

## **How to neutralize the Dutch disease notwithstanding the natural resource curse**

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**Summary:** This paper discusses two closely related concepts – the Dutch disease and the natural resource curse – and a third one, exchange rate populism, associated with the curse. The Dutch disease is a long-term overvaluation of the national currency that originates in exports of commodities that generate Ricardian rents. The natural resource curse is the generalized rent-seeking that takes over a commodity-exporting country. And exchange rate populism is the political practice of keeping the national currency overvalued, so as to ensure that politicians are re-elected. This paper shows that the curse and the populism will make it difficult for a country to neutralize the Dutch disease, which blocks investment and growth. But it argues that the fight against the natural resource curse and exchange rate populism will be strengthened if policymakers realize that there is a relatively simple policy that effectively neutralizes the disease – a policy that was sketched almost ten years ago (Bresser-Pereira 2008) but remains hardly known among economists.

**Key words:** Dutch disease, natural resource curse, exchange rate populism, growth

This paper discusses two interrelated concepts – the Dutch disease and the natural resource curse, the first an economic, the second a political and institutional problem – and focuses on the first. The Dutch disease is a serious obstacle to industrialization and growth. Corden and Neary (1982; 1984) were the first to formalize it, but their model has proved insufficient to include this long-term overvaluation of the exchange rate in the core of development economics. It involved an economy with three sectors – the tradable commodity sector, the tradable non-commodity sector, and the non-tradable sector – from which it was impossible to infer the policy that neutralized the major competitive disadvantage that, paradoxically, the countries benefiting from abundant natural resource confront. Instead, economists have been attracted by the political problem – the rent-seeking involved in the natural resource curse. In 2008 Bresser-Pereira introduced a second model of the Dutch disease, which, instead of concentrating on the disequilibrium among the three sectors, focused directly in the long-term overvaluation of the exchange rate that it causes, and inferred from it a simple (but politically difficult to implement) neutralization policy. This model was subsequently improved and eventually as part of the new-developmental macroeconomics in which the exchange rate and the current-account deficit play a central role.<sup>1</sup>

In 2007 two books were published that discussed the Dutch disease and the natural resource curse: *Escaping the Resource Curse*, edited by Macartan Humphreys, Jeffrey D.

Sachs and Joseph Stiglitz, and *Natural Resource: Neither Curse nor Destiny* edited by Daniel Lederman and William F. Maloney. The latter book is radical on the matter. Its two editors claim in their introduction that there is no natural resource curse or the “so called” Dutch disease. For them “several plausible indicators of the incidence of natural resource exports seem to have a *positive* rather than a negative effect on subsequent economic growth. Put bluntly, *there is no resource curse*” (Lederman and Maloney 2007: 3; emphasis in original). In contrast, the Humphreys, Sachs and Stiglitz collection acknowledges that the natural resource curse or the Dutch disease represents a serious problem, but the editors ultimately emphasize the political-institutional problem, possibly because the economic solutions that the three distinguished economists have to offer are not satisfying in themselves. In his chapter, Sachs (2007: 191) prescribes certain economic policies designed to overcome the problem. His essential recommendation is that “oil earnings are invested in ways that enhance productivity, and thereby raise rather than lower production in the non-oil traded good sector”. He also considers pegging the national currency to the dollar, but notes that pegging requires substantial foreign exchange reserves. And he gets near the solution of the problem when he entertains the possibility of subsidizing the production of manufactured goods that make a significant contribution to the technological sophistication of the economy, but he does not explore this possibility because subsidies are no real solution to a long-term and structural problem such as the Dutch disease.

