Revista de Instituciones, Ideas y Mercados Nº 57 | *Octubre 2012* | *pp. 141-167* | *ISSN 1852-5970*

MONETARY ARRANGEMENTS, RESOURCE CURSE AND THE "DUTCH DISEASE"*

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Resumen: Se argumenta que la "enfermedad holandesa" es un efecto de los cambios en los precios relativos tanto a nivel nacional como a nivel internacional, una situación que sólo puede explicarse cuando: a) bajo el régimen monetario actual las autoridades monetarias permiten que la tasa real de cambio se aprecie, y b) los arreglos institucionales respecto de un sector económico en auge permiten la extracción y distribución de rentas a través del proceso político.

Abstract: I argue that the "Dutch disease" is an effect of the changes in relative prices both domestically and internationally, a situation that can only be explained a) under the current monetary arrangements, when the monetary authorities allow the real foreign exchange rate to appreciate, and b) when the institutional arrangements in regard to a booming economic sector permit rents to be extracted and distributed through the political process.

Introduction

In March 2012 Liberty Fund held a conference directed by Professor Roberto Fendt on "Liberty and the Exploitation of Mineral Resources". During that conference, the group discussed why the exploitation of mineral resources in general, and oil more specifically, seems to be associated with bad economic

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* This is the first part of the paper presented at the IV International Congress "The Austrian School of Economics in the XXI Century", organized by Fundación Bases and Universidad Católica Argentina, held in August 2012, in Rosario.

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performances and political problems, generating the so-called "resource curse". The discussion during that colloquium motivated me to develop this work, with the hope to analyze that aspect of the "resource curse" –also called "Dutch disease"– as a phenomenon that can be analyzed considering how the monetary and political arrangements affect the "real" sector of the economy and the foreign trade.

Before continuing some clarifications are in order. First, according to Fernando Postali, "the 'Dutch disease' is a chronic competitiveness loss faced by resource-dependent economies resulting from the overvalued exchange rate. The term 'Dutch disease' firstly appeared to describe the impact of natural gas discoveries on the Dutch economy by the 1960's, when the subsequent export boom contributed to overvalue the exchange rate. As a consequence, the competitiveness of manufactured exports was negatively impacted and the economic growth was impaired. Although there are several variants, the 'Dutch disease' started to represent the general description of similar phenomena regarding the adverse effect of overvalued currencies on the economic dynamism" (Postali, 2009:207).

Second, the extent of the impact of the dependency on mineral "rents"[1] varies in intensity according to the shortcomings in the public governance. Therefore, although the paper deals with the "Dutch disease" as a monetary phenomenon, it also reflects on the nature of a *rentier* state.[2]

Built on these concepts, the thesis of this paper is that "Dutch disease" is a story of the changes in relative prices both domestically and internationally, something that can only be explained under the current monetary arrangements if the monetary authorities allow the real foreign exchange rate to appreciate, but it is also a story that requires substantial rents to happen.

The "Dutch disease," essential elements

A widely accepted definition of the "Dutch disease" is "the coexistence within the traded goods sector of progressing and declining, or booming and lagging, sub-sectors" (Corden and Neary, 1982:825). Since the booming

sector is usually of an extractive kind and the lagging sector is manufacturing sector, the emphasis of the discussion is about the phenomenon of de-industrialization. Some of the most respected analyses on the "Dutch disease" ignore monetary considerations entirely and focus on real variables. As already stated, my understanding is that the phenomenon can only happen under the current arrangements of national fiat money legal tender regimes, and therefore it cannot be understood separately from the monetary regime. For instance, W. Max Corden and J. Peter Neary describe two transmission mechanisms through which the effects of a boom in mineral exploitation is felt by the entire economy: the first, the *resource effect,* is one in which some mobile resource (labor) is attracted to the booming sector, mainly through variations in the real exchange rate; the second, the *spending effect,* occurs when the extra income in the booming sector is spent in services and produces real variation in prices, that is, an appreciation of the real exchange rate (Ibid.,1982:827). These authors explain the real exchange rate appreciation with the boom in a tradable sector by a diminution in the supply of non-tradable goods/services (the resource effect) and an increase in the demand for services/non-tradable goods (the spending effect) (Ibid.,1982:831). They conclude that de-industrialization may be caused directly by the boom in a tradable good and indirectly by the exchange rate appreciation, and the way to ameliorate that is to allow more flexibility in the use of resources (Ibid.,1982:841).

As already mentioned, for these authors, variations in the exchange rate may be explained solely by variations in relative prices in the domestic market between tradable and non-tradable goods (see footnote 8). That understanding of real exchange rate is in line with the neoclassical literature that assumes money as neutral in the long run. However, under the assumptions of Austrian Economics, in which money is not neutral, the deficiencies of such a definition become clear. Furthermore, it does not allow the analyst to perceive that the changes in the exchange rate –if those changes are understood as changes in the nominal and real parity between different currencies– are crucial to understand the mechanism through which the "Dutch disease" is transmitted.[3]

In contrast, Michael Ross's definition of the "Dutch disease" –composed of (a) the appreciation of the real exchange rate and (b) the attraction of labor and capital by the booming sector from other sectors in the economy– seems to be more appropriate (Ross, 2000:306). In Ross' scheme, the issue of the changes in the real exchange rate is brought into the analysis, and it leads to the crucial question of how the attraction of labor and capital happens, inviting an exploration of the transmission mechanism.

