$ . To the right (left) of  $CC = 0$ , the economy is in a situation of external deficit (surplus) since for a given real wage, the level of public expenditure is too high (low).

We are now in position to assess whether the abovementioned statements a), b) and c) hold or not. To assess claim a), notice that if we fix the level of  $G$  at  $\bar{G}$  in Figure 3, there is a corresponding level of  $E = E_{Eq}$  that, given money wages, equilibrates the external sector. And there is no reason why  $E_{Eq}$  should be equal to  $E_C$ , since the latter solves equation [8], while the former is the solution of  $CC(w/E, \bar{G}) = 0$ . The coincidence between  $E_C$  and  $E_{Eq}$  will therefore occur only by a *fluke*, which denies the first statement.

Let us consider statement b), namely whether surpluses or deficits in the current account are sustainable when, given  $G = \bar{G}$ , the effective rate that emerges from the problem of technical choices,  $E = \bar{E}$  ( $\geq E_C$ ), differs from  $E_{Eq}$ . In other words, is it the case that, if  $\bar{E} \neq E_{Eq}$ , the effective exchange rate will adjust to  $E_{Eq}$ ? The answer needs distinguishing between situations of surpluses and deficits. The NDP argues that a foreign exchange surplus cannot last because there will be a tendency to appreciation of the domestic currency. The argument, however, seems to forget the possibility of *quantity adjustments* in the market of foreign exchange; in other words, through the working of «compensation mechanisms», either by a Central-Bank policy of international reserve accumulation, or by private hoarding of foreign currency, as argued by many scholars of the Post Keynesian School (see Lavoie 2001, Frenkel, 2004)<sup>15</sup>.

It is clear, on the other hand, that persistent situations of current account deficits are not sustainable since they would imply an explosive dynamics of the country's external debt<sup>16</sup>. Therefore, if the level of  $G$  does not change, there will be a tendency towards depreciation, at least up to the level  $E_{Eq}$ .

Finally, with respect to statement c), it can be immediately noticed that given an initial situation of current account surplus or deficit, if equilibrium in the external sector is to be re-established, this can occur *either* by a change in the  $w/E$  ratio –as is argued by NDP– or in the level of  $G$  (or through a combination of both). Therefore, the necessary connection between income distribution and the balance of payments adduced by the NDP is lost once we admit the possibility of adjustments in the autonomous components of effective demand<sup>17</sup>.

Several conclusions emerge from the analysis. While it is still true the level of  $E$  that the economy tends to realize emerges from the technical-choice problem addressed in sections II and III, this statement must be qualified in the following sense:  $\bar{E}$  cannot be persistently

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<sup>15</sup> While for Frenkel the sustainability of the external surplus depends on the Central Bank's decision to fix the exchange rate and the size of the intervention in the foreign exchange market, vis-à-vis the practical limits of monetary sterilization, for Lavoie, following the Post-Keynesian endogenous money doctrine, compensation mechanisms are endogenous in nature. We will not discuss here whether the compensations mechanisms are exogenous (Frenkel) or endogenous (Lavoie). Our point is that there seems to be agreement among heterodox scholars that these mechanisms exist and are effective.

<sup>16</sup> We are of course assuming that the economy in question does not issue the currency that is internationally accepted as a means of payment.

<sup>17</sup> This possibility is recognized, for instance, by Latin American Structuralist authors, such as Canitrot (1975).

lower than  $E_{Eq}$ . Hence, if:  $E_C > E_{Eq}$ , then:  $\bar{E} \geq E_C$ , while if:  $E_{Eq} > E_C$ , then:  $\bar{E} \geq E_{Eq}$ . All this can be summarized by saying that, to be persistent, the effective exchange rate must satisfy the following condition:

$$\bar{E} \geq \max\{E_C; E_{Eq}\} \quad [17]$$

In other words,  $E_C$  and  $E_{Eq}$  must be seen as the minimum thresholds of the effective exchange rate,  $\bar{E}$ .