In this paper, I summarize the theory of the determination of the exchange rate, the structural model of the Dutch disease, and the policy that neutralizes it, which I refer to as the new-developmental model (NDM).<sup>2</sup> My reference is the book edited by Humphreys, Sachs and Stiglitz (2007). In its foreword, George Soros (2007: xi) remarks that the curse or the disease involves three problems, namely currency appreciation (the disease), the wide fluctuation of commodity prices, and their effect on political conditions (the curse). And he asserts: “The first two are purely economic factors and have been studied extensively. It is the third factor that needs to be better understood.” I am not persuaded that he is right. We should not underestimate the third factor, but the open macroeconomics on the exchange rate and the current-account deficit is faltering. On the other hand, the rent-seeking, if not sheer corruption, that characterizes many countries exporting commodities is highly detrimental to growth. And I agree with the distinguished political scientist, Terry Lynn Karl, who also contributes a chapter to the book, and who recently told me that the corruption associated with rent-seeking is a major obstacle to adopting a policy to neutralize the Dutch disease. But I am deeply persuaded that, if we have a better model explaining the disease, not only will its terrible consequences be better understood, but the way to neutralize it will be economically obvious and will open new avenues for policymaking promoting growth.

### **The determination of the exchange rate**

I begin with a simple definition of the two problems. The natural resource curse is an essentially political-institutional problem; it is the generalized rent-seeking that occurs in a country exporting commodities which generate Ricardian rents; it is the transformation of the state into a predator or an extractive state in which government, economic and political elites are oriented not to production but to the capture of rents that the state collects by imposing a tax on the exports of the commodities. In contrast, the Dutch disease is an economic problem; it is the *long-term* overvaluation of the national currency that originates in the exports of commodities that, benefiting from Ricardian rents or from price booms, may be exported at a substantially more appreciated exchange rate than the rate that companies producing tradable non-commodity goods require to be competitive, although they utilize world state-of-the-art

technology. This competitive disadvantage blocks industrialization, or, if the country was previously industrialized, causes premature deindustrialization. As in the case of the natural resource curse, it is an economic problem that arises because such commodities benefit from Ricardian rents and/or commodity booms, which allow the companies that produce and export them to make a profit with an overvalued exchange rate that renders uncompetitive the producers of the manufactured goods that the country could *potentially* produce.

This NDM definition of the Dutch disease is different from Corden and Neary's model referred to above. This definition emphasizes the presence of three sectors in the economy, and the national currency becomes overvalued because of the rise in the international prices of the commodities exported, which causes the domestic prices of the non-tradable sector to increase and the domestic prices of the tradable non-commodity sector to fall. Thus, as Sachs (2007: 183) remarks, "the rise in the relative price of non-tradable goods to tradable goods (or equivalently, the fall in the relative price of the tradable goods) is termed a real exchange rate appreciation". This is correct, but in this model the disease only occurs in the case of commodity booms, and from the model it is difficult to infer a policy to neutralize it.

The NDM focuses on the exchange rate, and includes a general theory of it as it distinguishes the value from the price of the foreign money. The economic literature on the exchange rate assumes that the rate is determined by the supply of and demand for foreign money, to which it adds the purchasing power parity model. In the NDM, the exchange rate fluctuates according to the supply of and demand for foreign money around a *value-equilibrium* (named "current equilibrium") which may be simply defined as the value that covers the costs plus reasonable profit rate of the companies that participate in the international market, and balances intertemporally the country's current account. This value-equilibrium changes primarily as the comparative unit labor cost of the country varies, and secondarily as the terms of trade of the country change in relation to a basket of foreign currencies.

When the Dutch disease is present, there is a second value equilibrium – the "industrial equilibrium" – which is defined as the exchange rate that renders competitive the non-commodity companies that utilize world state-of-the-art technology. What economics assumes is that the industrial equilibrium should be equal to the current equilibrium (which would make the industrial equilibrium unnecessary) when firms use the best technology and management practices available in the world. The tradable non-commodity companies would necessarily be competitive. But, when the country faces the Dutch disease, we must consider the two equilibriums. The Dutch disease is the difference between the two equilibriums: the greater the difference, the more severe is the disease.

In this model, the determination of the exchange rate follows a historical tendency – the tendency to the cyclical and (in the long term) chronic overvaluation of the exchange rate. Currency crises mark the end and the beginning of each cycle. When a country is hit by a financial crisis, the national currency devalues sharply, more so than the industrial equilibrium. Once the crisis abates, the currency begins to appreciate again, crosses the industrial equilibrium and then the current equilibrium, enters the realm of current-account deficits, and eventually reaches a floor where it remains for several years. Given the overvalued currency, the foreign debt increases, or the current-account deficit increases dangerously up to the point at which international creditors suddenly lose confidence and stop the roll-over of foreign debt, and a new currency crisis breaks.