The "Dutch disease" and monetary systems

The main argument in this paper is that the "Dutch disease" is a phenomenon that can only happen under the international monetary system we have today based in national, fiat money currencies and floating exchange rates. The thesis is not a denial that there are dislocations of resources in the real sector driven by the profitability of one industry of tradable goods such as minerals. First such reallocations can hardly be called a disease, and second, the argument is that on top of those movements of resources from other sectors to the booming sector, the "Dutch disease" manifests itself by further dislocations, mostly driven by incentives generated and transmitted by the current monetary system of national, floating fiat monies. Once the first (monetary) condition is present, the thesis is also that the "Dutch disease" manifests itself more strongly when the institutional arrangements in regard to the booming sector permit rents to be extracted and distributed through the political process.

The premises of my thesis are three. First, considering the characteristics of fiat money regimes in place around the world, one cannot expect foreign trade imbalances to be "automatically" corrected, since there are no more "automatic" correction mechanisms such as (with a varied degree of effectiveness, and thanks to the gold standard) existed as late as the early 1970's, when the Nixon Administration defaulted on its obligations under the Bretton Woods Treaty. That means that governments are less constrained than they have ever been to pursue active monetary policy without (too much) regard for the impact of those policies on the balance of trade, since they perceive themselves as able also to "manage" that variable.

Second, in order to achieve the different political goals that the respective governments may explicitly or implicitly pursue by using monetary policy as a tool (such as full employment, international competitiveness, and so on), not a single national currency today is free from government's manipulation. Therefore, if money is not neutral, it may be expected that an active monetary policy will create a different allocation of resources in the economy from the one that would happen under a neutral monetary policy (that is, in the absence of any monetary intervention). In turn, those government-guided misallocations would result in arbitrage opportunities for a reallocation of factors in international markets.

Third, mineral wealth is a unique kind of economic good. In traditional economic analysis, increases in production tend to happen at the margin. That is, more efficient producers, under a given state of technological knowledge, marginally and gradually advance production with their profits always tending to approach zero. In regard to mineral wealth, the quality and accessibility of the mineral deposits are such an important component of the costs of production that the success of prospection, even without significant technological changes, may bring to the market a new producer, far from the margin of zero profitability. That is, the law of diminishing returns does not apply to the aggregate of mineral exploitation in the long run (Simon, 1983:53). Incidentally, it is exactly this characteristic that creates such opportunity for "rents" in that industry.

The story of Dutchland

Now, imagine that not so long ago there was a country with a fairly diversified, although small, economy, and a tolerable government, with some degree of political representation, respect for individual rights, and economic links with the international community –so much so that there were no controls of capital flows and the government allowed some fluctuations of the exchange rate of the local currency in relation to their major commercial partners. Let's call that country *Dutchland*. That society also had a monetary regime

of legal tender fiat money. The national currency of *Dutchland* was not a "reserve" currency, more because of the size of their economy than because of any terrible mistake in its management, and, therefore, all of its foreign transactions were done in one of the world's reserve currencies. We may mention, in passing, that *Dutchland's* government had some political goals of its own, goals that would be easier to pursue under a lax monetary policy, say, running a loose fiscal policy.

Suddenly, some new mineral findings in *Dutchland*[4] gave rise to the creation of a very lucrative and internationally competitive new industry of mineral exports. The government, in nationalistic fervor and anticipating increases in public revenues, took the lead to extract an important "rent" from the new activity. That did not go well with the owners of the lands where the mineral deposits were found, since they expected to get the rent for themselves, but in the end the government settled with some of them for a tiny fraction of the royalties, proportional to their political clout, and they learned to live with that; the others are still waiting for their day in court and probably will fare no better than the first group, if they get anything at all.

Dutchland soon found itself in a situation in which there were significant inflows of foreign currency derived from the mineral sales. Given the legal tender character of the monetary system, the influx of reserve currency was deposited in the Central Bank, and the latter credited the government in the local currency (let's call it the "guilder").[5] Since the government had appropriated most of the "rent" for itself, the new revenue was immediately spent in current public expenses, which sharply increased. The government suppliers of goods and services started to use their new income to buy goods in the domestic market.

Under legal tender fiat money arrangements, the monetary authorities are able to control either the general price level or the exchange rate by their manipulation of interest rates and supply of base money. They can even, to some extent, strike a balance between the two, but they could not control both at the same time.

Let's say that the monetary authorities in *Dutchland* were more concerned with keeping the inflation and unemployment low than with the appreciation

of the exchange rate, and therefore, in order to prevent the general price level from rising or be forced to raise the interest rate to levels that could damage the economic activity, they allowed the guilder to appreciate in relation to the reserve currencies by "sterilizing" the increases in the money supply generated by the exchange of foreign currency for local currency. The increased demand for exchanging local for foreign currency and a constant supply of local currency forced the exchange rate up, as measured in the guilder.