Second, notice that, if the condition  $E_{Eq} > E_C$  holds, since by [17]  $\bar{E}$  must be at least equal to  $E_{Eq}$ , it follows that there will be «Ricardian rents» even if the current account is in equilibrium, that is, if  $\bar{E} = E_{Eq}$ . This feature does not arise within the NDP framework because  $E_C$  is arbitrarily argued to be equal to  $E_{Eq}$ , at least in the long run.

Finally, note that the previous two remarks hold for *given* levels of autonomous expenditures  $G$  and  $X$  (and terms of trade). Conversely, once  $G$  or  $X$  are allowed to vary, there is an additional degree of freedom to achieve condition [17]. Then, for instance, if the effective rate is such that:  $E_{Eq} > \bar{E} \geq E_C$ , the reestablishment of condition [17] can be achieved by a decrease in  $G$  that reduces the corresponding level of  $E_{Eq}$  (or by an increase in  $X$ , although this is beyond the control of the Government). This can be summarized by re-expressing condition [17] as:

$$E \geq \max\{E_C; E_{Eq}(G, X)\} \quad [17]'$$

## **V. INDUSTRIAL EQUILIBRIUM EXCHANGE RATE AND DISTRIBUTIVE CONFLICT**

We have already shown that Ricardian rents introduce an additional degree of freedom that allow policy-makers to fix the level of the  $E/w$  ratio independently of the behaviour of the rate of profits, and therefore devaluation policy can be employed to promote the development of the industrial sector. For a given value of the rate of profits, the required

(gross) rate of devaluation is determined by what Bresser (2008, p. 55) calls the «severity of the Dutch disease»<sup>18</sup>,  $dh$ , which is given by:

$$dh = \frac{E_I}{E_C} \quad [18]$$

Then,  $dh$  is equal to:

$$dh = \frac{l_I}{l_C} \frac{p_C^*}{[p_I^* - k p_K^* (1+r)]} \quad [18']$$

For a given rate of profits and terms of trade,  $dh$  positively depends on the degree of *structural heterogeneity* of the economy, namely: a) the relatively low labour productivity of sector I and b) the high import coefficients of this industry. From conditions [10] and [11] (see section II), both factors suggest that for Latin American peripheral economies,  $dh$ , and therefore the required rate of devaluation, could be *drastic*. This implies that the target exchange rate,  $E_I$ , may not be socially feasible.

To see this it may be useful to recall that there is a sort of hierarchy among commodities: the reason is that good C can be conceived as the only consumption good of which a minimum amount,  $\omega_\alpha$ , is necessary for workers' subsistence («food for the cattle»). Given  $w = \bar{w}$ , it is possible to determine the maximum level of the exchange rate ( $E_\alpha$ ) that allows workers to buy that quantity C as:

$$E_\alpha = \frac{\bar{w}}{\omega_\alpha p_C^*} \quad [19]$$

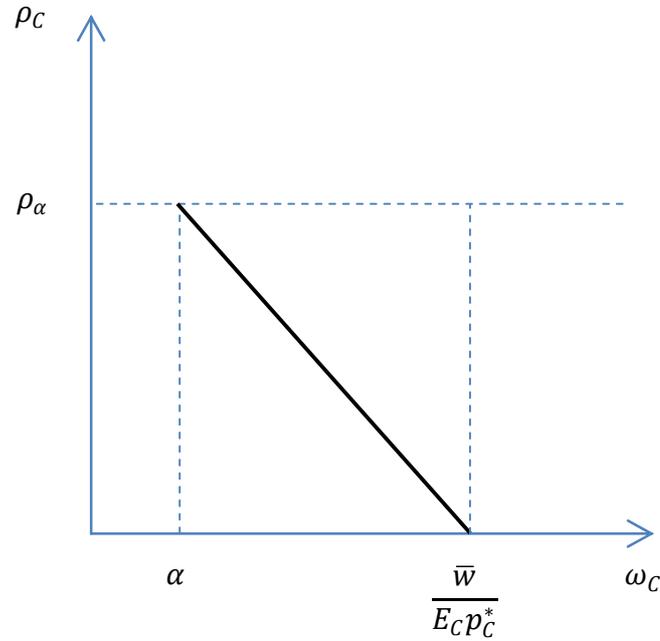
The implication is the following: since  $E_I = E_C * dh$ , if structural heterogeneity, measured by  $dh$ , is severe enough, it may well happen that  $E_I > E_\alpha$ . As a result, the required rate of devaluation will be *socially unviable*, it will provoke *full wage resistance*, and will therefore neutralize the initial effects of the rise of the exchange rate on international competitiveness.