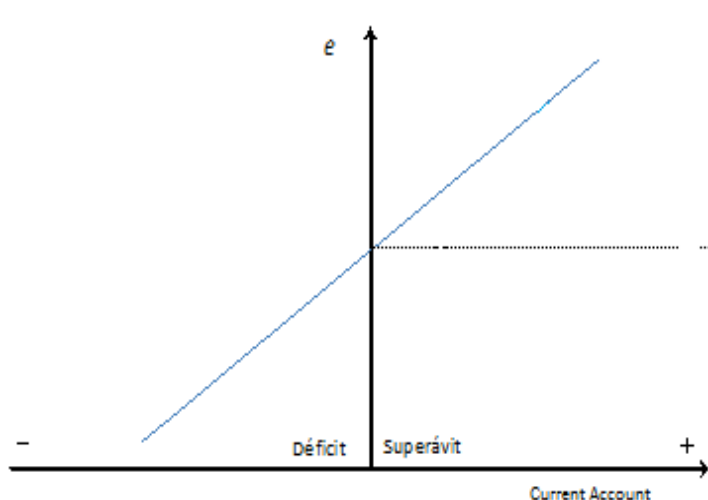
Two factors cause such an appreciation: the Dutch disease and three policies habitually adopted by most developing countries. The Dutch disease brings down the exchange rate to the current equilibrium because in a commodity-exporting country the exchange rate is

basically determined by the international prices of the commodities. The three *habitual* and interrelated policies that further appreciate the national currency and lead the country into current-account deficits are (a) the policy of growth with current-account deficits and foreign indebtedness, (b) the use of the exchange rate as an anchor against inflation, and (c) the central bank setting high the interest rate *level* around which the central bank conducts its monetary policy.

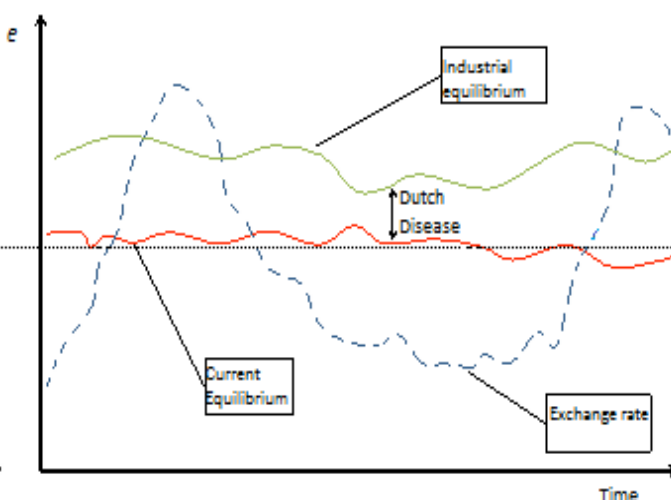
Besides the values of the current equilibrium and the industrial equilibrium and the variables behind them (the variations in comparative unit labor costs), and besides the three habitual policies which affect the demand for and supply of foreign money, there are other variables determining the exchange rate, mainly the variation in the terms of trade, major rises or falls in capital flows, the introduction of capital controls, the monetary policy of the central bank, and the buying or selling of reserves. But the main systematic variables determining the exchange rate are the current value equilibrium, the variations behind it (the Dutch disease and the variation in comparative unit labor costs), and the three habitual policies that affect the demand for and supply of foreign money, which cause fluctuations around the current value equilibrium.<sup>3</sup>

The exchange rate is ultimately determined by its close connection with the current account. Other variables remaining constant, and thinking in instantaneous or photographic terms, the higher the current-account deficit, the more appreciated will the national currency be. The exchange rate that balances the current account is substantially more competitive than the exchange rate that balances a current-account deficit of 3% of GDP. This is the outcome of two flows – the demand and supply of foreign money – the demand being higher than the supply in this example. The causation between the current account deficit and the exchange rate may run in both directions. Factors that appreciate or depreciate the currency will affect the current account, but the inverse takes place when the government adopts the policy of “growth with foreign savings”.