The moment that the monetary authorities decided to allow the currency to appreciate, the international competitiveness of all tradable goods in the economy started to diminish to some degree. Different goods suffered in different degrees according to the extent that their costs were more or less rigidly linked to prices in the domestic market. For instance, if there had been many "*maquiladoras*" (assembly industries in which the immense majority of the inputs were imported and the component of local costs were relatively small) in *Dutchland*, an appreciation of the guilder would not have been that bad for them. On the other hand, if there had been other industries with complex supply chains and substantial costs in local currency not easily replaceable by foreign suppliers, those industries would have suffered immediately from the appreciation of the local currency.

The supply chain of minerals is pretty much straightforward: a mine, means of transportation in bulk, and a harbor. The industry is very intensive in capital, and generally with very low intensity in labor costs. If we assume that the mines are not at the margin of mining worldwide, and that transportation and harbors are not terribly inefficient, the government may give up some of the "rents" to gain market share in international markets and keep exports for a long time, even if that would produce an appreciation of the local currency and diminish the competitiveness of other tradable goods.

The story told in this section illustrates that the impact of the "Dutch disease" in a given country is a necessary consequence of the legal tender fiat money with floating exchange rate regime to the extent that under such regime the proceeds of mineral exports allows for the appreciation of the exchange rate if the monetary authorities so decide.

One also sees that the "Dutch disease" is dependent on: (1) how marginally efficient the mineral production is; (2) the extent to which the State may extract rents from the mineral sector; (3) and the rigidities faced by the other sectors of the economy.

Before moving to the analysis of the "Dutch disease" in the next sections, one important aspect should be considered: Why bother with what is happening to the industrial sector?[6] If manufacturing is losing competitiveness because there are now better uses for capital and labor in mining, society will be better off with less industry. However, it is my understanding that we are not talking here about a matter of better allocation of resources to their most productive uses. I would be the last person in the world to advocate any restriction to the freedom of entrepreneurs to allocate resources the way they see fit. And I do not think that a country necessarily needs to have a big industrial sector to be wealthy and productive.

I think that it is possible to distinguish justifications for industrial protection from the analysis of the "Dutch disease," and I propose to compare what would have been the impact of inflows of revenue generated by mineral exports under a monetary system of commodity international money with the impact under the monetary regimes of national fiat money currencies we have today in order to make such distinction. If the lagging sectors of the economy are losing competitiveness, not because of a natural reallocation of resources to their most productive uses, but because the nature of the monetary system is such that the inflow of revenue of the booming sector is changing the purchasing power parity of the domestic currency and making the lagging sector less competitive (whether or not the resources they use may be transferred to other uses or simply liquidated), I think that one can make the case against such a monetary regime on purely economic grounds and without being understood as a supporter of industrial protectionism or non-economic motivations.

A classification of monetary systems according to their main characteristics

There are many dimensions along which a monetary system may be evaluated,[7] among them the legal status of the currency produced (whether there is legal or forced tender), the scope of action of the monetary authorities (the extent of their formal independence), the sources of value for the money produced (such as a currency board), the supporting mechanisms of money's relative value (such as international reserves) utilized by the monetary authorities, etc. Once one has in mind many of those dimensions, one may successfully classify different monetary systems according to their main features.

If we classify them, nowadays the majority of monetary systems around the world share these common characteristics: (1) the currency is national fiat money currency that is legal tender; (2) the currency is issued by a state-owned Central Bank; (3) the monetary authorities (usually a Central Bank) have authority to regulate what other financial institutions can do and to buy and sell public debt in order to influence the interest rate, through management of the supply and demand of money and credit; and (4) the monetary authorities also engage in and regulate foreign transactions in order to influence exchange rates.

There are important differences among monetary systems, and those differences are what explain the different performances of, say, the Chilean and the Argentinean pesos. But those differences are quantitative differences, not qualitative ones; for instance, there are degrees of independence of the Central Bank, but today there is not a single system around the world without the government's regulation of money. If no graduation were accepted, no differentiation among most modern monetary regimes would be perceivable, and they would be pigeonholed together, which would not be very useful in explaining their comparative merits.

Incidentally, in order to explain the performance of different currencies, it also is necessary to keep in mind that monetary institutions do not exist in a vacuum; the quality of the institutional arrangements in general, what may broadly be defined as the adherence to the rule of law, is an important

component to explain the way in which a given currency is valued relative to other goods and currencies. Aside from the degree of adherence to the principles of the rule of law, the quality of many "instrumental" institutions is also essential when comparing different monetary arrangements; after all, if the powers of criminal prosecution in the name of the State may be abused, for instance, because public attorneys are not sufficiently accountable, one cannot talk about "a fair distribution of justice," and the uncertainty about what you can do with your money increases to a point of affecting its value, even if we cannot measure that effect.

That is an important concept to remember: the value of fiat money currencies is always a relative value since, by definition, it has no intrinsic value. That is exactly what makes it possible for monetary authorities to manipulate foreign exchange transactions to support the value of their currency.

Among the different foreign exchange regimes that the monetary authorities may decide to follow, there are variations, with regimes allowing more or less exchange rate fluctuation. A regime of fixed parity would be the regime with the least room for fluctuations. The foreign-exchange regime has nothing to do with the general openness of an economy, since, for instance, you could have on the one hand a currency that is pegged but has trade of goods and services (ex. China), or on the other hand, you could have a free floating exchange rate with very cumbersome commercial and financial regulations (ex. Euro zone).