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<sup>18</sup> The Dutch Disease problem will be discussed in the following section.

All this forces us to redefine Figure 2 to incorporate the wage limit to devaluation.

**FIGURE 4: UPPER LIMIT TO DEVALUATION**



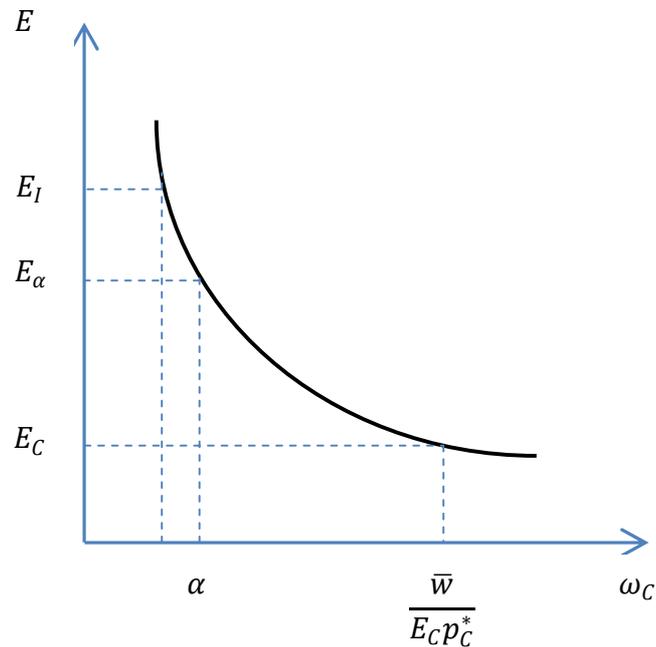
In Figure 4, at the minimum necessary level of consumption,  $\alpha$ , the maximum rent attainable is determined by equation [15] at the level:  $\rho_\alpha = 1 - \alpha l_C (1 + r)$ .

Since  $\omega_C = \frac{\bar{w}}{E_C p_C^*}$ , we can also illustrate this limit in terms of a  $E$ - $\omega_C$  equilateral hyperbola that shows how the level of the real wage changes when the nominal exchange rate varies.

Figure 5 shows the possible range of variations of the nominal effective exchange rate:

$$\bar{E} \in [E_C; E_\alpha] \quad [20]$$

**FIGURE 5: E- $\omega_C$  RELATIONSHIP AND UPPER LIMIT TO DEVALUATION**



Its lower limit is  $E_C$ , since below this level commodity C cannot be profitably produced; while its upper bound is given by  $E_\alpha$ , since above this value workers are not able to consume the quantity  $\alpha$  of C. Finally, the figure shows that, since  $E_\alpha > E_I$ , either the industrial sector does not earn the normal rate of profits or, alternatively, workers are not able to consume the minimum amount of the necessary good.

In the following section we will discuss how the problem manifests itself within the New-Developmentalist framework, and its possible solutions.