**Figure 1: Current-account and exchange rate**



**Figure 2: Determination of the exchange rate**



Figures 1 and 2 illustrate new-developmental model of the determination of the exchange rate. Figure 1 shows the linear, time-independent, relation between the current account and the exchange rate. Figure 2 shows the cyclical behavior of the exchange rate and

the behavior of the current and the industrial equilibriums. We have the two value equilibriums and the exchange rate. The industrial equilibrium and the current equilibrium vary over time: the industrial equilibrium mainly because of changes in comparative unit labor costs, the current equilibrium mainly because of variations in the terms of trade. The exchange rate follows the tendency to cyclical and chronic overvaluation.

If the recent Brazilian experience is cited as an example, the most recent cycle lasted from 2002 until the 2014 crisis. In real reals prices of the third quarter of 2016, the industrial equilibrium increased from R\$ 3.80 to R\$ 4.00 per dollar as a consequence of the rise in comparative unit labors cost in Brazil; the current equilibrium was around R\$ 3.20 per dollar (meaning a Dutch disease of R\$ 0.80 per dollar, or 20%), except during the 2014 crisis, when I estimate that it almost reached R\$ 4.00 per dollar, and the Dutch disease vanished because of the major drop fall in the prices of commodity exports, mainly iron and soy beans.

### **Exchange rate and growth**

I am assuming the fundamental determinant of the growth rate is the rate of investment, both public and private, but especially the latter as private investment is thought to make up between 75 and 80% of the total. There are other variables on the supply side, such as education, technical progress and good institutions, and on the demand side, but investment in physical capital is the most significant factor. Technical progress is mainly embodied in physical and human capital. Education and institutions are very important, but they don't make a difference in the short term. These variables assure a return on investment, but this is difficult to measure and always emerges over the long term. Institutions are mostly celebrated, particularly those that guarantee property rights and contracts, but they form an endogenous variable that is simultaneously a cause and a consequence of growth. In contrast, the investment rate – of public investment (mainly infrastructure) and of private investment (in all other sectors of the economy) – operates simultaneously on the supply side and on the demand side, and has a direct relation to growth.

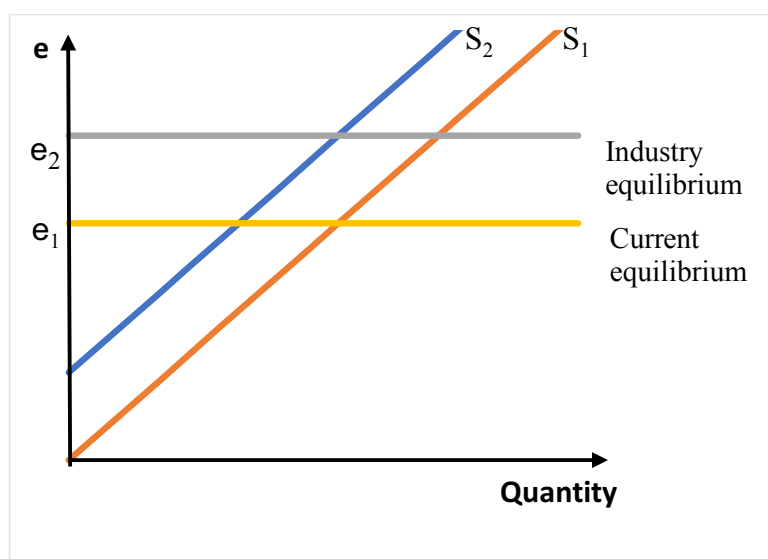
Considering this and the theory of the determination of the exchange rate just summarized, the exchange rate becomes a key variable in the investment function and, so, in growth theory. The reason is simple: the exchange rate is not volatile. Contrary to the claims of other theories, it doesn't oscillate rapidly around the equilibrium. Instead, it remains substantially overvalued in each cycle, which has a duration of several years. At the start of a financial crisis – usually a currency crisis – the exchange rate depreciates sharply. Once it reaches a peak it starts falling or appreciating gradually, reaches a kind of floor and remains on or near this floor for some years, probably reflecting the lowest exchange rate that the more efficient exporters of commodities can tolerate.