A last remark about the essential features of money seems required. If money is assumed to be a generally accepted medium of exchange, money could be anything used as media of exchange by the economic agents, and that which has satisfactory liquidity (the bid-ask price gap is as close to zero as possible) may be used as such. It is granted that such a definition is not as precise as legal definitions of money and its aggregates, but it is better at describing the real uses of money, which has important implications for our thesis.

Exchange rates and control cases

In an ideal world in where there are no barriers of any kind to the free flow of goods, services, labor, and capital across borders, it would be expected that nominal exchange rates would reflect the purchasing power parity of the different national currencies to acquire all goods and services in their respective countries, tradable and non-tradable goods alike[8], in the same way that under a universal gold standard like the one in force until 1914, the exchange rate of British Sovereigns and 20-franc French Angels tended to reflect their different gold content.

Since we do not live in an ideal world, a number of national variations result such that there is a difference between the nominal exchange rate of any currency in relation to other currencies and the differences of their relative purchasing power.[9] It is relevant for our purposes to recognize that there are differences in the purchasing power among different currencies and that those differences are not automatically corrected with changes in nominal exchange rates.

But now consider that you are living, say, in a mineral-rich country around the 1900's –let's say copper-producer Chile. The balance of trade has a substantial surplus, but the local currency, the Chilean peso, at the time was in the gold standard, so the inflow of foreign exchange, likely British pounds, brought by the sales of copper are re-exported in order to keep equilibrium between the price of gold in the domestic market and abroad. In the Chile of the beginning of the twentieth century, the supply of base money changes with the increase in the deposits of gold with the banks of issuance. At that time, sterling pounds were as good as gold, and therefore the inflow of foreign exchange would, without the interference of government, produce an increase in the money supply. But the demand for money is a variable independent of the money supply. Let's say that at first, the banks would use the new reserves to try to expand credit; eventually the interest rate will go down below its opportunity cost. The next action is to re-export the excess deposits of gold equivalent. Therefore, if there were more deposits of gold equivalents than the demand for money, the banks would automatically, without the

interference of the government, keep not only the money supply but also the exchange rate "in equilibrium."

Let's consider another case, the case of Panama for its entire history as an independent country, but particularly today when the sovereignty over the Panama Canal and the proceeds from the use of the Canal unquestionably belongs to the Panamanian Government. Panama gives legal tender status to the United States dollar, and Panama does not have a Central Bank; therefore, the constant inflow of fees paid to the authorities in charge of the Panama Canal operation and spread throughout the Panamanian economy in the form of wages, remuneration of goods and services, etc., are all US dollars. Why do we not talk about a "Dutch disease" in Panama? Why are other sectors of the Panamanian economy not put out of competitiveness because of the inflow of foreign currency and the positive balance of trade Panama has enjoyed for more than a century now? The answer is that, like in the cases of the gold standard, monetary unions, and currency boards, there are no fluctuations of the exchange rate, and the supply of money is not politically determined but it is independently variable.

The decision to highlight these cases was not to advocate a return to the gold standard, a substitution of national currencies by the US dollar or the introduction of a currency board. These actions should be analyzed by their own merits and challenges, and it is not the place here to do that. The reason to bring up those cases is just to show that the inflow of foreign currency brought by the mineral exports or the exploration of other natural resources –although attracting factors of production from other sectors of the economy and generating income that will be spent in the domestic market, pricing up non-tradable goods– does not produce an appreciation of the local currency, because either the exchange rate is independently defined (in the case of the gold standard) or there simply is no exchange rate because the country is in a sorts of monetary union with its main commercial partners, by force of the substitution of the local currency or by force of a currency board.

The Model and Its Elements: Foreign Exchange Impact in Five Scenarios

In order to present the main argument of this paper, it is useful to analyze the impact of the increased inflow of foreign exchange and its impact on the economy in five scenarios: first, an economy without money; second, one under a constrained gold standard; third, one under a fiat money regime with fixed exchange rate; and two scenarios under a fiat money regime with floating exchange rate: one in which the monetary policy accepts inflation but not an exchange rate appreciation, and one in which the monetary policy allows the appreciation of the currency.

It is enough to consider this economy with three sectors: the booming tradable sector, which we will call "oil," the lagging tradable sector, which we will call "shoes," and the sector of non-tradable goods and services which we will call "hospitality."

We assume that there are two factors of production, "labor" and "imports", and all the production of tradable goods are "exports."

There are two time periods: time one before the boom, and time two after the boom has started.

We will call the foreign currency the "dollar," and the local currency the "peso". The foreign exchange rate at time one is one dollar to ten pesos.

At time one let's say that the revenue of "oil" is zero, the production of "shoes" is about 200 pesos, and the remuneration of hospitality is 200 pesos. The exports of shoes generate revenue of 200 pesos, 200 pesos are imported, and the balance of trade is in equilibrium.

At time two there is a production of 200 pesos in oil, consuming 150 pesos in factors of production, 100 pesos in labor acquired in the domestic market (the remaining 50 pesos we may call "rents"), the production of shoes has declined to 100 pesos, and the remuneration of hospitality has remained 200 pesos, but is now consuming 150 in factors of production, which results in a "profit" of 50 pesos. Now the exports of oil and shoes generate revenue of 300 pesos, the imports are now 200 pesos, and there is a foreign trade surplus of 100 pesos.