## VI. DUTCH DISEASE AND ITS NEUTRALIZATION

The NDP subordinates distributive conflict to the potential problem of «reprimarization» of the productive structure, a phenomenon known in the literature as «Dutch disease» (see Corden and Neary, 1982). In general terms, the issue can be described as follows: consider an economy with significant industrial development, in which differences in productivity across sectors are small. In other words, within the relevant interval for the rate of profits, the industrial and primary exchange rates are approximately equal:

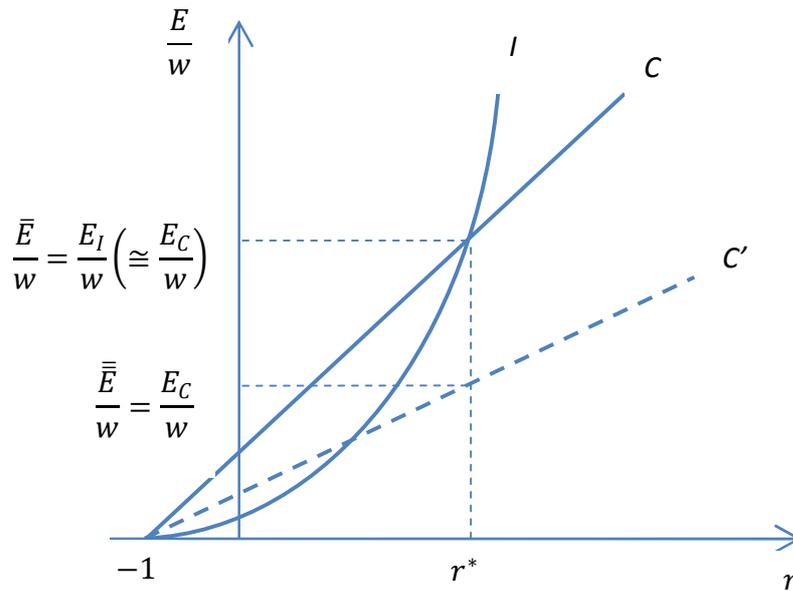
$$\bar{E} = E_I (\cong E_C) \quad [21]$$

Then, the argument follows, the discovery of a new natural resource allows exploiting C under particularly favourable conditions. This decreases C-supply price:

$$p_C^s < \bar{E} p_C^* \quad [22]$$

If we further assume that the higher productivity of C at the prevailing exchange rate allows the sector to increase its exports, a foreign exchange inflow will take place. If there are no «compensation mechanisms» (see section IV), this inflow will induce a tendency to the appreciation of the domestic currency towards the level  $\bar{\bar{E}} = E_C$ <sup>19</sup>, now *considerably* lower than  $E_I$ <sup>20</sup>. And this provokes, in the absence of protection, the disappearance of industry. The Dutch disease is illustrated in Figure 6.

**FIGURE 6: DUTCH DISEASE**



<sup>19</sup> In the light of our discussion of section III about the relationship between the level  $E_C$  and  $E_{Eq}$ , we will here assume that  $E_C \geq E_{Eq}$  and hence the effective exchange rate will gravitate around  $E_C$ .

<sup>20</sup> An analogous effect to the discovery of a natural resource may be obtained if initially both sectors are equally efficient ( $\bar{E} = E_I = E_C$ ) and a rise of  $p_C^*$  takes place, allowing sector C to tolerate a lower exchange rate,  $E'_C$ . At the initial level of  $E$ , there will exist a foreign exchange inflow due to the price effect, which will push the exchange rate towards the level  $E'_C$ .

According to the NDP, the «correct way» (Bresser, 2012, p. 66) to solve the problem consists in implementing a tax ( $\theta$ ) on C-production that increases the *supply price* of this commodity ( $p_C^S$ ) (or what Bresser denominates its «necessary price»), and therefore its demand price, by appropriately rising the level of  $E_C$ . If the new supply price is  $p_{C\theta}^S = p_C^S(1 + \theta)$ , with

$$1 + \theta = \frac{E_I}{E_C} \quad [23]$$

From condition [23] it follows that the equality of demand and supply prices for C is now  $p_C^S(1 + \theta) = E_C p_C^*$ , which means that the new (and higher) level of the exchange rate that satisfies this condition is:

$$E_{C\theta} = \frac{E_C}{(1+\theta)} = E_I, \text{ (with } E_{C\theta} > E_C \text{)} \quad [24]$$

The tax allows re-establishing condition [21], and hence the viability of the industrial sector. However, this solution is inflationary and it may therefore face a «major political obstacle», since the real-wage fall in terms of tradable goods may tackle the resistance of the working class (Bresser, 2008, p. 59).