Thus, when a company considers a new investment, it will probably calculate its likely return in light of the overvalued exchange rate and, most likely, will either not invest at all or will invest just enough to keep the plant modern but not to expand production. When the exchange rate is volatile, business decision-makers are insecure; when the exchange rate is overvalued in the long term, they will just not invest. The exchange rate acts as a light switch that gives or withholds *access* to existing demand, be it international or domestic.

### Neutralization of the Dutch disease

The Dutch disease is a problem as old as capitalism, international trade, and the existence of a relevant exchange rate. As I understand it, the main cause of the decline of Spain and Portugal was the Dutch disease that stemmed from the gold, silver, and sugar cane that these countries obtained from their colonies. Their currencies remained overvalued in the long term, making industrialization and growth unviable. The neutralization of the Dutch disease is also an old practice, although it came to be understood and defined only in the 1980s. The fact that before the Corden and Neary model there was no theory that explained it didn't stop pragmatic and competent policymakers from neutralizing it intuitively – but almost always only in relation to the domestic market, not in relation to the foreign markets. The Dutch disease was neutralized in relation to the domestic market simply through the imposition of tariffs on imports of manufactured goods. When a country imposes a 20% tariff on all imported manufactured goods, this is the same as depreciating its currency by 20% in relation to imported manufactured goods. The tariff establishes a dual, if not a multiple, exchange rate regime. Some countries adopted dual or multiple exchange rate regimes instead of tariffs. Liberal economists indicted import tariffs as “protectionism” and developmentalist economists defended it, following Alexander Hamilton, with the infant industry argument. Actually, besides the infant industry argument, the neutralization of the Dutch disease also justifies high import tariffs, and, so, don't configure protectionism. The import tariff will be just leveling the playing field.

**Figure 3: Neutralization of the Dutch disease**



When the country is beginning to industrialize, and chooses an import substitution strategy, the use of import tariffs is a legitimate way, if we can characterize the country's manufacturing industry as infant. But this model is intrinsically limited as a growth strategy. In countries that adopted the import substitution strategy, growth rates fell when its benefits were exhausted. Others, like Brazil, having reached the exhaustion of this growth model, established, beginning in 1967, a major program of subsidizing exports of manufactured goods. In this way, it completed the job by neutralizing the disease also in relation to foreign markets. And it was successful. Exports of manufactured goods represented only 6% of total exports in 1965; in 1990 they reached a peak of 62%. Yet, in that year, weakened by ten

years of foreign debt crisis, the country agreed to liberalize trade, believing that it was doing no more than eliminating protectionism. In fact, it was dismantling the mechanism that neutralized the Dutch disease. From then on the country faced a major deindustrialization and low growth rates.

Multiple exchange-rate regimes are not the best alternative to neutralizing the Dutch disease. There is a simple policy that does the job without resorting to tariffs and subsidies, which derives directly from the new-developmental model. It involves the imposition of a tax on the exports of the commodities that generate the disease. The tax varies according to the severity of the exchange-rate overvaluation, depending mainly on the variation in the commodities' international prices: when the prices increase, the tax increases, and vice versa. Given a table of prices and percentage taxes for each main exported commodity, which in principle should be established by law, exporters would be assured a stable and satisfying profit rate. Note that if the disease is not severe and the international price falls substantially, the percentage tax may be zero.

Why should the tax or "retention" neutralize the Dutch disease? Because it will increase the cost of production of the commodity, and, in consequence, the current equilibrium (the value equilibrium determined by commodity exports) will converge to the industrial equilibrium, and the market will duly lead the exchange rate to fluctuate around the now unified equilibrium. Another way of reaching the same result is by considering the microeconomic consequences of the export tax. The tax will shift the supply curve of the commodity to the left, not in relation to its price (which is given by international markets) but in relation to the exchange rate, and the value equilibrium will converge to the industrial equilibrium. Figure 3 shows the neutralization of the Dutch disease by means of a shift in the supply curve.