The existing factors in the domestic market in time one generated an income of 400 pesos and in time two received a remuneration of 500 pesos.

Regardless of any reallocation of factors of production that may be caused and transmitted by the monetary system, this model offers an obvious case in which some resources previously utilized in the production of shoes and hospitality were now invested in the oil business, and the increased demand for non-tradable goods and services in the economy increased its remuneration in the domestic market.

Chart 1. Foreign Exchange Impact in a Scenario Without Money

	Time 1		Time 2	
	Revenue	Expenses	Revenue	Expenses
Oil	0	0	200	50 imports 100 labor 50 rents
Shoes	200	100 imports 100 labor	100	50 imports 50 labor
Hospitality	200	100 imports 100 labor	200	100 imports 50 labor 50 profits
GDP	400	400	500	500
Exports/Imports	200	200	300	200
Balance of trade	0		100	

This model without money leaves the question of what to do with the trade surplus unanswered, but for the purposes of our comparison, it is not necessary to elaborate further.

Now let's introduce money into the model. First, we will use the gold standard scenario. The only change in the model is that now the balance of trade will be cleared by the Humean "specie" mechanism.[10]

With this scenario we intend to prove that aside from the reallocation of factors of production motivated by the opportunity of more productive uses in the economy, there is no need for an appreciation of the currency to occur, as long as the monetary system is such that there is an automatic "correction" mechanism to keep purchasing power parity between prices in the domestic and foreign markets.

Again, for the purposes of our comparison, we do not need to elaborate what will be done with the gold acquired by the clearance of the balance of trade.

Chart 2. Foreign Exchange Impact in a Scenario with Gold Standard

	Time 1		Time 2	
	Revenue	Expenses	Revenue	Expenses
Oil	0	0	200	50 imports 100 labor 50 rents
Shoes	200	100 imports 100 labor	100	50 imports 50 labor
Hospitality	200	100 imports 100 labor	200	100 imports 50 labor 50 profits
GDP	400	400	500	500
Exports	200		300	
Imports		200 Production factors		200 Production factors 100 gold imports
Balance of trade	0		0	

Now let's consider a scenario with fiat money but with foreign exchange with a fixed parity. The central bank, in order to keep the fixed parity, will borrow money in the domestic market with "money market operations" in order to "mop up" the excess liquidity. That will force interest rates up, and impose a burden to the Treasury, since the government will be forced to pay to keep those resources "sterilized" in the central bank. We do not need to elaborate further; suffice it to say that for awhile the policy of "fixed exchange rate," by definition, will prevent the exchange rate from appreciating and therefore will prevent further dislocations in the economy, but these arrangements are unsustainable in the long run.

Chart 3. Foreign Exchange Impact in a Scenario with a Fixed Exchange Rate

	Time 1		Time 2	
	Revenue	Expenses	Revenue	Expenses
Oil	0	0	200	50 imports 100 labor 50 rents
Shoes	200	100 imports 100 labor	100	50 imports 50 labor
Hospitality	200	100 imports 100 labor	200	100 imports 50 labor 50 profits
GDP	400	400	500	500
Exports/Imports	200	200	300	200
Balance of trade	0		100	
Money market operations	0		100	
Exchange rate	1/10		1/10	

Now, let's consider the same variables under two scenarios of floating exchange rates. The first one to consider is the one in which the monetary authorities prefer inflation to the appreciation of the foreign exchange rate.

They will acquire foreign currency with the creation of new domestic money and with that inflate the money supply. Although in nominal terms the exchange rate will go up, the exchange rate measured in constant values, that is, the real exchange rate, may remain stable.

There are all sorts of consequences and repercussions of such a decision by the monetary authorities, but, for the purposes of our comparison, to highlight the fact that no appreciation of the exchange rate necessarily happens is enough.

Chart 4. Foreign Exchange Impact in a Scenario with a Floating Exchange Rate and an Inflationary Monetary Policy

	Time 1		Time 2	
	Revenue	Expenses	Revenue	Expenses
Oil	0	0	200	50 imports 100 labor 50 rents
Shoes	200	100 imports 100 labor	100	50 imports 50 labor
Hospitality	200	100 imports 100 labor	200	100 imports 50 labor 50 profits
GDP	400	400	500	500
Exports/Imports	200	200	300	200
Balance of trade	0		100	
Money is created by the Central Bank and exchanged by the surplus of foreign currency, inflating the money supply by 25%	0		100	
Exchange rate kept constant (in real terms)	1/10		1/10	

Let's now discuss the fifth and last scenario, the one with floating exchange rate and no-inflationary monetary policy. Under such conditions, the entire surplus in the balance of trade will force an appreciation of the local currency if brought into the country. This is the scenario that describes how the existence of rents in the "booming tradable sector" translates into a change in the purchasing power parity of all domestic prices in relation to the international market, compromising the competitiveness of the "lagging tradable sector" further than the simple reallocation of production factors to the most efficient uses. Again, in order to keep the model simple, we will not try to describe here the impact of the appreciation of the currency or any other corollary of this scenario. We believe that it is a sufficient tool to conclude that only

under certain monetary arrangements will the appreciation of foreign exchange rate associated with the "Dutch disease" happen.