There are several aspects of the Dutch Disease that are worth discussing. First, notice that when the problem manifests itself, the distributive conflict has *already* been solved, since the tax limits to *counteract* the pervasive effects of appreciation, and hence increases the level of exchange rate, and therefore reduces the real wage, only up to its initial value  $E = \bar{E}$ , which by hypothesis was *socially viable*.

Note in any case that, at first sight, there seems to be no way to avoid the potential inflationary pressures associated with the neutralization of the disease by means of the tax. At closer inspection, however, this is the result of the assumptions underlying NDP's framework, in which the *only* way to induce an increase in the level of the effective exchange rate is through an increase in the *supply price* of C, since the presence of differential rents in «equilibrium» is neglected.

As we have already seen, on the contrary, the moment these rents are sufficiently persistent, monetary authorities can manage the nominal exchange rate directly (without relying on the aid of a tax), even if the rate of profits is exogenously given. Therefore, it is possible to eliminate the competitiveness gap of the industrial sector by raising  $E$  up to its initial level  $\bar{E} = E_I$ . Like the tax on production costs, this policy alone is inflationary too. In this case, however, it limits itself to increase the *demand price of C*, but does not alter its supply price (in other words, the original value of  $E_C$  *does not change*), and therefore its inflationary effect on the necessary good C can be avoided. To achieve this goal, it is enough that, at the same time, the Government imposes a *tax on exports* ( $\tau$ ) that fixes the exchange rate net of taxes faced by C at the lower level  $\bar{\bar{E}} = E_C$ . This is none other than a *compensated devaluation policy*, or *effective exchange rate differentiation*, endorsed by several old Latin American Structuralist scholars, the Argentinian economist Marcelo Diamand (1972) among them<sup>21</sup>.

To see how this works, let us recall that  $E_\alpha$  is the *maximum* level of the exchange rate tolerable by workers, and further assume that  $E_I > E_\alpha > E_C (= \bar{\bar{E}})$ , which means that the gross rate of devaluation required by the industrial sector,  $dh = \frac{E_I}{E_C}$ , cannot be implemented. In this context, an exchange-rate-differentiation policy absorbs a portion of the differential rent appropriated by landowners after devaluation and prevents the demand price of C from raising to the same extent as  $dh$ . If  $1 - \tau = \frac{E_\alpha}{E_I}$ , the effective exchange rate faced by sector C will be:  $E_\alpha = (1 - \tau)E_I$ . Then, at  $E = E_I$  workers are now able to consume the minimum amount ( $\alpha$ ) of the necessary good, since:

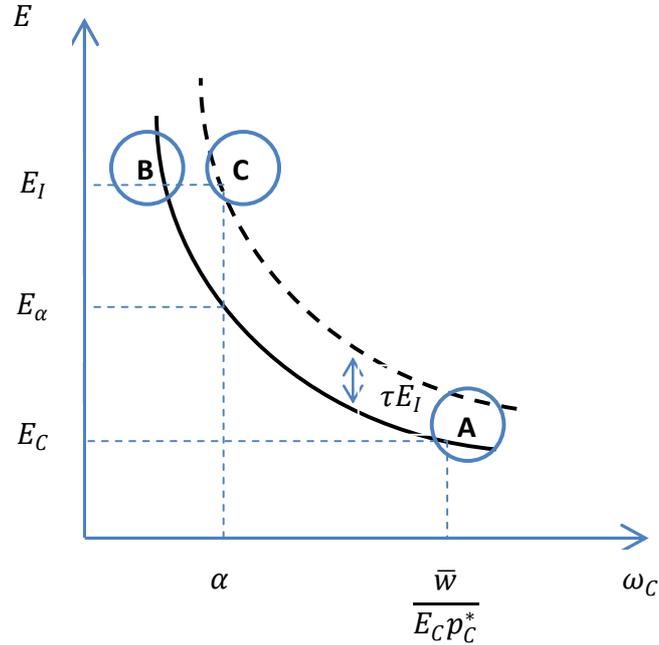
$$\frac{w}{(1-\tau)E_I p_C^*} = \frac{w}{E_\alpha p_C^*} = \omega_\alpha \quad [25]$$