In our Brazilian example, an exchange rate of R\$ 0.80 per dollar on the exports of the main commodities will neutralize the Dutch disease. In Argentina, in the major 2001 financial crisis, the government created a "retención" on the exports of commodities. It did so for fiscal reasons, not as a policy measure to neutralize the Dutch disease, but, although it was a fixed tax, it did neutralize the disease, reindustrialization took pace, and high growth rates were achieved, while the country experienced a current account surplus. Yet, when inflation increased, the government decided to use the exchange rate as an anchor against it, the peso appreciated, the current-account surplus evaporated, and the growth rate fell.

## **Winners and losers**

Who will gain and who will lose? The price of the commodity will be determined mainly by the cost plus reasonable profit of the least efficient producer admitted to the market. Given this price, before the tax, the countries that have a lower cost of production will benefit from the corresponding rent (the difference between the cost of production and that of the least efficient producer admitted to the market), which will be captured by those producers who are more efficient than the marginal producer. Once the tax is imposed, the state will capture the rent, and the producers will be left only with the economic profit. But eventually they will pay nothing, because the national currency will depreciate as a result of the increase in the cost of production (or the shift of the supply curve to the left), and what they paid in the form of taxes they will recoup from a devaluation of the national currency. In the Brazilian case, they will pay R\$ 0.80 per dollar exported, and receive back R\$ 0.80 per dollar exported in the form of currency depreciation. Thus, the eventual payer of the tax is the population of the

country, because the currency depreciation makes them poorer: they will be able to buy fewer tradable goods and services, whose relative prices have increased.

What to do with the new revenue? Its ideal destiny is the creation of a sovereign fund, like Norway's. The fund will not neutralize the disease (this is done by the tax), but it will prevent hard currency inflows from increasing the supply of foreign money and revaluing the national currency: the fund would have to buy reserves to neutralize such capital inflows – which would make the use of the money self-defeating

Thus, there is a solution to the Dutch disease. As for the natural resource curse – is there likewise a simple solution? Unhappily, no. This is a political and institutional problem with strong cultural associations. It tends to be overcome as a country industrializes, becomes capitalist and becomes democratic, but the fundamental challenge that human development faces is how to advance in these structural and political domains. It is not the purpose of this article to discuss the solutions to the natural resource curse and exchange rate populism.

Exchange rate populism is a second cause of the non-neutralization of the Dutch disease. It is a form of economic populism that is distinct from the well-known fiscal populism that arises when the state or government gets involved in chronic pro-cyclical fiscal deficits. By “exchange rate populism” I mean a nation-state or country spending more than it receives and gets involved in chronic current account deficits. Exchange rate populism is very attractive to politicians who want to be reelected. It increases the incomes of all (not only the wages of workers and the salaries of the middle class, but also the incomes of rentier capitalists on the form of interest, dividends and real-estate rents), and it makes everybody richer. The fact that the neutralization of the Dutch disease involves a depreciation of the national currency makes this policy unattractive both to politicians and to the people. This is one of the two reasons why countries face difficulty in imposing the required tax. The other reason is the natural resource curse. For both evils, there is *no* simple solution; we should not make the neutralization of the Dutch disease dependent on “solving” them.

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<sup>1</sup> On the new-developmental macroeconomics, see Bresser-Pereira, Marconi and Oreiro (2014) and Bresser-Pereira (2016).

<sup>2</sup> There is already a sizable literature on the NDM. I cite here Bresser-Pereira (2008, 2010, 2016) and Bresser-Pereira, Marconi and Oreiro (2016), which is a more complete version of the authors’ *Developmental Macroeconomics*, originally published in English, by Routledge in 2014.

<sup>3</sup> It is usual to hear the comment that the exchange rate became indeterminate because of the volume and unpredictability of capital flows. I agree that this is a difficulty, but, first, it is not a sufficient reason for giving up a theory of the exchange rate; second, in this model, capital flows are considered in one of the three habitual policies: that of growth with current-account deficits to be financed by capital flows.