Chart 5. Foreign Exchange Impact in a Scenario with a Floating Exchange Rate and Non Inflationary Monetary Policy

	Time 1		Time 2	
	Revenue	Expenses	Revenue	Expenses
Oil	0	0	200	50 imports 100 labor 50 rents
Shoes	200	100 imports 100 labor	100	50 imports 50 labor
Hospitality	200	100 imports 100 labor	200	100 imports 50 labor 50 profits
GDP	400	400	500	500
Exports/Imports	200	200	300	200
Balance of trade	0		100	
Exporters bring into the country the surplus of foreign currency, buying pesos in the market, thus appreciating the domestic currency	0		100	
Exchange rate appreciates 20%	1/10		1/8	

An Austrian Concern

The Austrian Business Cycle Theory (ABCT, for short) is a theory about how the effects of an inflationary expansion of credit are transmitted to the real sector of the economy producing a cycle of boom and bust in economic activity. The ABCT is based on the assumption that the transmission mechanism of monetary phenomena does not affect the entire economy

equally: the inflationary increase of credit money affects different sectors of the economy at different times and produces different effects. So this recognition that changes in the money supply affect not only the general price level but relative prices as well, and that changes in relative prices transmit information from the monetary side to the real side of the economy with impact on the structure of production is a central claim of the ABCT.

A useful analogy to establish, for the purpose of this thesis, is that given, among other things, the fact that the supply and demand of factors of production are not perfectly elastic, and neither are they perfectly interchangeable, an increase in the international demand for some goods results in changes in relative prices in the domestic market in the same way that a "Cantillon effect" is observable during an Austrian Business Cycle.[11] Those changes in relative prices would have happened even in the moneyless society of the textbooks; therefore, we insist, there are real movements of factors when the products of one sector of the economy are in higher demand, but that will only have an impact on the exchange rate under a certain kind of monetary arrangement.

Also, it is important to consider that the openness of a national economy to the free flow of goods, services, labor, and capital and the elasticity of domestic prices (that is, the lack of laws and regulations imposing price rigidities) certainly influences the extent to which international demand may distort relative prices in the domestic market. In other words, the amount of time for distortions in relative prices in the domestic market to be "corrected" (that is, for relative prices in the domestic market to get closer to relative prices in international markets) is greatly influenced by coercive domestic measures in force, in the same way that coercive measures may increase the time necessary for the "Ricardo effect" to operate in the downturn of an Austrian Business Cycle.[12]

Rent-seeking and the resource curse

A sensible way to describe the resource curse is to think about it as composed of two elements. The first element is the trigger of rent-seeking activity

targeting the "rents" generated by the exploitation of mineral wealth that manifests itself by the introduction of perverse incentives in the political sphere.[13] The second element is the bundle of economic problems generated by the appreciation of exchange rates, specifically, the loss of competitiveness of other tradable goods as a consequence of the exports of minerals, the so-called "Dutch disease" (*The Economist*, 2012).

Christa Brunnschweiler and Erwin Bulte distinguish between abundance and dependence on oil revenue: oil revenues approaching 50% of exports' revenues ceases to be abundance and becomes dependence. While abundance leads to faster growth, dependence may be detrimental if coupled with poor political institutions (Brunnschweiler and Bulte, 2008). So, according to these authors, a key element in determining the outcome of oil revenue is the quality of the political institutions and not so much the aspects of the economic structure in place at the time the oil revenue begins.

Some supporting evidence for their thesis may be found in F. Postali, who makes a comparative analysis of the economic performance of municipalities in Brazil with the highest royalty revenues in relation to a representative group of other towns. He concludes that:

> Results suggest the existence of a phenomenon that resembles the so-called resource curse, to the extent that high resource-dependence seems to impact negatively on local economic growth. Higher royalty revenues tend to reduce the economic growth of municipalities entitled to receive them compared to the control group (Postali, 2009:211).

Since all municipalities in Brazil use the same currency and there is unimpeded labor and capital mobility in the country, we cannot say that exchange rates or crowding out of resources are responsible for those consequences. Therefore, Postali argues that the "Dutch disease" is not a valid explanation for the poor performance of those local governments; further, he thinks that "blaming local institutions and opportunistic behavior for inefficiencies in the use of those revenues" may be tempting, but it is premature (Ibid., 212). I have only anecdotal evidence to support my

disagreement that such a conclusion is premature, but for the purposes of this paper, the relevant conclusion is that poor political arrangements may be understood as an independent variable from the "Dutch disease" to explain the "resource curse."[14] Aside from the "Dutch disease," Postali offers other explanations for the resource curse, such as the crowding out of capital for investments, the peculiar production path of mineral exploration, the influence of mineral exploration in the institutional design, the decline in the terms of trade, the inherent instability of the market price for natural resources and, last but not least, the misuse of rents (Ibid., 207). Regardless of the fact that all these explanations cannot be true at the same time and some of them are not true at all, it is important to stress the independence of the two variables we are discussing here: one may witness bad economic results from the misuse of rents even if other parts of the same economic area are thriving; and it is also possible to have a significant percentage of total export revenue proceeding from mineral exploitation without that causing a manifestation of "Dutch disease," much less "resource curse."