This is shown in Figure 7 by means of the  $E$ - $\omega_C$  equilateral hyperbola introduced in section V. An export duty of magnitude  $\tau$  shifts the curve upwards (dotted line), and allows a higher real wage for each level of  $E$ . Moreover, the effective exchange rate for the industrial sector is equal to  $E_I$ , while the one faced by sector C is  $E_\alpha$ .

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<sup>21</sup> See Dvoskin and Feldman (2015) for a formal reconstruction of Marcelo Diamand's thought.

**FIGURE 7: EXCHANGE RATE DIFFERENTIATION**



Then, if we depart from a situation in which  $\bar{E} = E_C$  (point A), devaluation from  $E_C$  to  $E_I$  causes a fall of  $\omega_C$ , but, thanks to exchange rate differentiation, the distributive limit has not been surpassed (point C), as it would have occurred with a standard devaluation (point B). Finally, notice that the inflationary pressures could be fully neutralized if the Government sets  $1-\tau = \frac{E_C}{E_I}$ , since in this case the maximum rate of C-consumption,  $\omega_C$ , will remain at its initial level.

## VII. CONCLUDING REMARKS

The present paper has attempted to reconstruct the New-Developmentalist approach, by means of a formal framework that *endogenizes* the productive structure of a small open peripheral economy, as the outcome of a problem of technical choices. This framework allowed us to inspect the conditions that the exchange rate must satisfy to ensure the viability of the industrial sector while simultaneously respecting the restrictions imposed by the balance of payments and the distributive conflict. Once differential rents are admitted, we have shown that export duties are a more efficient tool to neutralize the Dutch disease than the imposition of a tax on the primary sector production costs, since the former extracts rents from the owners of natural resources without increasing the domestic price

faced by workers. At this juncture, one must stress, however, that distributive conflict may also emerge from the resistance of rentiers who may exert sufficient political power to block the policy of exchange rate differentiation.

If in the light of our framework we now return to the more general discussion about the role of the exchange rate as a tool for sustained economic growth, one should warn that setting the exchange rate at the industrial equilibrium level seems to be a necessary yet *not* a sufficient condition for industrial development. In particular, once the viability of the sector is ensured, the rise of the quantities produced and exported will depend on the «extent of the market», i.e. on the evolution of global effective demand. And given the aggregate level of exports, it is clear that the industrial exports of a particular economy can increase only to the extent that there is a simultaneous fall in the level of exports of her competitors, and this will imply «exporting unemployment» to her trade partners<sup>22</sup>. Thus, one should expect that in response to devaluation in the domestic economy, competitors devalue their own currencies as well, thereby starting a currency war that ends up in a zero-sum game.

At the global level, on the other hand, we should also expect that if a significant group of nations simultaneously devalue their currencies to promote their exports, the growth rate of global output decelerates, considering the negative influence that the exchange rate exerts on the real wage. And this effect will tend to diminish the level of exports of *all* the economies involved in trade. It could be therefore concluded that exchange rate policy seems to be more effective to counteract negative shocks, such as devaluations pursued by trade partners or the tendency towards reprimarization, than as an effective tool for economic development.

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<sup>22</sup> See Blecker (1989, p. 404).

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