It is worth exploring what at prima facie seems to be contrary evidence to the thesis that the resource curse is a consequence of political decision-making in regard to mineral wealth generating rent-seeking. That is the case of Norway. Ola Listhaug argues that, in the Norwegian case, bringing oil wealth under political control was a good thing (Listhaug, 2005:835). The argument raises the question of whether it is possible to explain, using Public Choice Theory, the Norwegian government's perceived position of trying to save oil revenue and not spend it. To answer that one needs to study particularities such as the composition of Parliament and the division of power between elected politicians and bureaucrats who have different time preferences for public spending. Anyway, the author's emphasis is on trust in the government; he seems to think that some skepticism is salutary but cynicism is not. For the author, the purpose of the oil fund is to "handle" fluctuations of revenue flows into the domestic economy and to provide for pensions, a goal that in his view the government-managed fund has performed satisfactorily so far (Ibid., 838). The author recognizes, however, that putting the oil revenue in an oil fund postponed but did not eliminate the rent-seeking

problem; the oil fund became the target of rent-seeking (Ibid., 839). True, the data presented in that paper does not support the hypothesis that oil wealth has undermined confidence in democratic institutions in Norway; perhaps it never will, but what seems to be the most clear conclusion from the analysis of the Norwegian case is that better instrumental institutions, such as a well-designed perpetual fund with a policy of sharing annual dividends throughout the population and a culture of limited and representative government, create checks to the perverse incentives that are at the core of the resource curse.

A final argument in favor of the idea that the resource curse is essentially a political and not an economic problem[15] is the argument claiming there are anti-democratic properties in mineral wealth appropriated by the state, which Michael Ross defines as the *rentier* effect. For him, the *rentier* effect operates through taxation, expenditure, and group formation (2000:335). The taxation effect implies that states that fund themselves more with personal and corporate taxes are more democratic. The expenditure effect implies that states with higher government consumption as a percentage of GDP are less democratic. Looking for a group formation effect, higher government share of the GDP would imply less democracy (Ibid., 347). According to this interpretation, a resource curse is one more example of the tragedy of the commons (Shaxson, 2007:1128), and the two elements of lack of accountability of the political class and the perverse incentives generated by rent-seeking would be eliminated if there were a direct distribution of oil revenue, preferably through private property and funding the needs of the State through tax collection (*Ibid*.,1135).

Conclusions

The "Dutch disease," as I defined it in this paper, is a specific effect of the appreciation of the real exchange rate of a national legal tender fiat currency. That appreciation is caused by the conversion of increasing amounts of foreign currency earned by nationals in their exports of minerals, when a

substantial part of those earnings is constituted by "artificial rents" and not factors of production. If there were no government intervention in the mineral industry, that is, if all factors of production were open to be privately appropriated, there would not be, by definition, "artificial rents." So the way in which the revenue of mineral exports will be used is a function of the extent to which government's intervention in the mineral sector generates "artificial rents," and changes in relative prices both domestically and internationally can be derived from that intervention.

In an effort to prevent the excess liquidity produced by capital inflows from generating inflation, the government may either allow the local currency to appreciate or may buildup reserves, which put pressure on the public budget. In any case, in a context with no "automatic" mechanisms to balance the supply and demand of liquidity under national monetary arrangements, and in the presence of rigidities in the economy, there may be no "good" solution to cope with the above-mentioned problem. In that context, any policy directed towards fighting the excess liquidity will tend to generate fiscal imbalances or will induce a lack of competitiveness in other sectors of the economy.[16]

A final note is that the different models I have presented here may suggest an indictment against floating exchange rates. Given the fact that prices generally tend to be rigid downwards, it is "less painful" to adjust the purchasing power domestically by inflation than by deflation. But one may not assume that the foreign trading partners would not react to such policy, for example by implementing protectionist measures. Understanding this is one more reason to conclude that, as long as we have national fiat monies, there will not be monetary policies without undesired unintended consequences.

NOTES

1 The concept of rents, for the purposes of this paper, is the classic one in which rents are considered the returns "in excess" of the ones obtainable by the resource owners "in perfect competition." There are more elaborate definitions of "rents," but it may be useful to keep

in mind that for Adam Smith they are simply the "activities of people who reap what they do not sow" (Karl, 2007:259). For the purposes of this paper it is also important to distinguish "artificial rents," such as the ones generated and appropriated by the political process, from "natural rents," such as the ones, for instance, commanded by the owners of the most productive lands referred to by Ricardo. That is, by the terminology used in this paper, those "excess" returns obtained by force of private property rights arrangements are considered "natural rents," while the same income, once captured by the government, become "artificial rents."

2 For Michael Ross, the *rentier-state* explanation for the resource curse is based on the assumption that the state is not a revenue maximizer (Ross, 1999:313). I disagree. Statesmen may act rationally in limiting taxation and accountability; a certain amount of taxation without too much accountability might be the greatest possible result in terms of revenue maximization for the politician.

3 Neary, in his treatment of the real and monetary aspects of the "Dutch disease," introduces a third effect which he labels *liquidity effect*. Such an effect, unequivocally monetary, is the transmission mechanism through which, under a fixed exchange rate regime, there is a build-up of foreign exchange reserves delaying the real effects of the boom (Neary, 1982:18), and under a floating regime, makes the exchange rate "bear all the brunt of ensuring that the money market clears at the new higher level of real income" (Ibid., 21). My conclusions are similar to the conclusions of his monetary model, although Neary, accepting the treatment of real exchange rates as a story of changes in relative prices in the domestic market, does not take into consideration changes in the purchasing power parity, which, I argue, is essential to understanding the "Dutch disease."

4 For an actual description of the events related to the findings of the Slochteren gas fields in the Groningen province in the Netherlands in the late 1950's and their economic consequences, see Rudd (1996).

5 It does not matter much whether the government intervenes directly in the foreign exchange market by centralizing all foreign exchange transactions, or if it allows private clearing of foreign exchange transactions and intervenes only indirectly by providing liquidity to financial institutions, through the manipulation of the demand for money via the interest rates, etc. In the former case, the influx of foreign currency will be acquired in exchange for newly printed domestic currency and kept in reserves with the Central Bank, and the latter will need to sell bonds (previously bought from the Treasury) to "mop up" the excess liquidity in the economy and avoid too much inflationary pressure. In the latter case, the Central Bank will need first to sell public debt in order to raise funds to provide the government with local currency in exchange for the foreign currency earned with the mineral exports, and next it will need to provide liquidity to the financial system to prevent the interest rate from going up. Either way, the monetary authorities, by issuing a mixture of base money and public debt, will provide the necessary liquidity in the domestic currency for the clearance of foreign transactions and will try to control the impact of the increased liquidity in the general price level by inducing some of that money to be "sterilized" in public debt.

6 Nealy, in a paper written solo, in the same year of his seminal paper on the "Dutch disease" with Corden, concluded that: "… de-industrialization following a resource boom is a 'disease' requiring treatment only if a large manufacturing sector is desired for the sake of some non-economic objective, or if distortions (such as wage stickiness) impede the smooth reallocation of resources" (Nealy, 1982:26).

7 For a complete classification of modern monetary systems, see Zelmanovitz (2010).

8 "Real exchange rate" may be defined as: "The relative price of non-traded goods to traded goods" (Corden and Neary, 1982:827). According to this definition, a rise in the price of non-traded goods (services) means a real appreciation of the exchange rate. Although I concede that this definition works for the purposes of identifying imbalances in the domestic market, I prefer to define "real exchange rate" with a focus on differences in purchasing power as identified by relative prices across borders and dealing with the differences in relative prices between tradable and non-tradable goods in the domestic market separately, since the causation for those imbalances may not be in the interface between the domestic economy and international markets.

9 Because that fact is well recognized, models of Purchasing Power Parity are usually displayed in order to better compare real exchange rates. Purchasing power parity theory was popularized by the Big Mac Index, created and regularly published by *The Economist* under the assumption that the famous sandwich is a sufficiently representative and uniform bundle of goods and services - so much so that the discrepancy between its price in different countries and the nominal exchange rate may be used as gauge of how much real and nominal exchange rates are at variance.

10 Here, for the sake of the model, we are using a very basic model of gold standard, a system with Humean characteristics in which the flow of specie would balance prices internationally. Incidentally, it was already noted that in nineteenth-century England the operation of this external drain of specie would only work in order to keep the monetary system "neutral," i.e., neither promoting nor reducing the business cycle under a hypothetical purely metallic currency as described by Hume in his essay "Of the Balance of Trade" (Hume, 1987: 308). Under the gold reserve system with a Central Bank of that time, its effects were not immediately perceived, but took some time to happen, as Professor L. White mentions (White, 1995: 115).

11 Richard Cantillon (1680–1734), a successful speculator during the "Mississippi Bubble" in early eighteenth-century France, wrote an essay in economics where, among many original contributions to economic theory, he developed the idea that money is not neutral, and that the introduction of new money in the economy benefits most the ones that first receive it, since it is only gradually that the consciousness of the monetary inflation will be transmitted to different prices in the economy.

12 The "Ricardo effect" is the mechanism through which misdirected resources are drawn back from capital-intensive modes of production to less intensive ones, reversing the economy back to a sustainable structure of production.

13 Rent-seeking may be legal or illegal, but the opportunity for it to happen is always due to government's intervention in the market place. Once the opportunity to extract rents presents

itself, rent-seeking activity becomes competitive and therefore attracts resources away from productive enterprise (Krueger, 1974:291). To substantiate these two statements (about rent-seeking arising from government's intervention and attracting resources because of its competitive nature), there is no need to go further than Professor G. Tullock's reasoning that in Gladstone's England, few resources were wasted lobbying for tariffs; in the United States today, huge amounts are so invested (Tullock, 2004:178).

14 4For other authors the resource curse is entirely a political and not an economic problem, and the increased levels of external intervention and the lower levels of checks on political power precisely because of a lesser dependence on tax revenues may explain it. For one of these authors, the solution is to implement via a "fiscal social contract" political reforms to diminish rent-seeking activities through transparence and accountability (Karl, 2007:256).

15 For an Exxon Mobil spokesperson, there is not an "oil" curse but a "governance" curse (Shaxson, 2007: 1125).

16 In the specific case of Brazil, which I will analyze further in another paper, the current sharp increase in direct foreign investment in the oil and gas industry may already be causing the country to suffer from the "Dutch disease," not yet as a consequence of the oil exports, but from the influx of foreign currency that produces the same effect as exports in exerting pressure on the exchange rate.

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